

Pipe Fittings Specialist

WINHIBEND

(주)원하이벤드



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I 회사소개서

부산시 녹산국가산업단지에 위치한 (주)원하이벤드는 관이음쇠(Pipe Fittings) 전문 제조기업입니다.

1989년부터 스테인레스 관이음쇠(Stainless Steel Pipe Fittings)를 전문적으로 생산해온 (주)에스티벤드앤플랜트를 (주)윈스틸이 인수하여 새롭게 설립되었으며, 27년간 축적된 제조기술 및 서비스 Know How와 개선된 재무구조를 바탕으로 관이음쇠 업계의 새로운 강자로 떠오르고 있습니다.

ERP를 기반으로한 생산체제 확립과 다량의 재고를 항시 보유하여 다품종 소량주문 등 고객의 수요에 즉시 대응할 수 있는 System을 구축하였습니다. 또한 수도권 고객의 요구에 항시 대응고자 서울 가산디지털밸리에 영업 및 서비스 인프라를 보유하고 있습니다.

KS, KC, JIS, ISO9001 등 주요 인증을 보유하여 고객의 품질 요구를 만족시키고 있으며, 각종 선급 (KR, ABS, DNV, Lloyd's, RINA, GL, ClassNK) 및 원자력(ASME NPT, KEPIC 등) 등 고객/산업별 특화된 인증을 획득하였습니다.

또한 건실한 재무구조를 바탕으로 사업 및 제품 Portfolio 다각화를 추진하여 다양한 고객의 요구를 만족시키고 있습니다.

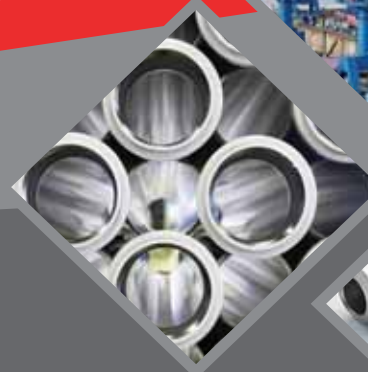
항상 최고의 제품과 서비스로 고객에게 보답하겠습니다.

I 주요현황

- 2016.07.01. 철강그룹 (주)윈스틸 가족회사로 설립
- 삼성물산, 현대건설 등 국내 주요 EPC사의 협력업체 등록
- 제조현황(Production Capacity) : 연간 100만개(3,000톤) 이상 생산가능
- 제품범위(Product Scope) : Elbow(~ 1,200A(48")), Tees, Reducers, Caps, Stub-ends
ASME 규격 제품(HI SCHEDULE 포함)
특수 소재(Cu-Ni, MONEL, Hi-Mn, DUPLEX 등) 제품
- 주요설비: 5,000톤 성형프레스, 10,000톤 TEE 프레스 등 각종 설비 및 금형보유
- MES/ERP 구축(Technopark Smart Factory Project)

I 주요실적

- 화성동탄, 독도 등 주요 수질복원시설
- 석유화학, 제지, 해양플랜트, 담수화 PLANT
- 삼성전자, LG 등 반도체, LCD 등 주요 라인
- STS 430, Hi-Mn 성형성과 용접성에 대한 연구 개발 (일본 Nowla Engineering)
- POSCO 'LNG용 고망간강 배관재 부품제조기술개발' 주관사(산업통상자원부)
- 'HYDRAULIC TEE 성형기술개발' 주관사(중소기업청)

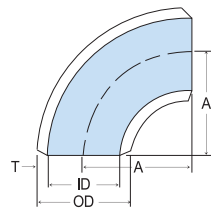


KS/JIS

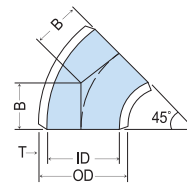
- 05 90°, 45° Elbow Sch5s, Sch10s, Sch20s
- 06 90°, 45° Elbow 7.9T, STD, XS
- 07 Tee Sch5s, Sch10s, Sch20s
- 09 Tee 7.9T, STD, XS
- 11 Reducer Sch5s, Sch10s, Sch20s
- 13 Reducer 7.9T, STD, XS
- 15 180° Elbow, Cap Sch5s, Sch10s, Sch20s
- 16 Lab Joint Stub End Sch5s, Sch10s, Sch20s, Sch40s

90° Elbow [Long, Short] 45° Elbow [Long]

Sch 5s, Sch 10s, Sch 20s



[90° Elbow]



[45° Elbow]

KS B 1541/43, JIS B 2312/3

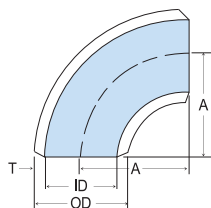
unit : mm

Nominal Pipe Size	Outside Diameter (O.D)	Sch 5s		Sch 10s		Sch 20s		Long		Short
		ID	T	ID	T	ID	T	A(90°)	B(45°)	A(90°)
15A	21.7	18.4	1.65	17.5	2.1	16.7	2.5	38.1	15.8	-
20A	27.2	23.9	1.65	23.0	2.1	22.2	2.5	38.1	15.8	-
25A	34.0	30.7	1.65	28.4	2.8	28.0	3.0	38.1	15.8	25.4
32A	42.7	39.4	1.65	37.1	2.8	36.7	3.0	47.6	19.7	31.8
40A	48.6	45.3	1.65	43.0	2.8	42.6	3.0	57.2	23.7	38.1
50A	60.5	57.2	1.65	54.9	2.8	53.5	3.5	76.2	31.6	50.8
65A	76.3	72.1	2.10	70.3	3.0	69.3	3.5	95.3	39.5	63.5
80A	89.1	84.9	2.10	83.1	3.0	81.1	4.0	114.3	47.3	76.2
90A	101.6	97.4	2.10	95.6	3.0	93.6	4.0	133.4	55.3	88.9
100A	114.3	110.1	2.10	108.3	3.0	106.3	4.0	152.4	63.1	101.6
125A	139.8	134.2	2.80	133.0	3.4	129.8	5.0	190.5	78.9	127.0
150A	165.2	159.6	2.80	158.4	3.4	155.2	5.0	228.6	94.7	152.4
200A	216.3	210.7	2.80	208.3	4.0	203.3	6.5	304.8	126.3	203.2
250A	267.4	260.6	3.40	259.4	4.0	254.4	6.5	381.0	157.8	254.0
300A	318.5	310.5	4.00	309.5	4.5	305.5	6.5	457.2	189.4	304.8
350A	355.6	347.6	4.00	346.0	4.8	339.8	7.9	533.4	220.9	355.6
400A	406.4	398.0	4.20	396.8	4.8	390.6	7.9	609.6	252.5	406.4
450A	457.2	448.8	4.20	447.6	4.8	441.4	7.9	685.8	284.1	457.2
500A	508.0	498.4	4.80	497.0	5.5	492.2	7.9	762.0	315.6	508.0
550A	558.8	549.2	4.80	547.8	5.5	-	-	838.2	347.2	558.8
600A	609.6	598.6	5.50	596.8	6.4	-	-	914.4	378.7	609.6
750A	762.0	749.2	6.40	746.2	7.9	-	-	1143.0	473.4	762.0

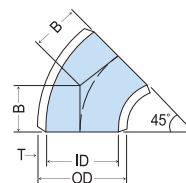
STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

90° Elbow [Long, Short]
45° Elbow [Long]

7.9T, STD, XS



[90° Elbow]



[45° Elbow]

KS B 1541/43, JIS B 2312/3

unit : mm

Nominal Pipe Size	Outside Diameter (O.D.)	Wall Thickness T						Center to Center			
		7.9T		STD		XS		Long		Short	
		ID	T	ID	T	ID	T	A	B	A	B
350A	355.6	339.8	7.9	336.6	9.5	330.2	12.7	533.4	220.9	355.6	147.3
400A	406.4	390.6	7.9	387.4	9.5	381.0	12.7	609.6	252.5	406.4	168.3
450A	457.2	441.4	7.9	438.2	9.5	431.8	12.7	685.8	284.1	457.2	189.4
500A	508.0	492.2	7.9	489.0	9.5	482.6	12.7	762.0	315.6	508.0	210.4
550A	558.8	543.0	7.9	539.8	9.5	533.4	12.7	838.2	347.2	558.8	231.5
600A	609.6	593.8	7.9	590.6	9.5	584.2	12.7	914.4	378.7	609.6	252.5
650A	660.4	644.6	7.9	641.4	9.5	635.0	12.7	990.6	410.3	660.4	273.5
700A	711.2	695.4	7.9	692.2	9.5	685.8	12.7	1066.8	441.9	711.2	294.6
750A	762.0	746.2	7.9	743.0	9.5	736.6	12.7	1143.0	473.4	762.0	315.6
800A	812.8	797.0	7.9	793.8	9.5	787.4	12.7	1219.2	505.0	812.8	336.7
850A	863.6	847.8	7.9	844.6	9.5	838.2	12.7	1295.4	536.6	863.6	357.7
900A	914.4	898.6	7.9	895.4	9.5	889.0	12.7	1371.6	568.1	914.4	378.7
950A	965.2	949.4	7.9	946.2	9.5	939.8	12.7	1447.8	599.7	965.2	-
1000A	1016.0	1000.2	7.9	997.0	9.5	990.6	12.7	1524.0	631.2	1016.0	420.8
1050A	1066.8	1051.0	7.9	1047.8	9.5	1041.4	12.7	1600.2	662.8	1066.8	-
1100A	1117.6	1101.8	7.9	1098.6	9.5	1092.2	12.7	1676.4	694.4	1117.6	462.9
1150A	1168.4	1152.6	7.9	1149.4	9.5	1143.0	12.7	1752.6	725.9	1168.4	-
1200A	1219.2	1203.4	7.9	1200.2	9.5	1193.8	12.7	1828.8	757.5	1219.2	505.0

KS/JIS

TEE

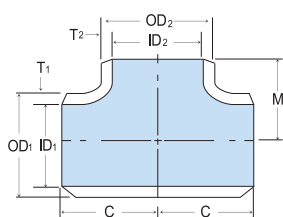
Sch 5s, Sch 10s, Sch 20s

KS B 1541/43, JIS B 2312/13

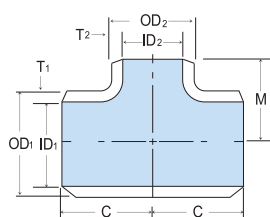
unit : mm

Nominal Pipe Size	Outside Diameter		Wall Thickness T						Center to End	
	OD ₁	OD ₂	Sch 5s		Sch 10s		Sch 20s		C	M
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
15A	21.7	21.7	1.65	1.65	2.1	2.1	2.5	2.5	25.4	25.4
20A	27.2	27.2	1.65	1.65	2.1	2.1	2.5	2.5	28.6	28.6
25A	34.0	34.0	1.65	1.65	2.8	2.8	3.0	3.0	38.1	38.1
32A	42.7	42.7	1.65	1.65	2.8	2.8	3.0	3.0	47.6	47.6
32 x 32 x 25A	42.7	34.0	1.65	1.65	2.8	2.8	3.0	3.0	47.6	47.6
40A	48.6	48.6	1.65	1.65	2.8	2.8	3.0	3.0	57.2	57.2
40 x 40 x 32A	48.6	42.7	1.65	1.65	2.8	2.8	3.0	3.0	57.2	57.2
40 x 40 x 25A	48.6	34.0	1.65	1.65	2.8	2.8	3.0	3.0	57.2	57.2
50A	60.5	60.5	1.65	1.65	2.8	2.8	3.5	3.5	63.5	63.5
50 x 50 x 40A	60.5	48.6	1.65	1.65	2.8	2.8	3.5	3.0	63.5	60.3
50 x 50 x 32A	60.5	42.7	1.65	1.65	2.8	2.8	3.5	3.0	63.5	57.2
65A	76.3	76.3	2.10	2.10	3.0	3.0	3.5	3.5	76.2	76.2
65 x 65 x 50A	76.3	60.5	2.10	1.65	3.0	2.8	3.5	3.5	76.2	69.9
65 x 65 x 40A	76.3	48.6	2.10	1.65	3.0	2.8	3.5	3.0	76.2	66.7
80A	89.1	89.1	2.10	2.10	3.0	3.0	4.0	4.0	85.7	85.7
80 x 80 x 65A	89.1	76.3	2.10	2.10	3.0	3.0	4.0	3.5	85.7	82.6
80 x 80 x 50A	89.1	60.5	2.10	1.65	3.0	2.8	4.0	3.5	85.7	76.2
90A	101.6	101.6	2.10	2.10	3.0	3.0	4.0	4.0	95.3	95.3
90 x 90 x 80A	101.6	89.1	2.10	2.10	3.0	3.0	4.0	4.0	95.3	92.1
90 x 90 x 65A	101.6	76.3	2.10	2.10	3.0	3.0	4.0	3.5	95.3	88.9
100A	114.3	114.3	2.10	2.10	3.0	3.0	4.0	4.0	104.8	104.8
100 x 100 x 90A	114.3	101.6	2.10	2.10	3.0	3.0	4.0	4.0	104.8	101.6
100 x 100 x 80A	114.3	89.1	2.10	2.10	3.0	3.0	4.0	4.0	104.8	98.4
100 x 100 x 65A	114.3	76.3	2.10	2.10	3.0	3.0	4.0	3.5	104.8	95.3
125A	139.8	139.8	2.80	2.80	3.4	3.4	5.0	5.0	123.8	123.8
125 x 125 x 100A	139.8	114.3	2.80	2.10	3.4	3.0	5.0	4.0	123.8	117.5
125 x 125 x 90A	139.8	101.6	2.80	2.10	3.4	3.0	5.0	4.0	123.8	114.3
125 x 125 x 80A	139.8	89.1	2.80	2.10	3.4	3.0	5.0	4.0	123.8	111.1
150A	165.2	165.2	2.80	2.80	3.4	3.4	5.0	5.0	142.9	142.9
150 x 150 x 125A	165.2	139.8	2.80	2.80	3.4	3.4	5.0	5.0	142.9	136.5
150 x 150 x 100A	165.2	114.3	2.80	2.10	3.4	3.0	5.0	4.0	142.9	130.2
200A	216.3	216.3	2.80	2.80	4.0	4.0	6.5	6.5	177.8	177.8
200 x 200 x 150A	216.3	165.2	2.80	2.80	4.0	3.4	6.5	5.0	177.8	168.3
200 x 200 x 125A	216.3	139.8	2.80	2.80	4.0	3.4	6.5	5.0	177.8	161.9
250A	267.4	267.4	3.40	3.40	4.0	4.0	6.5	6.5	215.9	215.9
250 x 250 x 200A	267.4	216.3	3.40	2.80	4.0	4.0	6.5	6.5	215.9	203.2
250 x 250 x 150A	267.4	165.2	3.40	2.80	4.0	3.4	6.5	5.0	215.9	193.7
300A	318.5	318.5	4.00	4.00	4.5	4.5	6.5	6.5	254.0	254.0
300 x 300 x 250A	318.5	267.4	4.00	3.40	4.5	4.0	6.5	6.5	254.0	241.3
300 x 300 x 200A	318.5	216.3	4.00	2.80	4.5	4.0	6.5	6.5	254.0	228.6

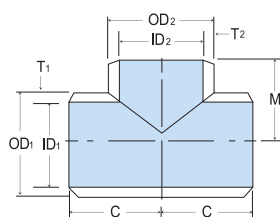
STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



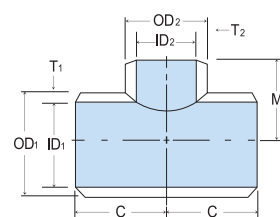
[Straight (I)]



[Reducing (I)]



[Straight (II)]



[Reducing (II)]

KS B 1541/43, JIS B 2312/13

unit : mm

Nominal Pipe Size	Outside Diameter		Wall Thickness T						Center to End	
	OD ₁	OD ₂	Sch 5s		Sch 10s		Sch 20s		C	M
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
350 A	355.6	355.6	4.0	4.0	4.8	4.8	7.9	7.9	279.4	279.4
350 x 350 x 300 A	355.6	318.5	4.0	4.0	4.8	4.5	7.9	7.9	279.4	269.9
350 x 350 x 250 A	355.6	267.4	4.0	3.4	4.8	4.0	7.9	7.9	279.4	257.2
350 x 350 x 200 A	355.6	216.3	4.0	2.8	4.8	4.0	7.9	7.9	279.4	247.7
400 A	406.4	406.4	4.2	4.2	4.8	4.8	7.9	7.9	304.8	304.8
400 x 400 x 350 A	406.4	355.6	4.2	4.0	4.8	4.8	7.9	7.9	304.8	304.8
400 x 400 x 300 A	406.4	318.5	4.2	4.0	4.8	4.5	7.9	7.9	304.8	295.3
400 x 400 x 250 A	406.4	267.4	4.2	3.4	4.8	4.0	7.9	7.9	304.8	282.6
450 A	457.2	457.2	4.2	4.2	4.8	4.8	7.9	7.9	342.9	342.9
450 x 450 x 400 A	457.2	406.4	4.2	4.2	4.8	4.8	7.9	7.9	342.9	330.2
450 x 450 x 350 A	457.2	355.6	4.2	4.0	4.8	4.8	7.9	7.9	342.9	330.2
450 x 450 x 300 A	457.2	318.5	4.2	4.0	4.8	4.5	7.9	7.9	342.9	320.7
500 A	508.0	508.0	4.8	4.8	5.5	5.5	7.9	7.9	381.0	381.0
500 x 500 x 450 A	508.0	457.2	4.8	4.2	5.5	4.8	7.9	7.9	381.0	368.3
500 x 500 x 400 A	508.0	406.4	4.8	4.2	5.5	4.8	7.9	7.9	381.0	355.6
500 x 500 x 350 A	508.0	355.6	4.8	4.0	5.5	4.8	7.9	7.9	381.0	355.6
550 A	558.8	558.8	4.8	4.8	5.5	5.5	-	-	419.1	419.1
550 x 550 x 500 A	558.8	508.0	4.8	4.8	5.5	5.5	-	-	419.1	406.4
550 x 550 x 450 A	558.8	457.2	4.8	4.2	5.5	4.8	-	-	419.1	393.7
550 x 550 x 400 A	558.8	406.4	4.8	4.2	5.5	4.8	-	-	419.1	381.0
600 A	609.6	609.6	5.5	5.5	6.4	6.4	-	-	431.8	431.8
600 x 600 x 550 A	609.6	558.8	5.5	4.8	6.4	5.5	-	-	431.8	431.8
600 x 600 x 500 A	609.6	508.0	5.5	4.8	6.4	5.5	-	-	431.8	431.8
600 x 600 x 450 A	609.6	457.2	5.5	4.2	6.4	4.8	-	-	431.8	419.1
750 A	762.0	762.0	6.4	6.4	7.9	7.9	-	-	558.8	558.8
750 x 750 x 600 A	762.0	609.6	6.4	5.5	7.9	6.4	-	-	558.8	533.4

TEE

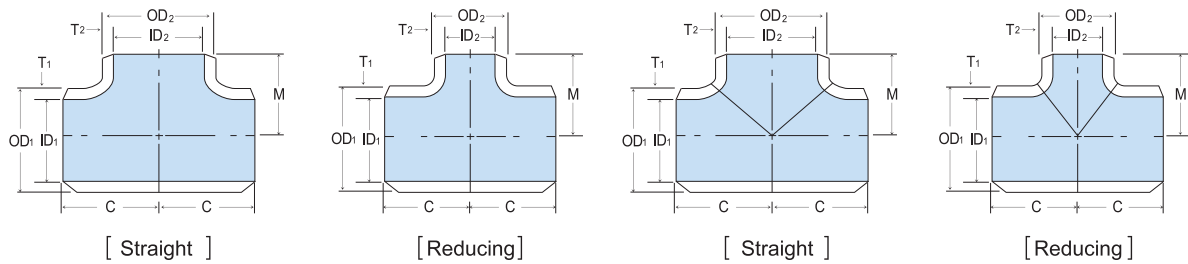
7.9T, STD, XS

KS B 1541/43, JIS B 2312/3

unit : mm

Nominal Pipe Size	Outside Diameter (O.D)	Outside Diameter (O.D)	Wall Thickness T			C	M
			7.9T	STD	XS		
400A	406.4	406.4	7.9	9.5	12.7	304.8	304.8
400X400X350A	406.4	355.6	7.9	9.5	12.7	304.8	304.8
400X400X300A	406.4	318.5	7.9	9.5	12.7	304.8	295.3
400X400X250A	406.4	267.4	7.9	9.5	12.7	304.8	282.6
450A	457.2	457.2	7.9	9.5	12.7	342.9	342.9
450X450X400A	457.2	406.4	7.9	9.5	12.7	342.9	330.2
450X450X350A	457.2	355.6	7.9	9.5	12.7	342.9	330.2
450X450X300A	457.2	318.5	7.9	9.5	12.7	342.9	330.2
500A	508.0	508.0	7.9	9.5	12.7	381.0	381.0
500X500X450A	508.0	457.2	7.9	9.5	12.7	381.0	368.0
500X500X400A	508.0	406.4	7.9	9.5	12.7	381.0	355.6
500X500X350A	508.0	355.6	7.9	9.5	12.7	381.0	355.6
550A	558.8	558.8	7.9	9.5	12.7	419.1	419.1
550X550X500A	558.8	508.0	7.9	9.5	12.7	419.1	406.4
550X550X450A	558.8	457.2	7.9	9.5	12.7	419.1	393.7
550X550X400A	558.8	406.4	7.9	9.5	12.7	419.1	381.0
600A	609.6	609.6	7.9	9.5	12.7	431.8	431.8
600X600X550A	609.6	558.8	7.9	9.5	12.7	431.8	431.8
600X600X500A	609.6	508.0	7.9	9.5	12.7	431.8	431.8
600X600X450A	609.6	457.2	7.9	9.5	12.7	431.8	419.1
650A	660.4	660.4	7.9	9.5	12.7	495.3	495.3
650X650X600A	660.4	609.6	7.9	9.5	12.7	495.3	482.6
650X650X550A	660.4	558.8	7.9	9.5	12.7	495.3	469.9
650X650X500A	660.4	508.0	7.9	9.5	12.7	495.3	457.2
700A	711.2	711.2	7.9	9.5	12.7	520.7	520.7
700X700X650A	711.2	660.4	7.9	9.5	12.7	520.7	520.7
700X700X600A	711.2	609.6	7.9	9.5	12.7	520.7	508.0
700X700X550A	711.2	558.8	7.9	9.5	12.7	520.7	495.3
750A	762.0	762.0	7.9	9.5	12.7	558.8	558.8
750X750X700A	762.0	711.2	7.9	9.5	12.7	558.8	546.1
750X750X650A	762.0	660.4	7.9	9.5	12.7	558.8	546.1
750X750X600A	762.0	609.6	7.9	9.5	12.7	558.8	533.4

STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



KS B 1541/43, JIS B 2312/3

unit : mm

Nominal Pipe Size	Outside Diameter (O.D)	Outside Diameter (O.D)	Wall Thickness T			C	M
			7.9T	STD	XS		
800A	812.8	812.8	7.9	9.5	12.7	596.9	596.9
800X800X750A	812.8	762.0	7.9	9.5	12.7	596.9	584.2
800X800X700A	812.8	711.2	7.9	9.5	12.7	596.9	571.5
800X800X650A	812.8	660.4	7.9	9.5	12.7	596.9	571.5
850A	863.6	863.6	7.9	9.5	12.7	635.0	635.0
850X850X800A	863.6	812.8	7.9	9.5	12.7	635.0	622.3
850X850X750A	863.6	762.0	7.9	9.5	12.7	635.0	609.6
850X850X700A	863.6	711.2	7.9	9.5	12.7	635.0	596.9
900A	914.4	914.4	7.9	9.5	12.7	673.1	673.1
900X900X850A	914.4	863.6	7.9	9.5	12.7	673.1	660.4
900X900X800A	914.4	812.8	7.9	9.5	12.7	673.1	647.7
900X900X750A	914.4	762.0	7.9	9.5	12.7	673.1	635.0
950A	965.2	965.2	7.9	9.5	12.7	711.2	711.2
950X950X900A	965.2	914.4	7.9	9.5	12.7	711.2	711.2
950X950X850A	965.2	863.6	7.9	9.5	12.7	711.2	698.5
950X950X800A	965.2	812.8	7.9	9.5	12.7	711.2	685.8
1000A	1016.0	1016.0	7.9	9.5	12.7	749.3	749.3
1000X1000X950A	1016.0	965.2	7.9	9.5	12.7	749.3	749.3
1000X1000X900A	1016.0	914.4	7.9	9.5	12.7	749.3	736.6
1000X1000X850A	1016.0	863.6	7.9	9.5	12.7	749.3	723.9
1050A	1066.8	1066.8	7.9	9.5	12.7	762.0	711.2
1050X1050X1000A	1066.8	1016.0	7.9	9.5	12.7	762.0	711.2
1050X1050X950A	1066.8	965.2	7.9	9.5	12.7	762.0	711.2
1050X1050X900A	1066.8	914.4	7.9	9.5	12.7	762.0	711.2
1100A	1117.6	1117.6	7.9	9.5	12.7	812.8	762.0
1100X1100X1050A	1117.6	1066.8	7.9	9.5	12.7	812.8	762.0
1100X1100X1000A	1117.6	1016.0	7.9	9.5	12.7	812.8	749.3
1100X1100X950A	1117.6	965.2	7.9	9.5	12.7	812.8	736.6
1150A	1168.4	1168.4	7.9	9.5	12.7	850.9	800.1
1150X1150X1100A	1168.4	1117.6	7.9	9.5	12.7	850.9	800.1
1150X1150X1050A	1168.4	1066.8	7.9	9.5	12.7	850.9	787.4
1150X1150X1000A	1168.4	1016.0	7.9	9.5	12.7	850.9	774.8
1200A	1219.2	1219.2	7.9	9.5	12.7	889.0	838.2
1200X1200X1150A	1219.2	1168.4	7.9	9.5	12.7	889.0	838.2
1200X1200X1100A	1219.2	1117.6	7.9	9.5	12.7	889.0	838.2
1200X1200X1050A	1219.2	1066.8	7.9	9.5	12.7	889.0	812.8

KS/JIS

Reducer

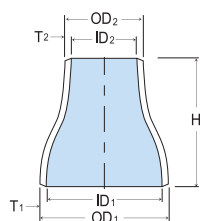
Sch 5s, Sch 10s, Sch 20s

KS B 1541/43, JIS B 2312/13

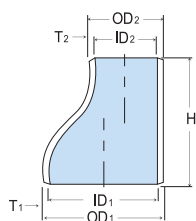
unit : mm

Nominal Pipe Size	Outside Diameter		Wall Thickness T						End to End H
	OD ₁	OD ₂	Sch 5s		Sch 10s		Sch 20s		
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	
25X20A	34.0	27.2	1.65	1.65	2.8	2.1	3.0	2.5	50.8
25X15A	34.0	21.7	1.65	1.65	2.8	2.1	3.0	2.5	50.8
32X25A	42.7	34.0	1.65	1.65	2.8	2.8	3.0	3.0	50.8
32X20A	42.7	27.2	1.65	1.65	2.8	2.1	3.0	2.5	50.8
40X32A	48.6	42.7	1.65	1.65	2.8	2.8	3.0	3.0	63.5
40X25A	48.6	34.0	1.65	1.65	2.8	2.8	3.0	3.0	63.5
40X20A	48.6	27.2	1.65	1.65	2.8	2.1	3.0	2.5	63.5
50X40A	60.5	48.6	1.65	1.65	2.8	2.8	3.5	3.0	76.2
50X32A	60.5	42.7	1.65	1.65	2.8	2.8	3.5	3.0	76.2
50X25A	60.5	34.0	1.65	1.65	2.8	2.8	3.5	3.0	76.2
65X50A	76.3	60.5	2.10	1.65	3.0	2.8	3.5	3.5	88.9
65X40A	76.3	48.6	2.10	1.65	3.0	2.8	3.5	3.0	88.9
65X32A	76.3	42.7	2.10	1.65	3.0	2.8	3.5	3.0	88.9
80X65A	89.1	76.3	2.10	2.10	3.0	3.0	4.0	3.5	88.9
80X50A	89.1	60.5	2.10	1.65	3.0	2.8	4.0	3.5	88.9
80X40A	89.1	48.6	2.10	1.65	3.0	2.8	4.0	3.0	88.9
90X80A	101.6	89.1	2.10	2.10	3.0	3.0	4.0	4.0	101.6
90X65A	101.6	76.3	2.10	2.10	3.0	3.0	4.0	3.5	101.6
90X50A	101.6	60.5	2.10	1.65	3.0	2.8	4.0	3.5	101.6
100X90A	114.3	101.6	2.10	2.10	3.0	3.0	4.0	4.0	101.6
100X80A	114.3	89.1	2.10	2.10	3.0	3.0	4.0	4.0	101.6
100X65A	114.3	76.3	2.10	2.10	3.0	3.0	4.0	3.5	101.6
100X50A	114.3	60.5	2.10	1.65	3.0	2.8	4.0	3.5	101.6
125X100A	139.8	114.3	2.80	2.10	3.4	3.0	5.0	4.0	127.0
125X90A	139.8	101.6	2.80	2.10	3.4	3.0	5.0	4.0	127.0
125X80A	139.8	89.1	2.80	2.10	3.4	3.0	5.0	4.0	127.0
125X65A	139.8	76.3	2.80	2.10	3.4	3.0	5.0	3.5	127.0
150X125A	165.2	139.8	2.80	2.80	3.4	3.4	5.0	5.0	139.7
150X100A	165.2	114.3	2.80	2.10	3.4	3.0	5.0	4.0	139.7
150X90A	165.2	101.6	2.80	2.10	3.4	3.0	5.0	4.0	139.7
150X80A	165.2	89.1	2.80	2.10	3.4	3.0	5.0	4.0	139.7
200X150A	216.3	165.2	2.80	2.80	4.0	3.4	6.5	5.0	152.4
200X125A	216.3	139.8	2.80	2.80	4.0	3.4	6.5	5.0	152.4
200X100A	216.3	114.3	2.80	2.10	4.0	3.0	6.5	4.0	152.4

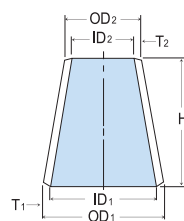
STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



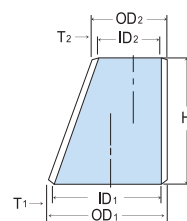
[Concentric (I)]



[Eccentric (I)]



[Concentric (II)]



[Eccentric (II)]

KS B 1541/43, JIS B 2312/13

unit : mm

Nominal Pipe Size	Outside Diameter		Wall Thickness T						End to End H
	OD ₁	OD ₂	Sch 5s		Sch 10s		Sch 20s		
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	
250X200A	267.4	216.3	3.4	2.8	4.0	4.0	6.5	6.5	177.8
250X150A	267.4	165.2	3.4	2.8	4.0	3.4	6.5	5.0	177.8
250X125A	267.4	139.8	3.4	2.8	4.0	3.4	6.5	5.0	177.8
250X100A	267.4	114.3	3.4	2.1	4.0	3.0	6.5	4.0	177.8
300X250A	318.5	267.4	4.0	3.4	4.5	4.0	6.5	6.5	203.2
300X200A	318.5	216.3	4.0	2.8	4.5	4.0	6.5	6.5	203.2
300X150A	318.5	165.2	4.0	2.8	4.5	3.4	6.5	5.0	203.2
300X125A	318.5	139.8	4.0	2.8	4.5	3.4	6.5	5.0	203.2
350X300A	355.6	318.5	4.0	4.0	4.8	4.5	8.0	6.5	330.2
350X250A	355.6	267.4	4.0	3.4	4.8	4.0	8.0	6.5	330.2
350X200A	355.6	216.3	4.0	2.8	4.8	4.0	8.0	6.5	330.2
350X150A	355.6	165.2	4.0	2.8	4.8	3.4	8.0	5.0	330.2
400X350A	406.4	355.6	4.2	4.0	4.8	4.8	8.0	8.0	355.6
400X300A	406.4	318.5	4.2	4.0	4.8	4.5	8.0	6.5	355.6
400X250A	406.4	267.4	4.2	3.4	4.8	4.0	8.0	6.5	355.6
400X200A	406.4	216.3	4.2	2.8	4.8	4.0	8.0	6.5	355.6
450X400A	457.2	406.4	4.2	4.2	4.8	4.8	8.0	8.0	381.0
450X350A	457.2	355.6	4.2	4.0	4.8	4.8	8.0	8.0	381.0
450X300A	457.2	318.5	4.2	4.0	4.8	4.5	8.0	6.5	381.0
450X250A	457.2	267.4	4.2	3.4	4.8	4.0	8.0	6.5	381.0
500X450A	508.0	457.2	4.8	4.2	5.5	4.8	9.5	8.0	508.0
500X400A	508.0	406.4	4.8	4.2	5.5	4.8	9.5	8.0	508.0
500X350A	508.0	355.6	4.8	4.0	5.5	4.8	9.5	8.0	508.0
505X300A	508.0	318.5	4.8	4.0	5.5	4.5	9.5	6.5	508.0
550X500A	558.8	508.0	4.8	4.8	5.5	5.5	-	-	508.0
550X450A	558.8	457.2	4.8	4.2	5.5	4.8	-	-	508.0
550X400A	558.8	406.4	4.8	4.2	5.5	4.8	-	-	508.0
600X550A	609.6	508.0	5.5	4.8	6.4	5.5	-	-	508.0
600X500A	609.6	508.0	5.5	4.8	6.4	5.5	-	-	508.0
600X450A	609.6	457.2	5.5	4.2	6.4	4.8	-	-	508.0
750X600A	762.0	609.6	6.4	5.5	7.9	6.4	-	-	609.6

Reducer

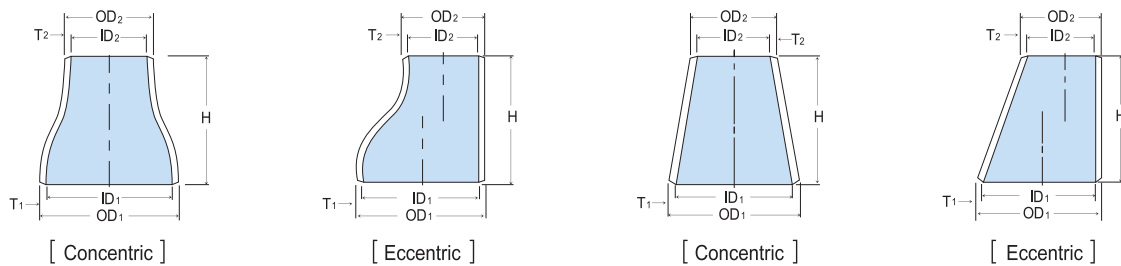
7.9T, STD, XS

KS B 1541/43, JIS B 2312/3

unit : mm

Nominal Pipe Size	Outside Diameter		Wall Thickness T			H
	OD ₁	OD ₂	7.9T	STD	XS	
400X350A	406.4	355.6	7.9	9.5	12.7	355.6
400X300A	406.4	318.6	7.9	9.5	12.7	355.6
400X250A	406.4	267.4	7.9	9.5	12.7	355.6
400X200A	406.4	216.3	7.9	9.5	12.7	355.6
450X400A	457.2	406.4	7.9	9.5	12.7	381.0
450X350A	457.2	355.6	7.9	9.5	12.7	381.0
450X300A	457.2	318.5	7.9	9.5	12.7	381.0
450X250A	457.2	267.4	7.9	9.5	12.7	381.0
500X450A	508.0	457.2	7.9	9.5	12.7	508.0
500X400A	508.0	406.4	7.9	9.5	12.7	508.0
500X350A	508.0	355.6	7.9	9.5	12.7	508.0
500X300A	508.0	318.5	7.9	9.5	12.7	508.0
550X500A	558.8	508.0	7.9	9.5	12.7	508.0
550X450A	558.8	457.2	7.9	9.5	12.7	508.0
550X400A	558.8	406.4	7.9	9.5	12.7	508.0
550X350A	558.8	355.6	7.9	9.5	12.7	508.0
600X550A	609.6	558.8	7.9	9.5	12.7	508.0
600X500A	609.6	508.0	7.9	9.5	12.7	508.0
600X450A	609.6	457.2	7.9	9.5	12.7	508.0
600X400A	609.6	406.4	7.9	9.5	12.7	508.0
650X600A	660.4	609.6	7.9	9.5	12.7	609.6
650X550A	660.4	558.8	7.9	9.5	12.7	609.6
650X500A	660.4	508.0	7.9	9.5	12.7	609.6
650X450A	660.4	457.2	7.9	9.5	12.7	609.6
700X650A	711.2	660.4	7.9	9.5	12.7	609.6
700X600A	711.2	609.6	7.9	9.5	12.7	609.6
700X550A	711.2	558.8	7.9	9.5	12.7	609.6
700X500A	711.2	508.0	7.9	9.5	12.7	609.6
750X700A	762.0	711.2	7.9	9.5	12.7	609.6
750X650A	762.0	660.4	7.9	9.5	12.7	609.6
750X600A	762.0	609.6	7.9	9.5	12.7	609.6
750X550A	762.0	558.8	7.9	9.5	12.7	609.6

STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



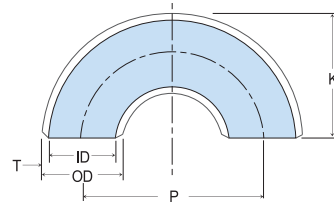
KS B 1541/43, JIS B 2312/3

unit : mm

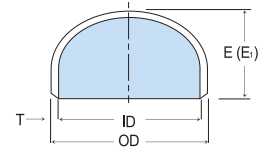
Nominal Pipe Size	Outside Diameter		Wall Thickness T			H
	OD ₁	OD ₂	7.9T	STD	XS	
800X750A	812.8	762.0	7.9	9.5	12.7	609.6
800X700A	812.8	711.2	7.9	9.5	12.7	609.6
800X650A	812.8	660.4	7.9	9.5	12.7	609.6
800X600A	812.8	609.6	7.9	9.5	12.7	609.6
850X800A	863.6	812.8	7.9	9.5	12.7	609.6
850X750A	863.6	762.0	7.9	9.5	12.7	609.6
850X700A	863.6	711.2	7.9	9.5	12.7	609.6
850X650A	863.6	660.4	7.9	9.5	12.7	609.6
900X850A	914.4	863.6	7.9	9.5	12.7	609.6
900X800A	914.4	812.8	7.9	9.5	12.7	609.6
900X750A	914.4	762.0	7.9	9.5	12.7	609.6
900X700A	914.4	711.2	7.9	9.5	12.7	609.6
950X900A	965.2	914.4	7.9	9.5	12.7	609.6
950X850A	965.2	863.6	7.9	9.5	12.7	609.6
950X800A	965.2	812.8	7.9	9.5	12.7	609.6
950X750A	965.2	762.0	7.9	9.5	12.7	609.6
1000X950A	1016.0	965.2	7.9	9.5	12.7	609.6
1000X900A	1016.0	914.4	7.9	9.5	12.7	609.6
1000X850A	1016.0	863.6	7.9	9.5	12.7	609.6
1000X800A	1016.0	812.8	7.9	9.5	12.7	609.6
1050X1000A	1066.8	1016.0	7.9	9.5	12.7	609.6
1050X950A	1066.8	965.2	7.9	9.5	12.7	609.6
1050X900A	1066.8	914.4	7.9	9.5	12.7	609.6
1050X850A	1066.8	863.6	7.9	9.5	12.7	609.6
1100X1050A	1117.6	1066.8	7.9	9.5	12.7	609.6
1100X1000A	1117.6	1016.0	7.9	9.5	12.7	609.6
1100X950A	1117.6	965.2	7.9	9.5	12.7	609.6
1100X900A	1117.6	914.4	7.9	9.5	12.7	609.6
1150X1100A	1168.4	1117.6	7.9	9.5	12.7	711.2
1150X1050A	1168.4	1066.8	7.9	9.5	12.7	711.2
1150X1000A	1168.4	1016.0	7.9	9.5	12.7	711.2
1150X950A	1168.4	965.2	7.9	9.5	12.7	711.2
1200X1150A	1219.2	1168.4	7.9	9.5	12.7	711.2
1200X1100A	1219.2	1117.6	7.9	9.5	12.7	711.2
1200X1050A	1219.2	1066.8	7.9	9.5	12.7	711.2
1200X1000A	1219.2	1016.0	7.9	9.5	12.7	711.2

180° Elbow [Long, Short] Cap

Sch 5s, Sch 10s, Sch 20s



[180° Elbow]



[Cap]

KS B 1541/43, JIS B 2312/13

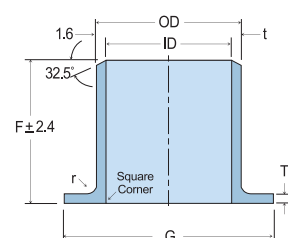
unit : mm

Nominal Pipe Size	Outside Diameter OD	Wall Thickness T			CAP			Wall Thickness T			
		Sch 5s	Sch10s	Sch 20s	E	E ₁	Limited Wall Thickness For E	Long		Short	
								P	K	P	K
15A	21.7	1.65	2.1	2.5	25.4	-	-	76.2	49.0	-	-
20A	27.2	1.65	2.1	2.5	25.4	-	-	76.2	51.7	-	-
25A	34.0	1.65	2.8	3.0	38.1	-	-	76.2	55.1	50.8	42.4
32A	42.7	1.65	2.8	3.0	38.1	-	-	95.2	69.0	63.6	53.2
40A	48.6	1.65	2.8	3.0	38.1	-	-	114.4	81.5	76.2	62.4
50A	60.5	1.65	2.8	3.5	38.1	44.5	5.5	152.4	106.5	101.6	81.1
65A	76.3	2.10	3.0	3.5	38.1	50.8	7.0	190.6	133.5	127.0	101.7
80A	89.1	2.10	3.0	4.0	50.8	63.5	7.6	228.6	158.9	152.4	120.8
90A	101.6	2.10	3.0	4.0	63.5	76.2	8.1	266.8	184.2	177.8	139.7
100A	114.3	2.10	3.0	4.0	63.5	76.2	8.6	304.8	209.6	203.2	158.8
125A	139.8	2.80	3.4	5.0	76.2	88.9	9.5	381.0	260.4	254.0	196.9
150A	165.2	2.80	3.4	5.0	88.9	101.6	11.0	457.2	311.2	304.8	235.0
200A	216.3	2.80	4.0	6.5	101.6	127.0	12.7	609.6	413.0	406.4	311.4
250A	267.4	3.40	4.0	6.5	127.0	152.4	12.7	762.0	514.7	508.0	387.7
300A	318.5	4.00	4.5	6.5	152.4	177.8	12.7	914.4	616.5	609.6	464.1
350A	355.6	4.00	4.8	7.9	165.1	190.5	12.7	1066.8	711.2	711.2	533.4
400A	406.4	4.20	4.8	7.9	177.8	203.2	12.7	1219.2	812.8	812.8	609.6
450A	457.2	4.20	4.8	7.9	203.2	228.6	12.7	1371.6	914.4	914.4	685.8
500A	508.0	4.80	5.5	7.9	228.6	254.0	12.7	1524.0	1016.0	1016.0	762.0

STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

Lab Joint Stub End

Sch 5s, Sch 10s, Sch 20s, Sch 40s



JPI-7S-15-70

unit : mm

Nominal Pipe Size	Outside Diameter (O.D)	Sch 5s		Sch 10s		Sch 20s		Sch 40s		r	G	F
		ID	t	ID	t	ID	t	ID	t			
15A	21.7	18.4	1.65	17.5	2.1	16.7	2.5	16.1	2.8	3.2	35	50
20A	27.2	23.9	1.65	23.0	2.1	22.2	2.5	21.4	2.9	3.2	43	50
25A	34.0	30.7	1.65	28.4	2.8	28.0	3.0	27.2	3.4	3.2	51	50
32A	42.7	39.4	1.65	37.1	2.8	36.7	3.0	35.5	3.6	4.8	64	50
40A	48.6	45.3	1.65	43.0	2.8	42.6	3.0	41.2	3.7	6.4	73	50
50A	60.5	57.2	1.65	54.9	2.8	53.5	3.5	52.7	3.9	7.9	92	65
65A	76.3	72.1	2.10	70.3	3.0	69.3	3.5	65.9	5.2	7.9	105	65
80A	89.1	84.9	2.10	83.1	3.0	81.1	4.0	78.1	5.5	9.5	127	65
90A	101.6	97.4	2.10	95.6	3.0	93.6	4.0	90.2	5.7	9.5	140	75
100A	114.3	110.1	2.10	108.3	3.0	106.3	4.0	102.3	6.0	11.1	157	75
125A	139.8	134.2	2.80	133.0	3.4	129.8	5.0	126.6	6.6	11.1	186	75
150A	165.2	159.6	2.80	158.4	3.4	155.2	5.0	151.0	7.1	12.7	216	90
200A	216.3	210.7	2.80	208.3	4.0	203.3	6.5	199.9	8.2	12.7	270	100
250A	267.4	260.6	3.40	259.4	4.0	254.4	6.5	248.8	9.3	12.7	324	125
300A	318.5	310.5	4.00	309.5	4.5	305.5	6.5	297.9	10.3	12.7	381	150

*Minimum Lap Thickness "T" shall not be less than Wall Thickness "t"

KS/JIS 10K

unit : mm

Nominal Pipe Size	Outside Diameter (O.D)	Sch 5s		Sch 10s		Sch 20s		Sch 40s		r	G	F
		ID	t	ID	t	ID	t	ID	t			
15A	21.7	18.4	1.65	17.5	2.1	16.7	2.5	16.1	2.8	3	51	30
20A	27.2	23.9	1.65	23.0	2.1	22.2	2.5	21.4	2.9	3	56	30
25A	34.0	30.7	1.65	28.4	2.8	28.0	3.0	27.2	3.4	3	67	50
32A	42.7	39.4	1.65	37.1	2.8	36.7	3.0	35.5	3.6	4	76	50
40A	48.6	45.3	1.65	43.0	2.8	42.6	3.0	41.2	3.7	4	81	50
50A	60.5	57.2	1.65	54.9	2.8	53.5	3.5	52.7	3.9	4	96	50
65A	76.3	72.1	2.10	70.3	3.0	69.3	3.5	65.9	5.2	5	116	50
80A	89.1	84.9	2.10	83.1	3.0	81.1	4.0	78.1	5.5	5	126	50
90A	101.6	97.4	2.10	95.6	3.0	93.6	4.0	90.2	5.7	5	136	50
100A	114.3	110.1	2.10	108.3	3.0	106.3	4.0	102.3	6.0	5	151	50
125A	139.8	134.2	2.80	133.0	3.4	129.8	5.0	126.6	6.6	6	182	50
150A	165.2	159.6	2.80	158.4	3.4	155.2	5.0	151.0	7.1	6	212	50
200A	216.3	210.7	2.80	208.3	4.0	203.3	6.5	199.9	8.2	6	262	65
250A	267.4	260.6	3.40	259.4	4.0	254.4	6.5	248.8	9.3	6	324	65
300A	318.5	310.5	4.00	309.5	4.5	305.5	6.5	297.9	10.3	8	368	65

*This Specifications Used For JIS 10K Flanges

KS/JIS

STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

SUS PIPE FITTINGS, ELBOW, TEE, REDUCER, CAP, LAB JOINT, BEND

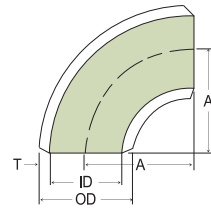


STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

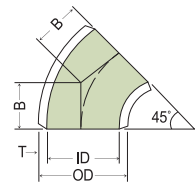
- 19 **90°, 45° Elbow** Sch5s, Sch10s, Sch40s, Sch80s
- 20 **Tee** Sch5s, Sch10s, Sch40s, Sch80s
- 23 **Reducer** Sch5s, Sch10s, Sch40s, Sch80s
- 25 **180° Elbow, Cap** Sch5s, Sch10s, Sch40s, Sch80s
- 26 **Lab Joint Stub End** Sch5s, Sch10s, Sch40s

**90° Elbow [Long, Short]
45° Elbow [Long]**

Sch 5s, Sch 10s, Sch 40s, Sch 80s



[90° Elbow]



[45° Elbow]

ASME B16.9

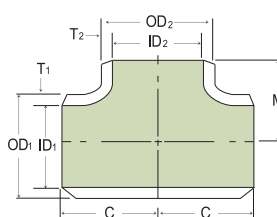
unit : inch

Nominal Pipe Size	Outside Diameter OD	Center to End			Sch 5s		Sch 10s		Sch 40s		Sch 80s	
		Long		Short	T	I.D	T	I.D	T	I.D	T	I.D
		A	B	A								
1/2	0.840	1.50	0.62	-	0.065	0.710	0.083	0.674	0.109	0.622	0.147	0.546
3/4	1.050	1.50	0.62	-	0.065	0.920	0.083	0.884	0.113	0.824	0.154	0.742
1	1.315	1.50	0.88	1.00	0.065	1.185	0.109	1.097	0.133	1.049	0.179	0.957
1 1/4	1.660	1.88	1.00	1.25	0.065	1.530	0.109	1.442	0.140	1.380	0.191	1.278
1 1/2	1.900	2.25	1.12	1.50	0.065	1.770	0.109	1.682	0.145	1.610	0.200	1.500
2	2.375	3.00	1.38	2.00	0.065	2.245	0.109	2.157	0.154	2.067	0.218	1.939
2 1/2	2.875	3.75	1.75	2.50	0.083	2.709	0.120	2.635	0.203	2.469	0.276	2.323
3	3.500	4.50	2.00	3.00	0.083	3.334	0.120	3.260	0.216	3.068	0.300	2.900
3 1/2	4.000	5.25	2.25	3.50	0.083	3.834	0.120	3.760	0.226	3.548	0.318	3.364
4	4.500	6.00	2.50	4.00	0.083	4.417	0.120	4.260	0.237	4.026	0.337	3.826
5	5.563	7.50	3.12	5.00	0.109	5.345	0.134	5.295	0.258	5.047	0.375	4.813
6	6.625	9.00	3.75	6.00	0.109	6.407	0.134	6.357	0.280	6.065	0.432	5.761
8	8.625	12.00	5.00	8.00	0.109	8.407	0.148	8.329	0.322	7.981	0.500	7.625
10	10.750	15.00	6.25	10.00	0.134	10.482	0.165	10.420	0.365	10.020	0.500	9.750
12	12.750	18.00	7.50	12.00	0.156	12.438	0.180	12.390	0.375	12.000	0.500	11.750
14	14.000	21.00	8.75	14.00	0.156	13.688	0.188	13.624	-	-	-	-
16	16.000	24.00	10.00	16.00	0.165	15.670	0.188	15.624	-	-	-	-
18	18.000	27.00	11.25	18.00	0.165	17.670	0.188	17.624	-	-	-	-
20	20.000	30.00	12.50	20.00	0.188	19.624	0.218	19.564	-	-	-	-
22	22.000	33.00	13.50	22.00	0.188	21.624	0.218	21.564	-	-	-	-
24	24.000	36.00	15.00	24.00	0.218	23.564	0.250	23.500	-	-	-	-
30	30.000	45.00	18.50	30.00	0.250	29.500	0.312	29.376	-	-	-	-

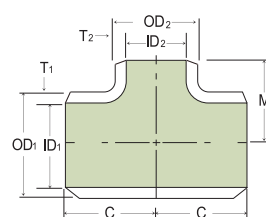
STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

TEE

Sch 5s, Sch 10s, Sch 40s, Sch 80s



[Straight]



[Reducing]

ASME B16.9

unit : inch

Nominal Pipe Size	Outside Diameter		Center to End		Sch 5s		Sch 10s		Sch 40s		Sch 80s	
	OD ₁	OD ₂	Run C	Outlet M	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
1/2 x 1/2 x 1/2	0.840	0.840	1.00	1.00	0.065	0.065	0.083	0.083	0.109	0.109	0.147	0.147
1/2 x 1/2 x 3/8	0.840	0.675	1.00	1.00	-	-	0.083	0.065	0.109	0.109	0.147	0.126
1/2 x 1/2 x 1/4	0.840	0.540	1.00	1.00	-	-	0.083	0.065	0.109	0.088	0.147	0.119
3/4 x 3/4 x 3/4	1.050	1.050	1.12	1.12	0.065	0.065	0.083	0.083	0.113	0.113	0.154	0.154
3/4 x 3/4 x 1/2	1.050	0.840	1.12	1.12	0.065	0.065	0.083	0.083	0.113	0.109	0.154	0.147
3/4 x 3/4 x 3/8	1.050	0.675	1.12	1.12	-	-	0.083	0.065	0.113	0.091	0.154	0.216
1 x 1 x 1	1.315	1.315	1.50	1.50	0.065	0.065	0.109	0.109	0.133	0.133	0.179	0.179
1 x 1 x 3/4	1.315	1.050	1.50	1.50	0.065	0.065	0.109	0.083	0.133	0.113	0.179	0.154
1 x 1 x 1/2	1.315	0.840	1.50	1.50	0.065	0.065	0.109	0.083	0.133	0.109	0.179	0.147
1 1/4 x 1 1/4 x 1 1/4	1.660	1.660	1.88	1.88	0.065	0.065	0.109	0.109	0.140	0.140	0.191	0.191
1 1/4 x 1 1/4 x 1	1.660	1.315	1.88	1.88	0.065	0.065	0.109	0.109	0.140	0.133	0.191	0.179
1 1/4 x 1 1/4 x 3/4	1.660	1.050	1.88	1.88	0.065	0.065	0.109	0.083	0.140	0.113	0.191	0.154
1 1/4 x 1 1/4 x 1/2	1.660	0.840	1.88	1.88	0.065	0.065	0.109	0.083	0.140	0.109	0.191	0.147
1 1/2 x 1 1/2 x 1 1/2	1.900	1.900	2.25	2.25	0.065	0.065	0.109	0.109	0.145	0.145	0.200	0.200
1 1/2 x 1 1/2 x 1 1/4	1.900	1.660	2.25	2.25	0.065	0.065	0.109	0.109	0.145	0.140	0.200	0.191
1 1/2 x 1 1/2 x 1	1.900	1.315	2.25	2.25	0.065	0.065	0.109	0.109	0.145	0.133	0.200	0.179
1 1/2 x 1 1/2 x 3/4	1.900	1.050	2.25	2.25	0.065	0.065	0.109	0.083	0.145	0.113	0.200	0.154
1 1/2 x 1 1/2 x 1/2	1.900	0.840	2.25	2.25	0.065	0.065	0.109	0.083	0.145	0.109	0.200	0.147
2 x 2 x 2	2.375	2.375	2.50	2.50	0.065	0.065	0.109	0.109	0.154	0.154	0.218	0.218
2 x 2 x 1 1/2	2.375	1.900	2.50	2.38	0.065	0.065	0.109	0.109	0.154	0.145	0.218	0.200
2 x 2 x 1 1/4	2.375	1.660	2.50	2.25	0.065	0.065	0.109	0.109	0.154	0.140	0.218	0.191
2 x 2 x 1	2.375	1.315	2.50	2.00	0.065	0.065	0.109	0.109	0.154	0.133	0.218	0.179
2 x 2 x 3/4	2.375	1.050	2.50	1.75	0.065	0.065	0.109	0.083	0.154	0.113	0.218	0.154
2 1/2 x 2 1/2 x 2 1/2	2.875	2.875	3.00	3.00	0.083	0.083	0.120	0.120	0.203	0.203	0.276	0.276
2 1/2 x 2 1/2 x 2	2.875	2.375	3.00	2.75	0.083	0.065	0.120	0.109	0.203	0.154	0.276	0.218
2 1/2 x 2 1/2 x 1 1/2	2.875	1.900	3.00	2.62	0.083	0.065	0.120	0.109	0.203	0.145	0.276	0.200
2 1/2 x 2 1/2 x 1 1/4	2.875	1.660	3.00	2.50	0.083	0.065	0.120	0.109	0.203	0.140	0.276	0.191
2 1/2 x 2 1/2 x 1	2.875	1.315	3.00	2.25	0.083	0.065	0.120	0.109	0.203	0.133	0.276	0.179
3 x 3 x 3	3.500	3.500	3.38	3.38	0.083	0.083	0.120	0.120	0.216	0.216	0.300	0.300
3 x 3 x 2 1/2	3.500	2.875	3.38	3.25	0.083	0.083	0.120	0.120	0.216	0.203	0.300	0.276
3 x 3 x 2	3.500	2.375	3.38	3.00	0.083	0.065	0.120	0.109	0.216	0.154	0.300	0.218
3 x 3 x 1 1/2	3.500	1.900	3.38	2.88	0.083	0.065	0.120	0.109	0.216	0.145	0.300	0.200
3 x 3 x 1 1/4	3.500	1.660	3.38	2.75	0.083	0.065	0.120	0.109	0.216	0.140	0.300	0.191
3 1/2 x 3 1/2 x 3 1/2	4.000	4.000	3.75	3.75	0.083	0.083	0.120	0.120	0.226	0.226	0.318	0.318
3 1/2 x 3 1/2 x 3	4.000	3.500	3.75	3.62	0.083	0.083	0.120	0.120	0.226	0.216	0.318	0.300
3 1/2 x 3 1/2 x 2 1/2	4.000	2.875	3.75	3.50	0.083	0.083	0.120	0.120	0.226	0.203	0.318	0.276
3 1/2 x 3 1/2 x 2	4.000	2.375	3.75	3.25	0.083	0.065	0.120	0.109	0.226	0.154	0.318	0.218
3 1/2 x 3 1/2 x 1 1/2	4.000	1.900	3.75	3.12	0.083	0.065	0.120	0.109	0.226	0.145	0.318	0.200

ASME

TEE

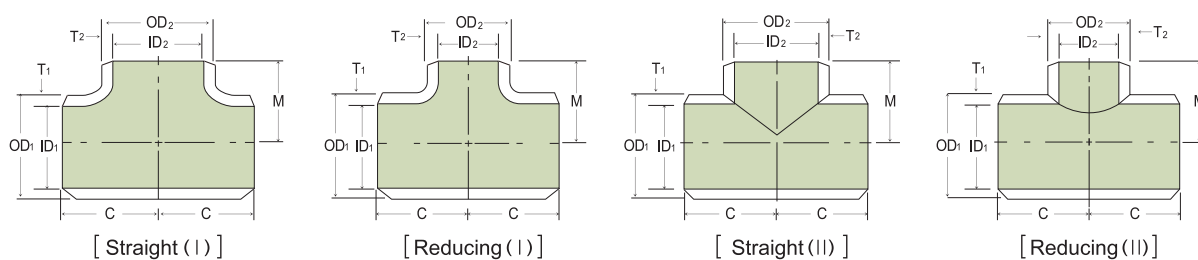
Sch 5s, Sch 10s, Sch 40s, Sch 80s

ASME B16.9

unit : inch

Nominal Pipe Size	Outside Diameter		Center to End		Sch 5s		Sch 10s		Sch 40s		Sch 80s	
	OD ₁	OD ₂	Run C	Outlet M	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
4 x 4 x 4	4.500	4.500	4.12	4.12	0.083	0.083	0.120	0.120	0.237	0.237	0.337	0.337
4 x 4 x 3 _{1/2}	4.500	4.000	4.12	4.00	0.083	0.083	0.120	0.120	0.237	0.226	0.337	0.318
4 x 4 x 3	4.500	3.500	4.12	3.88	0.083	0.083	0.120	0.120	0.237	0.216	0.337	0.300
4 x 4 x 2 _{1/2}	4.500	2.875	4.12	3.75	0.083	0.083	0.120	0.120	0.237	0.203	0.337	0.276
4 x 4 x 2	4.500	2.375	4.12	3.50	0.083	0.065	0.120	0.109	0.237	0.154	0.337	0.218
4 x 4 x 1 _{1/2}	4.500	1.900	4.12	3.38	0.083	0.065	0.120	0.109	0.237	0.145	0.337	0.200
5 x 5 x 5	5.563	5.563	4.88	4.88	0.109	0.109	0.134	0.134	0.258	0.258	0.375	0.375
5 x 5 x 4	5.563	4.500	4.88	4.62	0.109	0.083	0.134	0.120	0.258	0.237	0.375	0.337
5 x 5 x 3 _{1/2}	5.563	4.000	4.88	4.50	0.109	0.083	0.134	0.120	0.258	0.226	0.375	0.318
5 x 5 x 3	5.563	3.500	4.88	4.38	0.109	0.083	0.134	0.120	0.258	0.216	0.375	0.300
5 x 5 x 2 _{1/2}	5.563	2.875	4.88	4.25	0.109	0.083	0.134	0.120	0.258	0.203	0.375	0.276
5 x 5 x 2	5.563	2.375	4.88	4.12	0.109	0.065	0.134	0.109	0.258	0.154	0.375	0.218
6 x 6 x 6	6.625	6.625	5.62	5.62	0.109	0.109	0.134	0.134	0.280	0.280	0.432	0.432
6 x 6 x 5	6.625	5.563	5.62	5.38	0.109	0.109	0.134	0.134	0.280	0.258	0.432	0.375
6 x 6 x 4	6.625	4.500	5.62	5.12	0.109	0.083	0.134	0.120	0.280	0.237	0.432	0.337
6 x 6 x 3 _{1/2}	6.625	4.000	5.62	5.00	0.109	0.083	0.134	0.120	0.280	0.226	0.432	0.318
6 x 6 x 3	6.625	3.500	5.62	4.88	0.109	0.083	0.134	0.120	0.280	0.216	0.432	0.300
6 x 6 x 2 _{1/2}	6.625	2.875	5.62	4.75	0.109	0.083	0.134	0.120	0.280	0.203	0.432	0.276
8 x 8 x 8	8.625	8.625	7.00	7.00	0.109	0.109	0.148	0.148	0.322	0.322	0.500	0.500
8 x 8 x 6	8.625	6.625	7.00	6.62	0.109	0.109	0.148	0.134	0.322	0.280	0.520	0.432
8 x 8 x 5	8.625	5.563	7.00	6.38	0.109	0.109	0.148	0.134	0.322	0.258	0.500	0.375
8 x 8 x 4	8.625	4.500	7.00	6.12	0.109	0.083	0.148	0.120	0.322	0.237	0.500	0.337
8 x 8 x 3 _{1/2}	8.625	4.000	7.00	6.00	0.109	0.083	0.148	0.120	0.322	0.226	0.500	0.318
10 x 10 x 10	10.750	10.750	8.50	8.50	0.134	0.134	0.165	0.165	0.365	0.365	0.500	0.500
10 x 10 x 8	10.750	8.625	8.50	8.00	0.134	0.109	0.165	0.148	0.365	0.322	0.500	0.500
10 x 10 x 6	10.750	6.625	8.50	7.62	0.134	0.109	0.165	0.134	0.365	0.280	0.500	0.432
10 x 10 x 5	10.750	5.563	8.50	7.50	0.134	0.109	0.165	0.134	0.365	0.258	0.500	0.375
10 x 10 x 4	10.750	4.500	8.50	7.25	0.134	0.083	0.165	0.120	0.365	0.237	0.520	0.337
12 x 12 x 12	12.750	12.750	10.00	10.00	0.156	0.156	0.180	0.180	0.375	0.375	0.500	0.500
12 x 12 x 10	12.750	10.750	10.00	9.50	0.156	0.134	0.180	0.165	0.375	0.365	0.500	0.500
12 x 12 x 8	12.750	8.625	10.00	9.00	0.156	0.109	0.180	0.148	0.375	0.322	0.500	0.500
12 x 12 x 6	12.750	6.625	10.00	8.62	0.156	0.109	0.180	0.134	0.375	0.280	0.500	0.432
12 x 12 x 5	12.750	5.563	10.00	8.50	0.156	0.109	0.180	0.134	0.375	0.258	0.500	0.375
14 x 14 x 14	14.000	14.000	11.00	11.00	0.156	0.156	0.188	0.188	-	-	-	-
14 x 14 x 12	14.000	12.750	11.00	10.62	0.156	0.156	0.188	0.180	-	-	-	-
14 x 14 x 10	14.000	10.750	11.00	10.12	0.156	0.134	0.188	0.165	-	-	-	-
14 x 14 x 8	14.000	8.625	11.00	9.75	0.156	0.109	0.188	0.148	-	-	-	-
14 x 14 x 6	14.000	6.625	11.00	9.38	0.156	0.109	0.188	0.134	-	-	-	-

STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



ASME B16.9

unit : inch

Nominal Pipe Size	Outside Diameter		Center to End		Sch 5s		Sch 10s		Sch 40s		Sch 80s	
	OD ₁	OD ₂	Run C	Outlet M	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
16 x 16 x 16	16.000	16.000	12.00	12.00	0.165	0.165	0.188	0.188	-	-	-	-
16 x 16 x 14	16.000	14.000	12.00	12.00	0.165	0.156	0.188	0.188	-	-	-	-
16 x 16 x 12	16.000	12.750	12.00	11.62	0.165	0.156	0.188	0.180	-	-	-	-
16 x 16 x 10	16.000	10.750	12.00	11.12	0.165	0.134	0.188	0.165	-	-	-	-
16 x 16 x 8	16.000	8.625	12.00	10.75	0.165	0.109	0.188	0.148	-	-	-	-
16 x 16 x 6	16.000	6.625	12.00	10.38	0.165	0.109	0.188	0.134	-	-	-	-
18 x 18 x 18	18.000	18.000	13.50	13.50	0.165	0.165	0.188	0.188	-	-	-	-
18 x 18 x 16	18.000	16.000	13.50	13.00	0.165	0.165	0.188	0.188	-	-	-	-
18 x 18 x 14	18.000	14.000	13.50	13.00	0.165	0.156	0.188	0.188	-	-	-	-
18 x 18 x 12	18.000	12.750	13.50	12.62	0.165	0.156	0.188	0.180	-	-	-	-
18 x 18 x 10	18.000	10.750	13.50	12.12	0.165	0.134	0.188	0.165	-	-	-	-
18 x 18 x 8	18.000	8.625	13.50	11.75	0.165	0.109	0.188	0.148	-	-	-	-
20 x 20 x 20	20.000	20.000	15.00	15.00	0.188	0.188	0.218	0.218	-	-	-	-
20 x 20 x 18	20.000	18.000	15.00	14.50	0.188	0.156	0.218	0.188	-	-	-	-
20 x 20 x 16	20.000	16.000	15.00	14.00	0.188	0.165	0.218	0.188	-	-	-	-
20 x 20 x 14	20.000	14.000	15.00	14.00	0.188	0.165	0.218	0.188	-	-	-	-
20 x 20 x 12	20.000	12.750	15.00	13.62	0.188	0.156	0.218	0.180	-	-	-	-
20 x 20 x 10	20.000	10.750	15.00	13.12	0.188	0.134	0.218	0.165	-	-	-	-
20 x 20 x 8	20.000	8.625	15.00	12.75	0.188	0.109	0.218	0.148	-	-	-	-
22 x 22 x 22	22.000	22.000	16.50	16.50	0.188	0.188	0.218	0.218	-	-	-	-
22 x 22 x 20	22.000	20.000	16.50	16.00	0.188	0.188	0.218	0.218	-	-	-	-
22 x 22 x 18	22.000	18.000	16.50	15.50	0.188	0.165	0.218	0.188	-	-	-	-
22 x 22 x 16	22.000	16.000	16.50	15.00	0.188	0.165	0.218	0.188	-	-	-	-
22 x 22 x 14	22.000	14.000	16.50	15.00	0.188	0.156	0.218	0.188	-	-	-	-
22 x 22 x 12	22.000	12.750	16.50	14.62	0.188	0.156	0.218	0.180	-	-	-	-
22 x 22 x 10	22.000	10.750	16.50	14.12	0.188	0.134	0.218	0.165	-	-	-	-
24 x 24 x 24	24.000	24.000	17.00	17.00	0.218	0.218	0.250	0.250	-	-	-	-
24 x 24 x 22	24.000	22.000	17.00	17.00	0.218	0.188	0.250	0.218	-	-	-	-
24 x 24 x 20	24.000	20.000	17.00	17.00	0.218	0.188	0.250	0.218	-	-	-	-
24 x 24 x 18	24.000	18.000	17.00	16.50	0.218	0.165	0.250	0.188	-	-	-	-
24 x 24 x 16	24.000	16.000	17.00	16.00	0.218	0.165	0.250	0.188	-	-	-	-
24 x 24 x 14	24.000	14.000	17.00	16.00	0.218	0.156	0.250	0.188	-	-	-	-
24 x 24 x 12	24.000	12.750	17.00	15.62	0.218	0.156	0.250	0.180	-	-	-	-
24 x 24 x 10	24.000	10.750	17.00	15.12	0.218	0.134	0.250	0.165	-	-	-	-
30 x 30 x 30	30.000	30.000	22.00	22.00	0.250	0.250	0.312	0.312	-	-	-	-
30 x 30 x 24	30.000	24.000	22.00	21.00	0.250	0.218	0.312	0.258	-	-	-	-
30 x 30 x 22	30.000	22.000	22.00	20.50	0.250	0.188	0.312	0.218	-	-	-	-
30 x 30 x 20	30.000	20.000	22.00	20.00	0.250	0.188	0.312	0.218	-	-	-	-
30 x 30 x 18	30.000	18.000	22.00	19.50	0.250	0.165	0.312	0.188	-	-	-	-
30 x 30 x 16	30.000	16.000	22.00	19.00	0.250	0.165	0.312	0.188	-	-	-	-
30 x 30 x 14	30.000	14.000	22.00	19.00	0.250	0.156	0.312	0.188	-	-	-	-
30 x 30 x 12	30.000	12.750	22.00	18.62	0.250	0.156	0.312	0.180	-	-	-	-
30 x 30 x 10	30.000	10.750	22.00	18.12	0.250	0.134	0.312	0.165	-	-	-	-

Reducer

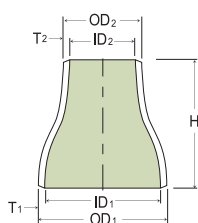
Sch 5s, Sch 10s, Sch 40s, Sch 80s

ASME B16.9

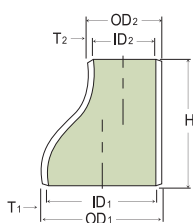
unit : inch

Nominal Pipe Size	Outside Diameter		End to End H	Wall Thickness T							
				Sch 5s		Sch 10s		Sch 40s		Sch 80s	
	OD ₁	OD ₂		T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
3/4 X 1/2	1.050	0.840	1.50	0.065	0.065	0.083	0.083	0.113	0.109	0.154	0.147
1 X 3/4	1.315	1.050	2.00	0.065	0.065	0.109	0.083	0.133	0.133	0.179	0.154
1 X 1/2	1.315	0.840	2.00	0.065	0.065	0.109	0.083	0.133	0.109	0.179	0.147
1 1/4 X 1	1.660	1.135	2.00	0.065	0.065	0.109	0.109	0.140	0.133	0.191	0.179
1 1/4 X 3/4	1.660	1.050	2.00	0.065	0.065	0.109	0.083	0.140	0.113	0.191	0.154
1 1/4 X 1/2	1.660	0.840	2.00	0.065	0.065	0.109	0.083	0.140	0.109	0.191	0.147
1 1/2 X 1/4	1.900	1.660	2.50	0.065	0.065	0.109	0.109	0.145	0.140	0.200	0.191
1 1/2 X 1	1.900	1.315	2.50	0.065	0.065	0.109	0.109	0.145	0.133	0.200	0.179
1 1/2 X 3/4	1.900	1.050	2.50	0.065	0.065	0.109	0.083	0.145	0.113	0.200	0.154
1 1/2 X 1/2	1.900	0.840	2.50	0.065	0.065	0.109	0.083	0.145	0.109	0.200	0.147
2 X 1 1/2	2.375	1.900	3.00	0.065	0.065	0.109	0.109	0.154	0.145	0.218	0.200
2 X 1 1/4	2.375	1.660	3.00	0.065	0.065	0.109	0.109	0.154	0.140	0.218	0.191
2 X 1	2.375	1.315	3.00	0.065	0.065	0.109	0.109	0.154	0.133	0.218	0.179
2 X 3/4	2.375	1.050	3.00	0.065	0.065	0.109	0.083	0.154	0.113	0.218	0.154
2 1/2 X 2	2.875	2.375	3.50	0.083	0.065	0.120	0.109	0.203	0.154	0.276	0.218
2 1/2 X 1 1/2	2.875	1.900	3.50	0.083	0.065	0.120	0.109	0.203	0.145	0.276	0.200
2 1/2 X 1 1/4	2.875	1.660	3.50	0.083	0.065	0.120	0.109	0.203	0.140	0.276	0.191
2 1/2 X 1	2.875	1.315	3.50	0.083	0.065	0.120	0.109	0.203	0.133	0.276	0.179
3 X 2 1/2	3.500	2.875	3.50	0.083	0.083	0.120	0.120	0.216	0.203	0.300	0.276
3 X 2	3.500	2.375	3.50	0.083	0.065	0.120	0.109	0.216	0.154	0.300	0.218
3 X 1 1/2	3.500	1.900	3.50	0.083	0.065	0.120	0.109	0.216	0.145	0.300	0.200
3 X 1 1/4	3.500	1.660	3.50	0.083	0.065	0.120	0.109	0.216	0.140	0.300	0.191
3 1/2 X 3	4.000	3.500	4.00	0.083	0.083	0.120	0.120	0.226	0.216	0.318	0.300
3 1/2 X 2 1/2	4.000	2.875	4.00	0.083	0.083	0.120	0.120	0.226	0.203	0.318	0.276
3 1/2 X 2	4.000	2.375	4.00	0.083	0.065	0.120	0.109	0.226	0.154	0.318	0.218
3 1/2 X 1 1/2	4.000	1.900	4.00	0.083	0.065	0.120	0.109	0.226	0.145	0.318	0.200
3 1/2 X 1 1/4	4.000	1.660	4.00	0.083	0.065	0.120	0.109	0.226	0.140	0.318	0.191
4 X 3 1/2	4.500	4.000	4.00	0.083	0.083	0.120	0.120	0.237	0.226	0.337	0.318
4 X 3	4.500	3.500	4.00	0.083	0.083	0.120	0.120	0.237	0.216	0.337	0.300
4 X 2 1/2	4.500	2.875	4.00	0.083	0.083	0.120	0.120	0.237	0.203	0.337	0.276
4 X 2	4.500	2.375	4.00	0.083	0.065	0.120	0.109	0.237	0.154	0.337	0.218
4 X 1 1/2	4.500	1.900	4.00	0.083	0.065	0.120	0.109	0.237	0.145	0.337	0.200
5 X 4	5.563	4.500	5.00	0.109	0.083	0.134	0.120	0.258	0.237	0.375	0.337
5 X 3 1/2	5.563	4.000	5.00	0.109	0.083	0.134	0.120	0.258	0.226	0.375	0.318
5 X 3	5.563	3.500	5.00	0.109	0.083	0.134	0.120	0.258	0.216	0.375	0.300
5 X 2 1/2	5.563	2.875	5.00	0.109	0.083	0.134	0.120	0.258	0.203	0.375	0.276
5 X 2	5.563	2.375	5.00	0.109	0.065	0.134	0.109	0.258	0.154	0.375	0.218
6 X 5	6.625	5.563	5.50	0.109	0.109	0.134	0.134	0.280	0.258	0.432	0.375
6 X 4	6.625	4.500	5.50	0.109	0.083	0.134	0.120	0.280	0.237	0.432	0.337
6 X 3 1/2	6.625	4.000	5.50	0.109	0.083	0.134	0.120	0.280	0.226	0.432	0.318
6 X 3	6.625	3.500	5.50	0.109	0.083	0.134	0.120	0.280	0.216	0.432	0.300
6 X 2 1/2	6.625	2.875	5.50	0.109	0.083	0.134	0.120	0.280	0.203	0.432	0.276

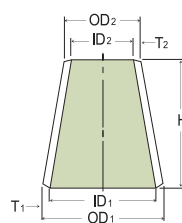
STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



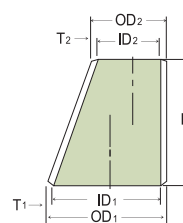
[Concentric (I)]



[Eccentric (I)]



[Concentric (II)]



[Eccentric (II)]

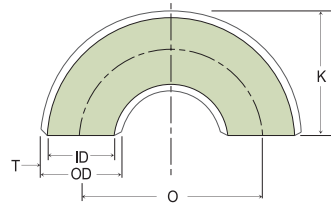
ASME B16.9

unit : inch

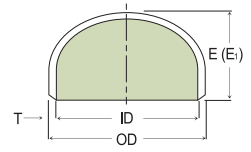
Nominal Pipe Size	Outside Diameter		End to End H	Wall Thickness T							
				Sch 5s		Sch 10s		Sch 40s		Sch 80s	
	OD ₁	OD ₂		T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂
8 x 6	8.625	6.625	6.00	0.109	0.109	0.148	0.134	0.322	0.280	0.500	0.432
8 x 5	8.625	5.563	6.00	0.109	0.109	0.148	0.134	0.322	0.258	0.500	0.375
8 x 4	8.625	4.500	6.00	0.109	0.083	0.148	0.120	0.322	0.237	0.500	0.337
8 x 3½	8.625	4.000	6.00	0.109	0.083	0.148	0.120	0.322	0.226	0.500	0.318
10 x 8	10.750	8.625	7.00	0.134	0.109	0.165	0.148	0.365	0.322	0.500	0.500
10 x 6	10.750	6.625	7.00	0.134	0.109	0.165	0.134	0.365	0.280	0.500	0.432
10 x 5	10.750	5.563	7.00	0.134	0.109	0.165	0.134	0.365	0.258	0.500	0.375
10 x 4	10.750	4.500	7.00	0.134	0.083	0.165	0.120	0.365	0.237	0.500	0.337
12 x 10	12.750	10.750	8.00	0.156	0.134	0.180	0.165	0.375	0.365	0.500	0.500
12 x 8	12.750	8.625	8.00	0.156	0.109	0.180	0.148	0.375	0.322	0.500	0.500
12 x 6	12.750	6.625	8.00	0.156	0.109	0.180	0.134	0.375	0.280	0.500	0.432
12 x 5	12.750	5.563	8.00	0.156	0.109	0.180	0.134	0.375	0.258	0.500	0.375
14 x 12	14.000	12.750	13.00	0.156	0.156	0.188	0.180	-	-	-	-
14 x 10	14.000	10.750	13.00	0.156	0.134	0.188	0.165	-	-	-	-
14 x 8	14.000	8.625	13.00	0.156	0.109	0.188	0.148	-	-	-	-
14 x 6	14.000	6.625	13.00	0.156	0.109	0.188	0.134	-	-	-	-
16 x 14	16.000	14.000	14.00	0.165	0.156	0.188	0.188	-	-	-	-
16 x 12	16.000	12.750	14.00	0.165	0.156	0.188	0.180	-	-	-	-
16 x 10	16.000	10.750	14.00	0.165	0.134	0.188	0.165	-	-	-	-
16 x 8	16.000	8.625	14.00	0.165	0.109	0.188	0.148	-	-	-	-
18 x 16	18.000	16.000	15.00	0.165	0.165	0.188	0.188	-	-	-	-
18 x 14	18.000	14.000	15.00	0.165	0.156	0.188	0.188	-	-	-	-
18 x 12	18.000	12.750	15.00	0.165	0.156	0.188	0.180	-	-	-	-
18 x 10	18.000	10.750	15.00	0.165	0.134	0.188	0.165	-	-	-	-
20 x 18	20.000	18.000	20.00	0.188	0.165	0.218	0.188	-	-	-	-
20 x 16	20.000	16.000	20.00	0.188	0.165	0.218	0.188	-	-	-	-
20 x 14	20.000	14.000	20.00	0.188	0.156	0.218	0.188	-	-	-	-
20 x 12	20.000	12.750	20.00	0.188	0.156	0.218	0.180	-	-	-	-
22 x 20	22.000	20.000	20.00	0.188	0.188	0.218	0.218	-	-	-	-
22 x 18	22.000	18.000	20.00	0.188	0.165	0.218	0.188	-	-	-	-
22 x 16	22.000	16.000	20.00	0.188	0.165	0.218	0.188	-	-	-	-
22 x 14	22.000	14.000	20.00	0.188	0.156	0.218	0.188	-	-	-	-
24 x 22	24.000	22.000	20.00	0.218	0.188	0.250	0.218	-	-	-	-
24 x 20	24.000	20.000	20.00	0.218	0.188	0.250	0.218	-	-	-	-
24 x 18	24.000	18.000	20.00	0.218	0.165	0.250	0.188	-	-	-	-
24 x 16	24.000	16.000	20.00	0.218	0.165	0.250	0.188	-	-	-	-
30 x 24	30.000	24.000	24.00	0.250	0.218	0.312	0.250	-	-	-	-
30 x 22	30.000	22.000	24.00	0.250	0.188	0.312	0.218	-	-	-	-
30 x 20	30.000	20.000	24.00	0.250	0.188	0.312	0.218	-	-	-	-

180° Elbow [Long, Short] Cap

Sch 5s, Sch 10s, Sch 40s, Sch 80s



[180° Elbow]



[Cap]

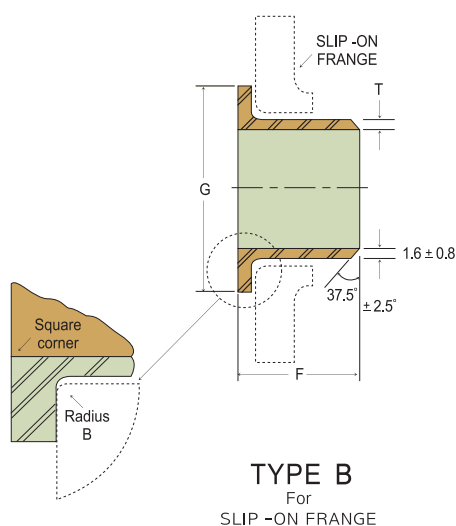
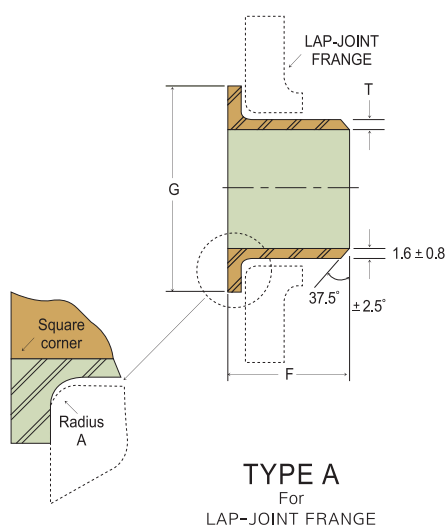
ASME B16.9

unit : inch

Nominal Pipe Size	Outside Diameter OD	Wall Thickness T				Length E	Limiting Wall Thickness For Length E	Length E ₁	180° Elbow			
		5s	10s	40s	80s				Long		Short	
									O	K	O	K
1/2	0.840	0.065	0.083	0.109	0.147	1.00	0.18	1.00	3.00	1.88	-	-
3/4	1.050	0.065	0.083	0.113	0.154	1.00	0.15	1.00	3.00	1.88	-	-
1	1.315	0.065	0.109	0.133	0.179	1.50	0.18	1.50	3.00	2.19	2.00	1.62
1 1/4	1.660	0.065	0.109	0.140	0.191	1.50	0.19	1.50	3.75	2.75	2.50	2.06
1 1/2	1.900	0.065	0.109	0.145	0.200	1.50	0.20	1.50	4.50	3.25	3.00	2.44
2	2.375	0.065	0.109	0.154	0.218	1.50	0.22	1.75	6.00	4.19	4.00	3.19
2 1/2	2.875	0.083	0.120	0.203	0.276	1.50	0.28	2.00	7.50	5.19	5.00	3.94
3	3.500	0.083	0.120	0.216	0.300	2.00	0.30	2.50	9.00	6.25	6.00	4.75
3 1/2	4.000	0.083	0.120	0.226	0.318	2.50	0.32	3.00	10.50	7.25	7.00	5.50
4	4.500	0.083	0.120	0.237	0.337	2.50	0.34	3.00	12.00	8.25	8.00	6.25
5	5.563	0.109	0.134	0.258	0.375	3.00	0.38	3.50	15.00	10.31	10.00	7.75
6	6.625	0.109	0.134	0.280	0.432	3.50	0.43	4.00	18.00	12.31	12.00	9.31
8	8.625	0.109	0.148	0.322	0.500	4.00	0.50	5.00	24.00	16.31	16.00	12.31
10	10.750	0.134	0.165	0.365	0.500	5.00	0.50	6.00	30.00	20.38	20.00	15.38
12	12.750	0.156	0.180	0.375	0.500	6.00	0.50	7.00	36.00	24.38	24.00	18.38
14	14.000	0.156	0.188	-	-	6.50	0.50	7.50	42.00	28.00	28.00	21.00
16	16.000	0.165	0.188	-	-	7.00	0.50	8.00	48.00	32.00	32.00	24.00
18	18.000	0.165	0.188	-	-	8.00	0.50	9.00	54.00	36.00	36.00	27.00
20	20.000	0.188	0.218	-	-	9.00	0.50	10.00	60.00	40.00	40.00	30.00
22	22.000	0.188	0.218	-	-	10.00	0.50	10.00	66.00	44.00	44.00	33.00
24	24.000	0.218	0.250	-	-	10.50	0.50	12.00	72.00	48.00	48.00	36.00
30	30.000	0.250	0.312	-	-	10.50	-	-	-	-	-	-

Lab Joint Stub End

Sch 5s, Sch 10s, Sch 40s



MSS SP-43, ASME B16.9

unit : inch

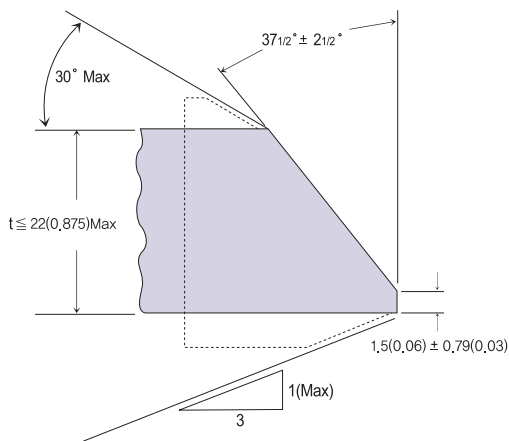
Nominal Pipe Size	Outside Diameter OD	Length F			Dia. of Lap-G Nominal& Maximum	Radius of Fillet		Wall Thickness T		
		MSS	ASME			A Max.	B Max.	Sch 5s	Sch 10s	Sch 40s
			Long	Short						
1/2	0.840	2.00	3.00	2.00	1.38	0.12	0.03	0.065	0.083	0.109
3/4	1.050	2.00	3.00	2.00	1.69	0.12	0.03	0.065	0.083	0.113
1	1.315	2.00	4.00	2.00	2.00	0.12	0.03	0.065	0.109	0.133
1 1/4	1.660	2.00	4.00	2.00	2.50	0.19	0.03	0.065	0.109	0.140
1 1/2	1.900	2.00	4.00	2.00	2.88	0.25	0.03	0.065	0.109	0.145
2	2.375	2.50	6.00	2.50	3.62	0.31	0.03	0.065	0.109	0.154
2 1/2	2.875	2.50	6.00	2.50	4.12	0.31	0.03	0.083	0.120	0.203
3	3.500	2.50	6.00	2.50	5.00	0.38	0.03	0.083	0.120	0.216
3 1/2	4.000	3.00	6.00	3.00	5.50	0.38	0.03	0.083	0.120	0.226
4	4.500	3.00	6.00	3.00	6.19	0.44	0.03	0.083	0.120	0.237
5	5.563	3.00	8.00	3.00	7.31	0.44	0.06	0.109	0.134	0.258
6	6.625	3.50	8.00	3.50	8.50	0.50	0.06	0.109	0.134	0.280
8	8.625	4.00	8.00	4.00	10.62	0.50	0.06	0.109	0.148	0.322
10	10.750	5.00	10.00	5.00	12.75	0.50	0.06	0.134	0.165	0.365
12	12.750	6.00	10.00	6.00	15.00	0.50	0.06	0.156	0.180	0.375
14	14.000	6.00	12.00	6.00	16.25	0.50	0.06	0.156	0.188	-
16	16.000	6.00	12.00	6.00	18.50	0.50	0.06	0.165	0.188	-
18	18.000	6.00	12.00	6.00	21.00	0.50	0.06	0.165	0.188	-
20	20.000	6.00	12.00	6.00	23.00	0.50	0.06	0.188	0.218	-
22	22.000	6.00	12.00	6.00	25.75	0.50	0.06	0.188	0.218	-
24	24.000	6.00	12.00	6.00	27.25	0.50	0.06	0.218	0.250	-

REFERENCES

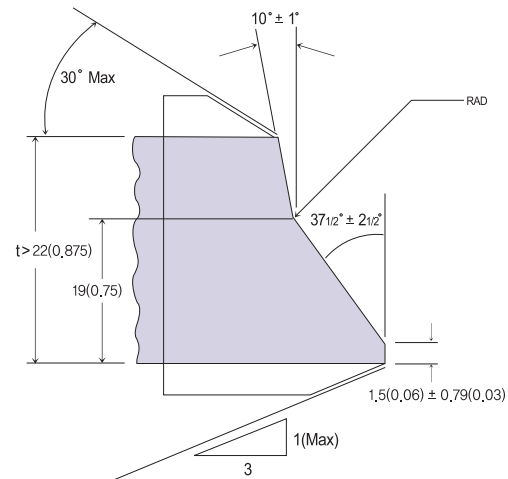
STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

- 28 Welding End Preparations for ASME B16.9
- 29 Welding End Preparations for KS/ JIS
- 31 Dimensional Tolerances for ASME B16.9 & 16.28
- 32 Dimensional Tolerances for MSS SP-43
- 33 Dimensional Tolerances for KS / JIS

ASME B16.9



(a) Plain Bevel



(b) Compound Bevel

Nominal Pipe Wall Thickness(t)	End Preparation
Less than X*	Cut square or slightly chamfer, at mfr's. option
X* to 22(0.875), inclusive	Plain bevel as in sketch (a) above
More than 22(0.875)	Compound bevel as in sketch (b) above

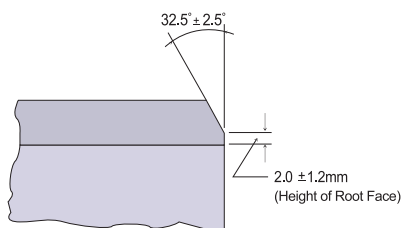
X* = 5(0.19) for carbon steel, ferritic alloy steel or wrought iron;
3(0.12) for austenitic alloy steel

- Notes:
- End preparations are in accordance with ASME B16.25 Paragraph 4.2
 - End preparations conforming to customer specifications will be specially manufactured upon consultation.

Welding End Preparations

KS / JIS

1. Steel Butt-Welding Pipe Fittings for Ordinary Use.



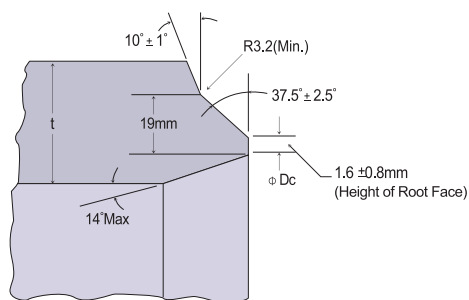
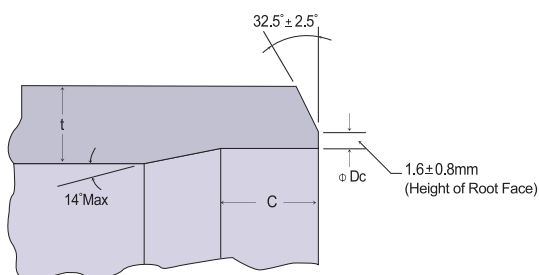
{ KS B 1522
JIS B 2311 }

2. Steel Butt-Welding Pipe Fittings for Special Use.

{ KS B 1541
JIS B 2312 }

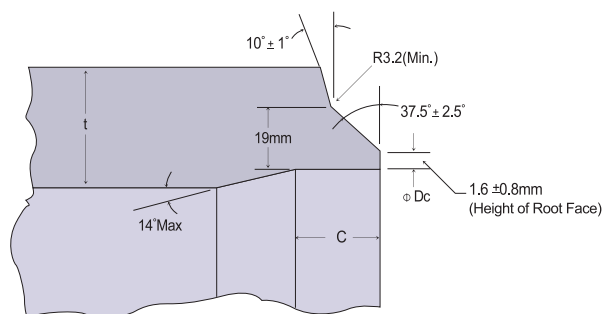
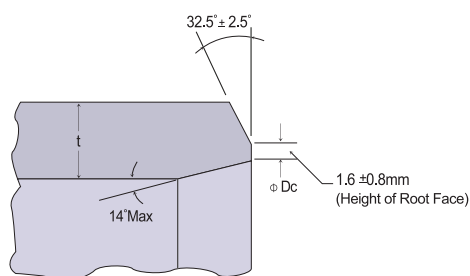
A: In the Case Where t is 19mm or Less

B: In the Case Where t is Over 19mm



C: In the Case Where t is 19mm or Less

D: In the Case Where t is Over 19mm



Where t : nominal wall thickness
Dc : diameter of machining bore
C : length of machining bore

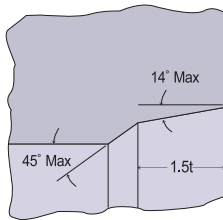
Remarks

1. Diameter (Dc) and length (C) of machining bore and dimensional tolerances shall be as agreed between parties concerned.

2. Relieving of machining bore may be performed by providing an inclination of 14° or less from the end face to the limits of 1.5 times the wall thickness, or after cutting to the cylindrical surface to the length of machining bore, providing an inclination of 14° or less to the limits above-indicated, and beyond that portion machining with an inclination of 45° or less.

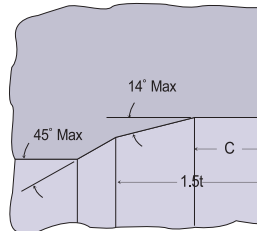
KS / JIS

For Types A and B of Bevel Shape



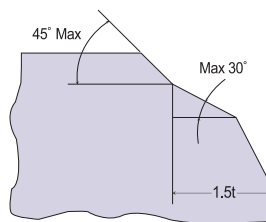
In the figure,
T: nominal wall thickness

For Types C and D of Bevel Shape



In the figure,
T: nominal wall thickness
C: length of machining bore

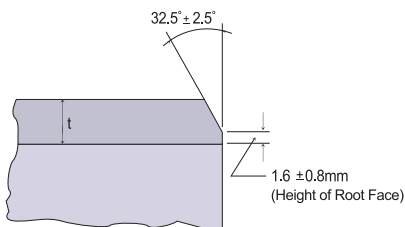
Relieving for outside diameter may be performed by providing an inclination of 30° or less from the end face to the limits of 1.5 times the wall thickness, and beyond that portion machining with an inclination of 45° or less.



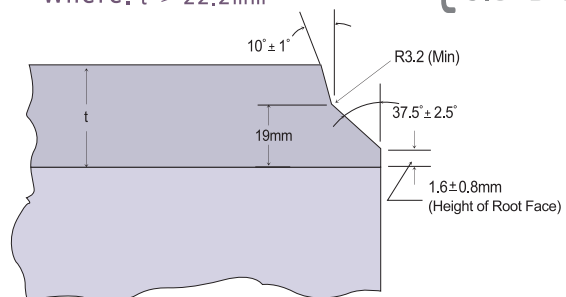
In the figure,
T: nominal wall thickness

3. Steel Plate Butt-Welding Pipe Fittings

Where, $t \leq 22.2\text{mm}$



Where, $t > 22.2\text{mm}$



{ KS B 1543
JIS B 2313 }

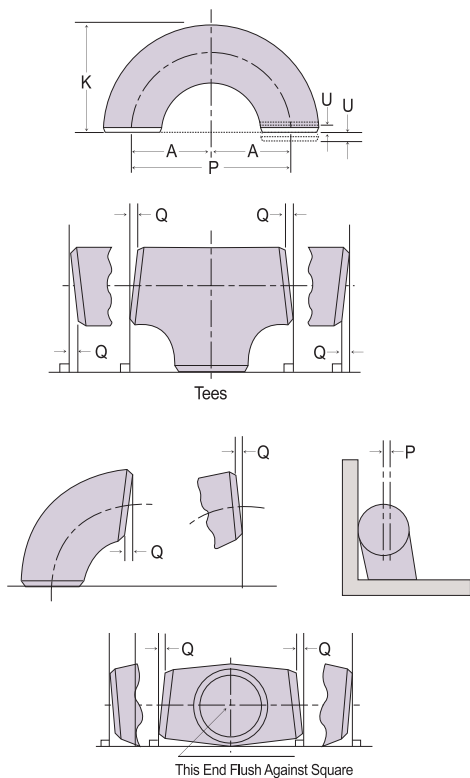
·Remarks : The shape and dimensions of the special bevel ends are referred to the reference clause stated in KS B1541, JIS B 2312.

Dimensional Tolerances

ASME B16.9

1. Wrought Steel Butt-Welding Fittings

All fittings				90° and 45° Elbows	Tees	Reducers	Caps	180° Returns		
Nominal Pipe Size	Outside Diameter at Bevel OD	Inside Diameter at End ID	Wall Thickness T	Center-to-End Dimension A,B	Center-to-End Dimension C,M	End to End H	Back to Face E	Center-to-Center Dimension P	Back to Face Dimension K	Alignments of Ends K
1/2 ~ 2 1/2	+0.06 -0.03	±0.03	Not less than 87 1/2% of nominal thickness	±0.06	±0.06	±0.06	±0.12	±0.25	±0.25	±0.03
3 ~ 4	±0.06	±0.06								
5 ~ 8	±0.09 -0.06									
10 ~ 18	+0.16 -0.12	±0.12		±0.09	±0.09	±0.09	±0.25	±0.38		±0.06
20 ~ 24	+0.25 -0.19	±0.19		±0.12	±0.12	±0.19	±0.38	-	-	-
26 ~ 30				±0.19	±0.19					
32 ~ 48				±0.19	±0.19					



Nominal Pipe Size	Angularity Tolerance	
	Off Angle Q	Off Plane P
1/2~4	0.03	0.06
5~8	0.06	0.12
10~12	0.09	0.19
14~16		0.25
18~24	0.12	0.38
26~30	0.19	
32~42		0.5
44~48		0.75

• Dimensions are in inches

MSS SP-43

Nominal Pipe Size	All Fittings		90° Elbow 45° Elbow Tee	Reducer Lap Joint Stub End	180° Return		
	Outside(1) Diameter at Welding End	Wall Thickness	Center-to-End Dimension A, B, C, M	Overall Length F, H	Center- to-Center Dimension O	Center- to-Center Dimension K	Alignment of Ends U
1/2~1 1/2	±0.03	Not less than 87 1/2% of nominal thickness	±0.06	±0.06	±0.25	±0.25	±0.03
2~3 1/2	±0.03		±0.06	±0.06	±0.25	±0.25	±0.03
4	±0.03		±0.06	±0.06	±0.25	±0.25	±0.03
5~8	+0.06 -0.03		±0.06	±0.06	±0.25	±0.25	±0.03
10~18	+0.09 -0.03		±0.09	±0.09	±0.38	±0.25	±0.06
20~24	+0.12 -0.03		±0.09	±0.09	±0.38	±0.25	±0.06

Nominal Pipe Size	All Fittings		Cap	Lap Joint Stub End	
	Outside(1) Diameter at Welding End	Wall Thickness	Overall Length E	Fillet (2) Radius of Lap A	Outside Diameter of Lap G
1/2~1 1/2	±0.03	Not less than 87 1/2% of nominal thickness	±0.12	+0 -0.03	+0 -0.03
2~3 1/2	±0.03		±0.12	+0 -0.03	+0 -0.03
4	±0.03		±0.12	-0.06	+0 -0.03
5~8	+0.06 - 0.03		±0.25	-0.06	+0 -0.03
10~18	+0.09 - 0.03		±0.25	-0.06	+0 -0.06
20~24	+0.12 - 0.03		±0.25	-0.06	+0 -0.06

Notes:

1. Out of roundness is the vector sum of the plus and minus tolerance.
2. Fillet B radius is the maximum

• Dimensions are in inches

Dimensional Tolerances

KS / JIS

1. Steel Butt-Welding Pipe Fittings for Ordinary Use

{ KS B 1522
JIS B 2311 }

Item	Type of Pipe Fitting	Nominal Diameter				
		1/2~ 2 1/2	3~ 4	5~ 8	10~ 18	20
		Tolerance				
Outside Dia, at end face (OD)	All pipe Fittings	±2	±2.5	±3.5	+ 5 - 4.5	+ 6.4 - 4.8
Inside Dia, at end face (ID)		±2	±2.5	±3.5	±4.5	±4.8
Wall thickness (T)		+ Not specified - 15%				
Center-to-end dimension (A,B)	90°Elbow 45°Elbow	±2.0		±3.2		±4.8
Center-to-center dimension(P)	180°Elbow	±6.4		±9.5		-
Back-to-face dimension (K)		±6.4				-
Alignment of ends(Max) (U)		1.6		3.2		-
End-to-end dimension (H)	Reducer	±2.0		±3.2		
Center-to-end dimension (C.M)	Tee	±2.0		±3.2		
Back-to-face dimension (E)	CAP	±3.2		±6.4		

2. Steel Butt-Welding Pipe Fittings for Special Use and Steel Plate Butt-Welding Pipe Fittings

{ KS B 1541, JIS B 2312
KS B 1543, JIS B 2313 }

Item	Type of Pipe Fitting	Nominal Diameter						
		1/2~ 2 1/2	3~ 4	5~ 8	10~ 18	20~ 24	26~30	32~36
		Tolerance						
Outside Dia, at end face (OD)	All pipe Fittings	+1.6 - 0.8	±1.6	+2.4 - 1.6	+4 - 3.2	+6.4 - 4.8		
Inside Dia, at end face (ID)		±0.8	±1.6		±3.2	±4.8		
Wall thickness (T)		+ Not specified - 12.5%						
Center-to-end dimension (A,B)	90°Elbow 45°Elbow	±1.6			±2.4		±3.2	±4.8
Center-to-center dimension(P)	180°Elbow	±6.4			±9.5			
Back-to-face dimension (K)		±6.4						
Alignment of ends(Max) (U)		* ± 0.8 ** ± 1.6			* ± 1.6 ** ± 3.2			
End-to-end dimension (H)	Reducer	±1.6			±2.4		±4.8	
Center-to-end dimension (C.M)	Tee	±1.6			±2.4		±3.2	±4.8
Outside of end Peripheral length	All pipe Fittings	-					±0.5	

*Application of KS B 1541, JIS B 2312

*Application of KS B 1543, JIS B 2313

· Dimensions are in millimeters.

KS / JIS

3. Steel Socket-Welding Pipe Fittings for Special

{ KS B 1542
JIS B 2316 }

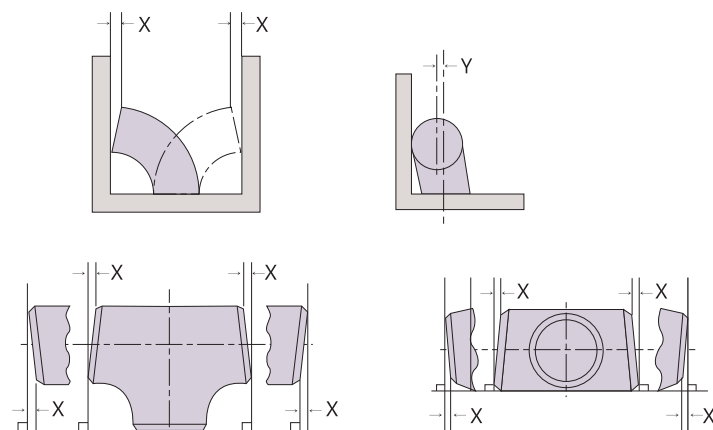
Item	Type of Pipe Fitting	Nominal Diameter			
		1/8 and 1/4	3/8 to 3/4	1 to 2	2 1/2 and 3
		Tolerance			
Inside Diameter of Socket	All pipe Fittings	$\begin{matrix} +0.3 \\ 0 \end{matrix}$			$\begin{matrix} +0.4 \\ 0 \end{matrix}$
Bore diameter		± 0.4			± 0.8
Eccentricity of inside diameter of socket to bore diameter		± 0.8			
Inclination of socket hole to fitting bore axis		1.5/300 Max.			
Distance from center to bottom of socket	45° Elbow 90° Elbow cross	± 0.8	± 1.5	± 2	± 2.5
Laying length	Full coupling	± 1.5	± 3	± 4	± 5
Laying length	Half coupling	± 0.8	± 1.5	± 2	± 2.5

4. Right Angle for Shaft-Center of Pipe Fittings

{ KS B 1522, JIS B 2311
KS B 1541, JIS B 2312
KS B 1543, JIS B 2313 }

Item	Type of Pipe Fitting	Nominal Diameter							
		1/2 ~ 4	5 ~ 8	10~12	14~16	18~24	26~30	32~42	44~48
		Tolerance							
Off Angle (X)	All pipe Fittings	0.8	1.6	2.4	3.2	4.8			
Off Plane (Y)		1.6	3.2	4.8	6.4	9.5	12.7	19.1	

• Dimensions are in millimeters



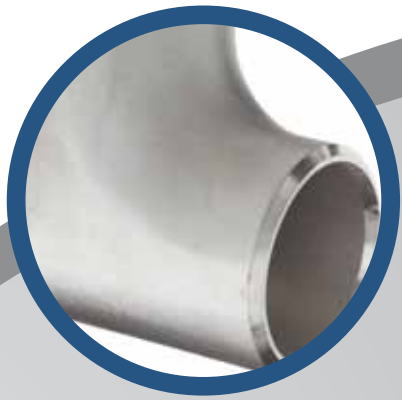
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