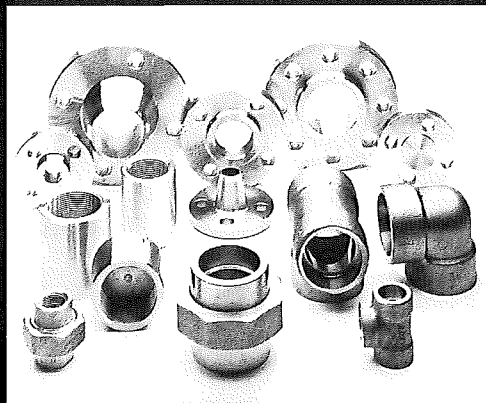
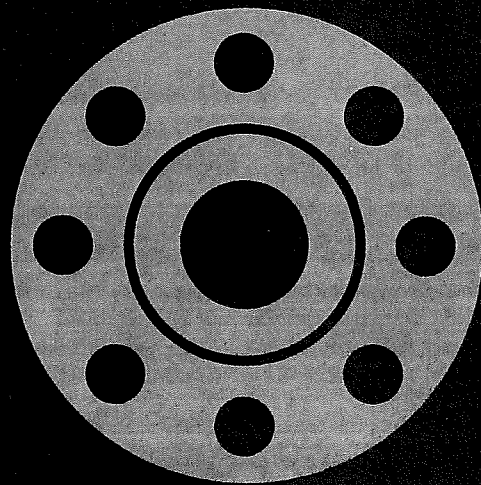
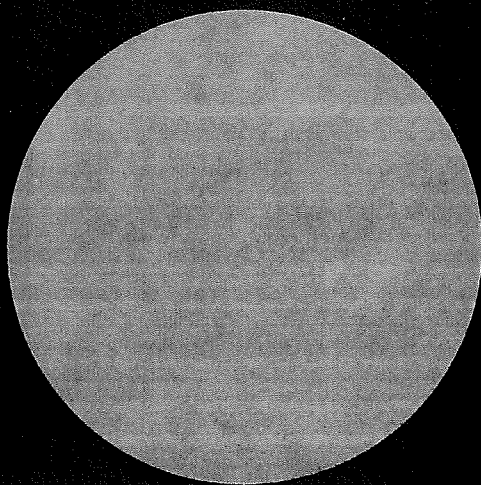


# FLANGES & FITTINGS



Specialty Steels has stocking locations coast-to-coast to serve you. You will find one of the most extensive selections in the country at Specialty Steels. We can supply fittings and flanges for virtually any stainless steel fluid handling system you devise - all at excellent prices. For a single fitting, or for an entire plant system, you can rely on Specialty Steels.

This section lists detailed specifications on standard flanges and fittings. If you need further information or don't see what you need, call your nearest Specialty Steels office.



**Threaded, Slip-On, Lap Joint and Blind Flanges**

<b>Outside Diameter*</b>	When O.D. is 24" or less	$\pm 1/16"$
	When O.D. is over 24"	$\pm 1/8"$
<b>Inside Diameter</b>	Threaded	Within limits on boring gauge
	Slip-On and Lap Joint: 10" and smaller	$+ 1/32", -0"$
	12" and larger	$+ 1/16", -0"$
<b>Diameter of Counterbore</b>	10" and smaller	$+ 1/32", -0"$
	12" and larger	$+ 1/16", -0"$
<b>Diameter of Contact Face</b>	1/16" Raised Face	$\pm 1/32"$
	1/4" Raised Face Tongue and Groove, or Male and Female	$\pm 1/64"$
<b>Outside Diameter of Hub*</b>	12" and smaller	$+ 3/32", -1/16"$
	14" and larger	$\pm 1/8"$
<b>Drilling*</b>	Bolt Circle	$\pm 1/16"$
	Bolt hole spacing	$\pm 1/32"$
	Eccentricity of Bolt Circle and Facing (with respect to bore)	1/32" max.
<b>Length Thru Hub</b>	18" and smaller	$+ 1/8", -1/32"$
	20" and larger	$+ 3/16", -1/16"$
<b>Thickness</b>	18" and smaller	$+ 1/8", -0"$
	20" and larger	$+ 3/16", -0"$
	Where allowance has been left on face for finish: All sizes	$+ 1/8", -1/16"$

In accordance with ANSI B16.5

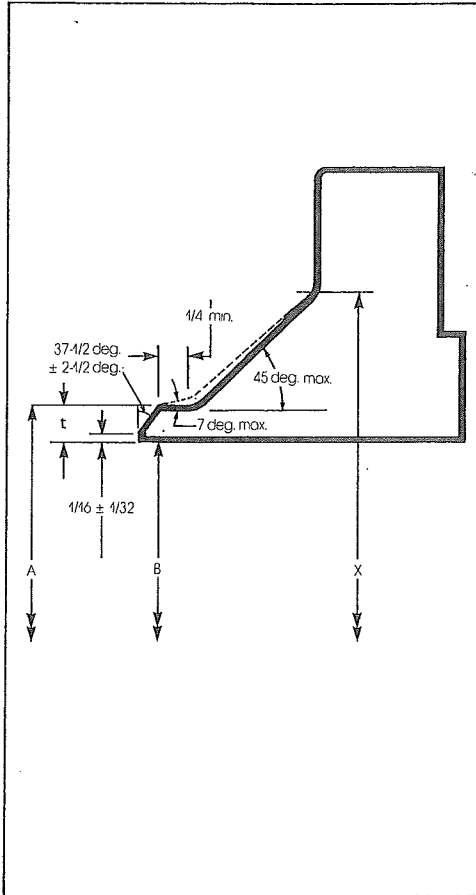
\*Tolerance for these dimensions not covered by ANSI B16.5

**Welding Neck Flanges**

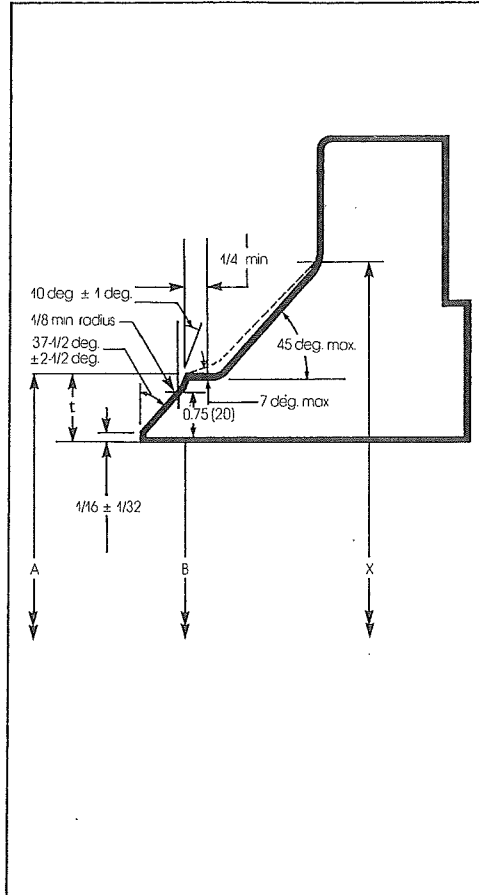
<b>Outside Diameter*</b>	When OD is 24" or less	$\pm 1/16"$
	When OD is over 24"	$\pm 1/8"$
<b>Inside Diameter</b>	10" and smaller	$\pm 1/32"$
	12" through 18"	$+1/16"$
	20" and larger	$+1/8", -1/16"$
<b>Diameter of Contact Face</b>	1/16" Raised Face	$\pm 1/32"$
	1/4" Raised Face Tongue and Groove, or Male and Female	$\pm 1/64"$
<b>Diameter of Hub at Point of Welding</b>	5" and smaller	$+3/32", -1/32"$
	6" and larger	$+5/32", -1/32"$
<b>Welding Bevel Standards</b>	see drawings on Page 78	
<b>Diameter of Hub at Base*</b>	When Hub Base is 24" or less	$\pm 1/16"$
	When Hub Base is over 24"	$\pm 1/8"$
<b>Drilling*</b>	Bolt Circle	$\pm 1/16"$
	Bolt hole spacing	$+1/32"$
	Eccentricity of Bolt Circle and Facing (with respect to bore)	$1/32"$ max.
<b>Length Thru Hub</b>	10" and smaller	$\pm 1/16"$
	12" and larger	$\pm 1/8"$
<b>Thickness</b>	18" and smaller	$+1/8", -0"$
	20" and larger	$+3/16", -0"$
	Where allowance has been left on face for finish: All sizes*	$+1/8", -1/16"$

In accordance with ANSI B16.5.

\*Tolerance for these dimensions not covered by ANSI B16.5.



BEVEL FOR WALL THICKNESSES (t) 3/16 IN. TO 7/8 IN. INCLUSIVE



BEVEL FOR WALL THICKNESSES (t) GREATER THAN 7/8 IN.

When the thickness of the hub at the bevel is greater than that of the pipe to which the flange is joined and the additional thickness is provided on the outside diameter, a taper weld having a slope not exceeding 1 to 3 may be employed or, alternatively, the greater outside diameter may be tapered, at the same maximum slope or less, from a point on the welding bevel equal to the OD of the mating pipe. Similarly, when the greater thickness is provided on the inside of the flange, it shall be tapered from the welding end at a slope not exceeding 1 to 3.

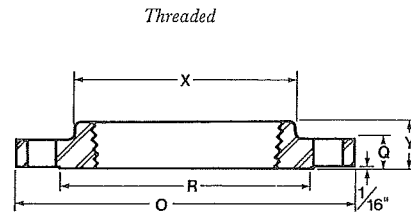
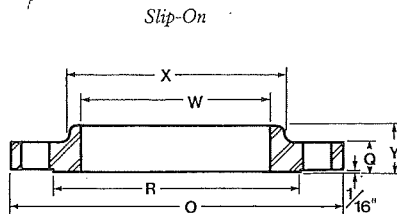
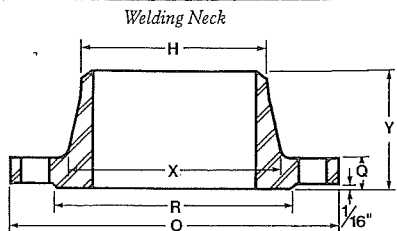
When flanges covered by this standard are intended for services with light wall, higher strength pipe, the thickness of the hub at the bevel may be greater than that of the pipe to which the flange is joined. Under these conditions a single taper hub may be provided and the outside diameter of the hub at the base (Dimension X) may also be modified.

The additional thickness may be provided on either inside or outside or partially on each side, but the total additional thickness shall not exceed one-half times the nominal wall thickness of intended mating pipe.

Nominal Pipe Size	Outside Diameter	Nominal Bore Diameter														
		Sch. 5S	Sch. 10S	Sch. 10	Sch. 20	Sch. 30	Sch. 40S	Sch. 40	Sch. 60S	Sch. 80S	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160	XX Strong
1/2	.840	.710	.674	-	-	-	.622	.622	-	.546	.546	-	-	-	.464	.252
3/4	1.050	.920	.884	-	-	-	.824	.824	-	.742	.742	-	-	-	.612	.434
1	1.315	1.185	1.097	-	-	-	1.049	1.049	-	.957	.957	-	-	-	.815	.599
1-1/4	1.660	1.530	1.442	-	-	-	1.380	1.380	-	1.278	1.278	-	-	-	1.160	.896
1-1/2	1.900	1.770	1.682	-	-	-	1.610	1.610	-	1.500	1.500	-	-	-	1.338	1.100
2	2.375	2.245	2.157	-	-	-	2.067	2.067	-	1.939	1.939	-	-	-	1.687	1.503
2-1/2	2.875	2.709	2.635	-	-	-	2.469	2.469	-	2.323	2.323	-	-	-	2.125	1.771
3	3.500	3.334	3.260	-	-	-	3.068	3.068	-	2.900	2.900	-	-	-	2.624	2.300
3-1/2	4.000	3.834	3.760	-	-	-	3.548	3.548	-	3.364	3.364	-	-	-	-	-
4	4.500	4.334	4.260	-	-	-	4.026	4.026	-	3.826	3.826	-	3.624	-	3.438	3.152
5	5.563	5.345	5.295	-	-	-	5.047	5.047	-	4.813	4.813	-	4.563	-	4.313	4.063
6	6.625	6.407	6.357	-	-	-	6.065	6.065	-	5.761	5.761	-	5.501	-	5.187	4.897
8	8.625	8.407	8.329	-	8.125	8.071	7.981	7.981	7.813	7.625	7.625	7.437	7.187	7.001	6.813	6.875
10	10.750	10.482	10.420	-	10.250	10.136	10.020	10.020	9.750	9.750	9.564	9.312	9.062	8.750	8.500	-
12	12.750	12.438	12.390	-	12.250	12.090	12.000	11.938	11.626	11.750	11.374	11.062	10.750	10.500	10.126	-
14	14.000	13.688	13.625	13.500	13.375	13.250	13.250	13.124	12.812	13.000	12.500	12.124	11.814	11.500	11.188	-
16	16.000	15.670	15.625	15.500	15.375	15.250	15.250	15.000	14.688	15.000	14.312	13.938	13.564	13.124	12.812	-
18	18.000	17.670	17.625	17.500	17.375	17.124	17.250	16.876	16.500	17.000	16.124	15.688	15.250	14.876	14.438	-
20	20.000	19.625	19.564	19.500	19.250	19.000	19.250	18.814	18.376	19.000	17.938	17.438	17.000	16.500	16.062	-
24	24.000	23.564	23.500	23.500	23.250	22.876	23.250	22.624	22.062	23.000	21.562	20.938	20.376	19.876	19.312	-

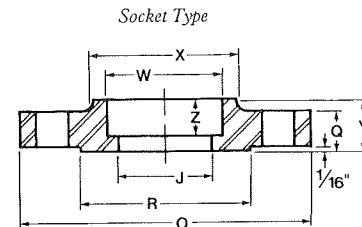
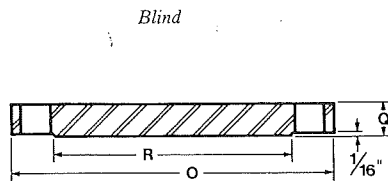
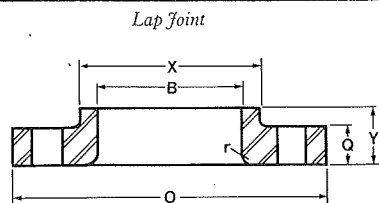
All dimensions are in inches.

# FLANGES & FITTINGS



Nominal Pipe Size	Outside Diameter of Flange O	Thickness of Flange Q	Diameter of Raised Face R	Diameter of Hub at Base X	Length Thru Hub			Diameter of Bore		Diameter of Hub at Bevel H	Radius of Fillet r	Depth of Socket Z
					Welding Neck Y	Slip-On, Threaded, Socket Y	Lap Joint Y	Slip-on, Socket W	Lap Joint B			
1/2	3-1/2	7/16	1-3/8	1-3/16	1-7/8	5/8	5/8	.88	.90	.84	1/8	3/8
3/4	3-7/8	1/2	1-11/16	1-1/2	2-1/16	5/8	5/8	1.09	1.14	1.05	1/8	7/16
1	4-1/4	9/16	2	1-15/16	2-3/16	11/16	11/16	1.36	1.38	1.32	1/8	1/2
1-1/4	4-5/8	5/8	2-1/2	2-5/16	2-1/4	13/16	13/16	1.70	1.72	1.66	3/16	9/16
1-1/2	5	11/16	2-7/8	2-9/16	2-7/16	7/8	7/8	1.95	1.97	1.90	1/4	5/8
2	6	3/4	3-5/8	3-1/16	2-1/2	1	1	2.44	2.46	2.38	5/16	11/16
2-1/2	7	7/8	4-1/8	3-9/16	2-3/4	1-1/8	1-1/8	2.94	2.97	2.88	5/16	3/4
3	7-1/2	15/16	5	4-1/4	2-3/4	1-3/16	1-3/16	3.57	3.60	3.50	3/8	13/16
3-1/2	8-1/2	15/16	5-1/2	4-13/16	2-13/16	1-1/4	1-1/4	4.07	4.10	4.00	3/8	7/8
4	9	15/16	6-3/16	5-5/16	3	1-5/16	1-5/16	4.57	4.60	4.50	7/16	15/16
5	10	15/16	7-5/16	6-7/16	3-1/2	1-7/16	1-7/16	5.66	5.69	5.56	7/16	15/16
6	11	1	8-1/2	7-9/16	3-1/2	1-9/16	1-9/16	6.72	6.75	6.63	1/2	1-1/16
8	13-1/2	1-1/8	10-5/8	9-11/16	4	1-3/4	1-3/4	8.72	8.75	8.63	1/2	1-1/4
10	16	1-3/16	12-3/4	12	4	1-15/16	1-15/16	10.88	10.92	10.75	1/2	1-5/16
12	19	1-1/4	15	14-3/8	4-1/2	2-3/16	2-3/16	12.88	12.92	12.75	1/2	1-9/16
14	21	1-3/8	16-1/4	15-3/4	5	2-1/4	3-1/8	14.14	14.18	14.00	1/2	1-5/8
16	23-1/2	1-7/16	18-1/2	18	5	2-1/2	3-7/16	16.16	16.19	16.00	1/2	1-3/4
18	25	1-9/16	21	19-7/8	5-1/2	2-11/16	3-13/16	18.18	18.20	18.00	1/2	1-15/16
20	27-1/2	1-11/16	23	22	5-11/16	2-7/8	4-1/16	20.20	20.25	20.00	1/2	2-1/8
24	32	1-7/8	27-1/4	26-1/8	6	3-1/4	4-3/8	24.25	24.25	24.00	1/2	2-1/2

All dimensions are in inches.



### Drilling

### Length of Bolts

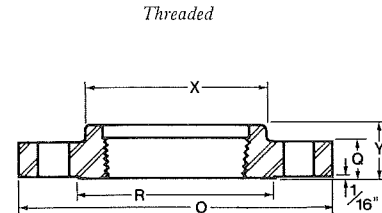
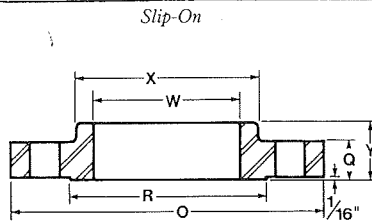
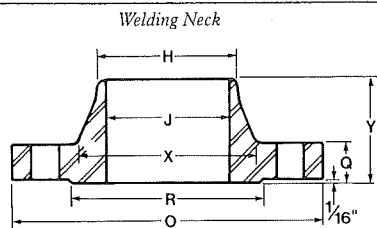
### Approximate Weight in Pounds

Nominal Pipe Size	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Holes	Length of Bolts			Approximate Weight in Pounds			
					Stud Bolts		Machine Bolts	Welding Neck	Slip-On, Threaded, Socket	Lap Joint	Blind
					1/16" Raised Face	Ring Joint					
1/2	2-3/8	4	1/2	5/8	2-1/4		1-3/4	2	2	2	2
3/4	2-3/4	4	1/2	5/8	2-1/4		2	2	2	2	2
1	3-1/8	4	1/2	5/8	2-1/2	3	2	2	2	2	2
1-1/4	3-1/2	4	1/2	5/8	2-1/2	3	2-1/4	4	3	3	3
1-1/2	3-7/8	4	1/2	5/8	2-3/4	3-1/4	2-1/4	5	3	3	4
2	4-3/4	4	5/8	3/4	3	3-1/2	2-3/4	9	5	5	4
2-1/2	5-1/2	4	5/8	3/4	3-1/4	3-3/4	3	11	7	7	11
3	6	4	5/8	3/4	3-1/2	4	3	14	8	8	14
3-1/2	7	8	5/8	3/4	3-1/2	4	3	15	11	11	13
4	7-1/2	8	5/8	3/4	3-1/2	4	3	16	13	13	19
5	8-1/2	8	3/4	7/8	3-3/4	4-1/4	3-1/4	21	15	15	21
6	9-1/2	8	3/4	7/8	3-3/4	4-1/4	3-1/4	25	19	19	28
8	11-3/4	8	3/4	7/8	4	4-1/2	3-1/2	40	30	30	48
10	14-1/4	12	7/8	1	4-1/2	5	3-3/4	56	42	42	70
12	17	12	7/8	1	4-1/2	5	4	86	64	64	105
14	18-3/4	12	1	1-1/8	5	5-1/2	4-1/4	111	85	99	135
16	21-1/4	16	1	1-1/8	5-1/4	5-3/4	4-1/2	141	94	128	176
18	22-3/4	16	1-1/8	1-1/4	5-3/4	6-1/4	4-3/4	153	120	146	214
20	25	20	1-1/8	1-1/4	6	6-1/2	5-1/4	188	155	185	284
24	29-1/2	20	1-1/4	1-3/8	6-3/4	7-1/4	5-3/4	270	210	260	398

All dimensions are in inches.



# FLANGES & FITTINGS

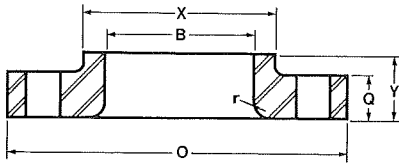


Nominal Pipe Size	Outside Diameter of Flange O	Thickness of Flange Q	Diameter of Raised Face R	Diameter of Hub at Base X	Length Thru Hub			Diameter of Bore		Diameter of Hub at Bevel H	Radius of Fillet r	Depth of Socket Z
					Welding Neck Y	Slip-On, Threaded, Socket Y	Lap Joint Y	Slip-on, Socket W	Lap Joint B			
1/2	3-3/4	9/16	1-3/8	1-1/2	2-1/16	7/8	7/8	.88	.90	.84	1/8	3/8
3/4	4-5/8	5/8	1-11/16	1-7/8	2-1/4	1	1	1.09	1.11	1.05	1/8	7/16
1	4-7/8	11/16	2	2-1/8	2-7/16	1-1/16	1-1/16	1.36	1.38	1.32	1/8	1/2
1-1/4	5-1/4	3/4	2-1/2	2-1/2	2-9/16	1-1/16	1-1/16	1.70	1.72	1.66	3/16	9/16
1-1/2	6-1/8	13/16	2-7/8	2-3/4	2-11/16	1-3/16	1-3/16	1.95	1.97	1.90	1/4	5/8
2	6-1/2	7/8	3-5/8	3-5/16	2-3/4	1-5/16	1-5/16	2.44	2.46	2.38	5/16	11/16
2-1/2	7-1/2	1	4-1/8	3-15/16	3	1-1/2	1-1/2	2.94	2.97	2.88	5/16	3/4
3	8-1/4	1-1/8	5	4-5/8	3-1/8	1-11/16	1-11/16	3.57	3.60	3.50	3/8	13/16
3-1/2	9	1-3/16	5-1/2	5-1/4	3-3/16	1-3/4	1-3/4	4.07	4.10	4.00	3/8	7/8
4	10	1-1/4	6-3/16	5-3/5	3-3/8	1-7/8	1-7/8	4.57	4.60	4.50	7/16	15/16
5	11	1-3/8	7-5/16	7	3-7/8	2	2	5.66	5.69	5.56	7/16	
6	12-1/2	1-7/16	8-1/2	8-1/8	3-7/8	2-1/16	2-1/16	6.72	6.75	6.63	1/2	
8	15	1-5/8	10-5/8	10-1/4	4-3/8	2-7/16	2-7/16	8.72	8.75	8.63	1/2	
10	17-1/2	1-7/8	12-3/4	12-5/8	4-5/8	2-5/8	3-3/4	10.88	10.92	10.75	1/2	
12	20-1/2	2	15	14-3/4	5-1/8	2-7/8	4	12.88	12.92	12.75	1/2	
14	23	2-1/8	16-1/4	16-3/4	5-5/8	3	4-3/8	14.14	14.18	14.00	1/2	
16	25-1/2	2-1/4	18-1/2	19	5-3/4	3-1/4	4-3/4	16.16	16.19	16.00	1/2	
18	28	2-3/8	21	21	6-1/4	3-1/2	5-1/8	18.18	18.20	18.00	1/2	
20	30-1/2	2-1/2	23	23-1/8	6-3/8	3-3/4	5-1/2	20.20	20.25	20.00	1/2	
24	36	2-3/4	27-1/4	27-5/8	6-5/8	4-3/16	6	24.25	24.25	24.00	1/2	

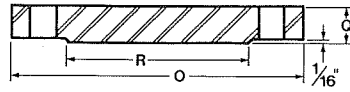
All dimensions are in inches.



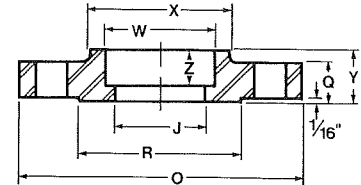
Lap Joint



Blind



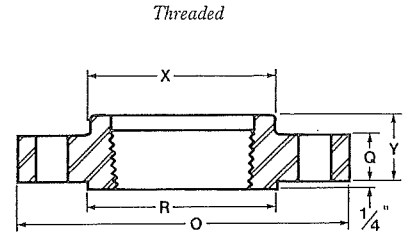
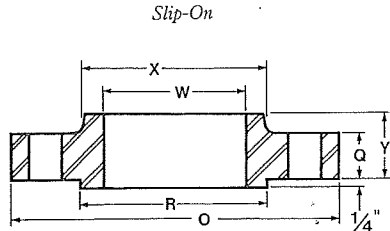
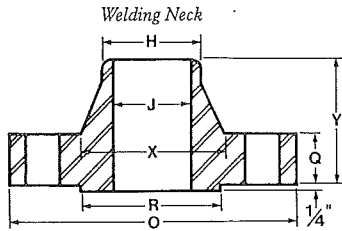
Socket Type



Nominal Pipe Size	Drilling				Length of Bolts			Approximate Weight in Pounds			
	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Holes	Stud Bolts		Machine Bolts 1/16" R.F.	Welding Neck	Slip-On, Threaded, Socket	Lap Joint	Blind
					1/16" Raised Face	Ring Joint					
1/2	2-5/8	4	1/2	5/8	2-1/2	3	2	4	3	3	2
3/4	3-1/4	4	5/8	3/4	2-3/4	3-1/4	2-1/2	4	3	3	3
1	3-1/2	4	5/8	3/4	3	3-1/2	2-1/2	5	3	3	4
1-1/4	3-7/8	4	5/8	3/4	3	3-1/2	2-3/4	6	4	4	6
1-1/2	4-1/2	4	3/4	7/8	3-1/2	4	3	9	6	6	7
2	5	8	5/8	3/4	3-1/4	4	3	10	7	7	8
2-1/2	5-7/8	8	3/4	7/8	3-3/4	4-1/2	3-1/4	13	10	10	15
3	6-5/8	8	3/4	7/8	4	4-3/4	3-1/2	16	13	13	16
3-1/2	7-1/4	8	3/4	7/8	4-1/4	5	3-3/4	19	17	17	20
4	7-7/8	8	3/4	7/8	4-1/4	5	3-3/4	26	22	22	27
5	9-1/4	8	3/4	7/8	4-1/2	5-1/4	4	35	28	28	41
6	10-5/8	12	3/4	7/8	4-3/4	5-1/2	4-1/4	45	39	39	50
8	13	12	7/8	1	5-1/4	6	4-3/4	70	58	58	80
10	15-1/4	16	1	1-1/8	6	6-3/4	5-1/4	94	82	91	120
12	17-3/4	16	1-1/8	1-1/4	6-1/2	7-1/4	5-3/4	140	115	139	184
14	20-1/4	20	1-1/8	1-1/4	6-3/4	7-1/2	6	190	163	189	249
16	22-1/2	20	1-1/4	1-3/8	7-1/4	8	6-1/2	250	220	240	324
18	24-3/4	24	1-1/4	1-3/8	7-1/2	8-1/4	6-3/4	305	280	305	416
20	27	24	1-1/4	1-3/8	8	8-3/4	7	380	325	375	516
24	32	24	1-1/2	1-5/8	9	10	7-3/4	540	492	530	763

All dimensions are in inches.

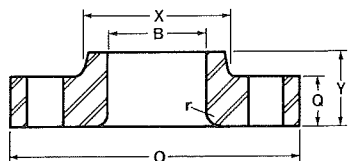
# FLANGES & FITTINGS



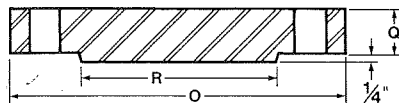
Nominal Pipe Size	Outside Diameter of Flange O	Thickness of Flange Q	Diameter of Raised Face R	Diameter of Hub at Base X	Length Thru Hub			Diameter of Bore		Diameter of Hub at Bevel H	Radius of Fillet r	Depth of Socket Z
					Welding Neck Y	Slip-On, Threaded, Socket Y	Lap Joint Y	Slip-On, Socket W	Lap Joint B			
1/2	3-3/4	9/16	1-3/8	1-1/2	2-1/16	7/8	7/8	.88	.90	.84	1/8	3/8
3/4	4-5/8	5/8	1-11/16	1-7/8	2-1/4	1	1	1.09	1.11	1.05	1/8	7/16
1	4-7/8	11/16	2	2-1/8	2-7/16	1-1/16	1-1/16	1.36	1.38	1.32	1/8	1/2
1-1/4	5-1/4	13/16	2-1/2	2-1/2	2-5/8	1-1/8	1-1/8	1.70	1.72	1.66	3/16	9/16
1-1/2	6-1/8	7/8	2-7/8	2-3/4	2-3/4	1-1/4	1-1/4	1.95	1.97	1.90	1/4	5/8
2	6-1/2	1	3-5/8	3-5/16	2-7/8	1-7/16	1-7/16	2.44	2.46	2.38	5/16	11/16
2-1/2	7-1/2	1-1/8	4-1/8	3-15/16	3-1/8	1-5/8	1-5/8	2.94	2.97	2.88	5/16	3/4
3	8-1/4	1-1/4	5	4-5/8	3-1/4	1-13/16	1-13/16	3.57	3.60	3.50	3/8	13/16
3-1/2	9	1-3/8	5-1/2	5-1/4	3-3/8	1-15/16	1-15/16	4.07	4.10	4.00	3/8	7/8
4	10-3/4	1-1/2	6-3/16	6	4	2-1/8	2-1/8	4.57	4.60	4.50	7/16	
5	13	1-3/4	7-5/16	7-7/16	4-1/2	2-3/8	2-3/8	5.66	5.69	5.56	7/16	
6	14	1-7/8	8-1/2	8-3/4	4-5/8	2-5/8	2-5/8	6.72	6.75	6.63	1/2	
8	16-1/2	2-3/16	10-5/8	10-3/4	5-1/4	3	3	8.72	8.75	8.63	1/2	
10	20	2-1/2	12-3/4	13-1/2	6	3-3/8	4-3/8	10.88	10.92	10.75	1/2	
12	22	2-5/8	15	15-3/4	6-1/8	3-5/8	4-5/8	12.88	12.92	12.75	1/2	
14	23-3/4	2-3/4	16-1/4	17	6-1/2	3-11/16	5	14.14	14.18	14.00	1/2	
16	27	3	18-1/2	19-1/2	7	4-3/16	5-1/2	16.16	16.19	16.00	1/2	
18	29-1/4	3-1/4	21	21-1/2	7-1/4	4-5/8	6	18.18	18.20	18.00	1/2	
20	32	3-1/2	23	24	7-1/2	5	6-1/2	20.20	20.25	20.00	1/2	
24	37	4	27-1/4	28-1/4	8	5-1/2	7-1/4	24.25	24.25	24.00	1/2	

All dimensions are in inches.

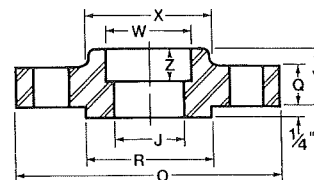
Lap Joint



Blind

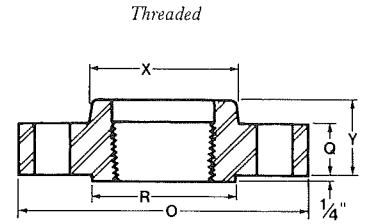
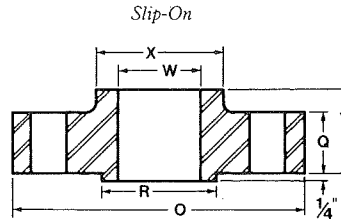
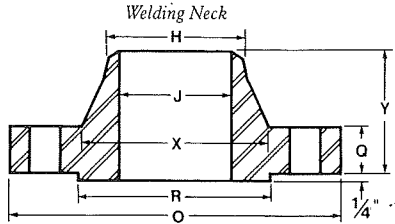


Socket Type



Nominal Pipe Size	Drilling				Length of Stud Bolts		Approximate Weight in Pounds			
	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Holes	1/4" Raised Face	Ring Joint	Welding Neck	Slip-On Threaded Socket	Lap Joint	Blind
1/2	2-5/8	4	1/2	5/8	3	3	4	3	3	2
3/4	3-1/4	4	5/8	3/4	3-1/4	3-1/4	6	3	3	3
1	3-1/2	4	5/8	3/4	3-1/2	3-1/2	6	4	4	4
1-1/4	3-7/8	4	5/8	3/4	3-3/4	3-3/4	8	6	6	6
1-1/2	4-1/2	4	3/4	7/8	4	4	10	7	7	8
2	5	8	5/8	3/4	4	4-1/4	12	9	9	10
2-1/2	5-7/8	8	3/4	7/8	4-1/2	4-3/4	18	13	13	15
3	6-5/8	8	3/4	7/8	4-3/4	5	20	16	16	20
3-1/2	7-1/4	8	7/8	1	5-1/4	5-1/2	25	21	21	29
4	8-1/2	8	7/8	1	5-1/2	5-3/4	41	36	36	41
5	10-1/2	8	1	1-1/8	6-1/4	6-1/2	66	63	63	68
6	11-1/2	12	1	1-1/8	6-1/2	6-3/4	77	83	83	86
8	13-3/4	12	1-1/8	1-1/4	7-1/2	7-3/4	111	114	114	140
10	17	16	1-1/4	1-3/8	8-1/4	8-1/2	180	170	195	230
12	19-1/4	20	1-1/4	1-3/8	8-1/2	8-3/4	226	210	240	295
14	20-3/4	20	1-3/8	1-1/2	9	9-1/4	334	264	290	378
16	23-3/4	20	1-1/2	1-5/8	9-3/4	10	462	366	400	527
18	25-3/4	20	1-5/8	1-3/4	10-1/2	10-3/4	534	476	469	665
20	28-1/2	24	1-5/8	1-3/4	11-1/4	11-1/2	678	642	604	855
24	33	24	1-7/8	2	12-3/4	13-1/4	959	876	866	1175

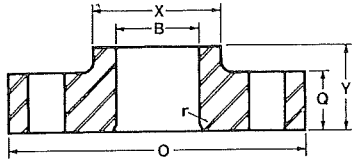
All dimensions are in inches.



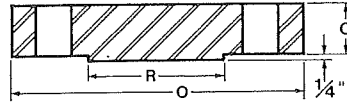
Nominal Pipe Size	Flange Outside Diameter	Flange Thickness*	Raised Face Diameter	Diameter of Hub at Base	Length thru Hub*			Bore		Diameter of Hub at Bevel	Radius of Fillet	Depth of Socket
					Welding Neck	Slip-On, Threaded, Socket	Lap Joint	Slip-On, and Socket Welding	Lap Joint			
	O	Q	R	X	Y	Y	Y	W	B	H	r	Z
1/2	4-3/4	7/8	1-3/8	1-1/2	2-3/8	1-1/4	1-1/4	0.88	0.90	0.84	1/8	3/8
3/4	5-1/8	1	1-11/16	1-3/4	2-3/4	1-3/8	1-3/8	1.09	1.11	1.05	1/8	7/16
1	5-7/8	1-1/8	2	2-1/16	2-7/8	1-5/8	1-5/8	1.36	1.38	1.32	1/8	1/2
1-1/4	6-1/4	1-1/8	2-1/2	2-1/2	2-7/8	1-5/8	1-5/8	1.70	1.72	1.66	3/16	9/16
1-1/2	7	1-1/4	2-7/8	2-3/4	3-1/4	1-3/4	1-3/4	1.95	1.97	1.90	1/4	5/8
2	8-1/2	1-1/2	3-5/8	4-1/8	4	2-1/4	2-1/4	2.44	2.46	2.38	5/16	11/16
2-1/2	9-5/8	1-5/8	4-1/8	4-7/8	4-1/8	2-1/2	2-1/2	2.94	2.97	2.88	5/16	3/4
3	9-1/2	1-1/2	5	5	4	2-1/8	2-1/8	3.57	3.60	3.50	3/8	-
4	11-1/2	1-3/4	6-3/16	6-1/4	4-1/2	2-3/4	2-3/4	4.57	4.60	4.50	7/16	
5	13-3/4	2	7-5/16	7-1/2	5	3-1/8	3-1/8	5.66	5.69	5.56	7/16	
6	15	2-3/16	8-1/2	9-1/4	5-1/2	3-3/8	3-3/8	6.72	6.75	6.63	1/2	
8	18-1/2	2-1/2	10-5/8	11-3/4	6-3/8	4	4-1/2	8.72	8.75	8.63	1/2	
10	21-1/2	2-3/4	12-3/4	14-1/2	7-1/4	4-1/4	5	10.88	10.92	10.75	1/2	
12	24	3-1/8	15	16-1/2	7-7/8	4-5/8	5-5/8	12.88	12.92	12.75	1/2	
14	25-1/4	3-3/8	16-1/4	17-3/4	8-3/8	5-1/8	6-1/8	14.14	14.18	14.00	1/2	
16	27-3/4	3-1/2	18-1/2	20	8-1/2	5-1/4	6-1/2	16.16	16.19	16.00	1/2	
18	31	4	21	22-1/4	9	6	7-1/2	18.18	18.20	18.00	1/2	
20	33-3/4	4-1/4	23	24-1/2	9-3/4	6-1/4	8-1/4	20.20	20.25	20.00	1/2	
24	41	5-1/2	27-1/4	29-1/2	11-1/2	8	10-1/2	24.25	24.25	24.00	1/2	

\*Dimensions do not include 1/4" raised face

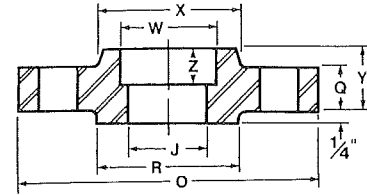
Lap Joint



Blind

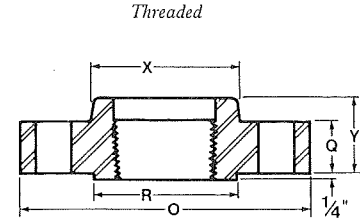
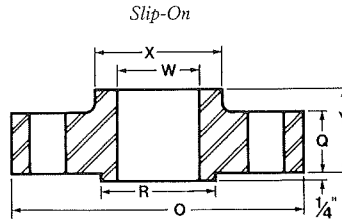
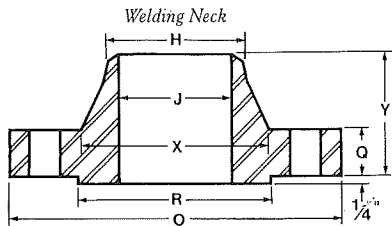


Socket Type



Nominal Pipe Size	Drilling				Length of Studs		Approximate Weight in Pounds			
	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolts	Diameter of Holes	1/4" Raised Face	Ring Joint	Welding Neck	Slip-On, Threaded Socket	Lap Joint	Blind
1/2	3-1/4	4	3/4	7/8	4	4	9	9	9	4
3/4	3-1/2	4	3/4	7/8	4-1/4	4-1/4	9	9	9	6
1	4	4	7/8	1	4-3/4	4-3/4	9	9	9	9
1-1/4	4-3/8	4	7/8	1	4-3/4	4-3/4	10	10	10	10
1-1/2	4-7/8	4	1-1/8	1-1/8	5-1/4	5-1/4	14	14	14	14
2	6-1/2	8	7/8	1	5-1/2	5-3/4	25	25	25	25
2-1/2	7-1/2	8	1	1-1/8	6	6-1/4	36	36	35	35
3	7-1/2	8	7/8	1	5-1/2	5-3/4	32	31	30	32
4	9-1/4	8	1-1/8	1-1/4	6-1/2	6-3/4	51	53	51	54
5	11	8	1-1/4	1-3/8	7-1/4	7-1/2	86	83	81	87
6	12-1/2	12	1-1/8	1-1/4	7-1/2	7-3/4	110	108	105	113
8	15-1/2	12	1-3/8	1-1/2	8-1/2	8-3/4	187	172	188	197
10	18-1/2	16	1-3/8	1-1/2	9	9-1/4	268	245	277	290
12	21	20	1-3/8	1-1/2	9-3/4	10	372	326	371	413
14	22	20	1-1/2	1-5/8	10-1/2	11	562	380	397	494
16	24-1/4	20	1-5/8	1-3/4	11	11-1/2	685	459	488	619
18	27	20	1-7/8	2	12-3/4	13-1/4	924	647	670	880
20	29-1/2	20	2	2-1/8	13-1/2	14	1164	792	868	1107
24	35-1/2	20	2-1/2	2-5/8	17	17-3/4	2107	1480	1659	2099

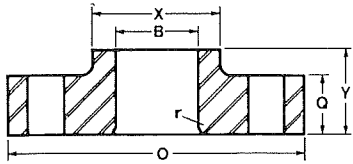
# FLANGES & FITTINGS



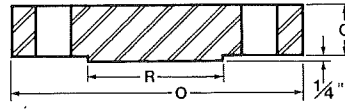
Nominal Pipe Size	Outside Diameter of Flange O	Thickness of Flange Q	Diameter of Raised Face R	Diameter of Hub at Base X	Length Thru Hub			Diameter of Bore		Diameter of Hub at Bevel H	Radius of Fillet r	Depth of Socket Z
					Welding Neck Y	Slip-On, Threaded, Socket Y	Lap Joint Y	Slip-on Socket W	Lap Joint B			
1/2	4-3/4	7/8	1-3/8	1-1/2	2-3/8	1-1/4	1-1/4	.88	.90	.84	1/8	3/8
3/4	5-1/8	1	1-11/16	1-3/4	2-3/4	1-3/8	1-3/8	1.09	1.11	1.05	1/8	7/16
1	5-7/8	1-1/8	2	2-1/16	2-7/8	1-5/8	1-5/8	1.36	1.38	1.32	1/8	1/2
1-1/4	6-1/4	1-1/8	2-1/2	2-1/2	2-7/8	1-5/8	1-5/8	1.70	1.72	1.66	3/16	9/16
1-1/2	7	1-1/4	2-7/8	2-3/4	3-1/4	1-3/4	1-3/4	1.95	1.97	1.90	1/4	
2	8-1/2	1-1/2	3-5/8	4-1/8	4	2-1/4	2-1/4	2.44	2.46	2.38	5/16	11/16
2-1/2	9-5/8	1-5/8	4-1/8	4-7/8	4-1/8	2-1/2	2-1/2	2.94	2.97	2.88	5/16	3/4
3	10-1/2	1-7/8	5	5-1/4	4-5/8	2-7/8	2-7/8	3.57	3.60	3.50	3/8	
4	12-1/4	2-1/8	6-3/16	6-3/8	4-7/8	3-9/16	3-9/16	4.57	4.60	4.50	7/16	
5	14-3/4	2-7/8	7-5/16	7-3/4	6-1/8	4-1/8	4-1/8	5.66	5.69	5.56	7/16	
6	15-1/2	3-1/4	8-1/2	9	6-3/4	4-11/16	4-11/16	6.72	6.75	6.63	1/2	
8	19	3-5/8	10-5/8	11-1/2	8-3/8	5-5/8	5-5/8	8.72	8.75	8.63	1/2	
10	23	4-1/4	12-3/4	14-1/2	10	6-1/4	7	10.88	10.92	10.75	1/2	
12	26-1/2	4-7/8	15	17-3/4	11-1/8	7-1/8	8-5/8	12.88	12.92	12.75	1/2	
14	29-1/2	5-1/4	16-1/4	19-1/2	11-3/4		9-1/2	14.14	14.18	14.00	1/2	
16	32-1/2	5-3/4	18-1/2	21-3/4	12-1/4		10-1/4	16.16	16.19	16.00	1/2	
18	36	6-3/8	21	23-1/2	12-7/8		10-7/8	18.18	18.20	18.00	1/2	
20	38-3/4	7	23	25-1/4	14		11-1/2	20.20	20.25	20.00	1/2	
24	46	8	27-1/4	30	16		13	24.25	24.25	24.00	1/2	

All dimensions are in inches.

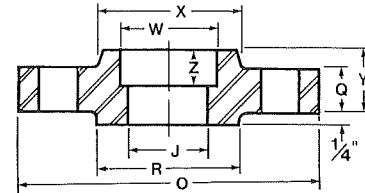
Lap Joint



Blind



Socket Type

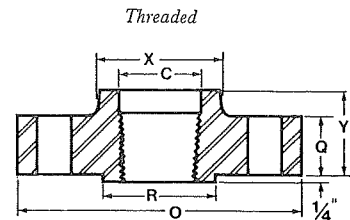
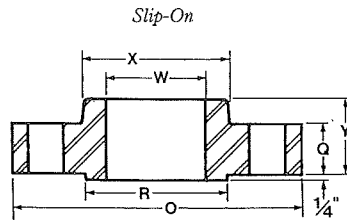
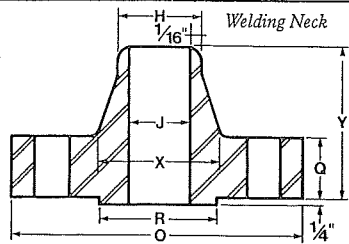


Nominal Pipe Size	Diameter of Bolt Circle	Number of Bolts	Drilling		Length of Stud Bolts		Approximate Weight in Pounds			
			Diameter of Bolts	Diameter of Bolt Holes	1/4" Raised Face	Ring Joint	Welding Neck	Slip-On, Threaded Socket	Lap Joint	Blind
1/2	3-1/4	4	3/4	7/8	4	4	9	9	9	4
3/4	3-1/2	4	3/4	7/8	4-1/4	4-1/4	7	9	9	6
1	4	4	7/8	1	4-3/4	4-3/4	9	9	9	9
1-1/4	4-3/8	4	7/8	1	4-3/4	4-3/4	10	10	10	10
1-1/2	4-7/8	4	1	1-1/8	5-1/4	5-1/4	14	14	14	14
2	6-1/2	8	7/8	1	5-1/2	5-3/4	25	25	25	25
2-1/2	7-1/2	8	1	1-1/8	6	6-1/4	36	36	36	35
3	8	8	1-1/8	1-1/4	6-3/4	7	48	48	48	48
4	9-1/2	8	1-1/4	1-3/8	7-1/2	7-3/4	73	73	73	73
5	11-1/2	8	1-1/2	1-5/8	9-1/2	9-3/4	132	132	132	142
6	12-1/2	12	1-3/8	1-1/2	10	10-1/4	164	164	164	159
8	15-1/2	12	1-5/8	1-3/4	11-1/4	11-3/4	273	258	258	302
10	19	12	1-7/8	2	13-1/4	13-1/2	454	436	485	507
12	22-1/2	16	2	2-1/8	14-3/4	15-1/4	690	667	749	775
14	25	16	2-1/4	2-3/8	16	16-3/4	940		890	975
16	27-3/4	16	2-1/2	2-5/8	17-1/2	18-1/2	1250		1150	1800
18	30-1/2	16	2-3/4	2-7/8	19-1/4	20-1/4	1625		1475	1750
20	32-3/4	16	3	3-1/8	21	22-1/4	2050		1775	2225
24	39	16	3-1/2	3-5/8	24	25-1/2	3325		2825	3625

all dimensions in above table are in inches.



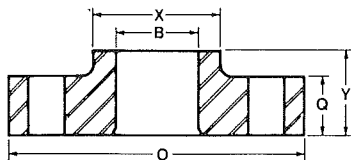
# FLANGES & FITTINGS



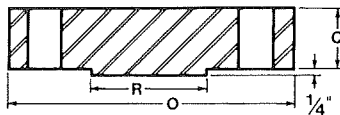
Nominal Pipe Size	Outside Diameter of Flange O	Thickness of Flange Q	Diameter of Raised Face R	Diameter of Hub at Base X	Length Thru Hub			Diameter of Bore		Diameter of Hub at Bevel H
					Welding Neck Y	Slip-On, Threaded, Socket Y	Lap Joint Y	Slip-on Socket W	Lap Joint B	
1/2	5-1/4	1-3/16	1-3/8	1-11/16	2-7/8	1-9/16	1-9/16	.88	.90	.84
3/4	5-1/2	1-1/4	1-11/16	2	3-1/8	1-11/16	1-11/16	1.09	1.11	1.05
1	6-1/4	1-3/8	2	2-1/4	3-1/2	1-7/8	1-7/8	1.36	1.38	1.32
1-1/4	7-1/4	1-1/2	2-1/2	2-7/8	3-3/4	2-1/16	2-1/16	1.70	1.72	1.66
1-1/2	8	1-3/4	2-7/8	3-1/8	4-3/8	2-3/8	2-3/8	1.95	1.97	1.90
2	9-1/4	2	3-5/8	3-3/4	5	2-3/4	2-3/4	2.44	2.46	2.38
2-1/2	10-1/2	2-1/4	4-1/8	4-1/2	5-5/8	3-1/8	3-1/8	2.94	2.97	2.88
3	12	2-5/8	5	5-1/4	6-5/8	3-5/8	3-5/8	3.57	3.60	3.50
4	14	3	6-3/16	6-1/2	7-1/2	4-1/4	4-1/4	4.57	4.60	4.50
5	16-1/2	3-5/8	7-5/16	8	9	5-1/8	5-1/8	5.66	5.69	5.56
6	19	4-1/4	8-1/2	9-1/4	10-3/4	6	6	6.72	6.75	6.63
8	21-3/4	5	10-5/8	12	12-1/2	7	7	8.72	8.75	8.63
10	26-1/2	6-1/2	12-3/4	14-3/4	16-1/2	9	9	10.88	10.92	10.75
12	30	7-1/4	15	17-3/8	18-1/4	10	10	12.88	12.92	12.75

All dimensions are in inches.

Lap Joint



Blind



Nominal Pipe Size	Diameter of Bolt Circle	Number of Bolts	Drilling		Length of Stud Bolts		Welding Neck	Approximate Weight in Pounds		
			Diameter of Bolts	Diameter of Bolt Holes	1/4" Raised Face	Ring Joint		Slip-On and Threaded	Lap Joint	Blind
1/2	3-1/2	4	3/4	7/8	4-3/4	4-3/4	8	7	7	7
3/4	3-3/4	4	3/4	7/8	4-3/4	4-3/4	9	9	9	10
1	4-1/4	4	7/8	1	5-1/4	5-1/4	13	12	12	12
1-1/4	5-1/8	4	1	1-1/8	5-3/4	6	20	18	18	18
1-1/2	5-3/4	4	1-1/8	1-1/4	6-1/2	6-3/4	28	25	25	25
2	6-3/4	8	1	1-1/8	6-3/4	7	42	38	38	39
2-1/2	7-3/4	8	1-1/8	1-1/4	7-1/2	7-3/4	52	52	55	56
3	9	8	1-1/4	1-3/8	8-1/2	8-3/4	94	83	83	86
4	10-3/4	8	1-1/2	1-5/8	9-3/4	10-1/4	146	127	127	133
5	12-3/4	8	1-3/4	1-7/8	11-1/2	12-1/4	244	210	210	223
6	14-1/2	8	2	2-1/8	13-1/2	14	378	323	323	345
8	17-1/4	12	2	2-1/8	15	15-1/2	576	485	485	533
10	21-1/4	12	2-1/2	2-5/8	19	20	1068	925	925	1025
12	24-3/8	12	2-3/4	2-7/8	21	22	1608	1300	1300	1464



# JACK SCREW SIZES FOR RING JOINT FACE ORIFICE FLANGES

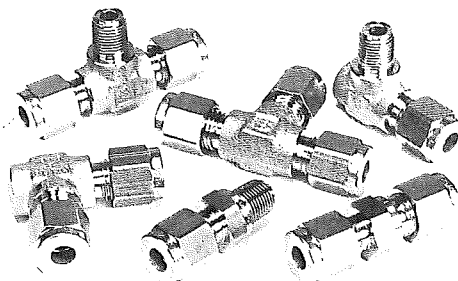
Nominal Pipe Size	300 lb.			400 lb.			600 lb.			900 lb.			1500 lb.		
	Size	Length	Hole Size	Size	Length	Hole Size	Size	Length	Hole Size	Size	Length	Hole Size	Size	Length	Hole Size
1	5/8	3-3/4	11/16	SAME AS 300 LB.						SAME AS 1500 LB.			5/8	3-3/4	3/4
1-1/4	5/8	3-3/4	11/16										5/8	3-3/4	3/4
1-1/2	5/8	3-3/4	11/16										5/8	3-3/4	3/4
2	5/8	3-3/4	11/16										5/8	4	3/4
2-1/2	3/4	3-3/4	13/16										5/8	4-1/4	3/4
3	3/4	3-3/4	13/16										3/4	4	7/8
4	3/4	3-3/4	13/16	3/4	4	7/8	3/4	4	7/8	3/4	4-1/4	7/8	3/4	5	7/8
5	3/4	4	7/8	3/4	4	7/8	3/4	4-1/4	7/8	3/4	4-1/2	7/8	3/4	6	7/8
6	3/4	4	7/8	7/8	4-1/2	1	7/8	4-1/2	1	1	5	1-1/8	1	6	1-1/8
8	3/4	4-1/4	7/8	7/8	4-1/2	1	7/8	5	1	1	5	1-1/8	1	7	1-1/8
10	1	4-1/2	1-1/8	7/8	5	1	7/8	5	1	1	5-1/2	1-1/8	1	7	1-1/8
12	1	4-1/2	1-1/8	7/8	5	1	7/8	5-1/2	1	1	6	1-1/8	1	8	1-1/8
14	1	5	1-1/8												
16	1	5	1-1/8												
18	1	5	1-1/8												
20	1	5-1/2	1-1/8												
24	1	5-1/2	1-1/8												

All dimensions are in inches.



## JACK SCREW SIZES FOR RAISED FACE ORIFICE FLANGES

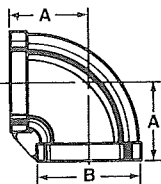
Nominal Pipe Size	300 lb.			400 lb.			600 lb.			900 lb.			1500 lb.		
	Size	Length	Hole Size	Size	Length	Hole Size	Size	Length	Hole Size	Size	Length	Hole Size	Size	Length	Hole Size
1	5/8	2-3/4	11/16	SAME AS 300 LB.						SAME AS 1500 LB.			5/8	3-1/4	3/4
1-1/4	5/8	2-3/4	11/16										5/8	3-1/4	3/4
1-1/2	5/8	2-3/4	11/16										5/8	3-1/4	3/4
2	5/8	2-3/4	11/16										5/8	3-1/4	3/4
2-1/2	5/8	2-3/4	13/16										5/8	3-1/2	3/4
3	3/4	2-3/4	13/16										3/4	3-1/4	7/8
4	3/4	2-3/4	13/16	3/4	3-1/4	7/8	3/4	3-1/4	7/8	3/4	3-1/2	7/8	3/4	4	7/8
5	3/4	2-3/4	7/8	3/4	3-1/4	7/8	3/4	3-1/2	7/8	3/4	3-3/4	7/8	3/4	5	7/8
6	3/4	2-3/4	7/8	7/8	3-1/2	1	7/8	4	1	1	4	1-1/8	1	5	1-1/8
8	3/4	3	7/8	7/8	4	1	7/8	4	1	1	4-1/2	1-1/8	1	5-1/2	1-1/8
10	1	3-1/2	1-1/8	7/8	4	1	7/8	4-1/2	1	1	4-1/2	1-1/8	1	6	1-1/8
12	1	3-1/2	1-1/8	7/8	4	1	7/8	4-1/2	1	1	5	1-1/8	1	7	1-1/8
14	1	3-1/2	1-1/8												
16	1	3-1/2	1-1/8												
18	1	3-3/4	1-1/8												
20	1	3-3/4	1-1/8												
24	1	4	1-1/8												



One call can look after all your tubing needs. We invite you to complement your instrument tubing requirements with tube fittings available from our stock. For a complete catalogue and technical information, contact a Specialty Steels sales office.

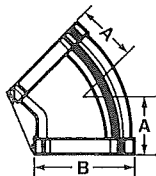


## 90° ELBOWS



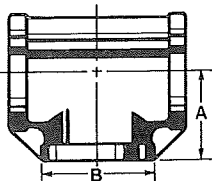
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	1 1/16	1 3/16	1 31/32	1-1/8	1-5/16	1-1/2	1-3/4	1-15/16
Dimension B	1 1/16	2 7/32	1-1/16	1-1/4	1-19/32	1-7/8	2-1/4	2-5/8
Approximate Weight In Pounds	.19	.15	.25	.34	.62	.94	1.31	2.06
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-1/4	2-23/32	3-3/32	3-7/16	3-13/16	4-1/2	5-1/8	
Dimension B	3-1/8	3-5/8	4-7/16	4-15/16	5-9/16	6-3/4	7-3/4	
Approximate Weight In Pounds	3.06	4.60	6.50	9.80	13.87	20.00	34.90	

## 45° ELBOWS



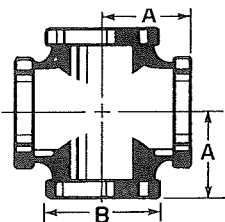
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A		3/4	13/16	7/8	1	1-1/8	1-5/16	1-7/16
Dimension B	1 1/16	2 7/32	1-1/16	1-1/4	1-19/32	1-7/8	2-1/4	2-5/8
Approximate Weight In Pounds	.18	.13	.24	.31	.58	.81	1.21	1.81
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	1-11/16	1-31/32	2-3/16	2-13/32	2-5/8	3-3/64	3-1/2	
Dimension B	3-1/8	3-5/8	4-7/16	4-15/16	5-9/16	6-3/4	7-13/16	
Approximate Weight In Pounds	2.75	3.65	6.00	6.45	10.18	24.95	25.60	

## TEES

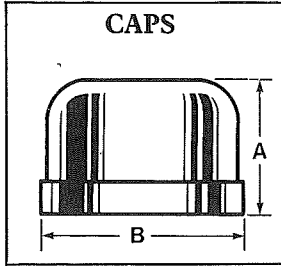


Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	1 1/16	1 3/16	1 31/32	1-1/8	1-5/16	1-1/2	1-3/4	1-15/16
Dimension B	1 1/16	2 7/32	1-1/16	1-1/4	1-19/32	1-7/8	2-1/4	1-5/8
Approximate Weight In Pounds	.25	.19	.31	.50	1.00	1.31	2.00	3.00
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-1/4	2-23/32	3-3/32	3-7/16	3-13/16	4-1/2	5-1/8	
Dimension B	3-1/8	3-5/8	4-7/16	4-15/16	5-9/16	6-3/4	7-3/4	
Approximate Weight In Pounds	4.38	6.44	10.12	10.25	17.50	29.50	51.50	

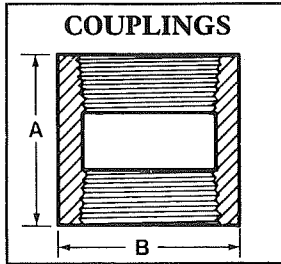
## CROSSES



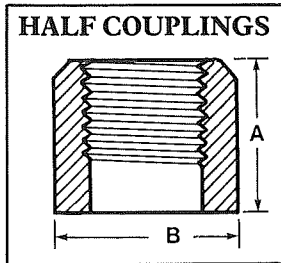
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	1 1/16	1 3/16	1 31/32	1-1/8	1-5/16	1-1/2	1-3/4	1-15/16
Dimension B	1 1/16	2 7/32	1-1/16	1-1/4	1-19/32	1-7/8	2-1/4	2-5/8
Approximate Weight In Pounds	.32	.26	.38	.56	1.12	1.56	2.19	3.38
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-1/4	2-23/32	3-1/4	3-7/16	3-13/16	4-1/2	5-1/8	
Dimension B	3-1/8	3-5/8	4-5/16	4-15/16	5-9/16	6-3/4	7-3/4	
Approximate Weight In Pounds	4.87	9.00	13.00	13.10	21.00	35.40	61.80	



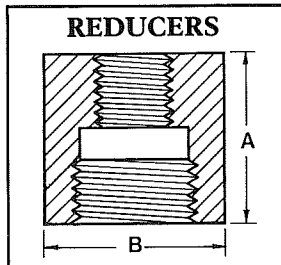
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	5/8	11/16	13/16	15/16	1-1/8	1-9/32	1-1/2	1-21/32
Dimension B	5/8	3/4	7/8	1-1/8	1-3/8	1-7/8	2-1/4	2-5/8
Approximate Weight In Pounds	.05	.06	.09	.19	.28	.50	.75	1.19
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	1-3/4	2-1/4	2-3/8	2-11/16	2-3/4	2-3/16	2-9/16	3-1/2
Dimension B	3-1/8	3-5/8	3-5/8	4-15/16	5-1/2	6-5/8	7-3/4	10
Approximate Weight In Pounds	1.65	2.50	3.50	4.00	7.00	11.00	11.85	20.14



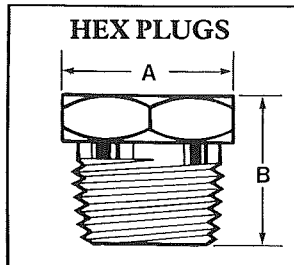
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	31/32	1-1/16	1-3/16	1-5/16	1-17/32	1-11/16	1-15/16	2-5/32
Dimension B	11/16	27/32	7/8	1-1/8	1-3/8	1-5/8	2	2-1/4
Approximate Weight In Pounds	.06	.08	.10	.20	.27	.44	.68	.87
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-17/32	2-7/8	3-3/16	3-1/2	3-11/16			
Dimension B	2-3/4	3-3/8	4-1/16	4-3/4	5-1/8			
Approximate Weight In Pounds	1.40	2.56	3.75	4.00	6.00			



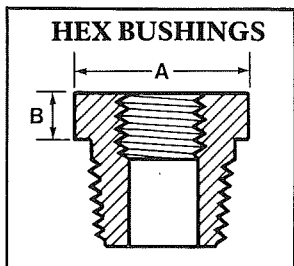
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	5/8	11/16	3/4	15/16	1	1-3/16	7/8	63/64
Dimension B	11/16	27/32	7/8	1-1/8	1-3/8	1-3/4	2	2-1/4
Approximate Weight In Pounds	.04	.06	.07	.16	.21	.44	.32	.40
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	1-11/64	1-11/32	1-1/2	1-5/8	1-3/4			
Dimension B	2-3/4	3-3/8	4-1/16	4-15/16	5-1/8			
Approximate Weight In Pounds	.68	1.44	1.87	1.78	3.00			



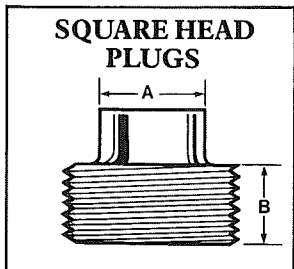
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A		1-1/16	1-3/16	1-5/16	1-17/32	1-3/4	2-1/16	2-5/16
Dimension B		27/32	7/8	1-1/8	1-3/8	1-7/8	2-3/16	2-9/16
Approximate Weight In Pounds		.09	.12	.25	.44	.59	.84	1.38
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-3/16	3	3-3/16	3-1/2	3-11/16			
Dimension B	3	3-5/8	4-3/8	4-7/8	5-1/2			
Approximate Weight In Pounds	2.06	2.87	4.50	4.75	8.00			



Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	9/16	9/16	3/4	7/8	1-1/8	1-3/8	1-13/16	2-1/16
Dimension B	11/16	25/32	13/16	7/8	1-3/32	1-3/8	1-7/16	1-1/2
Approximate Weight In Pounds	.03	.06	.09	.14	.28	.46	.75	1.00
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-9/16	3-1/16	3-3/4	4-1/4	4-3/4	5-15/16	6-3/4	8-3/4
Dimension B	1-9/16	1-3/4	1-7/8	2	2-3/16	2-3/16	2-7/8	3
Approximate Weight In Pounds	1.56	2.38	3.62	5.20	7.62	14.00	15.80	18.30



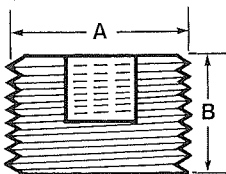
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A		9/16	3/4	7/8	1-1/8	1-3/8	1-13/16	2-1/16
Dimension B		1/4	1/4	1/4	3/8	3/8	3/8	3/8
Approximate Weight In Pounds		.03	.06	.09	.12	.25	.44	.50
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-9/16	3-1/16	3-3/4	4-1/4	4-3/4	5-15/16	6-3/4	8-3/4
Dimension B	3/8	3/8	3/8	7/16	1/2	5/8	1-1/4	1-1/4
Approximate Weight In Pounds	.93	1.75	2.06	4.30	6.25	12.00	13.20	15.35



Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	9/32	3/8	7/16	9/16	5/8	13/16	15/16	1-1/8
Dimension B	11/16	11/16	13/16	15/16	1-1/8	1-5/16	1-3/8	1-7/16
Approximate Weight In Pounds	.03	.04	.06	.11	.19	.35	.75	1.00
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	1-5/16	1-1/2	1-11/16	1-7/8	2-1/2	2-3/4	3-1/2	
Dimension B	1-9/16	2	2	2	2-1/4	2-1/2	2-1/2	
Approximate Weight In Pounds	1.60	2.50	3.00	3.50	5.80	9.60	11.60	

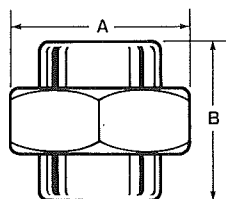


## COUNTERSUNK HEX PLUGS



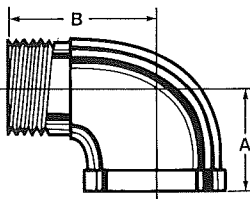
Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	3/8	5/8	3/4	7/8	1-1/8	1-3/8	1-3/4	1-15/16
Dimension B	9/32	13/32	31/64	35/64	9/16	23/32	11/16	3/4
Approximate Weight In Pounds	.01	.01	.03	.06	.11	.21	.32	.52
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-3/8	2-7/8	3-1/2	4	4-1/2			
Dimension B	1-3/16	1-5/16	1-1/8	1-1/8	1-1/4			
Approximate Weight In Pounds	1.88	2.00	3.06	3.90	4.50			

## UNIONS



Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	1-1/8	1-3/8	1-1/2	1-1/2	1-13/16	2-1/8	3	3-5/16
Dimension B	1-1/2	1-11/16	1-3/4	1-15/16	1-7/8	2-7/16	2-5/8	3
Approximate Weight In Pounds	.25	.30	.38	.45	1.00	1.75	2.44	3.19
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	3-7/8	4-1/2	5-3/8	6	6-5/8			
Dimension B	3-1/4	3-3/4	4-1/4	4-5/8	5			
Approximate Weight In Pounds	4.50	6.62	10.00	14.30	17.50			

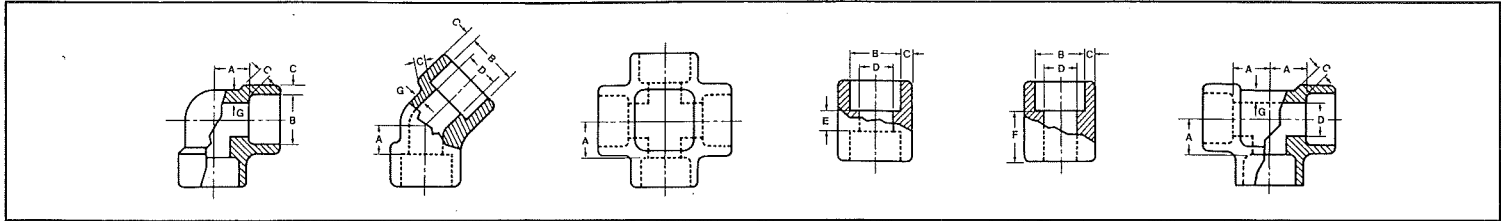
## STREET ELBOWS



Nominal Pipe Size	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2
Dimension A	13/16	13/16	31/32	1-1/8	1-5/16	1-1/2	1-3/4	1-15/16
Dimension B	1	1-3/16	1-7/16	1-5/8	1-7/8	2-1/8	2-7/16	2-11/16
Approximate Weight In Pounds	.17	.16	.28	.47	.62	1.00	1.44	1.87
Nominal Pipe Size	2	2-1/2	3	3-1/2	4	5	6	8
Dimension A	2-1/4	2-23/32	3-3/32					
Dimension B	3-1/4	3-7/8	4-1/2					
Approximate Weight In Pounds	3.50	4.20	7.00					

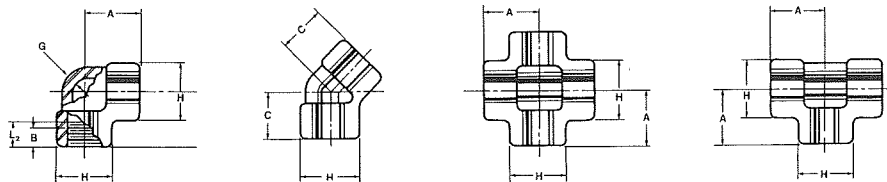
Please note that the following fittings are available in socket weld: elbows, tees, caps, couplings, reducers and unions.

All dimensions for 150# Screwed Fittings are approximate; for exact decimal dimensions, please refer to ANSI B16.3 & B16.39 where applicable.



## 90° ELBOW, 45° ELBOW, CROSS, COUPLING, HALF COUPLING, TEE

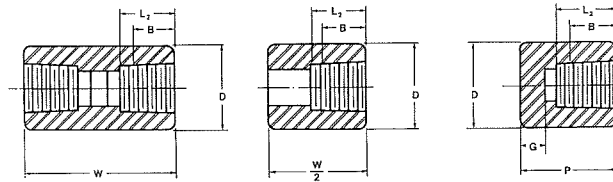
Nom. Pipe Size	Sock. Bore Diam. B	Depth of Sock. Min.	Wall Thickness Minimum				Center to Bottom of Socket				Laying Lengths		Tolerances, ±				
			3000lb		6000lb		Bore Diameter of Fitting D		90° Ells, Tees & Crosses A	45° Ells A	Couplings E	Half Couplings F	A	E	F		
			Sock. C	Body G	Sock. C	Body G	3000lb	6000lb	3000lb	6000lb	3000lb	6000lb					
1/8	.420 .430	3/8	.125	.095	.135	.124	.254 .284	.141 .171	7/16	7/16	5/16	5/16	1/4	5/8	.03	.06	.03
1/4	.555 .565	3/8	.130	.119	.158	.145	.349 .379	.235 .265	7/16	17/32	5/16	5/16	1/4	5/8	.03	.06	.03
3/8	.690 .700	3/8	.138	.126	.172	.158	.478 .508	.344 .374	17/32	5/8	5/16	7/16	1/4	11/16	.06	.12	.06
1/2	.855 .865	3/8	.164	.147	.204	.188	.607 .637	.451 .481	5/8	3/4	7/16	1/2	3/8	7/8	.06	.12	.06
3/4	1.065 1.075	1/2	.168	.154	.238	.219	.809 .839	.599 .629	3/4	7/8	1/2	9/16	3/8	15/16	.06	.12	.06
1	1.330 1.340	1/2	.196	.179	.273	.250	1.034 1.064	.800 .830	7/8	1-1/16	9/16	11/16	1/2	1-1/8	.08	.16	.08
1-1/4	1.675 1.685	1/2	.208	.191	.273	.250	1.365 1.395	1.145 1.175	1-1/16	1-1/4	11/16	13/16	1/2	1-3/16	.08	.16	.08
1-1/2	1.915 1.925	1/2	.218	.200	.307	.281	1.595 1.625	1.323 1.353	1-1/4	1-1/2	13/16	1	1/2	1-1/4	.08	.16	.08
2	2.406 2.416	5/8	.238	.218	.374	.344	2.052 2.082	1.674 1.704	1-1/2	1-5/8	1	1-1/8	3/4	1-5/8	.08	.16	.08
2-1/2	2.906 2.924	5/8	.304	.276		.375	2.439 2.499		1-5/8		1-1/8		3/4	1-11/16	.10	.20	.10
3	3.535 3.550	5/8	.327	.300		.438	3.038 3.098		2-1/4		1-1/4		3/4	1-3/4	.10	.20	.10
4	4.545 4.560	3/4	.368	.337		.534	3.996 4.056		2-5/8		1-5/8		3/4	1-7/8	.10	.20	.10



## 90° ELBOW, 45° ELBOW, CROSS, TEE

Nominal Pipe Size	Center to End Elbows, Tees, Crosses			Center to End 45° Elbow			Outside Diameter of Band			Minimum Wall Thickness			Length of Thread, Min.	
	A			C			H			G			B	L <sub>2</sub>
	2000lb	3000lb	6000lb	2000lb	3000lb	6000lb	2000lb	3000lb	6000lb	2000lb	3000lb	6000lb		
1/8	13/16	13/16	31/32	11/16	11/16	3/4	7/8	7/8	1	.125	.125	.250	.25	.2639
1/4	13/16	31/32	1-1/8	11/16	3/4	7/8	7/8	1	1-5/16	.125	.130	.260	.32	.4018
3/8	3/32	1-1/8	1-5/16	3/4	7/8	1	1	1-5/16	1-1/2	.125	.138	.275	.36	.4078
1/2	1-1/8	1-5/16	1-1/2	7/8	1	1-1/8	1-5/16	1-1/2	1-13/16	.125	.161	.321	.43	.5337
3/4	1-5/16	1-1/2	1-3/4	1	1-1/8	1-5/16	1-1/2	1-13/16	2-3/16	.123	.168	.336	.50	.5457
1	1-1/2	1-3/4	2	1-1/8	1-5/16	1-3/8	1-13/16	2-3/16	2-7/16	.145	.196	.391	.58	.6828
1-1/4	1-3/4	2	2-3/8	1-15/16	1-3/8	1-11/16	2-3/16	2-7/16	2-31/32	.153	.208	.417	.67	.7068
1-1/2	2	2-3/8	2-1/2	1-3/8	1-11/16	1-23/32	2-7/16	2-31/32	3-5/16	.158	.218	.436	.70	.7235
2	2-3/8	2-1/2	3-3/4	1-11/16	1-23/32	2-1/16	2-31/32	3-5/16	4	.168	.238	.476	.75	.7565
2-1/2	3	3-1/4	3-3/4	2-1/16	2-1/16	2-1/2	3-5/8	4	4	.221	.301	.602	.932	1.138
3	3-3/8	3-3/4	4-3/16	2-1/2	2-1/2	3-1/8	4-5/16	4-3/4	4-3/4	.236	.327	.655	1.016	1.200
4	3-3/16	4-1/2	4-1/2	3-1/8	3-1/8	3-1/8	5-3/4	5	6	.258	.368	.735	1.094	1.300

ANSI B16.11



COUPLING, HALF COUPLING, CAP

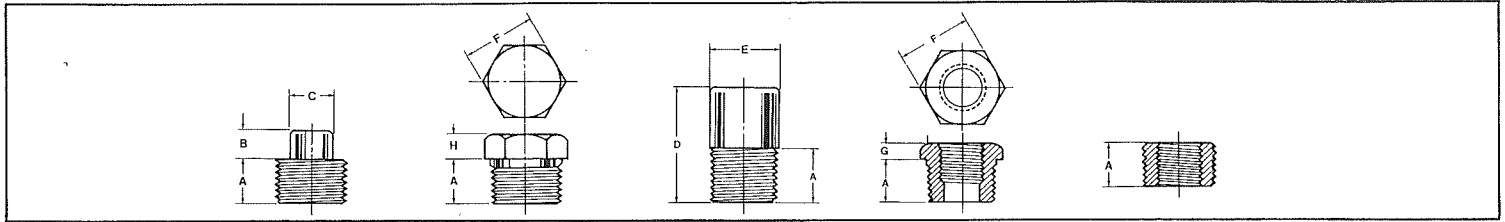
Nominal Pipe Size	End to End Couplings W		End to End Caps P		Outside Diameter D		End Wall Thickness G Min.		Length of Thread, Min.	
	3000lb & 6000lb		3000 lb	6000 lb	3000 lb	6000 lb	3000 lb	6000 lb	B	L <sub>2</sub>
1/8	1-1/4		3/4		5/8	7/8	3/16		.25	.2639
1/4	1-3/8		1	1-1/16	3/4	1	3/16	1/4	.32	.4018
3/8	1-1/2		1	1-1/16	7/8	1-1/4	3/16	1/4	.36	.4078
1/2	1-7/8		1-1/4	1-5/16	1-1/8	1-1/2	1/4	5/16	.43	.5337
3/4	2		1-7/16	1-1/2	1-3/8	1-3/4	1/4	5/16	.50	.5457
1	2-3/8		1-5/8	1-11/16	1-3/4	2-1/4	3/8	7/16	.58	.6828
1-1/4	2-5/8		1-3/4	1-13/16	2-1/4	2-1/2	3/8	7/16	.67	.7068
1-1/2	3-1/8		1-3/4	1-7/8	2-1/2	3	7/16	1/2	.70	.7235
2	3-3/8		1-7/8	2	3	3-5/8	1/2	5/8	.75	.7565
2-1/2	3-5/8		2-3/8	2-1/2	3-5/8	4-1/4	5/8	3/4	.932	1.138
3	4-1/4		2-9/16	2-11/16	4-1/4	5	3/4	7/8	1.016	1.200
4	4-3/4		2-11/16	2-15/16	5-1/2	6-1/4	7/8	1-1/8	1.094	1.300

ANSI B16.11

1. Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be

less than L<sub>2</sub> (effective length of external thread) required by American Standard for Pipe Threads (ASA B2. 1).

All dimensions are in inches.



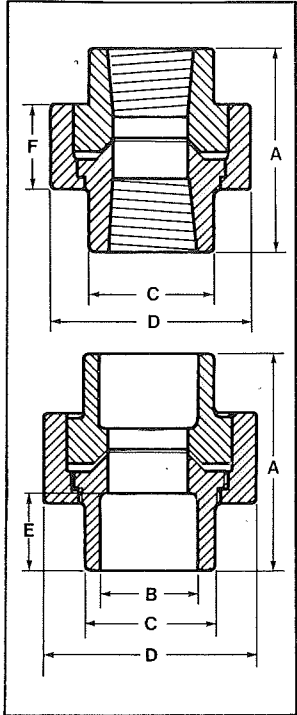
PLUGS, BUSHINGS

Nominal Pipe Size	Thread Length (min.) A	Plugs Square Head		Plugs Round Head		Hexagon Plugs & Bushings		
		Height of Square (min.) B	Width Flats (min.) C	Nominal Diameter of Head E	Length (min.) D	Width Flats (min.) F	Hexagon Height min.	
							Bushing G	Plug H
1/8	3/8	1/4	9/32	13/32	1-3/8	7/16	-	1/4
1/4	7/16	1/4	3/8	17/32	1-5/8	5/8	1/8	1/4
3/8	1/2	5/16	7/16	11/16	1-5/8	11/16	5/32	5/16
1/2	9/16	3/8	9/16	27/32	1-3/4	7/8	3/16	5/16
3/4	5/8	7/16	5/8	1-1/16	1-3/4	1-1/16	7/32	3/8
1	3/4	1/2	13/16	1-5/16	2	1-3/8	1/4	3/8
1-1/4	13/16	9/16	15/16	1-11/16	2	1-3/4	9/32	9/16
1-1/2	13/16	5/8	1-1/8	1-29/32	2	2	5/16	5/8
2	7/8	11/16	1-5/16	2-3/8	2-1/2	2-1/2	11/32	11/16
2-1/2	1-1/16	3/4	1-1/2	2-7/8	2-3/4	3	3/8	3/4
3	1-1/8	13/16	1-11/16	3-1/2	2-3/4	3-1/2	13/32	13/16
3-1/2	1-3/16	7/8	1-7/8	4	3	4-1/8	7/16	7/8
4	1-1/4	1-1/4	2-1/2	4-1/2	3	4-5/8	1/2	1-1/4

ANSI B16.11

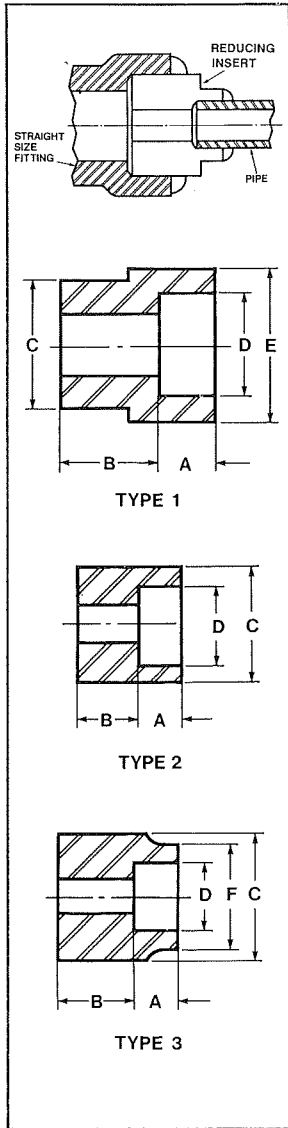


FORGED SCREWED, SOCKET WELDING UNIONS



Nominal Pipe Size	End to End A	Diameter of Socket B	3000lbs			
			Outside Diameter C	Diameter of Nut D	Socket Length E	Height of Nut F
1/8	1.830	.420	.940	1.570	.410	.71
1/4	1.830	.550	.940	1.570	.438	.71
3/8	1.830	.690	.940	1.570	.563	.71
1/2	1.960	.855	1.110	1.800	.625	.73
3/4	2.280	1.065	1.370	2.200	.688	.88
1	2.490	1.330	1.660	2.560	.750	.925
1-1/4	2.820	1.675	2.040	3.060	.813	1.035
1-1/2	3.050	1.915	2.310	3.420	.875	1.07
2	3.450	2.406	2.850	4.090	1.000	1.15
2-1/2	4.062	2.906	3.430	4.880	1.125	1.425
3	4.290	3.535	4.125	5.750	1.250	1.49

SOCKET WELDING REDUCING INSERT

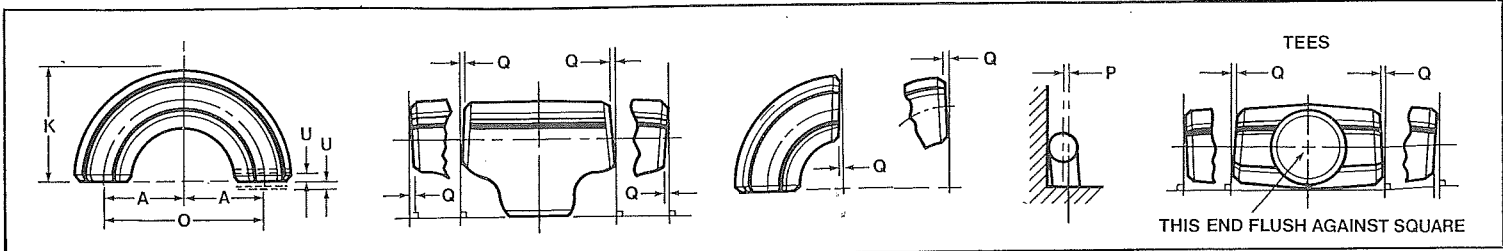


Size (in)	Dia. C	Dia. D	Insert Type	For use with Sch. 40 and 80 Pipe				For use with Sch. 160 Pipe				
				Dimensions				Insert Type	Dimensions			
				A	B	E	F		A	B	E	F
1/2 x 3/8	.850	.690	1	7/16	5/16	1		1	1/2	1-1/16	1-1/8	
1/2 x 1/4	.850	.555	2	3/8	5/8			2	7/16	11/16		
1/2 x 1/8	.850	.420	3	3/8	5/8		11/16	3	7/16	11/16	3/4	
3/4 x 1/2	1.060	.855	1	1/2	1	1-1/4		1	9/16	1-3/16	1-3/8	
3/4 x 3/8	1.060	.690	2	7/16	9/16			2	1/2	3/4		
3/4 x 1/4	1.060	.555	3	3/8	5/8		7/8	2	7/16	13/16		
3/4 x 1/8	1.060	.420	3	3/8	5/8		7/8	3	7/16	13/16	7/8	
1 x 3/4	1.325	1.065	1	9/16	15/16	1-1/2		1	5/8	1-1/2	1-5/8	
1 x 1/2	1.325	.855	2	1/2	13/16			2	9/16	1-1/4		
1 x 3/8	1.325	.690	3	7/16	7/8		1	3	1/2	1	1-1/8	
1 x 1/4	1.325	.555	3	3/8	15/16		1	3	7/16	1-1/16	1-1/8	
1-1/4 x 1	1.670	1.330	1	5/8	1-1/16	1-3/4		1	11/16	1-9/16	2	
1-1/4 x 3/4	1.670	1.065	2	9/16	13/16			2	5/8	1-1/4		
1-1/4 x 1/2	1.670	.855	3	1/2	7/8		1-1/4	3	9/16	1-3/16	1-3/8	
1-1/2 x 1-1/4	1.910	1.675	1	11/16	1-3/16	2-1/8		1	3/4	1-13/16	2-5/16	
1-1/2 x 1	1.910	1.330	2	5/8	13/16			2	11/16	1-7/16		
1-1/2 x 3/4	1.910	1.065	3	9/16	7/8		1-1/2	3	5/8	1-3/8	1-5/8	
1-1/2 x 1/2	1.910	.855	3	1/2	15/16		1-1/4	3	9/16	1-7/16	1-3/8	
2 x 1-1/2	2.400	1.915	2	3/4	13/16			1	7/8	1-5/8	2-5/8	
2 x 1-1/4	2.400	1.675	3	11/16	7/8		2-1/8	2	3/4	1-5/16		
2 x 1	2.400	1.330	3	5/8	15/16		1-3/4	3	11/16	1-5/16	2	
2 x 3/4	2.400	1.065	3	9/16	1		1-1/2	3	5/8	1-3/8	1-5/8	
2 x 1/2	2.400	.855	3	1/2	1-1/16		1-1/4	3	9/16	1-7/16	1-3/8	
2-1/2 x 2	2.900	2.406	1	7/8	1-15/16	3		1	7/8	1-15/16	3-1/8	
2-1/2 x 1-1/2	2.900	1.915	3	3/4	1-3/4		2-1/2	3	7/8	1-9/16	2-5/8	
2-1/2 x 1-1/4	2.900	1.675	3	11/16	1-13/16		2-1/8	3	3/4	1-9/16	2-5/16	
2-1/2 x 1	2.900	1.330	3	5/8	1-3/4		1-3/4	3	11/16	1-5/8	2	
3 x 2-1/2	3.530	2.906	1	7/8	1-13/16	3-5/8		1	7/8	2-1/4	3-7/8	
3 x 2	3.530	2.406	3	7/8	1-5/8		3	3	7/8	1-7/8	3-5/16	
3 x 1-1/2	3.530	1.915	3	3/4	1-9/16		2-1/2	3	7/8	1-7/8	2-5/8	
3 x 1-1/4	3.530	1.675	3	11/16	1-9/16		2-1/8	3	3/4	1-7/8	2-5/16	
3 x 1	3.530	1.330	3	5/8	1-1/2		1-3/4	3	11/16	1-13/16	2	
4 x 3	4.530	3.535	3	1-1/8	2-1/8		4-5/16	1	1-1/8	2-1/2	4-5/8	
4 x 2-1/2	4.530	2.906	3	15/16	2-1/16		3-5/8	3	7/8	2-1/16	3-7/8	
4 x 2	4.530	2.406	3	7/8	2-1/8		3	3	7/8	2-1/16	3-5/16	
4 x 1-1/2	4.530	1.915	3	3/4	2-1/8		2-1/2	3	7/8	1-7/8	2-5/8	
4 x 1-1/4	4.530	1.675	3	11/16	2-1/16		2-1/8	3	3/4	2	2-5/16	
4 x 1	4.530	1.330	3	5/8	1-7/8		1-3/4	3	11/16	1-7/8	2	



Name	Working Press.	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	lbs. per 100 pcs.
90° Ells S/W	3000 lbs	22	29	53	86	139	198	286	400	
90° Ells Screw	3000 lbs	29	53	86	139	198	286	400	1452	
45° Ells S/W	3000 lbs			53	86	139	198	374	396	
45° Ells Screw	3000 lbs		53	86	139	198	374	396		
Tees S/W	3000 lbs	34	40	73	106	158	220	317	572	
Tees Screw	3000 lbs	40	73	106	158	220	317	542	2090	
Union Screw										
Union S/W	3000 lbs	60	60	66	119	167	253	332	528	
Union Screw										
Union S/W										
Coupling S/W	3000 lbs	9	18	26	40	92	152	229	462	
Coupling Screw	3000 lbs	9	18	26	40	92	152	229	462	
Caps S/W	3000 lbs	11	13	24	37	62	114	147	297	
Caps Screw	3000 lbs	11	13	24	37	62	114	147	297	
Hex. Head Plugs		4	7	18	26	48	86	99	198	
Sq. Head Plugs		2	4	9	18	33	57	73	136	
Hex. Bushing		7	7	9	13	18	42	44	136	
Flush Bushing		4	4	7	9	15	33	37	132	

# WELDING FITTINGS DIMENSIONAL TOLERANCES



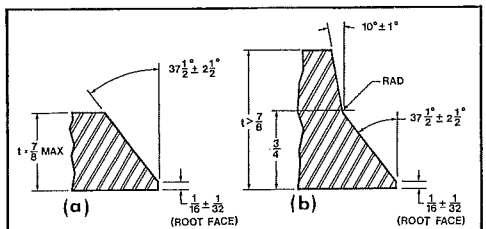
Nominal Pipe Size (NPS)	All Fittings			90° and 45° Ells and Tees	Reducers and Lap Joint Stub Ends	Caps	180° Returns			Angularity Tol.		
	Outside(1) Diameter at Bevel	Inside(2) Diameter at End	Wall(2) Thickness				Center-to-Center Dimension A,B,C,M	Overall Length L	Overall Length E	Center-to-Center Dimension O	Back-to-Face Dimension K	Alignment of Ends U
1/2 to 2-1/2	+1/16 -1/32	±1/32		±1/16	±1/16	±1/8	±1/4	±1/4	±1/32	1/2 to 4	1/32	1/16
3 to 3-1/2	±1/16	±1/16		±1/16	±1/16	±1/8	±1/4	±1/4	±1/32	5 to 8	1/16	1/8
4	±1/16	±1/16		±1/16	±1/16	±1/8	±1/4	±1/4	±1/32	10 to 12	3/32	
5 to 8	+3/32 -1/16	±1/16	Not less than 87-1/2% of Nominal Thickness	±1/16	±1/16	±1/4	±1/4	±1/4	±1/32	14 to 16	3/32	1/4
10 to 18	+1/16 -1/8	±1/8		±3/32	±3/32	±1/4	±3/8	±1/4	±1/16	18 to 24	1/8	3/8
20 to 24	+1/4 -3/32	±3/32		±3/32	±3/32	±1/4	±3/8	±1/4	±1/16			

All dimensions are in inches.

IN ACCORDANCE WITH ANSI B16.9 - B16.28

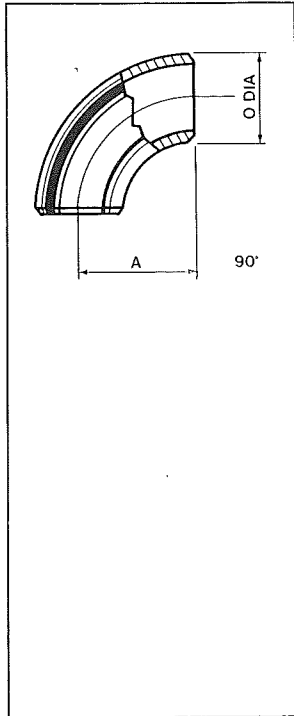
(1) Out-of-round is the sum of absolute values of plus and minus tolerance.

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



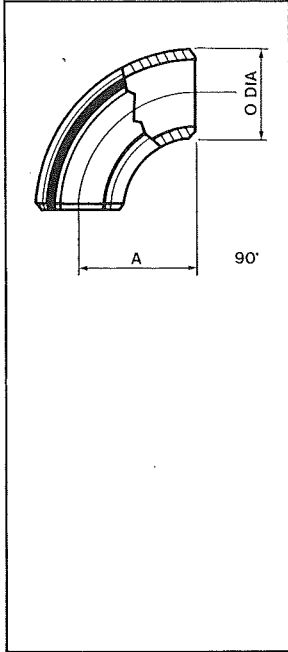
## WELDING ENDS

Nominal Wall Thickness (t)	End Preparation
Less than x"	Cut square or slightly chamfer, at mfr.'s option
x" to 7/8 incl.	Plain bevel as in sketch 'a'
More than 7/8	Compound bevel as in sketch 'b'
x" = 3/16" for carbon steel, ferritic alloy steel, or wrought iron; 1/8" for austenitic alloy steel.	



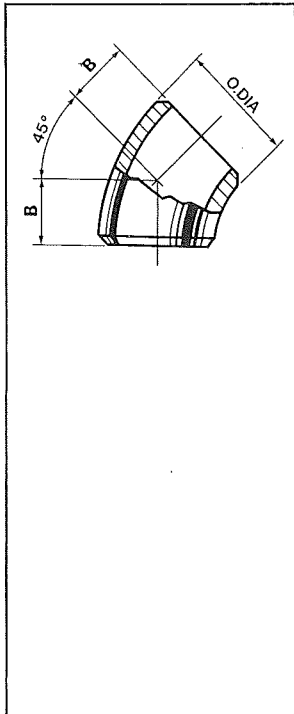
Nominal Pipe Size	Standard Range - Inches			Approximate Weight - Pounds		
	O.D. Outside Diameter	Center to Face A	Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80S
1/2	0.840	4-1/2	0.10	0.13	0.17	0.22
3/4	1.050	4-1/8	0.10	0.13	0.17	0.23
1	1.315	4-1/2	0.18	0.29	0.34	0.45
1-1/4	1.660	4-7/8	0.25	0.47	0.58	0.77
1-1/2	1.900	2-1/4	0.36	0.64	0.84	1.12
2	2.375	3	0.62	1.09	1.50	2.07
2-1/2	2.875	3-3/4	1.21	1.82	2.98	3.95
3	3.500	4-1/2	1.74	2.68	4.68	6.33
3-1/2	4.000	5-1/4	2.33	3.59	6.56	9.04
4	4.500	6	3.01	4.62	8.90	12.40
5	5.563	7-1/2	6.40	8.00	15.10	21.40
6	6.625	9	8.95	11.50	23.50	35.30
8	8.625	12	15.40	22.20	47.00	71.00
10	10.750	15	29.20	38.60	83.00	110.00
12	12.750	18	52.00	59.50	123.00	160.00
14	*	21		88.00	154.00	207.00
16	*	24		114.00	209.00	275.00
18	*	27		144.00	264.00	348.00
20	*	30		187.00	321.00	427.00
24	*	36		321.00	484.00	620.00

\*Dimensions same as Nominal Pipe Size



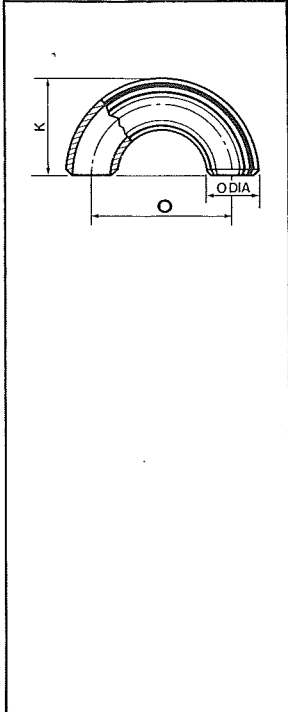
Nominal Pipe Size	Standard Range - Inches		Approximate Weight - Pounds			
	O.D. Outside Diameter	Center to Face A	Sch.5S	Sch.10S	Sch.40S	Sch.80S
1	1.315	1	0.17	0.23	0.26	
1-1/4	1.660	1-1/4	0.31	0.38	0.45	
1-1/2	1.900	1-1/2	0.43	0.49	0.63	0.75
2	2.375	2	0.63	0.81	1.13	1.40
2-1/2	2.875	2-1/2	1.25	1.36	2.25	2.60
3	3.500	3	1.75	2.17	3.31	4.20
3-1/2	4.000	3-1/2	2.35	3.05	4.54	6.00
4	4.500	4	3.12	3.79	6.88	8.20
5	5.563	5	4.94	6.12	11.63	14.00
6	6.625	6	7.75	9.15	17.50	23.00
8	8.625	8	15.44	17.63	37.60	48.00
10	10.750	10	27.40	35.00	63.00	75.00
12	12.750	12	35.00	40.00	80.00	108.00
14	*	14		66.00	116.00	145.00
16	*	16		85.00	157.00	230.00
18	*	18		108.00	198.00	243.00
20	*	20		140.00	242.00	299.00
24	*	24		242.00	363.00	436.00

\*Dimensions same as Nominal Pipe Size



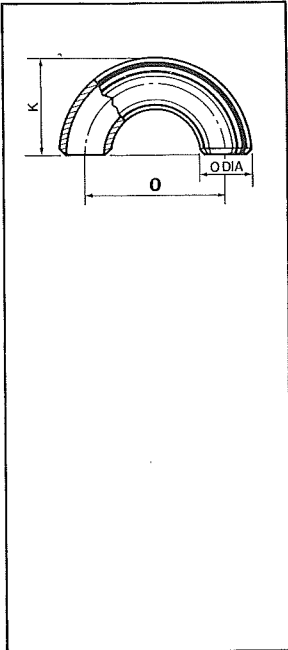
Nominal Pipe Size	Standard Range - Inches			Approximate Weight - Pounds			
	O.D. Outside Diameter	Center to Face B	Sch.5S	Sch.10S	Sch.40S	Sch.80S	
1/2	0.840	5/8	0.05	0.07	0.09	0.11	
3/4	1.050	7/16	0.05	0.07	0.09	0.11	
1	1.315	7/8	0.12	0.14	0.17	0.22	
1-1/4	1.660	1	0.16	0.23	0.29	0.39	
1-1/2	1.900	1-1/8	0.22	0.32	0.42	0.56	
2	2.375	1-3/8	0.34	0.54	0.75	1.04	
2-1/2	2.875	1-3/4	0.68	0.91	1.49	1.98	
3	3.500	2	0.90	1.34	2.34	3.17	
3-1/2	4.000	2-1/4	1.19	1.79	3.28	4.52	
4	4.500	2-1/2	1.51	2.31	4.45	6.20	
5	5.563	3-1/8	3.09	4.00	7.55	10.70	
6	6.625	3-3/4	4.48	5.75	11.80	17.70	
8	8.625	5	7.70	11.10	23.50	35.80	
10	10.750	6-1/4	14.70	19.30	41.80	56.00	
12	12.750	7-1/2	26.40	29.80	61.50	81.00	
14	*	8-3/4		44.00	77.00	103.00	
16	*	10		57.00	105.00	138.00	
18	*	11-1/4		72.00	132.00	174.00	
20	*	12-1/2		94.00	161.00	213.00	
24	*	15		161.00	242.00	310.00	

\*Dimensions same as Nominal Pipe Size



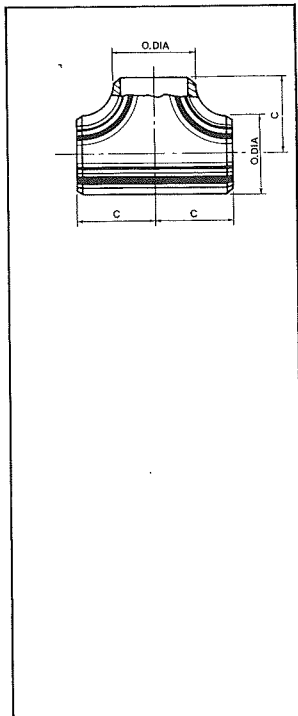
Nominal Pipe Size	Standard Range - Inches			Approximate Weight - Pounds			
	O.D. Outside Diameter	Center to Center O	Back to Face K	Sch.5S	Sch.10S	Sch.40S	Sch.80S
1/2	0.840	3	1-7/8	0.20	0.26	0.34	0.44
3/4	1.050	2-1/4	1-11/16	0.20	0.26	0.34	0.46
1	1.315	3	2-3/16	0.36	0.59	0.68	0.90
1-1/4	1.660	3-3/4	2-3/4	0.50	0.94	1.16	1.54
1-1/2	1.900	4-1/2	3-1/4	0.72	1.28	1.68	2.24
2	2.375	6	4-3/16	1.24	2.18	3.00	4.14
2-1/2	2.875	7-1/2	5-1/8	2.42	3.64	5.96	7.90
3	3.500	9	6-1/4	3.48	5.36	9.36	12.66
3-1/2	4.000	10-1/2	7-1/4	4.66	7.18	13.12	28.08
4	4.500	12	8-1/4	6.02	9.24	17.80	24.80
5	5.563	15	10-5/16	12.20	16.00	30.20	42.80
6	6.625	18	12-5/16	17.90	23.00	47.00	70.60
8	8.625	24	16-5/16	30.80	44.40	94.00	142.00
10	10.750	30	20-3/8	58.40	77.20	166.00	220.00
12	12.750	36	24-3/8	104.00	119.00	246.00	320.00
14	*	42	28	-	178.00	308.00	413.00
16	*	48	32	-	227.00	418.00	550.00
18	*	54	36	-	288.00	528.00	696.00
20	*	60	40	-	374.00	642.00	854.00
24	*	72	48	-	642.00	968.00	1240.00

\*Dimensions same as Nominal Pipe Size



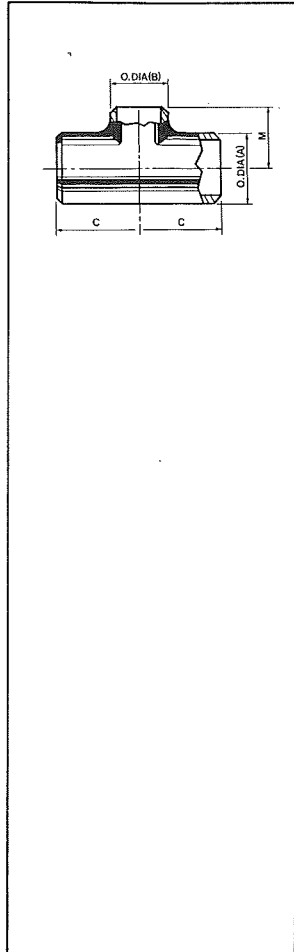
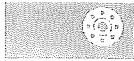
Nominal Pipe Size	Standard Range - Inches			Approximate Weight - Pounds			
	O.D. Outside Diameter	Center to Center O	Back to Face K	Sch.5S	Sch.10S	Sch.40S	Sch.80S
1	1.315	2	1-5/8	0.32	0.36	0.46	-
1-1/4	1.660	2-1/2	2-1/16	0.44	0.60	0.78	-
1-1/2	1.900	3	2-7/16	0.60	0.84	1.12	1.50
2	2.375	4	3-3/16	0.92	1.40	2.00	2.80
2-1/2	2.875	5	3-15/16	1.86	2.40	3.96	5.20
3	3.500	6	4-3/4	2.44	3.40	6.24	8.40
3-1/2	4.000	7	5-1/2	3.24	4.60	8.76	12.40
4	4.500	8	6-1/4	4.20	6.00	11.90	16.40
5	5.563	10	7-3/4	8.40	10.40	20.20	28.00
6	6.625	12	9-5/16	12.60	16.40	31.20	46.00
8	8.625	16	12-5/16	21.00	28.40	63.00	96.00
10	10.750	20	15-3/8	40.00	50.00	111.00	150.00
12	12.750	24	18-3/8	68.00	78.00	164.00	216.00
14	*	28	21	-	131.00	210.00	178.00
16	*	32	24	-	170.00	276.00	364.00
18	*	36	27	-	216.00	350.00	462.00
20	*	40	30	-	280.00	430.00	572.00
24	*	48	36	-	482.00	626.00	830.00

\*Dimensions same as Nominal Pipe Size



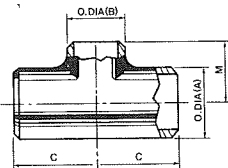
Nominal Pipe Size	Standard Range - Inches			Approximate Weight - Pounds			
	O.D. Outside Diameter	Center to Face C	Sch.5S	Sch.10S	Sch.40S	Sch.80S	
1/2	0.840	1	0.18	0.20	0.35	0.45	
3/4	1.050	1-1/8	0.21	0.28	0.45	0.65	
1	1.315	1-1/2	0.35	0.60	0.75	0.88	
1-1/4	1.660	1-7/8	0.65	1.10	1.30	1.60	
1-1/2	1.900	2-1/4	0.89	1.50	2.00	2.25	
2	2.375	2-1/2	1.07	1.80	3.50	4.00	
2-1/2	2.875	3	2.07	3.00	6.00	7.00	
3	3.500	3-3/8	2.69	3.90	7.00	8.50	
3-1/2	4.000	3-3/4	3.38	4.90	9.00	12.00	
4	4.500	4-1/8	3.94	5.70	12.00	15.70	
5	5.563	4-7/8	9.76	12.00	31.00	26.00	
6	6.625	5-5/8	13.80	17.00	34.00	40.00	
8	8.625	7	18.40	25.00	55.00	75.00	
10	10.750	8-1/2	30.00	37.00	85.00	105.00	
12	12.750	10	46.70	54.00	120.00	160.00	
14	*	11	-	154.00	226.00	280.00	
16	*	12	-	160.00	242.00	369.00	
18	*	13-1/2	-	224.00	333.00	425.00	
20	*	15	-	373.00	504.00	583.00	
24	*	17	-	674.00	765.00	934.00	

\*Dimensions same as Nominal Pipe Size



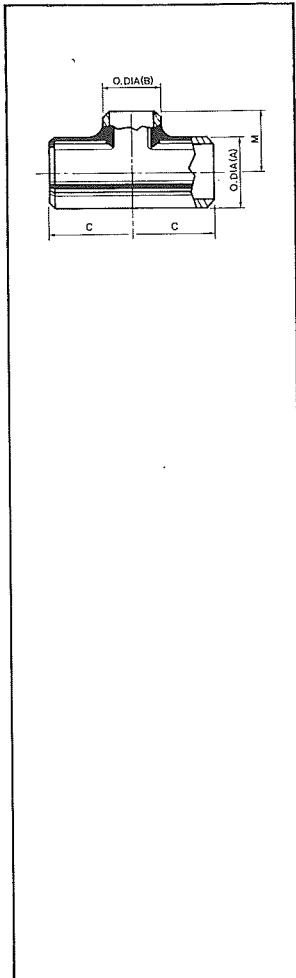
Standard Range - Inches						Approximate Weight - Pounds			
Nominal Pipe Size		O.D. Outside Diameter A	O.D. Outside Diameter B	Center to End C	Center to End M	Sch.5S	Sch.10S	Sch.40S	Sch.80S
Run	Branch								
3/4	1/2	1.050	0.840	1-1/8	1-1/8	0.25	0.28	0.33	0.41
1	1/2	1.315	0.840	1-1/2	1-1/2	0.44	0.57	0.63	0.77
1	3/4	1.315	1.050	1-1/2	1-1/2	0.45	0.58	0.64	0.78
1-1/4	1/2	1.660	0.840	1-7/8	1-7/8	0.75	0.95	1.08	1.34
1-1/4	3/4	1.660	1.050	1-7/8	1-7/8	0.76	0.96	1.09	1.35
1-1/4	1	1.660	1.315	1-7/8	1-7/8	0.82	1.02	1.15	1.42
1-1/2	1/2	1.900	0.840	2-1/4	2-1/4	0.92	1.34	1.57	1.98
1-1/2	3/4	1.900	1.050	2-1/4	2-1/4	1.03	1.35	1.58	1.99
1-1/2	1	1.900	1.315	2-1/4	2-1/4	1.12	1.41	1.65	2.05
1-1/2	1-1/4	1.900	1.660	2-1/4	2-1/4	1.21	1.49	1.72	2.16
2	3/4	2.375	1.050	2-1/2	1-3/4	1.38	1.55	2.46	3.17
2	1	2.375	1.315	2-1/2	2	1.42	1.60	2.52	3.23
2	1-1/4	2.375	1.660	2-1/2	2-1/4	1.50	1.65	2.60	3.33
2	1-1/2	2.375	1.900	2-1/2	2-3/8	1.62	1.69	2.71	3.47
2-1/2	1	2.875	1.315	3	2-1/4	1.77	2.53	4.42	5.57
2-1/2	1-1/4	2.875	1.660	3	2-1/2	1.80	2.58	4.48	5.64
2-1/2	1-1/2	2.875	1.900	3	2-5/8	1.82	2.61	4.59	5.77
2-1/2	2	2.875	2.375	3	2-3/4	1.85	2.66	4.67	5.87
3	1	3.500	1.315	3-3/8	2-5/8	2.58	3.49	6.41	8.28
3	1-1/4	3.500	1.660	3-3/8	2-3/4	2.68	3.51	6.47	8.33
3	1-1/2	3.500	1.900	3-3/8	2-7/8	2.93	3.54	6.57	8.47
3	2	3.500	2.375	3-3/8	3	3.13	3.59	6.64	8.53
3	2-1/2	3.500	2.875	3-3/8	3-1/4	3.48	3.72	6.95	8.77
3-1/2	1-1/2	4.000	1.900	3-3/4	3-1/8	3.58	4.49	8.65	11.32
3-1/2	2	4.000	2.375	3-3/4	3-1/4	3.78	4.53	8.66	11.42
3-1/2	2-1/2	4.000	2.875	3-3/4	3-1/2	4.12	4.66	8.97	11.73
3-1/2	3	4.000	3.500	3-3/4	3-5/8	4.47	4.75	9.19	11.93

\*Dimensions same as Nominal Pipe Size



Standard Range - Inches						Approximate Weight - Pounds			
Run	Nominal Pipe Size Branch	O.D. Outside Diameter A	O.D. Outside Diameter B	Center to End C	Center to End M	Sch.5S	Sch.10S	Sch.40S	Sch.80S
						4	1-1/2	4.500	1.900
4	2	4.500	2.375	4-1/8	3-1/2	5.45	5.59	11.22	14.79
4	2-1/2	4.500	2.875	4-1/8	3-3/4	5.57	5.71	11.53	14.99
4	3	4.500	3.500	4-1/8	3-7/8	5.62	5.76	11.63	15.30
4	3-1/2	4.500	4.000	4-1/8	4	5.76	5.90	11.83	15.64
5	2	5.563	2.375	4-7/8	4-1/8	7.36	9.07	17.54	23.87
5	2-1/2	5.563	2.875	4-7/8	4-1/4	7.44	9.14	17.75	24.07
5	3	5.563	3.500	4-7/8	4-3/8	7.47	9.20	17.95	24.17
5	3-1/2	5.563	4.000	4-7/8	4-1/2	7.50	9.27	18.16	24.38
5	4	5.563	4.500	4-7/8	4-5/8	7.56	9.35	18.46	24.68
6	2-1/2	6.625	2.875	5-5/8	4-3/4	10.20	12.55	26.21	37.64
6	3	6.625	3.500	5-5/8	4-7/8	10.30	12.69	26.32	37.68
6	3-1/2	6.625	4.000	5-5/8	5	10.38	12.79	26.52	37.84
6	4	6.625	4.500	5-5/8	5-1/8	10.48	12.92	26.72	37.94
6	5	6.625	5.563	5-5/8	5-3/8	10.60	13.06	27.23	38.56
8	3	8.625	3.500	7	6	15.97	21.56	46.65	67.72
8	3-1/2	8.625	4.000	7	6	16.09	21.58	46.75	67.80
8	4	8.625	4.500	7	6-1/8	16.20	21.63	46.94	67.91
8	5	8.625	5.563	7	6-3/8	16.32	21.70	47.14	68.11
8	6	8.625	6.625	7	6-5/8	16.46	21.85	47.73	68.99
10	4	10.750	4.500	8-1/2	7-1/4	29.40	36.06	79.58	103.88
10	5	10.750	5.563	8-1/2	7-1/2	29.63	36.35	79.77	104.80
10	6	10.750	6.625	8-1/2	7-5/8	29.75	36.60	80.07	105.84
10	8	10.750	8.625	8-1/2	8	29.89	36.84	81.34	106.82
12	5	12.750	5.563	10	8-1/2	50.37	54.98	114.64	147.98
12	6	12.750	6.625	10	8-5/8	50.62	55.40	114.70	148.96
12	8	12.750	8.625	10	9	50.80	55.90	115.64	149.94

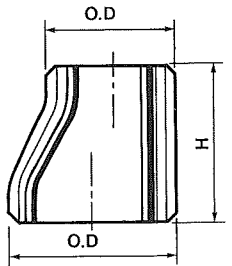
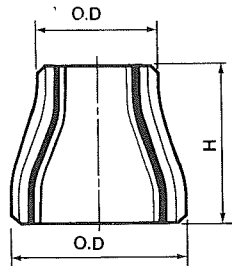
\*Dimensions same as Nominal Pipe Size



Standard Range - Inches					Approximate Weight - Pounds				
Nominal Pipe Size		O.D.	O.D.	Center to	Center to				
Run	Branch	Outside Diameter A	Outside Diameter B	End C	End M	Sch.5S	Sch.10S	Sch.40S	Sch.80S
12	10	12.750	10.750	10	9-1/2	51.06	56.25	118.58	151.90
14	6	14.000	6.625	11	9-3/8	-	-	-	-
14	8	14.000	8.625	11	9-3/4	-	-	-	-
14	10	14.000	10.750	11	10-1/8	-	-	-	-
14	12	14.000	12.750	11	10-5/8	-	-	-	-
16	6	16.000	6.625	12	-	-	-	-	-
16	8	16.000	8.625	12	-	-	-	-	-
16	10	16.000	10.750	12	-	-	-	-	-
16	12	16.000	12.750	12	-	-	-	-	-
16	14	*	*	12	-	-	-	-	-
18	8	18.000	8.625	13-1/2	11-3/4	-	-	-	-
18	10	18.000	10.750	13-1/2	12-1/8	-	-	-	-
18	12	18.000	12.750	13-1/2	12-5/8	-	-	-	-
				C	M				
18	14	*	*	13-1/2	13	-	-	-	-
18	16	*	*	13-1/2	13	-	-	-	-
20	8	20.000	8.625	15	12-3/4	-	-	-	-
20	10	20.000	10.750	15	13-1/8	-	-	-	-
20	12	20.000	12.750	15	13-5/8	-	-	-	-
20	14	*	*	15	14	-	-	-	-
20	16	*	*	15	14	-	-	-	-
20	18	*	*	15	14-1/2	-	-	-	-
24	10	20.000	10.750	17	15-1/8	-	-	-	-
24	12	20.000	12.750	17	15-5/8	-	-	-	-
24	14	*	*	17	16	-	-	-	-
24	16	*	*	17	16	-	-	-	-
24	18	*	*	17	16-1/2	-	-	-	-
24	20	*	*	17	17	-	-	-	-

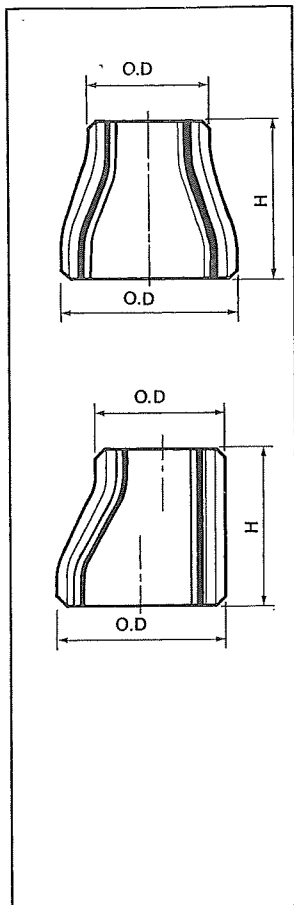
USE APPROXIMATE WEIGHTS OF STRAIGHT TEES FOR WEIGHTS OF REDUCING TEES

\*Dimensions same as Nominal Pipe Size



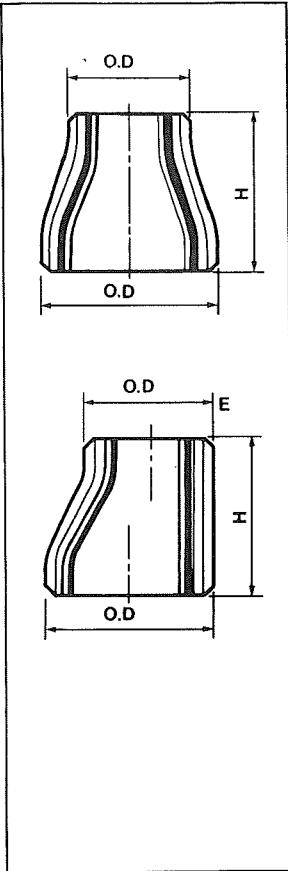
Nominal Pipe Size	Standard Range - Inches		Approximate Weight - Pounds			
	O.D. Outside Diameter	Length H	Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80S
3/4 x 1/2	1.050 x 0.840	1-1/2	0.14	0.21	0.28	0.35
1 x 1/2	1.315 x 0.840	2	0.15	0.25	0.31	0.36
1 x 3/4	1.315 x 1.050	2	0.15	0.25	0.31	0.37
1-1/4 x 1/2	1.660 x 0.840	2	0.20	0.33	0.43	0.49
1-1/4 x 3/4	1.660 x 1.050	2	0.20	0.34	0.44	0.51
1-1/4 x 1	1.660 x 1.315	2	0.21	0.35	0.45	0.54
1-1/2 x 1/2	1.900 x 0.840	2-1/2	0.20	0.34	0.45	0.61
1-1/2 x 3/4	1.900 x 1.050	2-1/2	0.22	0.36	0.48	0.65
1-1/2 x 1	1.900 x 1.315	2-1/2	0.24	0.40	0.58	0.68
1-1/2 x 1-1/4	1.900 x 1.660	2-1/2	0.26	0.43	0.57	0.73
2 x 1/2	2.375 x 0.840	3	0.27	0.46	0.64	0.95
2 x 3/4	2.375 x 1.050	3	0.31	0.52	0.73	1.01
2 x 1	2.375 x 1.315	3	0.35	0.58	0.82	1.07
2 x 1-1/4	2.375 x 1.660	3	0.37	0.62	0.87	1.16
2 x 1-1/2	2.375 x 1.900	3	0.38	0.64	0.90	1.20
2-1/2 x 1	2.875 x 1.315	3-1/2	0.54	0.77	1.31	1.75
2-1/2 x 1-1/4	2.875 x 1.660	3-1/2	0.61	0.87	1.48	1.82
2-1/2 x 1-1/2	2.875 x 1.900	3-1/2	0.62	0.90	1.52	1.89
2-1/2 x 2	2.875 x 2.375	3-1/2	0.66	0.95	1.61	2.07
3 x 1	3.500 x 1.315	3-1/2	0.62	0.90	1.58	1.96
3 x 1-1/4	3.500 x 1.660	3-1/2	0.66	0.95	1.71	2.29
3 x 1-1/2	3.500 x 1.900	3-1/2	0.73	1.06	1.00	2.44
3 x 2	3.500 x 2.375	3-1/2	0.77	1.12	2.01	2.60
3 x 2-1/2	3.500 x 2.875	3-1/2	0.83	1.21	2.17	2.85
3-1/2 x 1-1/4	4.000 x 1.660	4	0.89	1.29	2.40	3.15
3-1/2 x 1-1/2	4.000 x 1.900	4	0.93	1.34	2.53	3.38

\*Dimensions same as Nominal Pipe Size



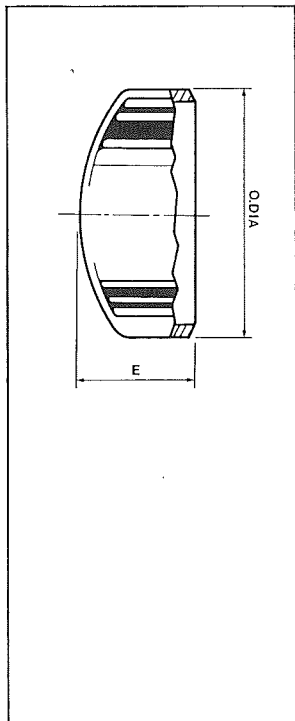
Nominal Pipe Size	Standard Range - Inches		Approximate Weight - Pounds			
	O.D. Outside Diameter	Length H	Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80S
3/4 x 1/2	1.050 x 0.840	1-1/2	0.14	0.21	0.28	0.35
1 x 1/2	1.315 x 0.840	2	0.15	0.25	0.31	0.36
1 x 3/4	1.315 x 1.050	2	0.15	0.25	0.31	0.37
1-1/4 x 1/2	1.660 x 0.840	2	0.20	0.33	0.43	0.49
1-1/4 x 3/4	1.660 x 1.050	2	0.20	0.34	0.44	0.51
1-1/4 x 1	1.660 x 1.315	2	0.21	0.35	0.45	0.54
1-1/2 x 1/2	1.900 x 0.840	2-1/2	0.20	0.34	0.45	0.61
1-1/2 x 3/4	1.900 x 1.050	2-1/2	0.22	0.36	0.48	0.65
1-1/2 x 1	1.900 x 1.315	2-1/2	0.24	0.40	0.58	0.68
1-1/2 x 1-1/4	1.900 x 1.660	2-1/2	0.26	0.43	0.57	0.73
2 x 1/2	2.375 x 0.840	3	0.27	0.46	0.64	0.95
2 x 3/4	2.375 x 1.050	3	0.31	0.52	0.73	1.01
2 x 1	2.375 x 1.315	3	0.35	0.58	0.82	1.07
2 x 1-1/4	2.375 x 1.660	3	0.37	0.62	0.87	1.16
2 x 1-1/2	2.375 x 1.900	3	0.38	0.64	0.90	1.20
2-1/2 x 1	2.875 x 1.315	3-1/2	0.54	0.77	1.31	1.75
2-1/2 x 1-1/4	2.875 x 1.660	3-1/2	0.61	0.87	1.48	1.82
2-1/2 x 1-1/2	2.875 x 1.900	3-1/2	0.62	0.90	1.52	1.89
2-1/2 x 2	2.875 x 2.375	3-1/2	0.66	0.95	1.61	2.07
3 x 1	3.500 x 1.315	3-1/2	0.62	0.90	1.58	1.96
3 x 1-1/4	3.500 x 1.660	3-1/2	0.66	0.95	1.71	2.29
3 x 1-1/2	3.500 x 1.900	3-1/2	0.73	1.06	1.00	2.44
3 x 2	3.500 x 2.375	3-1/2	0.77	1.12	2.01	2.60
3 x 2-1/2	3.500 x 2.875	3-1/2	0.83	1.21	2.17	2.85
3-1/2 x 1-1/4	4.000 x 1.660	4	0.89	1.29	2.40	3.15
3-1/2 x 1-1/2	4.000 x 1.900	4	0.93	1.34	2.53	3.38

\*Dimensions same as Nominal Pipe Size



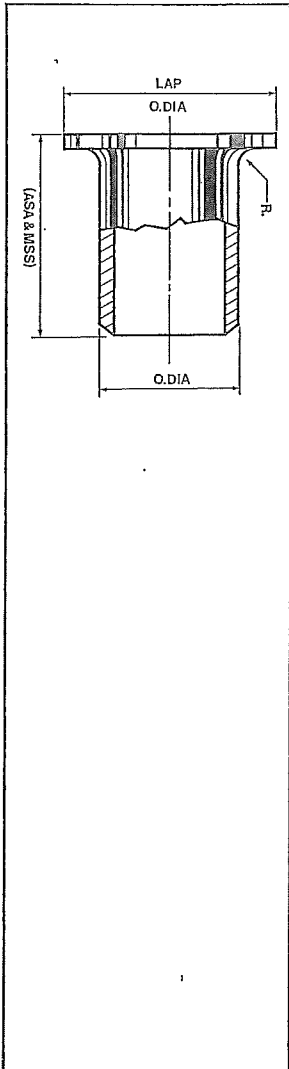
Nominal Pipe Size	Standard Range - Inches		Approximate Weight - Pounds			
	O.D. Outside Diameter	Length H	Sch. 5S	Sch.10S	Sch.40S	Sch.80S
10 x 6	10.750 x 6.625	7	8.22	10.12	22.40	29.80
10 x 8	10.750 x 8.625	7	8.55	10.53	23.30	31.40
12 x 5	12.750 x 5.563	8	13.46	14.69	30.60	39.10
12 x 6	12.750 x 6.625	8	13.73	14.98	31.20	40.60
12 x 8	12.750 x 8.625	8	14.17	15.45	32.20	42.10
12 x 10	12.750 x 10.750	8	14.84	16.08	33.50	43.00
14 x 6	14.000 x 6.625	13	-	23.00	50.00	68.00
14 x 8	14.000 x 8.625	13	-	25.00	52.00	70.00
14 x 10	14.000 x 10.750	13	-	27.00	54.00	72.00
14 x 12	14.000 x 12.750	13	-	29.00	56.00	74.00
16 x 8	16.000 x 8.625	14	-	31.00	58.00	79.00
16 x 10	16.000 x 10.750	14	-	32.00	61.00	81.00
16 x 12	16.000 x 12.750	14	-	33.00	65.00	86.00
16 x 14	*	14	-	35.00	68.00	90.00
18 x 10	18.000 x 10.750	15	-	37.00	73.00	92.00
18 x 12	18.000 x 12.750	15	-	39.00	76.00	100.00
18 x 14	*	15	-	40.00	79.00	105.00
18 x 16	*	15	-	42.00	83.00	110.00
20 x 12	20.000 x 12.750	20	-	64.00	108.00	139.00
20 x 14	*	20	-	66.00	112.00	148.00
20 x 16	*	20	-	70.00	118.00	156.00
20 x 18	*	20	-	73.00	124.00	165.00
24 x 16	*	20	-	90.00	130.00	196.00
24 x 18	*	20	-	93.00	139.00	200.00
24 x 20	*	20	-	97.00	145.00	204.00

\*Dimensions same as Nominal Pipe Size  
 Reducers of greater reduction are available but are  
 not covered by ANSI B16.9



Nominal Pipe Size	Standard Range - Inches		Approximate Weight - Pounds			
	O.D. Outside Diameter	Length E	Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80S
1/2	0.840	1	0.07	0.07	0.07	0.10
3/4	1.050	1	0.10	0.12	0.13	0.19
1	1.315	1-1/2	0.10	0.16	0.20	0.24
1-1/4	1.660	1-1/2	0.13	0.22	0.28	0.35
1-1/2	1.900	1-1/2	0.17	0.28	0.38	0.49
2	2.375	1-1/2	0.24	0.41	0.58	0.76
2-1/2	2.875	1-1/2	0.37	0.53	0.90	1.13
3	3.500	2	0.58	0.83	1.50	1.96
3-1/2	4.000	2-1/2	0.70	1.01	1.91	2.55
4	4.500	2-1/2	0.88	1.26	2.50	3.34
5	5.563	3	1.97	2.43	4.67	6.38
6	6.625	3-1/2	2.53	3.11	6.50	9.37
8	8.625	4	4.02	5.46	11.87	17.12
10	10.750	5	8.07	9.95	22.00	28.93
12	12.750	6	13.49	14.72	30.67	39.61
14	*	6-1/2	-	18.00	33.00	43.00
16	*	7	-	23.00	42.00	54.00
18	*	8	-	29.00	55.00	73.00
20	*	9	-	37.00	68.00	90.00
24	*	10-1/2	-	58.00	96.00	127.00

\*Dimensions same as nominal pipe size



Standard Range - Inches			Approximate Weight - Pounds								
Nominal Pipe Size	O.D. Outside Diameter	O.D. Outside Diameter of Lap	Length		Radius		Sch. 5S	Sch. 10S	Sch. 40S	Sch. 80S	
			ASA	MSS	Type A	Type B					
1/2	0.840	1.375	3.0	2.0	1/8	1/32	ASA	-	-	0.30	0.32
							MSS	0.13	0.17	0.25	0.27
3/4	1.050	1.687	3.0	2.0	1/8	1/32	ASA	-	-	0.40	0.44
							MSS	0.15	0.19	0.34	0.36
1	1.315	2.000	4.0	2.0	1/8	1/32	ASA	-	-	0.66	0.85
							MSS	0.20	0.31	0.44	0.49
1-1/4	1.660	2.500	4.0	2.0	3/16	1/32	ASA	-	-	0.94	1.21
							MSS	0.29	0.46	0.58	0.70
1-1/2	1.900	2.875	4.0	2.0	1/4	1/32	ASA	-	-	1.22	1.49
							MSS	0.35	0.55	0.83	0.88
2	2.375	3.625	6.0	2.5	5/16	1/32	ASA	-	-	2.19	3.01
							MSS	0.54	0.83	1.19	1.55
2-1/2	2.875	4.125	6.0	2.5	5/16	1/32	ASA	-	-	3.45	4.59
							MSS	0.77	1.04	1.76	2.36
3	3.500	5.000	6.0	2.5	3/8	1/32	ASA	-	-	4.71	6.27
							MSS	1.03	1.41	2.50	3.28
3-1/2	4.000	5.500	6.0	3.0	3/8	1/32	ASA	-	-	5.54	6.58
							MSS	1.33	1.84	3.25	3.45
4	4.500	6.187	6.0	3.0	7/16	1/32	ASA	-	-	6.70	9.33
							MSS	1.57	2.16	4.00	5.58
5	5.563	7.312	8.0	3.0	7/16	1/32	ASA	-	-	11.70	16.60
							MSS	2.31	2.73	5.60	7.95
6	6.625	8.500	8.0	3.5	1/2	1/16	ASA	-	-	15.20	23.00
							MSS	3.58	4.30	8.20	12.29
8	8.625	10.625	8.0	4.0	1/2	1/16	ASA	-	-	23.00	35.00
							MSS	5.40	6.85	13.00	22.23
10	10.750	12.750	10.0	5.0	1/2	1/16	ASA	-	-	40.00	53.60
							MSS	8.91	10.73	23.00	30.80
12	12.750	15.000	10.0	6.0	1/2	1/16	ASA	-	-	49.00	65.80
							MSS	14.57	15.69	33.00	44.00

\*Type A & B - Serrated Face  
 \*Type C stub ends available upon request