



INTRODUCTION

BOTH-WELL is equivalent to Win-Win, existing in between both consumers and manufacturer, both devoted employers and valued employees, a bilateral satisfaction.

Ever since its establishment in 1985, with the spirit of pursuing most advanced technology and striving for the ultimate quality-oriented products, the company is continuously utilizing the most up-to-date hi-tech facilities and most sophisticated manufacturing techniques, on the basis of skilled manpower and accumulated experiences, BOTH-WELL has been well-recognized among customers worldwide for the excellence of Quality and Services which has enabled us to win the unrivalled reputation in our industries.



QUALITY ASSURANCE

It is our indelible belief in Quality First.

BOTH-WELL's Quality Management System has been certified with ISO 9001: 2015, PED, together with all major international-recognized certificates and being granted as an approval vendor for ARAMCO, also being listed on the Approval Supplier List of major domestic refineries, petro-chemical factories in Taiwan.

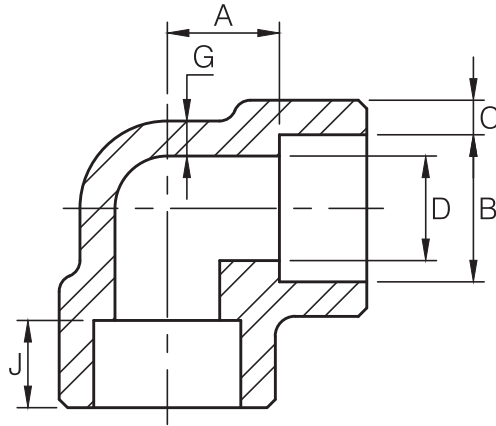
BOTH-WELL prides itself in having the best service performance in our industries which can only attribute it to the quality of people we employ and the amicable relationship and close partnership we have built-up with all our customers, and the company will continue its ultimate efforts to satisfy all its customers' demands by providing top quality products and high efficient services by anticipating the continued encouragement and supports from all its customers in the years ahead.

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 (ISO7-1, ISO228-1)), 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	: 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). C. SIZE of RAW MATERIAL : DIA. 19 ~ 120mm ROUND BAR.	
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 : BRAND ONLY. D. 1/2" to 4" : MARKED WITH BRAND, 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 / WOODEN CASE. PLYWOODEN CASE	



90° ELBOW



Dimensions are in millimeters.

Socket Welding								
DN	Nom. Pipe Size	B ⁽²⁾	C ⁽¹⁾		D ⁽²⁾	A ⁽²⁾	G (Min)	J (Min)
			(Avg)	(Min)				

3000Lb

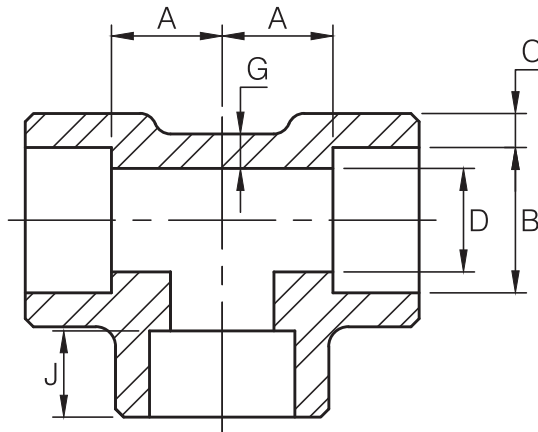
6	1/8	10.8	3.18	3.18	6.9	11.0	2.41	9.5
8	1/4	14.2	3.78	3.30	9.3	11.0	3.02	9.5
10	3/8	17.6	4.01	3.50	12.6	13.5	3.20	9.5
15	1/2	21.8	4.67	4.09	15.8	15.5	3.73	9.5
20	3/4	27.2	4.90	4.27	21.0	19.0	3.91	12.5
25	1	33.9	5.69	4.98	26.7	22.5	4.55	12.5
32	1-1/4	42.7	6.07	5.28	35.1	27.0	4.85	12.5
40	1-1/2	48.8	6.35	5.54	40.9	32.0	5.08	12.5
50	2	61.2	6.93	6.04	52.5	38.0	5.54	16.0
65	2-1/2	73.9	8.76	7.67	62.7	41.0	7.01	16.0
80	3	89.8	9.52	8.30	78.0	57.0	7.62	16.0
100	4	115.2	10.69	9.35	102.3	66.5	8.56	19.0

(1) Average of socket Wall Thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.

(2) Tolerance see page 5



TEE



Dimensions are in millimeters.

Socket Welding								
DN	Nom. Pipe Size	B ⁽²⁾	C ⁽¹⁾		D ⁽²⁾	A ⁽²⁾	G (Min)	J (Min)
			(Avg)	(Min)				

3000Lb

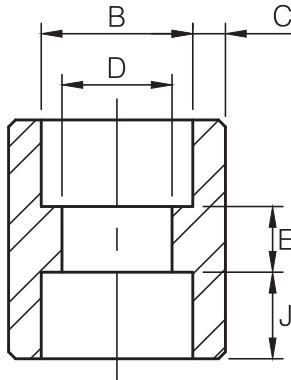
6	1/8	10.8	3.18	3.18	6.9	11.0	2.41	9.5
8	1/4	14.2	3.78	3.30	9.3	11.0	3.02	9.5
10	3/8	17.6	4.01	3.50	12.6	13.5	3.20	9.5
15	1/2	21.8	4.67	4.09	15.8	15.5	3.73	9.5
20	3/4	27.2	4.90	4.27	21.0	19.0	3.91	12.5
25	1	33.9	5.69	4.98	26.7	22.5	4.55	12.5
32	1-1/4	42.7	6.07	5.28	35.1	27.0	4.85	12.5
40	1-1/2	48.8	6.35	5.54	40.9	32.0	5.08	12.5
50	2	61.2	6.93	6.04	52.5	38.0	5.54	16.0
65	2-1/2	73.9	8.76	7.67	62.7	41.0	7.01	16.0
80	3	89.8	9.52	8.30	78.0	57.0	7.62	16.0
100	4	115.2	10.69	9.35	102.3	66.5	8.56	19.0

(1) Average of socket Wall Thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.

(2) Tolerance see page 5



FULL COUPLING



Dimensions are in millimeters.

Socket Welding							
DN	Nom. Pipe Size	B ⁽²⁾	C ⁽¹⁾		D ⁽²⁾	E ⁽²⁾	J (Min)
			(Avg)	(Min)			
3000Lb							
6	1/8	10.8	3.18	3.18	6.9	6.5	9.5
8	1/4	14.2	3.78	3.30	9.3	6.5	9.5
10	3/8	17.6	4.01	3.50	12.6	6.5	9.5
15	1/2	21.8	4.67	4.09	15.8	9.5	9.5
20	3/4	27.2	4.90	4.27	21.0	9.5	12.5
25	1	33.9	5.69	4.98	26.7	12.5	12.5
32	1-1/4	42.7	6.07	5.28	35.1	12.5	12.5
40	1-1/2	48.8	6.35	5.54	40.9	12.5	12.5
50	2	61.2	6.93	6.04	52.5	19.0	16.0
65	2-1/2	73.9	8.76	7.67	62.7	19.0	16.0
80	3	89.8	9.52	8.30	78.0	19.0	16.0
100	4	115.2	10.69	9.35	102.3	19.0	19.0

(1) Average of socket Wall Thickness around periphery shall be no less than listed values. The minimum values are permitted in localized areas.

(2) Tolerance see page 5

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

The others in accordance with each size.



DIMENSIONAL TOLERANCE OF ASME B16.11

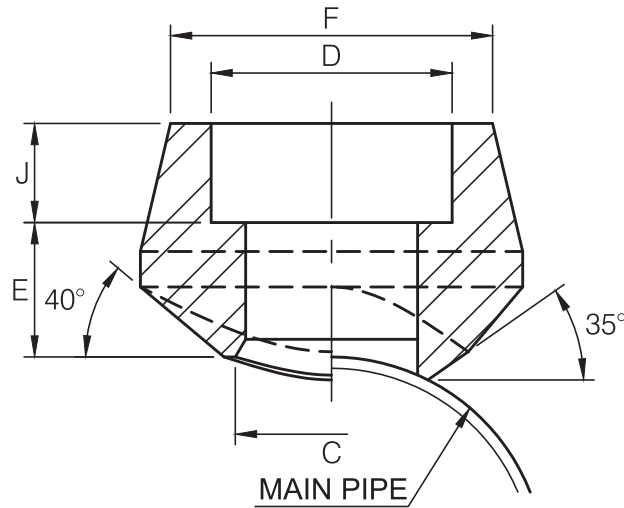
ASME B16.11-2016

Unit : mm

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 diameter 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 to socket to opposite face (F)	Half Coupling	±1.0	±1.5	± 2.0	± 2.5	



SOCKET WELDING END 90° BRANCH OUTLET



STRAIGHT WAY

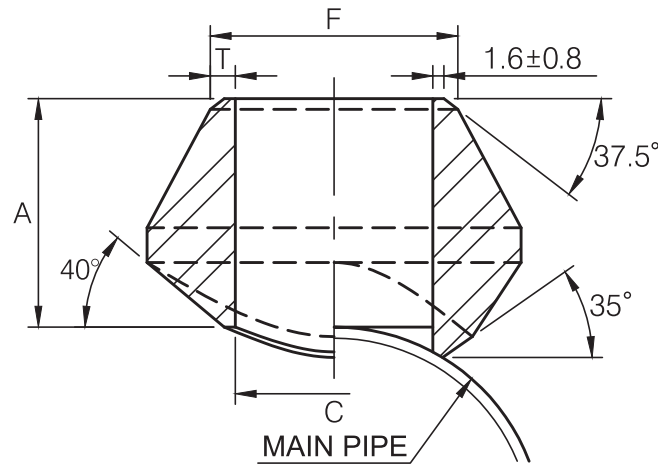
Dimensions are in millimeters.

Straight way					
OutLet Pipe (in)	C	D	F	J (Min)	E (Max)
3000Lb					
1/4	11.5	14.2	22.0	9.5	11.0
3/8	14.5	17.6	25.9	9.5	13.0
1/2	16.5	21.8	31.4	9.5	16.0
3/4	21.5	27.2	37.1	12.5	16.0
1	27.2	33.9	45.5	12.5	23.0
1-1/4	36.0	42.7	57.0	12.5	23.0
1-1/2	42.0	48.8	64.0	12.5	24.0
2	53.0	61.2	76.0	16.0	24.0
2-1/2	65.0	73.9	92.0	16.0	26.0
3	80.0	89.8	109.2	16.0	31.0
4	104.0	115.2	140.0	19.0	31.0

(1) Socket in accordance with ASME B16.11 .



BUTT WELDING END 90° BRANCH OUTLET



STRAIGHT WAY

Dimensions are in millimeters.

Straight way				
OutLet Pipe (in)	A	C	F	T
1/4	15.7	11.5	13.7	2.24
3/8	19.1	14.5	17.1	2.31
1/2	19.1	16.5	21.3	2.77
3/4	22.4	21.5	26.7	2.87
1	26.9	27.2	33.4	3.38
1-1/4	31.8	36.0	42.2	3.56
1-1/2	33.3	42.0	48.3	3.68
2	38.1	53.0	60.3	3.91
2-1/2	41.1	65.0	73.0	5.16
3	44.4	80.0	88.9	5.49
4	50.8	104.0	114.3	6.02

(1) Weld Bevel in accordance with ASME B16.25.

DIMENSIONAL TOLERANCE

MSS SP-97-2012

Unit : mm

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



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" 3~4" 5"~10" 12"~36"	1-1/2" 2" 2-1/2" 3" 3-1/2" 3-1/2"~5" 6"~8" 10"~36"	1-1/2" 2" 3" 3-1/2" 4" 4"~5" 6"~10" 12"~36"	2" 3" 3-1/2" 4" 5"~6" 8"~10" 12"~18" 20"~36"	2-1/2" 3" 3-1/2" 4" 5" 6" 8" 10"~14" 16"~36"	3" 3-1/2" 4" 5" 6" 8" 10" 12"~16" 18"~36"	3-1/2" 4" 5" 6" 8" 10" 12"~14" 20"~24" 26"~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.