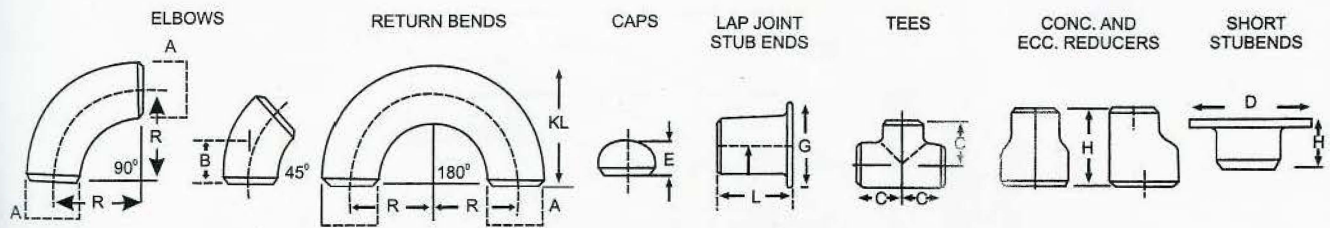




BUTT WELDING FITTINGS TO ANSI B16.9

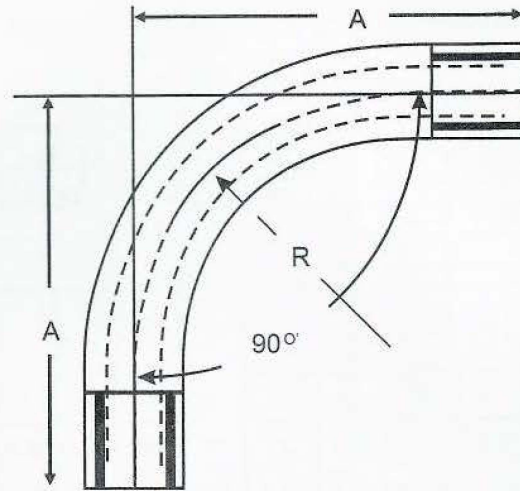


NOM BORE	PIPE O.D.	WALL THICKNESS				RADIUS R				L									
		5S	10S	40S	80S	1 D	1.5 D	2D	3D	A	B	C	E	G	Short	Long	H	D	H
1/2	21.34	1.65	2.11	2.77	3.73	12.7	19.05	25.4	38.1	12.7	15.9	25.4	25.4	34.9	50.8	76.2	50.8	45	8
3/4	26.67	1.65	2.11	2.87	3.91	19.05	28.57	38.1	57.15	19.05	11.1	28.6	25.4	42.8	50.8	76.2	50.8	54	8
1	33.40	1.65	2.77	3.38	4.55	25.40	38.10	50.8	76.2	25.4	22.2	38.1	38.1	50.8	50.8	101.6	50.8	64	10
1 1/4	42.16	1.65	2.77	3.56	4.85	31.75	47.60	63.5	95.25	31.75	25.0	47.6	38.1	63.5	50.8	101.6	50.8	74	12
1 1/2	48.26	1.65	2.77	3.68	5.08	38.10	57.15	76.2	114.3	38.10	28.6	57.2	38.1	73.0	50.8	101.6	63.5	84	12
2	60.32	1.65	2.77	3.91	5.54	50.80	76.20	101.6	152.4	50.8	34.0	63.5	38.1	92.0	63.5	152.4	76.2	102	16
2 1/2	73.02	2.11	3.05	5.16	7.01	63.50	95.25	127.0	190.5	63.5	44.0	76.2	38.1	104.8	63.5	152.4	88.9	122	16
3	88.90	2.11	3.05	5.49	7.62	76.20	114.30	152.4	228.6	76.2	50.8	85.7	50.8	127.0	63.5	152.4	88.9	138	18
3 1/2	101.60	2.11	3.05	5.74	8.08	88.90	133.35	177.8	266.7	88.9	57.2	95.3	63.5	139.7	76.2	152.4	101.6	148	18
4	114.30	2.11	3.05	6.02	8.56	101.60	152.40	203.2	304.8	101.6	63.5	104.8	63.5	157.2	76.2	152.4	101.6	158	20
5	141.30	2.77	3.40	6.55	9.52	127.00	190.50	254.0	381.0	127.0	82.6	123.8	76.2	185.7	76.2	203.2	127.0	188	25
6	168.27	2.77	3.40	7.11	10.97	152.40	228.60	304.8	457.2	152.4	95.3	158.7	88.9	215.9	88.9	203.2	139.7	212	25
8	219.07	2.77	3.76	8.18	12.70	203.20	304.80	406.4	609.6	203.2	127.0	190.5	101.6	270.0	101.6	203.2	152.4	268	30
10	273.05	3.40	4.19	9.27	12.70	254.00	381.00	508.0	762.0	254.0	158.7	215.9	127.0	324.0	127.0	254.0	177.8	330	35
12	323.85	3.96	4.57	9.52	12.70	304.80	457.20	609.6	914.4	304.8	190.5	254.0	152.4	381.0	152.4	254.0	203.2	400	40
14	355.60	3.96	4.76	9.52	12.70	355.60	533.40	711.2	1066.8	355.6	222.2	280.0	165.1	412.8	152.4	305.0	330.2		
16	406.40	4.19	4.76	9.52	12.70	406.40	609.60	812.8	1219.2	406.4	254.0	304.8	177.8	470.0	152.4	305.0	355.6		
18	457.20	4.19	4.76	9.52	12.70	457.20	685.80	914.4	1371.6	457.2	285.7	343.0	203.2	533.4	152.4	305.0	381.0		
20	508.00	4.76	5.54	9.52	12.70	508.00	762.00	1016.0	1524.0	508.0	317.6	381.0	228.6	584.2	152.4	305.0	508.0		

STANDARDS : All dimensions are in mm and confirm to ANSI B 16.9 and M.S.S SP - 43 where applicable.

Dimensional tolerances are in accordance with ANSI B 16.9 and MS.S SP 43 where applicable.

MATERIAL OF CONSTRUCTION : S.S. 304 / 304L / 316 / 316L / 321 Nickel 200 & Nickel alloys
C.S. ASTM - A - 234 WPB. WPA, ASTM - A420 WPL.

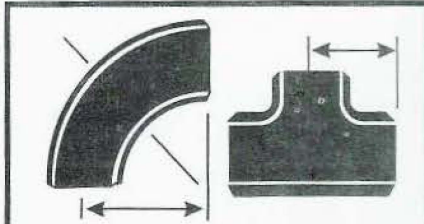
**90° Long Bends As per IS : 1239 (Part II) - 1982**

Nominal Pipe Size	Bends 90° Approximate Centre to Face	Approximate Radius R
	A	
006	051	032
010	073	048
015	086	057
020	102	073
025	121	089
032	146	108
040	165	127
050	203	159
065	248	197
080	292	232
100	381	308
125	540	-
150	622	-

As per customer's drawing & specification manufacture of special items make us exceptional.

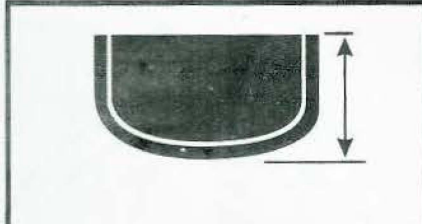


DIMENSIONAL TOLERANCE



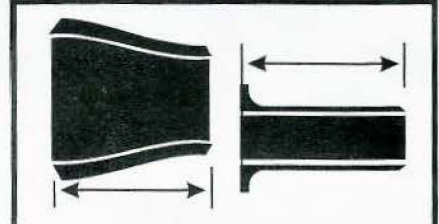
CENTER TO END All Schedules

Tolerance of 90° and 45° Elbows and Tee. Center of fitting to end :
Sizes 1/2" to 8" inclusive $\pm 1/16"$



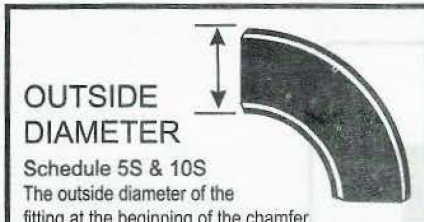
OVERALL LENGTH BUTT - WELDING CAPS

All Schedules
Sizes 1/2" to 4" inclusive $\pm 1/8"$
Sizes 5" to 8" inclusive $\pm 1/4"$



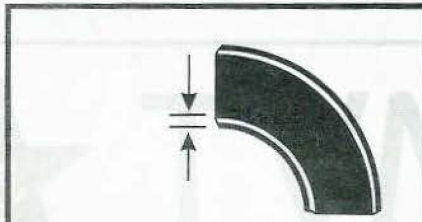
END TO END OF REDUCERS AND LAP JOINT STUB ENDS

All Schedules
End to End Dimension
Sizes 1/2" to 8" inclusive $\pm 1/16"$



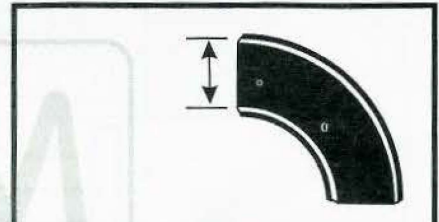
OUTSIDE DIAMETER

Schedule 5S & 10S
The outside diameter of the fitting at the beginning of the chamfer
Sizes upto 4" $\pm 1/32"$
Sizes 5" to 8" inclusive $\pm 1/16"$ - $1/32"$
Schedule 40S & 80S
Sizes upto 2.1/2" $\pm 1/16"$ - $1/32"$
Sizes 3" to 4" inclusive $\pm 1/16"$
Sizes 5" to 8" inclusive $\pm 3.32"$ - $1/16"$



WALL

The wall thickness of the fitting at any point shall be less than 87.1/2 percent of the normal thickness.



INSIDE DIAMETER

Schedule 40S & 80S
The inside diameter of the fitting at welding ends.
Sizes up to 2.1/2" $\pm 1/32"$
Sizes 3" to 8" inclusive $\pm 1/16"$

OUTSIDE DIAMETER OF LAP

All Schedules and Types
1/2" to 8" inclusive $\pm 0.11/32"$

RADIUS OF LAP

All Schedules
1/2" to 3.1/2" inclusive $\pm 0.1/32"$
4" to 8" inclusive $\pm 0.1/16"$

THICKNESS OF LAP

All Schedules
1/2" to 8" inclusive $\pm 1/16"$

BACK TO FACE

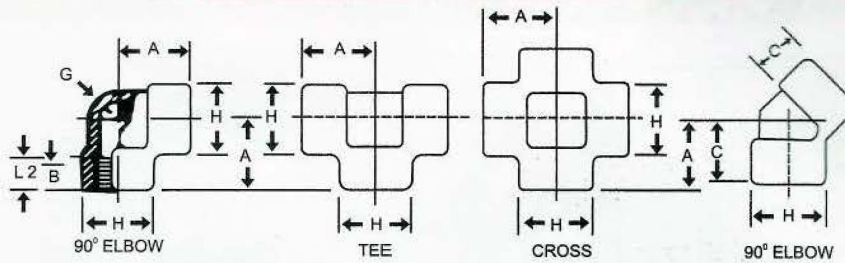
All Schedules
1/2" to 8" inclusive $\pm 1/4"$

ALIGNMENT OF ENDS

All Schedules
1/2" to 8" inclusive $\pm 1/32"$

CENTER TO CENTER

All Schedules
1/2" to 8" inclusive $\pm 1/4"$

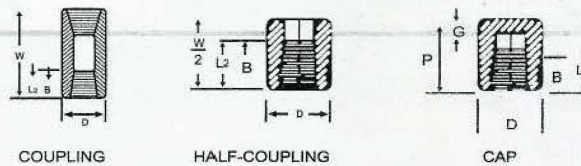


THREADED FITTINGS

Nom. Pipe size	Center to End Elbow Tee Cross A			Center to end 45° Elbow C			Outside Diameter of fittings H			Minimum Wall Thickness G			Length of Thread. Min. (1)	
	2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000	B	L2
1/8	21	21	25	17	17	19	22	22	25	3.0	3.0	6.5	6.5	6.5
1/4	21	25	29	17	19	22	22	25	33	3.0	3.5	6.5	8.0	10.0
3/8	25	29	33	19	22	25	33	38	38	3.0	3.5	7.0	10.5	10.5
1/2	29	33	38	22	25	29	33	38	46	3.5	4.0	8.0	11.0	13.5
3/4	33	38	44	25	29	33	38	46	56	3.0	4.5	8.5	12.5	14.0
1	38	44	51	29	33	35	46	56	62	3.5	5.0	10.0	14.5	17.5
1 1/4	44	51	60	33	35	43	56	62	75	4.0	5.5	10.5	17.0	18.0
1 1/2	51	60	64	35	43	44	62	75	84	4.0	5.5	11.0	18.0	18.5
2	60	64	83	43	45	52	75	84	102	4.5	7.0	12.0	19.0	19.0
2 1/2	76	83	9*5	52	52	64	92	102	121	5.5	7.5	15.5	23.5	29.5
3	86	95	106	64	64	79	110	121	146	6.0	9.0	16.5	26.0	30.5
4	106	114	114	79	79	79	146	152	152	6.5	11.0	18.5	27.5	33.0

Dimensions are in Millimeters.

(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 L2 (effective length of external thread) required by American National Standard for Pipe threads (ANSI B2.1)



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 (1)	
	3000 & 6000	3000	6000	3000	6000	3000	6000	B	L2
1/8	32	19	-	16	22	5.0	-	6.5	6.5
1/4	35	25	27	19	25	5.0	6.5	8.0	10.5
3/8	38	25	27	22	32	5.0	6.5	9.0	10.5
1/2	48	32	33	29	38	6.5	8.0	11.0	13.5
3/4	51	37	38	35	44	6.5	8.0	12.5	14.0
1	60	41	43	44	57	9.5	11.0	14.5	17.5
1 1/4	67	44	46	57	64	9.5	11.0	17.0	18.0
1 1/2	79	44	48	64	76	11.0	12.5	18.0	18.5
2	86	48	51	76	92	12.5	16.0	19.0	19.0
2 1/2	92	60	64	92	108	16.0	19.0	23.5	29.0
3	108	65	68	108	127	19.0	22.0	26.0	30.5
4	121	68	75	140	159	22.0	28.5	27.5	33.0

Dimensions are in Millimeters.

(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

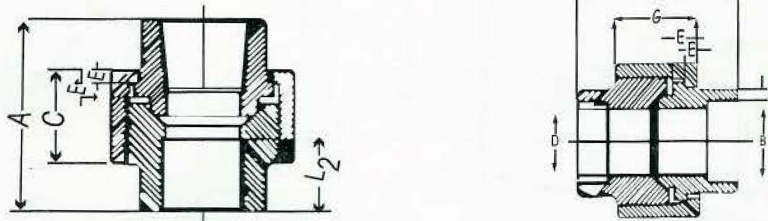
L2 (effective length of external thread) required by American National Standard for Pipe threads (ANSI B2.1)

DIMENSIONAL TOLERANCES IN INCHES FOR SCREWED FITTINGS TO ASA B 16.11 & BS3799

Nominal bore	Elbows Tees Crosses		Couplings, Half Couplings		Bushings - plugs		Across Flat	Overall length
	Centre to end	Diameter of bead	Overall Length	Diameter	Height of head	Length Under head		
1/8 to 1/4	± 0.031	± 0.062 -0.031	± 0.062	± 0.062 -0	± 0.031	± 0.062	+ 0 -0.031	± 0.062
1/2 to 2	± 0.062	± 0.093 -0.062	± 0.125	± 0.093 -0	± 0.062	± 0.093	+ 0 -0.062	± 0.093



SOCKET WELD & THREAD FITTINGS AMERICAN NATIONAL STANDARD FORGED STEEL FITTINGS



UNION DIMENSIONS

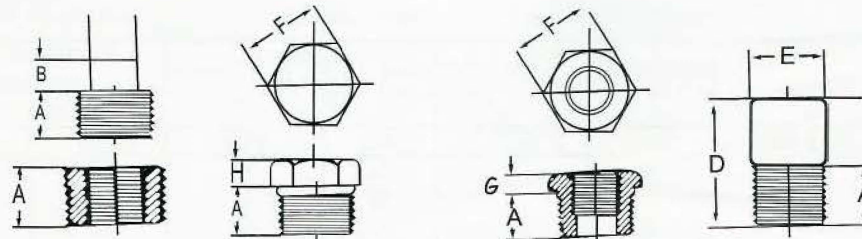
ANSI B 16.11 / BS 3799 : 1974

Nominal Size		3000lbs.										Depth of socket (min.) S	Socket Wall thickness (min.) T
		End to End A	Width A/F Union nut (min.) B	Height of Union nut (min.) C	Width A/F of ends (min.) D	Thickness Shoulder (min.) E	Length of thread (min.) L2	Distance between bottoms of socket (min.) A1	Bore diameter of sockets (min.) B-1	Bore diameter of union (min.) d*			
in	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
1/8	(6)	40	32	16	17	3.2	6.70	17	10.7	6.8	10	3.2	
1/4	(8)	43	32	18	19	3.2	10.21	17	14.1	9.2	10	3.3	
3/8	(10)	48	36	19	22	3.2	10.36	17	17.6	12.5	10	3.5	
1/2	(15)	51	43	21	30	4.0	13.56	18	21.8	15.5	10	4.1	
3/4	(20)	57	50	24	36	4.8	13.86	20	27.4	21.0	13	4.3	
1	(20)	64	60	25	41	4.8	17.34	26	34.1	26.5	13	5.0	
1-1/4	(32)	70	70	29	50	5.6	17.93	28	42.9	35.0	13	5.3	
1-1/2	(40)	79	78	30	60	5.6	18.38	30	49.0	40.5	13	5.6	
2	(50)	89	95	37	70	6.4	19.22	36	61.0	52.0	16	6.1	
2-1/2	(65)	118	125	48	85	9.6	28.89	57	73.8	62.0	16	6.1	
3	(80)	121	140	51	100	12.7	30.48	70	89.7	78.0	16	8.3	

Note : Other external forms of nut and ends are permissible provided the minimum dimensions in this table are maintained

* Bore diameter corresponds to schedule 40 pipe. Subject to tolerance

* Outside diameter of pipe must be specified if dimensions are not in accordance with BS 1600



STEEL PLUG & BUSHING

Nomial Pipe Size	Length (Min) A	Plugs Square Head		Plugs Round Head		Hex plugs & Bushings		
		Height to Square (Min) B	Width Flats (Min) C	Nominal Diameter of head E	Length (Min) D	Width Flats (Min) F	Hex Heigh (Min.)	
							Busing G	Plug H
1/8	9.5	6	7.5	10	35	11.0	-	6
1/4	11.0	6	9.5	13	41	16.0	3	6
3/8	12.5	8	11.0	17	41	17.5	4	6
1/2	14.5	10	14.5	21	44	22.0	5	8
3/4	16.0	11	16.0	27	44	27.0	6	10
1	19.0	13	20.5	33	51	35.0	6	10
1-1/4	20.5	14	24.0	43	51	44.5	7	14
1-1/2	20.5	16	28.5	48	51	76.0	8	16
2	22.0	17	33.5	60	64	63.5	9	17
2-1/2	27.0	19	38.0	73	70	76.0	10	19
3	28.5	21	43.0	89	70	89.0	10	21
4	32.0	25	63.5	114	76	117.5	13	25

Dimension are in millimeters

(1) CAUTIONARY NOTE REGARDING HEX HEAD BUSHINGS : Hed Head Bushings of one-size reduction should not be used in services wherein they might be subject to harmful loads and forces other than internal Pressures.