

C&N Industrial Group Limited
Steelfittings,flange,piping material specialist



1. C&N Industrial Group limited product Catalog

2. BUTTWELDFITTINGS–ASMEB16.9ANDMSSSP-75

ASMEB16.9 Elbows(LR), Tees, Reducers, Endcaps, Stub-ends, Returnbends(LR)
ASMEB16.28
Elbows(SR), Returnbends(SR)M
SSSP-43 Stubends–typeA
MSSSP-75 Elbows(LR), Tees, Reducers, Endcaps,

3. FLANGES–B16.5

ASMEB16.5 Weld-neck, Blind, Slip-on, Socket-weld, Lap-Joint, Threade

4. FLANGES–MSSSP-44

MSSSP-44 Weld-neck, Blind

5. FLANGES–API6A 75–79

API 6A Type6Band6BX

6. FORGEDFITTINGS–ASMEB16.11ANDBS3799

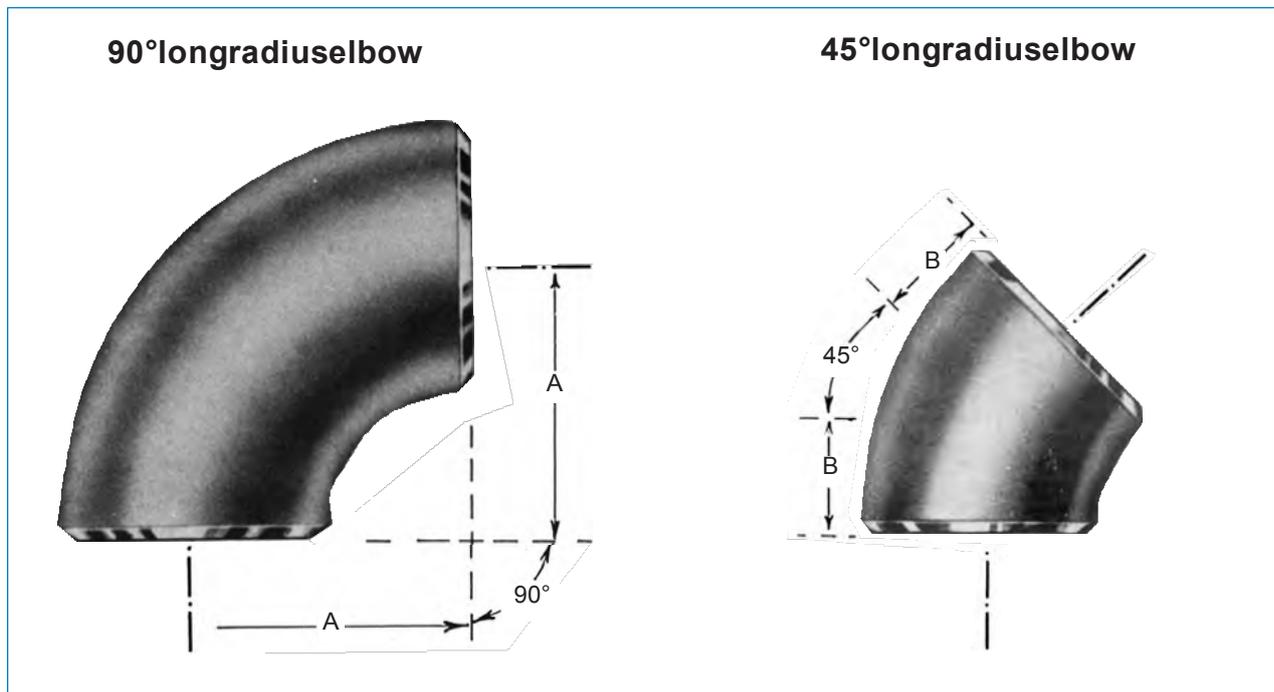
ASMEB16.11/BS3799–Threadedandsocketwelding-
Elbows, Tees, Crosses, Couplings, Caps, Bushing, Plugs, Nipples, Unions, Weldingboss

7. O’LETS

Manufacturersstandard–O’lettypes:
Buttweld, Elbow, Lateral, Nipple, InsertBranch, FlangedButtweld, FlangedNipple

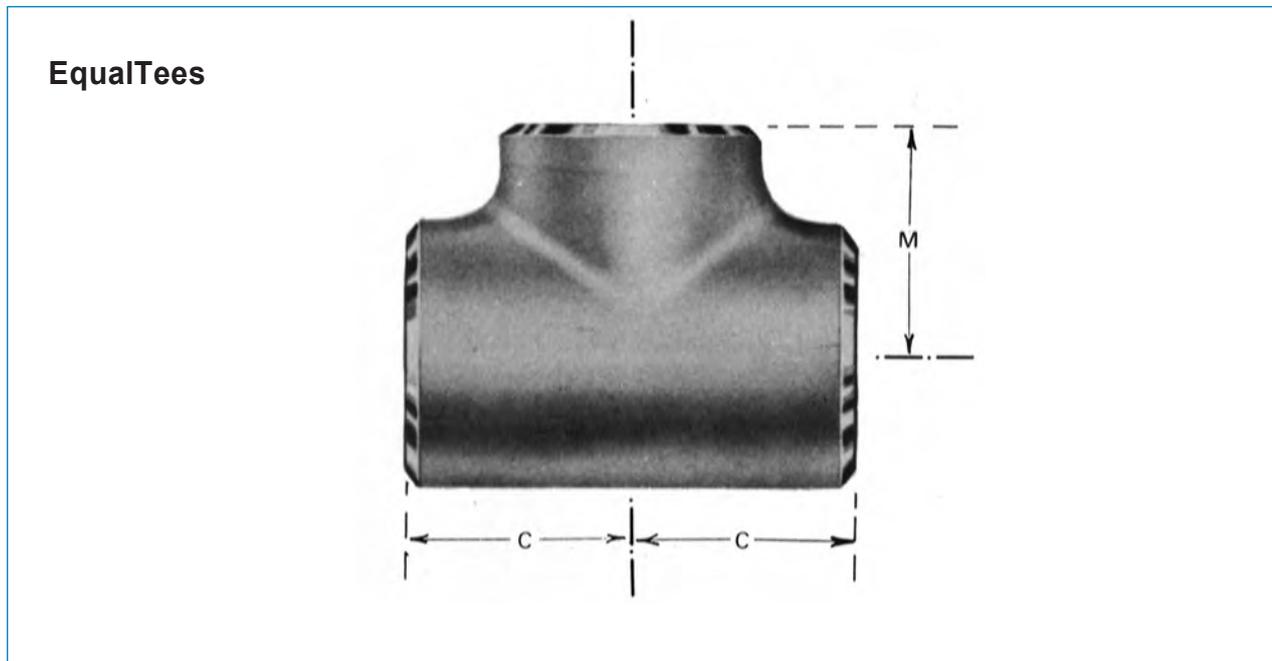
Steelfittings, flange, piping material specialist

Longradiuselbows



ASMEB16.9				MSSSP-75			
N.B.	O.D. at Bevel	A (mm)	B (mm)	N.B.	O.D. at Bevel	A (mm)	B (mm)
1/2	21,3	38	16				
3/4	26,7	38	19				
1	33,4	38	22				
1 1/4	42,2	48	25				
1 1/2	48,3	57	29				
2	60,3	76	35				
2 1/2	73,0	95	44				
3	88,9	114	51				
3 1/2	101,6	133	57				
4	114,3	152	64				
5	141,3	190	79				
6	168,3	229	95				
8	219,1	305	127				
10	273,0	381	159				
12	323,8	457	190				
14	355,6	533	222				
16	406,4	610	254	16	406,4	610	254
18	457,0	686	286	18	457,0	686	286
20	508,0	762	318	20	508,0	762	318
22	559,0	838	343	22	559,0	838	343
24	610,0	914	381	24	610,0	914	381
26	660,0	991	406	26	660,0	991	406
28	711,0	1067	438	28	711,0	1067	438
30	762,0	1143	470	30	762,0	1143	470
32	813,0	1219	502	32	813,0	1219	502
34	864,0	1295	533	34	864,0	1295	533
36	914,0	1372	565	36	914,0	1372	565
38	965,0	1448	600	38	965,0	1448	600
40	1016,0	1524	632	40	1016,0	1524	632
42	1067,0	1600	660	42	1067,0	1600	660
44	1118,0	1676	695	44	1118,0	1676	695
46	1168,0	1753	727	46	1168,0	1753	727
48	1219,0	1829	759	48	1219,0	1829	759

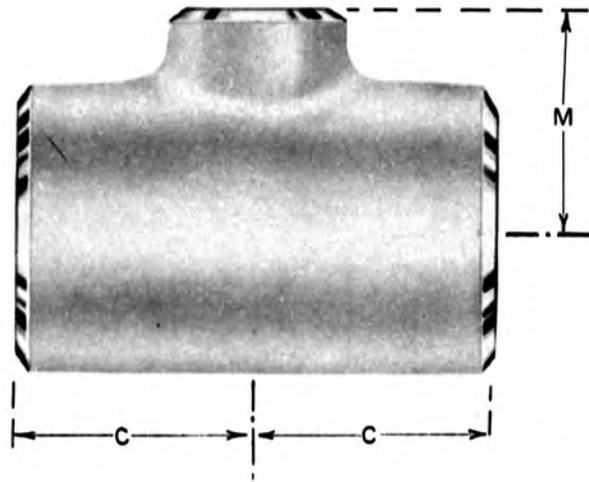
Tees



ASMEB16.9				MSSSP-75			
N.B.	O.D. at Bevel	C (mm)	M (mm)	N.B.	O.D. at Bevel	C (mm)	M (mm)
1/2	21,3	25	25				
3/4	26,7	29	29				
1	33,4	38	38				
1 1/4	42,2	48	48				
1 1/2	48,3	57	57				
2	60,3	64	64				
2 1/2	73,0	76	76				
3	88,9	86	86				
3 1/2	101,6	95	95				
4	114,3	105	105				
5	141,3	124	124				
6	168,3	143	143				
8	219,1	178	178				
10	273,0	216	216				
12	323,8	254	254				
14	355,6	279	279				
16	406,4	305	305	16	406,4	305	305
18	457,0	343	343	18	457,0	343	343
20	508,0	381	381	20	508,0	381	381
22	559,0	419	419	22	559,0	419	419
24	610,0	432	432	24	610,0	432	432
26	660,0	495	495	26	660,0	495	495
28	711,0	521	521	28	711,0	521	521
30	762,0	559	559	30	762,0	559	559
32	813,0	597	597	32	813,0	597	597
34	864,0	635	635	34	864,0	635	635
36	914,0	673	673	36	914,0	673	673
38	965,0	711	711	38	965,0	711	711
40	1016,0	749	749	40	1016,0	749	749
42	1067,0	762	711	42	1067,0	762	711
44	1118,0	813	762	44	1118,0	813	762
46	1168,0	851	800	46	1168,0	851	800
48	1219,0	889	838	48	1219,0	889	838

Tees

Reducing Outlet Tees



REDUCING OUTLET TEES (dimensions in mm)

ASMEB16.9						MSSSP-75					
N.B.		O.D. Outlet at Bevel		Run		N.B.		O.D. at Bevel		Run	Outlet
Run	Outlet	Run	Outlet	C	M	Run	Outlet	Run	Outlet	C	M
1/2	3/8	21,3	17,3	25	25						
1/2	1/4	21,3	13,7	25	25						
3/4	1/2	26,7	21,3	29	29						
3/4	3/8	26,7	17,3	29	29						
1	3/4	33,4	26,7	38	38						
1	1/2	33,4	21,3	38	38						
1 1/4	1	42,2	33,4	48	48						
1 1/4	3/4	42,2	26,7	48	48						
1 1/4	1/2	42,2	21,3	48	48						
1 1/2	1 1/4	48,3	42,2	57	57						
1 1/2	1	48,3	33,4	57	57						
1 1/2	3/4	48,3	26,7	57	57						
1 1/2	1/2	48,3	21,3	57	57						
2	1 1/2	60,3	48,3	64	60						
2	1 1/4	60,3	42,2	64	57						
2	1	60,3	33,4	64	51						
2	3/4	60,3	26,7	64	44						
2 1/2	2	73,0	60,3	76	70						
2 1/2	1 1/2	73,0	48,3	76	67						
2 1/2	1 1/4	73,0	42,2	76	64						
2 1/2	1	73,0	33,4	76	57						
3	2 1/2	88,9	73,0	86	83						
3	2	88,9	60,3	86	76						
3	1 1/2	88,9	48,3	86	73						
3	1 1/4	88,9	42,2	86	70						
3 1/2	3	101,6	88,9	95	92						
3 1/2	2 1/2	101,6	73,0	95	89						
3 1/2	2	101,6	60,3	95	83						
3 1/2	1 1/2	101,6	48,3	95	79						

REDUCING OUTLETTEES(dimensionsinmm)–continued

ASMEB16.9						MSSSP-75					
N.B.		O.D. atBevel		Run	Outlet	N.B.		O.D. atBevel		Run	Outlet
Run	Outlet	Run	Outlet	C	M	Run	Outlet	Run	Outlet	C	M
4	3½	114,3	101,6	105	102						
4	3	114,3	88,9	105	98						
4	2½	114,3	73,0	105	95						
4	2	114,3	60,3	105	89						
4	1½	114,3	48,3	105	86						
5	4	141,3	114,3	124	117						
5	3½	141,3	101,6	124	114						
5	3	141,3	88,9	124	111						
5	2½	141,3	73,0	124	108						
5	2	141,3	60,3	124	105						
6	5	168,3	141,3	143	137						
6	4	168,3	114,3	143	130						
6	3½	168,3	101,6	143	127						
6	3	168,3	88,9	143	124						
6	2½	168,3	73,0	143	121						
8	6	219,1	168,3	178	168						
8	5	219,1	141,3	178	162						
8	4	219,1	114,3	178	156						
8	3½	219,1	101,6	178	152						
10	8	273,0	219,1	216	203						
10	6	273,0	168,3	216	194						
10	5	273,0	141,3	216	191						
10	4	273,0	114,3	216	184						
12	10	323,8	273,0	254	241						
12	8	323,8	219,1	254	229						
12	6	323,8	168,3	254	219						
12	5	323,8	141,3	254	216						
14	12	355,6	323,8	279	270						
14	10	355,6	273,1	279	257						
14	8	355,6	219,1	279	248						
14	6	355,6	168,3	279	238						
16	14	406,4	355,6	305	305	16	14	406,4	355,6	305	305
16	12	406,4	323,8	305	295	16	12	406,4	323,8	305	295
16	10	406,4	273,0	305	283	16	10	406,4	273,0	305	283
16	8	406,4	219,1	305	273	16	8	406,4	219,1	305	273
16	6	406,4	168,3	305	264	16	6	406,4	168,3	305	264
18	16	457	406,4	343	330	18	16	457	406,4	343	330
18	14	457	355,6	343	330	18	14	457	355,6	343	330
18	12	457	323,8	343	321	18	12	457	323,8	343	321
18	10	457	273,0	343	308	18	10	457	273,0	343	308
18	8	457	219,1	343	298	18	8	457	219,1	343	298
20	18	508	457,0	381	368	20	18	508	475,0	381	368
20	16	508	406,4	381	356	20	16	508	406,4	381	356
20	14	508	355,6	381	356	20	14	508	355,6	381	356
20	12	508	323,8	381	346	20	12	508	323,8	381	346
20	10	508	273,0	381	333	20	10	508	273,0	381	333
20	8	508	219,1	381	324	20	8	508	219,1	381	324
22	20	559	508,0	419	406	22	20	559	508,0	419	406
22	18	559	457,0	419	394	22	18	559	457,0	419	394
22	16	559	406,4	419	381	22	16	559	406,4	419	381
22	14	559	355,6	419	381	22	14	559	355,6	419	381
22	12	559	323,8	419	371	22	12	559	323,8	419	371
22	10	559	273,0	419	359	22	10	559	273,0	419	359
24	22	610	559,0	432	432	24	22	610	559,0	432	432
24	20	610	508,0	432	432	24	20	610	508,0	432	432
24	18	610	457,0	432	419	24	18	610	457,0	432	419
24	16	610	406,4	432	406	24	16	610	406,4	432	406
24	14	610	355,6	432	406	24	14	610	355,6	432	406
24	12	610	323,8	432	397	24	12	610	323,8	432	397
24	10	610	273,0	432	384	24	10	610	273,0	432	384

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REDUCING OUTLETTEES(dimensionsinmm)–continued

ASMEB16.9						MSSSP-75					
N.B.		O.D. atBevel		Run	Outlet	N.B.		O.D. atBevel		Run	Outlet
Run	Outlet	Run	Outlet	C	M	Run	Outlet	Run	Outlet	C	M
26	24	660	610,0	495	483	26	24	660	610,0	495	483
26	22	660	559,0	495	470	26	22	660	559,0	495	470
26	20	660	508,0	495	457	26	20	660	508,0	495	457
26	18	660	457,0	495	444	26	18	660	457,0	495	444
26	16	660	406,4	495	432	26	16	660	406,4	495	432
26	14	660	355,6	495	432	26	14	660	355,6	495	432
26	12	660	323,8	495	422	26	12	660	323,8	495	422
28	26	711	660,0	521	521	28	26	711	660,0	521	521
28	24	711	610,0	521	508	28	24	711	610,0	521	508
28	22	711	559,0	521	495	28	22	711	559,0	521	495
28	20	711	508,0	521	483	28	20	711	508,0	521	483
28	18	711	457,0	521	470	28	18	711	457,0	521	470
28	16	711	406,4	521	457	28	16	711	406,4	521	457
28	14	711	355,6	521	457	28	14	711	355,6	521	457
28	12	711	323,8	521	448	28	12	711	323,8	521	448
30	28	762	711,0	559	546	30	28	762	711,0	559	546
30	26	762	660,0	559	546	30	26	762	660,0	559	546
30	24	762	610,0	559	533	30	24	762	610,0	559	533
30	22	762	559,0	559	521	30	22	762	559,0	559	521
30	20	762	508,0	559	508	30	20	762	508,0	559	508
30	18	762	457,0	559	495	30	18	762	457,0	559	495
30	16	762	406,4	559	483	30	16	762	406,4	559	483
30	14	762	355,6	559	483	30	14	762	355,6	559	483
30	12	762	323,8	559	473	30	12	762	323,8	559	473
30	10	762	273,0	559	460	30	10	762	273,0	559	460
32	30	813	762,0	597	584	32	30	813	762,0	597	584
32	28	813	711,0	597	572	32	28	813	711,0	597	572
32	26	813	660,0	597	572	32	26	813	660,0	597	572
32	24	813	610,0	597	559	32	24	813	610,0	597	559
32	22	813	559,0	597	546	32	22	813	559,0	597	546
32	20	813	508,0	597	533	32	20	813	508,0	597	533
32	18	813	457,0	597	521	32	18	813	457,0	597	521
32	16	813	406,4	597	508	32	16	813	406,4	597	508
32	14	813	355,6	597	508	32	14	813	355,6	597	508
34	32	864	813,0	635	622	34	32	864	813,0	635	622
34	30	864	762,0	635	610	34	30	864	762,0	635	610
34	28	864	711,0	635	597	34	28	864	711,0	635	597
34	26	864	660,0	635	597	34	26	864	660,0	635	597
34	24	864	610,0	635	584	34	24	864	610,0	635	584
34	22	864	559,0	635	572	34	22	864	559,0	635	572
34	20	864	508,0	635	559	34	20	864	508,0	635	559
34	18	864	457,0	635	546	34	18	864	457,0	635	546
34	16	864	406,4	635	533	34	16	864	406,4	635	533
36	34	914	864,0	673	660	36	34	914	864,0	673	660
36	32	914	813,0	673	648	36	32	914	813,0	673	648
36	30	914	762,0	673	635	36	30	914	762,0	673	635
36	28	914	711,0	673	622	36	28	914	711,0	673	622
36	26	914	660,0	673	622	36	26	914	660,0	673	622
36	24	914	610,0	673	610	36	24	914	610,0	673	610
36	22	914	559,0	673	597	36	22	914	559,0	673	597
36	20	914	508,0	673	584	36	20	914	508,0	673	584
36	18	914	457,0	673	572	36	18	914	457,0	673	572
36	16	914	406,4	673	559	36	16	914	406,4	673	559
38	36	965	914,0	711	711	38	36	965	914,0	711	711
38	34	965	864,0	711	698	38	34	965	864,0	711	698
38	32	965	813,0	711	686	38	32	965	813,0	711	686
38	30	965	762,0	711	673	38	30	965	762,0	711	673
38	28	965	711,0	711	648	38	28	965	711,0	711	648
38	26	965	660,0	711	648	38	26	965	660,0	711	648
38	24	965	610,0	711	635	38	24	965	610,0	711	635
38	22	965	559,0	711	622	38	22	965	559,0	711	622
38	20	965	508,0	711	610	38	20	965	508,0	711	610
38	18	965	457,0	711	597	38	18	965	457,0	711	597

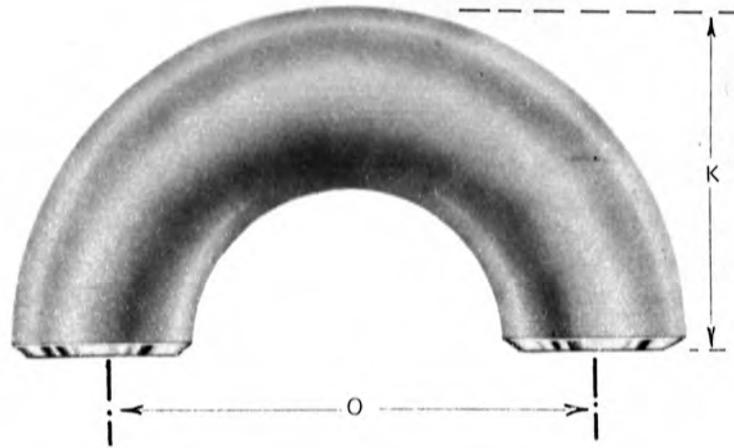
Steelfittings, flange, piping materials specialist

REDUCING OUTLETTEES(dimensionsinmm)–continued

ASMEB16.9						MSSSP-75					
N.B.		O.D. atBevel		Run	Outlet	N.B.		O.D. atBevel		Run	Outlet
Run	Outlet	Run	Outlet	C	M	Run	Outlet	Run	Outlet	C	M
40	38	1016	965	749	749	40	38	1016	965	749	749
40	36	1016	914	749	737	40	36	1016	914	749	737
40	34	1016	864	749	724	40	34	1016	864	749	724
40	32	1016	813	749	711	40	32	1016	813	749	711
40	30	1016	762	749	698	40	30	1016	762	749	698
40	28	1016	711	749	673	40	28	1016	711	749	673
40	26	1016	660	749	673	40	26	1016	660	749	673
40	24	1016	610	749	660	40	24	1016	610	749	660
40	22	1016	559	749	648	40	22	1016	559	749	648
40	20	1016	508	749	635	40	20	1016	508	749	635
40	18	1016	457	749	622	40	18	1016	457	749	622
42	40	1067	1016	762	711						
42	38	1067	968	762	711						
42	36	1067	914	762	711	42	36	1067	914	762	711
42	34	1067	864	762	711	42	34	1067	864	762	711
42	32	1067	813	762	711	42	32	1067	813	762	711
42	30	1067	762	762	711	42	30	1067	762	762	711
42	28	1067	711	762	698	42	28	1067	711	762	698
42	26	1067	660	762	698	42	26	1067	660	762	698
42	24	1067	610	762	660	42	24	1067	610	762	660
42	22	1067	559	762	660	42	22	1067	559	762	660
42	20	1067	508	762	660	42	20	1067	508	762	660
42	18	1067	457	762	648	42	18	1067	457	762	648
42	16	1067	406,4	762	635	42	16	1067	406,4	762	635
44	42	1118	1067	813	762	44	42	1118	1067	813	762
44	40	1118	1016	813	749	44	40	1118	1016	813	749
44	38	1118	965	813	737	44	38	1118	965	813	737
44	36	1118	914	813	724	44	36	1118	914	813	724
44	34	1118	864	813	724	44	34	1118	864	813	724
44	32	1118	813	813	711	44	32	1118	813	813	711
44	30	1118	762	813	711	44	30	1118	762	813	711
44	28	1118	711	813	698	44	28	1118	711	813	698
44	26	1118	660	813	698	44	26	1118	660	813	698
44	24	1118	610	813	698	44	24	1118	610	813	698
44	22	1118	559	813	686	44	22	1118	559	813	686
44	20	1118	508	813	686	44	20	1118	508	813	686
46	44	1168	1118	851	800	46	44	1168	1118	851	800
46	42	1168	1067	851	787	46	42	1168	1067	851	787
46	40	1168	1016	851	775	46	40	1168	1016	851	775
46	38	1168	965	851	762	46	38	1168	965	851	762
46	36	1168	914	851	762	46	36	1168	914	851	762
46	34	1168	864	851	749	46	34	1168	864	851	749
46	32	1168	813	851	749	46	32	1168	813	851	749
46	30	1168	762	851	737	46	30	1168	762	851	737
46	28	1168	711	851	737	46	28	1168	711	851	737
46	26	1168	660	851	737	46	26	1168	660	851	737
46	24	1168	610	851	724	46	24	1168	610	851	724
46	22	1168	559	851	724	46	22	1168	559	851	724
48	46	1219	1168	889	838	48	46	1219	1168	889	838
48	44	1219	1118	889	838	48	44	1219	1118	889	838
48	42	1219	1067	889	813	48	42	1219	1067	889	813
48	40	1219	1016	889	813	48	40	1219	1016	889	813
48	38	1219	965	889	813	48	38	1219	965	889	813
48	36	1219	914	889	787	48	36	1219	914	889	787
48	34	1219	864	889	787	48	34	1219	864	889	787
48	32	1219	813	889	787	48	32	1219	813	889	787
48	30	1219	762	889	762	48	30	1219	762	889	762
48	28	1219	711	889	762	48	28	1219	711	889	762
48	26	1219	660	889	762	48	26	1219	660	889	762
48	24	1219	610	889	737	48	24	1219	610	889	737
48	22	1219	559	889	737	48	22	1219	559	889	737

Long Radius Bends

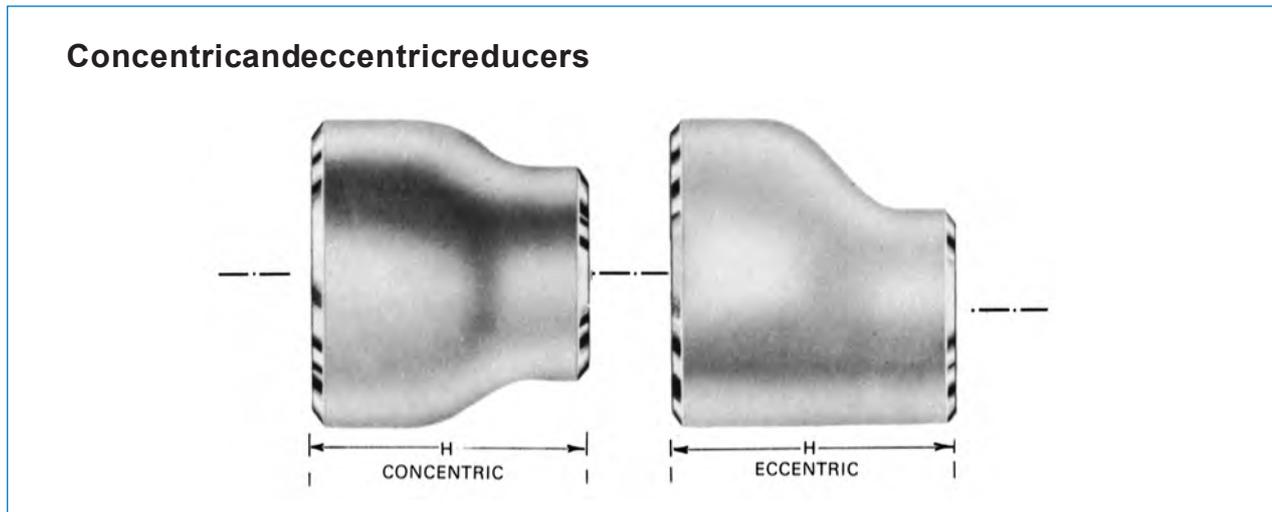
Long Radius Return Bends



LONGRADIUSRETURNBENDS(dimensionsinmm)

ASME B16.9			
N.B.	O.D. at Bevel	O	K
1/2	21,3	76	48
3/4	26,7	76	51
1	33,4	76	56
1 1/4	42,2	95	70
1 1/2	48,3	114	83
2	60,3	152	106
2 1/2	73,0	190	132
3	88,9	229	159
3 1/2	101,6	267	184
4	114,3	305	210
5	141,3	381	262
6	168,3	457	313
8	219,1	610	414
10	273,0	762	518
12	323,8	914	619
14	355,6	1067	711
16	406,4	1219	813
18	457,0	1372	914
20	508,0	1524	1016
22	559,0	1676	1118
24	610,0	1829	1219

Reducers



REDUCERS(dimensions in mm)

ASMEB16.9					MSSSP-75				ASMEB16.9					MSSSP-75					
N.B.		O.D. at Bevel		H	N.B.		O.D. at Bevel		H	N.B.		O.D. at Bevel		H	N.B.		O.D. at Bevel		H
L.E.	S.E.	L.E.	S.E.		L.E.	S.E.	L.E.	S.E.		L.E.	S.E.	L.E.	S.E.		L.E.	S.E.	L.E.	S.E.	
3/4	3/8	26,7	17,3	38						5	4	141,3	114,3	127					
3/4	1/2	26,7	21,3	38						5	3 1/2	141,3	101,6	127					
1	3/4	33,4	26,7	51						5	3	141,3	88,9	127					
1	1/2	33,4	21,3	51						5	2 1/2	141,3	73,0	127					
1 1/4	1	42,2	33,4	51						5	2	141,3	60,3	127					
1 1/4	3/4	42,2	26,7	51						6	5	168,3	141,3	140					
1 1/4	1/2	42,2	21,3	51						6	4	168,3	114,3	140					
1 1/2	1 1/4	48,3	42,2	64						6	3 1/2	168,3	101,6	140					
1 1/2	1	48,3	33,4	64						6	3	168,3	88,9	140					
1 1/2	3/4	48,3	26,7	64						6	2 1/2	168,3	73,0	140					
1 1/2	1/2	48,3	21,3	64						8	6	219,1	168,3	152					
2	1 1/2	60,3	48,3	76						8	5	219,1	141,3	152					
2	1 1/4	60,3	42,2	76						8	4	219,1	114,3	152					
2	1	60,3	33,4	76						8	3 1/2	219,1	101,6	152					
2	3/4	60,3	26,7	76						10	8	273,0	219,1	178					
2 1/2	2	73,0	60,3	89						10	6	273,0	168,3	178					
2 1/2	1 1/2	73,0	48,3	89						10	5	273,0	141,3	178					
2 1/2	1 1/4	73,0	42,2	89						10	4	273,0	114,3	178					
2 1/2	1	73,0	33,4	89						12	10	323,8	273,0	203					
3	2 1/2	88,9	73,0	89						12	8	323,8	219,1	203					
3	2	88,9	60,3	89						12	6	323,8	168,3	203					
3	1 1/2	88,9	48,3	89						12	5	323,8	141,3	203					
3	1 1/4	88,9	42,2	89						14	12	355,6	323,8	330					
3 1/2	3	101,6	88,9	102						14	10	355,6	273,0	330					
3 1/2	2 1/2	101,6	73,0	102						14	8	355,6	219,1	330					
3 1/2	2	101,6	60,3	102						14	6	355,6	168,3	330					
3 1/2	1 1/2	101,6	48,3	102						16	14	406,4	355,6	356	16	14	406,4	355,6	356
3 1/2	1 1/4	101,6	42,2	102						16	12	406,4	323,8	356	16	12	406,4	323,8	356
4	3 1/2	114,3	101,6	102						16	10	406,4	273,0	356	16	10	406,4	273,0	356
4	3	114,3	88,9	102						16	8	406,4	219,1	356	16	8	406,4	219,1	356
4	2 1/2	114,3	73,0	102						18	16	457,2	406,4	381	18	16	457,2	406,4	381
4	2	114,3	60,3	102						18	14	457,0	355,6	381	18	14	457,0	355,6	381
4	1 1/2	114,3	48,3	102						18	12	457,0	323,8	381	18	12	457,0	323,8	381
										18	10	457,0	273,0	381	18	10	457,0	273,0	381

NOTE: LE=Large End
 SE=Small End

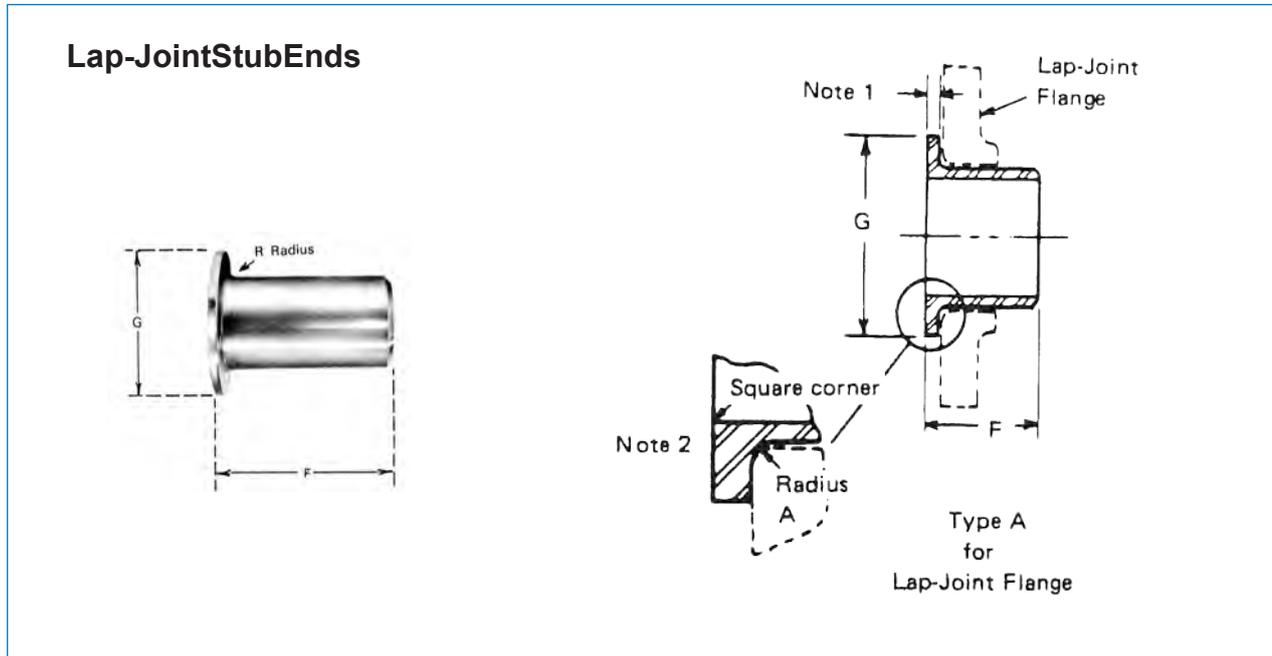
Steelfittings,flange,pipingmaterialspecialist

REDUCERS(dimensionsinmm)-continued

ASMEB16.9					MSSSP-75					ASMEB16.9					MSSSP-75								
N.B.		O.D. atBevel			H	N.B.		O.D. atBevel			H	N.B.		O.D. atBevel			H	N.B.		O.D. atBevel			H
L.E.	S.E.	L.E.	S.E.	L.E.		S.E.	L.E.	S.E.	H	L.E.		S.E.	L.E.	S.E.	H	L.E.		S.E.	L.E.	S.E.	H		
20	18	508	457	508	20	18	508	457	508	40	38	1016	965	610	40	38	1016	965	610				
20	16	508	406,4	508	20	16	508	406,4	508	40	36	1016	914	610	40	36	1016	914	610				
20	14	508	355,6	508	20	14	508	355,6	508	40	34	1016	864	610	40	34	1016	864	610				
20	12	508	323,8	508	20	12	508	323,8	508	40	32	1016	813	610	40	32	1016	813	610				
22	20	559	508	508	22	20	559	508	508	40	30	1016	762	610	40	30	1016	762	610				
22	18	559	457	508	22	18	559	457	508	40	28	1016	711	610	40	28	1016	711	610				
22	16	559	406,4	508	22	16	559	406,4	508	40	26	1016	660	610	40	26	1016	660	610				
22	14	559	355,6	508	22	14	559	355,6	508	40	24	1016	610	610	40	24	1016	610	610				
24	22	610	559	508	24	22	610	559	508	40	22	1016	559	610	40	22	1016	559	610				
24	20	610	508	508	24	20	610	508	508	40	20	1016	508	610	40	20	1016	508	610				
24	18	610	457	508	24	18	610	457	508	42	40	1067	1016	610	42	40	1067	1016	610				
24	16	610	406,4	508	24	16	610	406,4	508	42	38	1067	965	610	42	38	1067	965	610				
26	24	660	610	610	26	24	660	610	610	42	36	1067	914	610	42	36	1067	914	610				
26	22	660	559	610	26	22	660	559	610	42	34	1067	864	610	42	34	1067	864	610				
26	20	660	508	610	26	20	660	508	610	42	32	1067	813	610	42	32	1067	813	610				
26	18	660	457	610	26	18	660	457	610	42	30	1067	762	610	42	30	1067	762	610				
28	26	711	660	610	28	26	711	660	610	42	28	1067	711	610	42	28	1067	711	610				
28	24	711	610	610	28	24	711	610	610	42	26	1067	660	610	42	26	1067	660	610				
28	22	711	559	610	28	22	711	559	610	42	24	1067	610	610	42	24	1067	610	610				
28	20	711	508	610	28	20	711	508	610	42	22	1067	559	610	42	22	1067	559	610				
28	18	711	457	610	28	18	711	457	610	44	42	1118	1067	610	44	42	1118	1067	610				
30	28	762	711	610	30	28	762	711	610	44	40	1118	1016	610	44	40	1118	1016	610				
30	26	762	660	610	30	26	762	660	610	44	38	1118	965	610	44	38	1118	965	610				
30	24	762	610	610	30	24	762	610	610	44	36	1118	914	610	44	36	1118	914	610				
30	22	762	559	610	30	22	762	559	610	44	34	1118	864	610	44	34	1118	864	610				
30	20	762	508	610	30	20	762	508	610	44	32	1118	813	610	44	32	1118	813	610				
32	30	813	762	610	32	30	813	762	610	44	30	1118	762	610	44	30	1118	762	610				
32	28	813	711	610	32	28	813	711	610	44	28	1118	711	610	44	28	1118	711	610				
32	26	813	660	610	32	26	813	660	610	44	26	1118	660	610	44	26	1118	660	610				
32	24	813	610	610	32	24	813	610	610	44	24	1118	610	610	44	24	1118	610	610				
34	32	864	813	610	34	32	864	813	610	44	22	1118	559	610	44	22	1118	559	610				
34	30	864	762	610	34	30	864	762	610	46	44	1168	1118	711	46	44	1168	1118	711				
34	28	864	711	610	34	28	864	711	610	46	42	1168	1067	711	46	42	1168	1067	711				
34	26	864	660	610	34	26	864	660	610	46	40	1168	1016	711	46	40	1168	1016	711				
34	24	864	610	610	34	24	864	610	610	46	38	1168	965	711	46	38	1168	965	711				
36	34	914	864	610	36	34	914	864	610	46	36	1168	914	711	46	36	1168	914	711				
36	32	914	813	610	36	32	914	813	610	46	34	1168	864	711	46	34	1168	864	711				
36	30	914	762	610	36	30	914	762	610	46	32	1168	813	711	46	32	1168	813	711				
36	28	914	711	610	36	28	914	711	610	46	30	1168	762	711	46	30	1168	762	711				
36	26	914	660	610	36	26	914	660	610	46	28	1168	711	711	46	28	1168	711	711				
36	24	914	610	610	36	24	914	610	610	46	26	1168	660	711	46	26	1168	660	711				
38	36	965	914	610	38	36	965	914	610	46	24	1168	610	711	46	24	1168	610	711				
38	34	965	864	610	38	34	965	864	610	48	46	1219	1168	711	48	46	1219	1168	711				
38	32	965	813	610	38	32	965	813	610	48	44	1219	1118	711	48	44	1219	1118	711				
38	30	965	762	610	38	30	965	762	610	48	42	1219	1067	711	48	42	1219	1067	711				
38	28	965	711	610	38	28	965	711	610	48	40	1219	1016	711	48	40	1219	1016	711				
38	26	965	660	610	38	26	965	660	610	48	38	1219	965	711	48	38	1219	965	711				
38	24	965	610	610	38	24	965	610	610	48	36	1219	914	711	48	36	1219	914	711				
38	22	965	559	610	38	22	965	559	610	48	34	1219	864	711	48	34	1219	864	711				
38	20	965	508	610	38	20	965	508	610	48	32	1219	813	711	48	32	1219	813	711				
										48	30	1219	762	711	48	30	1219	762	711				
										48	28	1219	711	711	48	28	1219	711	711				
										48	26	1219	660	711	48	26	1219	660	711				
										48	24	1219	610	711	48	24	1219	610	711				

NOTE: LE=Large End
SE=Small End

Stub Ends



LAP-JOINT STUB ENDS (dimensions in mm)

ASMEB16.9-longtype						ASMEB16.9-Shorttype/MSSSP43TypeA							
N.B.	O.D. at Bevel	F	RAD. of Fillet R	DIA. of Lap G	O.D. of Barrel		N.B.	O.D. at Bevel	F	RAD. of Fillet R	DIA. of Lap G	O.D. of Barrel	
					Max.	Min.						Max.	Min.
1/2	21,3	76	3	35	22,8	20,5	1/2	21,3	51	3	35	22,8	20,5
3/4	26,7	76	3	43	28,1	25,9	3/4	26,7	51	3	43	28,1	25,9
1	33,4	102	3	51	35,0	32,6	1	33,4	51	3	51	35,0	32,6
1 1/4	42,2	102	5	64	43,6	41,4	1 1/4	42,2	51	5	64	43,6	41,4
1 1/2	48,3	102	6	73	49,9	47,5	1 1/2	48,3	51	6	73	49,9	47,5
2	60,3	152	8	92	62,4	59,5	2	60,3	64	8	92	62,4	59,5
2 1/2	73,0	152	8	105	75,3	72,2	2 1/2	73,0	64	8	105	75,3	72,2
3	88,9	152	10	127	91,3	88,1	3	88,9	64	10	127	91,3	88,1
3 1/2	101,6	152	10	140	104,0	100,8	3 1/2	101,6	76	10	140	104,0	100,8
4	114,3	152	11	157	116,7	113,5	4	114,3	76	11	157	116,7	113,5
5	141,3	203	11	186	144,3	140,5	5	141,3	76	11	186	144,3	140,5
6	168,3	203	13	216	171,3	167,5	6	168,3	89	13	216	171,3	167,5
8	219,1	203	13	270	222,1	218,3	8	219,1	102	13	270	222,1	218,3
10	273,0	254	13	324	277,2	272,3	10	273,0	127	13	324	277,2	272,3
12	323,8	254	13	381	328,0	323,1	12	323,8	152	13	381	328,0	323,1
14	355,6	305	13	413	359,9	354,8	14	355,6	152	13	413	359,9	354,8
16	406,4	305	13	470	411,0	405,6	16	406,4	152	13	470	411,0	405,6
18	457,0	305	13	533	462,0	456,0	18	457,0	152	13	533	462,0	456,0
20	508,0	305	13	584	514,0	507,0	20	508,0	152	13	584	514,0	507,0
22	559,0	305	13	641	565,0	558,0	22	559,0	152	13	641	565,0	558,0
24	610,0	305	13	692	616,0	609,0	24	610,0	152	13	692	616,0	609,0

When used with the higher pressure flanges, it may be necessary to increase the length of stub ends in sizes 12 in and larger. Such increase in length shall be a matter of agreement between the manufacturer and purchaser.

R—These dimensions conform to the radius established for lap-joint flanges in American National Standard Steel Pipe Flanges and Flanged Fittings ANSIB16.5.

G—The dimension conform to standard machined facings shown in the American National Standard Steel Pipe Flanges and Flanged Fittings ANSIB16.5.

The back face of the lap shall be machined to conform to the surface on which it seats. Where ring joint facings are to be applied used dimension 'K' as given in ANSIB16.5.

F—When special facings such as tongue-groove, male-

female, etc. are employed, additional lap thickness must be provided and such additional thickness shall be in addition to (not included in) the basic length 'F'.

Steel fittings, flange, piping materials specialist

End Caps



ENDCAPS(dimensions in mm)

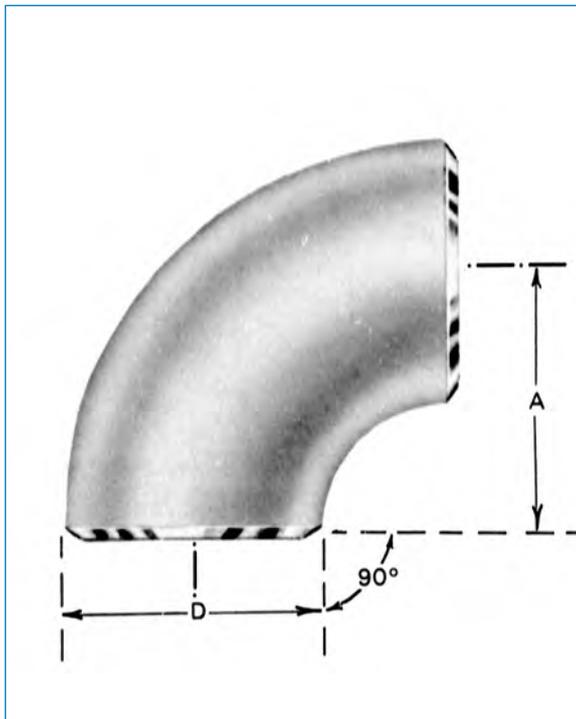
ASMEB16.9					MSSSP-75				
N.B.	O.D.at Bevel	# E	Limiting W.T. for Length E	³ E ₁	N.B.	O.D.at Bevel	# E	Limiting W.T. for Length E	E ₁
1/2	21,3	25	4,57	25					
3/4	26,7	25	3,81	25					
1	33,4	38	4,57	38					
1 1/2	42,2	38	4,83	38					
1 1/2	48,3	38	5,08	38					
2	60,3	38	5,59	44					
2 1/2	73,0	38	7,11	51					
3	88,9	51	7,62	64					
3 1/2	101,6	64	8,13	76					
4	114,3	64	8,64	76					
5	141,3	76	9,65	89					
6	168,3	89	10,92	102					
8	219,1	102	12,70	127					
10	273,0	127	12,70	152					
12	323,8	152	12,70	178					
14	355,6	165	12,70	191					
16	406,4	178	12,70	203	16	406,4	178	25,4	203
18	457	203	12,70	229	18	457	203	25,4	229
20	508	229	12,70	254	20	508	229	25,4	254
22	559	254	12,70	254	22	559	254	25,4	279
24	610	267	12,70	305	24	610	267	25,4	305
26	660	267	–	–	26	660	267	25,4	305
28	711	267	–	–	28	711	267	25,4	305
30	762	267	–	–	30	762	267	25,4	305
32	813	267	–	–	32	813	267	25,4	305
34	864	267	–	–	34	864	267	25,4	305
36	914	267	–	–	36	914	267	25,4	305
38	965	305	–	–	38	965	305	25,4	343
40	1016	305	–	–	40	1016	305	25,4	343
42	1067	305	–	–	42	1067	305	25,4	343
44	1118	343	–	–	44	1118	343	25,4	381
46	1168	343	–	–	46	1168	343	25,4	381
48	1219	343	–	–	48	1219	343	25,4	381

*The shape of these caps shall be ellipsoidal and shall conform to the shape requirements as given in ASME Boiler and Pressure Vessel Code.

#Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length E".

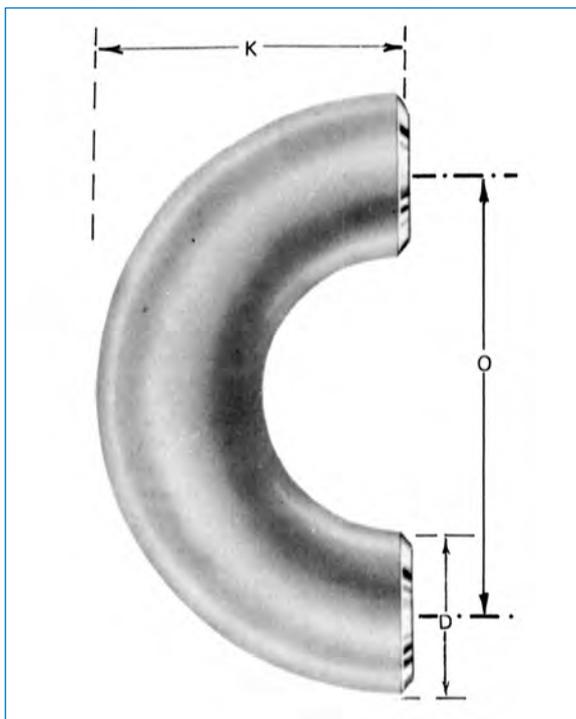
*³ Length E₁, applies for thickness greater than that given in column "Limiting Wall Thickness" for sizes 24 in. and smaller. For type B16.9 sizes 26 in. and larger the length E₁ shall be by agreement between manufacturer and purchaser.

Short radius elbows



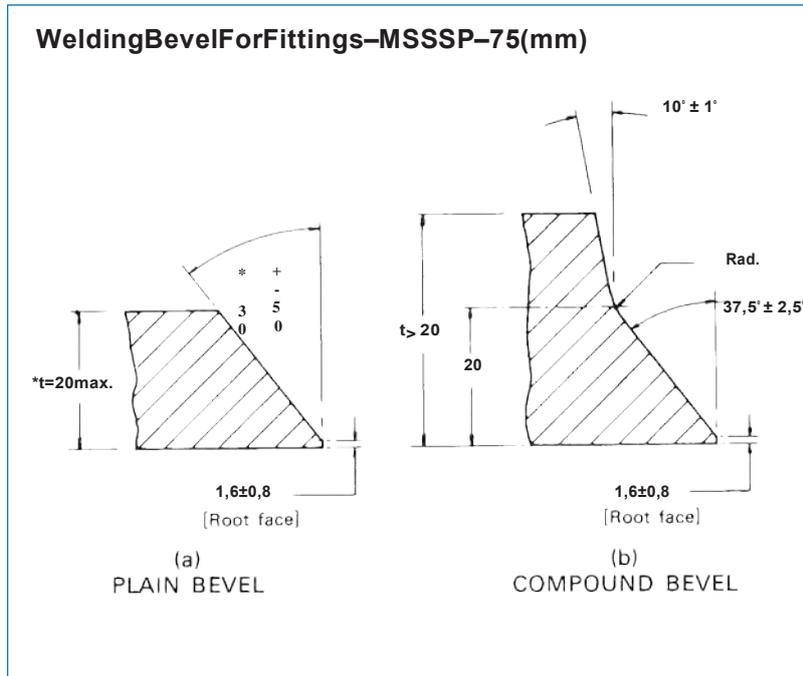
ASME B16.28 [mm]						
N.B. (inch)	O.D. at Bevel-D			Center to End dim.-A		
	Min.	Nom.	Max.	Min.	Nom.	Max.
1	32	33	34	23	25	27
1½	41	42	43	30	32	34
1½	47	48	49	36	38	40
2	59	60	61	49	51	53
2½	72	73	74	62	64	66
3	88	89	90	74	76	78
3½	101	102	103	87	89	91
4	113	114	116	100	102	104
5	140	141	144	125	127	129
6	167	168	171	150	152	154
8	217	219	221	201	203	205
10	270	273	277	252	254	256
12	321	324	328	302	305	308
14	353	356	360	353	356	359
16	403	406	410	403	406	409
18	454	457	461	454	457	460
20	503	508	514	505	508	511
22	554	559	565	556	559	562
24	605	610	616	607	610	613

Short radius 180° returns

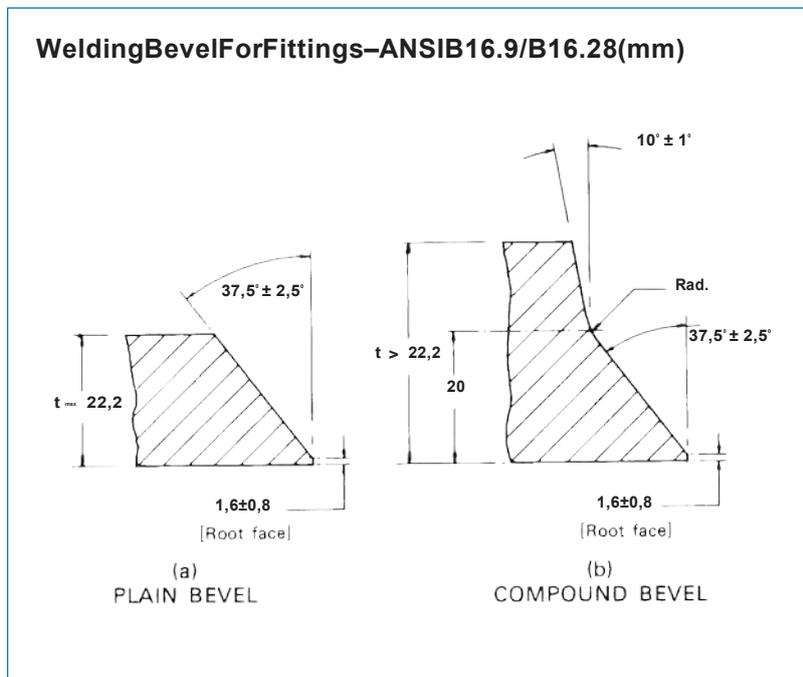


ASME B16.28 [mm]								
N.B. (inch)	O.D. at Bevel-D			Center to Center-O			Back to Bevel Face-K Min. Nom. Max.	
	Min.	Nom.	Max.	Min.	Nom.	Max.	Min.	Max.
1	32	33	34	44	51	58	34	48
1½	41	42	43	57	64	71	45	59
1½	47	48	49	69	76	83	55	69
2	59	60	61	95	102	109	74	88
2½	72	73	74	120	127	134	93	107
3	88	89	90	145	152	159	114	128
3½	101	102	103	171	178	185	133	147
4	113	114	116	196	203	210	152	166
5	140	141	144	247	254	261	190	204
6	167	168	171	298	305	312	230	244
8	217	219	221	399	406	413	306	320
10	270	273	277	498	508	518	384	398
12	321	324	328	600	610	620	460	474
14	353	356	360	701	711	721	526	540
16	403	406	410	803	813	823	603	617
18	454	457	461	904	914	924	679	693
20	503	508	514	1006	1016	1026	755	769
22	554	559	565	1108	1118	1128	831	845
24	605	610	616	1209	1219	1229	907	921

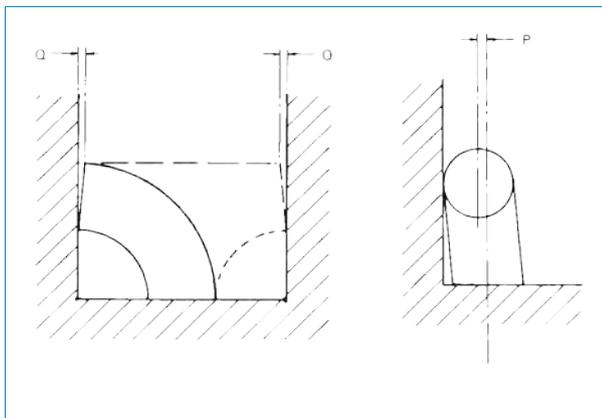
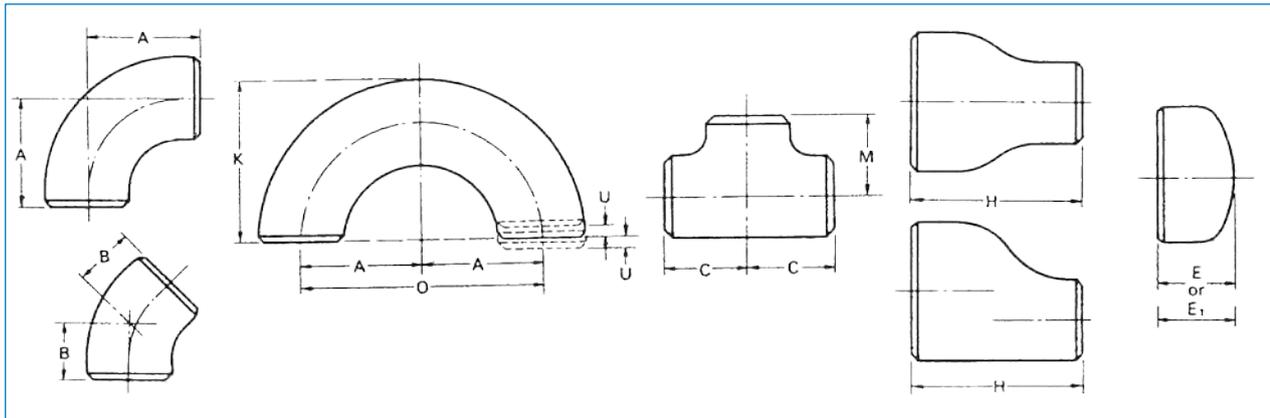
Bevel types



*NOTE: Plain bevel up to $t \leq 25.4$ mm at manufacturer's option.
 Plain bevel may be 37.5° up to 24° at manufacturer's option.



Tolerances



TOLERANCE (mm) FORMSSSP-75

All Fittings													
Nominal Pipe Size	Inside Diameter at End	Wall Thickness	Out-of-roundness	Center-to-end Dimensions A, B, C, M			Overall Length H	Overall Length E	Angularity Off Angle Q	Elbows Off Plane P	Reducers Off Plane P		
			At ends of fittings		Throughout Body of Elbows	Tees & 1.5 Relbows	3 Relbows	Reducers	Caps				
			Elbows	Other									
16 to 24	±2.3	-0.3	4.8	3.1	2.5%	±2.3	±3.1	±2.3	±6.4	1.6	6.4	2.5%	
26 to 36	±2.3	-0.3	Note 5	3.1	2.5%	±3.1	±6.4	±4.8	±9.7	2.3	12.7	2.5%	
38 to 48	±3.1	-0.3	Note 5	3.1	2.5%	±4.8	±9.7	±9.7	±9.7	3.1	19.1	2.5%	

NOTE: ¹⁾ The inside diameter at ends shall be determined by circumferential measurements, and the tolerance refer to variations from nominal I.D. calculations by (ODnom - nom).
²⁾ Out-of-roundness tolerance shall be the difference between the maximum and minimum diameters measured on any radial cross-section.
³⁾ Minus 0.3mm except that isolated non-continuous reduction are permitted in accordance with subsection 13.2.1 Excess thickness whether on inside or outside is to be treated in accordance with sketch given in Figure 3.
⁴⁾ When elbows are intended for field segmenting, out-of-roundness tolerance may be furnished to 1% by agreement between the manufacturer and the purchaser. It is recognized that extra thickness, if any, may be on the I.D.
⁵⁾ Out-of-roundness tolerance at ends shall be 1% of diameter for NPS 26 and larger. Percent of O.D.

NOTE: Outside diameter may be tapered at angle to 30° beyond weld bevel.

Steel fittings, flange, piping materials specialist

TOLERANCES- ASMEB16.9/B16.28

All Fittings				90-Deg and 45-Deg Elbows and Tees	Reducers and Lap-Joint Stub Ends	Caps	180-Deg Returns			Lap-Joint Ends	
Nominal Pipe Size (inch)	Outside* Diameter at Bevel (1),(2)	Inside Diameter at End (1),(3),(4)	Wall Thickness (3)	Centre-to-End Dimension A,B,C,M	Overall Length F,H	Overall Length E	Centre-to-Centre Dimension O	Back-to-Face Dimension K	Alignment of Ends U	Outside Diameter of Lap G	Fillet Radius of Lap R
1/2-2½	+1.6 -0.8	±0.8		±2	±2	±3	±6	±6	±1	+0 -1	+0 -1
3-3½	±1.6	±1.6	Not less than 87.5% of nominal thickness	±2	±2	±3	±6	±6	±1	+0 -1	+0 -1
4	±1.6	±1.6		±2	±2	±3	±6	±6	±1	+0 -1	+0 -2
5-8	+2.4 -1.6	±1.6		±2	±2	±6	±6	±6	±1	+0 -1	+0 -2
10-18	+4.0 -3.2	±3.2		±2	±2	±6	±10	±6	±2	+0 -2	+0 -2
20-24	+6.4 -4.8	±4.8		±2	±2	±6	±10	±6	±2	+0 -2	+0 -2
26-30	+6.4 -4.8	±4.8		±3	±5	±10	-	-	-	-	-
32-48	+6.4 -4.8	±4.8		±5	±5	±10	-	-	-	-	-

NOTE: ¹ Out-of-round is the sum of absolute values of plus and minus tolerance.

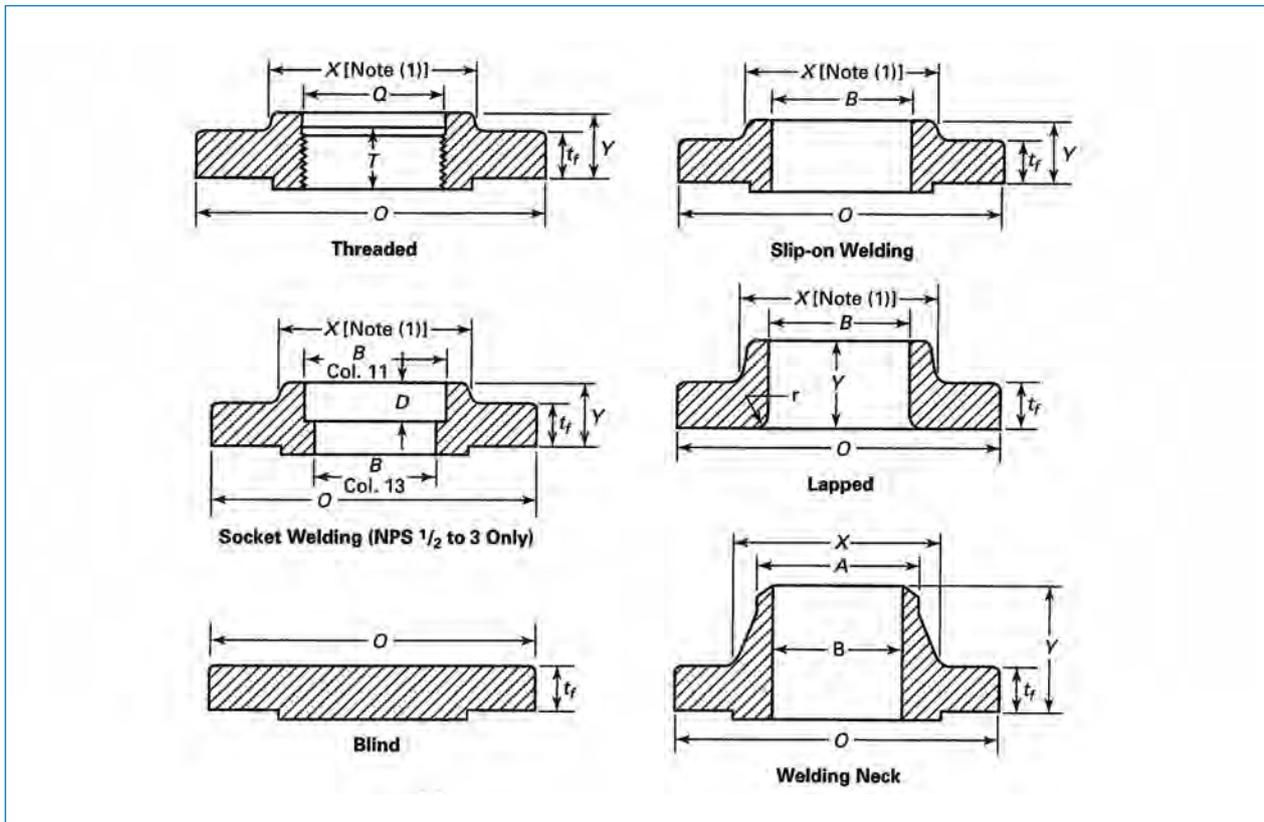
² This tolerance may be exceeded in localized areas of formed fittings where increased wall thickness is required to meet design requirements of para. 2.2.

³ The inside diameter and the nominal wall thicknesses at ends are to be specified by the purchaser.

⁴ Unless otherwise specified by the purchaser, these tolerances apply to the nominal inside diameter, which equals the difference between the nominal outside and twice the nominal wall thickness.

Nominal Pipe Size (inch)	Angularity Tol.	
	Off Angle Q (mm)	Off Plane P (mm)
1/2-4	1	2
5-8	2	4
10-12	3	5
14-16	3	6
18-24	4	10
26-30	5	10
32-42	5	13
44-48	5	19

CLASS 150 FLANGES

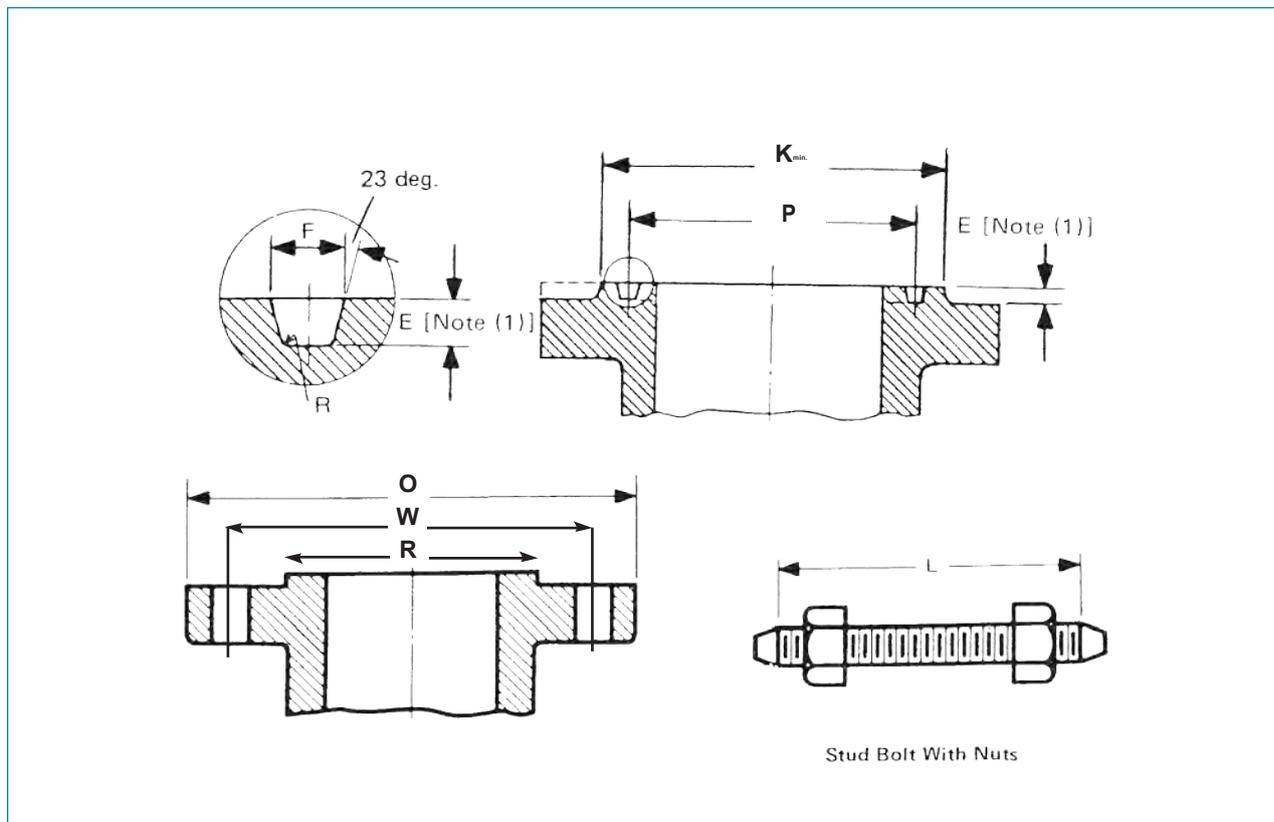


DIMENSIONS OF CLASS 150 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Flanged dimensions		HUB dimensions		Length Through HUB		Threaded flange		SW	Bore			
Nominal Pipe Size	OD flange	Thickn.	Large end	Small end	Thr. Slip, Sw	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On, SW	Lapped	Weld neck
NPS	O	tf min. #	X	A	Y	Y	Y	Q min.	T min.	D	B min.	B min.	B
1/2	90,0	9,6	30,0	21,3	14,0	16,0	46,0	...	16,0	10,0	22,2	22,9	15,8
3/4	100,0	11,2	38,0	26,7	14,0	16,0	51,0	...	16,0	11,0	27,7	28,2	20,9
1	110,0	12,7	49,0	33,4	16,0	17,0	54,0	...	17,0	13,0	34,5	34,9	26,6
1 1/4	115,0	14,3	59,0	42,2	19,0	21,0	56,0	...	21,0	14,0	43,2	43,7	35,1
1 1/2	125,0	15,9	65,0	48,3	21,0	22,0	60,0	...	22,0	16,0	49,5	50,0	40,9
2	150,0	17,5	78,0	60,3	24,0	25,0	62,0	...	25,0	17,0	61,9	62,5	52,5
2 1/2	180,0	20,7	90,0	73,0	27,0	29,0	68,0	...	29,0	19,0	74,6	75,4	62,7
3	190,0	22,3	108,0	88,9	29,0	30,0	68,0	...	30,0	21,0	90,7	91,4	77,9
3 1/2	215,0	22,3	122,0	101,6	30,0	32,0	70,0	...	32,0	...	103,4	104,1	90,1
4	230,0	22,3	135,0	114,3	32,0	33,0	75,0	...	33,0	...	116,1	116,8	102,3
5	255,0	22,3	164,0	141,3	35,0	36,0	87,0	...	36,0	...	143,8	144,4	128,2
6	280,0	23,9	192,0	168,3	38,0	40,0	87,0	...	40,0	...	170,7	171,4	154,1
8	345,0	27,0	246,0	219,1	43,0	44,0	100,0	...	44,0	...	221,5	222,2	202,7
10	405,0	28,6	305,0	273,0	48,0	49,0	100,0	...	49,0	...	276,2	277,4	254,6
12	485,0	30,2	365,0	323,8	54,0	56,0	113,0	...	56,0	...	327,0	328,2	304,8
14	535,0	33,4	400,0	355,6	56,0	79,0	125,0	...	57,0	...	359,2	360,2	To be specified
16	595,0	35,0	457,0	406,4	62,0	87,0	125,0	...	64,0	...	410,5	411,2	specified
18	635,0	38,1	505,0	457,0	67,0	97,0	138,0	...	68,0	...	461,8	462,3	by purchaser
20	700,0	41,3	559,0	508,0	71,0	103,0	143,0	...	73,0	...	513,1	514,4	purchaser
24	815,0	46,1	663,0	610,0	81,0	111,0	151,0	...	83,0	...	616,0	616,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for groove depth
 # Lapped flanges shall be 1.6mm thicker than table value.

CLASS 150 FLANGES

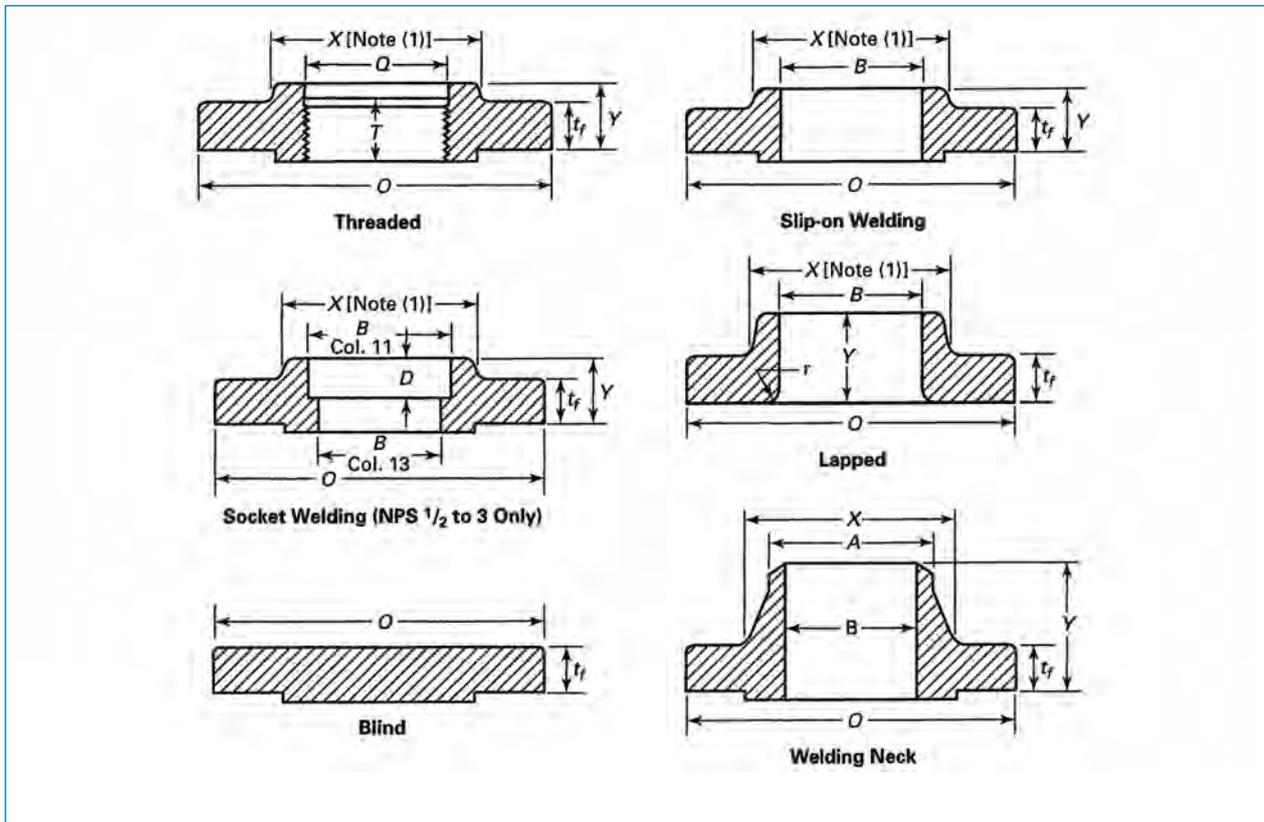


DIMENSIONS OF CLASS 150 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Bolthead drilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	Noof bolts	Bolt diam.	2,0mm R F	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2	34,9	2,0	...	...	...	...	...	...	60,3	15,9	4	1/2	55,0	...
3/4	42,9	2,0	...	...	...	...	...	...	69,9	15,9	4	1/2	65,0	...
1	50,8	2,0	63,5	6,35	R15	47,63	6,35	8,74	79,4	15,9	4	1/2	65,0	75,0	
1 1/4	63,5	2,0	73,0	6,35	R17	57,15	6,35	8,74	88,9	15,9	4	1/2	70,0	85,0	
1 1/2	73,0	2,0	82,5	6,35	R19	65,07	6,35	8,74	98,4	15,9	4	1/2	70,0	85,0	
2	92,1	2,0	102,0	6,35	R22	82,55	6,35	8,74	120,7	19,1	4	5/8	85,0	95,0	
2 1/2	104,8	2,0	121,0	6,35	R25	101,60	6,35	8,74	139,7	19,1	4	5/8	90,0	100,0	
3	127,0	2,0	133,0	6,35	R29	114,30	6,35	8,74	152,4	19,1	4	5/8	90,0	100,0	
3 1/2	139,7	2,0	154,0	6,35	R33	131,78	6,35	8,74	177,8	19,1	8	5/8	90,0	100,0	
4	157,2	2,0	171,0	6,35	R36	149,23	6,35	8,74	190,5	19,1	8	5/8	90,0	100,0	
5	185,7	2,0	194,0	6,35	R40	171,45	6,35	8,74	215,9	22,2	8	3/4	95,0	110,0	
6	215,9	2,0	219,0	6,35	R43	193,68	6,35	8,74	241,3	22,2	8	3/4	100,0	115,0	
8	269,9	2,0	273,0	6,35	R48	247,65	6,35	8,74	298,5	22,2	8	3/4	110,0	120,0	
10	323,8	2,0	330,0	6,35	R52	304,80	6,35	8,74	362,0	25,4	12	7/8	115,0	125,0	
12	381,0	2,0	406,0	6,35	R56	381,00	6,35	8,74	431,8	25,4	12	7/8	120,0	135,0	
14	412,8	2,0	425,0	6,35	R59	396,88	6,35	8,74	476,3	28,6	12	1	135,0	145,0	
16	469,9	2,0	483,0	6,35	R64	454,03	6,35	8,74	539,8	28,6	16	1	135,0	145,0	
18	533,4	2,0	546,0	6,35	R68	517,53	6,35	8,74	577,9	31,8	16	1 1/2	145,0	160,0	
20	584,2	2,0	597,0	6,35	R72	558,80	6,35	8,74	635,0	31,8	20	1 1/2	160,0	170,0	
24	692,2	2,0	711,0	6,35	R76	673,10	6,35	8,74	749,3	34,9	20	1 1/4	170,0	185,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 300 FLANGES

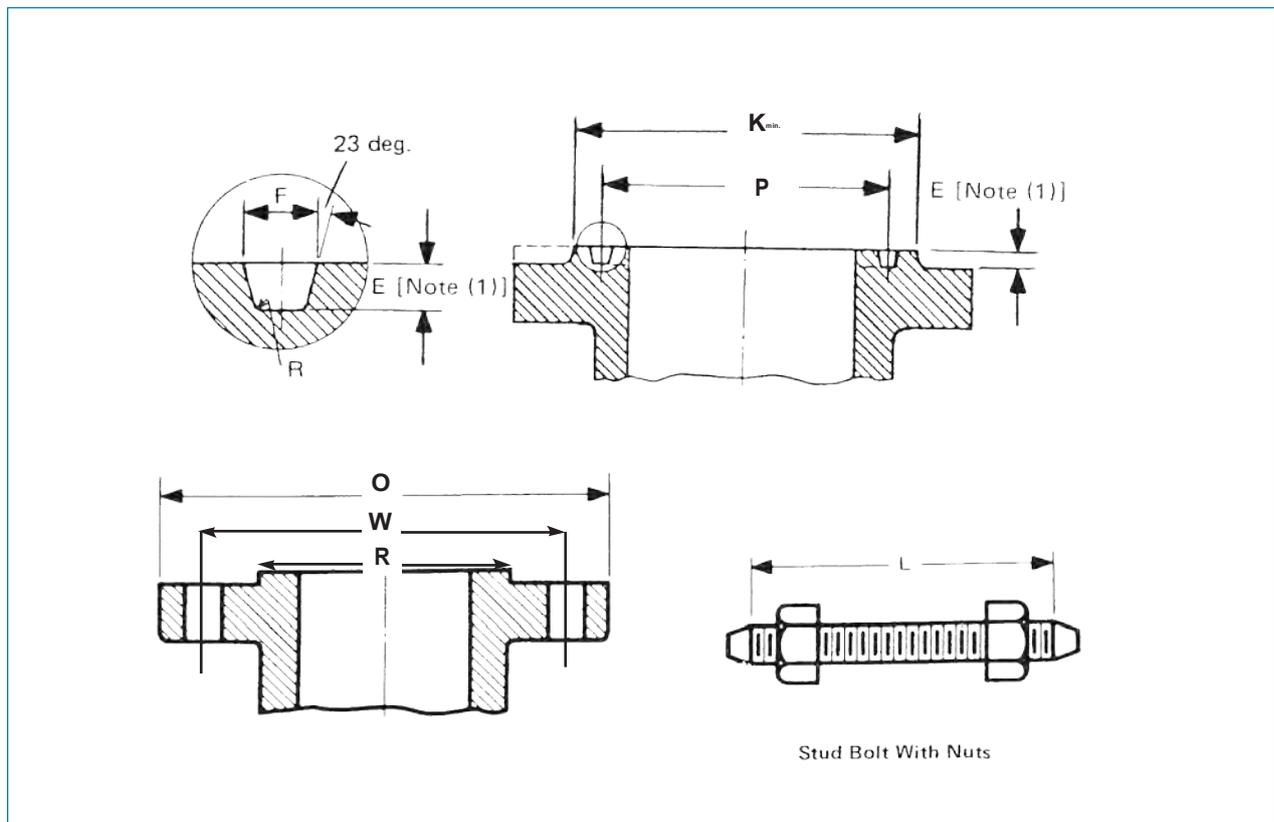


DIMENSIONS OF CLASS 300 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Flanged dimensions		HUB dimensions		Length Through HUB			Threaded flange		SW	Bore		
Nominal Pipe Size	OD flange	Thickn.	Large end	Small end	Thr. Slip, Sw.	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On, SW	Lapped	Weld neck
NPS	O	tf min. #	X	A	Y	Y	Y	Q min.	T min.	D	B min.	B min.	B
1/2	95,0	12,7	38,0	21,3	21,0	22,0	51,0	23,6	16,0	10,0	22,2	22,9	15,8
3/4	115,0	14,3	48,0	26,7	24,0	25,0	56,0	29,0	16,0	11,0	27,7	28,2	20,9
1	125,0	15,9	54,0	33,4	25,0	27,0	60,0	35,8	18,0	13,0	34,5	34,9	26,6
1 1/4	135,0	17,5	64,0	42,2	25,0	27,0	64,0	44,4	21,0	14,0	43,2	43,7	35,1
1 1/2	155,0	19,1	70,0	48,3	29,0	30,0	67,0	50,3	23,0	16,0	49,5	50,0	40,9
2	165,0	20,7	84,0	60,3	32,0	33,0	68,0	63,5	29,0	17,0	61,9	62,5	52,5
2 1/2	190,0	23,9	100,0	73,0	37,0	38,0	75,0	76,2	32,0	19,0	74,6	75,4	62,7
3	210,0	27,0	117,0	88,9	41,0	43,0	78,0	92,2	32,0	21,0	90,7	91,4	77,9
3 1/2	230,0	28,6	133,0	101,6	43,0	44,0	79,0	104,9	37,0	...	103,4	104,1	90,1
4	255,0	30,2	146,0	114,3	46,0	48,0	84,0	117,6	37,0	...	116,1	116,8	102,3
5	280,0	33,4	178,0	141,3	49,0	51,0	97,0	144,4	43,0	...	143,8	144,4	128,2
6	320,0	35,0	206,0	168,3	51,0	52,0	97,0	171,4	47,0	...	170,7	171,4	154,1
8	380,0	39,7	260,0	219,1	60,0	62,0	110,0	222,2	51,0	...	221,5	222,2	202,7
10	445,0	46,1	321,0	273,0	65,0	95,0	116,0	276,2	56,0	...	276,2	277,4	254,6
12	520,0	49,3	375,0	323,8	71,0	102,0	129,0	328,6	61,0	...	327,0	328,2	304,8
14	585,0	52,4	425,0	355,6	75,0	111,0	141,0	360,4	64,0	...	359,2	360,2	To be
16	650,0	55,6	483,0	406,4	81,0	121,0	144,0	411,2	69,0	...	410,5	411,2	specified
18	710,0	58,8	533,0	457,0	87,0	130,0	157,0	462,0	70,0	...	461,8	462,3	by
20	775,0	62,0	587,0	508,0	94,0	140,0	160,0	512,8	74,0	...	513,1	514,4	purchaser
24	915,0	68,3	702,0	610,0	105,0	152,0	167,0	614,4	83,0	...	616,0	616,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth
 #Lapped flanges shall be 1.6mm thicker than table value.

CLASS 300 FLANGES

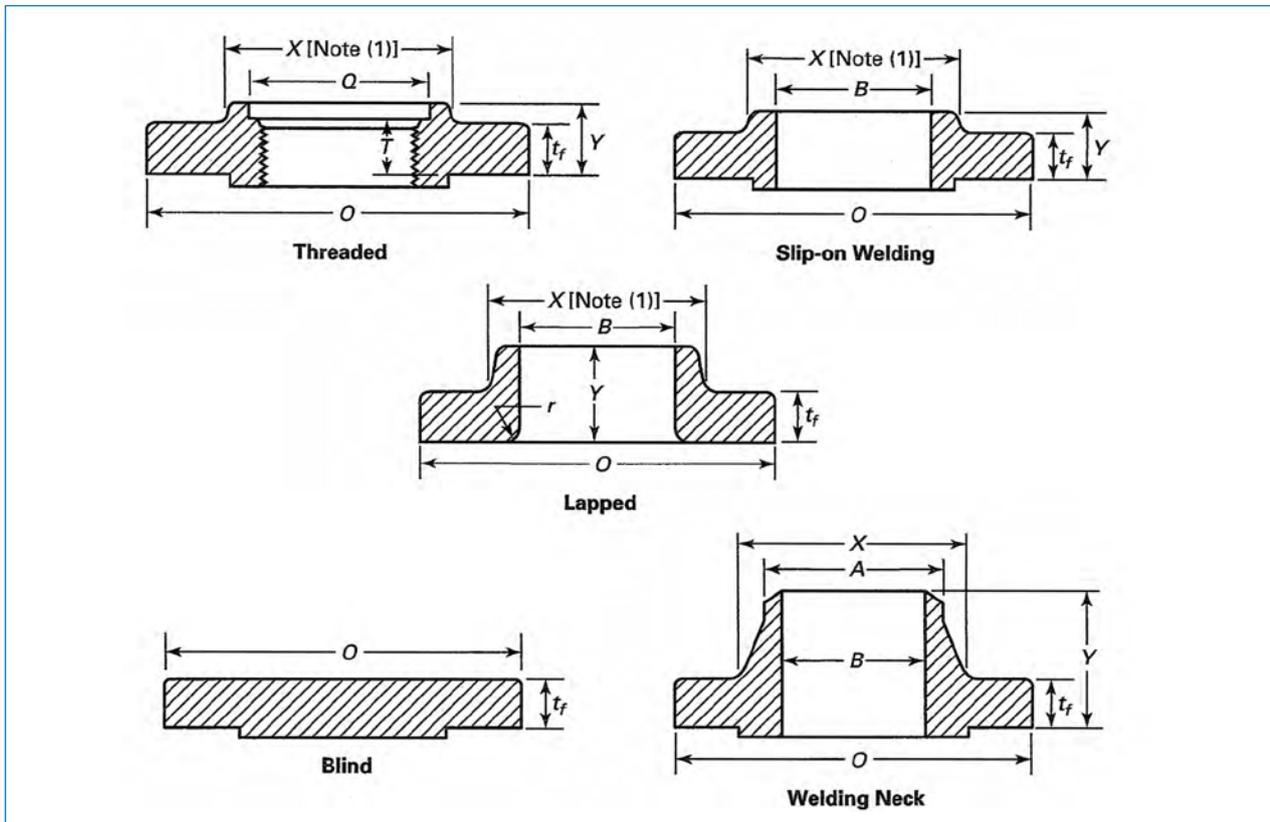


DIMENSIONS OF CLASS 300 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Bolt hole drilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of bolts	Bolt diam.	2,0mm R F	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2	34,9	2,0	51,0	5,54	R11	34,14	5,54	7,14	66,7	15,9	4	1/2	65,0	75,0	
3/4	42,9	2,0	63,5	6,35	R13	42,88	6,35	8,74	82,6	19,1	4	5/8	75,0	90,0	
1	50,8	2,0	70,0	6,35	R16	50,80	6,35	8,74	88,9	19,1	4	5/8	75,0	90,0	
1 1/4	63,5	2,0	79,5	6,35	R18	60,33	6,35	8,74	98,4	19,1	4	5/8	85,0	95,0	
1 1/2	73,0	2,0	90,5	6,35	R20	68,27	6,35	8,74	114,3	22,2	4	3/4	90,0	100,0	
2	92,1	2,0	108,0	7,92	R23	82,55	7,92	11,91	127,0	19,1	8	5/8	90,0	100,0	
2 1/2	104,8	2,0	127,0	7,92	R26	101,60	7,92	11,91	149,2	22,2	8	3/4	100,0	115,0	
3	127,0	2,0	146,0	7,92	R31	123,83	7,92	11,91	168,3	22,2	8	3/4	110,0	120,0	
3 1/2	139,7	2,0	159,0	7,92	R34	131,78	7,92	11,91	184,2	22,2	8	3/4	110,0	125,0	
4	157,2	2,0	175,0	7,92	R37	149,23	7,92	11,91	200,0	22,2	8	3/4	115,0	125,0	
5	185,7	2,0	210,0	7,92	R41	180,98	7,92	11,91	235,0	22,2	8	3/4	120,0	135,0	
6	215,9	2,0	241,0	7,92	R45	211,12	7,92	11,91	269,9	22,2	12	3/4	120,0	140,0	
8	269,9	2,0	302,0	7,92	R49	269,88	7,92	11,91	330,2	25,4	12	7/8	140,0	150,0	
10	323,8	2,0	356,0	7,92	R53	323,85	7,92	11,91	387,4	28,6	16	1	160,0	170,0	
12	381,0	2,0	413,0	7,92	R57	381,00	7,92	11,91	450,8	31,8	16	1 1/8	170,0	185,0	
14	412,8	2,0	457,0	7,92	R61	419,10	7,92	11,91	514,4	31,8	20	1 1/8	180,0	190,0	
16	469,9	2,0	508,0	7,92	R65	469,90	7,92	11,91	571,5	34,9	20	1 1/4	190,0	205,0	
18	533,4	2,0	575,0	7,92	R69	533,40	7,92	11,91	628,6	34,9	24	1 1/4	195,0	210,0	
20	584,2	2,0	635,0	9,53	R73	584,20	9,53	13,49	685,8	34,9	24	1 1/2	205,0	220,0	
24	692,2	2,0	749,0	11,13	R77	692,15	11,13	16,66	812,8	41,3	24	1 1/2	230,0	255,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 400 FLANGES

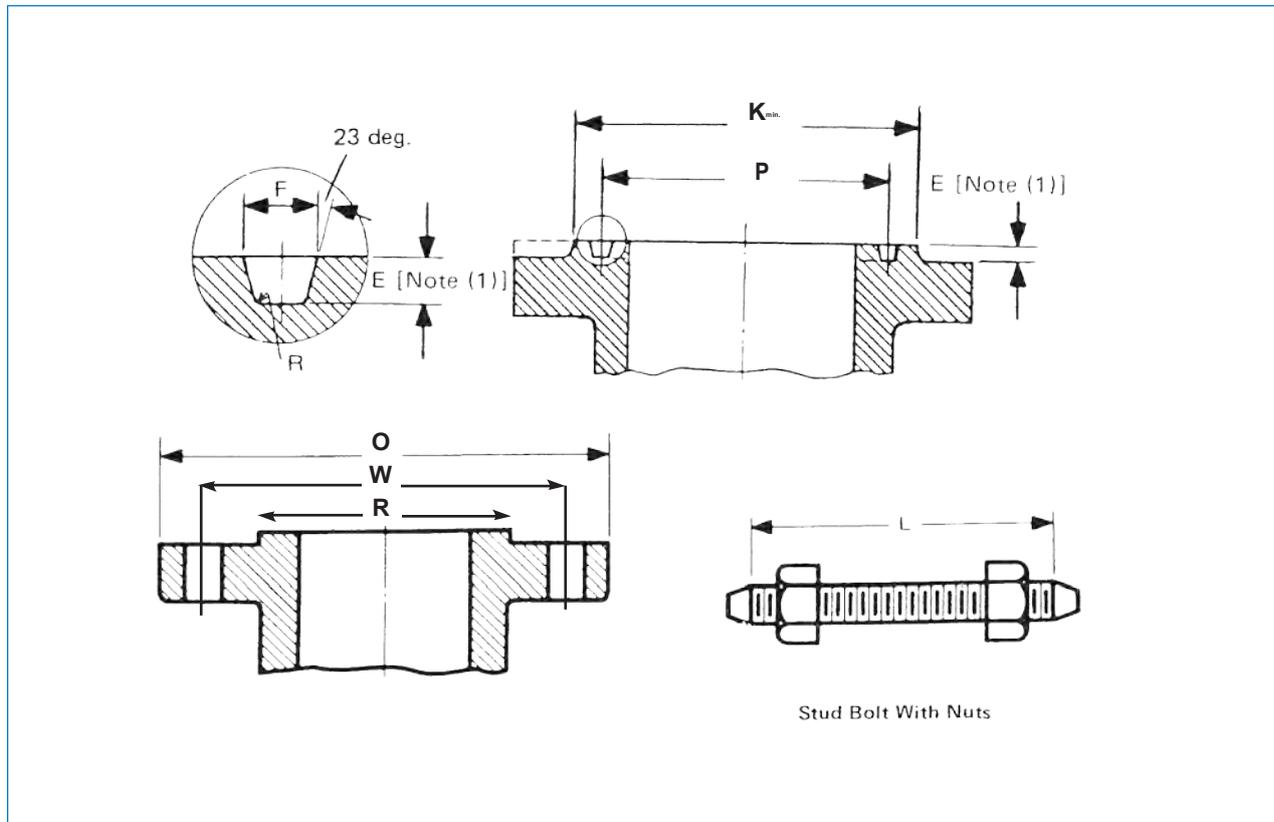


DIMENSIONS OF CLASS 400 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nominal Pipe Size	Flanged dimensions		HUB dimensions		Length Through HUB			Threaded flange		SW	Bore		
	OD flange	Thickn.	Large end	Small end	Thr. Slip.	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On,	Lapped	Weld neck
	NPS	O	tf min.	X	A	Y	Y	Y	Qmin.	Tmin.	D	Bmin.	Bmin.	B
1/2													
3/4													
1													
1 1/4					Use Class 600 dimensions in these sizes								
1 1/2													
2													
2 1/2													
3													
3 1/2													
4	255,0	35,0	146,0	114,3	51,0	51,0	89,0	117,6	37,0	...	116,1	116,8	
5	280,0	38,1	178,0	141,3	54,0	54,0	102,0	144,4	43,0	...	143,8	144,5	To be
6	320,0	41,3	206,0	168,3	57,0	57,0	103,0	171,4	46,0	...	170,7	171,4	specified
8	380,0	47,7	260,0	219,1	68,0	68,0	117,0	222,2	51,0	...	221,5	222,2	by
10	445,0	54,0	321,0	273,0	73,0	102,0	124,0	276,2	56,0	...	276,2	277,4	purchaser
12	520,0	57,2	375,0	323,8	79,0	108,0	137,0	328,6	61,0	...	327,0	328,2	
14	585,0	60,4	425,0	355,6	84,0	117,0	149,0	360,4	64,0	...	359,2	360,2	
16	650,0	63,5	483,0	406,4	94,0	127,0	152,0	411,2	69,0	...	410,5	411,2	
18	710,0	66,7	533,0	457,0	98,0	137,0	165,0	462,0	70,0	...	461,8	462,3	
20	775,0	69,9	587,0	508,0	102,0	146,0	168,0	512,8	74,0	...	513,1	514,4	
24	915,0	76,2	702,0	610,0	114,0	159,0	175,0	614,4	83,0	...	616,0	616,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 400 FLANGES

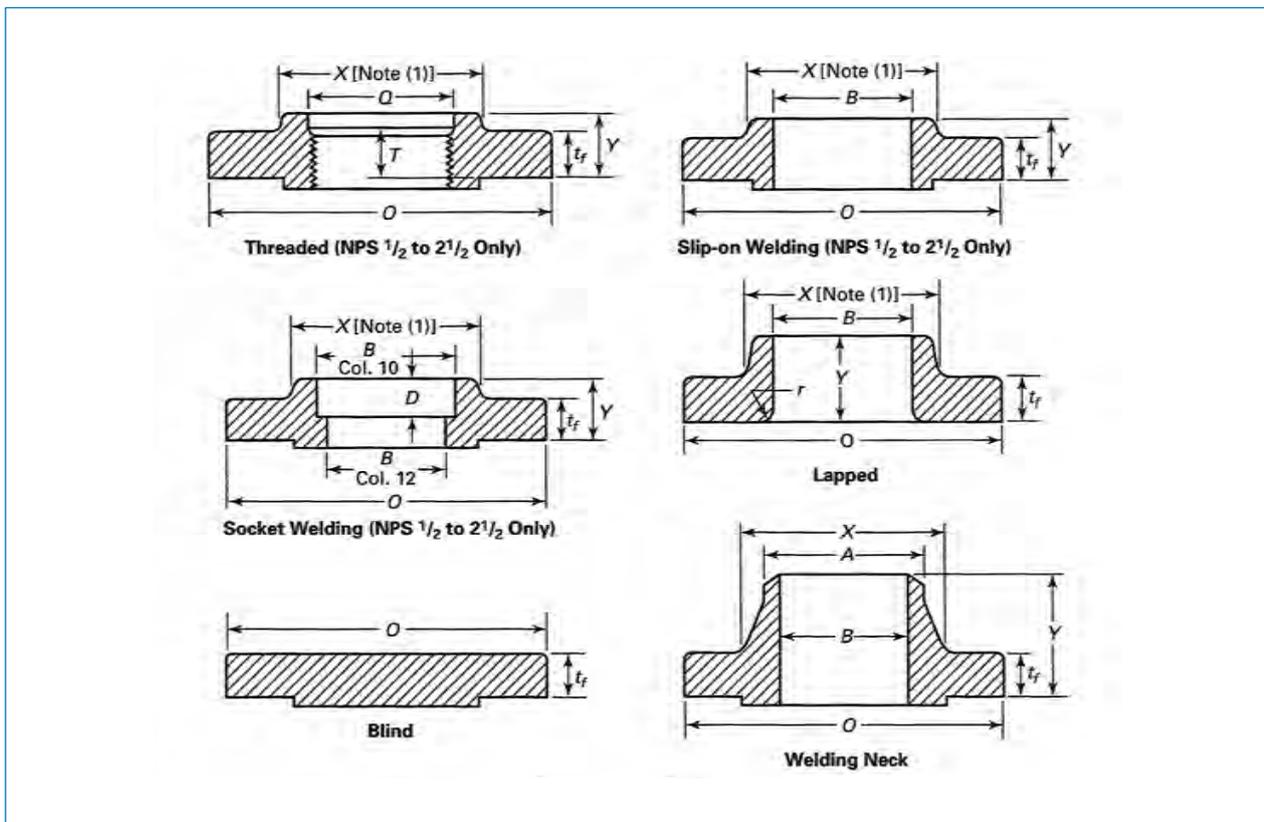


DIMENSIONS OF CLASS 400 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Bolt hole drilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of RF	Bolt diam.	7,0 mm RF	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2															
3/4															
1															
1 1/4					Use Class 600 dimensions in these sizes										
1 1/2															
2															
2 1/2															
3															
3 1/2															
4	157,2	7,0	175,0	7,92	R37	149,23	7,92	11,91	200,0	25,4	8	7/8	140,0	140,0	
5	185,7	7,0	210,0	7,92	R41	180,98	7,92	11,91	235,0	25,4	8	7/8	145,0	145,0	
6	215,9	7,0	241,0	7,92	R45	211,12	7,92	11,91	269,9	25,4	12	7/8	150,0	150,0	
8	269,9	7,0	302,0	7,92	R49	269,88	7,92	11,91	330,0	28,6	12	1	170,0	170,0	
10	323,8	7,0	356,0	7,92	R53	323,85	7,92	11,91	387,4	31,8	16	1 1/8	190,0	190,0	
12	381,0	7,0	413,0	7,92	R57	381,00	7,92	11,91	450,8	34,9	16	1 1/4	205,0	205,0	
14	412,8	7,0	457,0	7,92	R61	419,10	7,92	11,91	514,4	34,9	20	1 1/4	210,0	210,0	
16	469,9	7,0	508,0	7,92	R65	469,90	7,92	11,91	571,5	38,1	20	1 3/8	220,0	220,0	
18	533,4	7,0	575,0	7,92	R69	533,40	7,92	11,91	628,6	38,1	24	1 3/8	230,0	230,0	
20	584,2	7,0	635,0	9,53	R73	584,20	9,53	13,49	685,8	41,3	24	1 1/2	240,0	250,0	
24	692,2	7,0	749,0	11,13	R77	692,15	11,13	16,66	812,8	47,6	24	1 1/2	265,0	280,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters.
 (1) the tolerance for E is only applicable for groove depth

CLASS 600 FLANGES

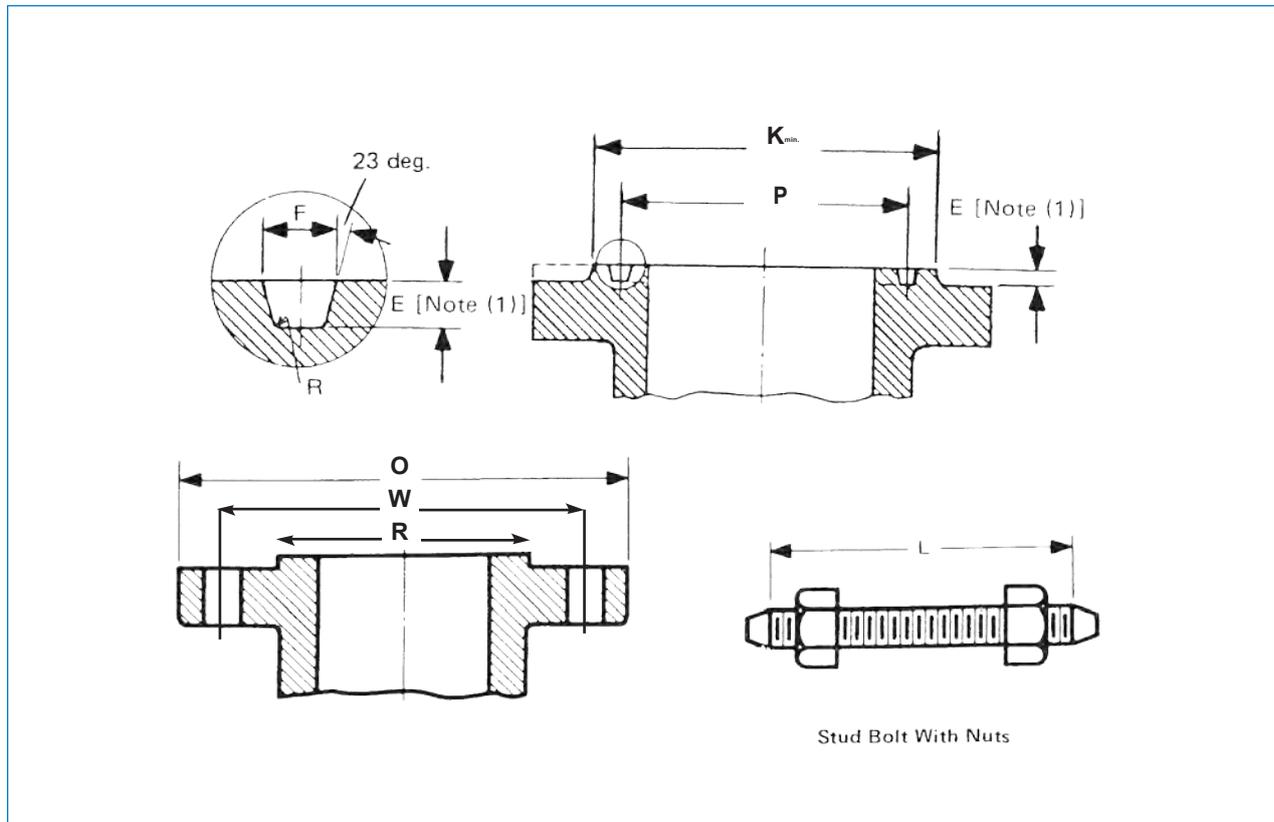


DIMENSIONS OF CLASS 600 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nominal Pipe Size	Flanged dimensions		HUB dimensions		Length Through HUB			Threaded flange		SW Bore			
	OD flange	Thickn.	Large end	Small end	Thr. Slip. SW	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On, SW	Lapped	Weld neck
	NPS	O	tf min.	X	A	Y	Y	Y	Q min.	T min.	D	B min.	B min.	B
1/2	95,0	14,3	38,0	21,3	22,0	22,0	52,0	23,6	16,0	10,0	22,2	22,9	
3/4	115,0	15,9	48,0	26,7	25,0	25,0	57,0	29,0	16,0	11,0	27,7	28,2	
1	125,0	17,5	54,0	33,4	27,0	27,0	62,0	35,8	18,0	13,0	34,5	34,9	
1 1/4	135,0	20,7	64,0	42,2	29,0	29,0	67,0	44,4	21,0	14,0	43,2	43,7	
1 1/2	155,0	22,3	70,0	48,3	32,0	32,0	70,0	50,6	23,0	16,0	49,5	50,0	
2	165,0	25,4	84,0	60,3	37,0	37,0	73,0	63,5	29,0	17,0	61,9	62,5	
2 1/2	190,0	28,6	100,0	73,0	41,0	41,0	79,0	76,2	32,0	19,0	74,6	75,4	
3	210,0	31,8	117,0	88,9	46,0	46,0	83,0	92,2	35,0	21,0	90,7	91,4	
3 1/2	230,0	35,0	133,0	101,6	49,0	49,0	86,0	104,9	40,0	...	103,4	104,1	
4	275,0	38,1	152,0	114,3	54,0	54,0	102,0	117,6	42,0	...	116,1	116,8	Tobe
5	330,0	44,5	189,0	141,3	60,0	60,0	114,0	144,4	48,0	...	143,8	144,4	specified
6	355,0	47,7	222,0	168,3	67,0	67,0	117,0	171,4	51,0	...	170,7	171,4	by
8	420,0	55,6	273,0	219,1	76,0	76,0	133,0	222,2	58,0	...	221,5	222,2	purchaser
10	510,0	63,5	343,0	273,0	86,0	111,0	152,0	276,2	66,0	...	276,2	277,4	
12	560,0	66,7	400,0	323,8	92,0	117,0	156,0	328,6	70,0	...	327,0	328,2	
14	605,0	69,9	432,0	355,6	94,0	127,0	165,0	360,4	74,0	...	359,2	360,2	
16	685,0	76,2	495,0	406,4	106,0	140,0	178,0	411,2	78,0	...	410,5	411,2	
18	745,0	82,6	546,0	457,0	117,0	152,0	184,0	462,0	80,0	...	461,8	462,3	
20	815,0	88,9	610,0	508,0	127,0	165,0	190,0	512,8	83,0	...	513,1	514,4	
24	940,0	101,6	718,0	610,0	140,0	184,0	203,0	614,4	93,0	...	616,0	616,0	

NOTE: All dimension except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 600 FLANGES



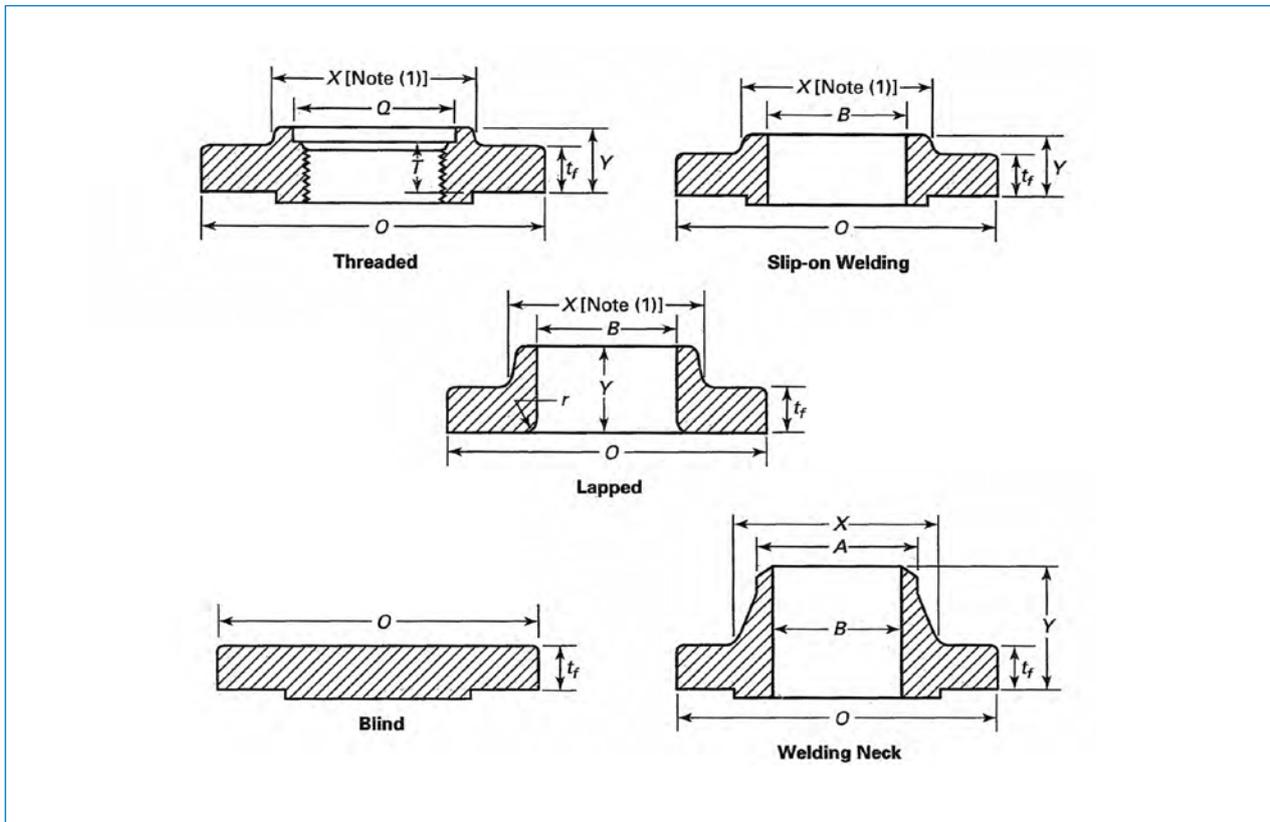
Stud Bolt With Nuts

DIMENSIONS OF CLASS 600 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Botholedrilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	Noof bolts	Bolt diam.	7.0mm R	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2	34,9	7,0	51,0	5,54	R11	34,14	5,54	7,14	66,7	15,9	4	1/2	75,0	75,0	
3/4	42,9	7,0	63,5	6,35	R13	42,88	6,35	8,74	82,6	19,1	4	5/8	90,0	90,0	
1	50,8	7,0	70,0	6,35	R16	50,80	6,35	8,74	88,9	19,1	4	5/8	90,0	90,0	
1 1/4	63,5	7,0	79,5	6,35	R18	60,33	6,35	8,74	98,4	19,1	4	5/8	95,0	95,0	
1 1/2	73,0	7,0	90,5	6,35	R20	68,27	6,35	8,74	114,3	22,2	4	3/4	110,0	110,0	
2	92,1	7,0	108,0	7,92	R23	82,55	7,92	11,91	127,0	19,1	8	5/8	110,0	110,0	
2 1/2	104,8	7,0	127,0	7,92	R26	101,60	7,92	11,91	149,2	22,2	8	3/4	120,0	120,0	
3	127,0	7,0	146,0	7,92	R31	123,83	7,92	11,91	168,3	22,2	8	3/4	125,0	125,0	
3 1/2	139,7	7,0	159,0	7,92	R34	131,78	7,92	11,91	184,2	25,4	8	7/8	140,0	140,0	
4	157,2	7,0	175,0	7,92	R37	149,23	7,92	11,91	215,9	25,4	8	7/8	145,0	145,0	
5	185,7	7,0	210,0	7,92	R41	180,98	7,92	11,91	266,7	28,6	8	1	165,0	165,0	
6	215,9	7,0	241,0	7,92	R45	211,12	7,92	11,91	292,1	28,6	12	1	170,0	170,0	
8	269,9	7,0	302,0	7,92	R49	269,88	7,92	11,91	349,2	31,8	12	1 1/8	190,0	195,0	
10	323,8	7,0	356,0	7,92	R53	323,85	7,92	11,91	431,8	34,9	16	1 1/4	215,0	215,0	
12	381,0	7,0	413,0	7,92	R57	381,00	7,92	11,91	489,0	34,9	20	1 1/4	220,0	220,0	
14	412,8	7,0	457,0	7,92	R61	419,10	7,92	11,91	527,0	38,1	20	1 3/8	235,0	235,0	
16	469,9	7,0	508,0	7,92	R65	469,90	7,92	11,91	603,2	41,3	20	1 1/2	255,0	255,0	
18	533,4	7,0	575,0	7,92	R69	533,40	7,92	11,91	654,0	44,5	20	1 5/8	275,0	275,0	
20	584,2	7,0	635,0	9,53	R73	584,20	9,53	13,49	723,9	44,5	24	1 5/8	285,0	290,0	
24	692,2	7,0	749,0	11,13	R77	692,15	11,13	16,66	838,2	50,8	24	1 7/8	330,0	335,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 900 FLANGES

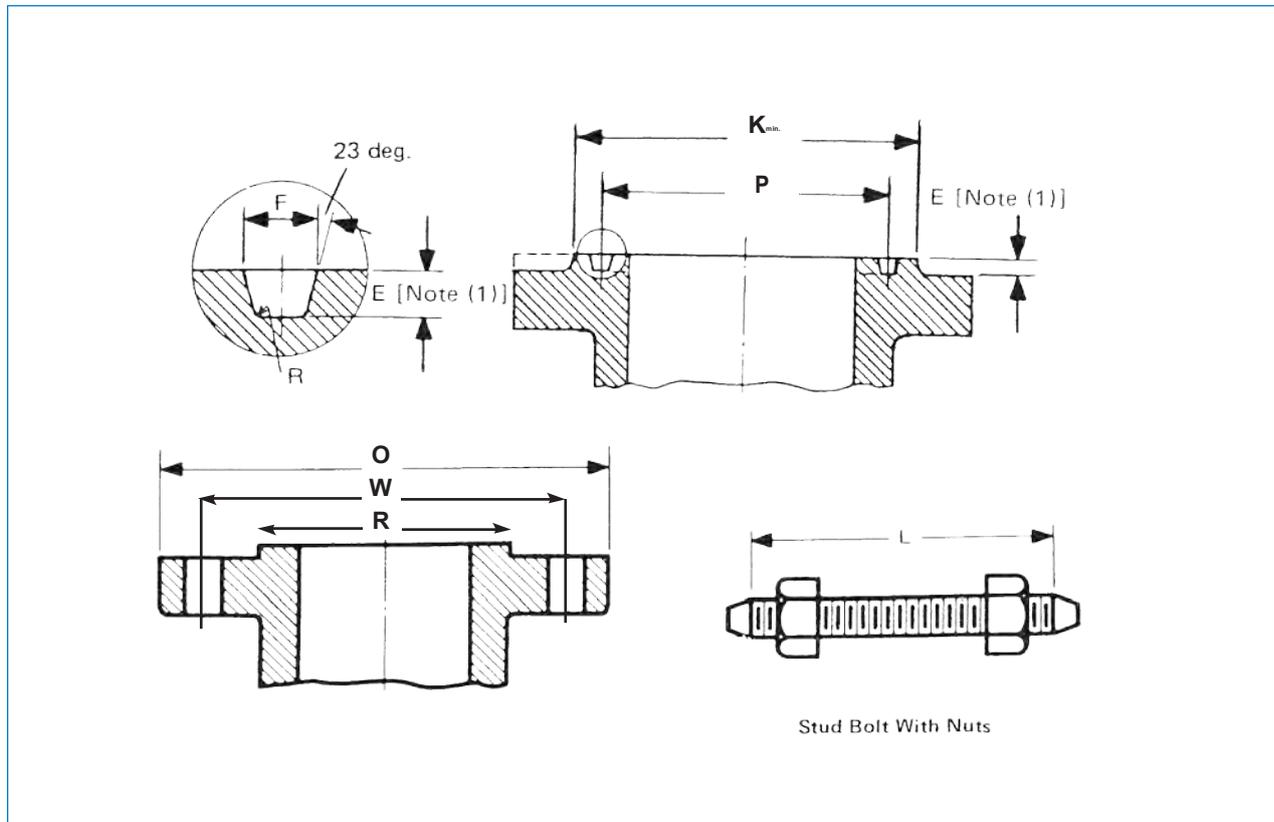


DIMENSIONS OF CLASS 900 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Flange dimensions		HUB dimensions		Length Through HUB			Threaded flange	SW	Bore			
Nominal Pipe Size	OD flange	Thickn.	Large end	Small end	Thr. Slip.	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On	Lapped	Weld neck
NPS	O	tf min.	X	A	Y	Y	Y	Qmin.	Tmin.	D	Bmin.	Bmin.	B
1/2													
3/4													
1													
1 1/4													
1 1/2					Use Class 1500 dimensions in these sizes								
2													
2 1/2													
3	240,0	38,1	127,0	88,9	54,0	54,0	102,0	92,2	42,0	...	90,7	91,4	
4	290,0	44,5	159,0	114,3	70,0	70,0	114,0	117,6	48,0	...	116,1	116,8	To be
5	350,0	50,8	190,0	141,3	79,0	79,0	127,0	144,4	54,0	...	143,8	144,4	specified
6	380,0	55,6	235,0	168,3	86,0	86,0	140,0	171,4	58,0	...	170,7	171,4	by
8	470,0	63,5	298,0	219,1	102,0	114,0	162,0	222,2	64,0	...	221,5	222,2	purchaser
10	545,0	69,9	368,0	273,0	108,0	127,0	184,0	276,2	72,0	...	276,2	277,4	
12	610,0	79,4	419,0	323,8	117,0	143,0	200,0	328,6	77,0	...	327,0	328,2	
14	640,0	85,8	451,0	355,6	130,0	156,0	213,0	360,4	83,0	...	359,2	360,2	
16	705,0	88,9	508,0	406,4	133,0	165,0	216,0	411,2	86,0	...	410,5	411,2	
18	785,0	101,6	565,0	457,0	152,0	190,0	229,0	462,0	89,0	...	461,8	462,3	
20	855,0	108,0	622,0	508,0	159,0	210,0	248,0	512,8	93,0	...	513,1	514,4	
24	1040,0	139,7	749,0	610,0	203,0	267,0	292,0	614,4	102,0	...	616,0	616,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 900 FLANGES

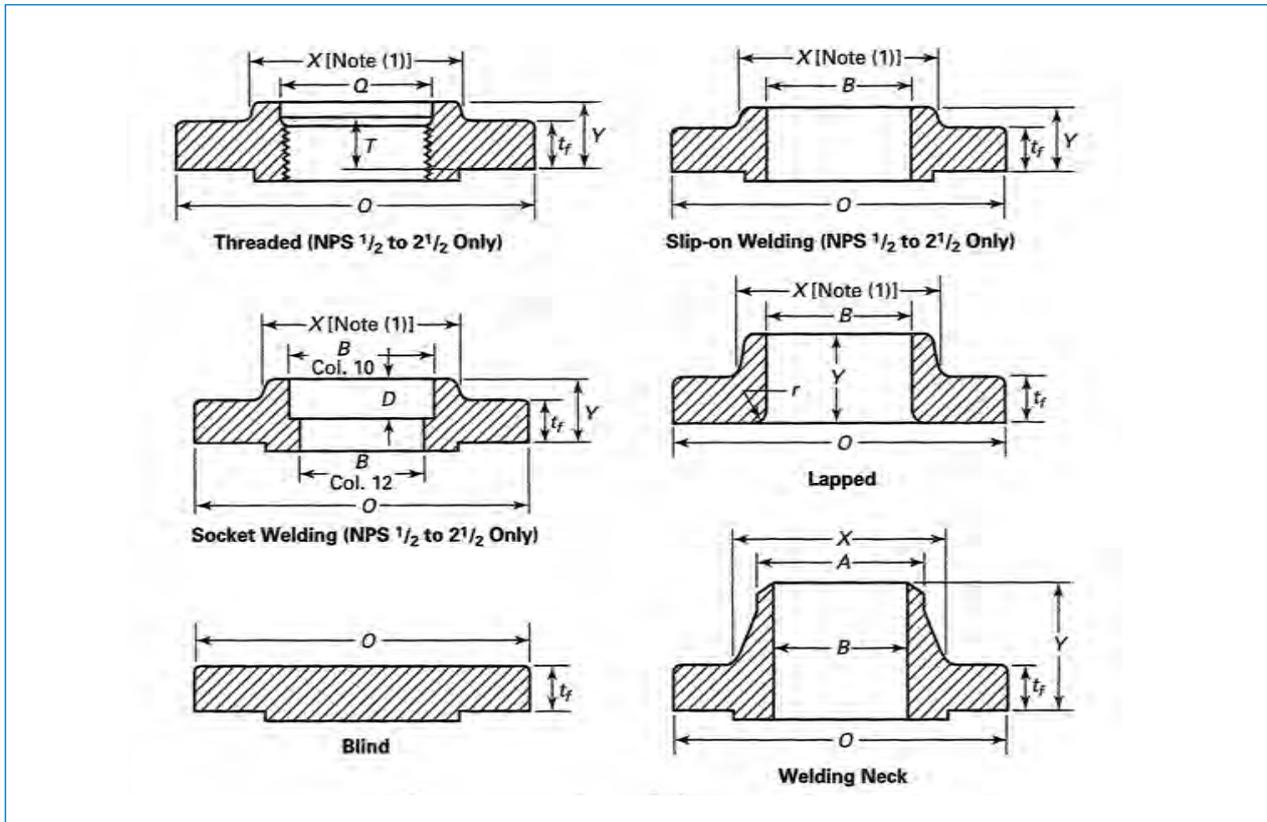


DIMENSIONS OF CLASS 900 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Bolthead drilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	Noof bolts	Bolt diam.	7,0mmR F	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2															
3/4															
1															
1 1/4															
1 1/2			Use Class 1500 dimensions in these sizes												
2															
2 1/2															
3	127,0	7,0	156,0	7,92	R31	123,83	7,92	11,91	190,5	25,4	8	7/8	145,0	145,0	
4	157,2	7,0	181,0	7,92	R37	149,23	7,92	11,91	235,0	31,8	8	1 1/8	170,0	170,0	
5	185,7	7,0	216,0	7,92	R41	180,98	7,92	11,91	279,4	34,9	8	1 1/4	190,0	190,0	
6	215,9	7,0	241,0	7,92	R45	211,12	7,92	11,91	317,5	31,8	12	1 1/8	190,0	195,0	
8	269,9	7,0	308,0	7,92	R49	269,88	7,92	11,91	393,7	38,1	12	1 3/8	220,0	220,0	
10	323,8	7,0	362,0	7,92	R53	323,85	7,92	11,91	469,9	38,1	16	1 3/8	235,0	235,0	
12	381,0	7,0	419,0	7,92	R57	381,00	7,92	11,91	533,4	38,1	20	1 3/8	255,0	255,0	
14	412,8	7,0	467,0	11,13	R62	419,10	11,13	16,66	558,8	41,3	20	1 1/2	275,0	280,0	
16	469,9	7,0	524,0	11,13	R66	469,90	11,13	16,66	616,0	44,5	20	1 3/8	285,0	290,0	
18	533,4	7,0	594,0	12,70	R70	533,40	12,70	19,84	685,8	50,8	20	1 7/8	325,0	335,0	
20	584,2	7,0	648,0	12,70	R74	584,20	12,70	19,84	749,3	54,0	20	2	350,0	360,0	
24	692,2	7,0	772,0	15,88	R78	692,15	15,88	26,97	901,7	66,7	20	2 1/2	440,0	455,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters.
 (1) the tolerance for E is only applicable for groove depth

CLASS 1500 FLANGES

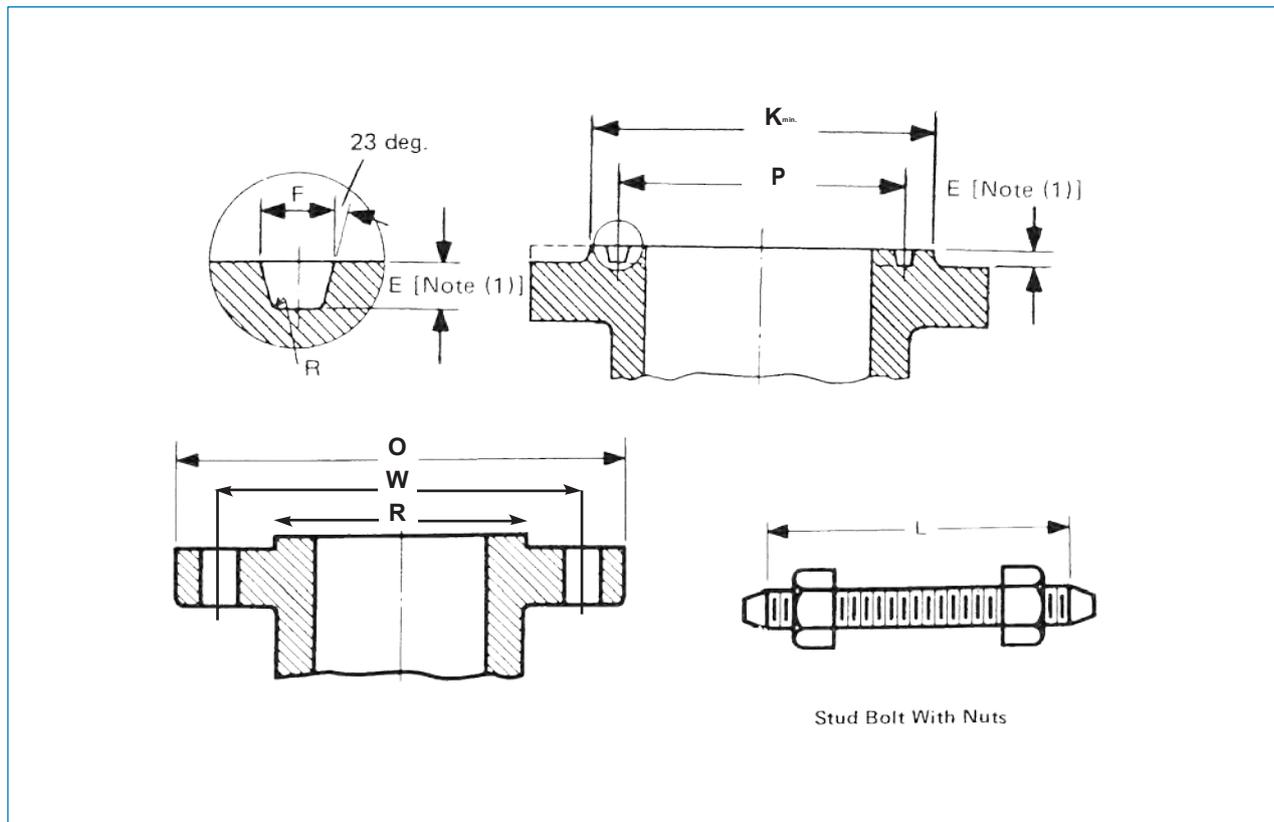


DIMENSIONS OF CLASS 1500 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Flanged dimensions		HUB dimensions		Length Through HUB			Threaded flange		SW	Bore		
Nominal Pipe Size	OD flange	Thickn.	Large end	Small end	Thr. Slip. Sw.	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On, SW	Lapped	Weld neck
NPS	O	tf min.	X	A	Y	Y	Y	Qmin.	Tmin.	D	Bmin.	Bmin.	B
1/2	120,0	22,3	38,0	21,3	32,0	32,0	60,0	23,6	23,0	10,0	22,2	22,9	
3/4	130,0	25,4	44,0	26,7	35,0	35,0	70,0	29,0	26,0	11,0	27,7	28,2	
1	150,0	28,6	52,0	33,4	41,0	41,0	73,0	35,8	29,0	13,0	34,5	34,9	
1 1/4	160,0	28,6	64,0	42,2	41,0	41,0	73,0	44,4	31,0	14,0	43,2	43,7	
1 1/2	180,0	31,8	70,0	48,3	44,0	44,0	83,0	50,6	32,0	16,0	49,5	50,0	
2	215,0	38,1	105,0	60,3	57,0	57,0	102,0	63,5	39,0	17,0	61,9	62,5	
2 1/2	245,0	41,3	124,0	73,0	64,0	64,0	105,0	76,2	48,0	19,0	74,6	75,4	
3	265,0	47,7	133,0	88,9	...	73,0	117,0	...	...	...	...	91,4	
4	310,0	54,0	162,0	114,3	...	90,0	124,0	...	...	...	...	116,8	To be
5	375,0	73,1	197,0	141,3	...	105,0	156,0	...	...	...	...	144,4	specified
6	395,0	82,6	229,0	168,3	...	119,0	171,0	...	...	...	...	171,4	by
8	485,0	92,1	292,0	219,1	...	143,0	213,0	...	...	...	...	222,2	purchaser
10	585,0	108,0	368,0	273,0	...	178,0	254,0	...	...	...	...	277,4	
12	675,0	123,9	451,0	323,8	...	219,0	283,0	...	...	...	...	328,2	
14	750,0	133,4	495,0	355,6	...	241,0	298,0	...	...	...	...	360,2	
16	825,0	146,1	552,0	406,4	...	260,0	311,0	...	...	...	...	411,2	
18	915,0	162,0	597,0	457,0	...	276,0	327,0	...	...	...	...	462,3	
20	985,0	177,8	641,0	508,0	...	292,0	356,0	...	...	...	...	514,4	
24	1170,0	203,2	762,0	610,0	...	330,0	406,0	...	...	...	...	616,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 1500 FLANGES

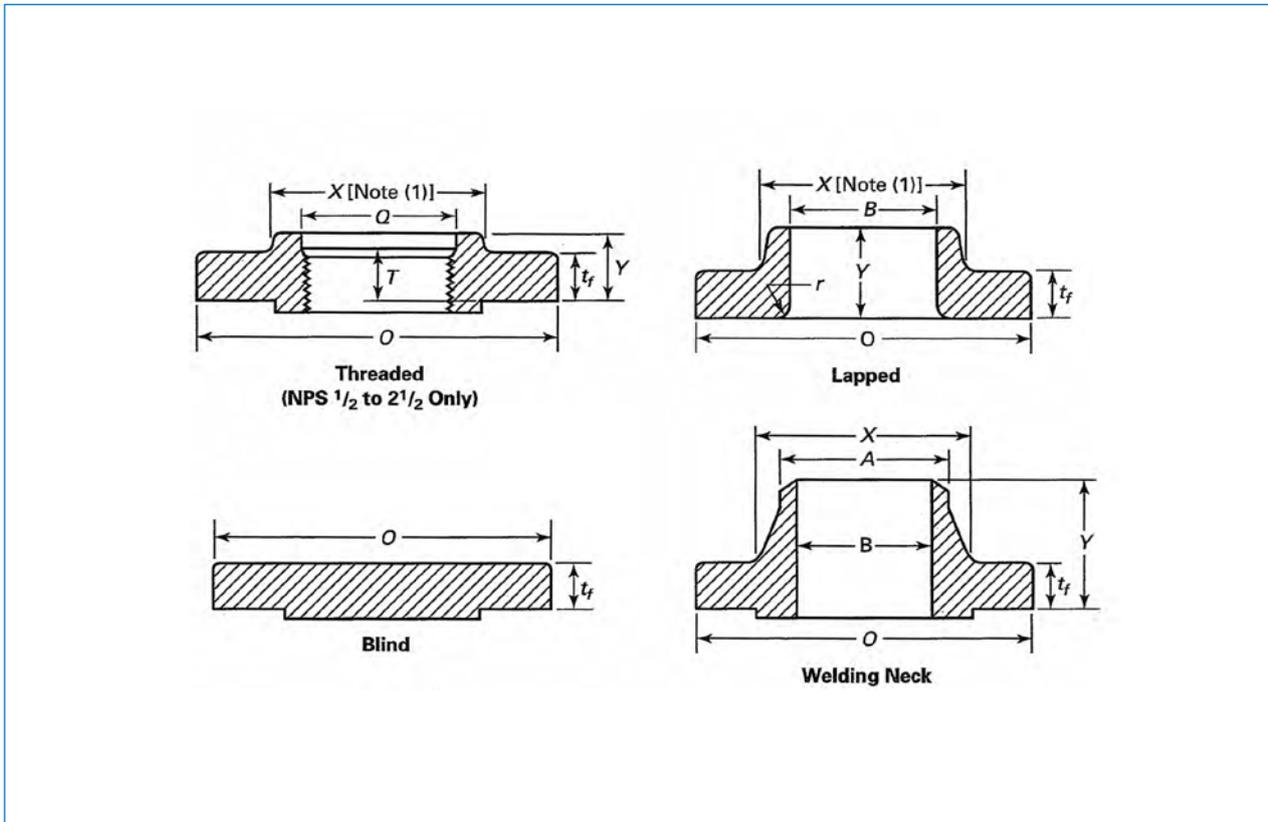


DIMENSIONS OF CLASS 1500 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Bolthead drilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	No of bolts	Bolt diam.	7.0mm RF	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2	34,9	7,0	60,5	6,35	R12	39,67	6,35	8,74	82,6	22,2	4	3/4	110,0	110,0	
3/4	42,9	7,0	66,5	6,35	R14	44,45	6,35	8,74	88,9	22,2	4	3/4	115,0	115,0	
1	50,8	7,0	71,5	6,35	R16	50,80	6,35	8,74	101,6	25,4	4	7/8	125,0	125,0	
1 1/4	63,5	7,0	81,0	6,35	R18	60,33	6,35	8,74	111,1	25,4	4	7/8	125,0	125,0	
1 1/2	73,0	7,0	92,0	6,35	R20	68,27	6,35	8,74	123,8	28,6	4	1	140,0	140,0	
2	92,1	7,0	124,0	7,92	R24	95,25	7,92	11,91	165,1	25,4	8	7/8	145,0	145,0	
2 1/2	104,8	7,0	137,0	7,92	R27	107,95	7,92	11,91	190,5	28,6	8	1	160,0	160,0	
3	127,0	7,0	168,0	7,92	R35	136,53	7,92	11,91	203,2	31,8	8	1 1/8	180,0	180,0	
4	157,2	7,0	194,0	7,92	R39	161,93	7,92	11,91	241,3	34,9	8	1 1/4	195,0	195,0	
5	185,7	7,0	229,0	7,92	R44	193,68	7,92	11,91	292,1	41,3	8	1 1/2	250,0	250,0	
6	215,9	7,0	248,0	9,53	R46	211,14	9,53	13,49	317,5	38,1	12	1 1/8	260,0	265,0	
8	269,9	7,0	318,0	11,13	R50	269,88	11,13	16,66	393,7	44,5	12	1 1/8	290,0	325,0	
10	323,8	7,0	371,0	11,13	R54	323,85	11,13	16,66	482,6	50,8	12	1 1/8	335,0	345,0	
12	381,0	7,0	438,0	14,27	R58	381,00	14,27	23,01	571,5	54,0	16	2	375,0	385,0	
14	412,8	7,0	489,0	15,88	R63	419,10	15,88	26,97	635,0	60,3	16	2 1/4	405,0	425,0	
16	469,9	7,0	546,0	17,48	R67	469,90	17,48	30,18	704,8	66,7	16	2 1/2	445,0	470,0	
18	533,4	7,0	613,0	17,48	R71	533,40	17,48	30,18	774,7	73,0	16	2 3/4	495,0	525,0	
20	584,2	7,0	673,0	17,48	R75	584,20	17,48	33,32	831,8	79,4	16	3	540,0	565,0	
24	692,2	7,0	794,0	20,62	R79	692,15	20,62	36,53	990,6	92,1	16	3 1/2	615,0	650,0	

NOTE: All dimensions except NPS and bolt diameter are in millimeters. The dimensions B₂ for SW flange equals B for Weld Neck.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 2500 FLANGES

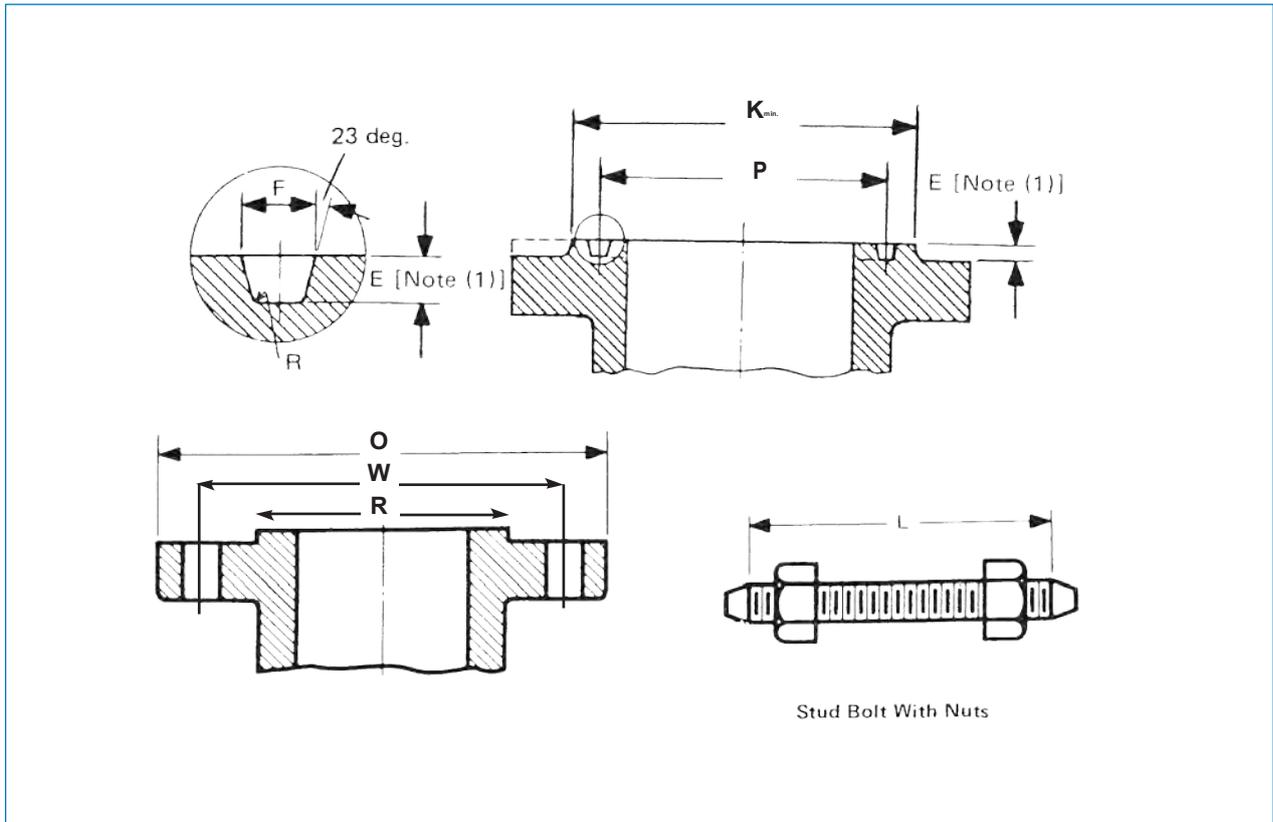


DIMENSIONS OF CLASS 2500 FLANGES (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Flanged dimensions		HUB dimensions		Length Through HUB			Threaded flange		SW	Bore		
Nominal Pipe Size	OD flange	Thickn.	Large end	Small end	Thr.	Lapped	Weld neck	Counter bore	Thread length	Socket depth	Slip-On, SW	Lapped	Weld neck
NPS	O	t_f min.	X	A	Y	Y	Y	Q min.	T min.	D	B min.	B min.	B
1/2	135,0	30,2	43,0	21,3	40,0	40,0	73,0	23,6	29,0	...	...	22,9	
3/4	140,0	31,8	51,0	26,7	43,0	43,0	79,0	29,0	32,0	...	...	28,2	
1	160,0	35,0	57,0	33,4	48,0	48,0	89,0	35,8	35,0	...	...	34,9	
1 1/4	185,0	38,1	73,0	42,2	52,0	52,0	95,0	44,4	39,0	...	...	43,7	
1 1/2	205,0	44,5	79,0	48,3	60,0	60,0	111,0	50,6	45,0	...	...	50,0	
2	235,0	50,9	95,0	60,3	70,0	70,0	127,0	63,5	51,0	...	...	62,5	
2 1/2	265,0	57,2	114,0	73,0	79,0	79,0	143,0	76,2	58,0	...	...	75,4	
3	305,0	66,7	133,0	88,9	...	92,0	168,0	...	...	...	...	91,4	
4	355,0	76,2	165,0	114,3	...	108,0	190,0	...	...	...	...	116,8	To be
5	420,0	92,1	203,0	141,3	...	130,0	229,0	...	...	...	...	144,4	specified
6	485,0	108,0	235,0	168,3	...	152,0	273,0	...	...	...	...	171,4	by
8	550,0	127,0	305,0	219,1	...	178,0	318,0	...	...	...	...	222,2	purchaser
10	675,0	165,1	375,0	273,0	...	229,0	419,0	...	...	...	...	277,4	
12	760,0	184,2	441,0	323,8	...	254,0	464,0	...	...	...	...	328,2	

NOTE: All dimensions except NPS and bolt diameter are in millimeters.
 (1) the tolerance for E is only applicable for grooved depth

CLASS 2500 FLANGES



DIMENSIONS OF CLASS 2500 FLANGES (mm)

	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
	RF dimensions		RTJ dimensions						Bolthead drilling				Stud bolt length		
Nominal Pipe Size	OD	Height	OD	Height	Groove number	Groove Pitch	Groove Depth	Groove Width	Bolt Circle	Bolt hole	Noof bolts	Bolt diam.	7,0mmR F	Ring Joint	
NPS	R		K	E		P	E	F	W	Bh			L	L	
1/2	34,9	7,0	65,0	6,35	R13	42,88	6,35	8,74	88,9	22,2	4	3/4	120,0	120,0	
3/4	42,9	7,0	73,0	6,35	R16	50,80	6,35	8,74	95,2	22,2	4	3/4	125,0	125,0	
1	50,8	7,0	82,5	6,35	R18	60,33	6,35	8,74	108,0	25,4	4	7/8	140,0	140,0	
1 1/4	63,5	7,0	102,0	7,92	R21	72,23	7,92	11,91	130,2	28,6	4	1	150,0	150,0	
1 1/2	73,0	7,0	114,0	7,92	R23	82,55	7,92	11,91	146,0	31,8	4	1 1/8	170,0	170,0	
2	92,1	7,0	133,0	7,92	R26	101,60	7,92	11,91	171,4	28,6	8	1	180,0	180,0	
2 1/2	104,8	7,0	149,0	9,52	R28	111,13	9,52	13,49	196,8	31,8	8	1 1/8	195,0	205,0	
3	127,0	7,0	168,0	9,53	R32	127,00	9,53	13,49	228,6	34,9	8	1 1/4	220,0	230,0	
4	157,2	7,0	203,0	11,13	R38	157,18	11,13	16,66	273,0	41,3	8	1 1/2	255,0	260,0	
5	185,7	7,0	241,0	12,70	R42	190,50	12,70	19,84	323,8	47,6	8	1 3/4	300,0	310,0	
6	215,9	7,0	279,0	12,70	R47	228,60	12,70	19,84	368,3	54,0	8	2	345,0	355,0	
8	269,9	7,0	340,0	14,27	R51	279,40	14,27	23,01	438,2	54,0	12	2	380,0	395,0	
10	323,8	7,0	425,0	17,48	R55	342,90	17,48	30,18	539,8	66,7	12	2 1/2	490,0	510,0	
12	381,0	7,0	495,0	17,48	R60	406,40	17,48	33,32	619,1	73,0	12	2 3/4	540,0	560,0	

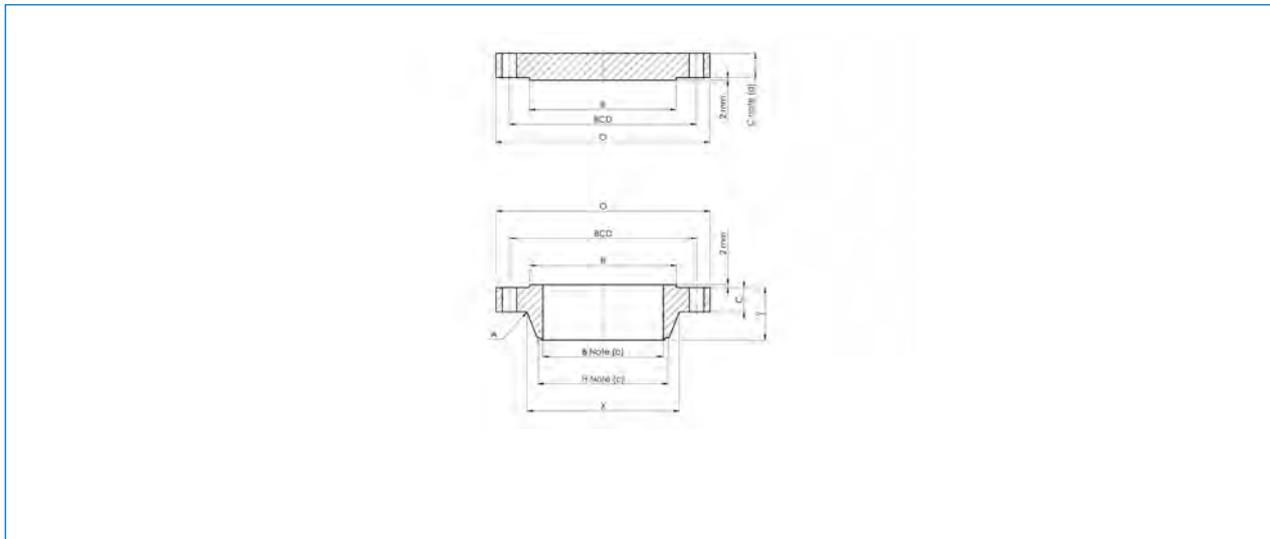
NOTE: All dimension except NPS and bolt diameter are in millimeters.
 (1) the tolerance for E is only applicable for groove depth

Tolerances B16.5-2003

DENOMINATION	DESCRIPTION	SIZE RANGE	TOLERANCE
O	Outside diameter flanging ¹⁾	<= 24" >= 26"	±1.6mm ±3.2mm
B	Inside diameter/bore	Weldneck: <= 10" 12" - 18" >= 20" Slip-on, lap joint, socket weld, threaded <= 10" >= 12"	±1.0mm ±1.5mm +3.0/-1.5mm +1.0/-0.0mm +1.5/-0.0mm
A	Diameter small end of HUB/WN end	<= 5" >= 6"	+2.0/-1.0mm +4.0/-1.0mm
X	Diameter of HUB base	<= 24" (dimension X) >= 26" (dimension X)	+1.6/-0.8mm +3.2/-0.8mm
W	Drilling and facing	Bolt circled diameter Center to center adjacent bolt holes Max eccentricity between bolt circled diameter and machining facing diameter: <= 2 1/2" >= 3"	±1.5mm ±0.8mm 0.8mm 1.5mm
Y	Overall HUB length of WN flanges	<= 4" 5" - 10" >= 12"	±1.5mm +1.5/-3.0mm +3.0/-5.0mm
tf	Thickness of flanging	<= 18" >= 20"	+3.0/-0.0mm +5.0/-0.0mm
E	Groove depth	Applicable for groove depth only	+0.4/-0.0mm
F	Groove width		±0.2mm
P	Groove pitch		±0.13mm
K	RTJ raised portion		+0.50/-0.00mm
R	RF raised portion	2.0mm RF height 7.0mm RF height	±1.0mm ±0.5mm

1) These tolerances are not covered by ANSI B16.5

MSS SP-44 CLASS 150 FLANGES

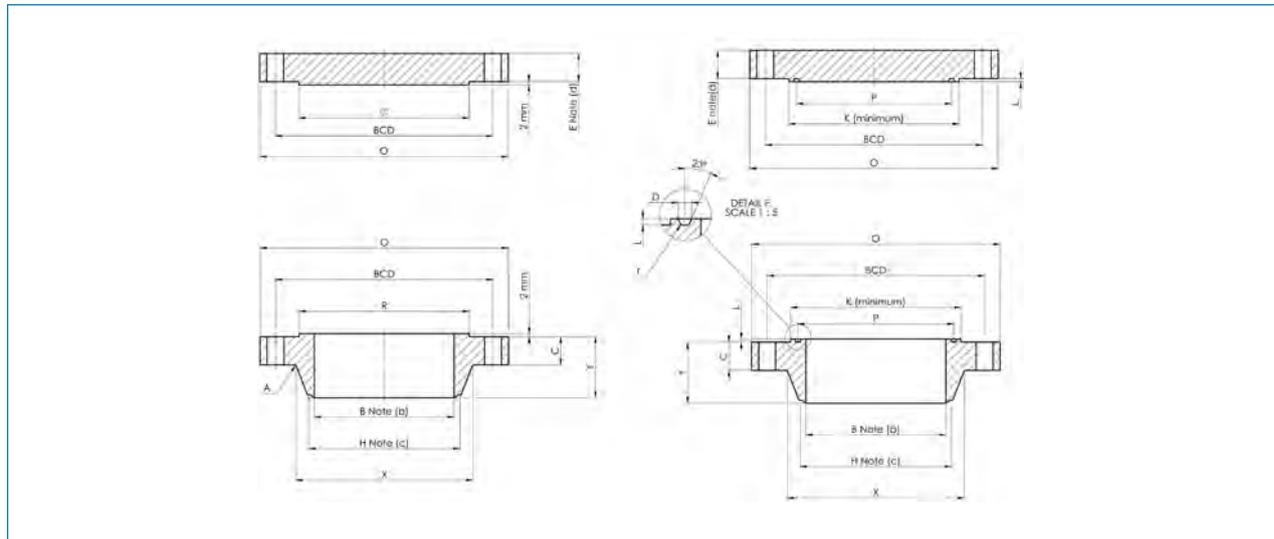


DIMENSIONS FOR MSS SP-44 CLASS 150 FLANGES (mm)

Nominal Pipe size	Flange dim.		Hub dimension		RF dimensions		RTJ dimensions					Bolt hole drilling		
	OD flange O	Thickness C min.	OD Large end X	Length through Y	OD D	Height	OD K	Groove number	Pitch P	Depth L	Width D	Bolt Circle Bc	Bolt Hole Bh	No of bolts
26"	870	66,7	676	119	749,3	2,0	-	-	-	-	-	806,4	35,1	24
28"	925	69,9	727	124	800,1	2,0	-	-	-	-	-	863,6	35,1	28
30"	985	73,1	781	135	857,2	2,0	-	-	-	-	-	914,4	35,1	28
32"	1060	79,4	832	143	914,4	2,0	-	-	-	-	-	977,9	41,2	28
34"	1110	81,0	883	148	965,2	2,0	-	-	-	-	-	1028,7	41,2	32
36"	1170	88,9	933	156	1022,4	2,0	-	-	-	-	-	1085,8	41,2	32
38"	1240	85,8	991	156	1073,2	2,0	-	-	-	-	-	1149,4	41,2	32
40"	1290	88,9	1041	162	1124,0	2,0	-	-	-	-	-	1200,2	41,2	36
42"	1345	95,3	1092	170	1193,8	2,0	-	-	-	-	-	1257,3	41,2	36
44"	1405	100,1	1143	176	1244,6	2,0	-	-	-	-	-	1314,4	41,2	40
46"	1455	101,6	1197	184	1295,4	2,0	-	-	-	-	-	1365,2	41,2	40
48"	1510	106,4	1248	190	1358,9	2,0	-	-	-	-	-	1422,4	41,2	44
50"	1570	109,6	1302	202	1409,7	2,0	-	-	-	-	-	1479,6	47,8	44
52"	1625	114,3	1353	208	1460,5	2,0	-	-	-	-	-	1536,7	47,8	44
54"	1685	119,1	1403	214	1511,3	2,0	-	-	-	-	-	1593,8	47,8	44
56"	1745	122,3	1457	227	1574,8	2,0	-	-	-	-	-	1651,0	47,8	48
58"	1805	127,0	1508	233	1625,6	2,0	-	-	-	-	-	1708,2	47,8	48
60"	1855	130,2	1559	238	1676,4	2,0	-	-	-	-	-	1759,0	47,8	52

NOTES: Bore (B) to be specified by purchaser
 OD of Hub at W End (H) depends on material properties of flange versus joining piping - see section 5.3 of MSS SP-44.

MSS SP-44 CLASS 300 FLANGES

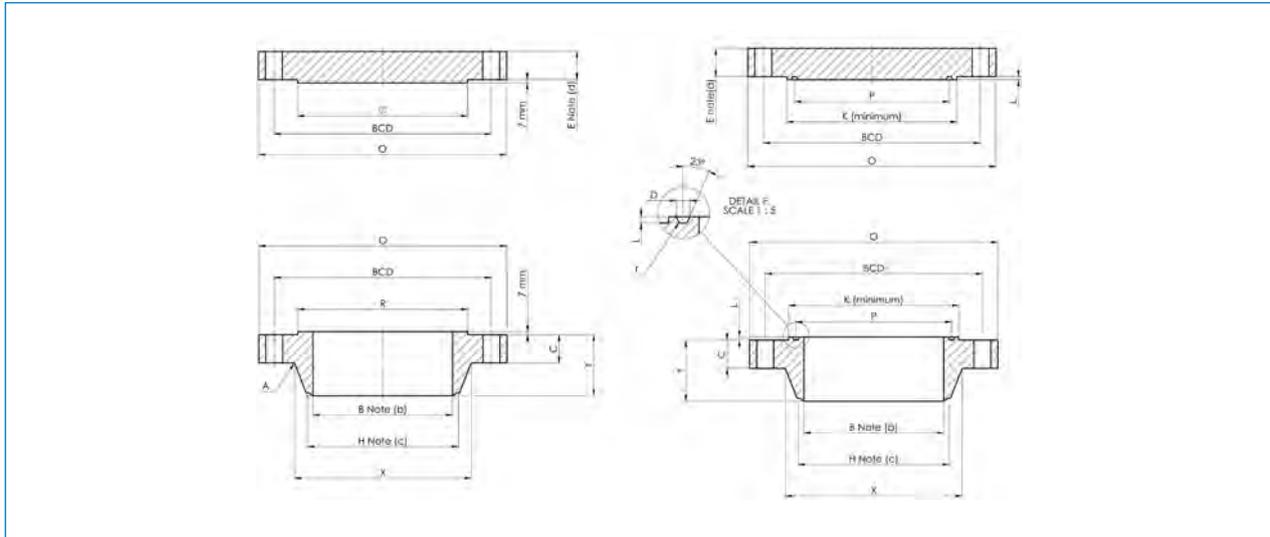


DIMENSIONS FOR MSS SP-44 CLASS 300 FLANGES (mm)

Nominal Pipe size	Flange dimension		Hub dimension		RF dimensions		RTJ dimensions				Bolt hole drilling				
	OD flange O	Thickn. WN N Cmin.	Thickn. Blind E.min	OD Large end X	Length through Y	OD D	Height	OD K	Groove number	Pitch P	Depth L	Width D	Bolt Circle Bc	Bolt Hole Bh	No of bolts
26"	970	77,8	82,6	721	183	749,3	2,0	810	R93	749,3	12,70	19,84	876,3	44,5	28
28"	1035	84,2	88,9	775	195	800,1	2,0	861	R94	800,1	12,70	19,84	939,8	44,5	28
30"	1090	90,5	93,7	827	208	857,2	2,0	917	R95	857,3	12,70	19,84	997,0	47,8	28
32"	1150	96,9	98,5	881	221	914,4	2,0	984	R96	914,4	14,27	23,01	1054,1	50,8	28
34"	1205	100,1	103,2	937	230	965,2	2,0	1035	R97	965,2	14,27	23,01	1104,9	50,8	28
36"	1270	103,2	109,6	991	240	1022,4	2,0	1092	R98	1022,4	14,27	23,01	1168,4	53,9	32
38"	1170	106,4	106,4	994	179	1028,7	2,0	-	-	-	-	-	1092,2	41,2	32
40"	1240	112,8	112,8	1048	192	1085,8	2,0	-	-	-	-	-	1155,7	44,5	32
42"	1290	117,5	117,5	1099	198	1136,6	2,0	-	-	-	-	-	1206,5	44,5	32
44"	1355	122,3	122,3	1149	205	1193,8	2,0	-	-	-	-	-	1263,6	47,8	32
46"	1415	127,0	127,0	1203	214	1244,6	2,0	-	-	-	-	-	1320,8	50,8	28
48"	1465	131,8	131,8	1254	222	1301,8	2,0	-	-	-	-	-	1371,6	50,8	32
50"	1530	138,2	138,2	1305	230	1358,9	2,0	-	-	-	-	-	1428,8	53,9	32
52"	1580	142,9	142,9	1356	237	1409,7	2,0	-	-	-	-	-	1479,6	53,9	32
54"	1660	150,9	150,9	1410	251	1466,8	2,0	-	-	-	-	-	1549,4	60,5	28
56"	1710	152,4	152,4	1464	259	1517,6	2,0	-	-	-	-	-	1600,2	60,5	28
58"	1760	157,2	157,2	1514	265	1574,8	2,0	-	-	-	-	-	1651,0	60,5	32
60"	1810	162,0	162,0	1565	271	1625,6	2,0	-	-	-	-	-	1701,8	60,5	32

NOTES: Bore (B) to be specified by purchaser
 OD of HUB at WN end (H) depends on material properties of flange versus joining piping - see section 5.3 of MSS SP-44.

MSSSP-44 CLASS 400 FLANGES

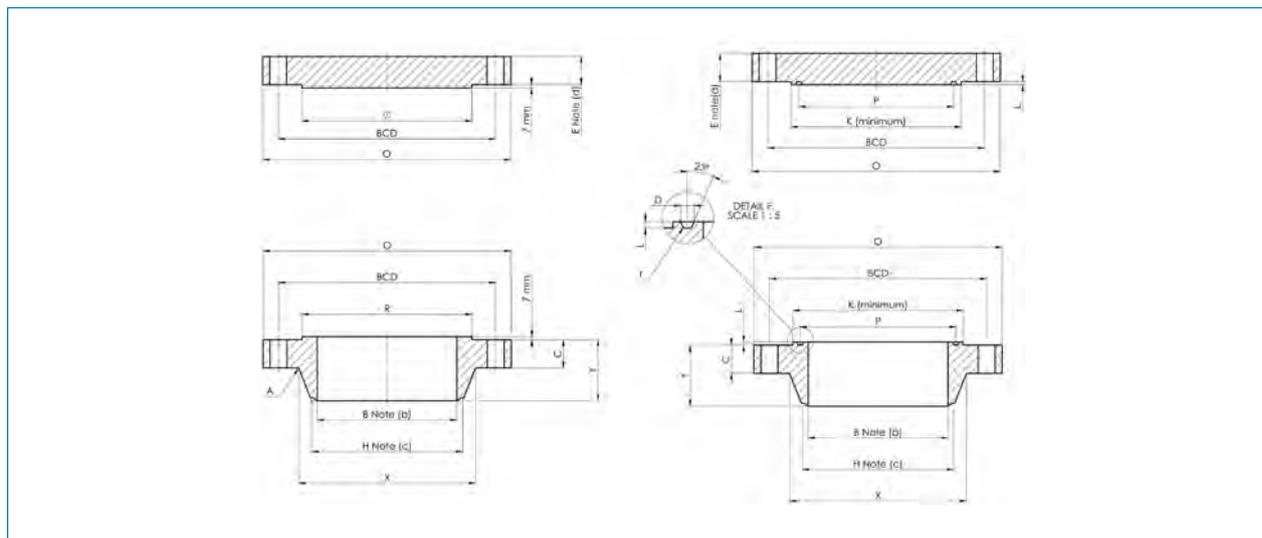


DIMENSIONS FOR MSSSP-44 CLASS 400 FLANGES (mm)

Nominal Pipe size	Flanged dimension			Hub dimension		RF dimensions		RTJ dimensions					Both hole drilling		
	OD flange O	Thickn. WN Cmin.	Thickn. Blind E.min	OD Large end X	Length through Y	OD D	Height	OD K	Groove number	Pitch P	Depth L	Width D	Bolt Circle Bc	Bolt Hole Bh	No of bolts
26"	970	88,9	98,5	727	194	749,3	7,0	810	R93	749,3	12,70	19,84	876,3	47,8	28
28"	1035	95,3	104,8	783	206	800,1	7,0	861	R94	800,1	12,70	19,84	939,8	50,8	28
30"	1090	101,6	111,2	837	219	857,2	7,0	917	R95	857,3	12,70	19,84	997,0	53,9	28
32"	1150	108,0	115,9	889	232	914,4	7,0	984	R96	914,4	14,27	23,01	1054,1	53,9	28
34"	1205	111,2	122,3	945	241	965,2	7,0	1035	R97	965,2	14,27	23,01	1104,9	53,9	28
36"	1270	114,3	128,6	1000	251	1022,4	7,0	1092	R98	1022,4	14,27	23,01	1168,4	53,9	32
38"	1205	123,9	123,9	1003	206	1035,0	7,0	-	-	-	-	-	1117,6	47,8	32
40"	1270	130,2	130,2	1054	216	1092,2	7,0	-	-	-	-	-	1174,8	50,8	32
42"	1320	133,4	133,4	1108	224	1143,0	7,0	-	-	-	-	-	1225,6	50,8	32
44"	1385	139,7	139,7	1159	233	1200,2	7,0	-	-	-	-	-	1282,7	53,9	32
46"	1440	146,1	146,1	1213	244	1257,3	7,0	-	-	-	-	-	1339,8	53,9	36
48"	1510	152,4	152,4	1267	257	1308,1	7,0	-	-	-	-	-	1403,4	60,5	28
50"	1570	157,2	158,8	1321	268	1362,1	7,0	-	-	-	-	-	1460,5	60,5	32
52"	1620	162,0	163,6	1372	276	1412,9	7,0	-	-	-	-	-	1511,3	60,5	32
54"	1700	169,9	171,5	1426	289	1470,0	7,0	-	-	-	-	-	1581,2	66,6	28
56"	1755	174,7	176,3	1480	298	1527,2	7,0	-	-	-	-	-	1632,0	66,6	32
58"	1805	177,8	181,0	1530	306	1578,0	7,0	-	-	-	-	-	1682,8	60,6	32
60"	1885	185,8	189,0	1584	319	1635,1	7,0	-	-	-	-	-	1752,6	73,2	32

NOTES: Bore (B) to be specified by purchaser
 OD of Hub at WN end (H) depends on material properties of flange versus joining piping - see section 5.3 of MSSSP-44.

MSS SP-44 CLASS 600 FLANGES

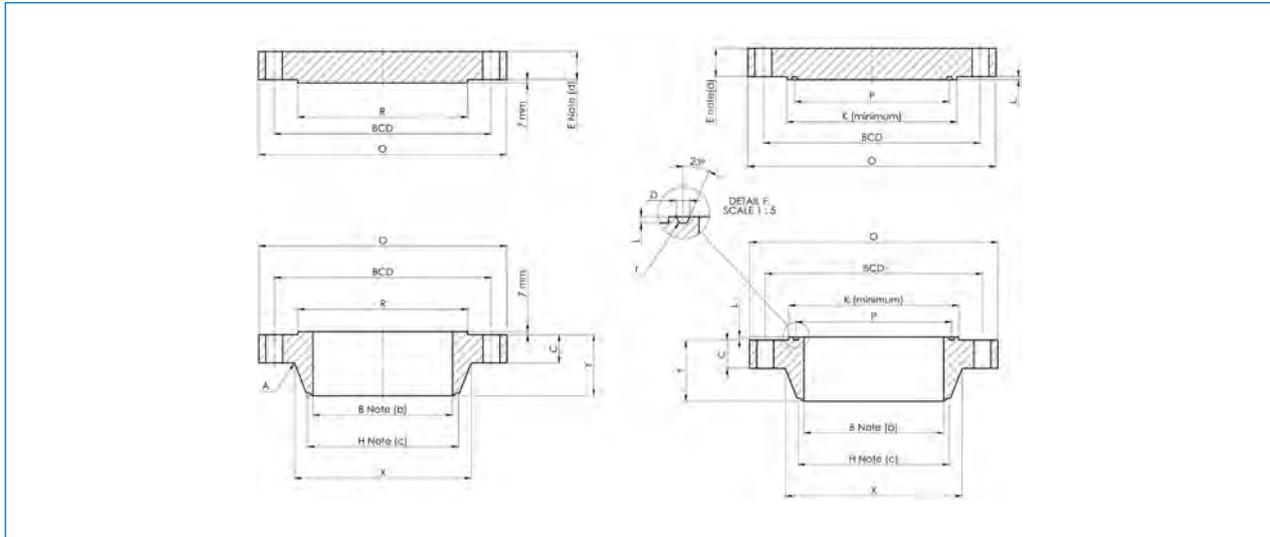


DIMENSIONS FOR MSS SP-44 CLASS 600 FLANGES (mm)

Nominal Pipe size	Flange dimension		Hub dimension		RF dimensions		RTJ dimensions					Bolt hole drilling			
	OD flange O	Thickn. WN Cmin.	Thickn. Blind E.min	OD Large end X	Length through Y	OD D	Height	OD K	Groove number	Pitch P	Depth L	Width D	Bolt Circle Bc	Bolt Hole Bh	No of bolts
26"	1015	108,0	125,5	748	222	749,3	7,0	810	R93	749,3	12,70	19,84	914,4	50,8	28
28"	1075	111,2	131,8	803	235	800,1	7,0	861	R94	800,1	12,70	19,84	965,2	53,9	28
30"	1130	114,3	139,7	862	248	857,2	7,0	917	R95	857,3	12,70	19,84	1022,4	53,9	28
32"	1195	117,5	147,7	918	260	914,4	7,0	984	R96	914,4	14,27	23,01	1079,5	60,5	28
34"	1245	120,7	154,0	973	270	965,2	7,0	1035	R97	965,2	14,27	23,01	1130,3	60,5	28
36"	1315	123,9	162,0	1032	283	1022,4	7,0	1092	R98	1022,4	14,27	23,01	1193,8	66,6	28
38"	1270	152,4	155,6	1022	254	1054,1	7,0	-	-	-	-	-	1162,0	60,5	28
40"	1320	158,8	162,0	1073	264	1111,2	7,0	-	-	-	-	-	1212,8	60,5	32
42"	1405	168,3	171,5	1127	279	1168,4	7,0	-	-	-	-	-	1282,7	66,6	28
44"	1455	173,1	177,8	1181	289	1225,6	7,0	-	-	-	-	-	1333,5	66,6	32
46"	1510	179,4	185,8	1235	300	1276,4	7,0	-	-	-	-	-	1390,6	66,6	32
48"	1595	189,0	195,3	1289	316	1333,5	7,0	-	-	-	-	-	1460,5	73,2	32
50"	1670	196,9	203,2	1343	329	1384,3	7,0	-	-	-	-	-	1524,0	79,3	28
52"	1720	203,2	209,6	1394	337	1435,1	7,0	-	-	-	-	-	1574,8	79,3	32
54"	1780	209,6	217,5	1448	349	1492,2	7,0	-	-	-	-	-	1632,0	79,3	32
56"	1855	217,5	225,5	1502	362	1543,0	7,0	-	-	-	-	-	1695,4	85,9	32
58"	1905	222,3	231,8	1553	370	1600,2	7,0	-	-	-	-	-	1746,2	85,9	32
60"	1995	233,4	242,9	1610	389	1657,4	7,0	-	-	-	-	-	1822,4	92,0	28

NOTES: Bore (B) to be specified by purchaser
 OD of Hub at W end (H) depends on material properties of flange versus joining piping - see section 5.3 of MSS SP-44.

MSSSP-44 CLASS 900 FLANGES



DIMENSIONS FOR MSSSP-44 CLASS 900 FLANGES (mm)

Nominal Pipe size	Flanged dimension			Hub dimension		RF dimensions		RTJ dimensions					Bolt hole drilling		
	OD flange O	Thickn. WN C.min.	Thickn. Blind E.min.	OD Large end X	Length through Y	OD D	Height	OD K	Groove number P	Pitch L	Depth D	Width D	Bolt Circle Bc	Bolt Hole Bh	No of bolts
26"	1085	139,7	160,4	775	286	749,3	7,0	832	R100	749,3	17,48	30,18	952,5	73,2	20
28"	1170	142,9	171,5	832	298	800,1	7,0	889	R101	800,1	17,48	33,32	1022,4	79,3	20
30"	1230	149,3	182,6	889	311	857,2	7,0	946	R102	857,3	17,48	33,32	1085,8	79,3	20
32"	1315	158,8	193,7	946	330	914,4	7,0	1003	R103	914,4	17,48	33,32	1155,7	85,9	20
34"	1395	165,1	204,8	1006	349	965,2	7,0	1067	R104	965,2	20,62	36,52	1225,6	92,0	20
36"	1460	171,5	214,4	1064	362	1022,4	7,0	1124	R105	1022,4	20,62	36,52	1289,0	92,0	20
38"	1460	190,5	215,9	1073	352	1098,6	7,0	-	-	-	-	-	1289,0	92,0	20
40"	1510	196,9	223,9	1127	364	1162,8	7,0	-	-	-	-	-	1339,8	92,0	24
42"	1560	206,4	231,8	1176	371	1212,8	7,0	-	-	-	-	-	1390,6	92,0	24
44"	1650	214,4	242,9	1235	391	1270,0	7,0	-	-	-	-	-	1463,7	98,6	24
46"	1735	225,5	255,6	1292	411	1333,5	7,0	-	-	-	-	-	1536,7	104,7	24
48"	1785	233,4	263,6	1343	419	1384,3	7,0	-	-	-	-	-	1587,5	104,7	24

NOTES: Bore (B) to be specified by purchaser
 OD of HUB at WN End (H) depends on material properties of flange versus joining piping - see section 5.3 of MSSSP-44.

TOLERANCES MSSSP-44-2006

Denomination	Description	Size range	Tolerance
O	Outsidediameter flanging-note 1	($\geq 26''$)	$\pm 3.2\text{mm}$
B	Insidediameter/ bore	($\geq 20''$)	$+3.0/-1.5\text{mm}$
H	Diametersmallend ofHUB/WNend	($\geq 26''$)	$+5.0/-1.5\text{mm}$
X	Diameter of HUB base- note1 Drillingandfacing	($\geq 26''$ dimensionX) Boltcirclediameter Centertocenteradjacentboltholes Maxeccentricitybetweenboltcirclediam. andmachiningfacingdiameter	$+3.2/-0.8\text{mm}$ $\pm 1.5\text{mm}$ $\pm 0.8\text{mm}$ 2.0mm
Y	OverallHUBlength	($\geq 26''$)	$\pm 5.0\text{mm}$
CorE	Thicknessof flanging	($\geq 20''$)	$+5.0/-0.0\text{mm}$
L	Groovedepth-note2	Applicableforgroovedepthonly	$+0.4/-0.0\text{mm}$
D	Groovewidth-note2		$\pm 0.2\text{mm}$
P	Groovepitch-note2		± 0.13
K	RTJraisedportion-note2		$+0.50/-0.00\text{mm}$
R	RFraisedportion	2.0mmRFheight($\geq 26''$) 7.0mmRFheight($\geq 26''$)	$\pm 2.0\text{mm}$ $\pm 1.0\text{mm}$

NOTES: 1) ThesetolerancesarenotcoveredbyMSSSP-44,andareforguidanceonly.
2) ThesetolerancesarenotcoveredbyMSSSP-44-takenfromASMEB16.5.

API 6A-type 6B flanges

Weldneck, Threaded and Integral flanges are available in 2000, 3000 and 5000 psi rating

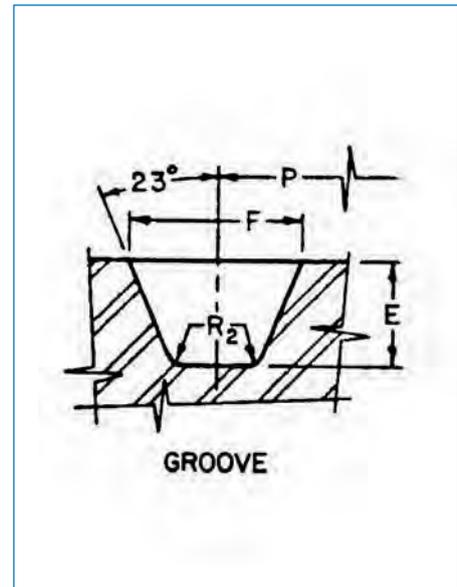
TYPE 6B WELD NECK FLANGES-5000 PSI

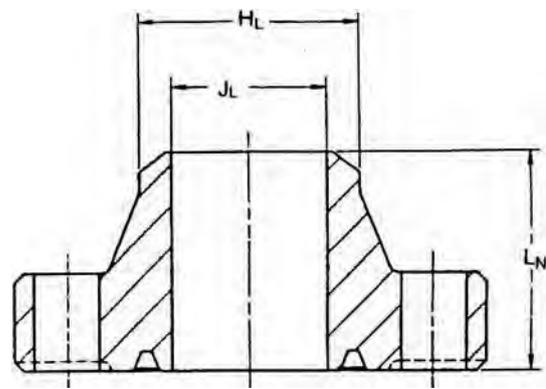
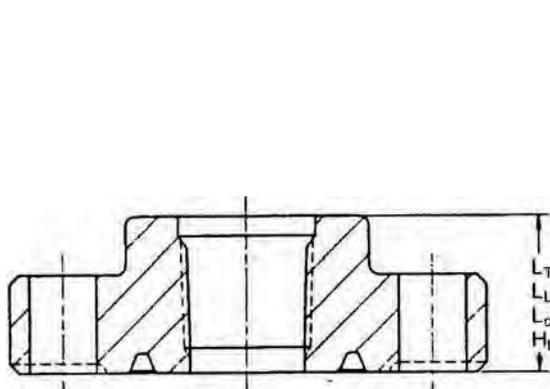
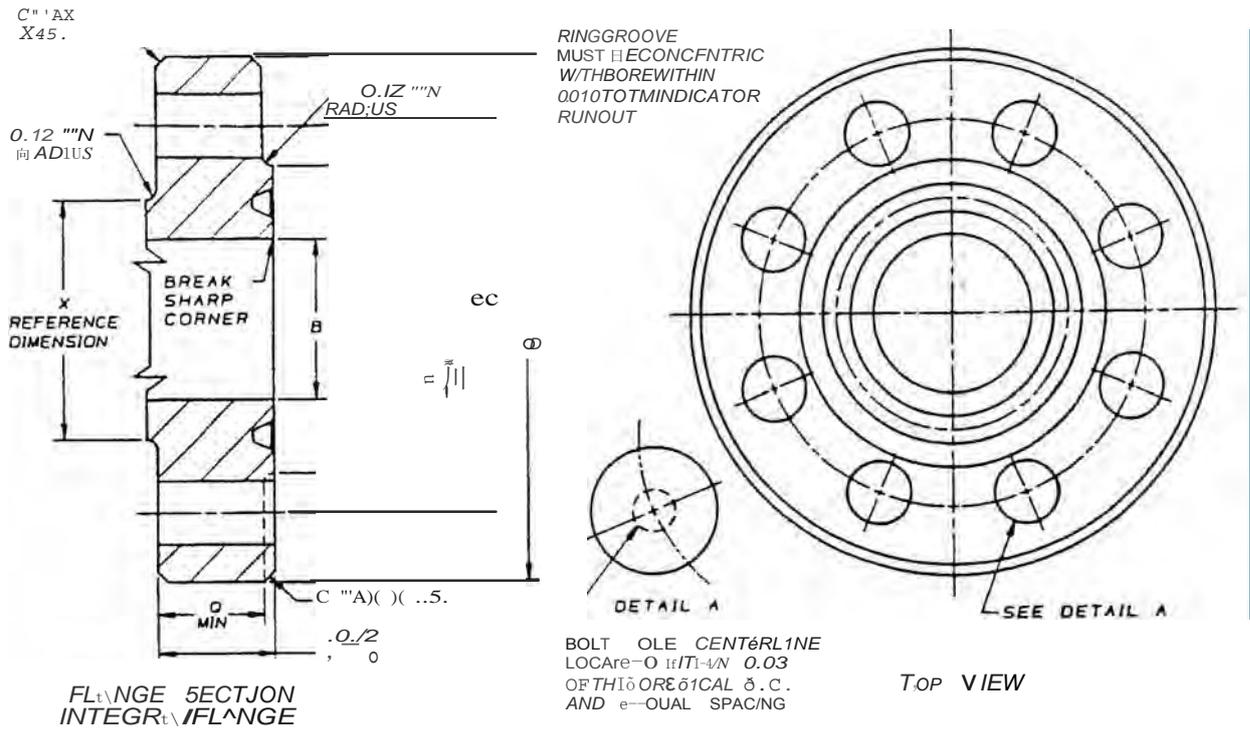
Nominal size	Nom. bore	Max bore	OD flange	Raised face OD	Total thckn.	Basic thckn. diam.	Large HUB diam.	Small HUB	HUB length	OD bolt circle	No. of bolts	Bolt diam.	Bolt hole diam.	Stud bolt length	Ring number	Pitch of groove	Width of groove	Depth of groove
(inch)	JL	OD	K	T	Q	X	HL	LN	BC	(inch)			Lssb	R/ RX	P	F	E	
2 1/16	52	43,7	215	124	46,1	38,1	104,8	60,3	109,5	165,1	8	7/8	26	150	24	95,25	11,91	7,9
2 5/16	65	54,9	245	137	49,3	41,3	123,8	73,0	112,7	190,5	8	1	29	165	27	107,95	11,91	7,9
3 1/8	79	67,5	265	168	55,6	47,7	133,3	88,9	125,4	203,2	8	1 1/8	32	185	35	136,53	11,91	7,9
4 1/16	103	88,1	310	194	62,0	54,0	161,9	114,3	131,8	241,3	8	1 1/4	35	205	39	161,93	11,91	7,9
5 1/8	130	110,3	375	229	81,0	73,1	196,8	141,3	163,5	292,1	8	1 1/2	42	255	44	193,68	11,91	7,9
7 1/16	178	132,6	395	248	92,1	82,6	228,6	168,3	181,0	317,5	12	1 3/8	39	275	46	211,15	13,49	9,7
9	228	173,8	485	318	103,2	92,1	292,1	219,1	223,8	393,7	12	1 3/4	45	305	50	269,88	16,66	11,2
11	279	216,7	585	371	119,1	108	368,3	273,1	265,1	482,6	12	1 7/8	51	350	54	323,85	16,66	11,2

NOTE: All dimension except NPS and bolt diameter in millimeters

TOLERANCES:

OD	2 1/16 to 5 1/8	+/-2mm
OD	7 1/16 to 11	+/-3mm
LN		+/-1.6mm
HL	2 1/16 to 5 1/8	+2.3/-0.8mm
HL	7 1/16 to 11	+4.0/-0.8mm
T		+3/-0mm
K		/-0mm
Q		/-0mm
Bolt holes	2 1/16 to 7 1/16	+2.0/-0.5mm
Bolt holes	9 to 11	+2.5/-0.5mm
P		+/-0.13mm
F		+/-0.20mm
E		+0.5/-0mm
All other dimension- as X.X		+/-0.5mm
All other dimension- as X.XX		+/-0.1mm





API6A-type6BX flanges

Weldneck, Blind and Test flanges are available in 10.000, 15.000 and 20.000 psi rating. Integral flanges are available in 2000, 3000, 5000, 10.000, 15.000 and 20.000 psi rating.

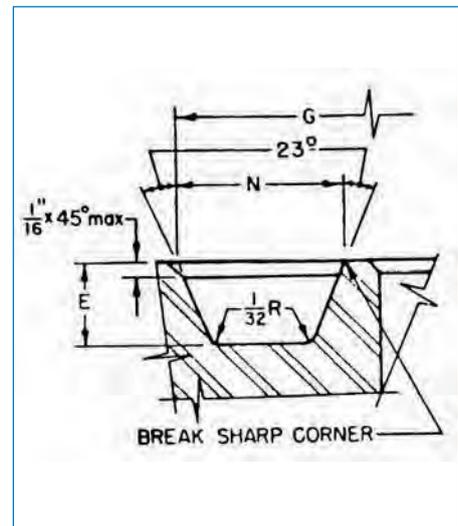
TYPE 6BX WELD NECK FLANGES - 10.000/15.000/20.000 PSI

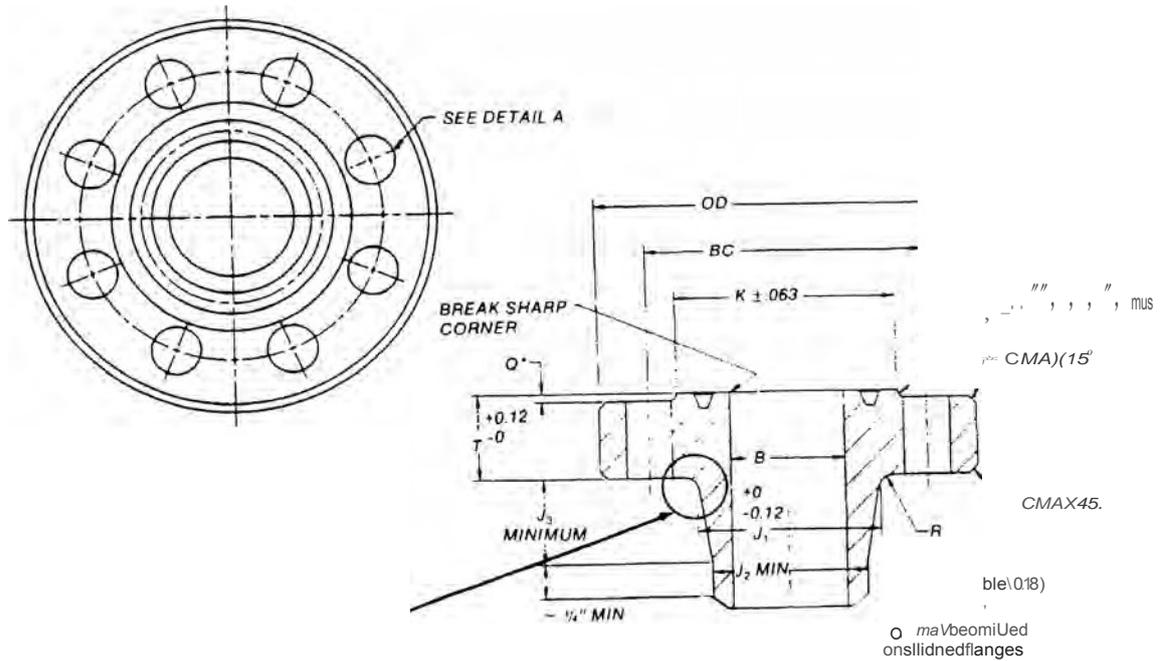
Nominal size	Nom. bore	Max bore	OD flange	Raised face OD	Total thickness	Large HUB diam.	Small HUB diam.	HUB length	OD bolt circle	No. of bolts	Bolt diam.	Bolt hole diam.	Studd bolt length	Ring number	OD of groove	Width of groove	Depth of groove
(inch)	B	B	OD	K	T	J1	J2	J3	BC		(inch)		Lssb	BX	G	N	E
10.000psi																	
1 13/16	46	46,8	185	105	42,1	88,9	65,1	48,4	146,0	8	3/4	23	125	151	77,77	11,84	5,56
2 1/16	52	53,2	200	111	44,1	100,0	74,6	51,6	158,8	8	3/4	23	135	152	86,23	12,65	5,95
2 3/16	65	65,9	230	132	51,2	120,7	92,1	57,2	184,2	8	7/8	26	150	153	102,77	14,07	6,75
3 1/16	78	78,6	270	152	58,4	142,1	110,3	63,5	215,9	8	1	29	170	154	119,00	15,39	7,54
4 1/16	103	104,0	315	185	70,3	182,6	146,1	73,0	258,8	8	1 1/8	32	205	155	150,62	17,73	8,33
5 1/16	130	131,0	360	221	79,4	223,8	182,6	81,0	300,0	12	1 1/8	32	220	169	176,66	16,92	9,53
7 1/16	179	180,2	480	302	103,2	301,6	254,0	95,2	403,2	12	1 1/2	42	285	156	241,83	23,39	11,11
9	228	229,4	550	359	123,9	374,7	327,1	93,7	476,2	16	1 1/2	42	330	157	299,06	26,39	12,70
11	279	280,2	655	429	141,3	450,9	400,1	103,2	565,2	16	1 3/4	48	380	158	357,23	29,18	14,29
13 3/16	346	346,9	770	518	168,3	552,5	495,3	114,3	673,1	20	1 7/8	51	440	159	432,64	32,49	15,88
16 3/4	425	426,2	870	576	168,3	655,6	601,7	76,2	776,3	24	1 7/8	51	445	162	478,33	17,91	8,33
15.000psi																	
1 13/16	46	46,8	210	106	45,3	97,6	71,4	47,6	160,3	8	7/8	26	140	151	77,77	11,84	5,56
2 1/16	52	53,2	220	114	50,8	111,1	82,6	54,0	174,6	8	7/8	26	150	152	86,23	12,65	5,95
2 3/16	65	65,9	255	133	57,2	128,6	100,0	57,2	200,0	8	1	29	170	153	102,77	14,07	6,75
3 1/16	78	78,6	290	154	64,3	154,0	122,2	63,5	230,2	8	1 1/8	32	190	154	119,00	15,39	7,54
4 1/16	103	104,0	360	194	78,6	195,3	158,8	73,0	290,5	8	1 1/8	39	235	155	150,62	17,73	8,33
5 1/16	130	131,0	420	225	98,5	244,5	200,0	81,8	342,9	12	1 1/2	42	290	169	176,66	16,92	9,53
7 1/16	179	180,2	505	305	119,1	325,4	276,2	92,1	428,6	16	1 1/2	42	325	156	241,83	23,39	11,11
20.000psi																	
1 13/16	46	46,8	255	117	63,5	133,4	109,5	49,2	203,2	8	1	29	190	151	77,77	11,84	5,56
2 1/16	52	53,2	285	132	71,5	154,0	127,0	52,4	230,2	8	1 1/8	32	210	152	86,23	12,65	5,95
2 3/16	65	65,9	325	151	79,4	173,0	144,5	58,7	261,9	8	1 1/4	35	235	153	102,77	14,07	6,75
3 1/16	78	78,6	355	171	85,8	192,1	160,3	63,5	287,3	8	1 1/8	39	255	154	119,00	15,39	7,54
4 1/16	103	104,0	445	219	106,4	242,9	206,4	73,0	357,2	8	1 3/4	48	310	155	150,62	17,73	8,33
7 1/16	179	180,2	655	352	165,1	385,8	338,1	96,8	554,0	16	2	54	445	156	241,83	23,39	11,11

NOTE: All dimensions except NPS and bolt diameter in millimeters

TOLERANCES:

OD	113/16 to 51/8	+/-2mm
OD	71/16 to 163/4	+/-3mm
J1		+0/-3mm
J2		-0mm
J3		-0mm
T		+3/-0mm
K		+/-1.6mm
Boltholes	113/16 to 51/8	+2.0/-0.5mm
Boltholes	71/16 to 163/4	+2.5/-0.5mm
G		+0.1/-0mm
N		+0.1/-0mm
E		+0.5/-0mm
All other dimension-		+/-0.5mm
as X.X		+/-0.1mm





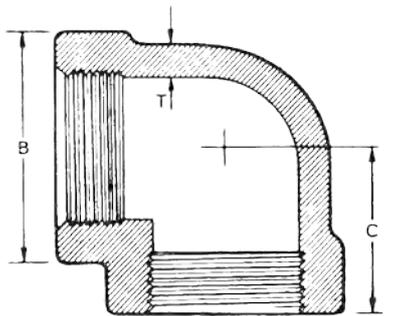
DETAIL B

FLANGE SECTION

90°ELBOWS-THREADED-B16.11

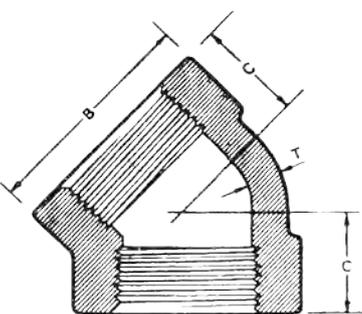
Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
2000LB	B	22	22	25	33	38	46	56	62	75	92	109	146
	C	21	21	25	28	33	38	44	51	60	76	86	106
	T	3,18	3,18	3,18	3,18	3,18	3,68	3,89	4,01	4,27	5,61	5,99	6,55
	AppWt	0,08	0,08	0,11	0,23	0,28	0,46	0,80	1,00	1,60	2,30	4,35	10,25
	Kg												
3000LB	B	22	25	33	38	46	56	62	75	84	102	121	152
	C	21	25	28	33	38	44	51	60	64	83	95	114
	T	3,18	3,30	3,51	4,09	4,32	4,98	5,28	5,56	7,14	7,65	8,84	11,18
	AppWt	0,14	0,14	0,27	0,37	0,60	1,08	1,22	2,45	2,50	5,25	7,40	13,00
	Kg												
6000LB	B	25	33	38	46	56	62	75	84	102	121	146	152
	C	25	28	33	38	44	51	60	64	83	95	106	114
	T	6,35	6,60	6,98	8,15	8,53	9,93	10,59	11,07	12,09	15,29	16,64	18,67
	AppWt	0,31	0,31	0,50	0,69	1,25	1,65	2,75	3,22	6,25	10,00	17,00	18,00
	Kg												

90°elbows



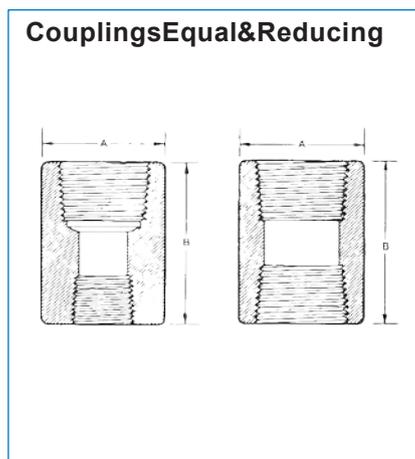
45°ELBOWS-THREADED-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
2000LB	B	22	22	25	33	38	46	56	62	75	92	109	146
	C	17	17	19	22	25	28	33	35	43	52	64	79
	T	3,18	3,18	3,18	3,18	3,18	3,68	3,89	4,01	4,27	5,61	5,99	6,55
	AppWt	0,10	0,10	0,11	0,21	0,24	0,39	0,70	0,85	1,23	3,00	3,50	9,00
	Kg												
3000LB	B	22	25	33	38	46	56	62	75	84	102	121	152
	C	17	19	22	25	28	33	35	43	44	52	64	79
	T	3,18	3,30	3,51	4,09	4,32	4,98	5,28	5,56	7,14	7,65	8,84	11,18
	AppWt	0,13	0,13	0,25	0,36	0,53	0,78	1,02	1,70	2,35	5,40	6,00	10,50
	Kg												
6000LB	B	25	33	38	46	56	62	75	84	102	121	146	152
	C	19	22	25	28	33	35	43	44	52	64	79	79
	T	6,35	6,60	6,98	8,15	8,53	9,93	10,59	11,07	12,09	15,29	16,64	18,67
	AppWt	0,25	0,25	0,35	0,60	0,95	1,22	1,35	2,55	5,60	8,00	15,50	13,00
	Kg												



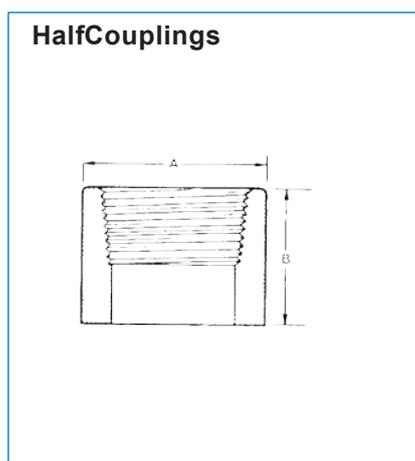
COUPLINGS-THREADED-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	16	19	22	28	35	44	57	64	76	92	108	140
	B	32	35	38	48	51	60	67	79	86	92	108	121
	AppWt Kg	0,05	0,05	0,06	0,14	0,20	0,39	0,73	1,03	1,35	2,30	3,15	5,80
6000LB	A	22	25	32	38	44	57	64	76	92	108	127	159
	B	32	35	38	48	51	60	67	79	86	92	108	121
	AppWt Kg	0,10	0,10	0,12	0,37	0,45	1,00	1,65	1,85	2,80	4,00	5,50	10,00



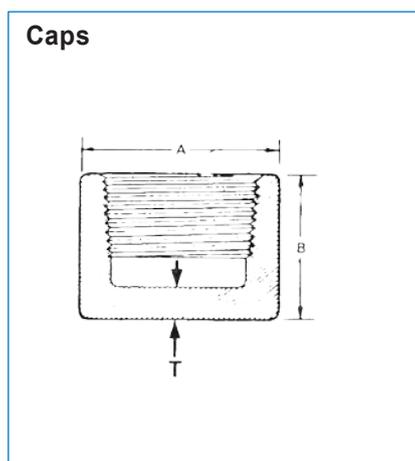
HALFCOUPLINGS-THREADED-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	16	19	22	28	35	44	57	64	76	92	108	140
	B	16,0	17,5	19,0	24,0	25,5	30,0	33,5	39,5	43,0	46,0	54,0	60,5
	AppWt Kg	0,02	0,03	0,03	0,07	0,11	0,20	0,37	0,51	0,66	1,15	1,57	2,90
6000LB	A	22	25	32	38	44	57	64	76	92	108	127	159
	B	16,0	17,5	19,0	24,0	25,5	30,0	33,5	39,5	43,0	46,0	54,0	60,5
	AppWt Kg	0,04	0,05	0,06	0,19	0,23	0,50	0,83	0,92	1,40	2,00	2,75	5,00

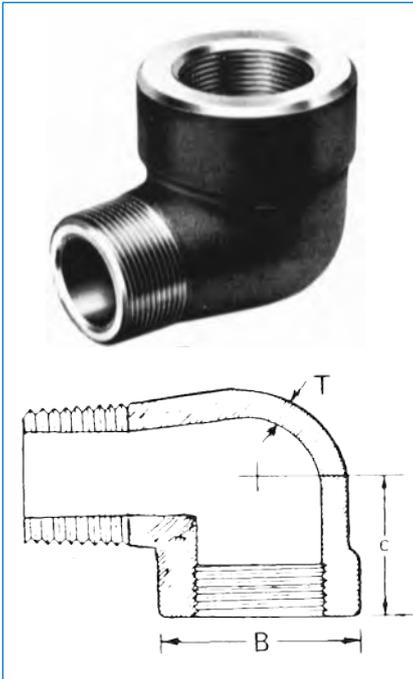


CAPS-THREADED-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	16	19	22	28	35	44	57	64	76	92	108	140
	B	19,0	25,0	25,0	32,0	37,0	41,0	44,0	44,0	48	60,0	65,0	68,0
	T AppWt Kg	4,8	4,8	4,8	6,4	6,4	9,7	9,7	11,2	12,7	15,7	19,0	22,4
6000LB	A		25	32	38	44	57	64	76	92	108	127	159
	B		27,0	27,0	33,0	38,0	43,0	46,0	48,0	51,0	64,0	68,0	75,0
	T AppWt Kg		6,4	6,4	7,9	7,9	11,2	11,2	12,7	15,7	19,0	22,4	28,4

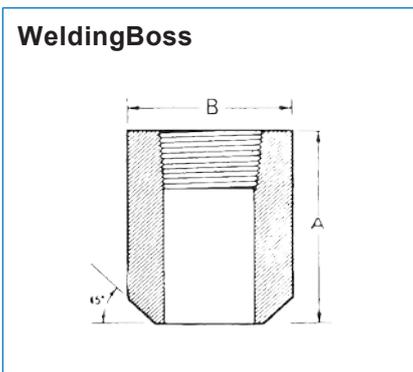


STREETELBOWS-MALE/FEMALE-THREADED-B16.11



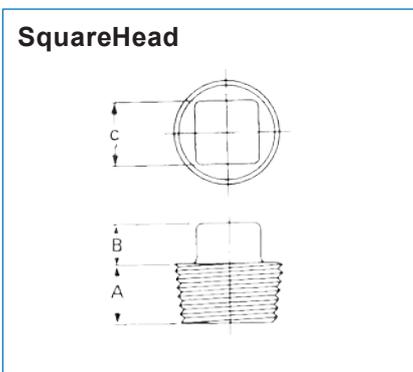
Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
3000LB	B	19	25	32	38	44	51	62	70	84
	C	19	22	25	28	35	44	51	64	64
	T	3,18	3,30	3,51	4,09	4,32	4,98	5,28	5,56	7,14
	AppWt Kg		0,13	0,23	0,33	0,53	0,94	1,30	1,47	2,30
6000LB	B	25	32	38	44	51	62	70	84	102
	C	22	25	28	35	44	51	54	64	83
	T	5,08	5,66	6,98	8,15	8,53	9,93	10,59	11,07	12,09
	AppWt Kg									

NOTE: At manufacturer option, the dimensions C of the table for threaded Tees (previous page) may be used instead of C in above table



WELDING BOSS-THREADED-BS3799

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"
3000LB	A	38	41	45	51	51	51	51	51
	B	16	19	22	29	35	45	64	76
6000LB	B	22	26	32	38	45	60	76	95
	AppWt Kg(6000lb)	0,20	0,24	0,30	0,37	0,50	0,80	1,29	1,78

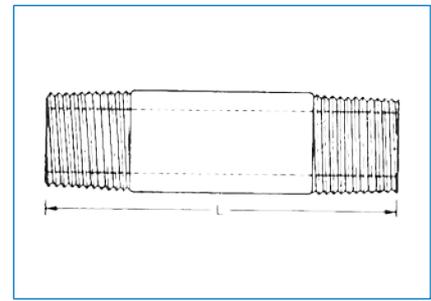


SQUARE HEAD PLUG (ASME B16.11)

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	10	11	13	14	16	19	21	21	22	27	28	32
	B	6	6	8	10	11	13	14	16	18	19	21	25
	C	7	10	11	14	16	21	24	28	32	36	41	65
6000LB	AppWt Kg	0,01	0,02	0,03	0,05	0,09	0,17	0,27	0,40	0,60	0,89	1,25	3,10

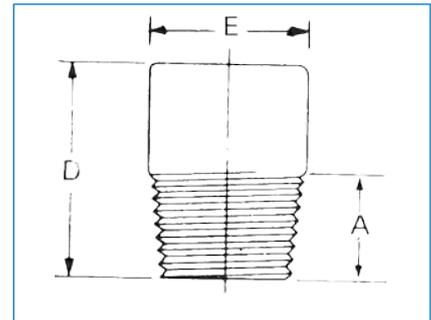
PIPENIPPLES-THREADED-BS3799

	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Length'L'	100mmisourstandard,butanylenghwillbeprovidedonrequest.Available											
Pipe wall:EndTypes	inanystandard Schedule,e.g.Sch80-3000lb,SchXXS-6000lb.Threaded,bevelledorplain.											
3000lbs-XS	0,07	0,08	0,11	0,16	0,22	0,31	0,44	0,53	0,74	1,12	1,46	2,15
6000lbs-XXS				0,25	0,36	0,54	0,77	0,95	1,31	2,00	2,65	4,00



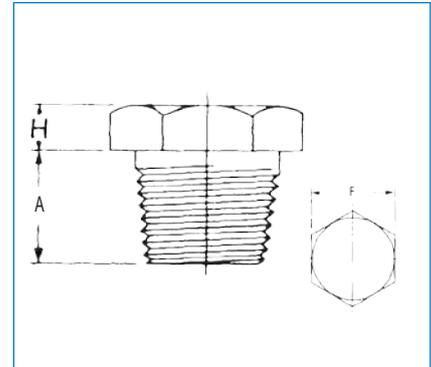
ROUNDHEADPLUG-THREADED-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	10	11	13	14	16	19	21	21	22	27	28	32
	D	35	41	41	44	44	51	51	51	64	70	70	76
	E	10	14	18	21	27	33	43	48	60	73	89	114
6000LB	AppWt	0,04	0,05	0,07	0,13	0,22	0,32	0,50	0,72	1,35	2,20	3,30	6,00
	Kg												



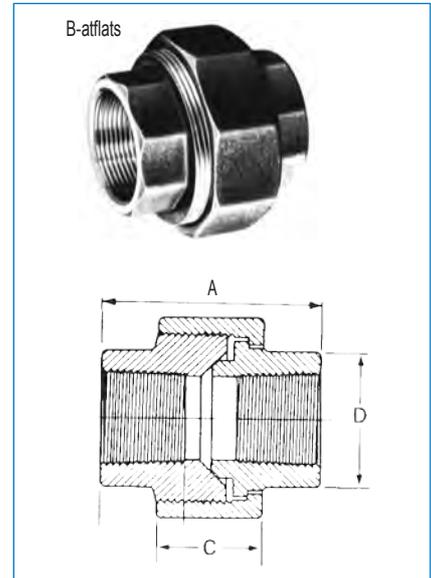
HEXAGONHEADPLUG-THREADED-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	10	11	13	14	16	19	21	21	22	27	28	32
	H	6	6	8	8	10	10	14	16	18	19	21	25
6000LB	F	11	16	18	22	27	36	46	50	65	75	90	115
	AppWt	0,02	0,03	0,05	0,07	0,13	0,22	0,41	0,49	0,77	1,61	1,94	4,50
	Kg												



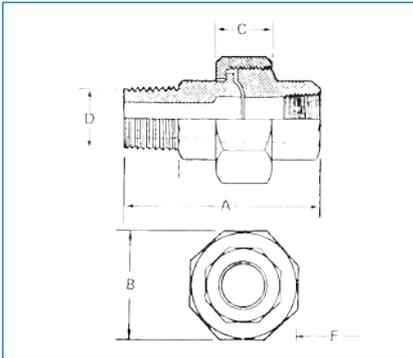
UNIONS-THREADED-BS3799(1974)

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	40	43	48	51	57	64	70	79	89	118	121	-
	B	32	32	36	43	50	60	70	78	95	125	140	-
	C	16	18	19	21	24	25	29	30	37	48	51	-
	D	17	19	22	30	36	41	50	60	70	85	100	-
	AppWt	0,14	0,17	0,21	0,31	0,49	0,83	1,22	1,53	2,30	5,00	6,25	-
6000LB	A	44,5	44,5	50,8	60,5	57,2	57,2	76,2	88,9	108,0	108,0	127,0	-
	B	39,6	39,6	42,9	53,8	58,4	73,2	79,2	88,9	120,7	152,4	190,5	-
	C	22,4	22,4	26,9	26,9	26,9	34,8	34,8	34,8	47,8	53,8	50,8	-
	D	23,9	23,9	31,8	36,6	44,5	55,6	63,5	76,2	88,9	108,0	127,0	-
	AppWt	0,20	0,30	0,50	1,12	1,60	2,15	2,42	4,73	6,50	9,50	19,20	-



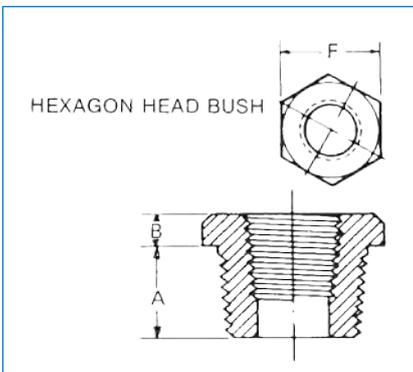
NOTE:The6000lbsistypicalmanufacturerstandard-notincludedinBS3799

UNIONS-MALE X FEMALE (MF), THREADED X 2,
 THREADED + SOCKET WELDED



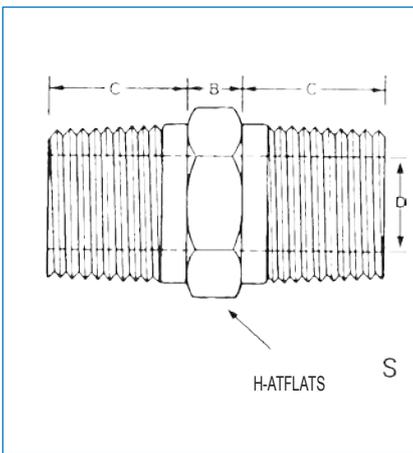
Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
3000LB	A	49,5	54,1	60,7	65,0	72,6	83,1	90,7	99,6	111,3
	B	32,0	32,0	36,1	42,9	50,0	59,9	70,1	78,0	95,0
	C	16,0	18,0	19,1	21,1	23,9	24,9	29,0	30,0	37,1
	D	17,0	19,1	22,1	30,0	36,1	40,9	50,0	59,9	70,1
	AppWt Kg	0,16	0,21	0,27	0,46	0,61	0,99	1,55	1,9	2,9

HEXAGON HEAD BUSHING-THREADED-B16.11



Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	-	11	13	14	16	19	21	21	22	27	28	32
	B	-	3	4	5	6	6	7	8	9	10	10	13
	F	-	16	18	22	27	36	46	50	65	75	90	115
6000LB	AvApp WtKg	-	0,02	0,03	0,06	0,10	0,17	0,33	0,42	0,62	1,27	1,65	3,10

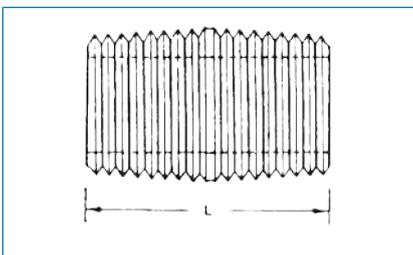
HEXAGON NIPPLES - THREADED - BS3799



Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"
BS3799 (min) 3000LB	B	6	6	8	8	10	10	16	17
	C	10	15	16	20	21	25	26	27
	D	5	8	11	14	19	24	38	49
6000LB	D	2	6	8	11	13	17	30	39
	H	11	15	18	22	27	35	50	62
	AppWt Kg	0,02	0,03	0,06	0,08	0,15	0,24	0,37	0,45

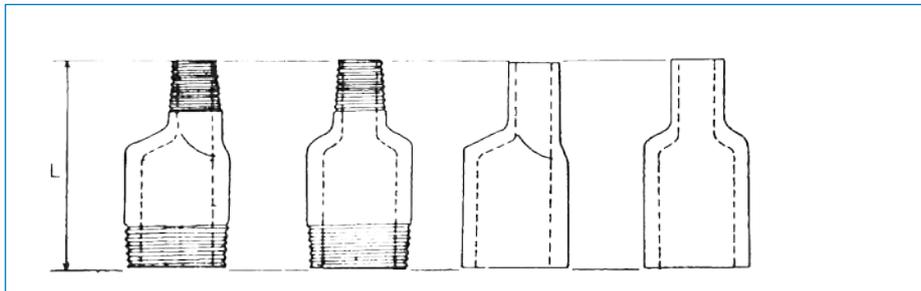
NOTE: Reducing sizes is also available, but not included in above table

CLOSE TAPER NIPPLES



	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
Standard L'Length	19,1	25,4	28,6	31,8	38,1	44,5	50,8	50,8	50,8	60,3	76,2	88,9
Available in any Standard Production Schedule Wall Thickness, e.g. Sch 40, 80, 160, XXS												

SWAGED NIPPLES

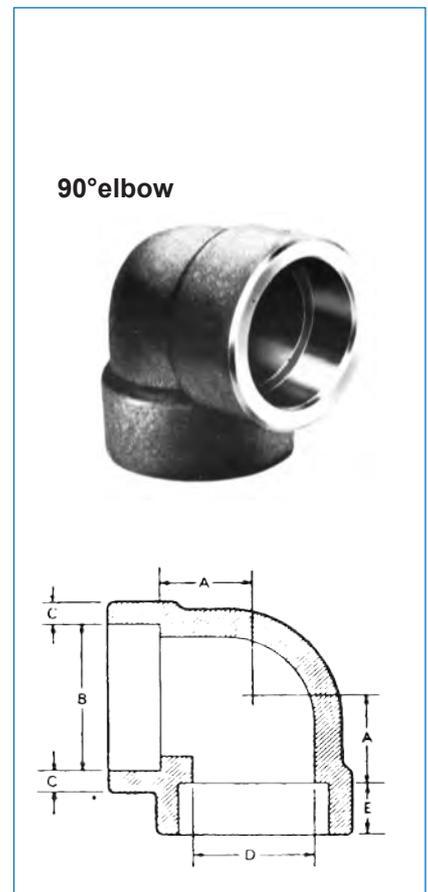


Large end dimensions	3/8"	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
Length	76	89	95	102	114	165	178	203	229

NOTE: 3000lbs minimum from thickness Sch80, 6000lbs from thickness Sch160/XXS respectively for plain vs screwed

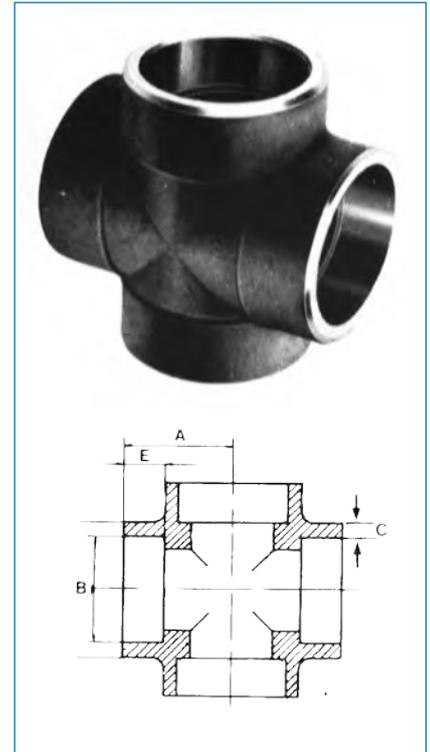
90° ELBOWS-SOCKET WELD-B16.11

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	11,0	11,0	13,5	15,5	19,0	22,5	27,0	32,0	38,0	41,0	57,0	66,5
	Bmin	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
	Bmax	11,2	14,6	18,0	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	Cmin	3,18	3,30	3,50	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,30	9,35
	Dmin	6,1	8,5	11,8	15,0	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	Dmax	7,6	10,0	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	16,0	16,0	16,0	16,0	19,0
	AppWt	0,08	0,08	0,12	0,24	0,29	0,48	0,75	0,95	1,65	2,50	4,30	9,70
	Kg												
6000LB	A	11,0	13,5	15,5	19,0	22,5	27,0	32,0	38,0	41,0	-	-	-
	Bmin	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	-	-	-
	Bmax	11,2	14,6	18,0	22,2	27,6	34,3	43,1	49,2	61,7	-	-	-
	Cmin	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,80	9,50	-	-	-
	Dmin	3,2	5,6	8,4	11,0	14,8	19,9	28,7	33,2	42,1	-	-	-
	E	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6	-	-	-
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16,0	-	-	-
	AppWt	0,15	0,17	0,30	0,43	0,66	1,14	1,60	2,70	2,95	-	-	-
	Kg												



CROSSES-SOCKETWELD-B16.11

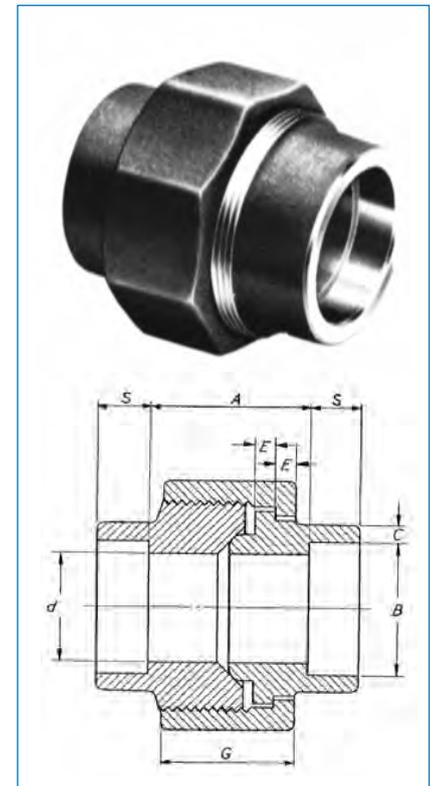
Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	A	11,0	11,0	13,5	15,5	19,0	22,5	27,0	32,0	38,0	41,0	57,0	66,5
	Bmin	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
	Bmax	11,2	14,6	18,0	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	Cmin	3,18	3,30	3,50	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,30	9,35
	Dmin	6,1	8,5	11,8	15,0	20,2	25,9	34,3	40,1	51,7	61,2	76,4	100,7
	Dmax	7,6	10,0	13,3	16,6	21,7	27,4	35,8	41,6	53,3	64,2	79,4	103,8
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16,0	16,0	16,0	19,0
	AppWt Kg	0,14	0,14	0,21	0,34	0,47	0,80	1,25	1,50	2,23	3,95	6,50	16,00
6000LB	A	11,0	13,5	15,5	19,0	22,5	27,0	32,0	38,0	41,0	-	-	-
	Bmin	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	-	-	-
	Bmax	11,2	14,6	18,0	22,2	27,6	34,3	43,1	49,2	61,7	-	-	-
	Cmin	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,80	9,50	-	-	-
	Dmin	3,2	5,6	8,4	11,0	14,8	19,9	28,7	33,2	42,1	-	-	-
	Dmax	4,8	7,1	9,9	12,5	16,3	21,5	30,2	34,7	43,6	-	-	-
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16,0	-	-	-
	AppWt Kg	0,26	0,26	0,50	0,67	1,06	1,79	2,15	4,45	5,40	-	-	-



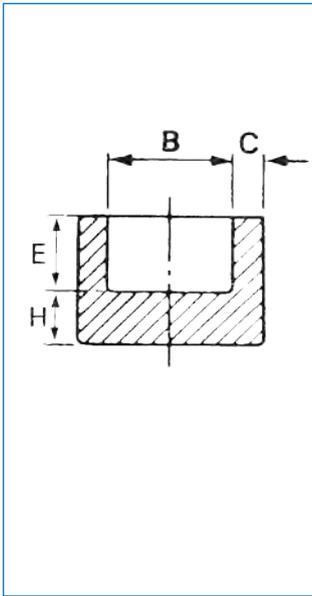
UNIONS-SOCKETWELD-BS3799

Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
3000LB	A	17	17	17	18	20	26	28	30	36	57	70
	B	10,7	14,1	17,6	21,8	27,4	34,1	42,9	49,0	61,0	73,8	89,7
	C	3,2	3,3	3,5	4,1	4,3	5,0	5,3	5,6	6,1	7,7	8,3
	D	6,8	9,2	12,5	15,5	21,0	26,5	35,0	40,5	52,0	62,0	78,0
	E	3,2	3,2	3,2	4,0	4,8	4,8	5,6	5,6	6,4	9,6	12,7
	F	32	32	36	41	50	60	70	78	95	125	140
	S	10	10	10	10	13	13	13	13	16	16	16
	AppWt Kg	0,14	0,18	0,23	0,39	0,52	0,73	1,20	1,56	2,30	5,00	7,15

NOTE:6000lbsisavailablewithmanufacturerstandarddimensions

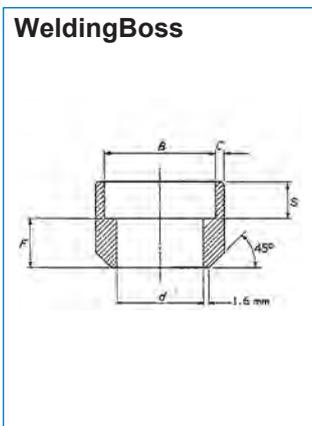


CAPS-SOCKETWELD-B16.11



Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
3000LB	Bmin	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	73,9	89,8	115,2
	Bmax	11,2	14,6	18,0	22,2	27,6	34,3	43,1	49,2	61,7	74,4	90,3	115,7
	Cmin	3,18	3,30	3,50	4,09	4,27	4,98	5,28	5,54	6,04	7,67	8,30	9,35
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16,0	16,0	16,0	19,0
	H	4,8	4,8	4,8	6,4	6,4	9,6	9,6	11,2	12,7	15,7	19,0	22,4
	AppWt Kg	0,03	0,04	0,06	0,14	0,18	0,30	0,51	0,65	0,92	1,40	2,50	3,50
6000LB	Bmin	10,8	14,2	17,6	21,8	27,2	33,9	42,7	48,8	61,2	-	-	-
	Bmax	11,2	14,6	18,0	22,2	27,6	34,3	43,1	49,2	61,7	-	-	-
	Cmin	3,43	4,01	4,37	5,18	6,04	6,93	6,93	7,80	9,50	-	-	-
	E	9,5	9,5	9,5	9,5	12,5	12,5	12,5	12,5	16,0	-	-	-
	H	6,4	6,4	6,4	7,9	7,9	11,2	11,2	12,7	15,7	-	-	-
	AppWt Kg	0,08	0,08	0,14	0,18	0,21	0,46	0,70	0,89	1,20	-	-	-

WELDINGBOSS-SOCKETWELD.-BS3799



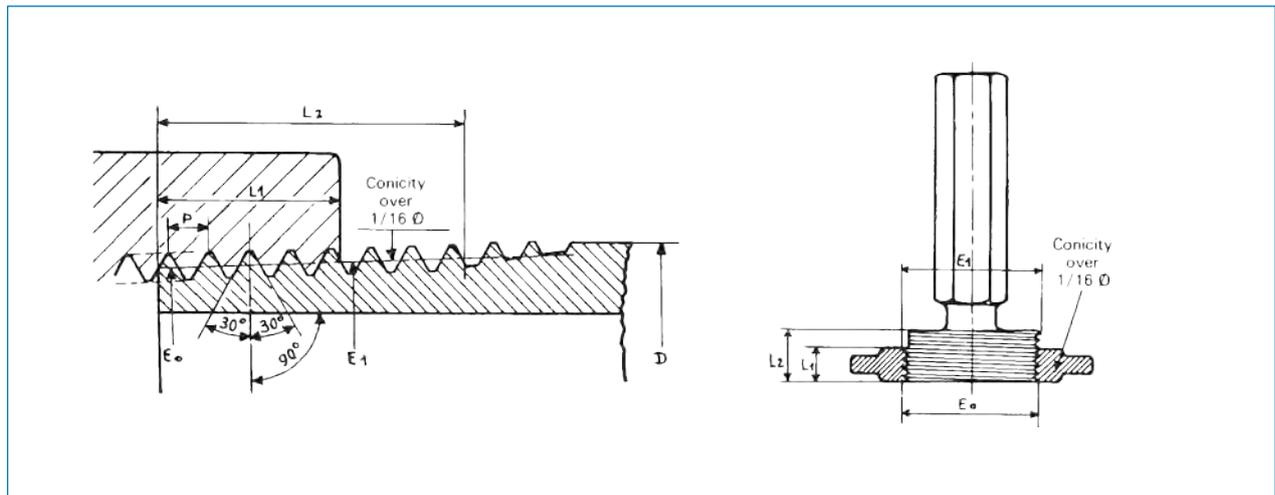
Rating	Dims	1/8"	1/4"	3/8"	1/2"	3/4"	1	1 1/2"	2"
3000LB	B	10,7	14,1	17,6	21,8	27,4	34,1	49,0	61,0
	C	3,2	3,3	3,5	4,1	4,3	5,0	5,6	6,1
6000LB	C	-	-	-	5,2	6,1	7,0	7,8	9,5
	D	THROUGHBORE, Sch40-3000lb, Sch160-6000lb							
	F	28,0	32	34	38	38	35	32	29
	S	10	10	11	13	13	16	19	22
	AppWt Kg	0,20	0,23	0,29	0,38	0,53	0,83	1,31	1,86

TAPER PIPE THREADS, NPT

Nominal size of tube	Outside diameter of the tube D		Number of threads per inch	Diameter of Pitch P		Diameter of the bolt at the outside end of the thread E _o		The pitch of the bolt at the inside end of the thread E ₁		Efficient length of the thread L ₂		Length of the head and packing L ₁		Increase of the diameter per rotation	
	mm	In.		mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.
1/8	10,29	0,405	27	0,94	0,03704	9,233	0,36351	9,489	0,3736	6,703	0,2639	4,102	0,1615	0,0586	0,00231
1/4	13,72	0,54	18	1,411	0,05556	12,126	0,47739	12,487	0,49163	10,205	0,4018	5,786	0,2278	0,0881	0,00347
3/8	17,14	0,675	18	1,411	0,05556	15,545	0,61201	15,929	0,62701	10,358	0,4078	6,096	0,24	0,0881	0,00347
1/2	21,34	0,84	14	1,814	0,07143	19,264	0,75843	19,772	0,77843	13,556	0,5337	8,128	0,32	0,1132	0,00446
3/4	26,67	1,05	14	1,814	0,07143	24,579	0,96768	25,117	0,98887	13,86	0,5457	8,61	0,339	0,1132	0,00446
1	33,4	1,315	11 1/2	2,209	0,08696	30,826	1,21363	31,461	1,23863	17,343	0,6828	10,16	0,4	0,1379	0,00543
1 1/4	42,16	1,66	11 1/2	2,209	0,08696	39,551	1,55713	40,218	1,58338	17,952	0,7068	10,668	0,42	0,1379	0,00543
1 1/2	48,26	1,9	11 1/2	2,209	0,08696	45,621	1,79609	46,287	1,82234	18,377	0,7235	10,668	0,42	0,1379	0,00543
2	60,32	2,375	11 1/2	2,209	0,08696	57,633	2,26902	58,325	2,29627	19,215	0,7565	11,074	0,436	0,1379	0,00543
2 1/2	73,02	2,875	8	3,175	0,125	69,076	2,71953	70,159	2,76216	28,892	1,1375	17,322	0,682	0,1983	0,00781
3	88,9	3,5	8	3,175	0,125	84,852	3,34062	86,068	3,3885	30,48	1,2	19,456	0,766	0,1983	0,00781
3 1/2	101,6	4	8	3,175	0,125	97,472	3,8375	98,776	3,88881	31,75	1,25	20,853	0,821	0,1983	0,00781
4	114,3	4,5	8	3,175	0,125	110,093	4,33438	111,433	4,38712	33,02	1,3	21,437	0,844	0,1983	0,00781

NOTE:

All sizes in the table correspond to the ASME B1.20.1 and API 5L Standards, excepted for the nominal sizes 1/8" and 1/4" for which E₁ and L₁ are not measured on the same plane according to API 5L. However, these sizes are the same when brought on the same plane.



BRANCH OUTLETS – O’LETS.

BASIS FOR DESIGN OF O’LETS: MANUFACTURER

STANDARD:

The O’lets in this catalogue are based on a single manufacturer’s standard design and denominations. The standard design is based on ASME B31.3, but O’lets may be designed, manufactured and verified to other requirements at the client’s request.

HEIGHT STANDARDISATION:

The table-listed heights (A) of reducing weldolet – butt weld, socket weld and threaded outlets – are identical to the heights standardised in MSSSP-97, except the 3000 lb socket weld outlets in sizes 2½” – 4”. However, it should be noted that the height stated as standard may have to be changed due to the actual/specific design required for specific size/wall thickness combinations.

DESIGN OPTIMISATION:

O’lets may be designed and manufactured to the customer’s specific design requirements, i.e. O’lets can be designed to specific design parameters (e.g. PCS) and/or Norsok EDSNOL1 so as to reduce the welding required in the crotch area.

DESIGN DETAILS REQUIRED FOR OPTIMISATION OF O’LETS:

- Design code
- Design pressure & rating
- Design temperature
- Material grade/allowable stress
- Wall thickness – for header and branch pipes
- Corrosion allowance
- Wall thickness tolerance

DESIGN VERIFICATION:

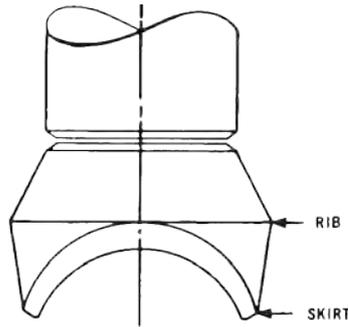
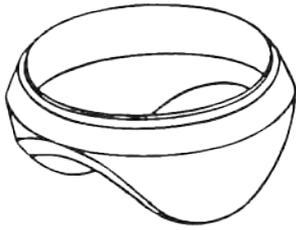
Drawings and calculations for each individual O’let may be provided, if requested by the client at the enquiry stage.

DIMENSION UNIFICATION:

O’lets may also be designed to fit a range of run header dimensions – i.e., each O’let will be suitable for use on various header pipe sizes. This design will, however, require more welding during fabrication, as the O’let dimensions cannot be optimised to a specific size and the actual design parameters.

TYPES OF O’LETS

- Butt weld Outlet (O’let) – Butt welded/Socket Welded/Threaded
- Elbow Outlet – Butt welded/Socket Welded/Threaded
- Lateral Outlet – Butt welded/Socket Welded/Threaded
- Nipple Outlet – Butt welded/Threaded/Plain end
- Insert Branch Outlet
- Flanged Butt weld Outlet
- Flanged Nipple Outlet



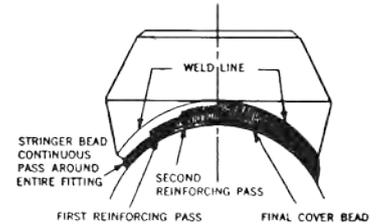
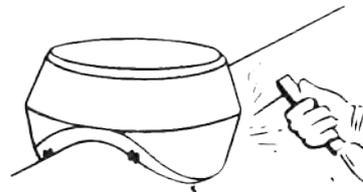
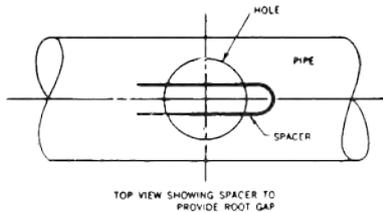
Ready to Weld

Every fitting is shaped to fit the pipe and itself-aligning.

butt-welding of the branch pipe for shop or field fabrication.

The template is the inside of the fitting. Cut Hole The hole in the run pipe on reducing sizes can be cut either before or after the fitting is welded on.

The hole can be cut with a torch, a drill or a hole saw. Welding the fitting to the run pipe prior to cutting the hole helps prevent distortion on the run and can be done generally on outlet sizes over two inches.



«Space» for Welding The weldolet is raised off run pipe to establish proper weld gap by placing spacers, e.g. weld-nut rods, under the fitting.

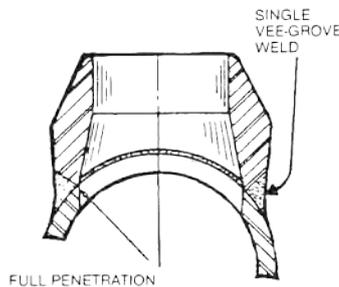
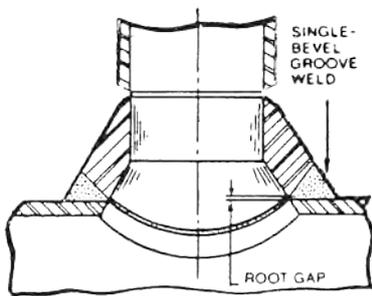
Tack Weld The base joint is tack welded, preferably at four points, each half way between the crotch and skirt section of the fitting.

Stringer Bead The stringer bead is applied completely around the base of the fitting. The established weld gap ensures full penetration.

This provides a uniform welding gap between the curvature of the run and base of fitting.

These spacers are then removed.

Reinforcing Beads Reinforcing welds should be made at the crotch bevel areas of the fitting to provide maximum weld at the crotch and a minimum at the skirt. Particular care should be taken to weld only the bevel portion of the fitting. (See «weld lines» on above drawing)



This eliminates the unnecessary use of continuous passes and prevents the erroneous practice of welding up to the rib on the skirt portion of the fitting. A continuous cover bead should be added to fill the bevel and provide a smooth taper ed weld.

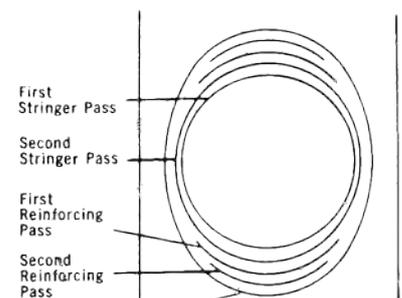
EXAMPLE OF WELD SEQUENCE

Longitudinal Section
 Fig. 1

Wide bases or footings at crotch section distribute internal and external stresses. Gradual changes of section eliminate stress concentration. Funnel shaped opening provides improved flow conditions. The outlet is machine bevelled for quick easy

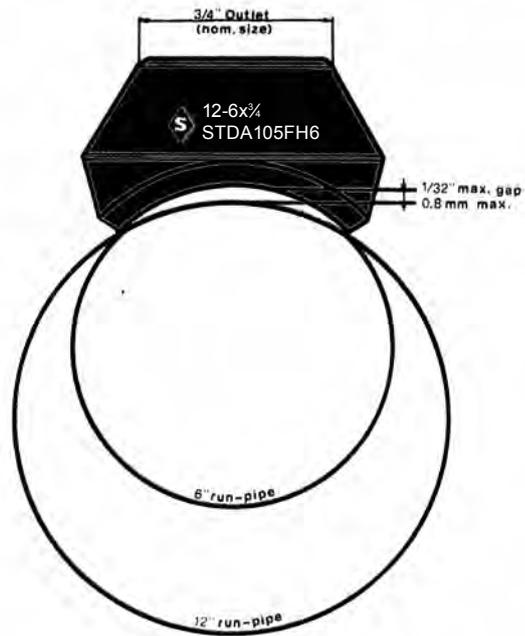
Transverse Section
 Fig. 2

Note the blending of the skirt section of the weldolet to the run pipe to avoid abrupt change in intersection. Throat of weld at this point is designated by the welding bevel.



DIMENSIONS UNIFICATION

In order to reduce warehouse inventory, our outlets have been unified to fit on different run-pipe sizes with gap maximum of 1/32" between the run-pipe and outlet. This does not cause any problems during welding.



BUTT WELD-OUTLETS, STANDARD AND EXTRA STRONG, SOCKET-OUTLETS & THREADED-OUTLETS 3000 LBS.

OUTLET SIZE		RUN-PIPE SIZES								
1/2	1/2	3/4	1	1 1/2-1 1/4	2 1/2-2	8-3	36-10			
3/4	3/4	1	1 1/2-1 1/4	2 1/2-2	5-3	12-6	36-14			
1	1	1 1/4	1 1/2	2	2 1/2	3 1/2-3	5-4	10-6	36-12	
1 1/4	1 1/4	1 1/2	2	2 1/2	3 1/2-3	5-4	8-6	18-10	36-20	
1 1/2	1 1/2	2	2 1/2	3	4-3 1/2	6-5	12-8	24-14	36-26	
2	2	2 1/2	3	3 1/2	4	5	6	10-8	18-12	36-20
2 1/2	2 1/2	3	3 1/2	4	5	6	8	12-10	18-14	36-20
3	3	3 1/2	4	5	6	8	10	14-12	20-16	36-24
3 1/2	3 1/2	4	5	6	8	10	14-12	20-16	36-24	
4	4	5	6	8	10	14-12	20-16	36-24		

Outlet over 4" order to specific run-pipe size

BUTT WELD-OUTLET SCH. 160 AND XXS

OUTLET SIZE		RUN-PIPE SIZES								
1/2	1/2	1 1/4-3/4	36-1 1/2							
3/4	1-3/4	2-1 1/4	6-2 1/2	36-8						
1	1	2 1/2-1 1/4	10-3	36-12						
1 1/4	1 1/2-1 1/4	2 1/2-2	10-3	36-12						
1 1/2	1 1/2	2 1/2-2	3 1/2-3	8-4	20-10	36-24				
2	2	2 1/2	3 1/2-3	5-4	8-6	18-10	36-20			

Outlet over 2" order to specific run-pipe size

BUTT WELD-OUTLETS & THREADED-OUTLETS 6000 LBS.

OUTLET SIZE		RUN-PIPE SIZES								
1/2	1-3/4	2-1 1/4	6-2 1/2	36-8						
3/4	1	2 1/2-1 1/4	10-3	36-12						
1	1 1/4-1 1/2	2 1/2-2	10-3	36-12						
1 1/4	1 1/2	2 1/2-2	3 1/2-3	8-4	20-10	36-24				
1 1/2	2	2 1/2	3 1/2-3	5-4	8-6	18-10	36-20			
2	2 1/2	3	4	5	6	10-8	20-12	36-24		

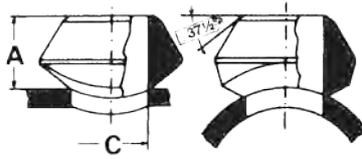


BUTTWELD OUTLETS-STANDARD

OUTLET SIZE [inch]	REDUCED SIZES			FULL SIZES			
	A [mm]	C [mm]	Approx. Weight	A [mm]	C [mm]	D [mm]	Approx. Weight
1/2	19,0	24,0	0,1	19,0	24,0	15,8	0,1
3/4	22,2	30,0	0,1	22,2	30,0	21,0	0,1
1	27,0	36,5	0,3	27,0	36,5	26,6	0,2
1 1/4	31,5	44,5	0,4	31,5	44,5	35,0	0,3
1 1/2	33,4	51,0	0,5	33,4	51,0	40,9	0,4
2	38,0	65,0	0,8	38,0	65,0	52,5	0,7
2 1/2	41,2	76,2	1,1	41,2	76,2	62,8	1,0
3	44,5	93,5	1,8	44,5	93,5	78,0	1,7
3 1/2	47,5	112,6	2,5	47,5	112,6	90,2	2,3
4	51,0	120,5	2,9	51,0	120,5	102,2	3,1
5	57,0	141,3	4,7	57,0	141,3	128,2	3,9
6	60,3	170,0	6,5	60,3	170,0	154,0	6,7
8	69,8	220,5	10,7	69,8	220,5	202,5	13,0
10	78,0	274,0	18,0	78,0	274,0	254,0	16,0
12	86,0	324,0	27,0	86,0	324,0	304,5	27,0
14	89,0	356,0	30,0	89,0	356,0	336,5	32,0

BUTTWELD OUTLETS-EXTRA STRONG

OUTLET SIZE [inch]	REDUCED SIZES			FULL SIZES			
	A [mm]	C [mm]	Approx. Weight	A [mm]	C [mm]	D [mm]	Approx. Weight
1/2	19,0	24,0	0,1	19,0	24,0	13,9	0,1
3/4	22,2	30,0	0,1	22,2	30,0	18,9	0,1
1	27,0	36,5	0,2	25,4	36,5	24,3	0,2
1 1/4	31,5	44,5	0,4	28,5	44,5	32,8	0,3
1 1/2	33,4	51,0	0,5	31,5	51,0	38,1	0,4
2	38,0	65,0	0,8	38,0	65,0	49,3	0,8
2 1/2	41,2	76,2	1,2	41,2	76,2	59,0	1,2
3	44,5	93,5	1,9	44,5	93,5	73,7	1,9
3 1/2	47,5	112,6	2,6	47,5	112,6	85,4	2,3
4	51,0	120,5	3,0	51,0	120,5	97,2	3,5
5	57,0	141,3	4,8	57,0	141,3	122,3	4,3
6	78,0	170,0	10,5	78,0	170,0	146,3	6,8
8	98,5	220,0	17,0	98,5	220,0	194,0	14,6
10	94,0	265,0	21,0	95,3	265,0	247,5	21,0
12	103,0	316,0	28,0	100,0	320,0	298,0	28,0
14	100,0	351,0	32,0	105,5	355,0	330,0	34,5



BUTTWELD OUTLETS • SCH.160 AND XXS

OUTLET SIZE [inch]	REDUCED SIZES			FULL SIZES		
	A [mm]	C [mm]	Approx. Weight	A [mm]	C [mm]	Approx. Weight
1/2	28,5	14,3	0,1	28,5	14,3	0,1
3/4	31,5	19,0	0,3	31,5	19,0	0,3
1	38,0	25,5	0,4	38,0	25,5	0,4
1 1/4	44,5	33,4	0,6	44,5	33,4	0,6
1 1/2	50,7	38,0	0,8	50,7	38,0	0,8
2	55,5	42,9	1,0	55,5	42,9	1,0
2 1/2	61,8	53,9	1,6	61,8	53,9	1,6
3	73,0	73,0	2,9	73,0	73,0	2,9
4	84,0	98,4	4,8	84,0	98,4	4,8
5	93,5	122,2	6,5	93,5	122,2	6,5
6	104,7	146,0	12,8	104,7	146,0	13,8

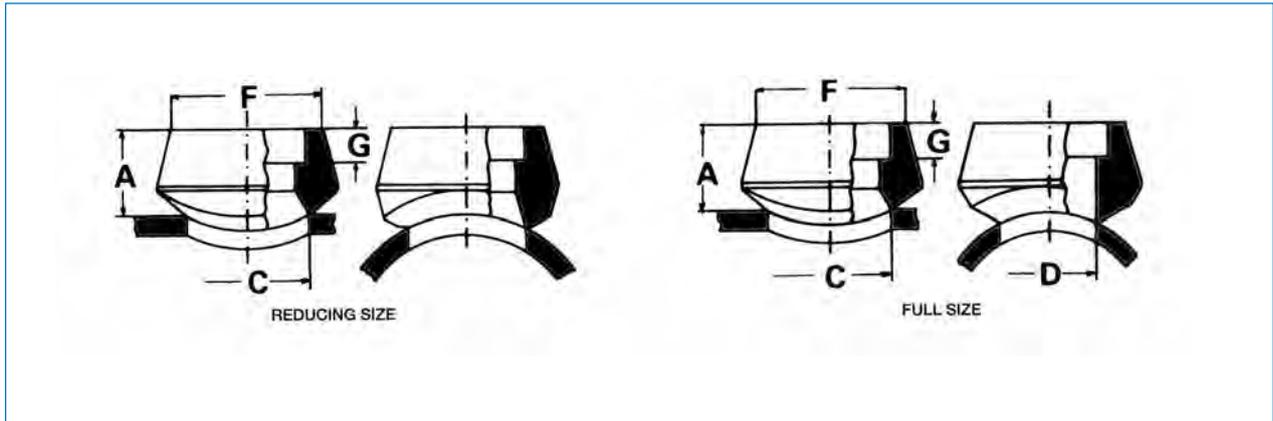


SOCKETWELD OUTLETS • 3000 LBS (SOCKETWELD TO ASME/ANSI B16.11)

OUTLET SIZE [inch]	REDUCED SIZES					FULL SIZES					
	A [mm]	C [mm]	F [mm]	G [mm]	Approx. Weight	A [mm]	C [mm]	D [mm]	F [mm]	G [mm]	Approx. Weight
1/2	25,5	24,0	31,8	10,0	0,1	25,5	22,4	16,0	31,8	10,0	0,1
3/4	27,0	30,0	36,6	13,0	0,2	27,0	30,0	21,0	36,6	13,0	0,1
1	33,4	36,5	46,1	13,0	0,3	33,4	36,5	26,7	46,1	13,0	0,3
1 1/4	33,4	44,5	55,6	13,0	0,4	33,4	44,5	35,0	55,6	13,0	0,3
1 1/2	34,8	51,0	62,0	13,0	0,5	34,8	51,0	40,9	62,0	13,0	0,4
2	38,0	65,0	74,7	16,0	0,7	38,0	65,0	52,5	74,7	16,0	0,6
2 1/2	46,0	76,2	87,4	16,0	1,3	46,0	76,2	62,8	87,4	16,0	1,0
3	50,7	93,5	104,8	16,0	1,7	50,7	93,5	77,9	104,8	16,0	1,7
3 1/2	53,8	101,5	122,3	19,0	2,0	53,3	112,8	90,1	117,5	19,0	2,0
4	57,0	120,5	130,2	19,0	3,3	55,5	127,0	102,2	130,2	19,0	3,0

SOCKETWELD OUTLETS • 6000 LBS (SOCKETWELD TO ASME/ANSI B16.11)

OUTLET SIZE [inch]	REDUCING SIZES				Approx. Weight
	A [mm]	C [mm]	F [mm]	G [mm]	
1/2	31,5	19,0	40,0	10,0	0,3
3/4	36,5	25,5	46,0	13,0	0,4
1	39,6	33,4	57,2	13,0	0,6
1 1/4	41,0	38,0	65,1	13,0	0,8
1 1/2	42,7	49,3	76,3	13,0	0,9
2	52,1	70,0	92,1	16,0	2,4

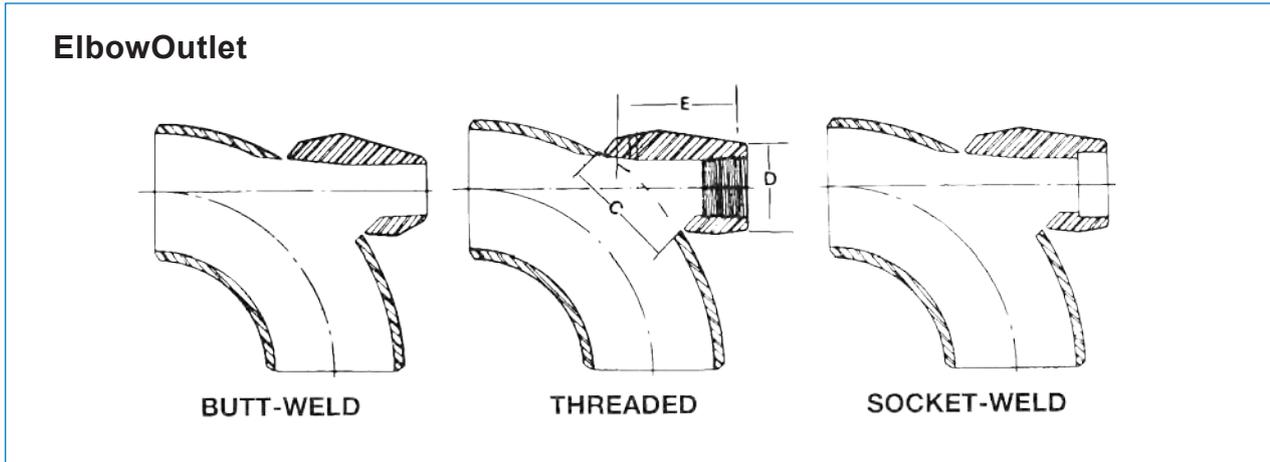


THREADED OUTLETS • 3000LBS

OUTLET SIZE [inch]	REDUCED SIZES					FULL SIZES					
	A [mm]	C [mm]	F [mm]		Approx. Weight	A [mm]	C [mm]	D [mm]	F [mm]		Approx. Weight
1/2	25,5	24,0	31,8		0,1	25,5	24,0	16,0	31,80		0,1
3/4	27,0	30,0	36,6		0,2	27,0	30,0	20,7	36,6		0,1
1	33,4	36,5	46,1		0,3	33,4	36,5	27,0	46,1		0,2
1 1/4	33,4	44,5	55,6		0,4	33,4	44,5	34,9	55,6		0,3
1 1/2	34,8	51,0	62,0		0,5	34,8	51,0	41,2	62,0		0,4
2	38,0	65,0	74,7		0,8	38,0	65,0	52,4	74,7		0,7
2 1/2	46,0	76,2	87,4		1,4	46,0	76,2	63,5	87,4		1,1
3	50,7	93,5	104,8		2,0	50,7	93,5	77,8	104,8		2,0
3 1/2	53,8	101,5	122,3		2,6	53,3	112,8	90,5	117,5		2,1
4	57,0	120,5	130,2		3,2	55,5	120,5	103,2	130,2		3,1

THREADED OUTLETS • 6000LBS

OUTLETS ZE [inch]	REDUCING SIZES				Approx. Weight
	A [mm]	C [mm]	F [mm]		
1/2	31,5	19,0	40,0		0,2
3/4	36,5	25,5	46,0		0,4
1	39,6	33,4	57,2		0,6
1 1/4	41,0	38,0	65,1		0,7
1 1/2	42,7	49,3	76,3		0,9
2	52,1	70,0	92,1		2,3

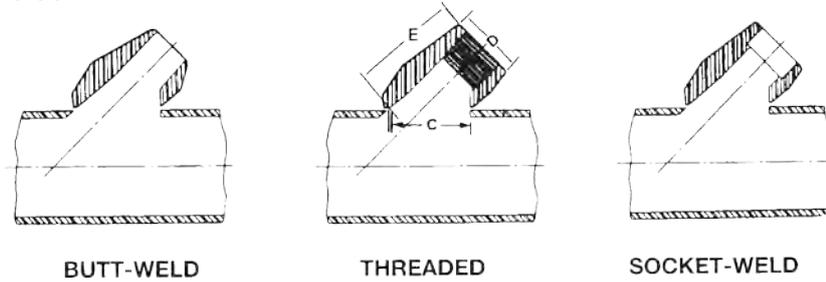


Dimensions for all three styles are the same except for the "D" dimension on the butt welding outlet which matches the proper schedule on the branch pipe.

**3000 LB THREADED AND SOCKET WELD STANDARD AND EXTRA STRONG BUTT-WELD
 6000 LB THREADED AND SOCKET WELD SCHEDULE 160 AND DOUBLE EXTRA STRONG BUTT-WELD**

Nominal Elbow Size (Inch) 3000 lb	Nominal Elbow Size (Inch) 6000 lb	Outlet Size-Inches	DIMENSIONS						WEIGHT	
			3000lb C mm	6000lb C mm	3000lb D mm	6000lb D mm	3000lb E mm	6000lb E mm	3000lb Approx.Wt. Kg.	6000lb Approx.Wt. Kg.
36-1/4	36-1/4	1/4	38,1	38,1	31,8	31,8	38,1	38,1	0,23	0,34
36-1/4	36-1/4	3/8	38,1	38,1	31,8	31,8	38,1	38,1	0,23	0,34
36-1/4	36-1/4	1/2	38,1	43,6	31,8	35,7	38,1	45,2	0,30	0,39
36-1/4	36-2	3/4	43,6	54,0	35,7	45,2	45,2	54,4	0,34	0,57
36-2	36-2	1	54,0	73,0	45,2	54,8	52,4	55,6	0,52	1,00
36-2	36-2	1 1/4	73,0	79,4	54,8	63,5	55,6	58,8	0,86	1,77
36-2	36-3	1 1/2	79,4	106,4	63,5	82,6	58,8	69,9	1,20	2,80
36-3	-	2	106,4	-	82,6	-	69,9	-	2,39	-

Lateral Outlet



Dimensions for all three styles are the same except for the "D" dimension on the butt welding outlet which matches the proper schedule on the branch pipe.

**3000 LB THREADED AND SOCKET WELD STANDARD AND EXTRA STRONG BUTT-WELD
 6000 LB THREADED AND SOCKET WELD SCHEDULE 160 AND DOUBLE EXTRA STRONG BUTT-WELD**

Nominal Elbow Size (Inch) 3000 lb	Nominal Elbow Size (Inch) 6000 lb	Outlet Size-Inches	DIMENSIONS						WEIGHT	
			3000lb C (mm)	6000lb C (mm)	3000lb D (mm)	6000lb D (mm)	3000lb E (mm)	6000lb E (mm)	3000lb Approx.Wt. Kg.	6000lb Kg.
12 - 1 ¼	12 - 2 ½	1/4	36,5	36,5	31,8	31,8	39,7	39,7	0,23	0,34
12 - 1 ¼	12 - 1 ¼	3/8	36,5	36,5	31,8	31,8	39,7	39,7	0,23	0,34
12 - 1 ¼	12 - 1 ¼	1/2	36,5	43,6	31,8	35,7	39,7	47,6	0,30	0,39
12 - 1 ¼	12 - 2	3/4	43,6	54	35,7	45,2	47,6	57,2	0,34	0,57
12 - 2	12 - 2	1	54	67,5	45,2	54,8	57,2	61,9	0,52	1,00
12 - 2	12 - 2	1 ¼	67,5	76,2	54,6	63,5	61,9	66,7	0,86	1,32
12 - 2	12 - 4	1 ½	76,2	104,8	63,5	82,6	66,7	81,0	1,20	2,80
12 - 4	-	2	104,8	-	82,6	-	81	-	3,29	-

NOTE: Other Outlet sizes available on request.

FLANGED NIPPLE OUTLETS

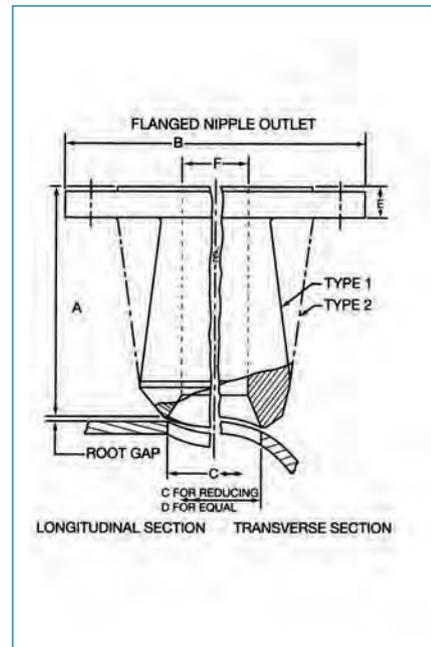
The height (A) is 150 mm for all sizes, except 2" 2500# that is 165 mm. The bore (F) equal to the nominal bore of the branch pipe.

FLANGED NIPPLE OUTLET-150#

Outlets ze					Type 1
	B	E	C Std/XS	C 160/XXS	
1/2	88,9	11,2	24,0	14,3	1
3/4	98,6	12,7	30,0	19,0	1
1	108,0	14,3	36,5	25,5	1
1¼	117,5	15,9	44,5	33,4	1
1½	127,0	17,5	51,0	38,0	1
2	152,4	19,1	65,0	42,9	1

FLANGED NIPPLE OUTLET-300#

Outlets ze					Type	
	B	E	C Std/XS	C 160/XXS	Std/XS	160/XXS
1/2	95,3	14,3	24,0	14,3	2	2
3/4	117,5	15,9	30,0	19,0	2	2
1	123,8	17,5	36,5	25,5	1	2
1¼	133,4	19,0	44,5	33,4	1	2
1½	155,6	20,6	51,0	38,0	1	1
2	165,1	22,2	65,0	42,9	1	2



FLANGED NIPPLE OUTLET-600#

Outlets ze					Type	
	B	E	C Std/XS	C 160/XXS	Std/XS	160/XXS
1/2	95,3	20,7	24,0	14,3	2	2
3/4	117,5	22,3	30,0	19,0	2	2
1	123,8	23,9	36,5	25,5	1	2
1¼	133,4	27,0	44,5	33,4	1	2
1½	155,6	28,6	51,0	38,0	1	1
2	165,1	31,8	65,0	42,9	1	2

FLANGED NIPPLE OUTLET-900#/1500#

Outlets ze					Type	
	B	E	C Std/XS	C 160/XXS	Std/XS	160/XXS
1/2	120,7	28,6	24,0	14,3	2	2
3/4	130,2	31,8	30,0	19,0	1	1
1	149,2	35,0	36,5	25,5	1	2
1¼	158,8	35,0	44,5	33,4	1	2
1½	177,8	38,1	51,0	38,0	1	1
2	215,9	44,5	65,0	42,9	2	2

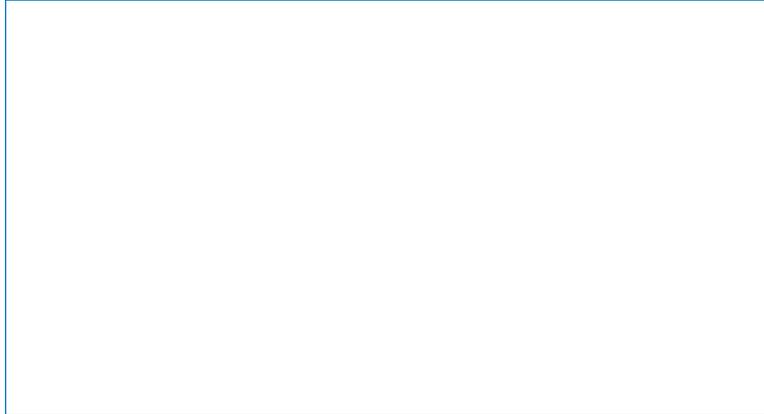
FLANGED NIPPLE OUTLET-2500#

Outlet size					Type
	B	E	C Std/XS	C 160/XXS	
1/2	133,4	36,6	24,0	14,3	2
3/4	139,7	38,1	30,0	19,0	2
1	158,8	41,3	36,5	25,5	2
1¼	184,2	44,5	44,5	33,4	2
1½	203,2	50,8	51,0	38,0	2
2	235,0	57,2	65,0	42,9	2

FLANGED BUTT WELD OUTLET

Flanged Butt Weld Outlet is available also for larger sizes than listed below (upto 24" for 150# to 1500#).
 Flanged Butt Weld Outlet is available in all pressure classes - below listed 150# and 2500# are typical
 - others available at request.

The dimensions below are based on RF type flanges.
 Other facings may be supplied at request. The C dimensions listed are based on Std wall for header and branch pipe. Any wall may be supplied at request. The bore (F) equal the nominal bore of the branch pipe.



FLANGED BUTT WELD OUTLET-150#

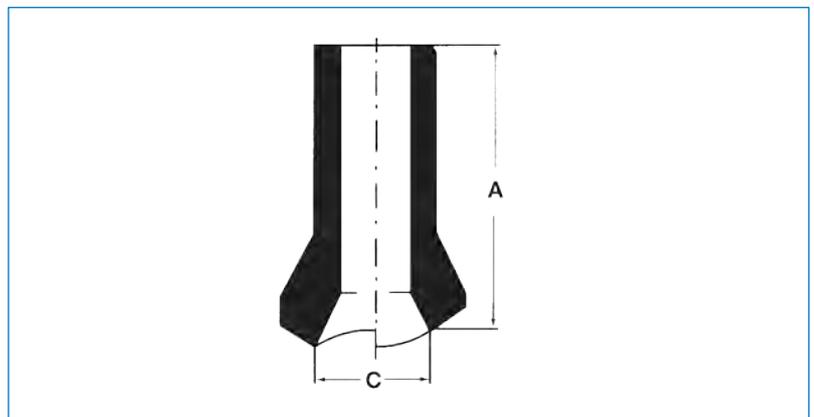
Outlet size	Dimensions				Type
	B	E	A	C	
1/2	88,9	11,2	65,0	24,0	1
3/4	98,6	12,7	75,0	30,0	1
1	108,0	14,3	85,0	36,5	1
1 1/4	117,5	15,9	90,0	44,5	1
1 1/2	127,0	17,5	95,0	51,0	1
2	152,4	19,1	105,0	65,0	1
2 1/2	177,8	22,3	112,0	76,2	1
3	190,5	23,8	115,0	93,5	1
3 1/2	215,9	23,8	120,0	112,6	1
4	228,6	23,8	130,0	120,5	1
5	254,0	23,8	146,0	141,3	1
6	279,4	25,4	150,0	170,0	1
8	342,9	28,6	175,0	220,5	1
10	406,4	30,2	180,0	274,0	1
12	482,6	31,8	200,0	324,0	1

FLANGED BUTT WELD OUTLET-2500#

Outlet size	Dimensions				Type
	B	E	A	C	
1/2	133,4	36,5	100,0	24,0	2
3/4	139,7	38,1	110,0	30,0	2
1	158,8	41,3	125,0	36,5	2
1 1/4	184,2	44,5	135,0	44,5	2
1 1/2	203,2	50,8	150,0	51,0	2
2	235,0	57,2	170,0	65,0	2
2 1/2	266,7	63,5	190,0	76,2	2
3	304,8	73,0	220,0	93,5	2
4	355,6	82,6	250,0	120,5	2
5	419,1	98,4	290,0	141,3	2
6	482,6	114,3	340,0	170,0	2
8	552,5	133,4	395,0	220,5	2
10	673,1	171,5	505,0	274,0	2
12	762,0	190,5	555,0	324,0	2

NIPPLE OUTLET-3000/6000LB
 Available with plain/bevel/threaded end

Outlet size	Dimensions		
	A 3000lb	C 6000lb	C
1/2	89,0	24,0	14,5
3/4	89,0	30,0	19,0
1	89,0	36,5	25,5
1 1/4	89,0	44,5	33,4
1 1/2	89,0	51,0	38,0
2	89,0	65,0	43,0

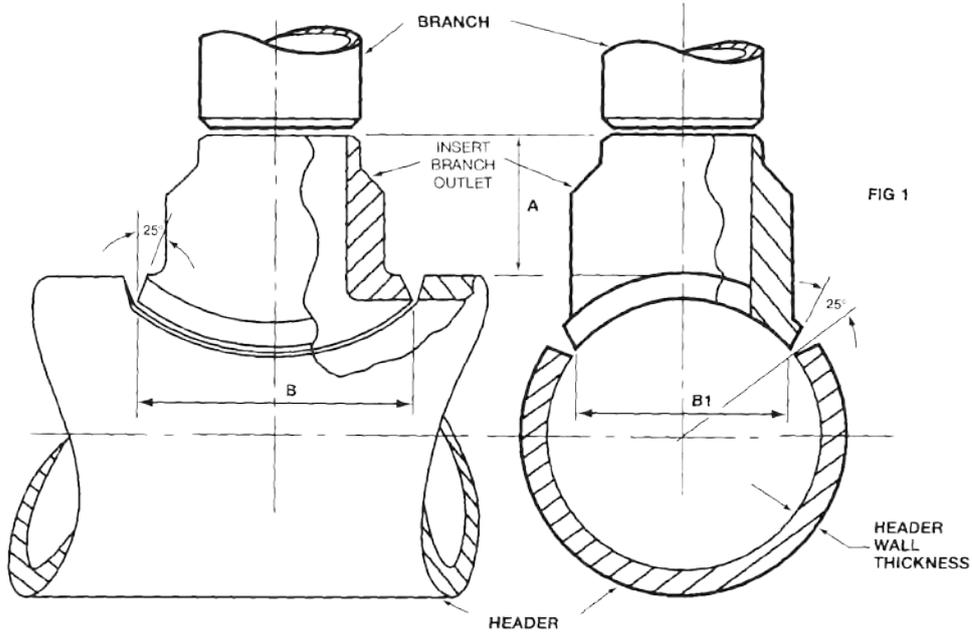


O-LETS

INSERT BRANCH OUTLET

Insert Branch Outlets are available for any header wall thickness.

The below dimensions are applicable for header wall thickness up to and including XS.



Outlet size			
	A	Min. header pipe size	
1/2	32,0	1½	Other dimensions available at specific request
3/4	32,0	2	
1	32,0	2	
1¼	32,0	2	
1½	38,0	2½	
2	44,0	3	
3	51,0	4	
4	60,0	6	
6	68,0	8	
8	76,0	10	
10	79,0	12	
12	86,0	16	
14	92,0	18	
16	95,0	20	
18	117,0	22	
20	130,0	24	
24	143,0	30	