

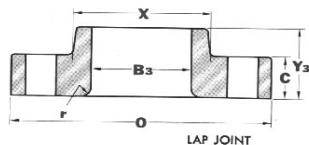
FLANGES 150 LB



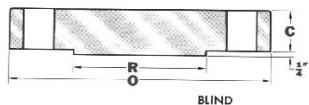
SOCKET WELDING TYPE



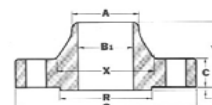
REDUCING FLANGES



LAP JOINT



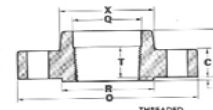
BLIND



SLIP-ON



WELDING NECK



THREADED

FLANGES 150 LB

ASA B16.5

DRILLING TEMPLATE AND BOLTING								
NOMINAL PIPE SIZE	DRILLING			BOLTING				
	BOLT CIRCLE DIAM.	NUM. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	MACHINE BOLT LENGTH RAISED FACE	STUD BOLT LENGTH RAISED FACE	RING JOINT	
1/2	2 3/8	4	5/8	1/2	1 3/4	2 1/4	--	
3/4	2 3/4	4	5/8	1/2	2	2 1/4	--	
1	3 1/8	4	5/8	1/2	2	2 1/2	3	
1 1/4	3 1/2	4	5/8	1/2	2 1/4	2 1/2	3	
1 1/2	3 7/8	4	5/8	1/2	2 1/4	2 3/4	3 1/4	
2	4 3/4	4	3/4	5/8	2 3/4	3	3 1/2	
2 1/2	5 1/2	4	3/4	5/8	3	3 1/4	3 3/4	
3	6	4	3/4	5/8	3	3 1/2	4	
3 1/2	7	8	3/4	5/8	3	3 1/2	4	
4	7 1/2	8	3/4	5/8	3	3 1/2	4	
5	8 1/2	8	7/8	3/4	3 1/4	3 3/4	4 1/4	
6	9 1/2	8	7/8	3/4	3 1/4	3 3/4	4 1/4	
8	11 3/4	8	7/8	3/4	3 1/2	4	4 1/2	
10	14 1/4	12	1	7/8	3 3/4	4 1/2	5	
12	17	12	1	7/8	4	4 1/2	5	
14	18 3/4	12	1 1/8	1	4 1/4	5	5 1/2	
16	21 1/4	16	1 1/8	1	4 1/2	5 1/4	5 3/4	
18	22 3/4	16	1 1/4	1 1/8	4 3/4	5 3/4	6 1/4	
20	25	20	1 1/4	1 1/8	5 1/4	6	6 1/2	
22	27 1/4	20	1 3/8	1 1/4	5 1/2	6 1/2	7	
24	29 1/2	20	1 3/8	1 1/4	5 3/4	6 3/4	7 1/4	
26	31 3/4	24	1 3/8	1 1/4	6	7	--	
28	34	28	1 3/8	1 1/4	6	7	--	
30	36	28	1 3/8	1 1/4	6 1/4	7 1/4	--	
32	38 1/2	28	1 5/8	1 1/2	6 3/4	8	--	
34	40 1/2	32	1 5/8	1 1/2	7	8	--	
36	42 3/4	32	1 5/8	1 1/2	7	8 1/4	--	
42	49 1/2	36	1 5/8	1 1/2	7 1/2	8 3/4	--	

WEIGHTS				
APPROX. WEIGHT EACH - POUNDS				
NOMINAL PIPE SIZE	WELD- ING NECK	SLIP-ON AND THR'D	LAP JOINT	BLIND
1/2	2	1	1	1
3/4	2	2	2	2
1	3	2	2	2
1 1/4	3	3	3	3
1 1/2	4	3	3	4
2	6	5	5	5
2 1/2	8	7	7	7
3	10	8	8	9
3 1/2	12	11	11	13
4	15	13	13	17
5	19	15	15	20
6	24	19	19	26
8	39	30	30	45
10	52	43	43	70
12	80	64	64	110
14	110	90	105	140
16	140	98	140	180
18	150	130	160	220
20	180	165	195	285
22	225	185	245	355
24	260	220	275	430
26	300	250	--	525
28	315	285	--	620
30	360	315	--	720
32	435	395	--	870
34	465	420	--	990
36	520	480	--	1125
42	750	680	--	1625

COMMON DIMENSIONS															BORE		LENGTH THRU HUB				DIAM. HUB AT BEVEL	RADIUS OF FILLET	THREAD LENGTH MIN.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
NOMINAL PIPE SIZE	OUTSIDE DIAM.	THICK- NESS MIN.	O.D. RAISED FACE	DIAM. AT BASE OF HUB	WELD- ING NECK	SLIP- ON	LAP JOINT	WELD- ING NECK	SLIP-ON AND THR'D	LAP JOINT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

ASA B16.5 covers only sizes through 24".

larger sizes as listed below have the same flange and drilling dimensions as class 125 Cast Iron flanges, ASA B16.1.

26	34 1/4	2	29 1/4	28 1/2	26.25	--	5	3 3/8	--	26.00	--	--
28	36 1/2	2 1/16	31 1/4	30 3/4	28.25	--	5 1/16	3 7/16	--	28.00	--	--
30	38 3/4	2 1/8	33 3/4	32 3/4	30.25	--	5 1/8	3 1/2	--	30.00	--	--
32	41 3/4	2 1/4	35 3/4	35	32.25	--	5 1/4	3 5/8	--	32.00	--	--
34	43 3/4	2 5/16	37 3/4	37	34.25	--	5 3/16	3 11/16	--	34.00	--	--
36	46	2 3/8	40 1/4	39 1/4	36.25	--	5 3/8	3 3/4	--	36.00	--	--
42	53	2 5/8	47	46	42.25	--	5 5/8	4	--	42.00	--	--

ALL DIMENSIONS ARE INCHES

* 22" SIZE NOT COVERED BY ASA B16.5.

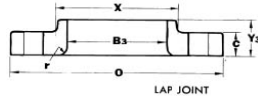
THE 1/16" RAISED FACE IS INCLUDED IN THICKNESS AND LENGTH Y.

SIZES 26" AND LARGER HAVE SINGLE TAPER HUBS.

FLANGES 300 LB



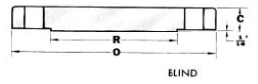
SOCKET WELDING TYPE



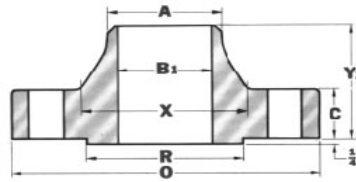
LAP JOINT



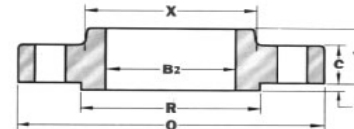
REDUCING FLANGES



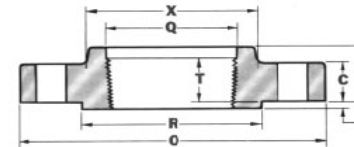
BLIND



WELDING NECK



SLIP-ON



THREADED



FLANGES 300 LB

ASA B16.5

DRILLING TEMPLATE AND BOLTING							WEIGHTS					NOMINAL PIPE SIZE	OUTSIDE DIAM.	THICK- NESS MIN.	O.D. RAISED FACE	DIAM. AT BASE OF HUB	WELD- ING NECK	SLIP- ON	LAP JOINT	COUNTER BORE MIN.	WELD- ING NECK	SLIP-ON AND THRD	LAP JOINT	DIAM. HUB AT BEVEL	RADIUS OF FILLET	THREAD LENGTH MIN.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NOMINAL PIPE SIZE	DRILLING			BOLTING			APPROX. WEIGHT EACH - POUNDS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	BOLT CIRCLE DIAM.	NUM. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	MACHINE BOLT LENGTH RAISED FACE	STUD BOLT LENGTH RAISED FACE	RING JOINT	NOMINAL PIPE SIZE	WELD- ING NECK	SLIP-ON AND THRD	LAP JOINT																BLIND																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1/2	2 5/8	4	5/8	1/2	2	2 1/2	3	1/2	2	2	2	2	3/4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3</

ALL DIMENSIONS ARE INCHES

* 22" SIZE NOT COVERED BY ASA B16.5.

THE 1/16" RAISED FACE IS INCLUDED IN THICKNESS C AND LENGTH Y.

SIZES 26" AND LARGER HAVE SINGLE TAPER HUBS.

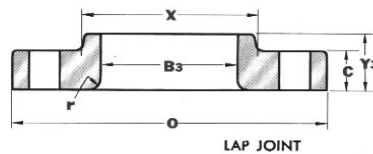
400 LB. FLANGES



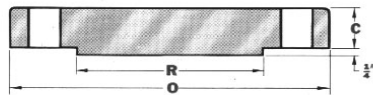
SOCKET WELDING TYPE



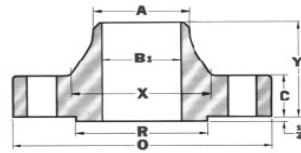
REDUCING FLANGES



LAP JOINT



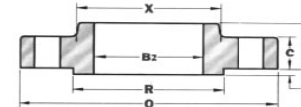
BLIND



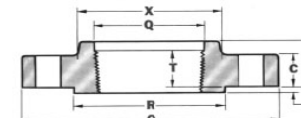
SLIP-ON



WELDING NECK



THREADED



DRILLING TEMPLATE AND BOLTING

NOMINAL PIPE SIZE	DRILLING			BOLTING				NOMINAL PIPE SIZE	APPROX. WEIGHT EACH - POUNDS			
	BOLT CIRCLE DIAM.	NUM. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	STUD BOLT LENGTH				WELD- ING NECK	SLIP-ON AND THRD	LAP JOINT	BLIND
					1/4"	MALE-FEMALE TONGUE-GROOVE	RING JOINT					
1/2	2 5/8	4	5/8	1/2	3	2 3/4	3	1/2	2	2	2	2
3/4	3 1/4	4	3/4	5/8	3 1/4	3	3 1/4	3/4	4	3	3	3
1	3 1/2	4	3/4	5/8	3 1/2	3 1/4	3 1/2	1	4	4	4	4
1 1/4	3 7/8	4	3/4	5/8	3 3/4	3 1/2	3 3/4	1 1/4	6	5	5	5
1 1/2	4 1/2	4	7/8	3/4	4	3 3/4	4	1 1/2	8	7	7	8
2	5	8	3/4	5/8	4	3 3/4	4 1/4	2	12	9	9	10
2 1/2	5 7/8	8	7/8	3/4	4 1/2	4 1/4	4 3/4	2 1/2	18	13	12	15
3	6 5/8	8	7/8	3/4	4 3/4	4 1/2	5	3	23	16	15	20
3 1/2	7 1/4	8	1	7/8	5 1/4	5	5 1/2	3 1/2	26	21	20	29
4	7 7/8	8	1	7/8	5 1/4	5	5 1/2	4	35	26	25	33
5	9 1/4	8	1	7/8	5 1/2	5 1/4	5 3/4	5	43	31	29	44
6	10 5/8	12	1	7/8	5 3/4	5 1/2	6	6	57	44	42	61
8	13	12	1 1/8	1	6 1/2	6 1/4	6 3/4	8	89	67	64	100
10	15 1/4	16	1 1/4	1 1/8	7 1/4	7	7 1/2	10	125	91	110	155
12	17 3/4	16	1 3/8	1 1/4	7 3/4	7 1/2	8	12	175	130	150	225
14	20 1/4	20	1 3/8	1 1/4	8	7 3/4	8 1/4	14	230	180	205	290
16	22 1/2	20	1 1/2	1 3/8	8 1/2	8 1/4	8 3/4	16	295	235	260	370
18	24 3/4	24	1 1/2	1 3/8	8 3/4	8 1/2	9	18	350	285	315	455
20	27	24	1 5/8	1 1/2	9 1/2	9 1/4	9 3/4	20	425	345	385	585
22†	29 1/4	24	1 3/4	1 5/8	10	9 3/4	10 1/2	22	505	405	455	720
24	32	24	1 7/8	1 3/4	10 1/2	10 1/4	11	24	620	510	570	890
26	34 1/2	28	1 7/8	1 3/4	11 1/2	--	12	26	750	650	--	1125
28	37	28	2	1 7/8	12 1/4	--	12 3/4	28	880	780	--	1425
30	39 1/4	28	2 1/8	2	13	--	13 1/2	30	1000	900	--	1675
32	41 1/2	28	2 1/8	2	13 1/2	--	14 1/4	32	1150	1025	--	1975
34	43 1/2	28	2 1/8	2	13 3/4	--	14 1/2	34	1300	1150	--	2250
36	46	32	2 1/8	2	14	--	14 3/4	36	1475	1325	--	2525

ALL DIMENSIONS ARE IN INCHES.
DIMENSIONS OF SIZES 1/2" THROUGH 3 1/2" ARE THE SAME AS FOR 600 LB. FLANGES.

† 22" SIZE NOT COVERED BY ASA B16.5.

* THE 1/4" RAISED FACE IS NOT INCLUDED IN THICKNESS, LENGTH Y OR THREAD LENGTH T.
SIZES 26" AND LARGER HAVE SINGLE TAPER HUBS.

ASA B16.5

NOMINAL PIPE SIZE	COMMON DIMENSIONS				WELD- ING NECK	BORE			LENGTH THRU HUB			DIAM. HUB AT BEVEL	RADIUS OF FILLET	THREAD LENGTH MIN.*	
	OUTSIDE DIAM. O	THICK- NESS MIN.* C	O.D. OF RAISED FACE R	DIAM. AT BASE OF HUB X		SLIP- ON B2	LAP JOINT B3	COUNTER BORE MIN. Q	WELD- ING NECK* Y1	SLIP-ON AND THRD* Y2	LAP JOINT Y3				
1/2	3 3/4	9/16	1 3/8	1 1/2	TO BE SPECI- FIED BY PUR- CHASER	.88	.90	.93	2 1/16	7/8	7/8	.84	1/8	5/8	
3/4	4 5/8	5/8	1 11/16	1 7/8		1.09	1.11	1.14	2 1/4	1	1	1.05	1/8	5/8	
1	4 7/8	11/16	2	2 1/8		1.36	1.38	1.41	2 7/16	1 1/16	1 1/16	1.32	1/8	11/16	
1 1/4	5 1/4	13/16	2 1/2	2 1/2		1.70	1.72	1.75	2 5/8	1 1/8	1 1/8	1.66	3/16	13/16	
1 1/2	6 1/8	7/8	2 7/8	2 3/4		1.95	1.97	1.99	2 3/4	1 1/4	1 1/4	1.90	1/4	7/8	
2	6 1/2	1	3 5/8	3 5/16		2.44	2.46	2.50	2 7/8	1 7/16	1 7/16	2.38	5/16	1 1/8	
2 1/2	7 1/2	1 1/8	4 1/8	3 15/16		2.94	2.97	3.00	3 1/8	1 5/8	1 5/8	2.88	5/16	1 1/4	
3	8 1/4	1 1/4	5	4 5/8		3.57	3.60	3.63	3 1/4	1 13/16	1 13/16	3.50	3/8	1 3/8	
3 1/2	9	1 3/8	5 1/2	5 1/4		4.07	4.10	4.13	3 3/8	1 15/16	1 15/16	4.00	3/8	1 9/16	
4	10	1 3/8	6 3/16	5 3/4		FIED	4.57	4.60	4.63	3 1/2	2	2	4.50	7/16	1 7/16
5	11	1 1/2	7 5/16	7		BY	5.66	5.69	5.69	4	2 1/8	2 1/8	5.56	7/16	1 11/16
6	12 1/2	1 5/8	8 1/2	8 1/8		PUR-	6.72	6.75	6.75	4 1/16	2 1/4	2 1/4	6.63	1/2	1 13/16
8	15	1 7/8	10 5/8	10 1/4	CHASER	8.72	8.75	8.75	4 5/8	2 11/16	2 11/16	8.63	1/2	2	
10	17 1/2	2 1/8	12 3/4	12 5/8		10.88	10.92	10.88	4 7/8	2 7/8	4	10.75	1/2	2 3/16	
12	20 1/2	2 1/4	15	14 3/4		12.88	12.92	12.94	5 3/8	3 1/8	4 1/4	12.75	1/2	2 3/8	
14	23	2 3/8	16 1/4	16 3/4		14.14	14.18	14.19	5 7/8	3 5/16	4 5/8	14.00	1/2	2 1/2	
16	25 1/2	2 1/2	18 1/2	19		16.16	16.19	16.19	6	3 11/16	5	16.00	1/2	2 11/16	
18	28	2 5/8	21	21		18.18	18.20	18.19	6 1/2	3 7/8	5 3/8	18.00	1/2	2 3/4	
20	30 1/2	2 3/4	23	23 1/8		20.20	20.25	20.19	6 5/8	4	5 3/4	20.00	1/2	2 7/8	
22†	33	2 7/8	25 1/4	25 1/4		22.22	22.25	22.19	6 3/4	4 1/4	6	22.00	1/2	3 1/16	
24	36	3	27 1/4	27 5/8		24.25	24.25	24.19	6 7/8	4 1/2	6 1/4	24.00	1/2	3 1/4	
MSS-SP44 CLASS 400															
26	38 1/4	3 1/2	29 1/2	28 5/8	TO BE	26.25	--	--	7 5/8	7 5/8	--	26 5/16	--	--	
28	40 3/4	3 3/4	31 1/2	30 13/16	SPECI-	28.25	--	--	8 1/8	8 1/8	--	28 5/16	--	--	
30	43	4	33 3/4	32 15/16	FIED	30.25	--	--	8 5/8	8 5/8	--	30 5/16	--	--	
32	45 1/4	4 1/4	36	35	BY	32.25	--	--	9 1/8	9 1/8	--	32 3/8	--	--	
34	47 1/2	4 3/8	38	37 3/16	PUR-	34.25	--	--	9 1/2	9 1/2	--	34 3/8	--	--	
36	50	4 1/2	40 1/4	39 3/8	CHASER	36.25	--	--	9 7/8	9 7/8	--	36 7/16	--	--	

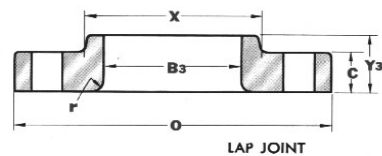
600 LB. FORGED FLANGES



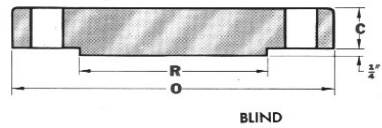
SOCKET WELDING TYPE



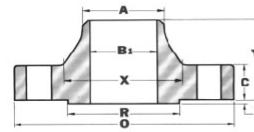
REDUCING FLANGES



LAP JOINT



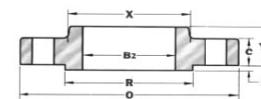
BLIND



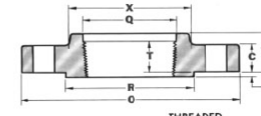
SLIP-ON



WELDING NECK



THREADED



Drilling Template And Bolting

Nominal Pipe Size	DRILLING			BOLTING			
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts	Stud Bolt Length		
					1/4" Raised Face	Male-Female Tongue-Groove	Ring joint
1/2	2 5/8	4	5/8	1/2	3	2 3/4	3
3/4	3 1/4	4	3/4	5/8	3 1/4	3	3 1/4
1	3 1/2	4	3/4	5/8	3 1/2	3 1/4	3 1/2
1 1/4	3 7/8	4	3/4	5/8	3 3/4	3 1/2	3 3/4
1 1/2	4 1/2	4	7/8	3/4	4	3 3/4	4
2	5	8	3/4	5/8	4	3 3/4	4 1/4
2 1/2	5 7/8	8	7/8	3/4	4 1/2	4 1/4	4 3/4
3	6 5/8	8	7/8	3/4	4 3/4	4 1/2	5
3 1/2	7 1/4	8	1	7/8	5 1/4	5	5 1/2
4	8 1/2	8	1	7/8	5 1/2	5 1/4	5 3/4
5	10 1/2	8	1 1/8	1	6 1/4	6	6 1/2
6	11 1/2	12	1 1/8	1	6 1/2	6 1/4	6 3/4
8	13 3/4	12	1 1/4	1 1/8	7 1/2	7 1/4	7 3/4
10	17	16	1 3/8	1 1/4	8 1/4	8	8 1/2
12	19 1/4	20	1 3/8	1 1/4	8 1/2	8 1/4	8 3/4
14	20 3/4	20	1 1/2	1 3/8	9	8 3/4	9 1/4
16	23 3/4	20	1 5/8	1 1/2	9 3/4	9 1/2	10
18	25 3/4	20	1 3/4	1 5/8	10 1/2	10 1/4	10 3/4
20	28 1/2	24	1 3/4	1 5/8	11 1/4	11	11 1/2
22	30 5/8	24	1 7/8	1 3/4	12	11 3/4	12 1/2
24	33	24	2	1 7/8	12 3/4	12 1/2	13 1/4
26	36	28	2	1 7/8	13 1/4	-	13 3/4
28	38	28	2 1/8	2	13 3/4	-	14 1/4
30	40 1/4	28	2 1/8	2	14	-	14 1/2
32	42 1/2	28	2 3/8	2 1/4	14 3/4	-	15 1/2
34	44 1/2	28	2 3/8	2 1/4	15	-	15 3/4
36	47	28	2 5/8	2 1/2	15 3/4	-	16 1/2

All Dimension are in inches.
22" size not covered by ASA B16.5.

The 1/4" raised face is not included in Thickness C, Length Y or Thread Length T.
Sizes 26" and Larger have single taper hubs.

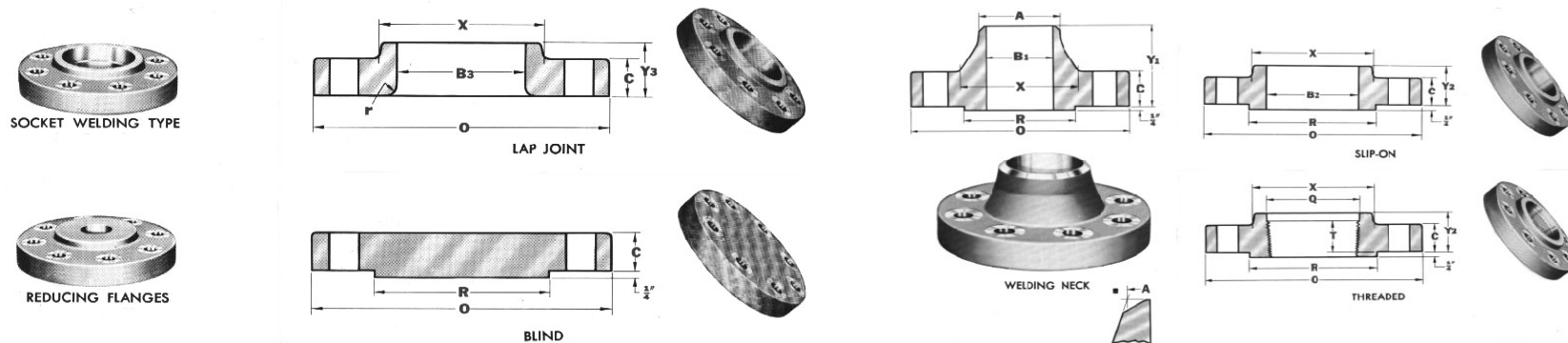
Weights

Nominal Pipe Size	APPROXIMATE WEIGHT EACH-POUNDS			
	Welding Neck	Slip-on and Thr'd	Lap Joint	Blind
1/2	2	2	2	2
3/4	3	3	3	3
1	4	4	4	4
1 1/4	6	5	5	5
1 1/2	8	7	7	8
2	12	9	9	10
2 1/2	18	13	12	15
3	23	16	15	20
3 1/2	26	21	20	29
4	42	37	36	41
5	68	63	61	68
6	81	80	78	86
8	120	115	110	140
10	190	170	170	230
12	225	200	200	295
14	280	230	250	355
16	390	330	365	495
18	475	400	435	630
20	590	510	570	810
22	720	590	670	1000
24	830	730	810	1250
26	1025	950	-	1525
28	1175	1075	-	1750
30	1300	1175	-	2000
32	1500	1375	-	2300
34	1650	1500	-	2575
36	1750	1600	-	2950

ASA B16.5

Nominal Pipe Size	COMMON DIMENSIONS				BORE				LENGTH THRU HUB				Diam. Hub at Bevel	Radius of Fillet	Thread Length Min.
	Outside Diam.	Thickness Min.	O.D. of Raised Face	Diam. of Base of Hub	Welding Neck	Slip-on	Lap Joint	Counter Bore Min.	Welding Neck	Slip-on and Thrd	Lap Joint				
	C	C	R	X	B1	B2	B3	Q3	Y1	Y2	Y3		A	r	T
1/2	3 3/4	9/16	1 3/8	1 1/2	0.88	0.90	0.93	2 1/16	7/8	7/8	0.84	1/8	5/8		
3/4	4 5/8	5/8	1 11/16	1 7/8	1.09	1.11	1.14	2 1/4	1	1	1.05	1/8	5/8		
1	4 7/8	11/16	2	2 1/8	1.36	1.38	1.41	2 7/16	1 1/16	1 1/16	1.32	1/8	11/16		
1 1/4	5 1/4	13/16	2 1/2	2 1/2	1.70	1.72	1.75	2 5/8	1 1/8	1 1/8	1.66	3/16	13/16		
1 1/2	6 1/8	7/8	2 7/8	2 3/4	1.95	1.97	1.99	2 3/4	1 1/4	1 1/4	1.90	1/4	7/8		
2	6 1/2	1	3 5/8	3 5/16	2.44	2.46	2.50	2 7/8	1 7/16	1 7/16	2.38	5/16	1 1/8		
2 1/2	7 1/2	1 1/8	4 1/8	3 15/16	2.94	2.97	3.00	3 1/8	1 5/8	1 5/8	2.88	5/16	1 1/4		
3	8 1/4	1 1/4	5	4 5/8	3.57	3.60	3.63	3 1/4	1 13/16	1 13/16	3.50	3/8	1 3/8		
3 1/2	9	1 3/8	5 1/2	5 1/4	4.07	4.10	4.13	3 3/8	1 15/16	1 15/16	4.00	3/8	1 9/16		
To Be Specified By The Purchaser	4	10 3/4	1 1/2	6 3/16	4.57	4.60	4.63	4	2 1/8	2 1/8	4.50	7/16	1 5/8		
	5	13	1 3/4	7 5/16	5.66	5.69	5.69	4 1/2	2 3/8	2 3/8	5.56	7/16	1 7/8		
	6	14	1 7/8	8 1/2	6.72	6.75	6.75	4 5/8	2 5/8	2 5/8	6.63	1/2	2		
	8	16 1/2	2 3/16	10 5/8	8.72	8.75	8.75	5 1/4	3	3	8.63	1/2	2 1/4		
	10	20	2 1/2	12 3/4	10.88	10.92	10.88	6	3 3/8	3 3/8	10.75	1/2	2 9/16		
	12	22	2 5/8	15	15 3/4	12.88	12.92	12.94	6 1/8	3 5/8	3 5/8	12.75	1/2	2 3/4	
	14	23 3/4	2 3/4	16 1/4	17	14.14	14.18	14.19	6 1/2	3 11/16	5	14.00	1/2	2 7/8	
	16	27	3	18 1/2	19 1/2	16.16	16.19	16.19	7	4 3/16	5 1/2	16.00	1/2	3 1/16	
	18	29 1/4	3 1/4	21	21 1/2	18.18	18.20	18.19	7 1/4	4 5/8	6	18.00	1/2	3 1/8	
	20	32	3 1/2	23	24	20.20	20.25	20.19	7 1/2	5	6 1/2	20.00	1/2	3 1/4	
22	34 1/4	3 3/4	25 1/4	26 1/4	22.22	22.25	22.19	7 3/4	5 1/4	6 7/8	22.00	1/2	3 7/16		
24	37	4	27 1/4	28 1/4	24.25	24.25	24.19	8	5 1/2	7 1/4	24.00	1/2	3 5/8		
MSS-SP44 Class 600															
26	40	4 1/4	29 1/2	29 7/16	To	26.25	-	-	8 3/4	8 3/4	-	26 7/16	-	-	-
28	42 1/4	4 3/8	31 1/2	31 5/8	Be	28.25	-	-	9 1/4	9 1/4	-	28 1/2	-	-	-
30	44 1/2	4 1/2	33 3/4	33 15/16	Specified	30.25	-	-	9 3/4	9 3/4	-	30 1/2	-	-	-
32	47	4 5/8	36	36 1/8	By	32.25	-	-	10 1/4	10 1/4	-	32 1/2	-	-	-
34	49	4 3/4	38	38 5/16	The	34.25	-	-	10 5/8	10 5/8	-	34 9/16	-	-	-
36	51 3/4	4 7/8	40 1/4	40 5/8	Purchaser	36.25	-	-	11 1/8	11 1/8	-	36 9/16	-	-	-

900 lb. FLANGES



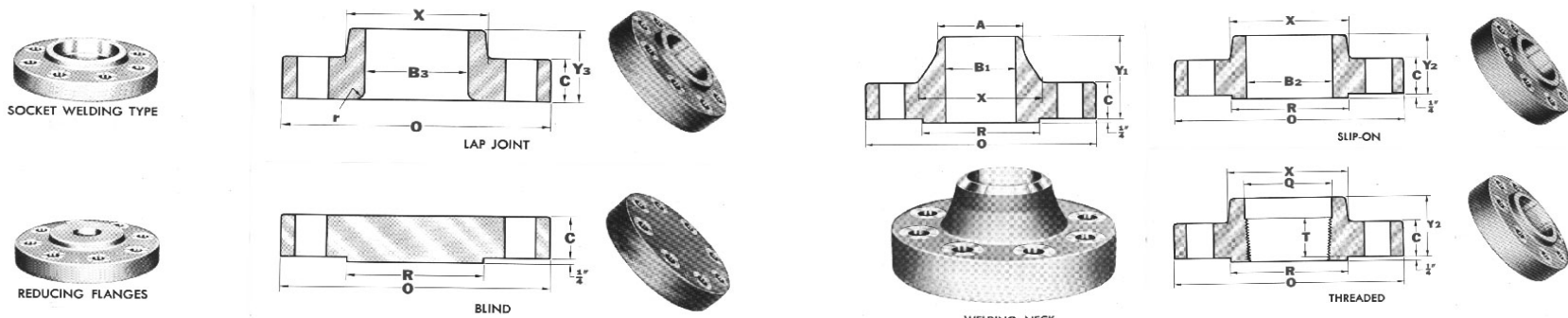
Drilling Template And Bolting								Weights				
Nominal Pipe Size	DRILLING			BOLTING				Nominal Pipe Size	APPROXIMATE WEIGHT EACH-POUNDS			
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts	1/4" Raised Face	Male-Female Tongue-Groove	Ring Joint		Welding Neck	Slip-on and Thr'd	Lap Joint	Blind
1/2	3 1/4	4	7/8	3/4	4	3 3/4	4	1/2	5	4	4	4
3/4	3 1/2	4	7/8	3/4	4 1/4	4	4 1/4	3/4	6	5	5	6
1	4	4	1	7/8	4 3/4	4 1/2	4 3/4	1	9	8	8	8
1 1/4	4 3/8	4	1	7/8	4 3/4	4 1/2	4 3/4	1 1/4	10	9	9	9
1 1/2	4 7/8	4	1 1/8	1	5 1/4	5	5 1/4	1 1/2	13	12	12	13
2	6 1/2	8	1 1/8	1 1/8	5 1/2	5 1/4	5 3/4	2	25	25	25	25
2 1/2	7 1/2	8	1 1/8	1	6	5 3/4	6 1/4	2 1/2	36	36	35	35
3	7 1/2	8	1 1/8	1 1/8	5 1/2	5 1/4	5 3/4	3	51	53	51	54
4	9 1/4	8	1 1/4	1 1/8	6 1/2	6 1/4	6 3/4	5	86	83	81	87
5	11	8	1 3/8	1 1/4	7 1/4	7	7 1/2	6	110	110	105	115
6	12 1/2	12	1 1/2	1 3/8	8 1/2	8 1/4	8 3/4	8	175	170	190	200
8	15 1/2	12	1 1/2	1 3/8	8 1/2	8 1/4	8 3/4	10	260	245	275	290
10	18 1/2	16	1 1/2	1 3/8	9	9 1/4	9 1/4	12	325	325	370	415
12	21	20	1 1/2	1 3/8	9 3/4	9 1/2	10	14	400	400	415	520
14	22	20	1 5/8	1 1/2	10 1/2	10 1/4	11	16	495	425	465	600
16	24 1/4	20	1 3/4	1 5/8	11	10 3/4	11 1/2	18	680	600	650	850
18	27	20	2	1 7/8	12 3/4	12 1/2	13 1/4	20	830	730	810	1075
20	29 1/2	20	2 1/8	2	13 1/2	13 1/4	14	24	1500	1400	1550	2025
24	35 1/2	20	2 5/8	2 1/2	17	16 3/4	17 3/4	26	1575	1525	-	2200
26	37 1/2	20	2 7/8	2 3/4	17 1/2	-	18 3/4	28	1850	1800	-	2575
28	40 1/4	20	3 1/8	3	18 1/4	-	19 1/2	30	2150	2075	-	3025
30	42 3/4	20	3 1/8	3	18 3/4	-	20	32	2575	2500	-	3650
32	45 1/2	20	3 3/8	3 1/4	20	-	21 1/4	34	3025	2950	-	4275
34	48 1/4	20	3 5/8	3 1/2	21	-	22 1/2	36	3450	3350	-	4900
36	50 3/4	20	3 5/8	3 1/2	21 1/2	-	23					

All Dimension are in inches.
Dimensions of sizes 1/2" through 2 1/2" are the same as for 1500 lb. flanges.

*The 1/4" raised face is not included in Thickness C, Length Y or Thread Length T.
Sizes 26" and Larger have single taper hubs.

ASA B16.5		COMMON DIMENSIONS					BORE					LENGTH THRU HUB							
Nominal Pipe Size	Outside Diam.	Thickness Min.*	O.D. of Raised Face	Diam. of Base of Hub	Welding Neck	Slip-on	Lap Joint	Counter Bore Min.	Welding Neck*	Slip-on and Thrd*	Lap Joint	Diam. Hub at Bevel	Radius of Fillet	Thread Length Min.*					
															Q	R	X	Y	Z
1/2	4 3/4	7/8	1 3/8	1 1/2	B1	B2	B3	C	T	Y1	Y2	Y3	A	0.84	1/8	7/8			
3/4	5 1/8	1	1 11/16	1 3/4		1.09	1.11	1.14	2 3/4	1 3/8	1 3/8	1 3/8	1.05	1/8	1				
1	5 7/8	1 1/8	2	2 1/16		1.36	1.38	1.41	2 7/8	1 5/8	1 5/8	1 5/8	1.32	1/8	1 1/8				
1 1/4	6 1/4	1 1/8	2 1/2	2 1/2		1.70	1.72	1.75	2 7/8	1 5/8	1 5/8	1 5/8	1.66	3/16	1 3/16				
1 1/2	7	1 1/4	2 7/8	2 3/4		1.95	1.97	1.99	3 1/4	1 3/4	1 3/4	1 3/4	1.90	1/4	1 1/4				
2	8 1/2	1 1/2	3 5/8	4 1/8	To Be Specified By	2.44	2.46	2.50	4	2 1/4	2 1/4	2 3/8	5/16	1 1/2	1 1/2				
2 1/2	9 5/8	1 5/8	4 1/8	4 7/8		2.94	2.97	3.00	4 1/8	2 1/2	2 1/2	2 8/8	5/16	1 7/8	1 7/8				
3	9 1/2	1 1/2	5	5		3.57	3.60	3.63	4	2 1/8	2 1/8	3 50	3/8	1 5/8					
4	11 1/2	1 3/4	6 3/16	6 1/4		4.57	4.60	4.63	4 1/2	2 3/4	2 3/4	4 50	7/16	1 7/8					
5	13 3/4	2	7 5/16	7 1/2		5.66	5.69	5.69	5	3 1/8	3 1/8	5 56	7/16	2 1/8					
6	15	2 3/16	8 1/2	9 1/4	Purchaser	6.72	6.75	6.75	5 1/2	3 3/8	3 3/8	6 63	1/2	2 1/4					
8	18 1/2	2 1/2	10 5/8	11 3/4		8.72	8.75	8.75	6 3/8	4	4 1/2	8 63	1/2	2 1/2					
10	21 1/2	2 3/4	12 3/4	14 1/2		10.88	10.92	10.88	7 1/4	4 1/4	4 1/4	5 10.75	1/2	2 13/16					
12	24	3 1/8	15	16 1/2		12.88	12.92	12.94	7 7/8	4 5/8	4 5/8	12.75	1/2	3					
14	25 1/4	3 3/8	16 1/4	17 3/4		14.14	14.18	14.19	8 3/8	5 1/8	5 1/8	14.00	1/2	3 1/4					
16	27 3/4	3 1/2	18 1/2	20		16.16	16.19	16.19	8 1/2	5 1/4	5 1/4	16 16.00	1/2	3 3/8					
18	31	4	21	22 1/4		18.18	18.20	18.19	9	6	6	18 18.00	1/2	3 1/2					
20	33 3/4	4 1/4	23	24 1/2		20.20	20.25	20.19	9 3/4	6 1/4	6 1/4	20 20.00	1/2	3 5/8					
24	41	5 1/2	27 1/4	29 1/2		24.25	24.25	24.19	11 1/2	8	8	24 24.00	1/2	4					
MSS-SP44 Class 900																			
26	42 3/4	5 1/2	29 1/2	30 1/2	To	26.25	-	-	11 1/4	11 1/4	-	-	26 5/8	-	-				
28	46	5 5/8	31 1/2	32 3/4	Be	28.25	-	-	11 3/4	11 3/4	-	-	28 11/16	-	-				
30	48 1/2	5 7/8	33 3/4	35	Specified	30.25	-	-	12 1/4	12 1/4	-	-	30 3/4	-	-				
32	51 3/4	6 1/4	36	37 1/4	By	32.25	-	-	13	13	-	-	32 3/4	-	-				
34	55	6 1/2	38	39 5/8	Th	34.25	-	-	13 3/4	13 3/4	-	-	34 13/16	-	-				
36	57 1/2	6 3/4	40 1/4	41 7/8	Purchaser	36.25	-	-	14 1/4	14 1/4	-	-	36 7/8	-	-				

1500 lb. FLANGES



Drilling Template And Bolting										Weights				
Nominal Pipe Size	DRILLING			BOLTING					Nominal Pipe Size	APPROXIMATE WEIGHT EACH-POUNDS				
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts	Stud Bolt Length					Welding Neck	Slip-on and Thr'd	Lap Joint	Blind	
1/2	3 1/4	4	7/8	3/4	4	3 3/4	4	4	1/2	5	4	4	4	
3/4	3 1/2	4	7/8	3/4	4 1/4	4	4 1/4	4	3/4	6	5	5	6	
1	4	4	1	7/8	4 3/4	4 1/2	4 3/4	4	1	9	8	8	8	
1 1/4	4 3/8	4	1	7/8	4 3/4	4 1/2	4 3/4	4	1 1/4	10	9	9	9	
1 1/2	4 7/8	4	1 1/8	1	5 1/4	5	5 1/4	4	1 1/2	13	12	12	13	
2	6 1/2	8	1	7/8	5 1/2	5 1/4	5 3/4	4	2	25	25	25	25	
2 1/2	7 1/2	8	1 1/8	1	6	5 3/4	6 1/4	4	2 1/2	36	36	35	35	
3	8	8	1 1/4	1 1/8	6 3/4	6 1/2	7	4	3	48	48	47	48	
4	9 1/2	8	1 3/8	1 1/4	7 1/2	7 1/4	7 3/4	4	4	73	73	75	73	
5	11 1/2	8	1 5/8	1 1/2	9 1/2	9 1/4	9 3/4	4	5	130	130	140	140	
6	12 1/2	12	1 1/2	1 3/8	10	9 3/4	10 1/4	4	6	165	165	170	160	
8	15 1/2	12	1 3/4	1 5/8	11 1/4	11	11 3/4	8	8	275	280	285	300	
10	19	12	2	1 7/8	13 1/4	13	13 1/2	10	10	455	435	485	510	
12	22 1/2	16	2 1/8	2	14 3/4	14 1/2	15 1/4	12	12	690	580	630	690	
14	25	16	2 3/8	2 1/4	16	15 3/4	16 3/4	14	14	940	-	890	975	
16	27 3/4	16	2 5/8	2 1/2	17 1/4	17 1/4	18 1/2	16	16	1250	-	1150	1300	
18	30 1/2	16	2 7/8	2 3/4	19 1/4	19	20 1/4	18	18	1625	-	1475	1750	
20	32 3/4	16	3 1/8	3	21	20 3/4	22 1/4	20	20	2050	-	1775	2225	
24	39	16	3 5/8	3 1/2	24	23 3/4	25 1/2	24	24	3325	-	2825	3625	

All Dimension are in inches.

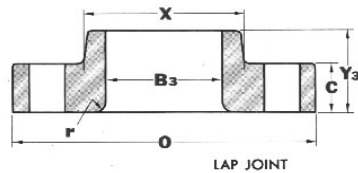
*The 1/4" raised face is not included in Thickness C, Length Y or Thread Length T.

Nominal Pipe Size	COMMON DIMENSIONS				BORE				LENGTH THRU HUB				Diam. Hub at Bevel	Radius of Fillet	Thread Length Min.
	Outside Diam.	Thickness Min.*	O.D. of Raised Face	Diam. of Base of Hub	Welding Neck	Slip-on	Lap Joint	Counter Bore Min.	Welding Neck	Slip-on and Thr'd	Lap Joint				
	O	C	R	X	B1	B2	B3	Q	Y1	Y2	Y3	A	r	T	
1/2	4 3/4	7/8	1 3/8	1 1/2	To Be Specified By The Purchaser	0.88	0.90	0.93	2 3/8	1 1/4	1 1/4	0.84	1/8	7/8	
3/4	5 1/8	1	1 11/16	1 3/4		1.09	1.11	1.14	2 3/4	1 3/8	1 3/8	1.05	1/8	1	
1	5 7/8	1 1/8	2	2 1/16		1.36	1.38	1.41	2 7/8	1 5/8	1 5/8	1.32	1/8	1 1/8	
1 1/4	6 1/4	1 1/8	2 1/2	2 1/2		1.70	1.72	1.75	2 7/8	1 5/8	1 5/8	1.66	3/16	1 3/16	
1 1/2	7	1 1/4	2 7/8	2 3/4		1.95	1.97	1.99	3 1/4	1 3/4	1 3/4	1.90	1/4	1 1/4	
2	8 1/2	1 1/2	3 5/8	4 1/8		2.44	2.46	2.50	4	2 1/4	2 1/4	2.38	5/16	1 1/2	
2 1/2	9 5/8	1 5/8	4 1/8	4 7/8		2.94	2.97	3.00	4 1/8	2 1/2	2 1/2	2.88	5/16	1 7/8	
3	10 1/2	1 7/8	5	5 1/4		3.57	3.60	3.63	4 5/8	2 7/8	2 7/8	3.50	3/8	2	
4	12 1/4	2 1/8	6 3/16	6 3/8		4.57	4.60	4.63	4 7/8	3 9/16	3 9/16	4.50	7/16	2 1/4	
5	14 3/4	2 7/8	7 5/16	7 3/4		5.66	5.69	5.69	6 1/8	4 1/8	4 1/8	5.56	7/16	2 1/2	
6	15 1/2	3 1/4	8 1/2	9		6.72	6.75	6.75	6 3/4	4 11/16	4 11/16	6.63	1/2	2 3/4	
8	19	3 5/8	10 5/8	11 1/2		8.72	8.75	8.75	8 3/8	5 5/8	5 5/8	8.63	1/2	3	
10	23	4 1/4	12 3/4	14 1/2		10.88	10.92	10.88	10	6 1/4	7	10.75	1/2	3 5/16	
12	26 1/2	4 7/8	15	17 3/4		12.88	12.92	12.94	11 1/8	7 1/8	8 5/8	12.75	1/2	3 5/8	
14	29 1/2	5 1/4	16 1/4	19 1/2		-	14.18	-	11 3/4	-	9 1/2	14.00	1/2	-	
16	32 1/2	5 3/4	18 1/2	21 3/4		-	16.19	-	12 1/4	-	10 1/4	16.00	1/2	-	
18	36	6 3/8	21	23 1/2		-	18.20	-	12 7/8	-	10 7/8	18.00	1/2	-	
20	38 3/4	7	23	25 1/4		-	20.25	-	14	-	11 1/2	20.00	1/2	-	
24	46	8	27 1/4	30		-	24.25	-	16	-	13	24.00	1/2	-	

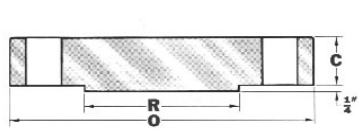
2500 lb. FLANGES



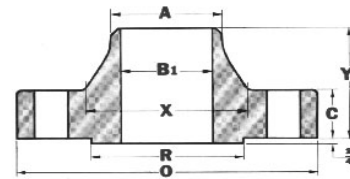
REDUCING FLANGES



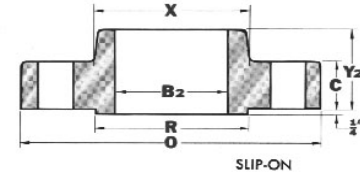
LAP JOINT



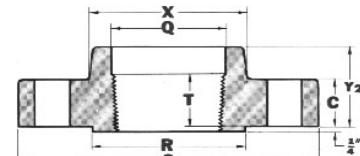
BLIND



WELDING NECK



SLIP-ON



THREADED



Drilling Template And Bolting

Nominal Pipe Size	DRILLING			BOLTING		
	Bolt Circle Diam.	Number of Holes	Diam. of Holes	Diam. of Bolts	Stud Bolt Length 1/4" Raised Face Male-Female Tongue-Groove	Ring joint
1/2	3 1/2	4	7/8	3/4	4 1/2	4 3/4
3/4	3 3/4	4	7/8	3/4	4 1/2	4 3/4
1	4 1/4	4	1	7/8	5 1/4	5 1/4
1 1/4	5 1/8	4	1 1/8	1	5 3/4	5 1/2
1 1/2	5 3/4	4	1 1/4	1 1/8	6 1/2	6 3/4
2	6 3/4	8	1 1/8	1	6 3/4	6 1/2
2 1/2		8	1 1/4	1 1/8	7 1/2	7 3/4
3	9	8	1 3/8	1 1/4	8 1/2	8 3/4
4	10 3/4	8	1 5/8	1 1/2	9 3/4	10 1/4
5	12 3/4	8	1 7/8	1 3/4	11 1/2	12 1/4
6	14 1/2	8	2 1/8	2	13 1/2	14
8	17 1/4	12	2 1/8	2	15	15 1/2
10	21 1/4	12	2 5/8	2 1/2	19	20
12	24 3/8	12	2 7/8	2 3/4	21	22

Weights

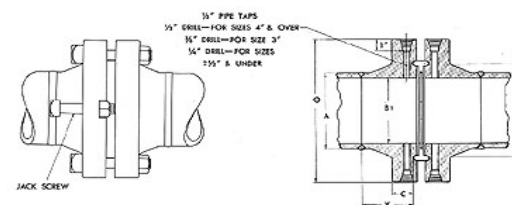
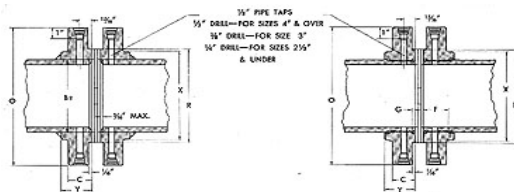
Nominal Pipe Size	APPROXIMATE WEIGHT EACH-POUNDS			
	Welding Neck*	Slip-on and Thr'd*	Lap Joint	Blind
1/2	7	7	7	7
3/4	8	8	8	8
1	12	11	11	11
1 1/4	17	16	16	17
1 1/2	25	22	22	23
2	42	38	37	39
2 1/2	52	55	53	56
3	94	83	80	86
4	145	125	120	135
5	245	210	205	225
6	380	325	315	345
8	580	485	470	530
10	1075	930	900	1025
12	1525	1100	1100	1300

All Dimension are in inches.

*The 1/4" raised face is not included in Thickness C, Length Y or Thread Length T.

Nominal Pipe Size	COMMON DIMENSIONS				Welding Neck	BORE				LENGTH THRU HUB				Diam. Hub at Bevel	Radius of Fille	Thread Length Min.
	Outside Diam.	Thickness Min.*	O.D. of Raised Face	Diam. of Base of Hub		Slip-on	Lap Joint	Counter Bore Min.	Welding Neck*	Slip-on and Thrd*	Lap Joint					
												C	C			
1/2	5 1/4	1 3/16	1 3/8	1 11/16	To Be Specified By The Purchaser		0.88	0.90	0.93	2 7/8	1 9/16	1 9/16	1 9/16	0.84	1/8	1 1/8
3/4	5 1/2	1 1/4	1 11/16	2			1.09	1.11	1.14	3 1/8	1 11/16	1 11/16	1 11/16	1.05	1/8	1 1/4
1	6 1/4	1 3/8	2	2 1/4			1.36	1.38	1.41	3 1/2	1 7/8	1 7/8	1 7/8	1.32	1/8	1 3/8
1 1/4	7 1/4	1 1/2	2 1/2	2 7/8			1.70	1.72	1.75	3 3/4	2 1/16	2 1/16	2 1/16	1.66	3/16	1 1/2
1 1/2	8	1 3/4	2 7/8	3 1/8			1.95	1.97	1.99	4 3/8	2 3/8	2 3/8	2 3/8	1.90	1/4	1 3/4
2	9 1/4	2	3 5/8	3 3/4			2.44	2.46	2.50	5	2 3/4	2 3/4	2 3/4	2.38	5/16	2
2 1/2	10 1/2	2 1/4	4 1/8	4 1/2			2.94	2.97	3.00	5 5/8	3 1/8	3 1/8	3 1/8	2.88	5/16	2 1/4
3	12	2 5/8	5	5 1/4			3.57	3.60	3.63	6 5/8	3 5/8	3 5/8	3 5/8	3.50	3/8	2 1/2
4	14	3	6 3/16	6 1/2			4.57	4.60	4.63	7 1/2	4 1/4	4 1/4	4 1/4	4.50	7/16	2 3/4
5	16 1/2	3 5/8	7 5/16	8			5.66	5.69	5.69	9	5 1/8	5 1/8	5 1/8	5.56	7/16	3
6	19	4 1/4	8 1/2	9 1/4			6.72	6.75	6.75	10 3/4	6	6	6	6.63	1/2	3 1/4
8	21 3/4	5	10 5/8	12			8.72	8.75	8.75	12 1/2	7	7	7	8.63	1/2	3 3/4
10	26 1/2	6 1/2	12 3/4	14 3/4			10.88	10.92	10.88	16 1/2	9	9	9	10.75	1/2	4 1/4
12	30	7 1/4	15	17 3/8			12.88	12.92	12.94	18 1/4	10	10	10	12.75	1/2	4 3/4

300 lb ORIFICE FLANGES



DRILLING TEMPLATE AND BOLTING

NOMINAL PIPE SIZE	DRILLING			BOLTING			APPROX. WEIGHT PER UNION (POUNDS)			
	BOLT CIRCLE DIAM.	NUM. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	BOLT LENGTH*		WELDING NECK		SLIP-ON AND THREADED	
					RAISED FACE	RING JOINT	RAISED FACE	RING JOINT	RAISED FACE	RING JOINT
1	3 1/2	4	11/16	5/8	4	4 3/4	1	18	20	15
1 1/4	3 7/8	4	11/16	5/8	4	4 3/4	1 1/4	21	23	17
1 1/2	4 1/2	4	13/16	3/4	4 1/4	5	1 1/2	28	30	24
2	5	8	11/16	5/8	4	4 3/4	2	33	36	27
2 1/2	5 7/8	8	13/16	3/4	4 1/4	5	2 1/2	43	46	36
3	6 5/8	8	13/16	3/4	4 1/4	5	3	48	52	42
4	7 7/8	8	13/16	3/4	4 1/4	5	4	68	73	60
5	9 1/4	8	7/8	3/4	4 1/4	5 1/2	5	78	89	69
6	10 5/8	12	7/8	3/4	4 1/4	5 1/2	6	100	115	94
8	13	12	1	7/8	4 1/2	6	8	155	180	135
10	15 1/4	16	1 1/8	1	5 1/2	6 1/2	10	220	255	200
12	17 3/4	16	1 1/4	1 1/8	5 1/2	7	12	330	380	280
14	20 1/4	20	1 1/4	1 1/8	6	7	14	425	485	395
16	22 1/2	20	1 3/8	1 1/4	6 1/2	8	16	590	660	465
18	24 3/4	24	1 3/8	1 1/4	6 1/2	8	18	750	830	610
20	27	24	1 3/8	1 1/4	7	8	20	910	1025	740
22	29 1/4	24	1 5/8	1 1/2	7 1/2	9	22	1125	1250	920
24	32	24	1 5/8	1 1/2	7 1/2	9	24	1350	1500	1125
26	34 1/2	28	1 3/4	1 5/8	10 1/2	11 1/2	26	1625	1825	1425
28	37	28	1 3/4	1 5/8	11	12	28	1925	2150	1700
30	39 1/4	28	1 7/8	1 3/4	11 3/4	12 3/4	30	2225	2450	1975
32	41 1/2	28	2	1 7/8	12 1/2	13 3/4	32	2525	2800	2300
34	43 1/2	28	2	1 7/8	12 3/4	14	34	2850	3150	2600
36	46	32	2 1/8	2	13 1/4	14 1/2	36	3200	3550	3000
42	52 3/4	36	2 1/8	2	14 1/4	15 1/2	42	4150	4600	4300

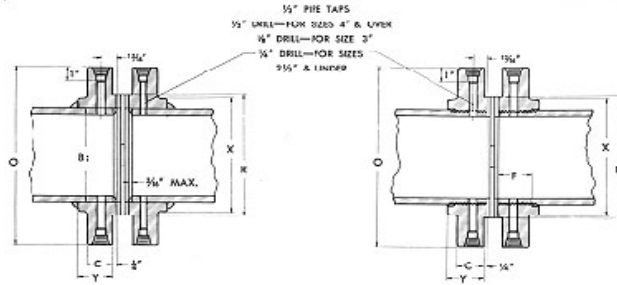
WEIGHTS

NOMINAL PIPE SIZE	COMMON DIMENSIONS					BORE		LENGTH THRU HUB Y				DIAM. HUB AT BEVEL	FACE TO HUB COUNTER- BORE	FACE COUNTER- BORE DEPTH
	OUTSIDE DIAM.	O.D. RAISED FACE	DIAM. AT BASE OF HUB	THICKNESS MIN. C		WELDING NECK	SLIP- ON	WELDING NECK		SLIP-ON AND THREADED				
				RAISED FACE	RING JOINT			RAISED FACE	RING JOINT	RAISED FACE	RING JOINT			
												B1	B2	
1 1/4	4 7/8	2	2 1/8	1 1/2	1 1/4	1.049	1.36	3 1/4	3	1 7/8	1 5/8	1.32	1 1/4	5/8
1 1/2	5 1/4	2 1/2	2 1/2	1 1/2	1 1/4	1.380	1.70	3 5/16	3 1/16	1 13/16	1 9/16	1.66	1 1/4	9/16
	6 1/8	2 7/8	2 3/4	1 1/2	1 1/4	1.610	1.95	3 3/8	3 1/8	1 7/8	1 5/8	1.90	1 1/4	5/8
2	6 1/2	3 5/8	3 5/16	1 1/2	1 1/4	2.067	2.44	3 3/8	3 1/8	1 15/16	1 11/16	2.38	1 1/2	1/2
2 1/2	7 1/2	4 1/8	3 15/16	1 1/2	1 1/4	2.469	2.94	3 1/2	3 1/4	2	1 3/4	2.88	1 3/4	5/8
3	8 1/4	5	4 5/8	1 1/2	1 1/4	3.068	3.57	3 1/2	3 1/4	2 1/16	1 13/16	3.50	1 3/4	1/2
4	10	6 3/16	5 3/4	1 1/2	1 1/4	4.026	4.57	3 5/8	3 3/8	2 1/8	1 7/8	4.50	1 3/4	7/16
5	11	7 5/16	7	1 1/2	1 3/8	5.047	5.66	4	3 7/8	2 1/8	2	5.56	1 3/4	5/16
6	12 1/2	8 1/2	8 1/8	1 1/2	1 7/16	6.065	6.72	3 15/16	3 7/8	2 1/8	2 1/16	6.63	1 3/4	1/4
8	15	10 5/8	10 1/4	1 5/8	1 5/8	7.981	8.72	4 3/8	4 3/8	2 7/16	2 7/16	8.63	2	--
10	17 1/2	12 3/4	12 5/8	1 7/8	1 7/8	10.020	10.88	4 5/8	4 5/8	2 5/8	2 5/8	10.75	2 3/16	--
12	20 1/2	15	14 3/4	2	2	12.000	12.88	5 1/8	5 1/8	2 7/8	2 7/8	12.75	2 3/8	--
14	23	16 1/4	16 3/4	2 1/8	2 1/8	13.250	14.14	5 5/8	5 5/8	3	3	14.00	2 1/2	--
16	25 1/2	18 1/2	19	2 1/4	2 1/4	15.250	16.16	5 3/4	5 3/4	3 1/4	3 1/4	16.00	2 11/16	--
18	28	21	21	2 3/8	2 3/8	17.250	18.18	6 1/4	6 1/4	3 1/2	3 1/2	18.00	2 3/4	--
20	30 1/2	23	23 1/8	2 1/2	2 1/2	19.250	20.20	6 3/8	6 3/8	3 3/4	3 3/4	20.00	2 7/8	--
22	33	25 1/4	25 1/4	2 5/8	2 5/8	21.250	22.22	6 1/2	6 1/2	4	4	22.00	3	--
24	36	27 1/4	27 5/8	2 3/4	2 3/4	23.250	24.25	6 5/8	6 5/8	4 3/16	4 3/16	24.00	3 1/4	--
26	38 1/4	29 1/2	28 3/8	3 1/8	3 1/8	TO BE SPEC'D	26.25	7 1/4	7 1/4	7 1/4	7 1/4	26.00	--	--
28	40 3/4	31 1/2	30 3/8	3 3/8	3 3/8	30.25	28.25	7 3/4	7 3/4	7 3/4	7 3/4	28.00	--	--
30	43	33 3/4	32 9/16	3 5/8	3 5/8	BY PUR- CHASER	30.25	8 1/4	8 1/4	8 1/4	8 1/4	30.00	--	--
32	45 1/4	36	34 11/16	3 7/8	3 7/8		32.25	8 3/4	8 3/4	8 3/4	8 3/4	32.00	--	--
34	47 1/2	38	36 7/8	4	4		34.25	9 1/8	9 1/8	9 1/8	9 1/8	34.00	--	--
36	50	40 1/4	39	4 1/8	4 1/8		36.25	9 1/2	9 1/2	9 1/2	9 1/2	36.00	--	--
42	57	47	45 7/16	4 5/8	4 5/8		42.25	10 7/8	10 7/8	10 7/8	10 7/8	42.00	--	--

ALL DIMENSIONS ARE IN INCHES

ORIFICE FLANGES

400 lb. & 600 lb.



DRILLING TEMPLATE AND BOLTING

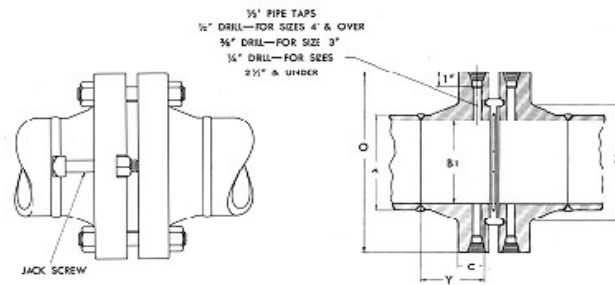
400 lb. SIZES 3" AND SMALLER ARE SAME AS 300 lb. UNIONS, EXCEPT THAT ALLOY STUD BOLTS ARE FURNISHED. LENGTH OF STUDS IN 3/4" GREATER FOR RAISED FACE AND 1/2" GREATER FOR RING JOINT THAN LISTED LENGTH OF MACHINE BOLTS.

NOMINAL PIPE SIZE	DRILLING			BOLTING		
	BOLT CIRCLE DIAM.	NUM. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	BOLT LENGTH+	
					RAISED FACE	RING JOINT
4	7 7/8	8	1	7/8	5 1/2	6
5	9 1/4	8	1	7/8	5 3/4	6 1/4
6	10 5/8	12	1	7/8	6 1/4	6 1/2
8	13	12	1 1/8	1	6 3/4	7 1/4
10	15 1/4	16	1 1/4	1 1/8	7 5/8	8
12	17 3/4	16	1 3/8	1 1/4	8	8 1/2

DRILLING TEMPLATE AND BOLTING

600 lb. SIZES 3" AND SMALLER ARE SAME AS 300 lb. UNIONS, EXCEPT: (1) ALLOY STUD BOLTS ARE FURNISHED; AND (2) WHEN FACED FOR RING JOINT, FLANGES ARE DRILLED WITH BOLT HOLES 1/8" LARGER THAN BOLT DIAMETERS GIVEN IN 300 lb. TABLE.

4	8 1/2	8	1	7/8	5 3/4	6 1/4
5	10 1/2	8	1 1/8	1	6 1/2	7
6	11 1/2	12	1 1/8	1	6 3/4	7 1/4
8	13 3/4	12	1 1/4	1 1/8	7 5/8	8 1/4
10	17	16	1 3/8	1 1/4	8 1/2	9
12	19 1/4	20	1 3/8	1 1/4	9	9 1/4



WEIGHTS

NOMINAL PIPE SIZE	APPROX. WEIGHT PER UNNION (POUNDS)			
	WELDING NECK		SLIP-ON AND THREADED	
	RAISED FACE	RING JOINT	RAISED FACE	RING JOINT
4	83	92	65	74
5	99	110	75	85
6	135	145	110	120
8	205	225	165	180
10	300	325	235	255
12	420	445	330	355

WEIGHTS

4	97	110	87	98
5	155	170	145	160
6	195	210	190	205
8	285	305	275	295
10	450	485	410	445
12	540	580	490	530

400 lb. DIMENSIONS OF SIZES 3" AND SMALLER ARE IDENTICAL WITH THOSE OF 300 lb. ORIFICE FLANGES.

NOMINAL PIPE SIZE	COMMON DIMENSIONS				BORE		LENGTH THRU HUB Y		DIAM. HUB AT BEVEL	FACE TO HUB COUNTER- BORE
	OUTSIDE DIAM.	O.D. RAISED FACE	DIAM. AT BASE OF HUB	THICK- NESS MIN.	WELDING NECK	SLIP- ON	WELDING NECK	SLIP-ON AND THREADED		
4	10	6 3/16	5 3/4	1 3/8	TO BE SPECI- FIED	4.57	3 1/2	2	4.50	1 11/16
5	11	7 5/16	7	1 1/2		5.66	4	2 1/8	5.56	1 15/16
6	12 1/2	8 1/2	8 1/8	1 5/8		6.72	4 1/16	2 1/4	6.63	2 1/16
8	15	10 5/8	10 1/4	1 7/8	BY PUR- CHASER	8.72	4 5/8	2 11/16	8.63	2 1/4
10	17 1/2	12 3/4	12 5/8	2 1/8		10.88	4 7/8	2 7/8	10.75	2 7/16
12	20 1/2	15	14 3/4	2 1/4		12.88	5 3/8	3 1/8	12.75	2 5/8

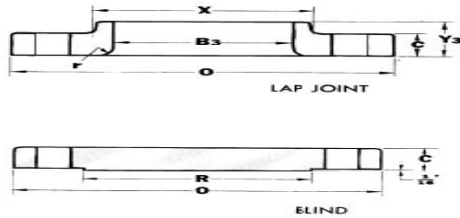
600 lb. DIMENSIONS OF SIZES 3" AND SMALLER ARE IDENTICAL WITH THOSE OF 300 lb. ORIFICE FLANGES.

4	10 3/4	6 3/16	6	1 1/2	TO BE SPECI- FIED	4.57	4	2 1/8	4.50	1 7/8
5	13	7 5/16	7 7/16	1 3/4		5.66	4 1/2	2 3/8	5.56	2 1/8
6	14	8 1/2	8 3/4	1 7/8		6.72	4 5/8	2 5/8	6.63	2 1/4
8	16 1/2	10 5/8	10 3/4	2 3/16	BY PUR- CHASER	8.72	5 1/4	3	8.63	2 1/2
10	20	12 3/4	13 1/2	2 1/2		10.88	6	3 3/8	10.75	2 13/16
12	22	15	15 3/4	2 5/8		12.88	6 1/8	3 5/8	12.75	3

ALL DIMENSIONS ARE IN INCHES

ORIFICE FLANGES

900 lb. & 1500 lb.



DRILLING TEMPLATE AND BOLTING

900 lb.

FOR SIZES 2 1/2" AND SMALLER, USE 1500 lb. STANDARD

NOMINAL PIPE SIZE	DRILLING			BOLTING		
	BOLT CIRCLE DIAM.	NUM. OF HOLES	DIAM. OF HOLES	DIAM. OF BOLTS	BOLT LENGTH+	
					RAISED FACE	RING JOINT
3	7 1/2	8	1	7/8	5 3/4	6 1/4
4	9 1/4	8	1 1/4	1 1/8	7	7 1/4
5	11	8	1 3/8	1 1/4	7 1/2	8
6	12 1/2	12	1 1/4	1 1/8	7 5/8	8 1/4
8	15 1/2	12	1 1/2	1 3/8	9	9 1/4
10	18 1/2	16	1 1/2	1 3/8	9 1/4	9 3/4
12	21	20	1 1/2	1 3/8	10	10 3/4

1500 lb.

DRILLING TEMPLATE AND BOLTING

1	4	4	1	7/8	5 1/2	5 3/4
1 1/4	4 3/8	4	1	7/8	5 1/2	5 3/4
1 1/2	4 7/8	4	1 1/8	1	5 3/4	6
2	6 1/2	8	1	7/8	5 3/4	6 1/4
2 1/2	7 1/2	8	1 1/8	1	6 1/4	6 3/4
3	8	8	1 1/4	1 1/8	7	7 5/8
4	9 1/2	8	1 3/8	1 1/4	7 3/4	8 1/4
5	11 1/2	8	1 5/8	1 1/2	9 3/4	10 1/4
6	12 1/2	12	1 1/2	1 3/8	10 1/4	11
8	15 1/2	12	1 3/4	1 5/8	11 1/2	12 1/2
10	19	12	2	1 7/8	13 1/4	14 1/4
12	22 1/2	16	2 1/8	2	14 3/4	16

900 lb.

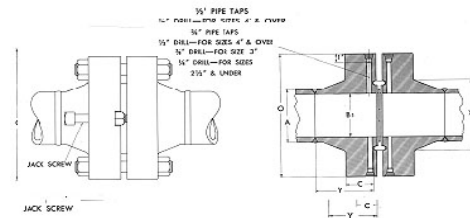
FOR SIZES 2 1/2" AND SMALLER, USE 1500 lb. STANDARD

NOMINAL PIPE SIZE	COMMON DIMENSIONS					BORE		LENGTH THRU HUB Y				DIAM. HUB AT BEVEL	FACE TO HUB COUNTER- BORE
	OUTSIDE DIAM.	O.D. RAISED FACE	DIAM. AT BASE OF HUB	THICKNESS MIN. C		WELDING NECK	SLIP- ON	WELDING NECK		SLIP-ON AND THREADED			
				RAISED FACE	RING JOINT			RAISED FACE	RING JOINT	RAISED FACE	RING JOINT		
3	9 1/2	5	5	1 1/2	1 1/2	TO BE SPECI- FIED BY PUR- CHASER	3.57	4	4	2 1/8	2 1/8	3.50	1 7/8
4	11 1/2	6 3/16	6 1/4	1 3/4	1 3/4		4.57	4 1/2	4 1/2	2 3/4	2 3/4	4.50	2 1/8
5	13 3/4	7 5/16	7 1/2	2	2		5.66	5	5	3 1/8	3 1/8	5.56	2 3/8
6	15	8 1/2	9 1/4	2 3/16	2 3/16	6.72	5 1/2	5 1/2	3 3/8	3 3/8	6.63	2 1/2	
8	18 1/2	10 5/8	11 3/4	2 1/2	2 1/2	8.72	6 3/8	6 3/8	4	4	8.63	2 3/4	
10	21 1/2	12 3/4	14 1/2	2 3/4	2 3/4	10.88	7 1/4	7 1/4	4 1/4	4 1/4	10.75	3 1/16	
12	24	15	16 1/2	3 1/8	3 1/8	12.88	7 7/8	7 7/8	4 5/8	4 5/8	12.75	3 1/4	

1500 lb.

2500 lb. ORIFICE FLANGES ARE ALSO AVAILABLE.

1	5 7/8	2	2 1/16	1 3/8	1 1/4	TO BE SPECI- FIED BY PUR- CHASER	1.36	3 1/8	3	1 7/8	1 3/4	1.32	1 1/2
1 1/4	6 1/4	2 1/2	2 1/2	1 3/8	1 1/4		1.70	3 1/8	3	1 7/8	1 3/4	1.66	1 1/2
1 1/2	7	2 7/8	2 3/4	1 3/8	1 1/4		1.95	3 3/8	3 1/4	1 7/8	1 3/4	1.90	1 1/2
2	8 1/2	3 5/8	4 1/8	1 1/2	1 1/2		2.44	4	4	2 1/4	2 1/4	2.38	1 3/4
2 1/2	9 5/8	4 1/8	4 7/8	1 5/8	1 5/8		2.94	4 1/8	4 1/8	2 1/2	2 1/2	2.88	2 1/8
3	10 1/2	5	5 1/4	1 7/8	1 7/8		3.57	4 5/8	4 5/8	2 7/8	2 7/8	3.50	2 1/4
4	12 1/4	6 3/16	6 3/8	2 1/8	2 1/8		4.57	4 7/8	4 7/8	3 9/16	3 9/16	4.50	2 1/2
5	14 3/4	7 5/16	7 3/4	2 7/8	2 7/8		5.66	6 1/8	6 1/8	4 1/8	4 1/8	5.56	2 3/4
6	15 1/2	8 1/2	9	3 1/4	3 1/4		6.72	6 3/4	6 3/4	4 11/16	4 11/16	6.63	3
8	19	10 5/8	11 1/2	3 5/8	3 5/8		8.72	8 3/8	8 3/8	5 5/8	5 5/8	8.63	3 1/4
10	23	12 3/4	14 1/2	4 1/4	4 1/4		10.88	10	10	6 1/4	6 1/4	10.75	3 9/16
12	26 1/2	15	17 3/4	4 7/8	4 7/8		12.88	11 1/8	11 1/8	7 1/8	7 1/8	12.75	3 7/8



WEIGHTS

NOMINAL PIPE SIZE	APPROX. WEIGHT PER UNION (POUNDS)			
	WELDING NECK		SLIP-ON AND THREADED	
	RAISED FACE	RING JOINT	RAISED FACE	RING JOINT
3	75	84	65	74
4	125	140	130	145
5	205	225	200	215
6	260	290	260	285
8	420	450	410	435
10	610	660	580	620
12	760	820	760	820

WEIGHTS

1	29	28	26	26
1 1/4	31	31	29	29
1 1/2	38	40	36	38
2	63	72	63	71
2 1/2	90	100	90	100
3	120	135	120	135
4	180	195	180	195
5	320	345	320	340
6	405	440	405	435
8	630	730	600	680
10	1100	1175	1050	1125
12	1675	1825	1475	1550

DIMENSIONAL TOLERANCES FOR FORGED PIPE FLANGES

The tolerances tabulated below apply to all ANSI Flanges and Large Diameter Flanges.
Except where indicated, the tolerances are those established by ANSI B16.5, and the variations are maximum.
Actual manufacturing and inspection procedures often control dimensions more closely than required.

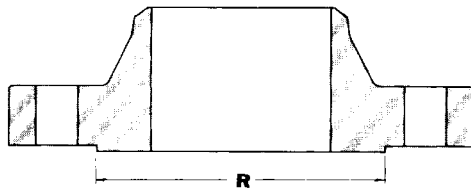
Threaded, Socket Welded, Slip-On, Lap joint and Blind			Welding Neck		
Outside Dia.	When O.D. is 24" or less When O.D. is Over 24"	$\pm 0.06"$ (1.6mm) $\pm 0.12"$ (3.2mm)	Outside Dia.	When O.D. is 24" or Less When O.D. Over 24"	$\pm 0.06"$ (1.6mm) $\pm 0.12"$ (3.2mm)
Inside Dia.	Threaded	To Standard Gauge Limits	Inside Dia.	10" and Smaller 12" thru 18" 20" thru 42"	$\pm 0.03"$ (0.8mm) $\pm 0.06"$ (1.6mm) $+0.12"$ (3.2mm) -0.06" (1.6mm)
	Socket-Welding Slip-on and Lap Joint	10" and Smaller $+0.03"$ (0.8mm) -0" 12" and Larger $+0.06"$ (1.6mm) -0"		0.06" Raised Face 0.25" Raised Face Tongue and Groove Male, Female	$\pm 0.03"$ (0.8mm) $\pm 0.02"$ (0.5mm)
Outside Dia. Of Hub	12" and Smaller 14" thru 42"	$+0.09"$ (2.4mm) -0.06" (1.6mm) $+0.12"$ (3.2mm)	Dia. of Contact Face	When "X" is 24" or Smaller When "X" is Over 24"	$\pm 0.06"$ (1.6mm) $\pm 0.12"$ (3.2mm)
Dia. of Contact Face	0.06" Raised Face 0.25" Raised Face Tongue and Groove Male, Female	$\pm 0.03"$ (0.8mm) $\pm 0.02"$ (0.5mm)		0.5" -24" 26" -42"	$\pm 0.06"$ (1.6mm) $\pm 0.06"$ $\blacktriangle$
Dia. Of Counterbore	10" and Smaller 12" thru 42"	$+0.03"$ (0.8mm) -0" $+0.06"$ (1.6mm) -0" 0.5" -24" 26" -42"	Drilling	Bolt Circle Bolt Hole Spacing	$\pm 0.03"$ (0.8mm) $\pm 0.03"$ $\blacktriangle$ $\pm 0.03"$ (0.8mm) $\pm 0.03"$ $\blacktriangle$
	Bolt Circle Bolt hole spacing	$\pm 0.06"$ (1.6mm) $\pm 0.06"$ $\blacktriangle$ $\pm 0.03"$ (0.8mm) $\pm 0.03"$ $\blacktriangle$		Eccentricity of Bolt Circle with Respect to Facing	2.5" and Smaller 0.03" Max. (0.8mm)
Drilling	Eccentricity of Bolt Circle with Respect to Facing	3" and Larger 0.06" Max (1.6mm)	Thickness	Eccentricity of Bolt Circle with Respect to Bore	0.03" Max. $\blacktriangle$ (0.8mm)
	Eccentricity of Bolt Circle with Respect to Bore	0.03" Max. $\blacktriangle$ (0.8mm)		Eccentricity of Facing with Respect to Bore	0.03" Max. (0.8mm)
	Eccentricity of Facing with Respect to Bore	0.03" Max. (0.8mm)		18" and Smaller Over 18"	$+0.12"$ (3.2mm) -0" $+0.19"$ (4.8mm) -0"
	18" and Smaller 20" thru 42"	$+0.12"$ (3.2mm) -0" $+0.19"$ (4.8mm) -0"		4" and Smaller 10" and Smaller 12" thru 42"	$\pm 0.06"$ (1.6mm) $+0.06"$ (1.6mm) -0.12" $+0.12"$ (3.2mm) -0.18"
Length Thru hub	10" and Smaller 12" thru 42"	$+0.06"$ (1.6mm) $\pm 0.12"$ (3.2mm)	<u>Ring Joint Gasket</u>		
<u>Ring Joint Facing</u>			Ring Width	Dimension A	$\pm 0.008"$
			Ring Depth	Dimension B&H	$\pm 0.02"$
Depth	Dimension L	$+0.016"$ (0.4mm) -0"	Width		
			Octagonal Flat	Dimension C	$\pm 0.008"$
Width	Dimension D	$\pm 0.008"$	Pitch Dia.	Dimension P	$\pm 0.007"$
Pitch Dia.	Dimension P	$\pm 0.005"$	Radius	Dimension r	$\pm 0.02"$
Rad. at Bottom	Dimension r	Max.	Angle	23° Angle	$\pm 0.5^\circ$
Angle	23° Angle	$\pm 0.5^\circ$			

‡ Tolerances conform to ANSI B16.20

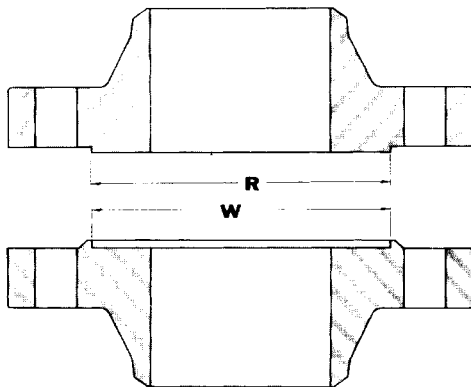
* This tolerance is not converted in ANSI B16.5

▲ This tolerance is + 0.03" for orifice flanges.

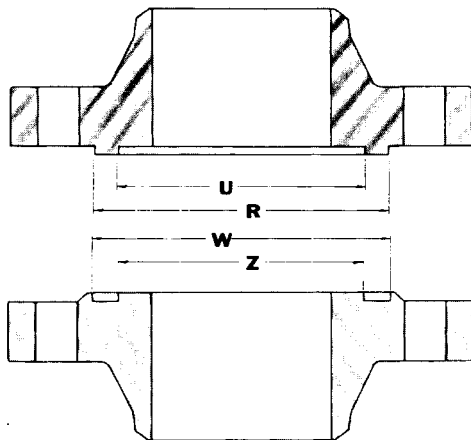
AMERICAN STANDARD FLANGE FACINGS



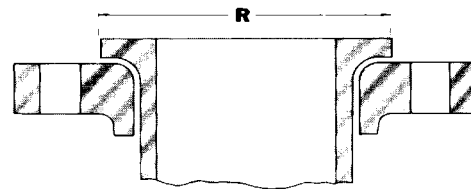
RAISED FACE



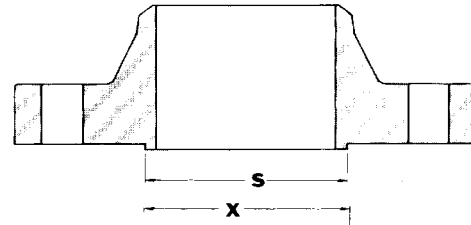
LARGE MALE AND FEMALE



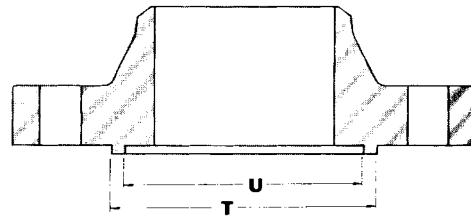
LARGE TONGUE AND GROOVE



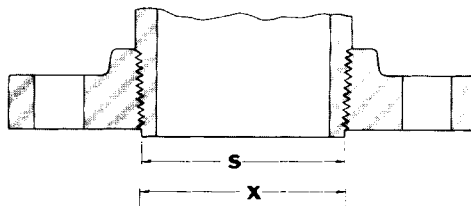
LAP JOINT



SMALL MALE AND FEMALE



SMALL TONGUE AND GROOVE



SMALL MALE AND FEMALE
(on end of pipe)

American Standard Flange Facings

For 150, 300, 400, 600, 900, 1500 and 2500 Lb. Flanges

Nominal Pipe Size	Outside Diameter ³			I.D. of Large and Small Tongue ^{3,5}	Outside Diameter ³			I.D. of Large and Small Groove ^{3,5}	Height	Height	Depth of Groove or Female
	Raised Face Lap Joint, Large Male and Large Tongue ⁵	Small Male ^{4,5}	Small Tongue ⁵		Large Female and Large Groove ⁵	Small Female ^{4,5}	Small Groove ⁵		Raised Face 150 and 300-Pound Standards ¹	Raised Face, Large and Small Male and Tongue 400, 600, 900 1500 and 2500 Pound Standards ²	
	R	S	T		W	X	Y		Z		
				U							
1/2	1 3/8	23/32	1 3/8	1	1 7/16	25/32	1 7/16	15/16	1/16	1/4	3/16
3/4	1 11/16	15/16	1 11/16	1 5/16	1 3/4	1	1 3/4	1 1/4	1/16	1/4	3/16
1	2	1 3/16	1 7/8	1 1/2	2 1/16	1 1/4	1 15/16	1 7/16	1/16	1/4	3/16
1 1/4	2 1/2	1 1/2	2 1/4	1 7/8	2 9/16	1 9/16	2 5/16	1 13/16	1/16	1/4	3/16
1 1/2	2 7/8	1 3/4	2 1/2	2 1/8	2 15/16	1 13/16	2 9/16	2 1/16	1/16	1/4	3/16
2	3 5/8	2 1/4	3 1/4	2 7/8	3 11/16	2 5/16	3 5/16	2 13/16	1/16	1/4	3/16
2 1/2	4 1/8	2 11/16	3 3/4	3 3/8	4 3/16	2 3/4	3 13/16	3 5/16	1/16	1/4	3/16
3	5	3 5/16	4 5/8	4 1/4	5 1/16	3 3/8	4 11/16	4 3/16	1/16	1/4	3/16
3 1/2	5 1/2	3 13/16	5 1/8	4 3/4	5 9/16	3 7/8	5 3/16	4 11/16	1/16	1/4	3/16
4	6 3/16	4 5/16	5 11/16	5 3/16	6 1/4	4 3/8	5 3/4	5 1/8	1/16	1/4	3/16
5	7 5/16	5 3/8	6 13/16	6 5/16	7 3/8	5 7/16	6 7/8	6 1/4	1/16	1/4	3/16
6	8 1/2	6 3/8	8	7 1/2	8 9/16	6 7/16	8 1/16	7 7/16	1/16	1/4	3/16
8	10 5/8	8 3/8	10	9 3/8	10 11/16	8 7/16	10 1/16	9 5/16	1/16	1/4	3/16
10	12 3/4	10 1/2	12	11 1/4	12 13/16	10 9/16	12 1/16	11 3/16	1/16	1/4	3/16
12	15	12 1/2	14 1/4	13 1/2	15 1/16	12 9/16	14 5/16	13 7/16	1/16	1/4	3/16
14	16 1/4	13 3/4	15 1/2	14 3/4	16 5/16	13 13/16	15 9/16	14 11/16	1/16	1/4	3/16
16	18 1/2	15 3/4	17 5/8	16 3/4	18 9/16	15 13/16	17 11/16	16 11/16	1/16	1/4	3/16
18	21	17 3/4	20 1/8	19 1/4	21 1/16	17 13/16	20 3/16	19 3/16	1/16	1/4	3/16
20	23	19 3/4	22	21	23 1/16	19 13/16	22 1/16	20 15/16	1/16	1/4	3/16
24	27 1/4	23 3/4	26 1/4	25 1/4	27 5/16	23 13/16	26 5/16	25 3/16	1/16	1/4	3/16

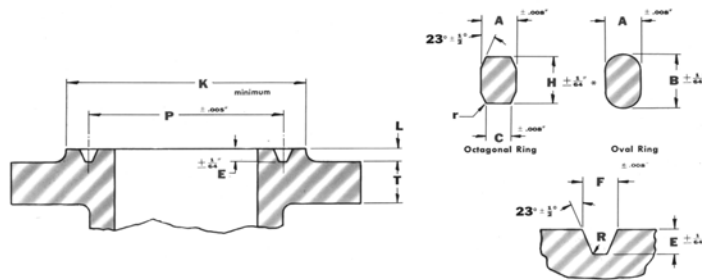
NOTE:

All dimensions are in inches

- Regular facing for 150 and 300 Lb. steel flanged fittings and flange standards is a 1/16 inch raised face included in the minimum flange thickness. A 1/16 inch raised face is also permitted on the 400, 600, 900, 1500 and 2500 Lb. flange standards but it must be added to the minimum flange thickness.
- Regular facings for 400, 600, 900, 1500 and 2500 Lb. flange standards is a 1/4 inch raised face not included in minimum flange thickness dimensions.
- A tolerance of plus or minus 0.016 inch (1/64 inch) is allowed on the inside and outside diameters of all facings.
- Care should be taken in the use of joints of these dimensions, (they apply particularly on lines where the joint is made on the end of pipe) to insure that pipe used is thick enough to permit sufficient bearing surface to prevent crushing gasket. Threaded companion flanges are furnished with plain face and are threaded with American Standard Locknut Thread.
- Gaskets for male-female and tongue-groove joints shall cover the bottom of the recess with minimum clearances taking into account the tolerances prescribed in Note 3.

A "STOCK" FACING can be either spiral or concentric. Spiral is like a Musical Record. This facing is mostly used. Concentric is circles. Photographic finish is spiral.

FACING DIMENSIONS FOR RING JOINT FLANGES

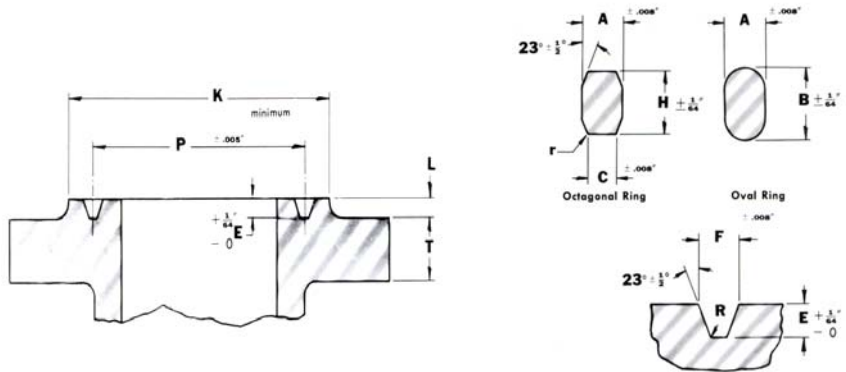


150 LB. STANDARD

ASA B16.5 AND B16.20

Nominal Pipe Size	Pitch Diam. Ring & Groove	Groove Dimensions			Ring Dimensions				Diam. Raised Face or Lap	Distance Between Flanges When Ring Is Compressed	Ring and Groove Number
					Width	Height		Width of Flat			
		Width	Oval	Octagonal							
P	F	E	R	A	B	H	C	K			
1	1 7/8	11/32	1/4	1/32	5/16	9/16	1/2	.206	2 1/2	5/32	R 15
1 1/4	2 1/4	11/32	1/4	1/32	5/16	9/16	1/2	.206	2 7/8	5/32	R 17
1 1/2	2 9/16	11/32	1/4	1/32	5/16	9/16	1/2	.206	3 1/4	5/32	R 19
2	3 1/4	11/32	1/4	1/32	5/16	9/16	1/2	.206	4	5/32	R 22
2 1/2	4	11/32	1/4	1/32	5/16	9/16	1/2	.206	4 3/4	5/32	R 25
3	4 1/2	11/32	1/4	1/32	5/16	9/16	1/2	.206	5 1/4	5/32	R 29
3 1/2	5 3/16	11/32	1/4	1/32	5/16	9/16	1/2	.206	6 1/16	5/32	R 33
4	5 7/8	11/32	1/4	1/32	5/16	9/16	1/2	.206	6 3/4	5/32	R 36
5	6 3/4	11/32	1/4	1/32	5/16	9/16	1/2	.206	7 5/8	5/32	R 40
6	7 5/8	11/32	1/4	1/32	5/16	9/16	1/2	.206	8 5/8	5/32	R 43
8	9 3/4	11/32	1/4	1/32	5/16	9/16	1/2	.206	10 3/4	5/32	R 48
10	12	11/32	1/4	1/32	5/16	9/16	1/2	.206	13	5/32	R 52
12	15	11/32	1/4	1/32	5/16	9/16	1/2	.206	16	5/32	R 56
14	15 5/8	11/32	1/4	1/32	5/16	9/16	1/2	.206	16 3/4	1/8	R 59
16	17 7/8	11/32	1/4	1/32	5/16	9/16	1/2	.206	19	1/8	R 64
18	20 3/8	11/32	1/4	1/32	5/16	9/16	1/2	.206	21 1/2	1/8	R 68
20	22	11/32	1/4	1/32	5/16	9/16	1/2	.206	23 1/2	1/8	R 72
22	24 1/4	11/32	1/4	1/32	5/16	- -	1/2	.206	25 1/2	1/8	R 80
24	26 1/2	11/32	1/4	1/32	5/16	9/16	1/2	.206	28	1/8	R 76

FACING DIMENSIONS FOR RING TYPE JOINT FLANGES 300, 400 and 600 LB. STANDARDS



Nominal Pipe Size	Pitch Diam. Ring & Groove	Groove Dimensions			Ring Dimensions				Diam. Raised Face or Lap	Distance Between Flanges When Ring Is Compressed			Ring and Groove Number	
					Width	Height		Width of Flat		300 Lb.	400 Lb.	600 Lb.		
		Width	Depth	Octagonal		A	B							Octagonal
1/2	1 11/32	9/32	7/32	1/32	1/4	7/16	3/8	0.170	2	1/8	1/8	1/8	R 11	
3/4	1 11/16	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 1/2	5/32	5/32	5/32	R 13	
1	2	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 3/4	5/32	5/32	5/32	R 16	
1 1/4	2 3/8	11/32	1/4	1/32	5/16	9/16	1/2	0.206	3 1/8	5/32	5/32	5/32	R 18	
1 1/2	2 11/16	11/32	1/4	1/32	5/16	9/16	1/2	0.206	3 9/16	5/32	5/32	5/32	R 20	
2	3 1/4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	4 1/4	7/32	3/16	3/16	R 23	
2 1/2	4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	5	7/32	3/16	3/16	R 26	
3	4 7/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	5 3/4	7/32	3/16	3/16	R 31	
3 1/2	5 3/16	15/32	5/16	1/32	7/16	11/16	5/8	0.305	6 1/4	7/32	3/16	3/16	R 34	
4	5 7/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	6 7/8	7/32	7/32	3/16	R 37	
5	7 1/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	8 1/4	7/32	7/32	3/16	R 41	
6	8 5/16	15/32	5/16	1/32	7/16	11/16	5/8	0.305	9 1/2	7/32	7/32	3/16	R 45	
8	10 5/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	11 7/8	7/32	7/32	3/16	R 49	
10	12 3/4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	14	7/32	7/32	3/16	R 53	
12	15	15/32	5/16	1/32	7/16	11/16	5/8	0.305	16 1/4	7/32	7/32	3/16	R 57	
14	16 1/2	15/32	5/16	1/32	7/16	11/16	5/8	0.305	18	7/32	7/32	3/16	R 61	
16	18 1/2	15/32	5/16	1/32	7/16	11/16	5/8	0.305	20	7/32	7/32	3/16	R 65	
18	21	15/32	5/16	1/32	7/16	11/16	5/8	0.305	22 5/8	7/32	7/32	3/16	R 69	
20	23	17/32	3/8	1/16	1/2	3/4	11/16	0.341	25	7/32	7/32	3/16	R 73	
22	25	19/32	7/16	1/16	9/16	-	3/4	0.377	27	-	-	-	R 81	
24	27 1/4	21/32	7/16	1/16	5/8	7/8	13/16	0.413	29 1/2	1/4	1/4	7/32	R 77	
MSS_SP44 Classes 300, 400 and 600														
26	29 1/2	25/32	1/2	1/16	3/4	-	15/16	0.485	31 7/8	This dimension not shown for 22" size in ASA Standard or for sizes 26" through 36" in MSS- SP44			R 93	
28	31 1/2	25/32	1/2	1/16	3/4	-	15/16	0.485	33 7/8				R 94	
30	33 3/4	25/32	1/2	1/16	3/4	-	15/16	0.485	36 1/8				R 95	
32	36	29/32	9/16	1/16	7/8	-	1 1/16	0.583	38 3/4				R 96	
34	38	29/32	9/16	1/16	7/8	-	1 1/16	0.583	40 3/4				R 97	
36	40 1/4	29/32	9/16	1/16	7/8	-	1 1/16	0.583	43				R 98	
900 LB. STANDARD (for sizes 1/2" through 2 1/2", use 1500 lb. Standard dimensions)														
3	4 7/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	6 1/8	-	5/32	-	R 31	
4	5 7/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	7 1/8	-	5/32	-	R 37	
5	7 1/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	8 1/2	-	5/32	-	R 41	
6	8 5/16	15/32	5/16	1/32	7/16	11/16	5/8	0.305	9 1/2	-	5/32	-	R 45	
8	10 5/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	12 1/8	-	5/32	-	R 49	
10	12 3/4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	14 1/4	-	5/32	-	R 53	
12	15	15/32	5/16	1/32	7/16	11/16	5/8	0.305	16 1/2	-	5/32	-	R 57	
14	16 1/2	21/32	7/16	1/16	5/8	7/8	13/16	0.413	18 3/8	-	5/32	-	R 62	
16	18 1/2	21/32	7/16	1/16	5/8	7/8	13/16	0.413	20 5/8	-	5/32	-	R 66	
18	21	25/32	1/2	1/16	3/4	1	15/16	0.485	23 3/8	-	3/16	-	R 70	
20	23	25/32	1/2	1/16	3/4	1	15/16	0.485	25 1/2	-	3/16	-	R 74	
24	27 1/4	1 1/16	5/8	3/32	1	1 5/16	1 1/4	0.681	30 3/8	-	7/32	-	R 78	
MSS_SP44 Class 900														
26	29 1/2	1 3/16	11/16	3/32	1 1/8	-	1 3/8	0.780	32 3/4	This dimension not shown in MSS-SP44			R 100	
28	31 1/2	1 5/16	11/16	3/32	1 1/4	-	1 1/2	0.879	35				R 101	
30	33 3/4	1 5/16	11/16	3/32	1 1/4	-	1 1/2	0.879	37 1/4				R 102	
32	36	1 5/16	11/16	3/32	1 1/4	-	1 1/2	0.879	39 1/2				R 103	
34	38	1 7/16	13/16	3/32	1 3/8	-	1 5/8	0.977	42				R 104	
36	40 1/4	1 7/16	13/16	3/32	1 3/8	-	1 5/8	0.977	44 1/4				R 105	

For applicable foot notes see previous page.

FACING DIMENSIONS FOR RING JOINT FLANGES

1500 LB. STANDARD

Nominal Pipe Size	Pitch Diam. Ring & Groove	Groove Dimensions			Ring Dimensions				Diam. Raised Face or Lap	Distance Between Flanges When Ring Is Compressed	Ring and Groove Number
					Width	Height		Width of Flat			
		Width	Oval	Octagonal							
						Width	Oval				
	P	F	E	R	A	B	H	C	K		
1/2	1 9/16	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 3/8	5/32	R 12
3/4	1 3/4	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 5/8	5/32	R 14
1	2	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 13/16	5/32	R 16
1 1/4	2 3/8	11/32	1/4	1/32	5/16	9/16	1/2	0.206	3 3/16	5/32	R 18
1 1/2	2 11/16	11/32	1/4	1/32	5/16	9/16	1/2	0.206	3 5/8	5/32	R 20
2	3 3/4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	4 7/8	1/8	R 24
2 1/2	4 1/4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	5 3/8	1/8	R 27
3	5 3/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	6 5/8	1/8	R 35
4	6 3/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	7 5/8	1/8	R 39
5	7 5/8	15/32	5/16	1/32	7/16	11/16	5/8	0.305	9	1/8	R 44
6	8 5/16	17/32	3/8	1/16	1/2	3/4	11/16	0.341	9 3/4	1/8	R 46
8	10 5/8	21/32	7/16	1/16	5/8	7/8	13/16	0.413	12 1/2	5/32	R 50
10	12 3/4	21/32	7/16	1/16	5/8	7/8	13/16	0.413	14 5/8	5/32	R 54
12	15	29/32	9/16	1/16	7/8	1 1/8	1 1/16	0.583	17 1/4	3/16	R 58
14	16 1/2	1 1/16	5/8	3/32	1	1 5/16	1 1/4	0.681	19 1/4	7/32	R 63
16	18 1/2	1 3/16	11/16	3/32	1 1/8	1 7/16	1 3/8	0.780	21 1/2	5/16	R 67
18	21	1 3/16	11/16	3/32	1 1/8	1 7/16	1 3/8	0.780	24 1/8	5/16	R 71
20	23	1 5/16	11/16	3/32	1 1/4	1 9/16	1 1/2	0.879	26 1/2	3/8	R 75
24	27 1/4	1 7/16	13/16	3/32	1 3/8	1 3/4	1 5/8	0.977	31 1/4	7/16	R 79

2500 LB. STANDARD

1/2	1 11/16	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 9/16	5/32	R 13
3/4	2	11/32	1/4	1/32	5/16	9/16	1/2	0.206	2 7/8	5/32	R 16
1	2 3/8	11/32	1/4	1/32	5/16	9/16	1/2	0.206	3 1/4	5/32	R 18
1 1/4	2 27/32	15/32	5/16	1/32	7/16	11/16	5/8	0.305	4	1/8	R 21
1 1/2	3 1/4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	4 1/2	1/8	R 23
2	4	15/32	5/16	1/32	7/16	11/16	5/8	0.305	5 1/4	1/8	R 26
2 1/2	4 3/8	17/32	3/8	1/16	1/2	3/4	11/16	0.341	5 7/8	1/8	R 28
3	5	17/32	3/8	1/16	1/2	3/4	11/16	0.341	6 5/8	1/8	R 32
4	6 3/16	21/32	7/16	1/16	5/8	7/8	13/16	0.413	8	5/32	R 38
5	7 1/2	25/32	1/2	1/16	3/4	1	15/16	0.485	9 1/2	5/32	R 42
6	9	25/32	1/2	1/16	3/4	1	15/16	0.485	11	5/32	R 47
8	11	29/32	9/16	1/16	7/8	1 1/8	1 1/16	0.583	13 3/8	3/16	R 51
10	13 1/2	1 3/16	11/16	3/32	1 1/8	1 7/16	1 3/8	0.780	16 3/4	1/4	R 55
12	16	1 5/16	11/16	3/32	1 1/4	1 9/16	1 1/2	0.879	19 1/2	5/16	R 60

NOTE:

All dimensions are in inches.

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

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

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

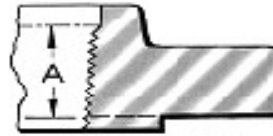
THREADING PRACTICE FOR AMERICAN STANDARD FLANGES



150 LB. STANDARD
WITH $\frac{1}{8}$ " RAISED FACE



300 LB. STANDARD
WITH $\frac{1}{8}$ " RAISED FACE



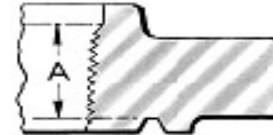
400 LB. STANDARD
AND HEAVIER
WITH $\frac{1}{4}$ " RAISED OR MALE FACE



ALL STANDARDS
WITH FEMALE FACE



ALL STANDARDS
WITH GROOVE FACE



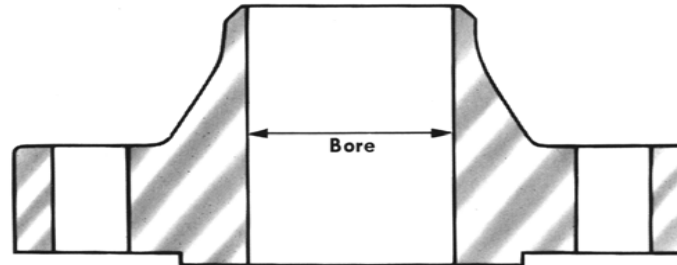
ALL STANDARDS
WITH RING JOINT FACE

Nominal Pipe Size	A- THREAD LENGTH, INCHES						
	150 Lb.	300 Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	2500 Lb.
1/2	5/8	5/8	5/8	5/8	7/8	7/8	1 1/8
3/4	5/8	5/8	5/8	5/8	1	1	1 1/4
1	11/16	11/16	11/16	11/16	1 1/8	1 1/8	1 3/8
1 1/4	13/16	13/16	13/16	13/16	1 3/16	1 3/16	1 1/2
1 1/2	7/8	7/8	7/8	7/8	1 1/4	1 1/4	1 3/4
2	1	1 1/8	1 1/8	1 1/8	1 1/2	1 1/2	2
2 1/2	1 1/8	1 1/4	1 1/4	1 1/4	1 7/8	1 7/8	2 1/4
3	1 3/16	1 1/4	1 3/8	1 3/8	1 5/8	2	2 1/2
3 1/2	1 1/4	1 7/16	1 9/16	1 9/16	--	--	--
4	1 5/16	1 7/16	1 7/16	1 5/8	1 7/8	2 1/4	2 3/4
5	1 7/16	1 11/16	1 11/16	1 7/8	2 1/8	2 1/2	3
6	1 9/16	1 13/16	1 13/16	2	2 1/4	2 3/4	3 1/4
8	1 3/4	2	2	2 3/8	2 1/2	3	3 3/4
10	1 15/16	2 3/16	2 3/16	2 9/16	2 13/16	3 5/16	4 1/4
12	2 3/16	2 3/8	2 3/8	2 3/4	3	3 5/8	4 3/4
14	2 1/4	2 1/2	2 1/2	2 7/8	3 1/4	--	--
16	2 1/2	2 11/16	2 11/16	3 1/16	3 3/8	--	--
18	2 11/16	2 3/4	2 3/4	3 1/8	3 1/2	--	--
20	2 7/8	2 7/8	2 7/8	3 1/4	3 5/8	--	--
24	3 1/4	3 1/4	3 1/4	3 5/8	4	--	--

FLANGES SHALL BE TAPPED WITH AMERICAN STANDARD TAPER PIPE THREADS IN ACCORDANCE WITH ASA STANDARD B2.1 BUT SHALL HAVE LONGER THREAD LENGTHS IN PROPORTION TO THE FLANGE

CHAMFER CONE, AND PITCH DIAMETER OF THREAD CONE ARE MAINTAINED. GAUGING NOTCH OF THE

PITCH DIAMETER AT SMALL END OF THREAD E_0 , IS MADE PROPORTIONALLY SMALLER IN FLANGES.

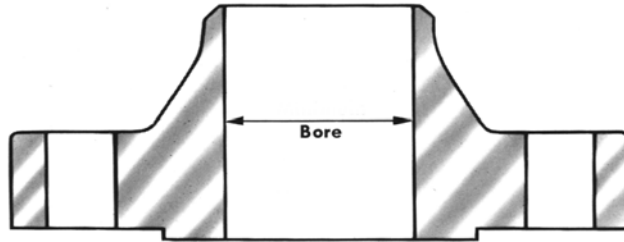


Nominal Wall Thickness

Nominal Size	Nominal Outside Size	Sched. 10S	Sched. 10	Sched 20	Sched 30	STD Wall	Sched 40	Sched 60	E.X.# STG.	Sched 80	Sched 100	Sched 120	Sched 140	Sched 160	XX STG.
Nominal Inside Diameter															
0.50	0.840	0.674	0.674	-	-	0.622	0.622	-	0.546	0.546	-	-	-	0.464	0.252
0.75	1.050	0.884	0.884	-	-	0.824	0.824	-	0.742	0.742	-	-	-	0.612	0.434
1.00	1.315	1.097	1.097	-	-	1.049	1.049	-	0.957	0.957	-	-	-	0.815	0.599
1.25	1.660	1.442	1.442	-	-	1.380	1.380	-	1.278	1.278	-	-	-	1.160	0.896
1.50	1.900	1.682	1.682	-	-	1.610	1.610	-	1.500	1.500	-	-	-	1.338	1.100
2.00	2.375	2.157	2.157	-	-	2.067	2.067	-	1.939	1.939	-	-	-	1.687	1.503
2.50	2.875	2.635	2.635	-	-	2.469	2.469	-	2.323	2.323	-	-	-	2.125	1.771
3.00	3.500	3.260	3.260	-	-	3.068	3.068	-	2.900	2.900	-	-	-	2.624	2.300
3.50	4.000	3.760	3.760	-	-	3.548	3.548	-	3.364	3.364	-	-	-	-	2.728
4.00	4.500	4.260	4.260	-	-	4.026	4.026	-	3.826	3.826	-	3.624	-	3.438	3.152
5.00	5.563	5.295	5.295	-	-	5.047	5.047	-	4.813	4.813	-	4.563	-	4.313	4.063
6.00	6.625	6.375	6.357	-	-	6.065	6.065	-	5.761	5.761	-	5.501	-	5.187	4.897
8.00	8.625	8.329	8.329	8.125	8.071	7.981	7.981	7.813	7.625	7.625	7.437	7.187	7.001	6.813	6.875
10.00	10.750	10.420	10.420	10.250	10.136	10.020	10.020	9.750	9.750	9.562	9.312	9.062	8.750	8.500	8.750
12.00	12.750	12.390	12.390	12.250	12.090	12.000	11.938	11.626	11.750	11.374	11.062	10.750	10.500	10.126	10.750
14.00	14.000	13.625	13.500	13.376	13.250	13.250	13.124	12.812	13.000	12.500	12.124	11.812	11.500	11.188	-
16.00	16.000	15.625	15.500	15.376	15.250	15.250	15.000	14.688	15.000	14.312	13.938	13.562	13.124	12.812	-
18.00	18.000	17.625	17.500	17.376	17.124	17.250	16.876	16.500	17.000	16.124	15.688	15.250	14.876	14.438	-
20.00	20.000	19.564	19.500	19.250	19.000	19.250	18.812	18.376	19.000	17.938	17.438	17.000	16.500	16.062	-
22.00	22.000	-	21.500	-	-	21.250	-	-	21.000	-	-	-	-	-	-
24.00	24.000	23.500	23.500	23.250	22.876	23.250	22.624	22.062	23.000	21.562	20.938	20.376	19.876	19.312	-
26.00	26.000	-	-	-	-	25.250	-	-	25.000	-	-	-	-	-	-
30.00	30.000	29.375	29.376	29.000	28.750	29.250	-	-	29.000	-	-	-	-	-	-

ALL DIMENSIONS ARE IN INCHES

MINIMUM FINISHED BORES



WELDING NECK FLANGES

NOMINAL PIPE SIZE	PIPE INSIDE DIAMETERS				MINIMUM FINISHED FLANGE BORES†						
	STANDARD WALL	EXTRA STRONG	SCHEDULE 160	DOUBLE EXTRA STRONG	150 Lb.	300 Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	2500 Lb.
1/2	.622	.546	.466	.252	*	*	*	*	*	*	*
3/4	.824	.742	.614	.434	*	*	*	*	*	*	*
1	1.049	.957	.815	.599	*	*	*	*	*	*	*
1 1/4	1.380	1.278	1.160	.896	*	*	*	*	*	*	*
1 1/2	1.610	1.500	1.338	1.100	*	*	*	*	*	*	*
2	2.067	1.939	1.689	1.503	1.50	1.81	1.53	1.53	*	*	*
2 1/2	2.469	2.323	2.125	1.771	2.21	2.21	2.21	2.21	*	*	*
3	3.068	2.900	2.624	2.300	2.80	2.80	2.21	2.21	2.21	2.15	2.13
3 1/2	3.548	3.364	--	2.728	3.30	3.34	3.34	3.34	--	--	--
4	4.026	3.826	3.438	3.152	3.78	3.75	3.75	3.37	3.12	3.09	3.09
5	5.047	4.813	4.313	4.063	4.75	4.75	4.75	4.31	4.00	3.93	3.63
6	6.065	5.761	5.189	4.897	5.71	5.65	5.65	4.78	4.78	4.78	4.62
8	7.981	7.625	6.813	6.875	7.59	7.40	7.40	6.81	6.81	6.81	6.13
10	10.020	9.750	8.500	--	9.43	9.43	9.43	9.00	8.34	8.15	8.13
12	12.000	11.750	10.126	--	11.34	11.25	11.25	10.62	10.12	10.12	9.50
14	13.250	13.000	11.188	--	12.78	12.71	12.71	12.50	12.50	12.50	--
16	15.250	15.000	12.814	--	14.71	14.69	14.50	14.19	14.50	14.50	--
18	17.250	17.000	14.438	--	17.00	16.88	16.50	16.50	16.50	16.50	--
20	19.250	19.000	16.604	--	19.00	18.81	18.50	18.37	18.50	18.50	--
22	21.250	21.000	--	--	21.00	20.88	20.50	20.50	--	--	--
24	23.250	23.000	19.314	--	23.00	22.88	22.50	22.50	22.50	22.50	--

ALL DIMENSIONS ARE IN INCHES.

*THESE SIZES ARE FORGED SOLID.ANY SPECIFIED BORE CAN BE FURNISHED.

† THESE ARE MINIMUM DIMENSIONS TO WHICH STOCK FORGINGS CAN BE MACHINED.SMALLER BORES CAN BE FURNISHED ON SPECIAL ORDER.

DIMENSIONS OF GASKETS (non-metallic - ASA B16.21)

Nominal Pipe Size	INSIDE DIAMETER		OUTSIDE DIAMETER							Small Male and Female	Small Tongue and Groove	Male and Female, Tongue and Groove (Large)
	Raised Face, Male and Female*	Tongue & Groove (Large & Small)	Raised Face									
			150 Lb.	300Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	2500 Lb.			
1	1 5/16	1 1/2	2 5/8	2 7/8	2 7/8	2 7/8	3 1/8	3 1/8	3 3/8	1 3/16	1 7/8	2
1 1/4	1 21/32	1 7/8	3	3 1/4	3 1/4	3 1/4	3 1/2	3 1/2	4 1/8	1 1/2	2 1/4	2 1/2
1 1/2	1 29/32	2 1/8	3 3/8	3 3/4	3 3/4	3 3/4	3 7/8	3 7/8	4 5/8	1 3/4	2 1/2	2 7/8
2	2 3/8	2 7/8	4 1/8	4 3/8	4 3/8	4 3/8	5 5/8	5 5/8	5 3/4	2 1/4	3 1/4	3 5/8
2 1/2	2 7/8	3 3/8	4 7/8	5 1/8	5 1/8	5 1/8	6 1/2	6 1/2	6 5/8	2 11/16	3 3/4	4 1/8
3	3 1/2	4 1/4	5 3/8	5 7/8	5 7/8	5 7/8	6 5/8	6 7/8	7 3/4	3 5/16	4 5/8	5
3 1/2	4	4 3/4	6 3/8	6 1/2	6 3/8	6 3/8	-	-	-	3 13/16	5 1/8	5 1/2
4	4 1/2	5 3/16	6 7/8	7 1/8	7	7 5/8	8 1/8	8 1/4	9 1/4	4 5/16	5 11/16	6 3/16
5	5 9/16	6 5/16	7 3/4	8 1/2	8 3/8	9 1/2	9 3/4	10	11	5 3/8		7 5/16
6	6 5/8	7 1/2	8 3/4	9 7/8	9 3/4	10 1/2	11 3/8	11 1/8	12 1/2	6 3/8	Larger Sizes not Covered by ASA B16.21	8 1/2
8	8 5/8	9 3/8	11	12 1/8	12	12 5/8	14 1/8	13 7/8	15 1/4	8 3/8		10 5/8
10	10 3/4	11 1/4	13 3/8	14 1/4	14 1/8	15 3/4	17 1/8	17 1/8	18 3/4	10 1/2		12 3/4
12	12 3/4	13 1/2	16 1/8	16 5/8	16 1/2	18	19 5/8	20 1/2	21 5/8	12 1/2		15
14	14	14 3/4	17 3/4	19 1/8	19	19 3/8	20 1/2	22 3/4	-	13 3/4		16 1/4
16	16	16 3/4	20 1/4	21 1/4	21 1/8	22 1/4	22 5/8	25 1/4	-	15 3/4		18 1/2
18	18	19 1/4	21 5/8	23 1/2	23 3/8	24 1/8	25 1/8	27 3/4	-	17 3/4		21
20	20	21	23 7/8	25 3/4	25 1/2	26 7/8	27 1/2	29 3/4	-	19 3/4	23	
22	22	23 1/4	26 1/4	28 1/2	28 1/4	29 1/8	31	33 1/2	-	21 3/4	25 1/4	
24	24	25 1/4	28 1/4	30 1/2	30 1/4	31 1/8	33	35 1/2	-	23 3/4	27 1/4	

All dimensions are in inches.

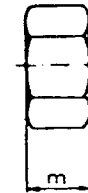
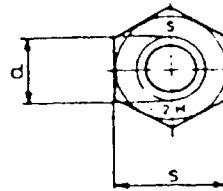
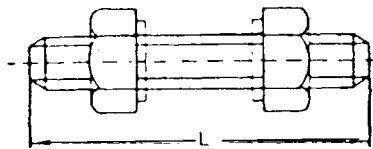
*For large male and female gaskets only. For small male and female gaskets purchaser must specify inside diameter of pipe.

STUD BOLTS WITH 2 HEXAGONAL NUTS

UNC/8-UN

Bolts to ANSI B16.5
and BS 4882

Nuts to ANSI B18.2
and BS 4882



d	1/2"	5/8"	3/4"	7/8"	1"	1 1/8"	1 1/4"	1 3/8"	d	1 1/2"	1 5/8"	1 3/4"	1 7/8"	2"
SCREWTHREADS UNC UP TO 1" INCL. 8-UN OVER 1"	13	11	10	9	8	8	8	8	SCREWTHREADS UNC UP TO 1" INCL. 8-UN OVER 1"	8	8	8	8	8
S MAX	22.22	26.97	31.75	36.52	41.27	46.02	50.8	55.57	S MAX	60.32	65.07	69.85	74.62	79.37
S MIN	21.59	26.19	30.79	35.41	40.01	44.61	49.23	53.83	S MIN	58.43	63.02	67.72	72.24	76.84
m MAX	12.80	16.02	19.25	22.47	25.7	28.93	31.77	35	m MAX	38.22	41.45	44.67	47.9	51.13
m MIN	11.79	14.91	18.04	21.16	24.29	27.41	30.15	33.28	m MIN	36.4	39.53	42.65	45.78	48.9
L*	WEIGHT IN KG PER 1.000 PIECES (INCLUDING 2 NUTS)								L*	WEIGHT IN KG PER 1.000 PIECES (INCLUDING 2 NUTS)				
2	99.2	169.7	268.5						8 1/2	2804.5				
2 1/4	104.2	178.1	280.5						8 3/4	2853.9				
2 1/2	109.4	187.2	296.5						9	2903.4				
2 3/4	114.5	195.2	305.6						9 1/4	2952.8				
3	119.5	203.3	316.1						9 1/2	3002.2	3675.8			
3 1/4	124.7	211.2	327.8						9 3/4	3051.7	3791.8			
3 1/2	129.7	219.3	339.6						10	3101.1	1849.8	4589.9		
3 3/4	134.8	227.4	351.5	509					10 1/2	3200	3965.8	4724.5		
4	139.9	235.4	363.7	525.2					11	3298.8	4081.9	4859.1		
4 1/4		243.5	376.1	541.4					11 1/2	3397.7	4197.9	4993.6		
4 1/2		251.5	387.8	557.6	788.5				12	3496.6	4313.9	5128.2	6133.6	
4 3/4		259.6	398.6	573.8	799.0				13		4546	5397.3	6442.6	
5		276.6	410.3	589.2	809.8				14		4778	5666.4	6751.6	
5 1/4		280.1	423.3	606.0	831.2				15			5935.6	7060.5	8061.8
5 1/2		283.6	434.4	622.2	852.3	1132.6			16			6204.7	7369.5	8413.3
5 3/4		291.6	445.7	638.5	874.4	1159.7			17				7678.4	8764.8
6		299.7	457.3	654.5	895.0	1187.4			18				7987.4	9116.4
6 1/4		307.9	469.2	670.5	916.1	1215.0			19				8296.3	9367.9
6 1/2		315.8	480.9	686.9	937.2	1242.0			20				8605.3	9819.4
6 3/4		323.8	492.6	703.2	958.5	1269.8								
7		331.9	504.4	719.5	979.6	1296.8	1666.1							
7 1/4			512.6	735.7	1000.4	1324.6	1700.8							
7 1/2			528	761.9	1022.0	1351.8	1734.8							
7 3/4			539.3	773.4	1043.0	1379.6	1468.9							
8			551.5	784.0	1065.0	1406.4	1803.5	2267.9						
8 1/4			563.3	800.3	1085.4	1433.4	1838.2	2301.4						
8 1/2					1106.9	1461.4	1870.7	2343.6						
8 3/4					1134.6		1906.9	2365.7						
9					1149.4		1940.9	2427.4						

*L(LENGTH OF STUDBOLT) IS THE LENGTH OF FIRST THREAD.(WITHOUT POINTS).