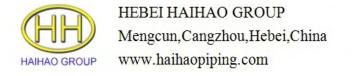


ANSI / ASME B16.11-2009

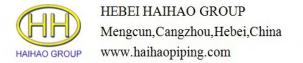
Forged Fittings, Socket-Welding and Threaded



Forged Steel Pipe Fittings

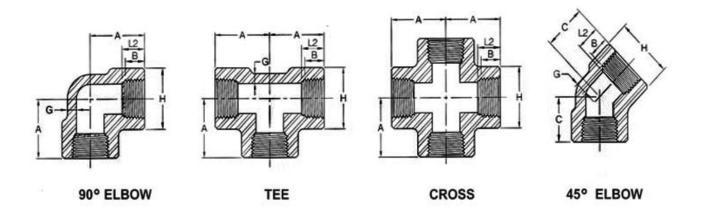
Summary:

Summary :	
Туре	 Elbow, Tee, Cross, Coupling, Half Coupling, Cap, Plug, Bushing, Union, HEX. Nipple, Swage nipple, Bull Plug, Street Elbow, Boss, Reducer Insert and Out-letetc Threaded (NPT or PT Type), Socket-Weld, Butt-welding
Size	NPS 1/8"~4" DN 6~100
Rating Pressure	Threaded End – 2000 / 3000 / 6000 LBS. Socket-weld End – 3000 / 6000 / 9000 LBS. Butt-weld End – SCH40 / SCH80 / SCH160 / XXS.
Specifications	 Dim. Spec. : ASME B16.11-2009 (Revision of ASME B16.11-2005) MSS – SP – 79, 83, 95, 97 and BS3799. ANSI / ASME B1.20.1-1983 NPT Material Spec. : ASTM A105, A350 LF2, A106, A312, A234, A403 ASTM A182 (F304, F304L, F316, F316L, F304H, F316H, F317L, F321, F11, F22, F91) Size of Raw Material: DIA. 19~85mm Round Bar.
Marking	 Carbon and Alloy Steel: Marked by stamping. Stainless Steel: Marked by electro-etched, jet printed or stamping. 3/8" under: Brand only. 1/2" to 4": Marked with brand, material, heat code, B16 (For ASME B16.11 product), pressure and size.
Finishing	Carbon steel: Galvanized or black. Stainless steel: Pickled.



Thread Fittings

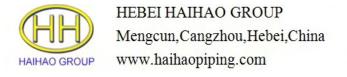
ASME B16.11-2009 (Revision of ASME B16.11-2005)



DN	Nom. Pipe Size		ter to E , Tee, 0 A	-		nter to I 5° Elbo C			ide Dia Of Band H			nimum \ hicknes G		Leng Thre Min.	ead
		2000	3000	6000	2000	3000	6000	2000	3000	6000	2000	3000	6000	В	L2
6	1/8"	21	21	25	17	17	19	22	22	25	3.18	3.18	6.35	6.4	6.7
8	1/4"	21	25	28	17	19	22	22	25	33	3.18	3.30	6.60	8.1	10.2
10	3/8"	25	28	33	19	22	25	25	33	38	3.18	3.51	6.98	9.1	10.4
15	1/2"	28	33	38	22	25	28	33	38	46	3.18	4.09	8.15	10.9	13.6
20	3/4"	33	38	44	25	28	33	38	46	56	3.18	4.32	8.53	12.7	13.9
25	1"	38	44	51	28	33	35	46	56	62	3.68	4.98	9.93	14.7	17.3
32	1-1/4"	44	51	60	33	35	43	56	62	75	3.89	5.28	10.59	17.0	18.0
40	1-1/2"	51	60	64	35	43	44	62	75	84	4.01	5.56	11.07	17.8	18.4
50	2"	60	64	83	43	44	52	75	84	102	4.27	7.14	12.09	19.0	19.2
65	2-1/2"	76	83	95	52	52	64	92	102	121	5.61	7.65	15.29	23.6	28.9
80	3"	86	95	106	64	64	79	109	121	146	5.99	8.84	16.64	25.9	30.5
100	4"	106	114	114	79	79	79	146	152	152	6.55	11.18	18.67	27.7	33.0

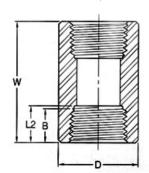
⁽¹⁾ Dimensions in Millimeters.

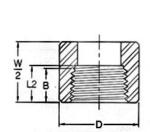
⁽²⁾ Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for Pipe Threads (ANSI/ASME B1.20.1)

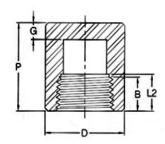


Thread Fittings

ASME B16.11-2009 (Revision of ASME B16.11-2005)







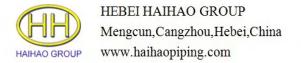
COUPLING

HALF COUPLING

CAP

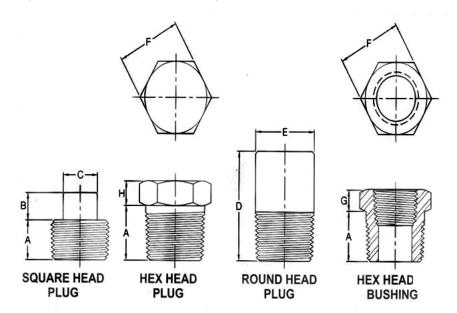
		- · · - ·								
	Nom.	Center to End Coupling	Center to	End Cap	Outside	Diameter		Wall mess	Length o	f Thread
DN	Pipe Size	W	Р		[)	G	Min.	Min	. (1)
		3000 & 6000	3000	6000	3000	6000	3000	6000	В	L2
6	1/8"	32	19		16		4.8		6.4	6.7
8	1/4"	35	25	27	19	25	4.8	6.4	8.1	10.2
10	3/8"	38	25	27	22	32	4.8	6.4	9.1	10.4
15	1/2"	48	32	33	28	38	6.4	7.9	10.9	13.6
20	3/4"	51	37	38	35	44	6.4	7.9	12.7	13.9
25	1"	60	41	43	44	57	9.7	11.2	14.7	17.3
32	1-1/4"	67	44	46	57	64	9.7	11.2	17.0	18.0
40	1-1/2"	79	44	48	64	76	11.2	12.7	17.8	18.4
50	2"	86	48	51	76	92	12.7	15.7	19.0	19.2
65	2-1/2"	92	60	64	92	108	15.7	19.0	23.6	28.9
80	3"	108	65	68	108	127	19.0	22.4	25.9	30.5
100	4"	121	68	75	140	159	22.4	28.4	27.7	33.0

- (1) Dimensions in Millimeters.
- (2) 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/ASME B1.20.1)



Thread Fittings

ASME B16.11-2009 (Revision of ASME B16.11-2005)

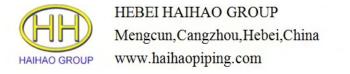


		Length	Square H	lead Plug	Round He	ead Plug		d Plug & E	
	Nom.	(Min.)	Height of	Width Flat	Nominal	Length	Width Flat	Hex. Heig	tht (Min.)
DN	Pipe		Square (Min.)	(Min.)	Diameter of Head	(Min.)	(Nom.)	Bushing	Plug
	Size		(1711111)		(Nom)				J
		Α	В	С	È	D	F	G	Н
6	1/8"	10	6	7	10	35			6
8	1/4"	11	6	10	14	41	16	3	6
10	3/8"	13	8	11	18	41	18	4	8
15	1/2"	14	10	14	21	44	22	5	8
20	3/4"	16	11	16	27	44	27	6	10
25	1"	19	13	21	33	51	36	6	10
32	1-1/4"	21	14	24	43	51	46	7	14
40	1-1/2"	21	16	28	48	51	50	8	16
50	2"	22	18	32	60	64	65	9	18
65	2-1/2"	27	19	36	73	70	75	10	19
80	3"	28	21	41	89	70	90	10	21
100	4"	32	25	65	114	76	115	13	25

⁽¹⁾ Dimensions in Millimeters.

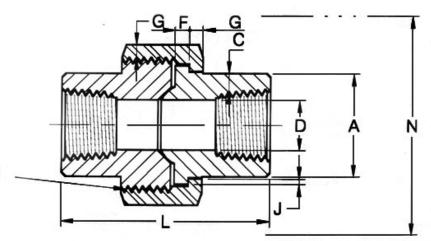
Hex head bushing of one-size reduction should not be used in services where they might be subject to harmful loads and forces other than internal pressure.

⁽²⁾ CAUTIONARY NOTE REGARDING HEX BUSHINGS.



Unions Threaded

Threaded End MSS-SP-83-2006



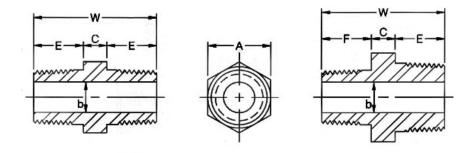
H-Thrd's Minimum 4 Full Thrd's Engagement Class 2A/2B Fit ANSI B1.1

Nom. Pipe Size	Pipe End	Wall	Water Way Bore	Male Flange	Nut	Threads Per 25.4mm	Bearing	Length Assem. Nom.	Clear Assem. Nut
	Min. A	Min. C	D	Min. F	Min. G	Max. H	Min. J	L	N
1/8"	14.7	2.41	8.43 6.43	3.18	3.18	16	1.24	41.4	50.8
1/4"	19.0	3.02	11.13 9.45	3.18	3.18	16	1.24	41.4	50.8
3/8"	22.9	3.20	14.27 13.51	3.43	3.43	14	1.37	46.0	55.9
1/2"	27.7	3.73	17.86 17.07	3.68	3.68	14	1.50	49.0	58.4
3/4"	33.5	3.91	23.01 21.39	4.06	4.06	11	1.68	56.9	66.0
1"	41.4	4.55	28.98 27.74	4.57	4.45	11	1.85	62.0	78.7
1-1/4"	50.5	4.85	37.69 35.36	5.33	5.21	11	2.13	71.1	94.0
1-1/2"	57.2	5.08	43.54 41.20	5.84	5.59	10	2.31	76.5	111.8
2"	70.1	5.54	55.58 52.12	6.60	6.35	10	2.69	86.1	132.1
2-1/2"	85.3	7.01	66.27 64.31	7.49	7.11	8	3.07	102.4	149.9
3"	102.4	7.62	88.25 77.27	8.26	8.00	8	3.53	109.0	175.3

- (1) Dimensions in Millimeters.
- (2) Upper and lower values for each size are the respective maximum and minimum dimensions.

Hex Nipples Threaded

BS3799-1974



FULL SIZE

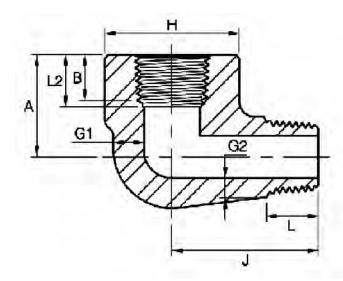
REDUCING SIZE

Nomir	nal Size	Α	W	E	ŀ)	С	F
DN	Inch	(Min)	(Min)	(Min)	3000	6000	(Min)	(Min)
6	1/8"	11	26	10	5	2	6	-
8	1/4"	15	36	15	8	6	6	-
8 x 6	1/4"x1/8"	15	31	15	5	2	6	10
10	3/8"	18	40	16	11	8	8	-
10 x 8	3/8"x1/4"	18	39	16	8	6	8	15
15	1/2"	22	48	20	14	11	8	-
15 x 10	1/2"x3/8"	22	44	20	11	8	8	16
15 x 8	1/2"x1/4"	22	43	20	8	6	8	15
20	3/4"	27	52	21	19	13	10	-
20 x 15	3/4"x1/2"	27	50	21	14	11	9	20
20 x 10	3/4"x3/8"	27	46	21	11	8	9	16
25	1"	35	60	25	24	17	10	-
25 x 20	1"x3/4"	35	56	25	19	13	10	21
25 x 15	1"x1/2"	35	55	25	14	11	10	20
40	1-1/2"	50	68	26	38	30	16	-
40 x 25	1-1/2"x1"	50	67	26	24	17	16	25
40 x 20	1-1/2"x3/4"	50	63	26	19	13	16	21
40 x 15	1-1/2"x1/2"	50	62	26	14	11	16	20
50	2"	62	71	27	49	39	17	-
50 x 40	2"x1-1/2"	62	70	27	38	30	17	26
50 x 25	2"x1"	62	70	27	24	17	18	25
50 x 20	2"x3/4"	62	65	27	19	13	17	21
50 x 15	2"x1/2"	62	65	27	14	11	18	20

Dimensions in Millimeters.

Street Elbows Threaded

Threaded End ASME B16.11-2009 (Revision of ASME B16.11-2005)



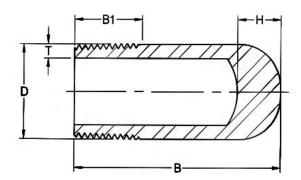
DN	Nom. Pipe	ŀ	1	,	A	,	J	G (M	61 in.)	G2 (M		B ⁽²⁾	L2 ⁽²⁾	L
	Size	3000	6000	3000	6000	3000	6000	3000	6000	3000	6000	(Min)	(Min)	(Min)
6	1/8"	19	25	19	22	25	32	3.18	5.08	2.74	4.22	6.4	6.7	10.0
8	1/4"	25	32	22	25	32	38	3.30	5.66	3.22	5.28	8.1	10.2	11.0
10	3/8"	32	38	25	28	38	41	3.50	6.98	3.50	5.59	9.1	10.4	13.0
15	1/2	38	44	28	35	41	48	4.09	8.15	4.16	6.53	10.9	13.6	14.0
20	3/4	44	51	35	44	48	57	4.32	8.53	4.88	6.86	12.7	13.9	16.0
25	1	51	62	44	51	57	66	4.98	9.93	5.56	7.95	14.7	17.3	19.0
32	1-1/4	62	70	51	54	66	71	5.28	10.59	5.56	8.48	17.0	18.0	21.0
40	1-1/2	70	84	54	64	71	84	5.56	11.07	6.25	8.89	17.8	18.4	21.0
50	2	84	102	64	83	84	105	7.14	12.09	7.64	9.70	19.0	19.0	22.0

(1) Dimensions in Millimeters.

⁽²⁾ 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/ASME B1.20.1)

Bull Plugs Threaded

MSS-SP-95-2006



Nom. Pipe	_	_	_		T (N	Min)		
Size	D	В	B1	Sch.40 (STD)	Sch.80 (XS)	Sch.160	xxs	Н
1/8"	10.3	34	9.5	1.73	2.41			14
1/4"	13.7	34	11.0	2.24	3.02			14
3/8"	17.1	57	12.5	2.31	3.20			14
1/2"	21.3	64	14.5	2.77	3.73	4.78	7.47	14
3/4"	26.7	70	16.0	2.87	3.91	5.56	7.82	18
1"	33.4	76	19.0	3.38	4.56	6.35	9.09	18
1-1/4"	42.2	83	20.5	3.56	4.85	6.35	9.70	18
1-1/2"	48.3	89	20.5	3.68	5.05	7.14	10.15	18
2"	60.3	102	22.0	3.91	5.54	8.74	11.07	20
2-1/2"	73.0	127	27.0	5.16	7.01	9.53	14.02	20
3"	88.9	152	28.5	5.49	7.60	11.13	15.24	20
4"	114.3	178	32.0	6.35	8.08	13.49	17.12	20

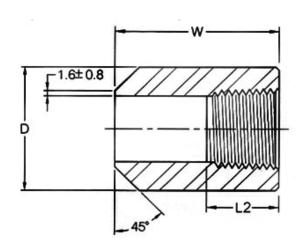
⁽¹⁾ Dimensions in Millimeters.

⁽²⁾ Thread in accordance with ASME B1.20.1

⁽³⁾ Wall thickness (T Min.) in accordance with ASME B36.10M.

Bosses Threaded

BS3799-1974

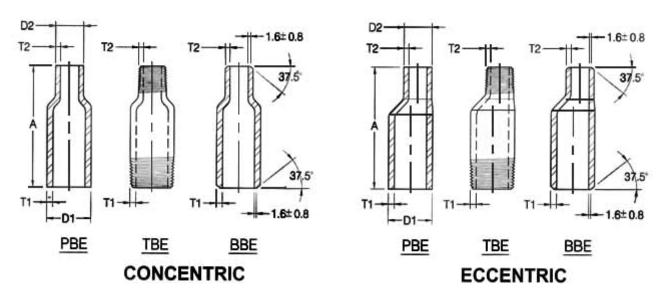


DN	Nom. Pipe Size	D)	W	1	L2 (Min)		
	·	3000lb	6000lb	3000lb	6000lb	3000lb	6000lb	
6	1/8"	16.0	22.0	38.	.0	6.	70	
8	1/4"	19.0	26.0	41.	.0	10	.21	
10	3/8"	22.0	32.0	45.	.0	10	.36	
15	1/2"	29.0	38.0	51.	.0	13	.56	
20	3/4"	35.0	45.0	51.	.0	13	.86	
25	1"	45.0	60.0	51.	.0	17	.34	
40	1-1/2"	64.0	76.0	51.	.0	18	.38	
50	2"	76.0	95.0	51.	.0	19	.22	
65	2-1/2"	95.0		51.0		28.89		
80	3"	110.0		57.0		30.48		
100	4"	140.0		64.0		33.02		

Dimensions in Millimeters.

Swaged Nipples

MSS-SP-95-2006



	Outside I	Diameter	End				Wall Th	ickness			
Nominal Pipe	Large	Small	То		T	1			Т	2	
Size	End	End	End	Sch40	Sch80	0.1.400	V/V0	Sch40	Sch80	0.1.400	V/V/O
(NPS)	D1	D2	"A"	(STD)	(XS)	Sch160	XXS	(STD)	(XS)	Sch160	XXS
1/4"x1/8"	13.7	10.3	57	2.2	3.0	3.7	6.1	1.7	2.4		
3/8"x1/8"	17.1	10.3	64	2.3	3.2	4.0	6.4	1.7	2.4		/
3/8"x1/4"	17.1	13.7	64	2.3	3.2	4.0	6.4	2.2	3.0		/
1/2"x1/8"	21.3	10.3	70	2.8	3.7	4.8	7.5	1.7	2.4		/
1/2"x1/4"	21.3	13.7	70	2.8	3.7	4.8	7.5	2.2	3.0		/
1/2"x3/8"	21.3	17.1	70	2.8	3.7	4.8	7.5	2.3	3.2		/
3/4"x1/8"	26.7	10.3	76	2.9	3.9	5.6	7.8	1.7	2.4		/
3/4'x1/4"	26.7	13.7	76	2.9	3.9	5.6	7.8	2.2	3.0		/
3/4"x3/8"	26.7	17.1	76	2.9	3.9	5.6	7.8	2.3	3.2		/
3/4"x1/2"	26.7	21.3	76	2.9	3.9	5.6	7.8	2.8	3.7	4.8	7.5
1"x1/8"	33.4	10.3	89	3.4	4.5	6.4	9.1	1.7	2.4		/
1"x1/4"	33.4	13.7	89	3.4	4.5	6.4	9.1	2.2	3.0		/
1"x3/8"	33.4	17.1	89	3.4	4.5	6.4	9.1	2.3	3.2		
1"x1/2"	33.4	21.3	89	3.4	4.5	6.4	9.1	2.8	3.7	4.8	7.5
1"x3/4"	33.4	26.7	89	3.4	4.5	6.4	9.1	2.9	3.9	5.6	7.8
1-1/4"x1/8"	42.2	10.3	102	3.6	4.9	6.4	9.7	1.7	2.4		/
1-1/4"x1/4"	42.2	13.7	102	3.6	4.9	6.4	9.7	2.2	3.0		
1-1/4"x3/8"	42.2	17.1	102	3.6	4.9	6.4	9.7	2.3	3.2		
1-1/4"x1/2"	42.2	21.3	102	3.6	4.9	6.4	9.7	2.8	3.7	4.8	7.5
1-1/4"x3/4"	42.2	26.7	102	3.6	4.9	6.4	9.7	2.9	3.9	5.6	7.8
1-1/4"x1"	42.2	33.4	102	3.6	4.9	6.4	9.7	3.4	4.5	6.4	9.1
1-1/2"x1/8"	48.3	10.3	114	3.7	5.1	7.1	10.2	1.7	2.4		/
1-1/2"x1/4"	48.3	13.7	114	3.7	5.1	7.1	10.2	2.2	3.0		/
1-1/2"x3/8"	48.3	17.1	114	3.7	5.1	7.1	10.2	2.3	3.2		/
1-1/2"x1/2"	48.3	21.3	114	3.7	5.1	7.1	10.2	2.8	3.7	4.8	7.5
1-1/2"x3/4"	48.3	26.7	114	3.7	5.1	7.1	10.2	2.9	3.9	5.6	7.8
1-1/2"x1"	48.3	33.4	114	3.7	5.1	7.1	10.2	3.4	4.5	6.4	9.1
1-1/2"x1-1/4"	48.3	42.2	114	3.7	5.1	7.1	10.2	3.6	4.9	6.4	9.7
2"x1/8"	60.3	10.3	165	3.9	5.5	8.7	11.1	1.7	2.4		
2"x1/4"	60.3	13.7	165	3.9	5.5	8.7	11.1	2.2	3.0		
2"x3/8"	60.3	17.1	165	3.9	5.5	8.7	11.1	2.3	3.2		
2"x1/2"	60.3	21.3	165	3.9	5.5	8.7	11.1	2.8	3.7	4.8	7.5
(Continued)								•			

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HEBEI HAIHAO GROUP Mengcun, Cangzhou, Hebei, China

BBE

www.haihaopiping.com

MSS-SP-95-2006

PBE

TBE

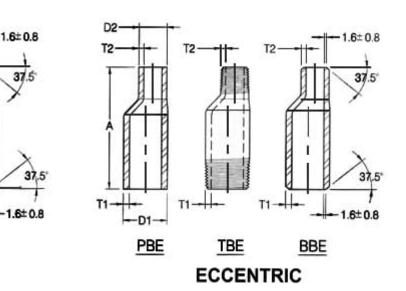
CONCENTRIC

D2

T2

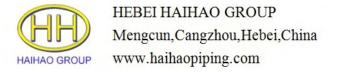
Swaged Nipples

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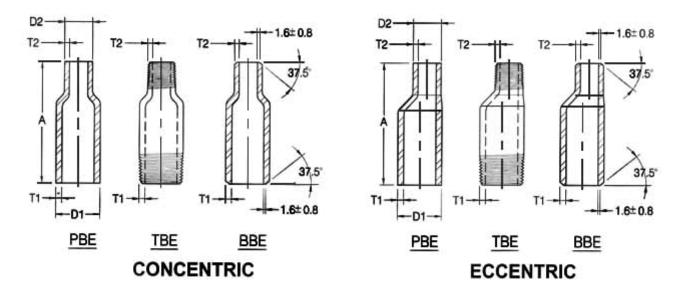
(Continued)											
Nominal Pipe	Outside I	Diameter	End				Wall Th	ickness			
Size	Large	Small	То			T1				Τ2	
(NPS)	End D1	End D2	End "A"	Sch40 (STD)	Sch80 (XS)	Sch160	XXS	Sch40 (STD)	Sch80 (XS)	Sch160	XXS
2"x3/4"	60.3	26.7	165	3.9	5.5	8.7	11.1	2.9	3.9	5.6	7.8
2"x1"	60.3	33.4	165	3.9	5.5	8.7	11.1	3.4	4.5	6.4	9.1
2"x1-1/4"	60.3	42.2	165	3.9	5.5	8.7	11.1	3.6	4.9	6.4	9.7
2"x1-1/2"	60.3	48.3	165	3.9	5.5	8.7	11.1	3.7	5.1	7.1	10.2
2-1/2"x1/8"	73.0	10.3	178	5.2	7.0	9.5	14.0	1.7	2.4		
2-1/2"x1/4"	73.0	13.7	178	5.2	7.0	9.5	14.0	2.2	3.0		
2-1/2"x3/8"	73.0	17.1	178	5.2	7.0	9.5	14.0	2.3	3.2		
2-1/2"x1/2"	73.0	21.3	178	5.2	7.0	9.5	14.0	2.8	3.7	4.8	7.5
2-1/2"x3/4"	73.0	26.7	178	5.2	7.0	9.5	14.0	2.9	3.9	5.6	7.8
2-1/2"x1"	73.0	33.4	178	5.2	7.0	9.5	14.0	3.4	4.5	6.4	9.1
2-1/2"x1-1/4"	73.0	42.2	178	5.2	7.0	9.5	14.0	3.6	4.9	6.4	9.7
2-1/2"x1-1/2"	73.0	48.3	178	5.2	7.0	9.5	14.0	3.7	5.1	7.1	10.2
2-1/2"x2"	73.0	60.3	178	5.2	7.0	9.5	14.0	3.9	5.5	8.7	11.1
3"x1/8"	88.9	10.3	203	5.5	7.6	11.1	15.2	1.7	2.4	3.2	4.8
3"x1/4"	88.9	13.7	203	5.5	7.6	11.1	15.2	2.2	3.0	3.7	6.1
3"x3/8"	88.9	17.1	203	5.5	7.6	11.1	15.2	2.3	3.2	4.0	6.4
3"x1/2"	88.9	21.3	203	5.5	7.6	11.1	15.2	2.8	3.7	4.8	7.5
3"x3/4"	88.9	26.7	203	5.5	7.6	11.1	15.2	2.9	3.9	5.6	7.8
3"x1"	88.9	33.4	203	5.5	7.6	11.1	15.2	3.4	4.5	6.4	9.1
3"x1-1/4"	88.9	42.2	203	5.5	7.6	11.1	15.2	3.6	4.9	6.4	9.7
3"x1-1/2"	88.9	48.3	203	5.5	7.6	11.1	15.2	3.7	5.1	7.1	10.2
3"x2"	88.9	60.3	203	5.5	7.6	11.1	15.2	3.9	5.5	8.7	11.1
3"x2-1/2"	88.9	73.0	203	5.5	7.6	11.1	15.2	5.2	7.0	9.5	14.0
3-1/2"x1/8"	101.6	10.3	203	5.7	8.1			1.7	2.4		
3-1/2"x1/4"	101.6	13.7	203	5.7	8.1			2.2	3.0		
3-1/2"x3/8"	101.6	17.1	203	5.7	8.1			2.3	3.2		
3-1/2"x1/2"	101.6	21.3	203	5.7	8.1			2.8	3.7	4.8	7.5
3-1/2"x3/4"	101.6	26.7	203	5.7	8.1			2.9	3.9	5.6	7.8
3-1/2"x1"	101.6	33.4	203	5.7	8.1			3.4	4.5	6.4	9.1
3-1/2"x1-1/4"	101.6	42.2	203	5.7	8.1			3.6	4.9	6.4	9.7

(Continued)



Swaged Nipples

MSS-SP-95-2006



(Continued)

(Continued)											
Nominal Pipe	Outside I	Diameter	End				Wall Th	ickness			
Size	Large	Small	То		Т	1			Т	2	
(NPS)	End D1	End D2	End "A"	Sch40 (STD)	Sch80 (XS)	Sch160	XXS	Sch40 (STD)	Sch80 (XS)	Sch160	XXS
3-1/2"x1-1/2"	101.6	48.3	203	5.7	8.1			3.7	5.1	7.1	10.2
3-1/2"x2"	101.6	60.3	203	5.7	8.1			3.9	5.5	8.7	11.1
3-1/2"x2-1/2"	101.6	73.0	203	5.7	8.1			5.2	7.0	9.5	14.0
3-1/2"x3"	101.6	88.9	203	5.7	8.1			5.5	7.6	11.1	15.2
4"x1/4"	114.3	13.7	229	6.0	8.6	13.5	17.1	2.2	3.0		/
4"x3/8"	114.3	17.1	229	6.0	8.6	13.5	17.1	2.3	3.2		
4"x1/2"	114.3	21.3	229	6.0	8.6	13.5	17.1	2.8	3.7	4.8	7.5
4"x3/4"	114.3	26.7	229	6.0	8.6	13.5	17.1	2.9	3.9	5.6	7.8
4"x1"	114.3	33.4	229	6.0	8.6	13.5	17.1	3.4	4.5	6.4	9.1
4"x1-1/4"	114.3	42.2	229	6.0	8.6	13.5	17.1	3.6	4.9	6.4	9.7
4"x1-1/2"	114.3	48.3	229	6.0	8.6	13.5	17.1	3.7	5.1	7.1	10.2
4"x2"	114.3	60.3	229	6.0	8.6	13.5	17.1	3.9	5.5	8.7	11.1
4"x2-1/2"	114.3	73.0	229	6.0	8.6	13.5	17.1	5.2	7.0	9.5	14.0
4"x3"	114.3	88.9	229	6.0	8.6	13.5	17.1	5.5	7.6	11.1	15.2
4"x3-1/2"	114.3	101.6	229	6.0	8.6	13.5	17.1	5.7	8.1		

(1) Dimensions in Millimeters.

(2) Wall Thickness: T1 & T2 in accordance with ASME B36.10M

PBE: Plain Both EndsBBE: Bevel Both EndsTBE: Thread Both EndsPSE: Plain Small EndBSE: Bevel Small EndTSE: Thread Small EndPLE: Plain Large EndBLE: Bevel Large EndTLE: Thread Large End

Dimensional Tolerance of Swaged Nipple

Nominal Pipe	Overall Length	Outside dia	Wall Thickness	
Size (inch)	(mm)	Square Cut Ends (mm)	Other End Connection (mm)	(prior to threading or grooving)
1/8" to 3/8"	± 1.5	+ 0.40 - 0.80	± 0.80	
1/2" to 1-1/2"	± 1.5	+ 0.40 - 0.80	+ 1.50 - 0.80	Not less than 87.5% of nominal wall
2" to 2-1/2"	± 3.0	± 0.80	+ 1.50 - 0.80	thickness
3" to 4"	± 3.0	± 0.80	± 1.50	

⁽¹⁾ Dimensions in Millimeters.

⁽²⁾ Prior to threading or grooving

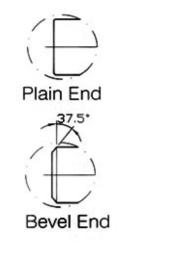


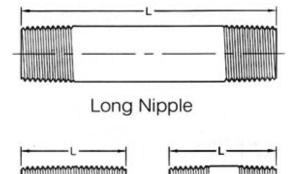
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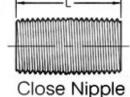
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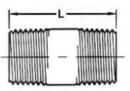
Pipe Nipples Threaded

ASME A773-03







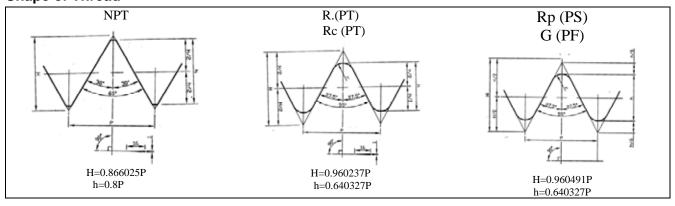


ipple	Short N	Vipple

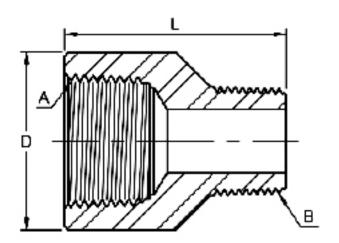
Nom. Pipe		L		Plain End Weight (kg/m)			
Size	Close Nipple	Short Nipple	Long Nipple	Sch40/STD	Sch80/XS	Sch160	XXS
1/8"	3/4	1-1/2	2~12	0.37	0.47		
1/4"	7/8	1-1/2	2~12	0.63	0.80		
3/8"	1	1-1/2	2~12	0.84	1.10		
1/2"	1-1/8	1-1/2	2~12	1.27	1.62	1.95	2.55
3/4"	1-3/8	2	2-1/2~12	1.69	2.20	2.90	3.64
1"	1-1/2	2	2-1/2~12	2.50	3.24	4.24	5.45
1-1/4"	1-5/8	2-1/2	3~12	3.39	4.47	5.61	7.77
1-1/2"	1-3/4	2-1/2	3~12	4.05	5.41	7.25	9.55
2"	2	2-1/2	3~12	5.44	7.48	11.11	13.44
2-1/2"	2-1/2	3	3-1/2~12	8.63	11.41	14.92	20.39
3"	2-5/8	3	3-1/2~12	11.29	15.27	21.35	27.68
3-1/2"	2-3/4	4	4-1/2~12	13.57	18.64		
4"	2-7/8	4	4-1/2~12	16.08	22.32	33.54	41.03
5"	3	4-1/2	5~12	21.77	30.97	49.12	57.43
6"	3-1/8	4-1/2	5~12	28.26	42.56	67.57	79.22

- (1) Dimensions in Millimeters.
- (2) Thickness in accordance with ASME B1.20.1
- (3) Weld bevel in accordance with ASME B16.25
- (4) Weight in accordance with ASME B36.10M Table 1.

Shape of Thread

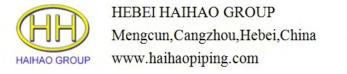


Adapter Threaded

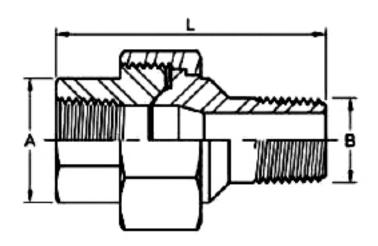


OCCULD				
DN	Nom Pipe Size	D	L	Threaded Size
	A			В
8	1/4"	19	33	1/8"
10	3/8"	22	35	1/4"
15	1/2"	28	42	3/8"
20	3/4"	35	47	1/2"
25	1"	44	55	3/4"
32	1-1/4"	57	63	1"
40	1-1/2"	64	66	1-1/4"
50	2"	76	76	1-1/2"
65	2-1/2"	92	90	2"
80	3"	108	110	2-1/2"
100	4"	140	120	3"

- (1) Dimensions in Millimeters.
- (2) Thickness in accordance with ANSI / ASME B1.20.1 1983
- (3) Dimensions may vary according to the customers' and manufacturer's requirement.



Union (Male x Female)



Nom Pipe Size	A ⁽²⁾ (Min)	В	L
1/4"	19.0	13.7	55.4
3/8"	22.9	17.1	60.0
1/2"	27.7	21.3	68.0
3/4"	33.5	26.7	75.9
1"	41.4	33.4	86.0
1-1/4"	50.5	42.2	95.1
1-1/2"	57.2	48.3	100.5
2"	70.1	60.3	112.1

- (1) Dimensions in Millimeters.
- (2) Dimensions refer to MSS SP-83 Table 5.
- (3) Thickness in accordance with ANSI / ASME B1.20.1 1983
- (4) Dimensions may vary according to the customers' and manufacturer's requirement.



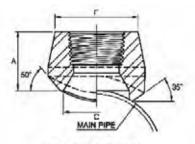
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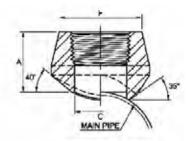
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Branch Outlet Threaded

Reducing Sizes MSS-SP-97-2006





REDUCING WAY

STRAIGHT WAY

Out-Let	Reducing Way								
Pipe		A		С		F			
NPS (in)	3000lb (Sch80)	6000lb (Sch160)	3000lb (Sch80)	6000lb (Sch160)	3000lb (Sch80)	6000lb (Sch160)			
1/8"	19.0		13.7		17.3				
1/4"	19.0		13.7		22.0				
3/8"	21.0		17.1		25.8				
1/2"	25.0	32.0	21.3	16.6	31.3	33.9			
3/4"	27.0	37.0	26.7	21.2	37.1	41.2			
1"	33.0	40.0	33.4	27.0	45.5	49.9			
1-1/4"	33.0	41.0	42.2	35.8	57.0	58.6			
1-1/2"	35.0	43.0	48.3	41.2	64.0	66.7			
2"	38.0	52.0	60.3	51.6	76.0	83.2			
2-1/2"	46.0		73.0		92.0				
3"	51.0		88.9		109.2				
4"	57.0		114.3		140.0				

Out-Let	S	traight Way				
Pipe	Α	С	F			
NPS (in)	3000lb					
1/8"						
1/4"	19.0	11.5	22.0			
3/8"	21.0	14.5	25.9			
1/2"	25.0	16.5	31.4			
3/4"	27.0	21.5	37.1			
1"	33.0	27.2	45.5			
1-1/4"	33.0	36.0	57.0			
1-1/2"	35.0	42.0	64.0			
2"	38.0	53.0	76.0			
2-1/2"	46.0	65.0	92.0			
3"	51.0	80.0	109.2			
4"	57.0	104.0	140.0			

Dimensional Tolerance of MSS SP-97-2006

Item	1/8" to 3/4"	1" to 4"
Face of fitting to crotch (A)	± 0.76	± 1.52

Conventional Run Size Combinations

			OUTLET SIZE									
		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
		3/8"~3/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	5"
	way	1"~36"	3/4"~1-1/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	6"
Dina)			1-1/2"~36"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"	8"
ا ا	_ ⊆			1-1/2"~3"	2"~3"	2-1/2"	3"	3-1/2"	4"	5"	6"	10"
				3-1/2"~36"	3-1/2"~6"	3"	3-1/2"~5"	4"~5"	5"~6"	6"	8"	12"~14"
/Main	Reducing				8"~36"	3-1/2"~4"	6"~8"	6"~10"	8"~10"	8"	10"	16"~18"
	4 -					5"~10"	10" ~ 36"	12"~36"	12"~18"	10"~14"	12"~16"	20"~24"
217	!					12~36"			20"~36"	16"~36"	18"~36"	26"~36"
7	5										3-1/2"	5"
							1-1/2"	2"	2-1/2"	3"	4"	6"
	raigl	3/8"~36"	1/2"~36"	3/4"~36"	1"~36"	1-1/4"~1-1/2"	2"~3"	2-1/2"~4"	3"~3-1/2"	3-1/2"~4"	5"	8"
4	Straight	3/0 ~30	1/2 ~30	3/4 ~30	1 30	2"~36"	3-1/2"~36"	5"~36"	4"~6"	5"~8"	6"	10"
	S						J-1/2 ~30	5 ~30	8"~36"	10"~36"	8"~12"	12"~16"
											14"~36"	18"~36"

Each charted outlet size is designed to fit a number of run pine size

⁽¹⁾ Dimensions in Millimeters.

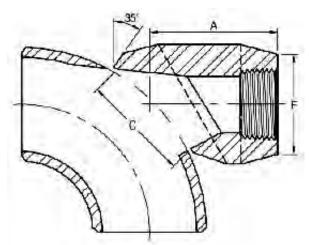
⁽²⁾ Thread in accordance with ASME B1.20.1

^{(3) 3000}LBS outlet size 4 and less fit a number of run pipe sizes and the fitting are marked accordingly.



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90° Elbow Outlet Threaded



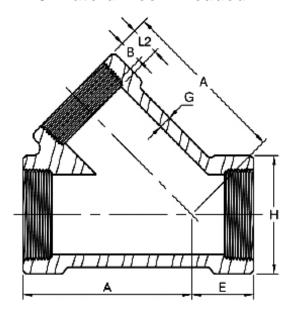
3000LB

Outlet Pipe		Δ.	0	_	
DN	Inch	Α	С	F	
8	1/4"	40.5	35.2	22.0	
10	3/8"	40.5	35.2	25.9	
15	1/2"	40.5	35.2	31.4	
20	3/4"	47.6	43.6	37.1	
25	1"	55.6	54.0	45.5	
32	1-1/4"	60.3	67.5	57.0	
40	1-1/2"	66.7	76.2	64.0	
50	2"	81.0	104.8	76.0	
65	2-1/2"	82.6	106.4	92.0	
80	3"	96.8	125.4	109.2	
100	4"	114.3	163.5	140.0	

Outlet Pipe		A	С	F	
DN	Inch	A	C	r	
8	1/4"	40.5	34.9	26.0	
10	3/8"	40.5	34.9	33.0	
15	1/2"	47.6	34.9	38.0	
20	3/4"	55.6	43.6	44.0	
25	1"	60.3	54.0	57.0	
32	1-1/4"	66.7	67.5	64.0	
40	1-1/2"	85.7	76.2	76.0	

- (1) Dimensions in Millimeters.
- (2) Thread in accordance with ASME B1.20.1
- (3) Dimensions may vary according to the customer's and manufacturer's requirement.

45° Lateral Tee Threaded



2000LB

DN	Nom. Pipe	Nom. Pipe Length of Thread (Min)		۸	Г	G ⁽²⁾	H ⁽²⁾
DIN	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		(Min)	П			
15	1/2"	10.9	13.6	46	20	3.18	33
20	3/4"	12.7	13.9	55	23	3.18	38
25	1"	14.7	17.3	65	26	3.68	46
32	1-1/4"	17.0	18.0	73	31	3.89	56
40	1-1/2"	17.8	18.4	82	35	4.01	62
50	2"	19.0	19.2	113	42	4.27	75
65	2-1/2"	23.6	28.9	136	56	5.61	92

3000LB

DN	Nom. Pipe Size	Length of T B (3)	hread (Min) L2 (3)	А	E	G ⁽²⁾ (Min)	H ⁽²⁾
15	1/2"	10.9	13.6	55	23	4.09	38
20	3/4"	12.7	13.9	65	26	4.32	46
25	1"	14.7	17.3	73	31	4.98	56
32	1-1/4"	17.0	18.0	82	35	5.28	62
40	1-1/2"	17.8	18.4	113	42	5.56	75
50	2"	19.0	19.2	136	56	7.14	84

- (1) Dimensions in Millimeters.
- (2) Dimensions refer to ANSI B16.11
- (3) Dimension B is minimum length of perfect thread.

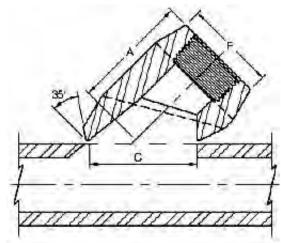
The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for pipe threads (ANSI/ASME B1.20.1)

- (4) Dimensions of BSP and PT are available if required.
- (5) Dimensions may vary according to the customer's and manufacturer's requirement.



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Lateral Outlet Threaded

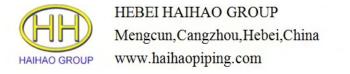


3000LB

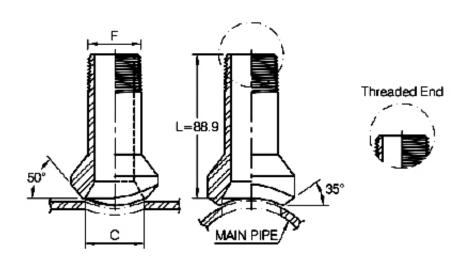
Outle	et Pipe	А	С	F
DN	Inch	A	C	Г
8	1/4"	40.5	35.2	22.0
10	3/8"	40.5	35.2	25.9
15	1/2"	40.5	35.2	31.4
20	3/4"	47.6	43.6	37.1
25	1"	55.6	54.0	45.5
32	1-1/4"	60.3	67.5	57.0
40	1-1/2"	66.7	76.2	64.0
50	2"	81.0	104.8	76.0
65	2-1/2"	82.6	106.4	92.0
80	3"	96.8	125.4	109.2
100	4"	114.3	163.5	140.0

Outle	et Pipe	Λ	C	F
DN	Inch	A	С	Г
8	1/4"	40.5	34.9	26.0
10	3/8"	40.5	34.9	33.0
15	1/2"	47.6	34.9	38.0
20	3/4"	55.6	43.6	44.0
25	1"	60.3	54.0	57.0
32	1-1/4"	66.7	67.5	64.0
40	1-1/2"	85.7	76.2	76.0

- (1) Dimensions in Millimeters.
- (2) Thread in accordance with ASME B1.20.1
- (3) Dimensions may vary according to the customer's and manufacturer's requirement.

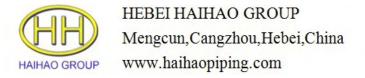


Nipple Branch Outlet Threaded



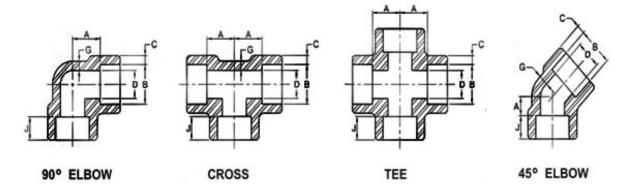
Outlet	(г
Pipe	3000LB	6000LB	Г
1/2"	23.8	13.8	21.3
3/4"	30.2	18.9	26.7
1"	36.5	24.3	33.4
1-1/4"	44.5	32.5	42.2
1-1/2"	50.8	38.1	48.3
2"	65.1	49.2	60.3

- (1) Dimensions in Millimeters.
- (2) Thread in accordance with ASME B1.20.1
- (3) Dimensions may vary according to the customer's and manufacturer's requirement.



Socket Weld Fittings

ASME B16.11-2009 (Revision of ASME B16.11-2005)



			Center	to Bott	om of So	cket-A		Socket	Bore [Dia. Of	Fitting		Socke		Thickr	ness (2))	Body V	Vall Thi G	ckness	Depth
DN	Nom. Pipe		o Elbows s, Crosse		4	5° Elbow	S	Bore Dia.		D			CI	ass De	signa	tion		Class	Design	nation	of Socket
	Size	Class	Designa	tion	Clas	s Designa	ation	В	Class	Design	nation	300	00	600	00	90	00	3000	6000	9000	Min. J
		3000	6000	9000	3000	6000	9000	Б	3000	6000	9000	Ave.	Min	Ave.	Min	Ave.	Min	Min.	Min.	Min.	3
6	1/8"	11.0	11.0		8.0	8.0		10.8	6.9	4.0		3.18	3.18	3.96	3.43			2.41	3.15		9.5
8	1/4"	11.0	13.5		8.0	8.0		14.2	9.3	6.4		3.78	3.30	4.60	4.01			3.02	3.68		9.5
10	3/8"	13.5	15.5		8.0	11.0		17.6	12.6	9.2		4.01	3.50	5.03	4.37			3.20	4.01		9.5
15	1/2"	15.5	19.0	25.5	11.0	12.5	15.5	21.8	15.8	11.8	6.4	4.67	4.09	5.97	5.18	9.35	8.18	3.73	4.78	7.47	9.5
20	3/4"	19.0	22.5	28.5	13.0	14.0	19.0	27.2	21.0	15.6	11.1	4.90	4.27	6.96	6.04	9.78	8.56	3.91	5.56	7.82	12.5
25	1"	22.5	27.0	32.0	14.0	17.5	20.5	33.9	26.7	20.7	15.2	5.69	4.98	7.92	6.93	11.38	9.96	4.55	6.35	9.09	12.5
32	1-1/4"	27.0	32.0	35.0	17.5	20.5	22.5	42.7	35.1	29.5	22.8	6.07	5.28	7.92	6.93	12.14	10.62	4.85	6.35	9.70	12.5
40	1-1/2"	32.0	38.0	38.0	20.5	25.5	25.5	48.8	40.9	34.0	28.0	6.35	5.54	8.92	7.80	12.70	11.12	5.08	7.14	10.15	12.5
50	2"	38.0	41.0	54.0	25.5	28.5	28.5	61.2	52.5	42.9	38.2	6.93	6.04	10.92	9.50	13.84	12.12	5.54	8.74	11.07	16.0
65	2-1/2"	41.0			28.5			73.9	62.7			8.76	7.67					7.01			16.0
80	3"	57.0			32.0			89.8	78.0			9.52	8.30					7.62			16.0
100	4"	66.5			41.0			115.2	102.3			10.69	9.35					8.56			19.0

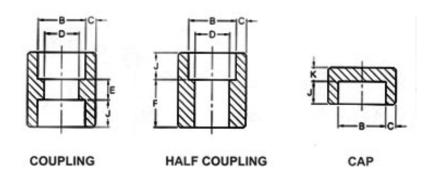
⁽¹⁾ Dimensions in Millimeters.
(2) Average of socket wall thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.
(3) Upper and lower values for each size are the respective maximum and minimum dimensions.



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Socket Weld Fittings

ASME B16.11-2009 (Revision of ASME B16.11-2005)



		Socket	Bore [Dia. Of Fi	tting		Socket	Wall TI C	nickne	ss (2)		Laying	Lengths		End	Wall Thick	ness
DN	Nom. Pipe	Bore Dia.		D			Cla	iss Des	ignatio	on		Coupling	Half	Depth of Socket		K Min.	
	Size	_	Class	Designa	tion	300	00	600	00	9	000		Coupling	Min. J	Cla	ss Designa	ition
		В	3000	6000	9000	Ave.	Min	Ave.	Min	Ave.	Min	Е	F		3000	6000	9000
6	1/8"	10.8	6.9	4.0		3.18	3.18	3.96	3.43			6.5	16.0	9.5	4.8	6.4	
8	1/4"	14.2	9.3	6.4		3.78	3.30	4.60	4.01			6.5	16.0	9.5	4.8	6.4	
10	3/8"	17.6	12.6	9.2		4.01	3.50	5.03	4.37			6.5	17.5	9.5	4.8	6.4	
15	1/2"	21.8	15.8	11.8	6.4	4.67	4.09	5.97	5.18	9.35	8.18	9.5	22.5	9.5	6.4	7.9	11.2
20	3/4"	27.2	21.0	15.6	11.1	4.90	4.27	6.96	6.04	9.78	8.56	9.5	24.0	12.5	6.4	7.9	12.7
25	1"	33.9	26.7	20.7	15.2	5.69	4.98	7.92	6.93	11.38	9.96	12.5	28.5	12.5	9.6	11.2	14.2
32	1-1/4"	42.7	35.1	29.5	22.8	6.07	5.28	7.92	6.93	12.14	10.62	12.5	30.0	12.5	9.6	11.2	14.2
40	1-1/2"	48.8	40.9	34.0	28.0	6.35	5.54	8.92	7.80	12.70	11.12	12.5	32.0	12.5	11.2	12.7	15.7
50	2"	61.2	52.5	42.9	38.2	6.93	6.04	10.92	9.50	13.84	12.12	19.0	41.0	16.0	12.7	15.7	19.0
65	2-1/2"	73.9	62.7			8.76	7.67					19.0	43.0	16.0	15.7	19.0	
80	3"	89.8	78.0			9.52	8.30					19.0	44.5	16.0	19.0	22.4	
100	4"	115.2	102.3			10.69	9.35					19.0	48.0	19.0	22.4	28.4	

⁽¹⁾ Dimensions in Millimeters.

⁽²⁾ Average of socket wall thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.

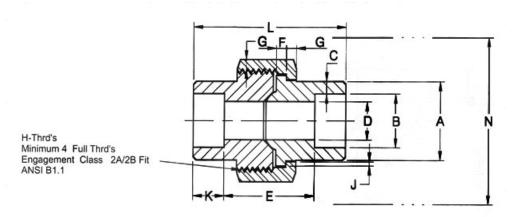
⁽³⁾ Reducer: C, J, E in accordance with large size.

D in accordance with small size

The others in accordance with each size.

Unions Socket Weld

Socket Weld End MSS-SP-83-2006



Nom. Pipe	Pipe End	Socket Bore Dia.	Socket Wall	Water Way Bore	Laying Length	Male Flange	Nut	Thread s Per 25.4mm	Bearing	Depth of Socket	Length Assem . Nom.	
Size	(Min.) A	В	(Min.) C	D	Е	(Min.) F	(Min.) G	Н	(Min.) J	(Min.) K	L	N
1/8"	21.8	11.18 10.67	3.18	7.59 6.07	22.4 19.1	3.18	3.18	16	1.24	9.7	41.4	50.8
1/4"	21.8	14.61 14.10	3.30	10.01 8.48	22.4 19.1	3.18	3.18	16	1.24	9.7	41.4	50.8
3/8"	25.9	18.03 17.53	3.51	13.28 11.76	26.9 20.6	3.43	3.43	14	1.37	9.7	46.0	55.9
1/2"	31.2	22.23 21.73	4.09	16.56 15.04	26.9 20.6	3.68	3.68	14	1.50	9.7	49.0	58.4
3/4"	37.1	27.56 27.05	4.27	21.69 20.17	31.8 25.4	4.06	4.06	11	1.68	12.7	56.9	66.0
1"	45.5	34.29 33.78	4.98	27.41 25.88	34.3 26.2	4.57	4.45	11	1.85	12.7	62.0	78.7
1-1/4"	54.9	43.05 42.55	5.28	35.81 34.29	40.6 32.5	5.33	5.21	11	2.13	12.7	71.1	94.0
1-1/2"	61.5	49.15 48.64	5.54	41.66 40.13	42.2 34.0	5.84	5.59	10	2.31	12.7	76.5	111.8
2"	75.2	61.62 61.11	6.05	53.26 51.74	45.5 37.3	6.60	6.35	10	2.69	15.7	86.1	132.1
2-1/2"	91.7	74.45 73.81	7.67	64.24 61.19	61.7 52.1	7.49	7.11	8	3.07	15.7	102.4	149.9
3"	109.2	90.42 89.79	8.31	79.45 76.40	63.8 53.6	8.26	8.00	8	3.53	15.7	109.0	175.3

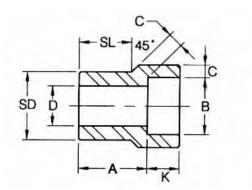
⁽¹⁾ Dimensions in Millimeters.

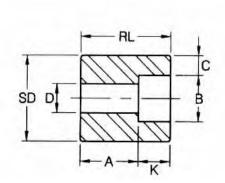
⁽²⁾ Upper and lower values for each size are the respective maximum and minimum dimensions.

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Reducer Inserts Socket Weld

Socket Welding MSS-SP-79-2009





Type 1

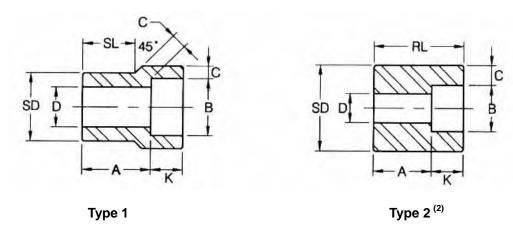
Type 2 (1)

			Type 1							Ту	pe 2 '''				
	т.,		Soc	cket	Shank			_					Ler	ngth	
Nom.	Ty	pe	Dia.	Depth	Dia.		Length	Bo	ore O	Wall		0	1	DI /	Min
Pipe Size	3000	6000		Min.		·	Α	L	J	,	,	S	L	KL (Min)
Size	3000	6000	В	K	SD	3000	6000	3000	6000	3000	6000	3000	6000	3000	6000
3/8"x1/4"	1	1	14.35	10	17.15	19	21	9.0	6.5	3.78	4.60	14	16		
1/2"x3/8"	1	1	17.78	10	21.34	21	23	12.5	9.0	4.01	5.03	16	16		
1/2"x1/4"	1	1	14.35	10	21.34	21	21	9.0	6.5	3.78	4.60	16	16		
3/4"x1/2"	1	1	21.97	10	26.67	22	25	16.0	11.5	4.67	5.97	17	19		
3/4"x3/8"	2	1	17.78	10	26.67	16	22	12.5	9.0	4.01	5.03		19	27	
3/4"x1/4"	2	2	14.35	10	26.67	18	22	9.0	6.5	3.78	4.60			27	32
1"x3/4"	1	1	27.31	13	33.40	24	28	21.0	15.5	4.90	6.96	19	21		
1"x1/2"	2	1	21.97	10	33.40	16	28	16.0	11.5	4.67	5.97		21	28	
1"x3/8"	2	2	17.78	10	33.40	18	22	12.5	9.0	4.01	5.03			28	33
1"x1/4"	2	2	14.35	10	33.40	19	24	9.0	6.5	3.78	4.60			28	33
1-1/4"x1"	1	1	34.04	13	42.16	25	30	26.5	20.5	5.69	7.92	21	22		
1-1/4"x3/4"	2	2	27.31	13	42.16	18	21	21.0	15.5	4.90	6.96			32	35
1-1/4"x1/2"	2	2	21.97	10	42.16	19	22	16.0	11.5	4.67	5.97			32	35
1-1/4"x3/8"	2	2	17.78	10	42.16	21	24	12.5	9.0	4.01	5.03			32	35
1-1/4"x1/4"	2	2	14.35	10	42.16	22	25	9.0	6.5	3.78	4.60			32	35
1-1/2"x1-1/4"	1	1	42.80	13	48.26	28	35	35.0	29.5	6.07	7.92	22	25		
1-1/2"x1"	2	1	34.04	13	48.26	18	29	26.5	20.5	5.69	7.92		25	33	
1-1/2"x3/4"	2	2	27.31	13	48.26	19	25	21.0	15.5	4.90	6.96			33	40
1-1/2"x1/2"	2	2	21.97	10	48.26	21	27	16.0	11.5	4.67	5.97			33	40
1-1/2"x3/8"	2	2	17.78	10	48.26	22	28	12.5	9.0	4.01	5.03			33	40
2"x1-1/2"	1	1	48.90	13	60.32	32	39	41.0	34.0	6.35	8.90	25	28		
2"x1-1/4"	2	2	42.80	13	60.32	21	24	35.0	29.5	6.07	7.92			38	41
2"x1"	2	2	34.04	13	60.32	22	25	26.5	21.0	5.69	7.92			38	41
2"x3/4"	2	2	27.31	13	60.32	24	27	21.0	15.5	4.90	6.96			38	41
2"x1/2"	2	2	21.97	10	60.32	25	28	16.0	11.5	4.67	5.97			38	41
2-1/2"x2"	1	1	61.37	16	73.02	46	43	52.5	43.0	6.93	10.92	32	38		
2-1/2"x1-1/2"	2	2	48.90	13	73.02	35	35	41.0	34.0	6.35				54	54
2-1/2"x1-1/4"	2	2	42.80	13	73.02	37	37	35.0	29.5	6.07				54	54
2-1/2"x1"	2	2	34.04	13	73.02	38	38	26.5	21.0	5.69				54	54
2-1/2"x3/4"	2	2	27.31	13	73.02	40	38	21.0	15.5	4.90				54	54
(Continued)															

(Continued)

Reducer Inserts Socket Weld

Socket Welding MSS-SP-79-2009



(Continued)

Ų	ontinued)															
		Tv	ре	Soc	cket		Lay	/ing	Во	ore	W	all		Len	gth	
	Nom. Pipe	1 9		Dia.	Depth	Shank Dia.	Ler	ngth A	[)	Mi		s	L	RL(Min)
	Size	3000	6000	В	Min. K	SD	3000	6000	3000	6000	3000	6000	3000	6000	3000	6000
Ī	3"x2-1/2"	1	1	74.07	16	88.90	38	57	62.5	54.0	8.76		32	45		
	3"x2"	2	2	61.37	16	88.90	25	32	52.5	43.0	6.93				48	54
	3"x1-1/2"	2	2	48.90	13	88.90	29	32	41.0	34.0	6.35				48	54
	3"x1-1/4"	2	2	42.80	13	88.90	30	32	35.0	29.5	6.07				48	54
	3"x1"	2	2	34.04	13	88.90	32	32	26.5	21.0	5.69				48	54
	4"x3"	2		90.04	16	114.30	33		78.0		9.50				60	
	4"x2-1/2"	2		74.07	16	114.30	38		62.5		8.76				60	
	4"x2"	2		61.37	16	114.30	38		52.5		6.93				60	
	4"x1-1/2"	2		48.90	13	114.30	42		41.0		6.35				60	
	4"x1-1/4"	2		42.80	13	114.30	43		35.0		6.07				60	

⁽¹⁾ Dimensions in Millimeters.

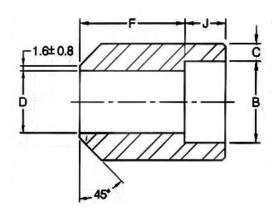
Dimensional Tolerance of Reducer Insert

Difficultional Tolerande of Reduce				
	Size 3/8"	through	3/4"	+ 1.50mm / -0.00mm
Laying Length A	Size 1"	through	2"	+ 2.00mm / -0.00mm
	Size 2-1/2"	through	4"	+ 2.50mm / -0.00mm
Socket Diameter B	Size 1/4"	through	2"	± 0.25mm
Socket Diameter B	Size 2-1/2"	through	3"	+ 0.40mm / -0.25mm
Bore D	Size 1/4"	through	2"	± 0.80mm
Bole D	Size 2-1/2"	through	3"	± 1.50mm
	Size 3/8"	through	1-1/2"	± 0.25mm
Shank Diameter SD	Size 2"	through	3"	± 0.50mm
	Size 4"			± 0.75mm
	Size 3/8"	through	3/4"	± 0.00mm / -1.50mm
Shank Length SL	Size 1"	through	2"	± 0.00mm / -2.00mm
	Size 2-1/2"	through	4"	± 0.00mm / -2.50mm

⁽²⁾ At the option of the manufacturer type 2 reducer may be furnished in type 1 configuration.

Bosses Socket Weld

BS3799-1974

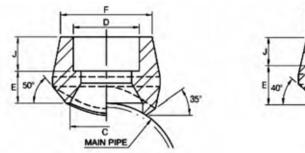


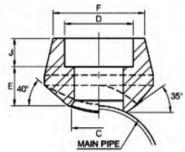
DN	Nom. Pipe	В		D		J lin)	F	=		C lin)
	Size	(Min)	3000lb	6000lb	3000lb	6000lb	3000lb	6000lb	3000lb	6000lb
6	1/8"	10.7	6.8		10.0		28.0		3.2	
8	1/4"	14.1	9.2		10.0		32.0		3.3	
10	3/8"	17.6	12.5		11.0		34.0		3.5	
15	1/2"	21.8	15.5	11.8	13.0	13.0	38.0	38.0	4.1	5.2
20	3/4"	27.4	21.0	15.5	13.0	13.0	38.0	38.0	4.3	6.1
25	1"	34.1	26.6	20.7	16.0	16.0	35.0	35.0	5.0	7.0
40	1-1/2"	49.0	40.5	34.0	19.0	19.0	32.0	32.0	5.6	7.8
50	2"	61.0	52.0	43.0	22.0	22.0	29.0	29.0	6.1	9.5
65	2-1/2"	73.8	62.0	54.0	22.0	22.0	29.0	29.0	7.7	10.4
80	3"	89.7	78.0	66.0	22.0	22.0	29.0	29.0	8.3	12.2

Dimensions in Millimeters.

Branch Outlet Socket Weld

Reducing Sizes MSS-SP-97-2006





REDUCING WAY

STRAIGHT WAY

Out-Let				F	Reducii	ng Way	/			
Pipe NPS	C		[)	F	=		J lin)		in)
INFO	3000	6000	3000	6000	3000	6000	3000	6000	3000	6000
1/8"	13.7		10.8		22.0		9.7		10.4	
1/4"	13.7		14.2		22.0		9.7		10.4	
3/8"	19.1		17.6		25.9		9.7		12.7	
1/2"	21.3	16.6	21.8	21.8	31.4	38.0	9.7	9.7	16.0	23.9
3/4"	26.7	21.2	27.2	27.2	37.1	44.0	12.7	12.7	16.0	25.4
1"	33.4	27.0	33.9	33.9	45.5	57.0	12.7	12.7	22.4	28.7
1-1/4"	42.2	35.8	42.7	42.7	57.0	64.0	12.7	12.7	22.4	30.2
1-1/2"	48.3	41.2	48.8	48.8	64.0	76.0	12.7	12.7	23.9	31.8
2"	60.3	51.6	61.2	61.2	76.0	92.0	15.8	15.8	23.9	36.6
2-1/2"	73.2		73.9		92.0		15.8		25.4	
3"	88.9		89.8		109.2		15.8		30.2	
4"	114.3		115.2		140.0		19.1		30.2	

Out-Let		Stra	aight V	Vay						
Pipe NPS	С	C D F		J (Min)	E (Min)					
IVI	3000									
1/8"										
1/4"	11.5	14.2	22.0	9.7	10.4					
3/8"	14.5	17.6	25.9	9.7	12.7					
1/2"	16.5	21.8	31.4	9.7	16.0					
3/4"	21.5	27.2	37.1	12.7	16.0					
1"	27.2	33.9	45.5	12.7	22.4					
1-1/4"	36.0	42.7	57.0	12.7	22.4					
1-1/2"	42.0	48.8	64.0	12.7	23.9					
2"	53.0	61.2	76.0	15.8	23.9					
2-1/2"	65.0	73.9	92.0	15.8	25.4					
3"	80.0	89.8	109.2	15.8	30.2					
4"	104.0	115.2	140.0	19.1	30.2					

Conventional Run Size Combinations

						OU	TLET SIZE					
		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
		3/8"~3/4"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	5"
	way	1"~36"	3/4"~1-1/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	6"
Pipe)			1-1/2"~36"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"	8"
l id	<u>.</u>			1-1/2"~3"	2"~3"	2-1/2"	3"	3-1/2"	4"	5"	6"	10"
				3-1/2"~36"	3-1/2"~6"	3"	3-1/2"~5"	4"~5"	5"~6"	6"	8"	12"~14"
(Main	Reducing				8"~36"	3-1/2"~4"	6"~8"	6"~10"	8"~10"	8"	10"	16"~18"
	<u>~</u>					5"~10"	10" ~ 36"	12"~36"	12"~18"	10"~14"	12"~16"	20"~24"
SIZE						12~36"			20"~36"	16"~36"	18"~36"	26"~36"
SI.											3-1/2"	5"
	l≢						1-1/2"	2"	2-1/2"	3"	4"	6"
RUN	raig way	3/8"~36"	1/2"~36"	3/4"~36"	1"~36"	1-1/4"~1-1/2"	2"~3"	2-1/2"~4"	3"~3-1/2"	3-1/2"~4"	5"	8"
4	Straight way	3/0 ~30	1/2 ~30	3/4 ~30	1 -30	2"~36"	3-1/2"~36"	5"~36"	4"~6"	5"~8"	6"	10"
	တ						0 1/2 ~00	0 00	8"~36"	10"~36"	8"~12"	12"~16"
											14"~36"	18"~36"

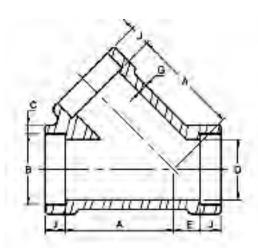
Each charted outlet size is designed to fit a number of run pipe size.

⁽¹⁾ Dimensions in Millimeters.

⁽²⁾ Socket in accordance with ASME B16.11

^{(3) 3000}LBS outlet size 4 and less fit a number of run pipe sizes and the fitting are marked accordingly.

45° Lateral Tee Socket Weld



3000LB

DN	Nom. Pipe	B (2)	B ⁽²⁾		D (1)	A	Е	G (2)	J ⁽²⁾
DIN	Size	D.	(Avg)	(Min)		A	_	(Min)	(Min)
15	1/2"	21.8	4.67	4.09	15.8	35	9	3.75	9.5
20	3/4"	27.2	4.90	4.27	21.0	41	9	3.95	12.5
25	1"	33.9	5.69	4.98	26.7	51	12	4.55	12.5
32	1-1/4"	42.7	6.07	5.28	35.1	59	17	4.85	12.5
40	1-1/2"	48.8	6.35	5.54	40.9	68	21	5.10	12.5
50	2"	61.2	6.93	6.04	52.5	95	24	5.55	16.0
65	2-1/2"	73.9	8.76	7.67	62.7	118	38	7.05	16.0

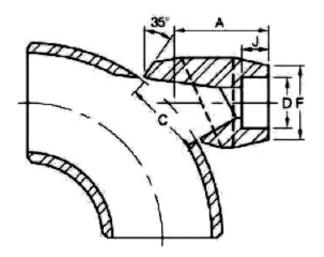
DNI	Nom. Pipe	B (2)	B (2)		D (2)	^	_	G (2)	J ⁽²⁾
DN	Size	B`′	(Avg)	(Min)	ט ׳׳	D (2) A	Е	(Min)	(Min)
15	1/2"	21.8	5.97	5.18	11.8	41	9	4.78	9.5
20	3/4"	27.2	6.96	6.04	15.6	51	12	5.56	12.5
25	1"	33.9	7.92	6.93	20.7	59	17	6.35	12.5
32	1-1/4"	42.7	7.92	6.93	29.5	68	21	6.35	12.5
40	1-1/2"	48.8	8.92	7.80	34.0	95	24	7.14	12.5
50	2"	61.2	10.92	9.50	42.9	106	31	8.74	16.0

- (1) Dimensions in Millimeters.
- (2) Dimensions refer to ANSI B16.11
- (3) Dimensions may vary according to the customer's and manufacturer's requirement.



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90° Elbow Outlet Socket Weld



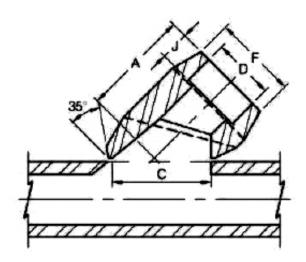
3000LB

Outle	et Pipe	Λ.	0	_	<u> </u>	
DN	Inch	А	С	F	D	J
8	1/4"	40.5	35.2	22.0	14.35	10.0
10	3/8"	40.5	35.2	25.9	17.80	10.0
15	1/2"	40.5	35.2	31.4	21.95	11.1
20	3/4"	47.6	43.6	37.1	27.30	12.7
25	1"	55.6	54.0	45.5	34.05	13.5
32	1-1/4"	60.3	67.5	57.0	42.80	15.1
40	1-1/2"	66.7	76.2	64.0	48.90	15.9
50	2"	81.0	104.8	76.0	61.35	17.5
65	2-1/2"	82.6	106.4	92.0	74.15	23.8
80	3"	96.8	125.4	109.2	90.10	28.6
100	4"	114.3	163.5	140.0	115.75	29.4

Outle	t Pipe	۸	С	F	<u></u>	
DN	Inch	А	C	Г	D	J
8	1/4"	40.5	34.9	26.0	14.35	10.0
10	3/8"	40.5	34.9	33.0	17.80	10.0
15	1/2"	47.6	34.9	38.0	21.95	10.0
20	3/4"	55.6	43.6	44.0	27.30	14.3
25	1"	60.3	54.0	57.0	34.05	15.9
32	1-1/4"	66.7	67.5	64.0	42.80	20.6
40	1-1/2"	85.7	76.2	76.0	48.90	20.6

- (1) Dimensions in Millimeters.
- (2) Dimensions refer to ANSI B16.11
- (3) Dimensions may vary according to the customer's and manufacturer's requirement.

Lateral Outlet Socket Weld



3000LB

Outle	t Pipe		0	F	5	
DN	Inch	A	С	F	D	J
8	1/4"	40.5	35.2	22.0	14.35	10.0
10	3/8"	40.5	35.2	25.9	17.80	10.0
15	1/2"	40.5	35.2	31.4	21.95	11.1
20	3/4"	47.6	43.6	37.1	27.30	12.7
25	1"	55.6	54.0	45.5	34.05	13.5
32	1-1/4"	60.3	67.5	57.0	42.80	15.1
40	1-1/2"	66.7	76.2	64.0	48.90	15.9
50	2"	81.0	104.8	76.0	61.35	17.5
65	2-1/2"	82.6	106.4	92.0	74.15	23.8
80	3"	96.8	125.4	109.2	90.10	28.6
100	4"	114.3	163.5	140.0	115.75	29.4

Outle	et Pipe	А	С	F	5	
DN	Inch	7		F	D	J
8	1/4"	40.5	34.9	26.0	14.35	10.0
10	3/8"	40.5	34.9	33.0	17.80	10.0
15	1/2"	47.6	34.9	38.0	21.95	10.0
20	3/4"	55.6	43.6	44.0	27.30	14.3
25	1"	60.3	54.0	57.0	34.05	15.9
32	1-1/4"	66.7	67.5	64.0	42.80	20.6
40	1-1/2"	85.7	76.2	76.0	48.90	20.6

- (1) Dimensions in Millimeters.
- (2) Dimensions refer to ANSI B16.11
- (3) Dimensions may vary according to the customer's and manufacturer's requirement.

Dimensional Tolerance of ASME B16.11

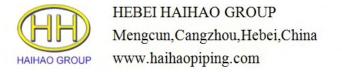
ASME B16.11-2001 Unit: m/m

		Nominal diameter						
Item	Type of pipe Fitting	DN	6 to 8	10 to 20	25 to 50	65 to 100		
		NPS	1/8 to 1/4	3/8 to 3/4	1 to 2	2-1/2 to 4		
Dara diameter of applicat (D)					+ 0.5			
Bore diameter of socket (B)	A.II.		- 0					
Bore diameter of fitting (D)	All types of Pipe Fitting		± 1.4					
Concentricity of bore (X)	riperiumg	± 0.8						
Coin cadence of axes (Y)			1 / 200 Max					
Center to bottom of socket (A)	45, 90D Elbow, Tee, Cross		± 1.0	± 1.5	± 2.0	± 2.5		
Bottom to bottom of socket (E)	Full Coupling		± 1.5	± 3.0	± 4.0	± 5.0		
Bottom of socket to opposite face (F)	Half Coupling		± 1.0	± 1.5	± 2.0	± 2.5		

Dimensional Tolerance of BS3799

BS3799-1974 Unit: m/m

		Nominal diameter					
Item	Type of pipe Fitting	DN	6 to 8	10 to 20	25 to 50	65 to 80	
		NPS	1/8 to 1/4	3/8 to 3/4	1 to 2	2-1/2 to 3	
Concentricity of bore (X)	All types of	± 0.8					
Coin cadence of axes (Y)	Pipe Fitting			1 / 200 N	1ax		
Bore diameter of fitting (b)	Boss, Hex Nipple	± 0.4 ±					
Bottom of socket to opposite face	Boss		± 0.8	± 1.5	± 2.0	± 2.5	



Weight List

Thread Fittings

inread Fittings													
Size Product		1/8"	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
	2000	0.10	0.08	0.13	0.25	0.35	0.53	0.82	1.06	1.70	3.14	4.81	10.21
90 Elbow	3000	0.10	0.14	0.29	0.43	0.69	1.14	1.42	2.63	2.92	5.99	8.88	14.85
	6000	0.17	0.33	0.45	0.80	1.31	1.61	2.93	3.79	7.31	9.88	17.73	15.76
	2000	0.09	0.08	0.10	0.20	0.27	0.41	0.68	0.82	1.41	3.46	5.44	8.96
45 Elbow	3000	0.09	0.12	0.24	0.34	0.56	0.94	1.03	2.05	2.23	3.71	5.97	8.96
	6000	0.11	0.27	0.39	0.63	1.07	1.27	2.24	2.54	4.37	7.01	14.16	11.36
	2000	0.13	0.12	0.17	0.31	0.43	0.69	1.07	1.39	2.16	4.11	6.12	14.74
Tee	3000	0.13	0.20	0.38	0.56	0.92	1.49	1.76	3.27	3.53	6.99	10.19	19.13
	6000	0.20	0.45	0.63	0.98	1.65	2.17	3.74	4.71	7.88	13.11	21.70	18.53
Cross	2000	0.17	0.14	0.21	0.39	0.54	0.83	1.26	1.75	2.65	5.26	7.58	16.35
Ciuss	3000	0.17	0.26	0.44	0.72	1.06	1.79	2.13	3.93	4.27	8.51	12.45	21.93
Full Coupling	3000	0.05	0.04	0.06	0.13	0.19	0.45	0.81	1.07	1.40	2.29	3.38	6.28
Full Coupling	6000	0.08	0.13	0.20	0.34	0.50	0.87	1.09	1.94	2.87	4.20	6.10	10.04
Half Coupling	3000	0.02	0.02	0.03	0.06	0.10	0.23	0.34	0.54	0.70	1.13	1.68	3.11
riali Coupling	6000	0.07	0.06	0.09	0.16	0.24	0.45	0.55	0.96	1.70	2.10	3.05	5.02
Red Coupling	3000	0.05	0.05	0.06	0.13	0.19	0.39	0.68	0.99	1.37	2.07	3.08	5.44
Red Coupling	6000	0.08	0.06	0.18	0.31	0.41	0.85	1.05	1.81	3.40	4.20	6.10	10.04
Сар	3000	0.02	0.04	0.05	0.11	0.18	0.37	0.62	0.72	1.09	2.22	3.50	4.84
Сар	6000	0.06	0.06	0.09	0.26	0.40	0.71	0.59	0.77	2.23			
Street Elbow	3000	0.13	0.11	0.22	0.31	0.53	1.02	1.13	2.01	2.91			
Union	3000	0.28	0.28	0.24	0.34	0.48	0.77	1.03	1.63	2.43	3.63	5.27	12.00
Hex. Nipple	3000	0.03	0.04	0.05	0.09	0.15	0.47	0.45	0.62	1.03	1.51	2.22	4.00
Square Head I	Plug	0.01	0.01	0.03	0.05	0.09	0.16	0.27	0.38	0.63	0.96	1.53	3.83
Hex. Head P	lug	0.01	0.03	0.05	0.07	0.14	0.22	0.44	0.59	1.03	1.80	2.60	5.20
Round Head F	Plug	0.02	0.45	0.07	0.12	0.20	0.34	0.55	0.79	1.47	2.34	3.26	6.24
Hex. Head Bus	shing		0.01	0.01	0.03	0.05	0.09	0.25	0.34	0.45	0.60	1.16	3.20

Unit: KGS

Socket Weld Fittings

Socker Mein Lit	ungs												
Size Product		1/8"	1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
90 Elbow	3000	0.09	0.08	0.12	0.22	0.33	0.53	0.84	1.08	1.68	3.20	5.38	10.95
90 EIDOW	6000	0.10	0.15	0.29	0.40	0.73	1.17	1.48	2.79	3.28			
45 Elbow	3000	0.08	0.07	0.11	0.20	0.28	0.42	0.69	0.80	1.35	2.53	5.10	9.41
43 EIDOW	6000	0.09	0.14	0.26	0.36	0.57	0.92	1.11	2.01	2.09			
Tee	3000	0.13	0.09	0.15	0.29	0.42	0.65	1.04	1.35	2.04	3.98	5.90	13.92
166	6000	0.14	0.20	0.43	0.56	0.94	1.49	1.93	3.37	3.95			
Cross	3000	0.16	0.13	0.20	0.35	0.47	0.73	1.12	1.58	2.25	4.37	6.69	14.58
C1055	6000	0.17	0.26	0.45	0.67	1.07	1.75	2.26	3.96	4.42			
Full Coupling	3000	0.04	0.05	0.07	0.13	0.17	0.29	0.45	0.59	0.86	1.40	1.78	2.85
Full Coupling	6000	0.05	0.07	0.114	0.204	0.27	0.44	0.60	1.11	1.62			
Half Coupling	3000	0.04	0.05	0.07	0.13	0.21	0.30	0.34	0.66	1.09	1.63	2.10	3.71
Hall Coupiling	6000	0.06	0.09	0.12	0.21	0.31	0.51	0.75	1.25	1.92			
Red Coupling	3000	0.04	0.05	0.07	0.13	0.19	0.27	0.49	0.59	0.97	1.42	1.88	3.31
Red Coupling	6000				0.24	0.33	0.65	0.75	1.20	2.12			
Con	3000	0.03	0.04	0.07	0.10	0.16	0.25	0.45	0.59	0.96	1.43	2.74	4.24
Сар	6000	0.05	0.08	0.10	0.16	0.23	0.36	0.64	0.94	1.41			
Union	3000	0.28	0.28	0.25	0.35	0.49	0.81	1.10	1.61	2.16	3.50	5.15	11.59
11 1/ 1/00													

Unit: KGS