

SUPERIOR

HYDROLIQUE PVT LTD



FORGED FITTINGS

CATALOGUE

STANDARDS : -

FORGED STEEL FITTING

- ASMR B 16.11
- ASTM A733-03
- BS 3799
- MSS SP - 79
- MSS SP - 83
- MSS SP - 95

BRANCH OUTLET

- MSS SP 97

PRODUCTION RANGE AND SPECIFICATION

TYPE	A. ELBOW, TEE, COUPLING, HALF COUPLING, CAP, PLUG, BUSHING, UNION, OUTLET, SWAGE NIPPLE, BULL PLUG, REDUCER INSERT AND HEX. NIPPLE, STREET ELBOWS, BOSS,.....ETC. B. SOCKET-WELD, THREADED (NPT, AND PT, AND BSP(IS07-1, 150228-1)), BUTT-WELDING.
SIZE	NPS 1/8" - 2"
RATING	PRESSURE : THREADED END - 2000 / 3000 / 6000 LBS. SOCKET-WELD END - 3000 / 6000 / 9000 LBS. BUTT WELD END - SCH40 / SCH80 / SCH160 / XXS
SPECIFICATIONS	A. DIM. SPEC. : ASME B16.11 MSS SP-79, 83, 95, 97 and BS3799. B. MATERIAL SPEC: ASME/ASTM SA/A105, SA/A350 LF2, SA/A106, SA/A312, SA/A234, SA/A403. ASME/ASTM SA/A182(F304,F304L,F316,F316L,F304H,F316H,F317L,F321,F5,F9,F11,F22,F44,F51/60,F53,F91).
MARKING	A. CARBON and ALLOY STEEL: MARKED BY STAMPING or LASER MARKING. B. STAINLESS STEEL: MARKED BY JET PRINTING or STAMPING or LASER MARKING. C. 3/8" UNDER: MATERIAL ONLY. D. 1/2" to 4" : MARKED WITH MATERIAL, HEAT CODE, B16(FOR ASME B16.11 PRODUCT), RATING and SIZE.
FINISHING	CARBON STEEL - GALVANIZED, PHOSPHATE, or ANTI-RUST OIL COATING. LOW ALLOY STEEL - PHOSPHATE, or ANTI-RUST OIL COATING. STAINLESS STEEL - PICKLED.
PACKING	CARTON / PALLET PLYWOODEN CASE.

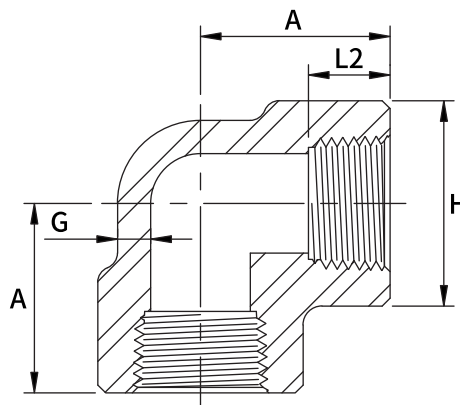
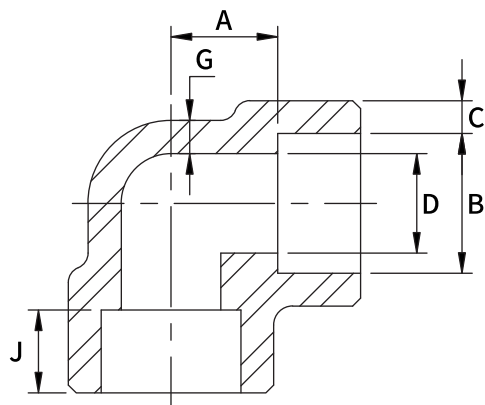
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FORGED HIGH PRESSURE PIPE FITTING

Sr. No.	Name	Pg No.
1	90° ELBOW	1
2	45° ELBOW	2
3	Tee	3
4	Cross	4
5	Full Coupling	5
6	Half Coupling	6
7	Cap	7
8	Square Head & Round Head Plug	8
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90° ELBOW

Asme B16.11-2016



Socket Welding							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
3000Lb							
6	1/8	10.8	3.20	6.9	11.0	2.41	10.5
8	1/4	14.2	3.80	9.3	11.0	3.02	10.5
10	3/8	17.6	4.05	12.6	13.5	3.20	10.5
15	1/2	21.8	4.70	15.8	15.5	3.73	12.5
20	3/4	27.2	4.90	21.0	19.0	3.91	14.0
25	1	33.9	5.70	26.7	22.5	4.55	15.0
32	1-1/4	42.7	6.10	35.1	27.0	4.85	17.0
40	1-1/2	48.8	6.40	40.9	32.0	5.08	17.5
50	2	61.2	6.95	52.5	38.0	5.54	22.0

Threaded					
DN	Nom. Pipe Size	Length of Thread.	A	G (Min)	H
		L2			
2000Lb					
6	1/8	8.8	21	3.18	22
8	1/4	11.4	21	3.18	22
10	3/8	12.4	25	3.18	25
15	1/2	14.9	28	3.18	33
20	3/4	16.8	33	3.18	38
25	1	19.6	38	3.68	46
32	1-1/4	21.9	44	3.89	56
40	1-1/2	22.7	51	4.01	62
50	2	23.9	60	4.27	75

6000Lb							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
6	1/8	10.8	4.00	4.0	11.0	3.15	10.5
8	1/4	14.2	4.60	6.4	13.5	3.68	10.5
10	3/8	17.6	5.05	9.2	15.5	4.01	12.5
15	1/2	21.8	6.00	11.8	19.0	4.78	14.0
20	3/4	27.2	7.00	15.6	22.5	5.56	15.0
25	1	33.9	7.95	20.7	27.0	6.35	17.0
32	1-1/4	42.7	7.95	29.5	32.0	6.35	17.5
40	1-1/2	48.8	8.95	34.0	38.0	7.14	22.0
50	2	61.2	10.95	42.9	41.0	8.74	22.0

3000Lb					
DN	Nom. Pipe Size	Length of Thread.	A	G (Min)	H
		L2			
6	1/8	8.8	21	3.18	22
8	1/4	11.4	25	3.30	25
10	3/8	12.4	28	3.51	33
15	1/2	14.9	33	4.09	38
20	3/4	16.8	38	4.32	46
25	1	19.6	44	4.98	56
32	1-1/4	21.9	51	5.28	62
40	1-1/2	22.7	60	5.56	75
50	2	23.9	64	7.14	84

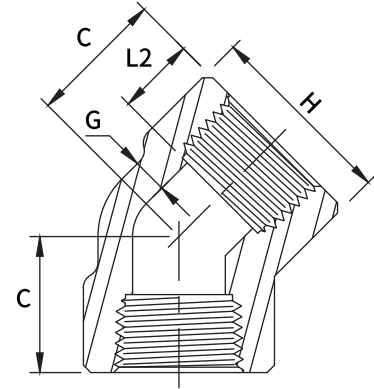
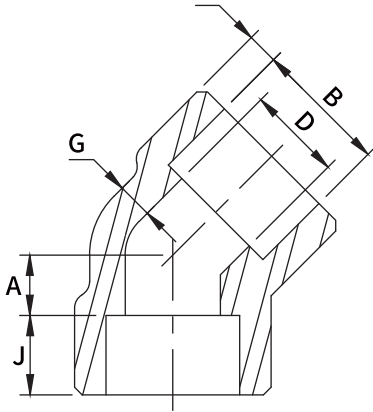
9000Lb							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
15	1/2	21.8	9.35	6.4	25.5	7.47	12.5
20	3/4	27.2	9.80	11.1	28.5	7.82	15.0
25	1	33.9	11.40	15.2	32.0	9.09	17.5
32	1-1/4	42.7	12.15	22.8	35.0	9.70	22.0
40	1-1/2	48.8	12.70	28.0	38.0	10.15	22.0
50	2	61.2	13.85	38.2	54.0	11.07	22.0

6000Lb					
DN	Nom. Pipe Size	Length of Thread.	A	G (Min)	H
		L2			
6	1/8	8.8	25	6.35	25
8	1/4	11.4	28	6.60	33
10	3/8	12.4	33	6.98	38
15	1/2	14.9	38	8.15	46
20	3/4	16.8	44	8.53	56
25	1	19.6	51	9.93	62
32	1-1/4	21.9	60	10.59	75
40	1-1/2	22.7	64	11.07	84

*All Dimensions In Millimeters.

45° Elbow

Asme B16.11-2016



Socket Welding							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
3000Lb							
6	1/8	10.8	3.20	6.9	8.0	2.41	10.5
8	1/4	14.2	3.80	9.3	8.0	3.02	10.5
10	3/8	17.6	4.05	12.6	8.0	3.20	10.5
15	1/2	21.8	4.70	15.8	11.0	3.73	11.5
20	3/4	27.2	4.90	21.0	13.0	3.91	13.0
25	1	33.9	5.70	26.7	14.0	4.55	15.0
32	1-1/4	42.7	6.10	35.1	17.5	4.85	15.5
40	1-1/2	48.8	6.40	40.9	20.5	5.08	14.5
50	2	61.2	6.95	52.5	25.5	5.54	22.0

Threaded					
DN	Nom. Pipe Size	Length of Thread. L2	A	G (Min)	H
2000Lb					
6	1/8	8.8	17	3.18	22
8	1/4	11.4	17	3.18	22
10	3/8	12.4	19	3.18	25
15	1/2	14.9	22	3.18	33
20	3/4	16.8	25	3.18	38
25	1	19.6	28	3.68	46
32	1-1/4	21.9	33	3.89	56
40	1-1/2	22.7	35	4.01	62
50	2	23.9	43	4.27	75

6000Lb							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
6	1/8	10.8	4.00	4.0	8.0	3.15	10.0
8	1/4	14.2	4.60	6.4	8.0	3.68	10.5
10	3/8	17.6	5.05	9.2	11.0	4.01	10.5
15	1/2	21.8	6.00	11.8	12.5	4.78	12.5
20	3/4	27.2	7.00	15.6	14.0	5.56	14.0
25	1	33.9	7.95	20.7	17.5	6.35	15.0
32	1-1/4	42.7	7.95	29.5	20.5	6.35	15.0
40	1-1/2	48.8	8.95	34.0	25.5	7.14	17.0
50	2	61.2	10.95	42.9	28.5	8.74	16.5

3000Lb					
DN	Nom. Pipe Size	Length of Thread. L2	A	G (Min)	H
6	1/8	8.8	17	3.18	22
8	1/4	11.4	19	3.30	25
10	3/8	12.4	22	3.51	33
15	1/2	14.9	25	4.09	38
20	3/4	16.8	28	4.32	46
25	1	19.6	33	4.98	56
32	1-1/4	21.9	35	5.28	62
40	1-1/2	22.7	43	5.56	75
50	2	23.9	44	7.14	84

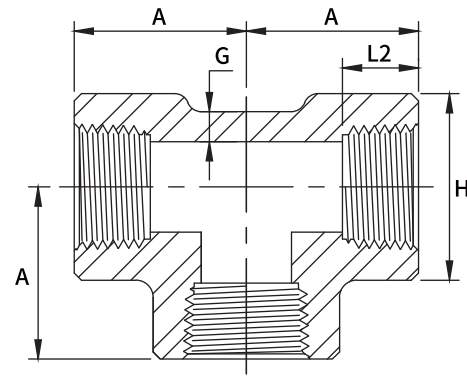
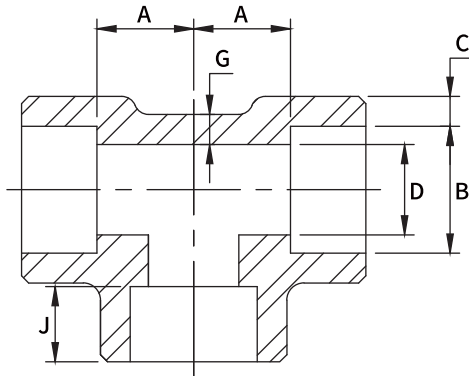
9000Lb							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
15	1/2	21.8	9.35	6.4	15.5	7.47	12.5
20	3/4	27.2	9.80	11.1	19.0	7.82	14.0
25	1	33.9	11.40	15.2	20.5	9.09	15.0
32	1-1/4	42.7	12.15	22.8	22.5	9.70	20.0
40	1-1/2	48.8	12.70	28.0	25.5	10.15	17.5
50	2	61.2	13.85	38.2	28.5	11.07	22.0

6000Lb					
DN	Nom. Pipe Size	Length of Thread. L2	A	G (Min)	H
6	1/8	8.8	19	6.35	25
8	1/4	11.4	22	6.60	33
10	3/8	12.4	25	6.98	38
15	1/2	14.9	28	8.15	46
20	3/4	16.8	33	8.53	56
25	1	19.6	35	9.93	62
32	1-1/4	21.9	43	10.59	75
40	1-1/2	22.7	44	11.07	84

*All Dimensions In Millimeters.

TEE

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Socket Welding							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
3000Lb							
6	1/8	10.8	3.20	6.9	11.0	2.41	10.5
8	1/4	14.2	3.80	9.3	11.0	3.02	10.5
10	3/8	17.6	4.05	12.6	13.5	3.20	10.5
15	1/2	21.8	4.70	15.8	15.5	3.73	12.5
20	3/4	27.2	4.90	21.0	19.0	3.91	14.0
25	1	33.9	5.70	26.7	22.5	4.55	15.0
32	1-1/4	42.7	6.10	35.1	27.0	4.85	17.0
40	1-1/2	48.8	6.40	40.9	32.0	5.08	17.5
50	2	61.2	6.95	52.5	38.0	5.54	22.0
65	2-1/2	73.9	8.80	62.7	41.0	7.01	34.0
80	3	89.8	9.55	78.0	57.0	7.62	28.0
100	4	115.2	10.70	102.3	66.5	8.56	38.5

6000Lb							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
6	1/8	10.8	4.00	4.0	11.0	3.15	10.5
8	1/4	14.2	4.60	6.4	13.5	3.68	10.5
10	3/8	17.6	5.05	9.2	15.5	4.01	12.5
15	1/2	21.8	6.00	11.8	19.0	4.78	14.0
20	3/4	27.2	7.00	15.6	22.5	5.56	15.0
25	1	33.9	7.95	20.7	27.0	6.35	17.0
32	1-1/4	42.7	7.95	29.5	32.0	6.35	17.5
40	1-1/2	48.8	8.95	34.0	38.0	7.14	22.0
50	2	61.2	10.95	42.9	41.0	8.74	22.0

9000Lb							
DN	Nom. Pipe Size	B	C	D	A	G (Min)	J
15	1/2	21.8	9.35	6.4	25.5	7.47	12.5
20	3/4	27.2	9.80	11.1	28.5	7.82	15.0
25	1	33.9	11.40	15.2	32.0	9.09	17.5
32	1-1/4	42.7	12.15	22.8	35.0	9.70	22.0
40	1-1/2	48.8	12.70	28.0	38.0	10.15	22.0
50	2	61.2	13.85	38.2	54.0	11.07	22.0

Threaded					
DN	Nom. Pipe Size	Length of Thread. L2	A	G (Min)	H
2000Lb					
6	1/8	8.8	21	3.18	22
8	1/4	11.4	21	3.18	22
10	3/8	12.4	25	3.18	25
15	1/2	14.9	28	3.18	33
20	3/4	16.8	33	3.18	38
25	1	19.6	38	3.68	46
32	1-1/4	21.9	44	3.89	56
40	1-1/2	22.7	51	4.01	62
50	2	23.9	60	4.27	75
65	2-1/2	30.5	76	5.61	92
80	3	32.8	86	5.99	109
100	4	34.6	106	6.55	146

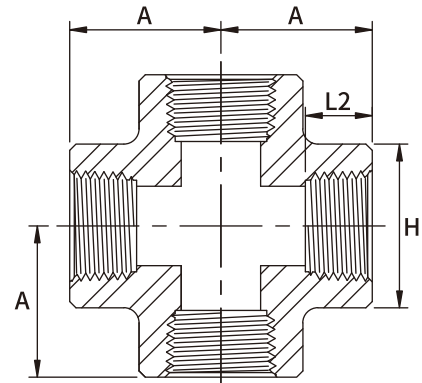
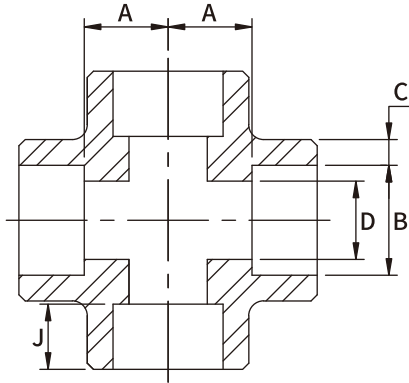
3000Lb					
DN	Nom. Pipe Size	Length of Thread. L2	A	G (Min)	H
6	1/8	8.8	21	3.18	22
8	1/4	11.4	25	3.30	25
10	3/8	12.4	28	3.51	33
15	1/2	14.9	33	4.09	38
20	3/4	16.8	38	4.32	46
25	1	19.6	44	4.98	56
32	1-1/4	21.9	51	5.28	62
40	1-1/2	22.7	60	5.56	75
50	2	23.9	64	7.14	84
65	2-1/2	30.5	83	7.65	102
80	3	32.8	95	8.84	121
100	4	34.6	114	11.18	152

6000Lb					
DN	Nom. Pipe Size	Length of Thread. L2	A	G (Min)	H
6	1/8	8.8	25	6.35	25
8	1/4	11.4	28	6.60	33
10	3/8	12.4	33	6.98	38
15	1/2	14.9	38	8.15	46
20	3/4	16.8	44	8.53	56
25	1	19.6	51	9.93	62
32	1-1/4	21.9	60	10.59	75
40	1-1/2	22.7	64	11.07	84
50	2	23.9	83	12.09	102
65	2-1/2	30.5	95	15.29	121
80	3	32.8	106	16.64	146
100	4	34.6	114	18.67	152

*All Dimensions In Millimeters.

CROSS

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Socket Welding						
DN	Nom. Pipe Size	B	C	D	A	J
3000Lb						
6	1/8	10.8	3.20	6.9	11.0	10.5
8	1/4	14.2	3.80	9.3	11.0	10.5
10	3/8	17.6	4.05	12.6	13.5	10.5
15	1/2	21.8	4.70	15.8	15.5	12.5
20	3/4	27.2	4.90	21.0	19.0	14.0
25	1	33.9	5.70	26.7	22.5	15.0
32	1-1/4	42.7	6.10	35.1	27.0	17.0
40	1-1/2	48.8	6.40	40.9	32.0	17.5
50	2	61.2	6.95	52.5	38.0	22.0
65	2-1/2	73.9	8.80	62.7	41.0	34.0
80	3	89.8	9.55	78.0	57.0	28.0
100	4	115.2	10.70	102.3	66.5	38.5

6000Lb						
DN	Nom. Pipe Size	B	C	D	A	J
6	1/8	10.8	4.00	4.0	11.0	10.5
8	1/4	14.2	4.60	6.4	13.5	10.5
10	3/8	17.6	5.05	9.2	15.5	12.5
15	1/2	21.8	6.00	11.8	19.0	14.0
20	3/4	27.2	7.00	15.6	22.5	15.0
25	1	33.9	7.95	20.7	27.0	17.0
32	1-1/4	42.7	7.95	29.5	32.0	17.5
40	1-1/2	48.8	8.95	34.0	38.0	22.0
50	2	61.2	10.95	42.9	41.0	22.0

9000Lb						
DN	Nom. Pipe Size	B	C	D	A	J
15	1/2	21.8	9.35	6.4	25.5	12.5
20	3/4	27.2	9.80	11.1	28.5	15.0
25	1	33.9	11.40	15.2	32.0	17.5
32	1-1/4	42.7	12.15	22.8	35.0	22.0
40	1-1/2	48.8	12.70	28.0	38.0	22.0
50	2	61.2	13.85	38.2	54.0	22.0

Threaded				
DN	Nom. Pipe Size	Length of Thread.	A	H
		L2		
2000Lb				
6	1/8	8.8	21	22
8	1/4	11.4	21	22
10	3/8	12.4	25	25
15	1/2	14.9	28	33
20	3/4	16.8	33	38
25	1	19.6	38	46
32	1-1/4	21.9	44	56
40	1-1/2	22.7	51	62
50	2	23.9	60	75
65	2-1/2	30.5	76	92
80	3	32.8	86	109
100	4	34.6	106	146

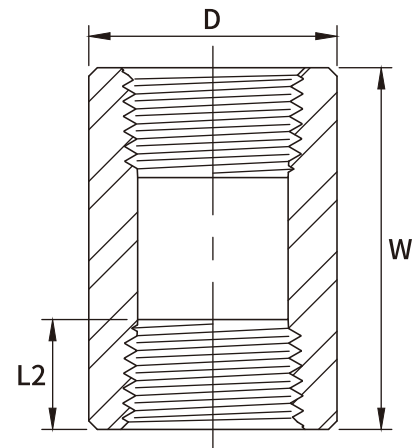
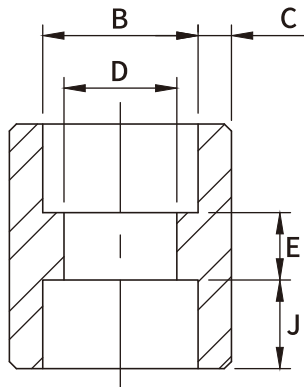
3000Lb				
DN	Nom. Pipe Size	Length of Thread.	A	H
		L2		
6	1/8	8.8	21	22
8	1/4	11.4	25	25
10	3/8	12.4	28	33
15	1/2	14.9	33	38
20	3/4	16.8	38	46
25	1	19.6	44	56
32	1-1/4	21.9	51	62
40	1-1/2	22.7	60	75
50	2	23.9	64	84
65	2-1/2	30.5	83	102
80	3	32.8	95	121
100	4	34.6	114	152

6000Lb				
DN	Nom. Pipe Size	Length of Thread.	A	H
		L2		
6	1/8	8.8	25	25
8	1/4	11.4	28	33
10	3/8	12.4	33	38
15	1/2	14.9	38	46
20	3/4	16.8	44	56
25	1	19.6	51	62
32	1-1/4	21.9	60	75
40	1-1/2	22.7	64	84
50	2	23.9	83	102
65	2-1/2	30.5	95	121
80	3	32.8	106	146
100	4	34.6	114	152

*All Dimensions In Millimeters.

FULL COUPLING

Asme B16.11-2016



Socket Welding						
DN	Nom. Pipe Size	B	C	D	E	J
3000Lb						
6	1/8	10.8	3.20	6.9	6.5	10.5
8	1/4	14.2	3.80	9.3	6.5	10.5
10	3/8	17.6	4.05	12.6	6.5	10.5
15	1/2	21.8	4.70	15.8	9.5	12.5
20	3/4	27.2	4.90	21.0	9.5	14.0
25	1	33.9	5.70	26.7	12.5	15.0
32	1-1/4	42.7	6.10	35.1	12.5	17.0
40	1-1/2	48.8	6.40	40.9	12.5	17.5
50	2	61.2	6.95	52.5	19.0	22.0
65	2-1/2	73.9	8.80	62.7	19.0	22.0
80	3	89.8	9.55	78.0	19.0	22.0
100	4	115.2	10.70	102.3	19.0	22.0

Threaded				
DN	Nom. Pipe Size	Length of Thread.	W	D
		L2		
3000Lb				
6	1/8	8.8	32	16
8	1/4	11.4	35	19
10	3/8	12.4	38	22
15	1/2	14.9	48	28
20	3/4	16.8	51	35
25	1	19.6	60	44
32	1-1/4	21.9	67	57
40	1-1/2	22.7	79	64
50	2	23.9	86	76
65	2-1/2	30.5	92	92
80	3	32.8	108	108
100	4	34.6	121	140

6000Lb						
DN	Nom. Pipe Size	B	C	D	E	J
6	1/8	10.8	4.00	4.0	6.5	10.5
8	1/4	14.2	4.60	6.4	6.5	10.5
10	3/8	17.6	5.05	9.2	6.5	10.5
15	1/2	21.8	6.00	11.8	9.5	12.5
20	3/4	27.2	7.00	15.6	9.5	14.0
25	1	33.9	7.95	20.7	12.5	15.0
32	1-1/4	42.7	7.95	29.5	12.5	17.0
40	1-1/2	48.8	8.95	34.0	12.5	17.5
50	2	61.2	10.95	42.9	19.0	22.0

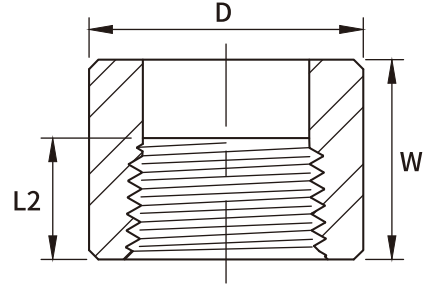
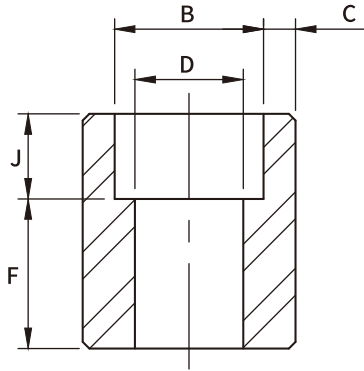
6000Lb				
DN	Nom. Pipe Size	Length of Thread.	W	D
		L2		
6	1/8	8.8	32	22
8	1/4	11.4	35	25
10	3/8	12.4	38	32
15	1/2	14.9	48	38
20	3/4	16.8	51	44
25	1	19.6	60	57
32	1-1/4	21.9	67	64
40	1-1/2	22.7	79	76
50	2	23.9	86	92
65	2-1/2	30.5	92	108
80	3	32.8	108	127
100	4	34.6	121	159

9000Lb						
DN	Nom. Pipe Size	B	C	D	E	J
15	1/2	21.8	9.35	6.4	9.5	12.5
20	3/4	27.2	9.80	11.1	9.5	14.0
25	1	33.9	11.40	15.2	12.5	15.0
32	1-1/4	42.7	12.15	22.8	12.5	17.0
40	1-1/2	48.8	12.70	28.0	12.5	17.5
50	2	61.2	13.85	38.2	19.0	22.0

*All Dimensions In Millimeters.

HALF COUPLING

Asme B16.11-2016



Socket Welding						
DN	Nom. Pipe Size	B	C	D	F	J
3000Lb						
6	1/8	10.8	3.20	6.9	16.0	10.5
8	1/4	14.2	3.80	9.3	16.0	10.5
10	3/8	17.6	4.05	12.6	17.5	10.5
15	1/2	21.8	4.70	15.8	22.5	12.5
20	3/4	27.2	4.90	21.0	24.0	14.0
25	1	33.9	5.70	26.7	28.5	15.0
32	1-1/4	42.7	6.10	35.1	30.0	17.0
40	1-1/2	48.8	6.40	40.9	32.0	17.5
50	2	61.2	6.95	52.5	41.0	22.0
65	2-1/2	73.9	8.80	62.7	43.0	22.0
80	3	89.8	9.55	78.0	44.5	22.0
100	4	115.2	10.70	102.3	48.0	22.0

Threaded				
DN	Nom. Pipe Size	Length of Thread.	W	D
		L2		
3000Lb				
6	1/8	8.8	16.0	16
8	1/4	11.4	17.5	19
10	3/8	12.4	19.0	22
15	1/2	14.9	24.0	28
20	3/4	16.8	25.5	35
25	1	19.6	30.0	44
32	1-1/4	21.9	33.5	57
40	1-1/2	22.7	39.5	64
50	2	23.9	43.0	76
65	2-1/2	30.5	46.0	92
80	3	32.8	54.0	108
100	4	34.6	60.5	140

6000Lb						
DN	Nom. Pipe Size	B	C	D	F	J
6	1/8	10.8	4.00	4.0	16.0	10.5
8	1/4	14.2	4.60	6.4	16.0	10.5
10	3/8	17.6	5.05	9.2	17.5	10.5
15	1/2	21.8	6.00	11.8	22.5	12.5
20	3/4	27.2	7.00	15.6	24.0	14.0
25	1	33.9	7.95	20.7	28.5	15.0
32	1-1/4	42.7	7.95	29.5	30.0	17.0
40	1-1/2	48.8	8.95	34.0	32.0	17.5
50	2	61.2	10.95	42.9	41.0	22.0

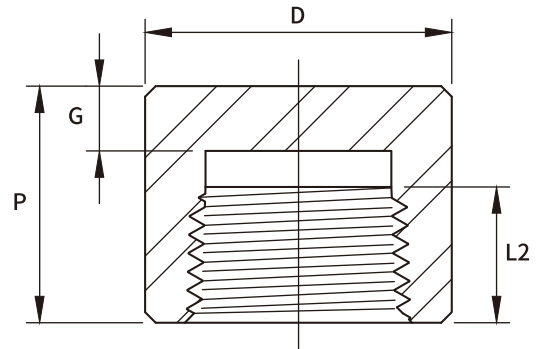
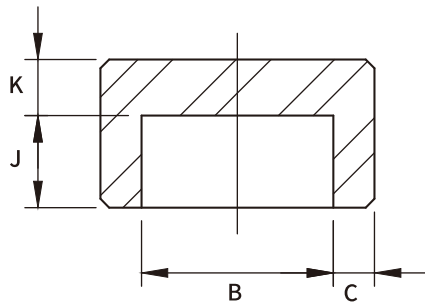
6000Lb				
DN	Nom. Pipe Size	Length of Thread.	W	D
		L2		
6	1/8	8.8	16.0	22
8	1/4	11.4	17.5	25
10	3/8	12.4	19.0	32
15	1/2	14.9	24.0	38
20	3/4	16.8	25.5	44
25	1	19.6	30.0	57
32	1-1/4	21.9	33.5	64
40	1-1/2	22.7	39.5	76
50	2	23.9	43.0	92
65	2-1/2	30.5	46.0	108
80	3	32.8	54.0	127
100	4	34.6	60.5	159

9000Lb						
DN	Nom. Pipe Size	B	C	D	F	J
15	1/2	21.8	9.35	6.4	22.5	12.5
20	3/4	27.2	9.80	11.1	24.0	14.0
25	1	33.9	11.40	15.2	28.5	15.0
32	1-1/4	42.7	12.15	22.8	30.0	17.0
40	1-1/2	48.8	12.70	28.0	32.0	17.5
50	2	61.2	13.85	38.2	41.0	22.0

*All Dimensions In Millimeters.

CAP

Asme B16.11-2016



Socket Welding					
DN	Nom. Pipe Size	B	C	K	J
3000Lb					
6	1/8	10.8	3.20	7	10.5
8	1/4	14.2	3.80	7	10.5
10	3/8	17.6	4.05	8.6	10.5
15	1/2	21.8	4.70	11.7	10.5
20	3/4	27.2	4.90	10.4	15
25	1	33.9	5.70	12	15
32	1-1/4	42.7	6.10	15.2	15
40	1-1/2	48.8	6.40	16.8	15
50	2	61.2	6.95	19.1	19
65	2-1/2	73.9	8.80	22	19
80	3	89.8	9.55	25.5	19
100	4	115.2	10.70	26.6	21

Threaded					
DN	Nom. Pipe Size	Length of Thread. L2	P	D	G
3000Lb					
6	1/8	8.8	19	16	4.8
8	1/4	11.4	25	19	4.8
10	3/8	12.4	25	22	4.8
15	1/2	14.9	32	28	6.4
20	3/4	16.8	37	35	6.4
25	1	19.6	41	44	9.7
32	1-1/4	21.9	44	57	9.7
40	1-1/2	22.7	44	64	11.2
50	2	23.9	48	76	12.7
65	2-1/2	30.5	60	92	15.7
80	3	32.8	65	108	19.0
100	4	34.6	68	140	22.4

6000Lb					
DN	Nom. Pipe Size	B	C	K	J
6	1/8	10.8	4.00	9.5	10.5
8	1/4	14.2	4.60	10.5	10.5
10	3/8	17.6	5.05	12.5	10.5
15	1/2	21.8	6.00	14.5	10.5
20	3/4	27.2	7.00	13	15
25	1	33.9	7.95	16	15
32	1-1/4	42.7	7.95	18	15
40	1-1/2	48.8	8.95	23	15
50	2	61.2	10.95	22	19

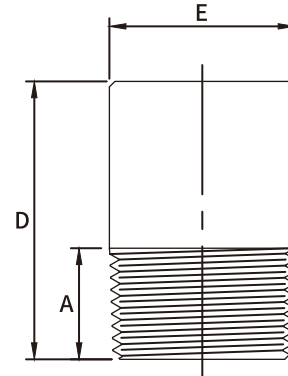
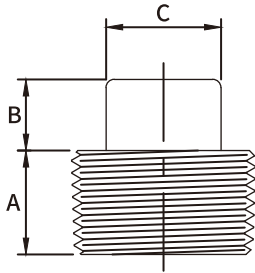
6000Lb					
DN	Nom. Pipe Size	Length of Thread. L2	P	D	G
6	1/8	8.8	22	22	6.4
8	1/4	11.4	27	25	6.4
10	3/8	12.4	27	32	6.4
15	1/2	14.9	33	38	7.9
20	3/4	16.8	38	44	7.9
25	1	19.6	43	57	11.2
32	1-1/4	21.9	46	64	11.2
40	1-1/2	22.7	48	76	12.7
50	2	23.9	51	92	15.7
65	2-1/2	30.5	64	108	19.0
80	3	32.8	68	127	22.4
100	4	34.6	75	159	28.4

9000Lb					
DN	Nom. Pipe Size	B	C	K	J
15	1/2	21.8	9.35	14.5	12.5
20	3/4	27.2	9.80	17	14.0
25	1	33.9	11.40	20	15.0
32	1-1/4	42.7	12.15	18	17.0
40	1-1/2	48.8	12.70	23.5	17.5
50	2	61.2	13.85	22	22.0

*All Dimensions In Millimeters.

SQUARE HEAD & ROUND HEAD PLUG

Asme B16.11-2016



Square Head Plug				
DN	Nom. Pipe Size	A	B	C
6	1/8	10	6	7.15
8	1/4	11	6	9.55
10	3/8	13	8	11.11
15	1/2	14	10	14.29
20	3/4	16	11	15.88
25	1	19	13	20.64
32	1-1/4	21	14	23.81
40	1-1/2	21	16	28.58
50	2	22	18	33.27
65	2-1/2	27	19	38.10
80	3	28	21	42.86
100	4	32	25	63.50

Round Head Plug				
DN	Nom. Pipe Size	A	B	C
6	1/8	10	10	35
8	1/4	11	14	41
10	3/8	13	18	41
15	1/2	14	21	44
20	3/4	16	27	44
25	1	19	33	51
32	1-1/4	21	43	51
40	1-1/2	21	48	51
50	2	22	60	64
65	2-1/2	27	73	70
80	3	28	89	70
100	4	32	114	76

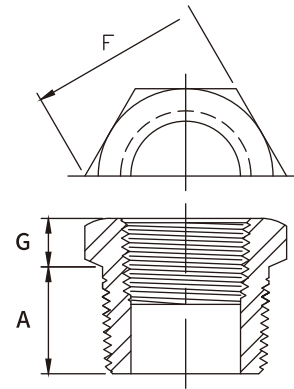
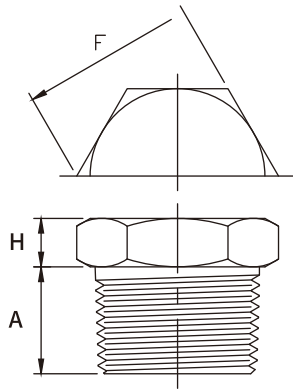
DIMENSIONAL TOLERANCE OF ASME B16. 11 - 2016

Item	Type of Pipe Fitting	Size				
		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
Bore dia meter of socket (B)	All types of Pipe fittings		+0.4 -0.0	+0.4 -0.0	+0.4 -0.0	+0.5 -0.0
Bore diameter of fitting (D)			±0.7	±0.7	±0.7	±1.4
Concentricity of bore (X)		±0.8				
Coincidence of axes (Y)		1/200 Max				
Center to bottom of socket (A)	45° 90° 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

*All Dimensions In Millimeters.

HEX HEAD PLUG & BUSHING

Asme B16.11-2016



Hex Head Plug				
DN	Nom. Pipe Size	A	F	H

6	1/8	12	11.0	6
8	1/4	15	16.0	6
10	3/8	15	18.0	8
15	1/2	17	22.0	8
20	3/4	20	27.0	10
25	1	22	35.0	10
32	1-1/4	22.5	45.5	14
40	1-1/2	22.5	50.0	16
50	2	24	64.0	18
65	2-1/2	29	76.0	19
80	3	30.5	90.0	21
100	4	34	118.5	25

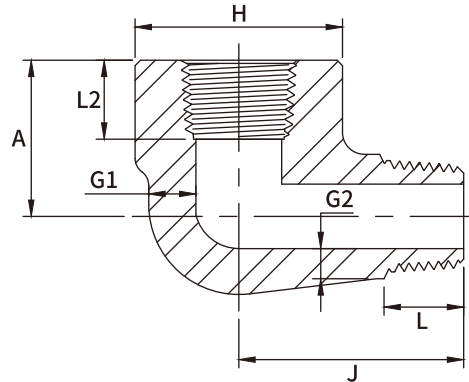
Hex Head Bushing				
DN	Nom. Pipe Size	A	F	G

8	1/4	15	16.0	5
10	3/8	15	18.0	7
15	1/2	17	22.0	9
20	3/4	20	27.0	9
25	1	22	35.0	10
32	1-1/4	23	45.5	11
40	1-1/2	25	50.0	11
50	2	26	64.0	12
65	2-1/2	31	76.0	14
80	3	34	90.0	16
100	4	36	118.5	18

*All Dimensions In Millimeters.

STREET ELBOW

Asme B16.11-2016



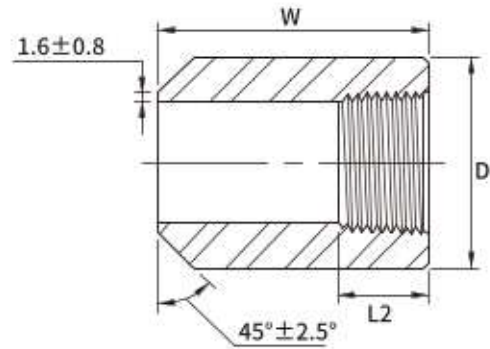
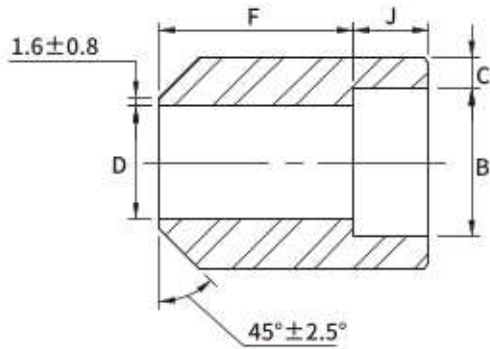
DN	Nom. Pipe Size	H	A	J	G1 (Min)	G2 (Min)	L2	L
3000Lb								
6	1/8	19	19	25	3.18	2.74	8.8	10.9
8	1/4	25	22	32	3.30	3.22	11.4	12.4
10	3/8	32	25	38	3.51	3.50	12.4	14.4
15	1/2	38	28	41	4.09	4.16	14.9	15.8
20	3/4	44	35	48	4.32	4.88	16.8	17.8
25	1	51	44	57	4.98	5.56	19.6	21.2
32	1-1/4	62	51	66	5.28	5.56	21.9	23.2
40	1-1/2	70	54	71	5.56	6.25	22.7	23.2
50	2	84	64	84	7.14	7.64	23.9	24.2

6000Lb								
DN	Nom. Pipe Size	H	A	J	G1 (Min)	G2 (Min)	L2	L
6	1/8	25	22	32	5.08	4.22	8.8	10.9
8	1/4	32	25	38	5.66	5.28	11.4	12.4
10	3/8	38	28	41	6.98	5.59	12.4	14.4
15	1/2	44	35	48	8.15	6.53	14.9	15.8
20	3/4	51	44	57	8.53	6.86	16.8	17.8
25	1	62	51	66	9.93	7.95	19.6	21.2
32	1-1/4	70	54	71	10.59	8.48	21.9	23.2
40	1-1/2	84	64	84	11.07	8.89	22.7	23.2
50	2	102	83	105	12.09	9.70	23.9	24.2

*All Dimensions In Millimeters.

BOSS

Asme B16.11-2016



Socket Welding						
DN	Nom. Pipe Size	B	C	D	F	J
3000Lb						
6	1/8	10.8	3.20	6.9	16.0	10.5
8	1/4	14.2	3.80	9.3	16.0	10.5
10	3/8	17.6	4.05	12.6	17.5	10.5
15	1/2	21.8	4.70	15.8	22.5	12.5
20	3/4	27.2	4.90	21.0	24.0	14.0
25	1	33.9	5.70	26.7	28.5	15.0
32	1-1/4	42.7	6.10	35.1	30.0	17.0
40	1-1/2	48.8	6.40	40.9	32.0	17.5
50	2	61.2	6.95	52.5	41.0	22.0
65	2-1/2	73.9	8.80	62.7	43.0	22.0
80	3	89.8	9.55	78.0	44.5	22.0
100	4	115.2	10.70	102.3	48.0	22.0

Threaded				
DN	Nom. Pipe Size	Length of Thread.	W	D
		L2		
3000Lb				
6	1/8	8.8	16.0	16
8	1/4	11.4	17.5	19
10	3/8	12.4	19.0	22
15	1/2	14.9	24.0	28
20	3/4	16.8	25.5	35
25	1	19.6	30.0	44
32	1-1/4	21.9	33.5	57
40	1-1/2	22.7	39.5	64
50	2	23.9	43.0	76
65	2-1/2	30.5	46.0	92
80	3	32.8	54.0	108
100	4	34.6	60.5	140

6000Lb						
DN	Nom. Pipe Size	B	C	D	F	J
6	1/8	10.8	4.00	4.0	16.0	10.5
8	1/4	14.2	4.60	6.4	16.0	10.5
10	3/8	17.6	5.05	9.2	17.5	10.5
15	1/2	21.8	6.00	11.8	22.5	12.5
20	3/4	27.2	7.00	15.6	24.0	14.0
25	1	33.9	7.95	20.7	28.5	15.0
32	1-1/4	42.7	7.95	29.5	30.0	17.0
40	1-1/2	48.8	8.95	34.0	32.0	17.5
50	2	61.2	10.95	42.9	41.0	22.0

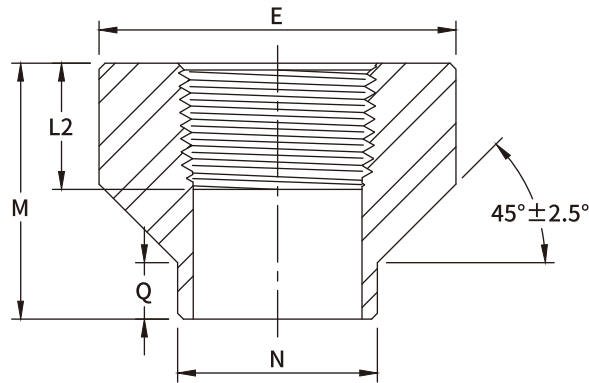
6000Lb				
DN	Nom. Pipe Size	Length of Thread.	W	D
		L2		
6	1/8	8.8	16.0	22
8	1/4	11.4	17.5	25
10	3/8	12.4	19.0	32
15	1/2	14.9	24.0	38
20	3/4	16.8	25.5	44
25	1	19.6	30.0	57
32	1-1/4	21.9	33.5	64
40	1-1/2	22.7	39.5	76
50	2	23.9	43.0	92
65	2-1/2	30.5	46.0	108
80	3	32.8	54.0	127
100	4	34.6	60.5	159

9000Lb						
DN	Nom. Pipe Size	B	C	D	F	J
15	1/2	21.8	9.35	6.4	22.5	12.5
20	3/4	27.2	9.80	11.1	24.0	14.0
25	1	33.9	11.40	15.2	28.5	15.0
32	1-1/4	42.7	12.15	22.8	30.0	17.0
40	1-1/2	48.8	12.70	28.0	32.0	17.5
50	2	61.2	13.85	38.2	41.0	22.0

*All Dimensions In Millimeters.

COUPLER

Asme B16.11-2016



DN	Nom. Pipe Size	Length of Thread.	N	Q	M	E
		L2				
3000Lb						
8	1/4	11.4	17.5	9.5	30.2	23.8
10	3/8	12.4	20.7	9.5	30.2	27.0
15	1/2	14.9	23.8	9.5	33.4	33.4
20	3/4	16.8	27.0	9.5	34.9	38.1
25	1	19.6	33.4	9.5	42.9	46.1
32	1-1/4	21.9	42.9	9.5	47.6	55.6
40	1-1/2	22.7	49.2	9.5	50.8	63.5
50	2	23.9	61.9	9.5	57.2	79.4
65	2-1/2	30.5	73.0	9.5	63.5	92.1
80	3	32.8	88.9	9.5	69.9	111.1
100	4	34.6	114.3	9.5	76.2	141.3

6000Lb						
8	1/4	11.4	17.5	9.5	30.2	25.4
10	3/8	12.4	20.7	9.5	30.2	31.8
15	1/2	14.9	23.8	9.5	33.4	38.1
20	3/4	16.8	27.0	9.5	34.9	44.5
25	1	19.6	33.4	9.5	42.9	57.2
32	1-1/4	21.9	42.9	9.5	47.6	63.5
40	1-1/2	22.7	49.2	9.5	50.8	76.2
50	2	23.9	61.9	9.5	57.2	92.1
65	2-1/2	30.5	73.0	9.5	63.5	108.0
80	3	32.8	88.9	9.5	69.9	127.0
100	4	34.6	114.3	9.5	76.2	158.8

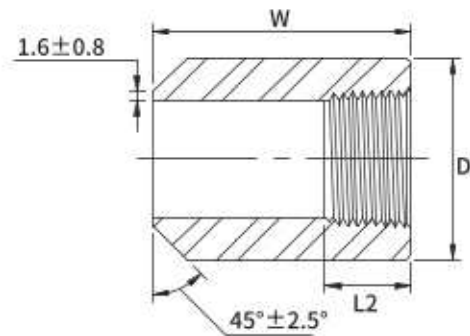
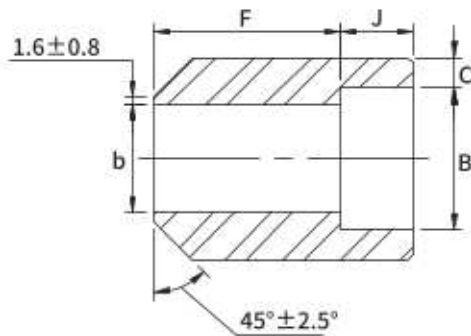
DIMENSIONAL TOLERANCE OF ASME B16. 11 - 2016

Item	N	Q	M	E
1/4"~1-1/2"	+1.5/-0.0	±0.8	+0.8/-0.0	+1.5/-0.0
2"~4"	+1.5/-0.0	±0.8	+1.5/-0.0	+1.5/-0.0

*All Dimensions In Millimeters.

BOSS

BS3799 - 1974



Socket Welding						
Nom. Pipe Size	DN	B	b	J	F	C
3000Lb						
1/8	6	10.7	6.8	11.0	28.0	3.2
1/4	8	14.1	9.2	11.0	32.0	3.3
3/8	10	17.6	12.5	12.0	34.0	3.5
1/2	15	21.8	15.5	14.0	38.0	4.1
3/4	20	27.4	21.0	14.0	38.0	4.3
1	25	34.1	26.5	17.0	35.0	5.0
1-1/2	40	49.0	40.5	20.0	32.0	5.6
2	50	61.0	52.0	23.0	29.0	6.1
2-1/2	65	73.8	62.0	23.0	29.0	7.7
3	80	89.7	78.0	23.0	29.0	8.3

Threaded				
Nom. Pipe Size	DN	D	W	L2 ⁽¹⁾
3000Lb				
1/8	6	16.0	38.0	8.8
1/4	8	19.0	41.0	11.4
3/8	10	22.0	45.0	12.4
1/2	15	29.0	51.0	14.9
3/4	20	35.0	51.0	16.8
1	25	45.0	51.0	19.6
1-1/2	40	64.0	51.0	22.7
2	50	76.0	51.0	23.9
2-1/2	65	95.0	51.0	30.5
3	80	110.0	57.0	32.8
4	100	140.0	64.0	34.6

6000Lb						
1/2	15	21.8	11.8	14.0	38.0	5.2
3/4	20	27.4	15.5	14.0	38.0	6.1
1	25	34.1	20.7	17.0	35.0	7.0
1-1/2	40	49.0	34.0	20.0	32.0	7.8
2	50	61.0	43.0	23.0	29.0	9.5
2-1/2	65	73.8	54.0	23.0	29.0	10.4
3	80	89.7	66.0	23.0	29.0	12.2

6000Lb				
1/8	6	22.0	38.0	8.8
1/4	8	26.0	41.0	11.4
3/8	10	32.0	45.0	12.4
1/2	15	38.0	51.0	14.9
3/4	20	45.0	51.0	16.8
1	25	60.0	51.0	19.6
1-1/2	40	76.0	51.0	22.7
2	50	95.0	51.0	23.9

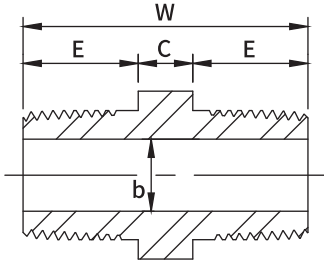
DIMENSIONAL TOLERANCE OF BS3799 - 1974

Item	Type of pipe fitting	DN	6~8	10~20	25~50	65~80
		NPS	1/8"~1/4"	3/8"~3/4"	1"~2"	2-1/2"~3"
Concentricity of bore (X)	All fittings	±0.8				
Coincidence of axes (Y)		±1/200				
Bore diameter of fitting (b)	Boss & Hex Nipple	±0.4			±0.8	
Bottom of socket to opposite face (F)	Boss	±0.8	±1.5	±2.0	±2.5	

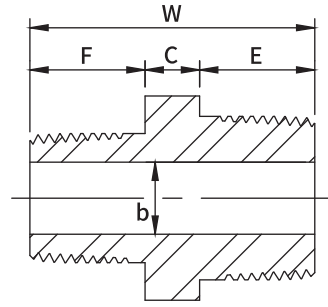
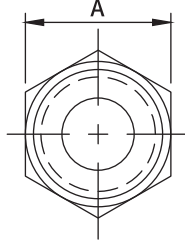
*All Dimensions In Millimeters.

HEX NIPPLE

Bs3799 - 1974



FULL SIZE



REDUCING SIZE

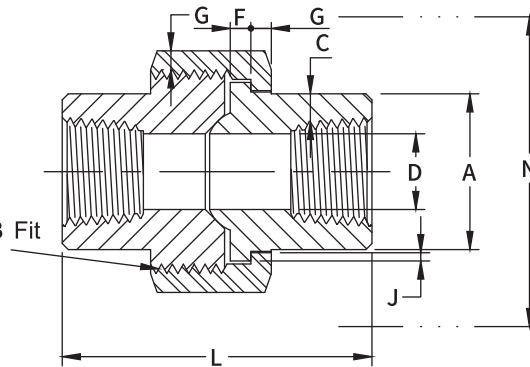
Nominal Size				A	W	E	b		C	F
Equal		Reducing					3M	6M		
In	DN	In	DN							
1/8	(6)	—	—	11	26	11	5	2	6	—
1/4	(8)	—	—	15	36	15.5	8	6	6	—
—	—	1/4 x 1/8	(8 x 6)	15	31	15.5	5	2	6	11
3/8	(10)	—	—	18	40	16.5	11	8	8	—
—	—	3/8 x 1/4	(10 x 8)	18	39	16.5	8	6	8	15.5
1/2	(15)	—	—	22	48	20.5	14	11	8	—
—	—	1/2 x 3/8	(15 x 10)	22	44	20.5	11	8	8	16.5
—	—	1/2 x 1/4	(15 x 8)	22	43	20.5	8	6	8	15.5
3/4	(20)	—	—	27	52	21.5	19	13	10	—
—	—	3/4 x 1/2	(20 x 15)	27	50	21.5	14	11	9	20.5
—	—	3/4 x 3/8	(20 x 10)	27	46	21.5	11	8	9	16.5
1	(25)	—	—	35	60	25.5	24	17	10	—
—	—	1 x 3/4	(25 x 20)	35	56	25.5	19	13	10	21.5
—	—	1 x 1/2	(25 x 15)	35	55	25.5	14	11	10	20.5
1-1/2	(40)	—	—	50	68	26.5	38	30	16	—
—	—	1-1/2 x 1	(40 x 25)	50	67	26.5	24	17	16	25.5
—	—	1-1/2 x 3/4	(40 x 20)	50	63	26.5	19	13	16	21.5
—	—	1-1/2 x 1/2	(40 x 15)	50	62	26.5	14	11	16	20.5
2	(50)	—	—	62	71	27.5	49	39	17	—
—	—	2 x 1-1/2	(50 x 40)	62	70	27.5	38	30	17	26.5
—	—	2 x 1	(50 x 25)	62	70	27.5	24	17	18	25.5
—	—	2 x 3/4	(50 x 20)	62	65	27.5	19	13	17	21.5
—	—	2 x 1/2	(50 x 15)	62	65	27.5	14	11	18	20.5

*All Dimensions In Millimeters.

THREADED END UNION

MSS SP-83-2018

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



Nom. Pipe Size	Pipe End A	Wall (Min) C	Water Way Bore D	Male Flange (Min) F	Nut (Min) G	Thrds. Per 25.4mm H	Bearing (Min) J	Length Assem. Nom. L	Clear Assem. Nut N
3000Lb									
1/8	22.9	2.41	8.40	3.18	3.18	16	1.24	41.4	50.8
1/4	22.9	3.02	11.20	3.18	3.18	16	1.24	41.4	50.8
3/8	22.9	3.20	14.60	3.43	3.43	14	1.37	46.0	55.9
1/2	27.7	3.73	17.27	3.68	3.68	14	1.50	49.0	58.4
3/4	33.5	3.91	21.59	4.06	4.06	11	1.68	56.9	66.0
1	41.4	4.55	27.94	4.57	4.45	11	1.85	62.0	78.7
1-1/4	50.5	4.85	35.56	5.33	5.21	10	2.13	71.1	94.0
1-1/2	57.2	5.08	41.40	5.84	5.59	10	2.31	76.5	111.8
2	70.1	5.54	52.33	6.60	6.35	10	2.69	86.1	132.1

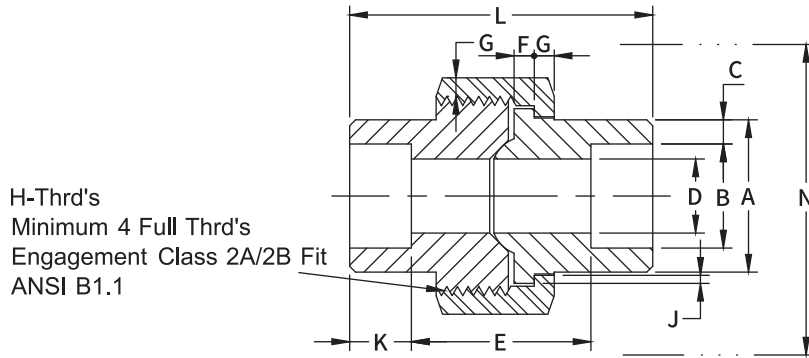
Nom. Pipe Size	Pipe End A	Wall (Min) C	Water Way Bore D	Male Flange (Min) F	Nut (Min) G	Thrds. Per 25.4mm H	Bearing (Min) J	Length Assem. Nom. L	Clear Assem. Nut N
6000Lb									
1/8	22.9	3.15	6.63	3.18	3.18	16	1.24	41.4	50.8
1/4	22.9	3.68	9.65	3.43	3.43	14	1.37	46.0	55.9
3/8	27.7	4.01	13.72	3.68	3.68	14	1.50	49.0	58.4
1/2	33.5	4.78	17.27	4.06	4.06	11	1.68	56.9	66.0
3/4	41.4	5.56	21.59	4.57	4.45	11	1.85	62.0	78.7
1	50.5	6.35	27.94	5.33	5.21	10	2.13	71.1	94.0
1-1/4	57.2	6.35	35.56	5.84	5.59	10	2.31	76.5	111.8
1-1/2	70.1	7.14	41.40	6.60	6.35	10	2.69	86.1	132.1
2	85.3	8.74	51.00	7.49	7.11	8	3.07	102.4	149.9

102.4

*All Dimensions In Millimeters.

SOCKET WELD END UNION

MSS SP-83-2018



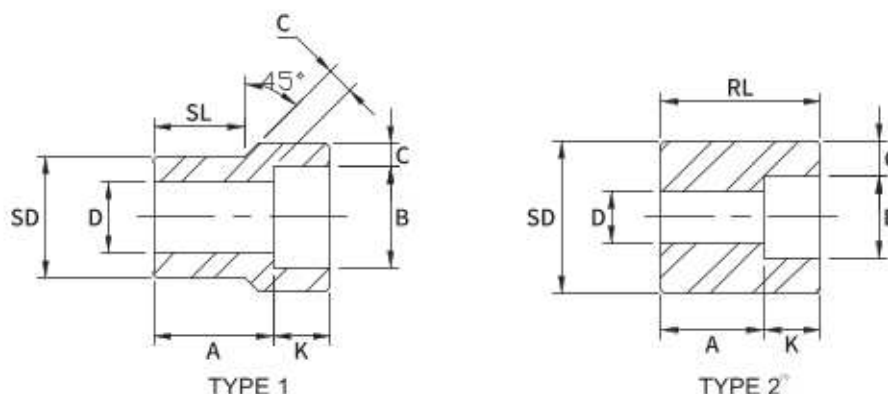
Nom. Pipe Size	Pipe End A	Socket Bore Dia. B	Socket Wall C	Water Way Bore D	Laying Length E	Male Flange (Min) F	Nut (Min) G	Thrds. Per 25.4mm H	Bearing (Min) J	Depth of Socket K	Length Assem. Nom. L	Clear Assem. Nut N
3000Lb												
1/8	25.9	10.9	3.18	6.9	20.70	3.18	3.18	16	1.24	10.5	41.4	50.8
1/4	25.9	14.3	3.30	9.3	20.70	3.18	3.18	16	1.24	10.5	41.4	50.8
3/8	25.9	17.7	3.51	12.6	23.75	3.43	3.43	14	1.37	10.5	46.0	55.9
1/2	31.2	21.9	4.09	15.8	23.75	3.68	3.68	14	1.50	12.5	49.0	58.4
3/4	37.1	27.3	4.27	21.0	28.60	4.06	4.06	11	1.68	14.0	56.9	66.0
1	45.5	34.0	4.98	26.7	30.25	4.57	4.45	11	1.85	15.0	62.0	78.7
1-1/4	54.9	42.8	5.28	35.1	36.55	5.33	5.21	10	2.13	17.0	71.1	94.0
1-1/2	61.5	48.9	5.54	40.9	38.10	5.84	5.59	10	2.31	17.5	76.5	111.8
2	75.2	61.3	6.05	52.5	41.40	6.60	6.35	10	2.69	22.0	86.1	132.1

Nom. Pipe Size	Pipe End A	Socket Bore Dia. B	Socket Wall C	Water Way Bore D	Laying Length E	Male Flange (Min) F	Nut (Min) G	Thrds. Per 25.4mm H	Bearing (Min) J	Depth of Socket K	Length Assem. Nom. L	Clear Assem. Nut N
6000Lb												
1/8	25.9	10.9	3.18	4.0	20.70	3.18	3.18	16	1.24	10.5	41.4	50.8
1/4	25.9	14.3	3.30	6.4	23.75	3.18	3.18	16	1.24	10.5	41.4	50.8
3/8	31.2	17.7	3.51	9.2	23.75	3.43	3.43	14	1.37	12.5	46.0	55.9
1/2	37.1	21.9	4.09	11.8	28.60	3.68	3.68	14	1.50	14.0	49.0	58.4
3/4	45.5	27.3	4.27	15.6	30.25	4.06	4.06	11	1.68	15.0	56.9	66.0
1	54.9	34.0	4.98	20.7	36.55	4.57	4.45	11	1.85	17.0	62.0	78.7
1-1/4	61.5	42.8	5.28	29.5	38.10	5.33	5.21	10	2.13	17.5	71.1	94.0
1-1/2	75.2	48.9	5.54	34.0	41.40	5.84	5.59	10	2.31	22.0	76.5	111.8
2	91.7	61.3	6.05	42.9	56.90	6.60	6.35	10	2.69	25.0	86.1	132.1

*All Dimensions In Millimeters.

REDUCER INSERT

MSS SP-79-2018

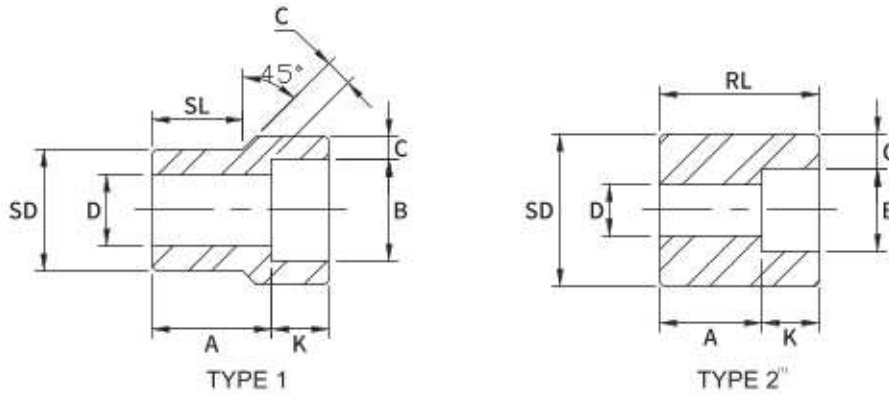


Nom. Pipe Size	Type	Socket		Shank Dia SD	Laying Length A	Bore D	Wall C	Length	
		Dia B	Depth K					SL	RL
								3M	3M
1/4×1/8	1	11.0	10.5	13.7	19.0	6.9	3.18	14.2	—
3/8×1/4	1	14.4	10.5	17.1	19.0	9.2	3.78	14.2	—
3/8×1/8	1	11.0	10.5	17.1	19.0	6.9	3.18	14.2	—
1/2×3/8	1	17.8	10.5	21.3	20.6	12.5	4.01	15.7	—
1/2×1/4	1	14.4	10.5	21.3	20.6	9.2	3.78	15.7	—
1/2×1/8	1	11.0	10.5	21.3	20.6	6.9	3.18	15.7	—
3/4×1/2	1	22.0	12.5	26.7	22.4	15.8	4.67	17.5	—
3/4×3/8	2	17.8	10.5	26.7	15.7	12.5	4.01	—	26.9
3/4×1/4	2	14.4	10.5	26.7	17.5	9.2	3.78	—	26.9
3/4×1/8	2	11.0	10.5	26.7	17.5	6.9	3.18	—	26.9
1×3/4	1	27.4	14.0	33.4	23.9	20.9	4.90	19.0	—
1×1/2	2	22.0	12.5	33.4	15.7	15.8	4.67	—	28.4
1×3/8	2	17.8	10.5	33.4	17.5	12.5	4.01	—	28.4
1×1/4	2	14.4	10.5	33.4	19.0	9.2	3.78	—	28.4
1×1/8	2	11.0	10.5	33.4	19.0	6.9	3.18	—	28.4
1-1/4×1	1	34.1	15.0	42.2	25.4	26.6	5.69	20.6	—
1-1/4×3/4	2	27.4	14.0	42.2	17.5	20.9	4.90	—	31.7
1-1/4×1/2	2	22.0	12.5	42.2	19.0	15.8	4.67	—	31.7
1-1/4×3/8	2	17.8	10.5	42.2	20.6	12.5	4.01	—	31.7
1-1/4×1/4	2	14.4	10.5	42.2	22.4	9.2	3.78	—	31.7
1-1/4×1/8	2	11.0	10.5	42.2	22.4	6.9	3.18	—	31.7
1-1/2×1-1/4	1	42.9	17.0	48.2	28.4	35.0	6.07	22.4	—
1-1/2×1	2	34.1	15.0	48.2	17.5	26.6	5.69	—	33.2
1-1/2×3/4	2	27.4	14.0	48.2	19.0	20.9	4.90	—	33.2
1-1/2×1/2	2	22.0	12.5	48.2	20.6	15.8	4.67	—	33.2
1-1/2×3/8	2	17.8	10.5	48.2	22.4	12.5	4.01	—	33.2
1-1/2×1/4	2	14.4	10.5	48.2	22.4	9.2	3.78	—	33.2
1-1/2×1/8	2	11.0	10.5	48.2	22.4	6.9	3.18	—	33.2
2×1-1/2	1	49.0	17.5	60.3	31.8	40.8	6.35	25.4	—
2×1-1/4	2	42.9	17.0	60.3	20.6	35.0	6.07	—	38.1
2×1	2	34.1	15.0	60.3	22.4	26.6	5.69	—	38.1

*All Dimensions In Millimeters.

REDUCER INSERT

MSS SP-79-2018



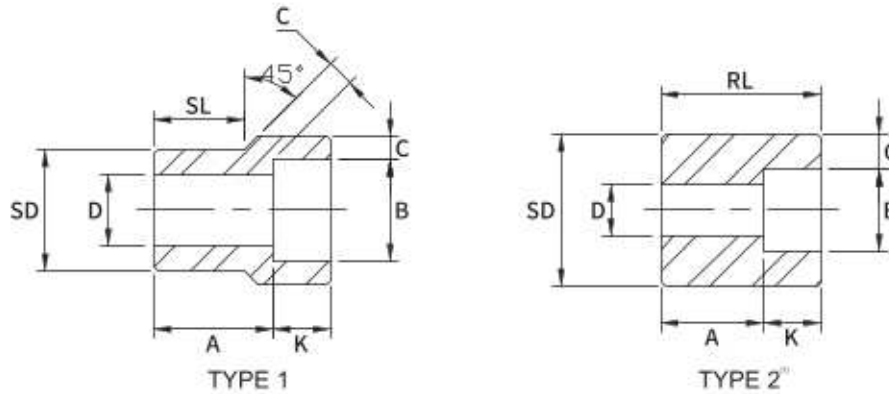
(Continued)

Nom. Pipe Size	Type	Socket		Shank Dia SD	Laying Length A	Bore D	Wall C	Length	
		Dia B	Depth K					SL	RL
	3M			3M	3M	3M	3M	3M	
2×3/4	2	27.4	14.0	60.3	23.9	20.9	4.90	—	38.1
2×1/2	2	22.0	12.5	60.3	25.4	15.8	4.67	—	38.1
2×3/8	2	17.8	10.5	60.3	26.9	12.5	4.01	—	38.1
2×1/4	2	14.4	10.5	60.3	26.9	9.2	3.78	—	38.1
2×1/8	2	11.0	10.5	60.3	26.9	6.9	3.18	—	38.1
2-1/2×2	1	61.4	22.0	73.0	46.0	52.4	6.93	38.1	—
2-1/2×1-1/2	2	49.0	17.5	73.0	35.0	40.8	6.35	—	53.8
2-1/2×1-1/4	2	42.9	17.0	73.0	36.6	35.0	6.07	—	53.8
2-1/2×1	2	34.1	15.0	73.0	38.1	26.6	5.69	—	53.8
2-1/2×3/4	2	27.4	14.0	73.0	39.6	20.9	4.90	—	53.8
2-1/2×1/2	2	22.0	12.5	73.0	41.4	15.8	4.67	—	53.8
2-1/2×3/8	2	17.8	10.5	73.0	42.9	12.5	4.01	—	53.8
2-1/2×1/4	2	14.4	10.5	73.0	42.9	9.2	3.78	—	53.8
2-1/2×1/8	2	11.0	10.5	73.0	42.9	6.9	3.18	—	53.8
3×2-1/2	1	74.1	22.0	88.9	38.1	62.7	8.76	31.8	—
3×2	2	61.4	22.0	88.9	25.4	52.4	6.93	—	47.4
3×1-1/2	2	49.0	17.5	88.9	28.4	40.8	6.35	—	47.4
3×1-1/4	2	42.9	17.0	88.9	30.2	35.0	6.07	—	47.4
3×1	2	34.1	15.0	88.9	31.8	26.6	5.69	—	47.4
3×3/4	2	27.4	14.0	88.9	33.3	20.9	4.90	—	47.4
3×1/2	2	22.0	12.5	88.9	35.1	15.8	4.67	—	47.4
3×3/8	2	17.8	10.5	88.9	36.6	12.5	4.01	—	47.4
3×1/4	2	14.4	10.5	88.9	36.6	9.2	3.78	—	47.4
3×1/8	2	11.0	10.5	88.9	36.6	6.9	3.18	—	47.4

*All Dimensions In Millimeters.

REDUCER INSERT

MSS SP-79-2018



(Continued)

Nom. Pipe Size	Type	Socket		Shank Dia SD	Laying Length A	Bore D	Wall C	Length	
		Dia B	Depth K					SL	RL
	3M	3M	3M	3M	3M	3M			
4×3	2	90.0	27.0	114.3	33.3	77.9	9.52	—	60.4
4×2-1/2	2	74.1	22.0	114.3	38.1	62.7	8.76	—	60.4
4×2	2	61.4	22.0	114.3	38.1	52.4	6.93	—	60.4
4×1-1/2	2	49.0	17.5	114.3	41.1	40.8	6.35	—	60.4
4×1-1/4	2	42.9	17.0	114.3	42.9	35.0	6.07	—	60.4
4×1	2	34.1	15.0	114.3	44.5	26.6	5.69	—	60.4
4×3/4	2	27.4	14.0	114.3	46.0	20.9	4.90	—	60.4
4×1/2	2	22.0	12.5	114.3	47.8	15.8	4.67	—	60.4
4×3/8	2	17.8	10.5	114.3	49.3	12.5	4.01	—	60.4
4×1/4	2	14.4	10.5	114.3	49.3	9.2	3.78	—	60.4
4×1/8	2	11.0	10.5	114.3	49.3	6.9	3.18	—	60.4

DIMENSIONAL TOLERANCES OF REDUCER INSERT

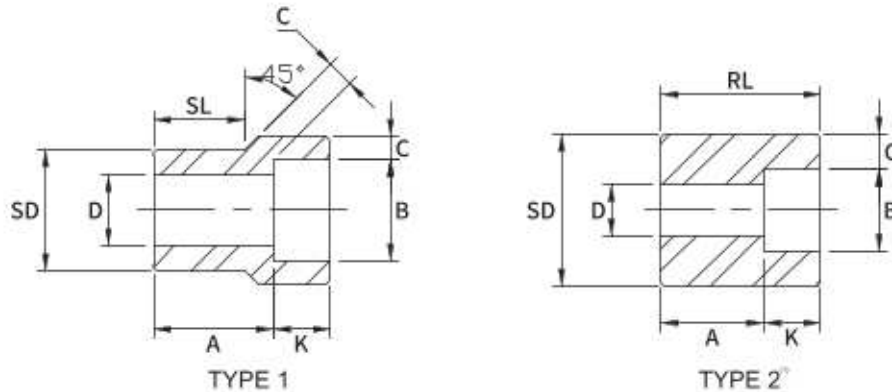
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	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
Laying length (A)	⊗		+1.5 -0.0				+2.0 -0.0				+2.5 -0.0	
Socket Dia (B)						±0.20					+0.3 -0.2	⊗
Bore (D)						±0.8					±1.5	⊗
Shank Dia (SD)	⊗					±0.3				±0.5		±0.8
Shank Length (SL)	⊗		+0.0 -1.5				+0.0 -2.0				+0.0 -2.5	

*All Dimensions In Millimeters.

REDUCER INSERT

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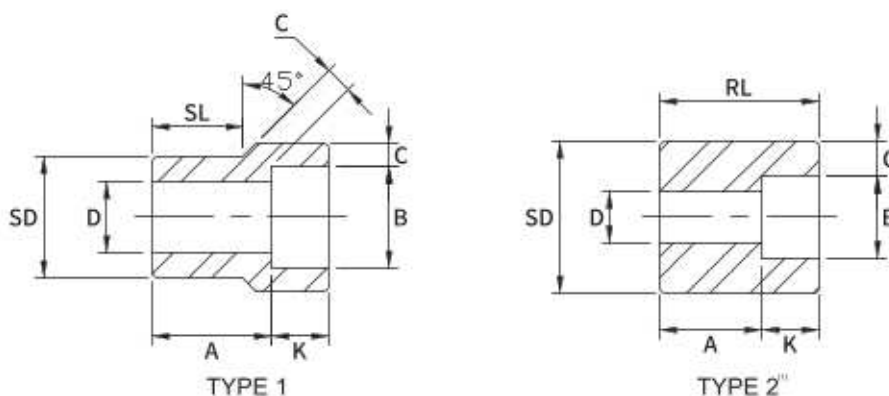


Nom. Pipe Size	Type	Socket		Shank Dia SD	Laying Length A	Bore D	Wall C	Length	
		Dia B	Depth K					SL	RL
								6M	6M
1/4x1/8	1	11.0	10.5	13.7	21.3	4.0	3.96	15.7	—
3/8x1/4	1	14.4	10.5	17.1	21.3	6.3	4.60	15.7	—
3/8x1/8	1	11.0	10.5	17.1	21.3	4.0	3.96	15.7	—
1/2x3/8	1	17.8	10.5	21.3	23.0	9.1	5.03	15.7	—
1/2x1/4	1	14.4	10.5	21.3	20.6	6.3	4.60	15.7	—
1/2x1/8	1	11.0	10.5	21.3	20.6	4.0	3.96	15.7	—
3/4x1/2	1	22.0	12.5	26.7	25.4	11.7	5.97	19.0	—
3/4x3/8	1	17.8	10.5	26.7	22.4	9.1	5.03	19.0	—
3/4x1/4	2	14.4	10.5	26.7	22.4	6.3	4.60	—	32.0
3/4x1/8	2	11.0	10.5	26.7	22.4	4.0	3.96	—	32.0
1x3/4	1	27.4	14.0	33.4	28.4	15.5	6.96	20.6	—
1x1/2	1	22.0	12.5	33.4	28.4	11.7	5.97	20.6	—
1x3/8	2	17.8	10.5	33.4	22.4	9.1	5.03	—	33.2
1x1/4	2	14.4	10.5	33.4	23.9	6.3	4.60	—	33.2
1x1/8	2	11.0	10.5	33.4	23.9	4.0	3.96	—	33.2
1-1/4x1	1	34.1	15.0	42.2	30.2	20.7	7.92	22.4	—
1-1/4x3/4	2	27.4	14.0	42.2	20.6	15.5	6.96	—	34.7
1-1/4x1/2	2	22.0	12.5	42.2	22.4	11.7	5.97	—	34.7
1-1/4x3/8	2	17.8	10.5	42.2	23.9	9.1	5.03	—	34.7
1-1/4x1/4	2	14.4	10.5	42.2	25.4	6.3	4.60	—	34.7
1-1/4x1/8	2	11.0	10.5	42.2	25.4	4.0	3.96	—	34.7
1-1/2x1-1/4	1	42.9	17.0	48.2	35.0	29.4	7.92	25.4	—
1-1/2x1	1	34.1	15.0	48.2	29.2	20.7	7.92	25.4	—
1-1/2x3/4	2	27.4	14.0	48.2	25.4	15.5	6.96	—	39.6
1-1/2x1/2	2	22.0	12.5	48.2	26.9	11.7	5.97	—	39.6
1-1/2x3/8	2	17.8	10.5	48.2	28.4	9.1	5.03	—	39.6
1-1/2x1/4	2	14.4	10.5	48.2	28.4	6.3	4.60	—	39.6
1-1/2x1/8	2	11.0	10.5	48.2	28.4	4.0	3.96	—	39.6
2x1-1/2	1	49.0	17.5	60.3	38.9	33.9	8.92	28.7	—
2x1-1/4	2	42.9	17.0	60.3	23.9	29.4	7.92	—	41.1
2x1	2	34.1	15.0	60.3	25.4	20.7	7.92	—	41.1

*All Dimensions In Millimeters.

REDUCER INSERT

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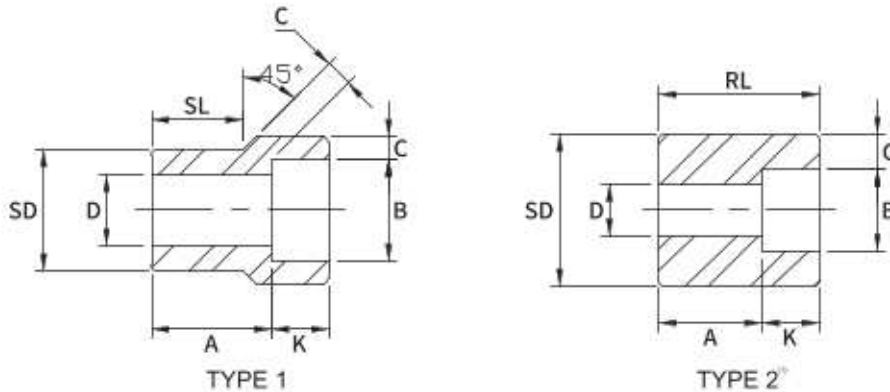
(Continued)

Nom. Pipe Size	Type	Socket		Shank Dia SD	Laying Length A	Bore D	Wall C	Length	
		Dia B	Depth K					SL	RL
	6M			6M	6M	6M	6M	6M	
2×3/4	2	27.4	14.0	60.3	26.9	15.5	6.96	—	41.1
2×1/2	2	22.0	12.5	60.3	28.4	11.7	5.97	—	41.1
2×3/8	2	17.8	10.5	60.3	30.2	9.1	5.03	—	41.1
2×1/4	2	14.4	10.5	60.3	30.2	6.3	4.60	—	41.1
2×1/8	2	11.0	10.5	60.3	30.2	4.0	3.96	—	41.1
2-1/2×2	1	61.4	22.0	73.0	42.7	42.8	10.92	31.8	—
2-1/2×1-1/2	2	49.0	17.5	73.0	35.0	33.9	8.92	—	53.8
2-1/2×1-1/4	2	42.9	17.0	73.0	36.6	29.4	7.92	—	53.8
2-1/2×1	2	34.1	15.0	73.0	38.1	20.7	7.92	—	53.8
2-1/2×3/4	2	27.4	14.0	73.0	38.1	15.5	6.96	—	53.8
2-1/2×1/2	2	22.0	12.5	73.0	38.1	11.7	5.97	—	53.8
2-1/2×3/8	2	17.8	10.5	73.0	39.6	9.1	5.03	—	53.8
2-1/2×1/4	2	14.4	10.5	73.0	39.6	6.3	4.60	—	53.8
2-1/2×1/8	2	11.0	10.5	73.0	39.6	4.0	3.96	—	53.8
3×2-1/2	1	74.1	22.0	88.9	57.2	54.0	11.91	44.4	—
3×2	2	61.4	22.0	88.9	31.8	42.8	10.92	—	53.8
3×1-1/2	2	49.0	22.0	88.9	31.8	33.9	8.92	—	53.8
3×1-1/4	2	42.9	22.0	88.9	31.8	29.4	7.92	—	53.8
3×1	2	34.1	22.0	88.9	31.8	20.7	7.92	—	53.8
3×3/4	2	27.4	14.0	88.9	42.9	15.5	6.96	—	53.8
3×1/2	2	22.0	12.5	88.9	44.5	11.7	5.97	—	53.8
3×3/8	2	17.8	10.5	88.9	46.0	9.1	5.03	—	53.8
3×1/4	2	14.4	10.5	88.9	46.0	6.3	4.60	—	53.8
3×1/8	2	11.0	10.5	88.9	46.0	4.0	3.96	—	53.8

*All Dimensions In Millimeters.

REDUCER INSERT

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(Continued)

Nom. Pipe Size	Type	Socket		Shank Dia SD	Laying Length A	Bore D	Wall C	Length	
		Dia B	Depth K					SL	RL
								6M	6M
4×3	1	90.0	22.0	114.3	65.0	66.7	13.92	44.5	—
4×2-1/2	2	74.1	22.0	114.3	50.8	54.0	11.91	—	73.2
4×2	2	61.4	22.0	114.3	50.8	42.8	10.92	—	73.2
4×1-1/2	2	49.0	17.5	114.3	54.1	33.9	8.92	—	73.2
4×1-1/4	2	42.9	17.0	114.3	55.6	29.4	7.92	—	73.2
4×1	2	34.1	15.0	114.3	57.2	20.7	7.92	—	73.2
4×3/4	2	27.4	14.0	114.3	58.7	15.5	6.96	—	73.2
4×1/2	2	22.0	12.5	114.3	60.5	11.7	5.97	—	73.2
4×3/8	2	17.8	10.5	114.3	62.0	9.1	5.03	—	73.2
4×1/4	2	14.4	10.5	114.3	62.0	6.3	4.60	—	73.2
4×1/8	2	11.0	10.5	114.3	62.0	4.0	3.96	—	73.2

DIMENSIONAL TOLERANCES OF REDUCER INSERT

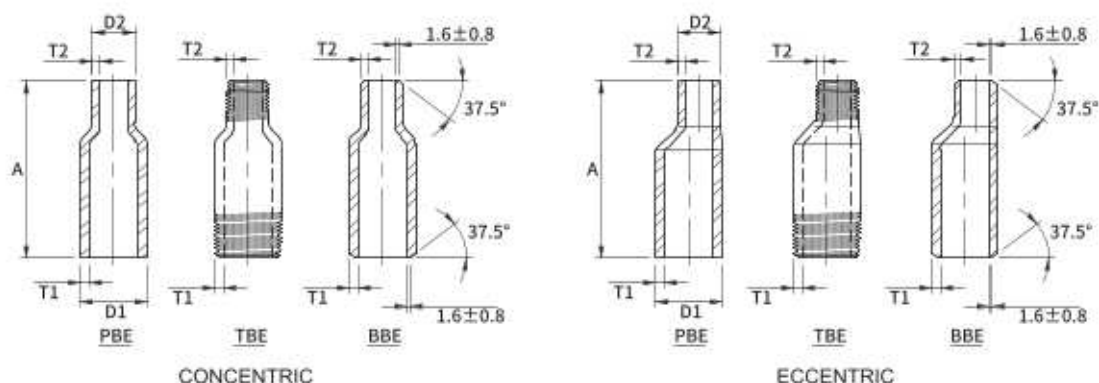
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	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
Laying length (A)	×			+1.5 -0.0				+2.0 -0.0			+2.5 -0.0	
Socket Dia (B)											+0.3 -0.2	×
Bore (D)											±1.5	×
Shank Dia (SD)	×										±0.5	±0.8
Shank Length (SL)	×										+0.0 -2.5	

*All Dimensions In Millimeters.

SWAGED NIPPLE

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Nom. Pipe Size	Outside Diameter		End to End "A"	Wall Thickness							
	Large End D1	Small End D2		T1				T2			
				Sch40 (STD)	Sch80 (XS)	Sch160	XXS	Sch40 (STD)	Sch80 (XS)	Sch160	XXS
1/4x1/8	13.7	10.3	57	2.2	3.0	3.7	6.1	1.7	2.4	—	—
3/8x1/8	17.1	10.3	64	2.3	3.2	4.0	6.4	1.7	2.4	—	—
3/8x1/4	17.1	13.7	64	2.3	3.2	4.0	6.4	2.2	3.0	—	—
1/2x1/8	21.3	10.3	70	2.8	3.7	4.8	7.5	1.7	2.4	—	—
1/2x1/4	21.3	13.7	70	2.8	3.7	4.8	7.5	2.2	3.0	—	—
1/2x3/8	21.3	17.1	70	2.8	3.7	4.8	7.5	2.3	3.2	—	—
3/4x1/8	26.7	10.3	76	2.9	3.9	5.6	7.8	1.7	2.4	—	—
3/4x1/4	26.7	13.7	76	2.9	3.9	5.6	7.8	2.2	3.0	—	—
3/4x3/8	26.7	17.1	76	2.9	3.9	5.6	7.8	2.3	3.2	—	—
3/4x1/2	26.7	21.3	76	2.9	3.9	5.6	7.8	2.8	3.7	4.8	7.5
1x1/8	33.4	10.3	89	3.4	4.5	6.4	9.1	1.7	2.4	—	—
1x1/4	33.4	13.7	89	3.4	4.5	6.4	9.1	2.2	3.0	—	—
1x3/8	33.4	17.1	89	3.4	4.5	6.4	9.1	2.3	3.2	—	—
1x1/2	33.4	21.3	89	3.4	4.5	6.4	9.1	2.8	3.7	4.8	7.5
1x3/4	33.4	26.7	89	3.4	4.5	6.4	9.1	2.9	3.9	5.6	7.8
1-1/4x1/8	42.2	10.3	102	3.6	4.9	6.4	9.7	1.7	2.4	—	—
1-1/4x1/4	42.2	13.7	102	3.6	4.9	6.4	9.7	2.2	3.0	—	—
1-1/4x3/8	42.2	17.1	102	3.6	4.9	6.4	9.7	2.3	3.2	—	—
1-1/4x1/2	42.2	21.3	102	3.6	4.9	6.4	9.7	2.8	3.7	4.8	7.5
1-1/4x3/4	42.2	26.7	102	3.6	4.9	6.4	9.7	2.9	3.9	5.6	7.8
1-1/4x1	42.2	33.4	102	3.6	4.9	6.4	9.7	3.4	4.5	6.4	9.1
1-1/2x1/8	48.3	10.3	114	3.7	5.1	7.1	10.2	1.7	2.4	—	—
1-1/2x1/4	48.3	13.7	114	3.7	5.1	7.1	10.2	2.2	3.0	—	—
1-1/2x3/8	48.3	17.1	114	3.7	5.1	7.1	10.2	2.3	3.2	—	—
1-1/2x1/2	48.3	21.3	114	3.7	5.1	7.1	10.2	2.8	3.7	4.8	7.5
1-1/2x3/4	48.3	26.7	114	3.7	5.1	7.1	10.2	2.9	3.9	5.6	7.8
1-1/2x1	48.3	33.4	114	3.7	5.1	7.1	10.2	3.4	4.5	6.4	9.1
1-1/2x1-1/4	48.3	42.2	114	3.7	5.1	7.1	10.2	3.6	4.9	6.4	9.7
2x1/8	60.3	10.3	165	3.9	5.5	8.7	11.1	1.7	2.4	—	—
2x1/4	60.3	13.7	165	3.9	5.5	8.7	11.1	2.2	3.0	—	—
2x3/8	60.3	17.1	165	3.9	5.5	8.7	11.1	2.3	3.2	—	—
2x1/2	60.3	21.3	165	3.9	5.5	8.7	11.1	2.8	3.7	4.8	7.5
2x3/4	60.3	26.7	165	3.9	5.5	8.7	11.1	2.9	3.9	5.6	7.8
2x1	60.3	33.4	165	3.9	5.5	8.7	11.1	3.4	4.5	6.4	9.1
2x1-1/4	60.3	42.2	165	3.9	5.5	8.7	11.1	3.6	4.9	6.4	9.7
2x1-1/2	60.3	48.3	165	3.9	5.5	8.7	11.1	3.7	5.1	7.1	10.2
2-1/2x1/8	73.0	10.3	178	5.2	7.0	9.5	14.0	1.7	2.4	—	—
2-1/2x1/4	73.0	13.7	178	5.2	7.0	9.5	14.0	2.2	3.0	—	—
2-1/2x3/8	73.0	17.1	178	5.2	7.0	9.5	14.0	2.3	3.2	—	—
2-1/2x1/2	73.0	21.3	178	5.2	7.0	9.5	14.0	2.8	3.7	4.8	7.5
2-1/2x3/4	73.0	26.7	178	5.2	7.0	9.5	14.0	2.9	3.9	5.6	7.8
2-1/2x1	73.0	33.4	178	5.2	7.0	9.5	14.0	3.4	4.5	6.4	9.1

SWAGED NIPPLE

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(Continued)

Nom. Pipe Size	Outside Diameter		End to End "A"	Wall Thickness							
	Large End D1	Small End D2		T1				T2			
				Sch40 (STD)	Sch80 (XS)	Sch160	XXS	Sch40 (STD)	Sch80 (XS)	Sch160	XXS
2-1/2×1-1/4	73.0	42.2	178	5.2	7.0	9.5	14.0	3.6	4.9	6.4	9.7
2-1/2×1-1/2	73.0	48.3	178	5.2	7.0	9.5	14.0	3.7	5.1	7.1	10.2
2-1/2×2	73.0	60.3	178	5.2	7.0	9.5	14.0	3.9	5.5	8.7	11.1
3×1-8	88.9	10.3	203	5.5	7.6	11.1	15.2	1.7	2.4	—	—
3×1-4	88.9	13.7	203	5.5	7.6	11.1	15.2	2.2	3.0	—	—
3×3-8	88.9	17.1	203	5.5	7.6	11.1	15.2	2.3	3.2	—	—
3×1-2	88.9	21.3	203	5.5	7.6	11.1	15.2	2.8	3.7	4.8	7.5
3×3-4	88.9	26.7	203	5.5	7.6	11.1	15.2	2.9	3.9	5.6	7.8
3×1	88.9	33.4	203	5.5	7.6	11.1	15.2	3.4	4.5	6.4	9.1
3×1-1/4	88.9	42.2	203	5.5	7.6	11.1	15.2	3.6	4.9	6.4	9.7
3×1-1/2	88.9	48.3	203	5.5	7.6	11.1	15.2	3.7	5.1	7.1	10.2
3×2	88.9	60.3	203	5.5	7.6	11.1	15.2	3.9	5.5	8.7	11.1
3×2-1/2	88.9	73.0	203	5.5	7.6	11.1	15.2	5.2	7.0	9.5	14.0
3-1/2×1-8	101.6	10.3	203	5.7	8.1	—	—	1.7	2.4	—	—
3-1/2×1-4	101.6	13.7	203	5.7	8.1	—	—	2.2	3.0	—	—
3-1/2×3-8	101.6	17.1	203	5.7	8.1	—	—	2.3	3.2	—	—
3-1/2×1-2	101.6	21.3	203	5.7	8.1	—	—	2.8	3.7	4.8	7.5
3-1-3/4×3-4	101.6	26.7	203	5.7	8.1	—	—	2.9	3.9	5.6	7.8
3-1/2×1	101.6	33.4	203	5.7	8.1	—	—	3.4	4.5	6.4	9.1
3-1/2×1-1/4	101.6	42.2	203	5.7	8.1	—	—	3.6	4.9	6.4	9.7
3-1/2×1-1/2	101.6	48.3	203	5.7	8.1	—	—	3.7	5.1	7.1	10.2
3-1/2×2	101.6	60.3	203	5.7	8.1	—	—	3.9	5.5	8.7	11.1
3-1/2×2-1/2	101.6	73.0	203	5.7	8.1	—	—	5.2	7.0	9.5	14.0
3-1/2×3	101.6	88.9	203	5.7	8.1	—	—	5.5	7.6	11.1	15.2
4×1-4	114.3	13.7	229	6.0	8.6	13.5	17.1	2.2	3.0	—	—
4×3-8	114.3	17.1	229	6.0	8.6	13.5	17.1	2.3	3.2	—	—
4×1-2	114.3	21.3	229	6.0	8.6	13.5	17.1	2.8	3.7	4.8	7.5
4×3-4	114.3	26.7	229	6.0	8.6	13.5	17.1	2.9	3.9	5.6	7.8
4×1	114.3	33.4	229	6.0	8.6	13.5	17.1	3.4	4.5	6.4	9.1
4×1-1/4	114.3	42.2	229	6.0	8.6	13.5	17.1	3.6	4.9	6.4	9.7
4×1-1/2	114.3	48.3	229	6.0	8.6	13.5	17.1	3.7	5.1	7.1	10.2
4×2	114.3	60.3	229	6.0	8.6	13.5	17.1	3.9	5.5	8.7	11.1
4×2-1/2	114.3	73.0	229	6.0	8.6	13.5	17.1	5.2	7.0	9.5	14.0
4×3	114.3	88.9	229	6.0	8.6	13.5	17.1	5.5	7.6	11.1	15.2
4×3-1/2	114.3	101.6	229	6.0	8.6	13.5	17.1	5.7	8.1	—	—

(1) Wall Thickness (T1, T2) in Accordance with ASME B36.10M.

PBE:PLAIN BOTH ENDS
PSE:PLAIN SMALL END
PLE:PLAIN LARGE END

BBE:BEVEL BOTH ENDS
BSE:BEVEL SMALL END
BLE:BEVEL LARGE END

TBE:THREAD BOTH ENDS
TSE:THREAD SMALL END
TLE:THREAD LARGE END

DIMENSIONAL TOLERANCES OF SWAGED NIPPLES

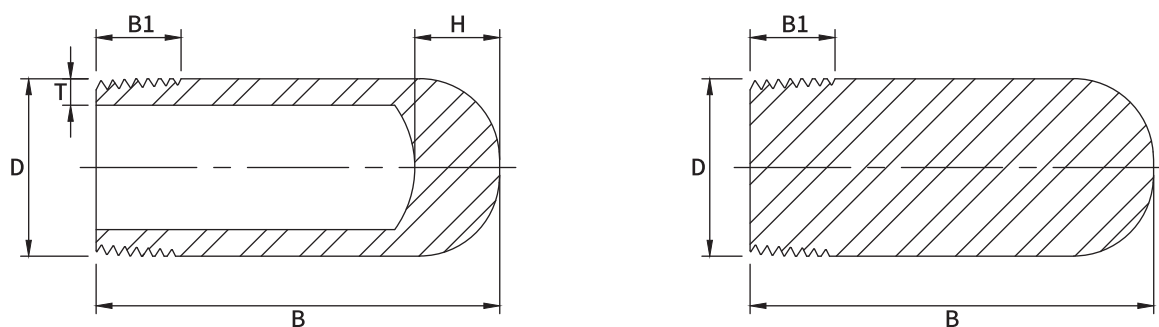
MSS SP-95 - 2018

Nominal Pipe Size (Inch)	Overall Lengths	Outside Diameter at End		Fitting Wall Thickness (see Note 1)
		Square Cut Ends	Other End Connections	
1/8~3/8	±1.5	+0.4 -0.8	±0.8	Not less than 87.5% of Nominal Wall Thickness
1/2~1-1/2	±1.5	+0.4 -0.8	+1.5 -0.8	
2~2-1/2	±3.0	±0.8	+1.5 -0.8	
3~4	±3.0	±0.8	±1.5	

*All Dimensions In Millimeters.

BULL PLUG

MSS SP-95-2018

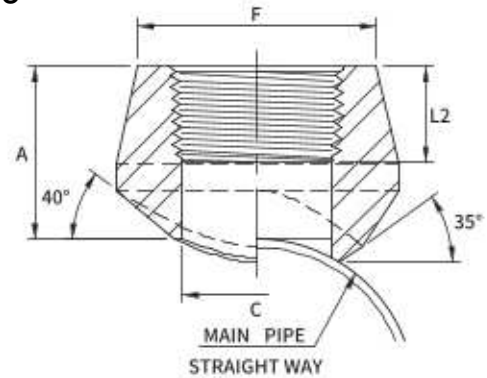
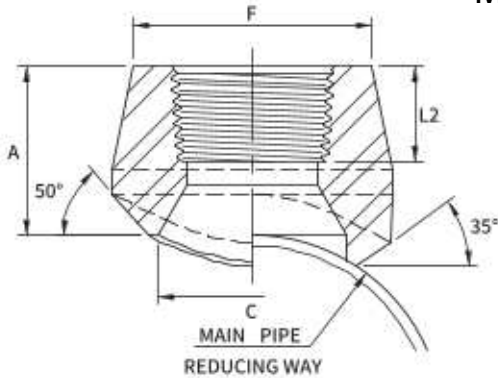


Nom. Pipe Size	D	B	B1	T (Min)				H
				Sch 40/STD	Sch 80/XS (3M)	Sch 160 (6M)	XXS	
1/8	10.3	51	9.5	1.73	2.41	—	—	14
1/4	13.7	51	11.0	2.24	3.02	—	—	14
3/8	17.1	57	12.5	2.31	3.20	—	—	14
1/2	21.3	64	14.5	2.77	3.73	4.78	7.47	14
3/4	26.7	70	16.0	2.87	3.91	5.56	7.82	18
1	33.4	76	19.0	3.38	4.55	6.35	9.09	18
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	5.08	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	7.62	11.13	15.24	20
4	114.3	178	32.0	6.02	8.56	13.49	17.12	20

*All Dimensions In Millimeters.

THREADED END 90° BRANCH OUTLET

MSS SP-97-2019



Reducing way				
OutLet Pipe (in)	A	C	L2	F
3000Lb				
1/8	19.0	13.7	8.8	22.0
1/4	19.0	13.7	11.4	22.0
3/8	20.6	17.1	12.4	25.9
1/2	25.4	21.3	14.9	31.4
3/4	26.9	26.7	16.8	37.1
1	33.3	33.4	19.6	45.5
1-1/4	33.3	42.2	21.9	57.0
1-1/2	35.0	48.3	22.7	64.0
2	38.1	60.3	23.9	76.0

Straight way				
OutLet Pipe (in)	A	C	L2	F
3000Lb				
1/4	19.0	11.5	11.4	22.0
3/8	20.6	14.5	12.4	25.9
1/2	25.4	16.5	14.9	31.4
3/4	26.9	21.5	16.8	37.1
1	33.3	27.2	19.6	45.5
1-1/4	33.3	36.0	21.9	57.0
1-1/2	35.0	42.0	22.7	64.0
2	38.1	53.0	23.9	76.0

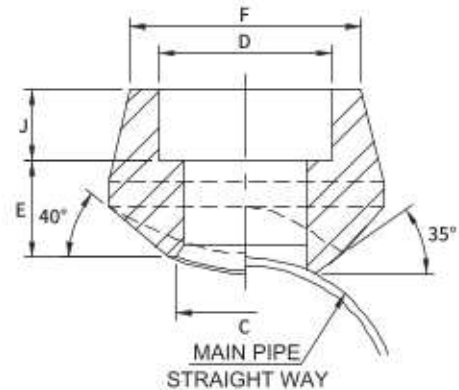
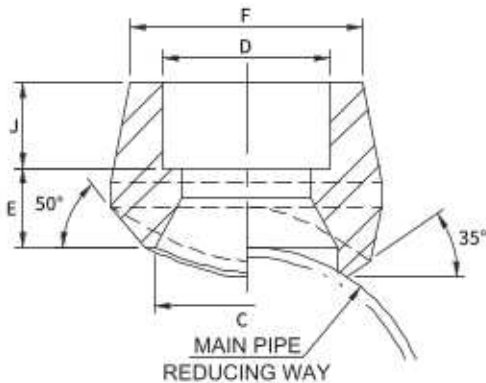
6000Lb				
OutLet Pipe (in)	A	C	L2	F
1/8	28.7	7.2	8.8	22.0
1/4	28.7	10.2	11.4	25.0
3/8	28.7	13.5	12.4	32.0
1/2	31.8	16.6	14.9	38.0
3/4	36.6	21.2	16.8	44.0
1	39.6	27.0	19.6	57.0
1-1/4	41.1	35.8	21.9	64.0
1-1/2	42.3	41.2	22.7	76.0
2	52.3	51.6	23.9	92.0

Reducing way				
OutLet Pipe (in)	A	C	L2	F
9000Lb				
1/8	28.7	7.2	8.8	25.0
1/4	28.7	10.2	11.4	32.0
3/8	28.7	13.5	12.4	38.0
1/2	31.8	16.6	14.9	42.0
3/4	36.6	21.2	16.8	48.0
1	39.6	27.0	19.6	57.2
1-1/4	41.1	35.8	21.9	68.0
1-1/2	42.3	41.2	22.7	76.2
2	52.3	51.6	23.9	92.1

*All Dimensions In Millimeters.

SOCKET WELDING END 90° BRANCH OUTLET

MSS SP-97-2019



Reducing way					
OutLet Pipe (in)	C	D	F	J	E
3000Lb					
1/8	13.7	10.8	22.0	10.5	8.5
1/4	13.7	14.2	22.0	10.5	8.5
3/8	19.1	17.6	25.9	10.5	10.5
1/2	21.3	21.8	31.4	12.5	12.5
3/4	26.7	27.2	37.1	14.0	13.0
1	33.4	33.9	45.5	15.0	18.0
1-1/4	42.2	42.7	57.0	17.0	16.0
1-1/2	48.3	48.8	64.0	17.5	17.5
2	60.3	61.2	76.0	22.0	16.0

Straight way					
OutLet Pipe (in)	C	D	F	J	E
3000Lb					
1/4	11.5	14.2	22.0	10.5	8.5
3/8	14.5	17.6	25.9	10.5	10.5
1/2	16.5	21.8	31.4	12.5	12.5
3/4	21.5	27.2	37.1	14.0	13.0
1	27.2	33.9	45.5	15.0	18.0
1-1/4	36.0	42.7	57.0	17.0	16.0
1-1/2	42.0	48.8	64.0	17.5	17.5
2	53.0	61.2	76.0	22.0	16.0

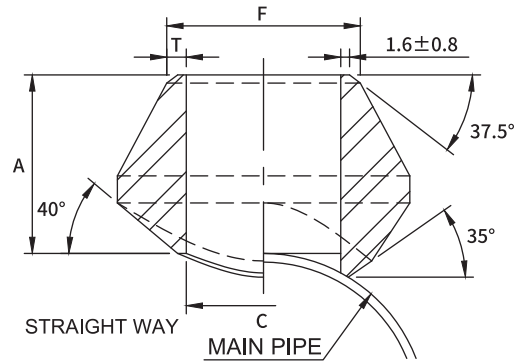
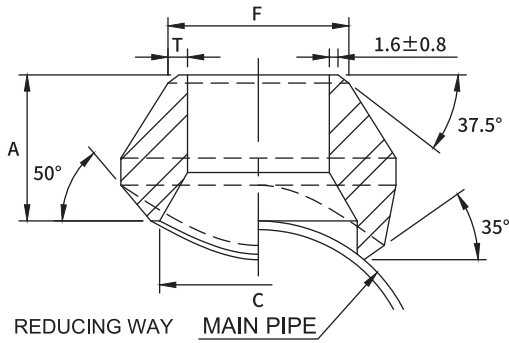
6000Lb					
OutLet Pipe (in)	C	D	F	J	E
1/8	7.2	10.8	22.0	10.5	18.5
1/4	10.2	14.2	25.0	10.5	18.5
3/8	13.5	17.6	32.0	10.5	18.5
1/2	16.6	21.8	38.0	12.5	19.5
3/4	21.2	27.2	44.0	14.0	23.0
1	27.0	33.9	57.0	15.0	25.0
1-1/4	35.8	42.7	64.0	17.0	24.0
1-1/2	41.2	48.8	76.0	17.5	25.5
2	51.6	61.2	92.0	22.0	30.0

Reducing way					
OutLet Pipe (in)	C	D	F	J	E
9000Lb					
1/2	16.6	21.8	42.0	12.5	19.5
3/4	21.2	27.2	48.0	14.0	23.0
1	27.0	33.9	57.2	15.0	25.0
1-1/4	35.8	42.7	68.0	17.0	24.0
1-1/2	41.2	48.8	76.2	17.5	25.5
2	51.6	61.2	92.1	22.0	30.0

*All Dimensions In Millimeters.

BUTT WELDING END 90° BRANCH OUTLET

MSS SP-97-2019



STANDARD

Reducing way				
OutLet Pipe (in)	A	C	F	T
1/8	16.0	13.7	10.3	1.73
1/4	16.0	13.7	13.7	2.24
3/8	19.0	17.1	17.1	2.31
1/2	19.0	21.3	21.3	2.77
3/4	22.0	26.7	26.7	2.87
1	27.0	33.4	33.4	3.38
1-1/4	32.0	42.2	42.2	3.56
1-1/2	33.0	48.3	48.3	3.68
2	38.0	60.3	60.3	3.91
2-1/2	41.0	73.0	73.0	5.16
3	44.0	88.9	88.9	5.49

Straight way				
OutLet Pipe (in)	A	C	F	T
1/4	16.0	11.5	13.7	2.24
3/8	19.0	14.5	17.1	2.31
1/2	19.0	16.5	21.3	2.77
3/4	22.0	21.5	26.7	2.87
1	27.0	27.2	33.4	3.38
1-1/4	32.0	36.0	42.2	3.56
1-1/2	33.0	42.0	48.3	3.68
2	38.0	53.0	60.3	3.91
2-1/2	41.0	65.0	73.0	5.16
3	44.0	80.0	88.9	5.49

DIMENSIONAL TOLERANCE

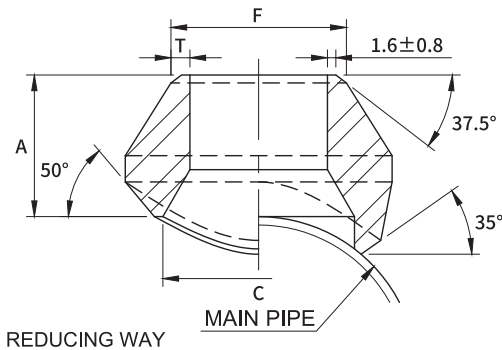
MSS SP-97 - 2019

Item	1/8"~3/4"	1"~4"	5"~12"	14"~24"
Face of fitting to Crotch (A)	±0.8	±1.6	±3.2	±4.8

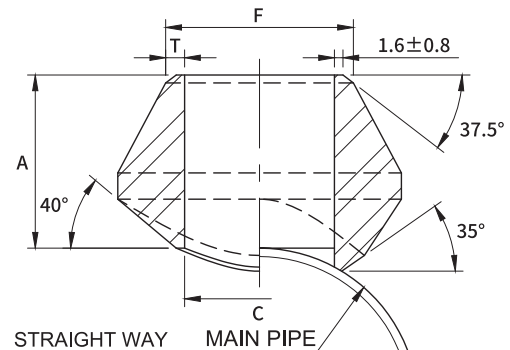
*All Dimensions In Millimeters.

BUTT WELDING END 90° BRANCH OUTLET

MSS SP-79-2019



REDUCING WAY



STRAIGHT WAY

EXTRA STRONG

Reducing way

OutLet Pipe (in)	A	C	F	T
1/8	16.0	13.7	10.3	2.41
1/4	16.0	13.7	13.7	3.02
3/8	19.0	17.1	17.1	3.20
1/2	19.0	21.3	21.3	3.73
3/4	22.0	26.7	26.7	3.91
1	27.0	33.4	33.4	4.55
1-1/4	32.0	42.2	42.2	4.85
1-1/2	33.0	48.3	48.3	5.08
2	38.0	60.3	60.3	5.54
2-1/2	41.0	73.0	73.0	7.01
3	44.0	88.9	88.9	7.62

Straight way

OutLet Pipe (in)	A	C	F	T
1/4	16.0	11.5	13.7	3.02
3/8	19.0	14.5	17.1	3.20
1/2	19.0	16.5	21.3	3.73
3/4	22.0	21.5	26.7	3.91
1	27.0	27.2	33.4	4.55
1-1/4	32.0	36.0	42.2	4.85
1-1/2	33.0	42.0	48.3	5.08
2	38.0	53.0	60.3	5.54
2-1/2	41.0	65.0	73.0	7.01
3	44.0	80.0	88.9	7.62

DIMENSIONAL TOLERANCE

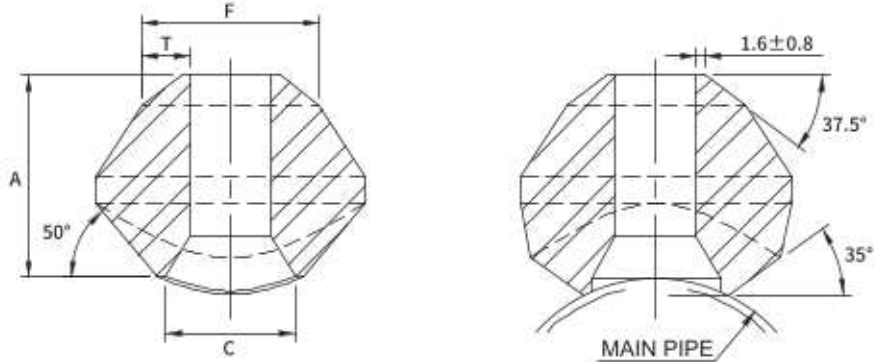
MSS SP-97 - 2019

Item	1/8"~3/4"	1"~4"	5"~12"	14"~24"
Face of fitting to Crotch (A)	±0.8	±1.6	±3.2	±4.8

*All Dimensions In Millimeters.

BUTT WELDING END 90° BRANCH OUTLET

MSS SP-97-2019



SCHEDULE 160 & DOUBLE EXTRA STRONG

Reducing way					
Outlet Pipe (in)	A	C	F	T	
				S160	XXS
1/2	28.4	13.8	21.3	4.78	7.47
3/4	31.8	18.9	26.7	5.56	7.82
1	38.1	24.3	33.4	6.35	9.09
1-1/4	44.4	32.5	42.2	6.35	9.70
1-1/2	50.8	38.1	48.3	7.14	10.15
2	55.4	49.2	60.3	8.74	11.07
2-1/2	62.0	59.0	73.0	9.53	14.02
3	73.2	73.7	88.9	11.13	15.24

CONVENTIONAL RUN PIPE SIZE COMBINATIONS

3000Lb THREAD/SOCKET-WELD END STD/XS BUTT WELDING END

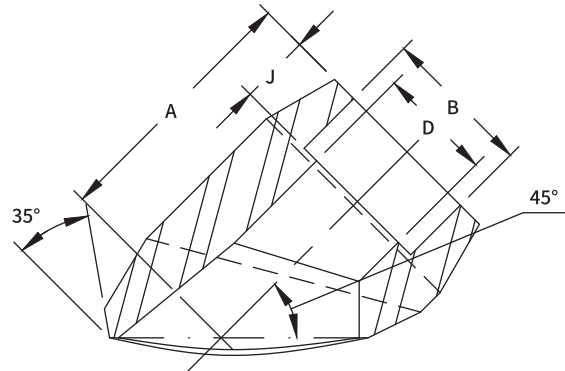
OUTLET SIZE												
		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
RUN SIZE (MAIN PIPE)	Reducing way	3/8"-3 4" 1"-36"	1/2" 3/4"-1-1/4" 1-1/2"-36"	3/4" 1" 1-1 4" 1-1/2"-3" 3-1 2"-36"	1" 1-1 4" 1-1 2" 2"-3" 3-1 2"-6" 8"-36"	1-1/4" 1-1/2" 2" 2-1/2" 3"-4" 5"-10" 12"-36"	1-1/2" 2" 2-1/2" 3" 3-1/2"-5" 6"-8" 10"-36"	2" 2-1/2" 3" 3-1/2" 4"-5" 6"-10" 12"-36"	2-1 2" 3" 3-1 2" 4" 5"-6" 8"-10" 12"-18" 20"-36"	3" 3-1/2" 4" 5" 6" 8" 10"-14" 16"-36"	3-1/2" 4" 5" 6" 8" 10" 12"-16" 18"-36"	5" 6" 8" 10" 12"-14" 16"-18" 20"-24" 26"-36"
	Straight way	3/8"-36"	1/2"-36"	3/4"-36"	1"-36"	1-1/4"-1-1/2" 2"-36"	1-1/2" 2"-3" 3-1/2"-36"	2" 2-1/2"-4" 5"-36"	2-1 2" 3"-3-1/2" 4"-6" 8"-36"	3" 3-1 2"-4" 5"-8" 10"-36"	3-1/2" 4" 5" 6" 8"-12" 14"-36"	5" 6" 8" 10" 12"-16" 18"-36"

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

*All Dimensions In Millimeters.

SOCKET WELDING 45° BRANCH OUTLET

MSS SP-97-2019



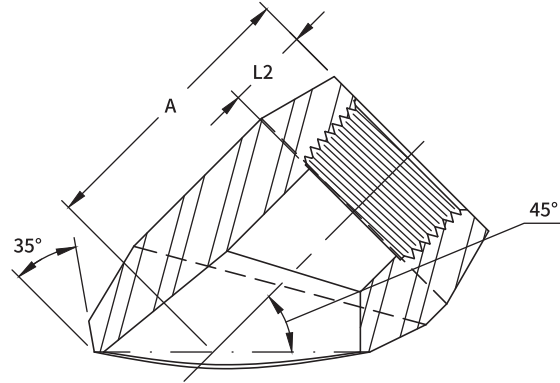
45° Branch Outlet					
Outlet Pipe		A	B	D	J
DN	IN				
3000Lb					
8	1/4	40.5	14.2	9.3	10.0
10	3/8	40.5	17.6	12.6	10.0
15	1/2	40.5	21.8	15.8	11.1
20	3/4	47.6	27.2	21.0	12.7
25	1	55.6	33.9	26.7	13.5
32	1-1/4	62.7	42.7	35.1	15.1
40	1-1/2	66.7	48.8	40.9	15.9
50	2	81.0	61.2	52.5	17.5

6000Lb					
8	1/4	40.5	14.2	6.4	10.0
10	3/8	40.5	17.6	9.2	10.0
15	1/2	47.6	21.8	11.8	10.0
20	3/4	55.6	27.2	15.6	14.3
25	1	62.7	33.9	20.7	15.9
32	1-1/4	66.7	42.7	29.5	20.6
40	1-1/2	84.1	48.8	34.0	20.6
50	2	93.7	61.2	42.9	22.0

*All Dimensions In Millimeters.

THREADED END 45° BRANCH OUTLET

MSS SP-97-2019



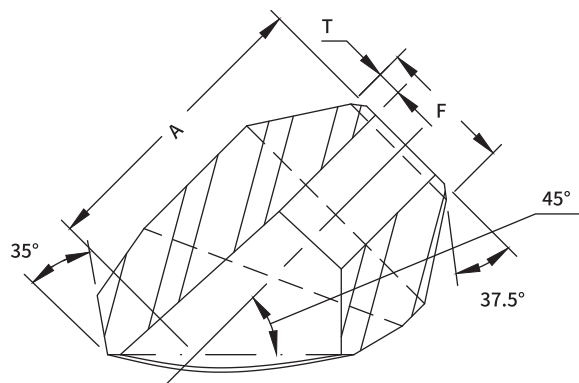
Standard Weight & Extra Strong

45°Branch Outlet				
Outlet Pipe		A		L2
DN	IN	3000Lb	6000Lb	
8	1/4	40.5	40.5	11.4
10	3/8	40.5	40.5	12.4
15	1/2	40.5	47.6	14.9
20	3/4	47.6	55.6	16.8
25	1	55.6	62.7	19.6
32	1-1/4	62.7	66.7	21.9
40	1-1/2	66.7	84.1	22.7
50	2	81.0	93.7	23.9

*All Dimensions In Millimeters.

BUTT WELDING END 45° BRANCH OUTLET

MSS SP-97-2019

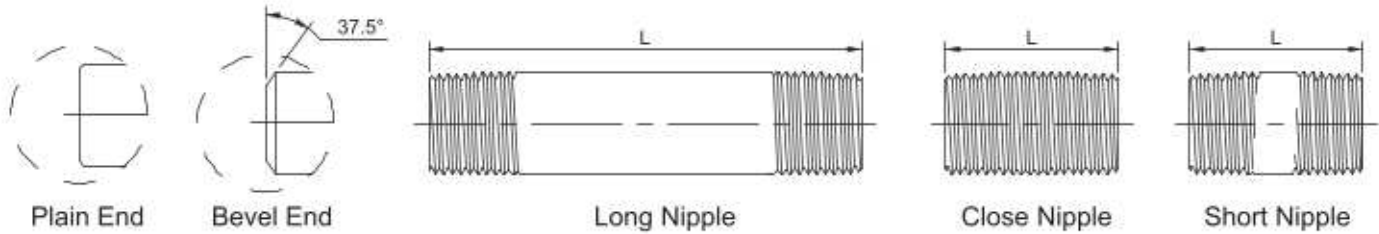


45°Branch Outlet					
Outlet Pipe		A	T		F
DN	IN		Sch 40/STD	Sch 80/XS	
8	1/4	40.5	2.24	3.02	13.7
10	3/8	40.5	2.31	3.20	17.1
15	1/2	40.5	2.77	3.73	21.3
20	3/4	47.6	2.87	3.91	26.7
25	1	55.6	3.38	4.55	33.4
32	1-1/4	62.7	3.56	4.85	42.2
40	1-1/2	66.7	3.68	5.08	48.3
50	2	81.0	3.91	5.54	60.3

*All Dimensions In Millimeters.

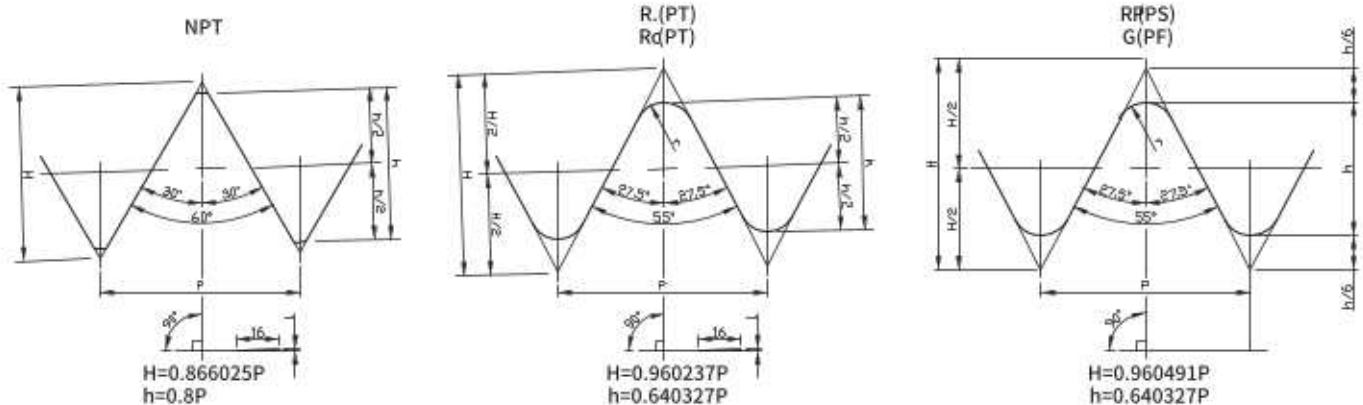
NIPPLE

ASTM A733 -2016



Nom. Pipe Size	L			Weight			
	Close Nipple	Short Nipple	Long Nipple	Sch 40/STD	Sch 80/XS	Sch 160	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	1-1/2	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	2-1/2-12	3.39	4.47	5.61	7.77
1-1/2	1-3/4	2	2-1/2-12	4.05	5.41	7.25	9.56
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	16.07	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	67.56	79.22

Shape of Threaded



*All Dimensions In Inches . .

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