

FITTINGS

High quality fitting that exceeds your highest expectations....



RPS 0160308 / 01

ST&H CORPORATION is one of the most well known pipe-line manufacturer & supplier. Established in 1983, we have remained focused producing high quality pipe-line products and providing export services to over 100 clients in world wide.

Our products are manufactured in modern facilities under strict quality control system.

We are certified under ISO 9001, CE/PED, CRN (Canada) and SABS. Also, all of our products are compliance with the requirements of JIS, ANSI, DIN, BS and special requests.

We offer a complet scope of services taking responsibility for all aspects export process.

We are always doing our best to improve products quality and expanding production range through continuous development. Our business philosophy is to always exceed expectations in quality of products and customer services.



MATERIAL

- * Carbon Steel / Alloy Steel for High Temperature
ASTM A234 - WPB, WPC, WP11, WP22, WP5, WP9&WP91
- * Stainless Steel
ASTM A403 - WP304/304L, WP316/316L, WP321
- * Alloy Steel for Low Temperature
ASTM A420 - WPL6

DIMENSION

- Butt Weld Seamless Pipe Fittings (WPB) & Welded Pipe Fittings (ERW)
- * Dimensional Standard: ASME B16.9, B16.28, MSS SP-43, MSS SP-75
- * Size : 1/2" ~ 48"
- * Type
 - Elbows 45°, 90°, 180° (Long & Short)
 - Tees (Reducing & Straight)
 - Reducers (Concentric & Eccentric)
 - Cap & 3R Elbows
- * Schedule : STD, S40, XS, S80, S120, S160,XXS

Our Commitments..

is to provide you the best quality products and services that exceeds your highest expectations.

ANSI

ELBOWS (90°, 45°, 180°) - 6p

Carbon & Stainless Steel / Long & Short Radius

TEES - 12p

Carbon Steel / Straight & Reducing

TEES- 20p

Stainless Steel / Straight & Reducing

REDUCERS - 22p

Carbon Steel / Concentric & Eccentric

REDUCERS - 26p

Stainless Steel / Concentric & Eccentric

CAPS - 28p

Carbon & Stainless Steel

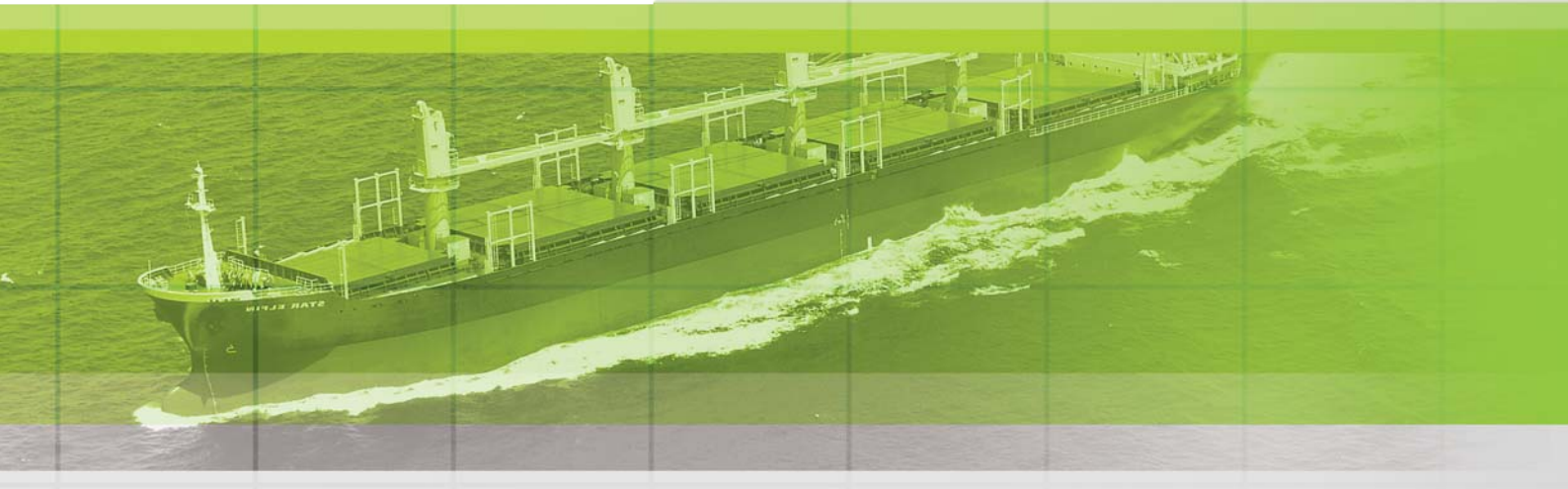
ANSI Dimensional Tolerance - 34p

Approx Weight Estimate Equation - 35p

Butt Welding Fitting Approx Weight List - 36p

Wall Thickness of Welded and Seamless Pipe - 46p





Wrought Steel Butt-Welding Fittings

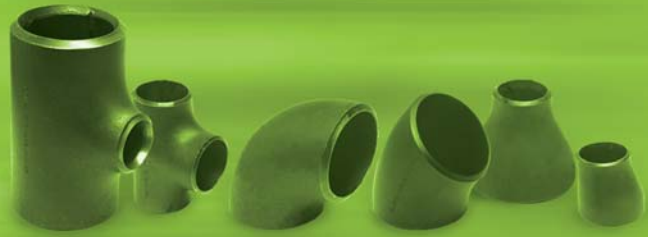
(Carbon & Alloy Steel)

<i>90° Elbow(Long)</i>	<i>180° Elbow(Long)</i>	<i>Reducer(Concentric)</i>	<i>Reducer(Concentric)</i>	<i>90° Elbow(Short)</i>	<i>180° Elbow(Short)</i>
					
<i>Reducer(Eccentric)</i>	<i>Reducer(Eccentric)</i>	<i>45° Elbow(Long)</i>	<i>Tee(Straight)</i>	<i>Tee(Reducing)</i>	<i>Cap</i>
					

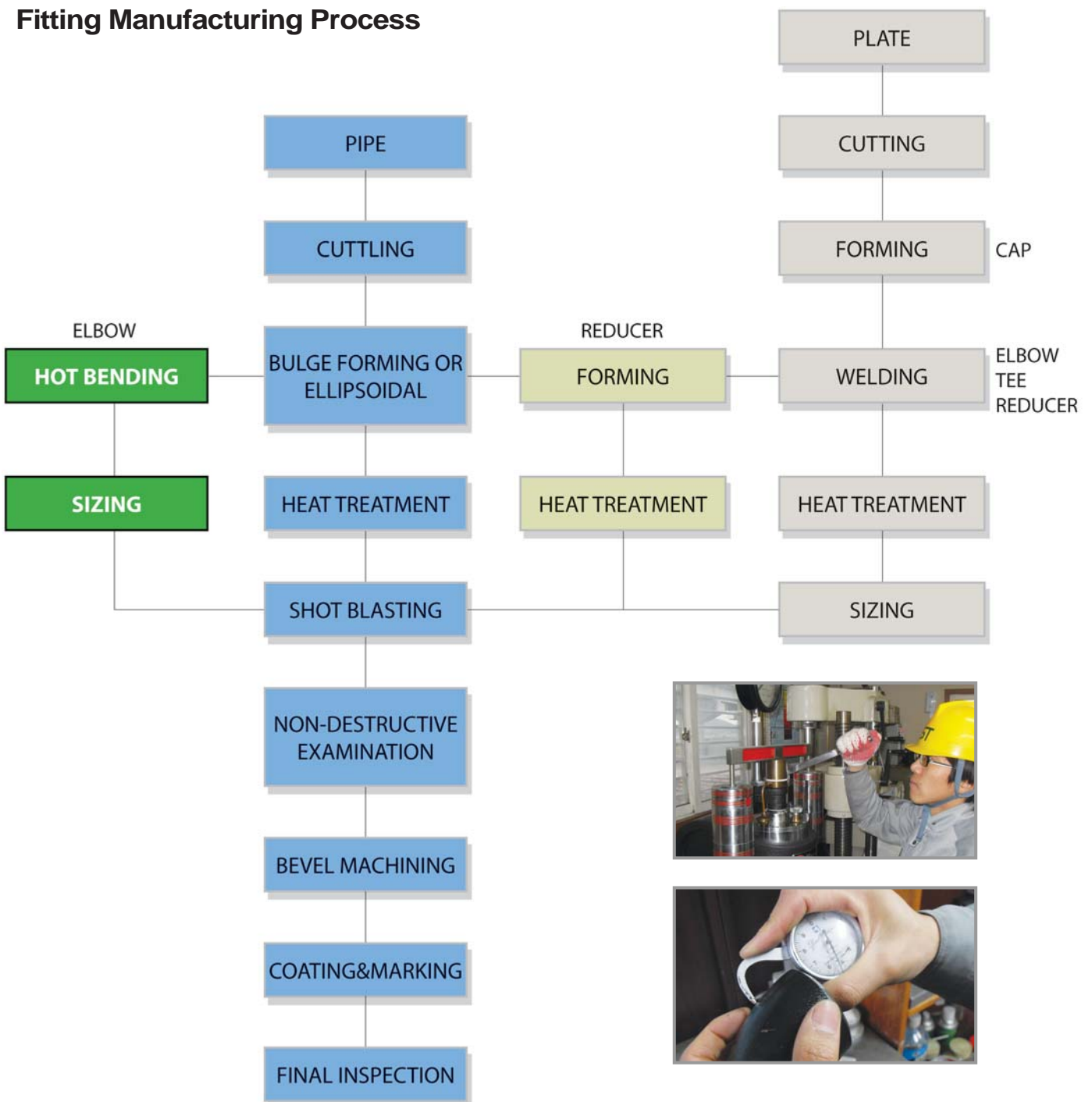
Stainless Steel Butt-Welding Fittings

<i>90° Elbow(Long)</i>	<i>Reducer(Concentric)</i>	<i>Tee(Straight)</i>	<i>90° Elbow(Short)</i>
			
<i>Reducer(Eccentric)</i>	<i>Tee(Reducing)</i>	<i>45° Elbow(Long)</i>	<i>Cap</i>
			

FITTINGS



Fitting Manufacturing Process



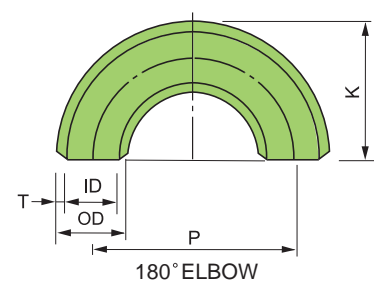
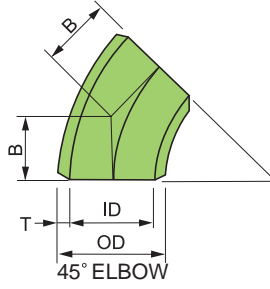
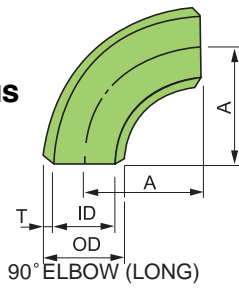


FITTINGS

ELBOW

Long & Short Radius

ASME / ANSI B 16.9
ANSI B 16.28
MSS SP-43



Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
	inch	mm	mm		mm	mm
1/2	21.34	18.04	5s	1.65	A = 38.1 B = 15.7 P = 76.2 K = 47.8	-
		17.12	10s	2.11		
		15.80	Std/40 40s	2.77		
		13.88	XS/80 80s	3.73		
		11.78	160	4.78		
		6.40	XXS	7.47		
3/4	26.67	23.37	5s	1.65	A = 38.1 B = 19.1 P = 76.2 K = 50.8	-
		22.45	10s	2.11		
		20.93	Std/40 40s	2.87		
		18.85	XS/80 80s	3.91		
		15.55	160	5.56		
		11.03	XXS	7.82		
1	33.53	30.23	5s	1.65	A = 38.1 B = 22.4 P = 76.2 K = 55.6	A = 25.4 P = 50.8 K = 41.1
		27.99	10s	2.77		
		26.77	Std/40 40s	3.38		
		24.43	XS/80 80s	4.55		
		20.83	160	6.35		
		15.22	XXS	9.09		
1 1/4	42.16	38.86	5s	1.65	A = 47.8 B = 25.4 P = 95.3 K = 69.9	A = 31.8 P = 63.5 K = 52.3
		36.62	10s	2.77		
		35.04	Std/40 40s	3.56		
		32.46	XS/80 80s	4.85		
		29.46	160	6.35		
		22.76	XXS	9.70		
1 1/2	48.26	44.96	5s	1.65	A = 57.2 B = 28.4 P = 114.3 K = 82.6	A = 38.1 P = 76.2 K = 62.0
		42.72	10s	2.77		
		40.90	Std/40 40s	3.68		
		38.10	XS/80 80s	5.08		
		33.98	160	7.14		
		27.94	XXS	10.16		
2	60.45	57.15	5s	1.65	A = 76.2 B = 35.1 P = 152.4 K = 106.4	A = 50.8 P = 101.6 K = 81.0
		54.91	10s	2.77		
		52.63	Std/40 40s	3.91		
		49.37	XS/80 80s	5.54		
		42.97	160	8.74		
		38.31	XXS	11.07		



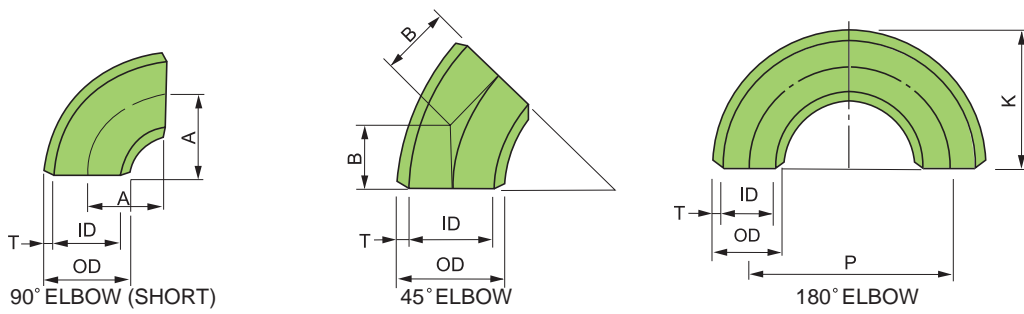
ELBOW

Long & Short Radius

ASME / ANSI B 16.9

ANSI B 16.28

MSS SP-43



Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
	inch	mm	mm		mm	mm
2 1/2	73.15	68.93	5s	2.11	A = 95.3 B = 44.5 P = 190.5 K = 131.8	A = 63.5 P = 127.0 K = 100.1
		67.05	10s	3.05		
		62.83	Std/40 40s	5.16		
		59.13	XS/80 80s	7.01		
		54.09	160	9.53		
		45.11	XXS	14.02		
3	88.90	84.68	5s	2.11	A = 114.3 B = 50.8 P = 228.6 K = 158.8	A = 76.2 P = 152.4 K = 120.7
		82.80	10s	3.05		
		77.92	Std/40 40s	5.49		
		73.66	XS/80 80s	7.62		
		66.64	160	11.13		
		58.42	XXS	15.24		
3 1/2	101.60	97.38	5s	2.11	A = 133.4 B = 57.2 P = 266.7 K = 184.2	A = 88.9 P = 177.8 K = 139.7
		95.50	10s	3.05		
		90.12	Std/40 40s	5.74		
		85.44	XS/80 80s	8.08		
		-	120	-		
		-	160	-		
-	XXS	-				
4	114.30	110.08	5s	2.11	A = 152.4 B = 63.5 P = 304.8 K = 209.6	A = 101.6 P = 203.2 K = 158.8
		108.20	10s	3.05		
		102.26	Std/40 40s	6.02		
		97.18	XS/80 80s	8.56		
		92.04	120	11.13		
		87.32	160	13.49		
80.06	XXS	17.12				
5	141.22	135.68	5s	2.77	A = 190.5 B = 79.2 P = 381.0 K = 261.9	A = 127.0 P = 254.0 K = 196.9
		134.42	10s	3.40		
		128.12	Std/40 40s	6.55		
		122.16	XS/80 80s	9.53		
		115.82	120	12.70		
		109.46	160	15.88		
103.12	XXS	19.05				
6	168.15	162.61	5s	2.77	A = 228.6 B = 95.3 P = 457.2 K = 312.7	A = 152.4 P = 304.8 K = 236.5
		161.35	10s	3.40		
		153.93	Std/40 40s	7.11		
		146.21	XS/80 80s	10.97		
		139.61	120	14.27		
		131.63	160	18.26		
124.25	XXS	21.95				

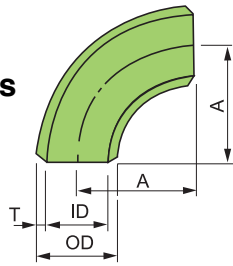


FITTINGS

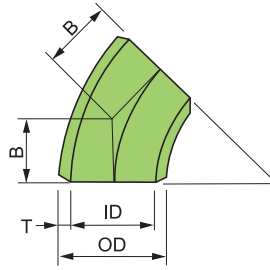
ELBOW

Long & Short Radius

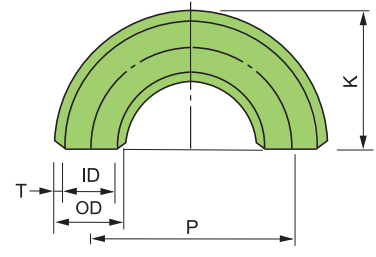
ASME / ANSI B 16.9
ANSI B 16.28
MSS SP-43



90° ELBOW (LONG)



45° ELBOW



180° ELBOW

Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
8	218.95	213.41	5s	2.77	A = 304.8 B = 127.0 P = 609.6 K = 414.3	A = 203.2 P = 406.4 K = 312.7
		211.43	10s	3.76		
		206.25	20	6.35		
		204.87	30	7.04		
		202.59	Std/40 40s	8.18		
		198.33	60	10.31		
		193.55	XS/80 80s	12.70		
		188.77	100	15.09		
		182.43	120	18.26		
		177.71	140	20.62		
		172.93	160	23.01		
		174.49	XXS	22.23		
10	273.05	266.25	5s	3.40	A = 381.0 B = 158.8 P = 762.0 K = 517.7	A = 254.0 P = 508.0 K = 390.7
		264.67	10s	4.19		
		260.35	20	6.35		
		257.45	30	7.80		
		254.51	Std/40 40s	9.27		
		247.65	XS/60 80s	12.70		
		242.87	80	15.09		
		236.53	100	18.26		
		230.17	120	21.44		
		222.25	140/XXS	25.40		
		215.89	160	28.58		
		12	323.85	315.93		
314.71	10s			4.57		
311.15	20			6.35		
307.09	30			8.38		
304.79	Std/40s			9.53		
303.23	40			10.31		
298.45	XS/80s			12.70		
295.31	60			14.27		
288.89	80			17.48		
208.97	100			21.44		
273.85	120/XXS			25.40		
266.69	140			28.58		
257.21	160	33.32				



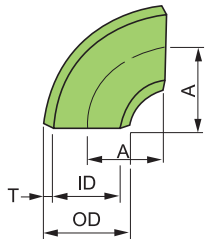
ELBOW

Long & Short Radius

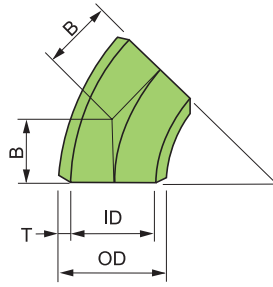
ASME / ANSI B 16.9

ANSI B 16.28

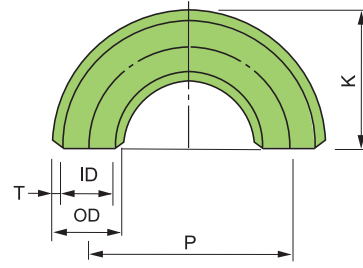
MSS SP-43



90° ELBOW (SHORT)



45° ELBOW



180° ELBOW

Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
14	355.60	347.68	5s	3.96	A = 533.4 B = 222.3 P = 1066.8 K = 711.2	A = 355.6 P = 711.2 K = 533.4
		346.04	10s	4.78		
		342.90	10	6.35		
		339.76	20	7.92		
		336.54	Std/30	9.53		
		333.34	40	11.13		
		330.20	XS	12.70		
		325.42	60	15.09		
		317.50	80	19.05		
		307.94	100	23.83		
		300.02	120	27.79		
		292.10	140	31.75		
284.18	160	35.71				
16	406.40	398.02	5s	4.19	A = 609.6 B = 254.0 P = 1219.2 K = 812.8	A = 406.4 P = 812.8 K = 609.6
		396.84	10s	4.78		
		393.70	10	6.35		
		390.56	20	7.92		
		387.34	Std/30	9.53		
		381.00	XS/40	12.70		
		373.08	60	16.66		
		363.52	80	21.44		
		354.02	100	26.19		
		344.48	120	30.96		
		333.34	140	36.53		
		325.42	160	40.49		
18	457.20	448.82	5s	4.19	A = 685.8 B = 285.8 P = 1371.6 K = 914.4	A = 457.2 P = 914.4 K = 685.8
		447.64	10s	4.78		
		444.50	10	6.35		
		441.36	20	7.92		
		434.96	30	11.13		
		438.14	Std	9.53		
		431.80	XS	12.70		
		428.66	40	14.27		
		419.10	60	19.05		
		409.54	80	23.83		
		398.48	100	29.36		
		387.34	120	34.93		
		377.86	140	39.67		
		366.72	160	45.24		

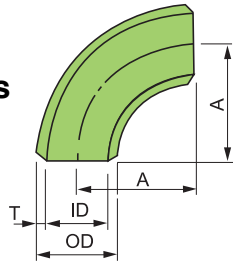


FITTINGS

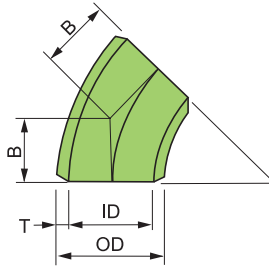
ELBOW

Long & Short Radius

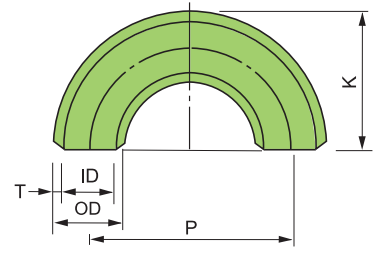
ASME / ANSI B 16.9
ANSI B 16.28
MSS SP-43



90° ELBOW (LONG)



45° ELBOW



180° ELBOW

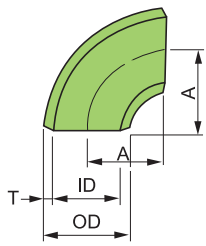
Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
20	508.00	498.44	5s	4.78	A = 762.0 B = 317.5 P = 1524.0 K = 1016.0	A = 508.0 P = 1016.0 K = 762.0
		496.92	10s	5.54		
		495.30	10	6.35		
		488.94	Std/20	9.53		
		482.60	XS/30	12.70		
		477.82	40	15.09		
		466.76	60	20.62		
		455.62	80	26.19		
		442.92	100	32.54		
		431.80	120	38.10		
		419.10	140	44.45		
407.98	160	50.01				
22	558.80	549.24	5s	4.78	A = 838.2 B = 342.9 P = 1676.4 K = 1117.6	A = 558.8 P = 1117.6 K = 838.2
		547.72	10s	5.54		
		546.10	10	6.35		
		539.74	Std/20	9.53		
		533.40	XS/30	12.70		
		514.34	60	22.23		
		501.64	80	28.58		
		488.94	100	34.93		
		476.24	120	41.28		
		463.54	140	47.63		
		450.84	160	53.98		
24	609.60	598.52	5s	5.54	A = 914.4 B = 381.0 P = 1828.8 K = 1219.2	A = 609.6 P = 1219.2 K = 914.4
		596.90	10s	6.35		
		596.90	10	6.35		
		590.54	Std/20	9.53		
		584.20	XS	12.70		
		581.06	30	14.27		
		574.64	40	17.48		
		560.38	60	24.61		
		547.72	80	30.94		
		531.82	100	38.89		
		517.56	120	46.02		
		504.86	140	52.37		
		490.52	160	59.54		
26	660.40	644.56	10	7.92	A = 990.6 B = 406.4	A = 660.4
		641.34	Std	9.53		
		635.00	XS/20	12.70		



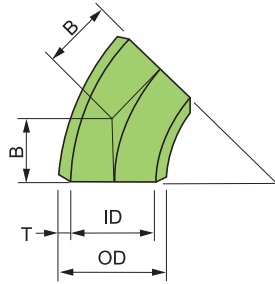
ELBOW

Long & Short Radius

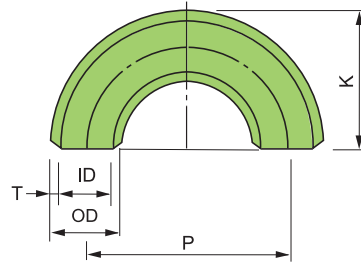
ASME / ANSI B 16.9
ANSI B16.28
MSS SP-43



90° ELBOW (SHORT)



45° ELBOW



180° ELBOW

Nominal Pipe Size	Dimensions		Wall Thickness		Long Radius	Short Radius
	OD	ID	Sch. No.	t		
inch	mm	mm		mm	mm	mm
28	711.20	695.36	10	7.92	A = 1066.8 B = 438.2	A = 711.0
		692.14	Std	9.53		
		685.80	XS/20	12.70		
		679.44	30	15.88		
30	762.00	749.30	5s	6.35	A = 1143.0 B = 469.9	A = 762.0
		746.16	10s	7.92		
		746.16	10	7.92		
		742.94	Std	9.53		
		736.60	XS/20	12.70		
32	812.80	796.96	10	7.92	A = 1219.2 B = 501.7	A = 813.0
		793.74	Std	9.53		
		787.40	XS/20	12.70		
		781.04	30	15.88		
34	863.60	847.76	10	7.92	A = 1295.4 B = 533.4	A = 864.0
		844.54	Std	9.53		
		838.20	XS/20	12.70		
		831.84	30	15.88		
36	914.40	898.56	10	7.92	A = 1371.6 B = 565.2	A = 914.4
		895.34	Std	9.53		
		889.00	XS/20	12.70		
		882.64	30	15.88		
38	965.20	946.16	Std/40	9.53	A = 1447.8 B = 600.0	A = 965.2
		939.80	XS/80	12.70		
		996.96	Std/40	9.53		
		990.60	XS/80	12.70		
42	1066.80	1047.76	Std/40	9.53	A = 1600.2 B = 660.4	A = 1066.8
		1041.40	XS/80	12.70		
44	1117.60	1098.56	Std/40	9.53	A = 1676.4 B = 695.5	A = 1117.6
		1092.20	XS/80	12.70		
46	1168.40	1149.36	Std/40	9.53	A = 1752.6 B = 726.9	A = 1168.4
		1143.00	XS/80	12.70		
48	1219.20	1200.16	Std/40	9.53	A = 1828.8 B = 759.0	A = 1219.2
		1193.80	XS/80	12.70		

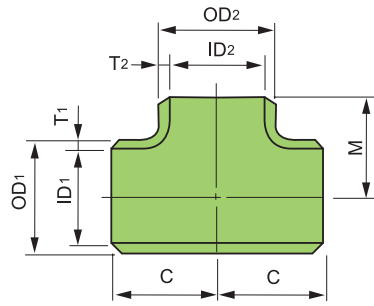


FITTINGS

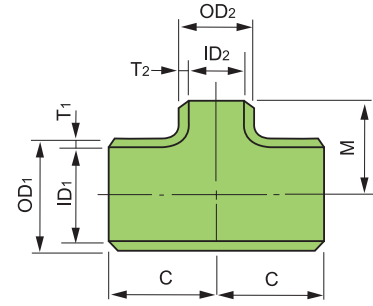
TEE

Straight and Reducing Outlet Tees

ASME / ANSI B 16.9



(STRAIGHT)



(REDUCING)

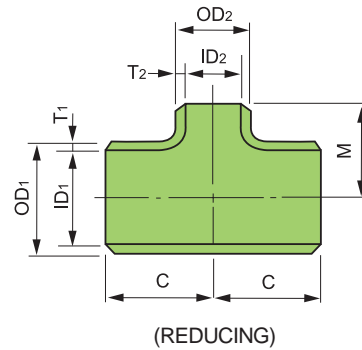
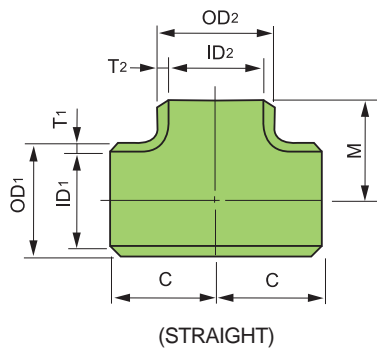
Nominal Pipe Size	Dimensions				Wall Thickness									
	Outside Diameter at Bevel : D ₁ /D ₂		Center to End		Sch. 20		Sch. 30		Std		Sch.40		Sch. 60	
	OD ₁ mm	OD ₂ mm	C mm	M mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm
1/2 × 1/2	21.34	21.34	25.4	25.4	-	-	-	-	2.77	2.77	2.77	2.77	-	-
3/4 × 3/4	26.67	26.67	28.4	28.4	-	-	-	-	2.87	2.87	2.87	2.87	-	-
3/4 × 1/2	26.67	21.34	28.4	28.4	-	-	-	-	2.87	2.77	2.87	2.77	-	-
1 × 1	33.53	33.53	38.1	38.1	-	-	-	-	3.38	3.38	3.38	3.38	-	-
1 × 3/4	33.53	26.67	38.1	38.1	-	-	-	-	3.38	2.87	3.38	2.87	-	-
1 × 1/2	33.53	21.34	38.1	38.1	-	-	-	-	3.38	2.77	3.38	2.77	-	-
1 1/4 × 1 1/4	42.16	42.16	47.8	47.8	-	-	-	-	3.56	3.56	3.56	3.56	-	-
1 1/4 × 1	42.16	33.40	47.8	47.8	-	-	-	-	3.56	3.38	3.56	3.38	-	-
1 1/4 × 3/4	42.16	26.67	47.8	47.8	-	-	-	-	3.56	2.87	3.56	2.87	-	-
1 1/2 × 1 1/2	48.26	48.26	57.2	57.2	-	-	-	-	3.68	3.68	3.68	3.68	-	-
1 1/2 × 1 1/4	48.26	42.16	57.2	57.2	-	-	-	-	3.68	3.56	3.68	3.56	-	-
1 1/2 × 1	48.26	33.53	57.2	57.2	-	-	-	-	3.68	3.38	3.68	3.38	-	-
1 1/2 × 3/4	48.26	26.67	57.2	57.2	-	-	-	-	3.68	2.87	3.68	2.87	-	-
1 1/2 × 1/2	48.26	21.34	57.2	57.2	-	-	-	-	3.68	2.77	3.68	2.77	-	-
2 × 2	60.45	60.45	63.5	63.5	-	-	-	-	3.91	3.91	3.91	3.91	-	-
2 × 1 1/2	60.45	48.26	63.5	60.5	-	-	-	-	3.91	3.68	3.91	3.68	-	-
2 × 1 1/4	60.45	42.16	63.5	57.2	-	-	-	-	3.91	3.56	3.91	3.56	-	-
2 × 1	60.45	33.53	63.5	50.8	-	-	-	-	3.91	3.38	3.91	3.38	-	-
2 × 3/4	60.45	26.67	63.5	44.5	-	-	-	-	3.91	2.87	3.91	2.87	-	-
2 1/2 × 2 1/2	73.15	73.15	76.2	76.2	-	-	-	-	5.16	5.16	5.16	5.16	-	-
2 1/2 × 2	73.15	60.45	76.2	69.9	-	-	-	-	5.16	3.91	5.16	3.91	-	-
2 1/2 × 1 1/2	73.15	48.26	76.2	66.5	-	-	-	-	5.16	3.68	5.16	3.68	-	-
2 1/2 × 1 1/4	73.15	42.16	76.2	63.5	-	-	-	-	5.16	3.56	5.16	3.56	-	-
2 1/2 × 1	73.15	33.53	76.2	57.2	-	-	-	-	5.16	3.38	5.16	3.38	-	-
3 × 3	88.90	88.90	85.9	85.9	-	-	-	-	5.49	5.49	5.49	5.49	-	-
3 × 2 1/2	88.90	73.15	85.9	82.6	-	-	-	-	5.49	5.16	5.49	5.16	-	-
3 × 2	88.90	60.45	85.9	76.2	-	-	-	-	5.49	3.91	5.49	3.91	-	-
3 × 1 1/2	88.90	48.26	85.9	73.2	-	-	-	-	5.49	3.68	5.49	3.68	-	-
3 × 1 1/4	88.90	42.16	85.9	69.9	-	-	-	-	5.49	3.56	5.49	3.56	-	-
4 × 4	114.30	114.30	104.6	104.6	-	-	-	-	6.02	6.02	6.02	6.02	-	-
4 × 3	114.30	88.90	104.6	98.6	-	-	-	-	6.02	5.49	6.02	5.49	-	-
4 × 2 1/2	114.30	73.15	104.6	95.3	-	-	-	-	6.02	5.16	6.02	5.16	-	-
4 × 2	114.30	60.45	104.6	88.9	-	-	-	-	6.02	3.91	6.02	3.91	-	-
4 × 1 1/2	114.30	48.26	104.6	85.9	-	-	-	-	6.02	3.68	6.02	3.68	-	-



TEE

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Wall Thickness														Nominal Pipe Size
XS		Sch. 80		Sch. 100		Sch. 120		Sch. 140		Sch. 160		XXS		
t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	
3.73	3.73	3.73	3.73	-	-	-	-	-	-	4.78	4.78	7.47	7.47	1/2 × 1/2
3.91	3.91	3.91	3.91	-	-	-	-	-	-	5.56	5.56	7.82	7.82	3/4 × 3/4
3.91	3.73	3.91	3.73	-	-	-	-	-	-	5.56	4.78	7.82	7.47	3/4 × 1/2
4.55	4.55	4.55	4.55	-	-	-	-	-	-	6.35	6.35	9.09	9.09	1 × 1
4.55	3.91	4.55	3.91	-	-	-	-	-	-	6.35	5.56	9.09	7.82	1 × 3/4
4.55	3.73	4.55	3.73	-	-	-	-	-	-	6.35	4.78	9.09	7.47	1 × 1/2
4.85	4.85	4.85	4.85	-	-	-	-	-	-	6.35	6.35	9.70	9.70	1 1/4 × 1 1/4
4.85	4.55	4.85	4.55	-	-	-	-	-	-	6.35	6.35	9.70	9.09	1 1/4 × 1
4.85	3.91	4.85	3.91	-	-	-	-	-	-	6.35	5.56	9.70	7.82	1 1/4 × 3/4
5.08	5.08	5.08	5.08	-	-	-	-	-	-	7.14	7.14	10.16	10.16	1 1/2 × 1 1/2
5.08	4.85	5.08	4.85	-	-	-	-	-	-	7.14	6.35	10.16	9.70	1 1/2 × 1 1/4
5.08	4.55	5.08	4.55	-	-	-	-	-	-	7.14	6.35	10.16	9.09	1 1/2 × 1
5.08	3.91	5.08	3.91	-	-	-	-	-	-	7.14	5.56	10.16	7.82	1 1/2 × 3/4
5.08	3.73	5.08	3.73	-	-	-	-	-	-	7.14	4.78	10.16	7.47	1 1/2 × 1/2
5.54	5.54	5.54	5.54	-	-	-	-	-	-	8.74	8.74	11.07	11.07	2 × 2
5.54	5.08	5.54	5.08	-	-	-	-	-	-	8.74	7.14	11.07	10.16	2 × 1 1/2
5.54	4.85	5.54	4.85	-	-	-	-	-	-	8.74	6.35	11.07	9.70	2 × 1 1/4
5.54	4.55	5.54	4.55	-	-	-	-	-	-	8.74	6.35	11.07	9.09	2 × 1
5.54	3.91	5.54	3.91	-	-	-	-	-	-	8.74	5.56	11.07	7.82	2 × 3/4
7.01	7.01	7.01	7.01	-	-	-	-	-	-	9.53	9.53	14.02	14.02	2 1/2 × 2 1/2
7.01	5.54	7.01	5.54	-	-	-	-	-	-	9.53	8.74	14.02	11.07	2 1/2 × 2
7.01	5.08	7.01	5.08	-	-	-	-	-	-	9.53	7.14	14.02	10.16	2 1/2 × 1 1/2
7.01	4.85	7.01	4.85	-	-	-	-	-	-	9.53	6.35	14.02	9.70	2 1/2 × 1 1/4
7.01	4.55	7.01	4.55	-	-	-	-	-	-	9.53	6.35	14.02	9.09	2 1/2 × 1
7.62	7.62	7.62	7.62	-	-	-	-	-	-	11.13	11.13	15.24	15.24	3 × 3
7.62	7.01	7.62	7.01	-	-	-	-	-	-	11.13	9.53	15.24	14.02	3 × 2 1/2
7.62	5.54	7.62	5.54	-	-	-	-	-	-	11.13	8.74	15.24	11.07	3 × 2
7.62	5.08	7.62	5.08	-	-	-	-	-	-	11.13	7.14	15.24	10.16	3 × 1 1/2
7.62	4.85	7.62	4.85	-	-	-	-	-	-	11.13	6.35	15.24	9.70	3 × 1 1/4
8.56	8.56	8.56	8.56	-	-	11.13	11.13	-	-	13.49	13.49	17.12	17.12	4 × 4
8.56	7.62	8.56	7.62	-	-	-	-	-	-	13.49	11.13	17.12	15.24	4 × 3
8.56	7.01	8.56	7.01	-	-	-	-	-	-	13.49	9.53	17.12	14.02	4 × 2 1/2
8.56	5.54	8.56	5.54	-	-	-	-	-	-	13.49	8.74	17.12	11.07	4 × 2
8.56	5.08	8.56	5.08	-	-	-	-	-	-	13.49	7.14	17.12	10.16	4 × 1 1/2

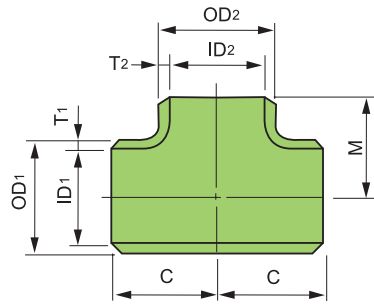


FITTINGS

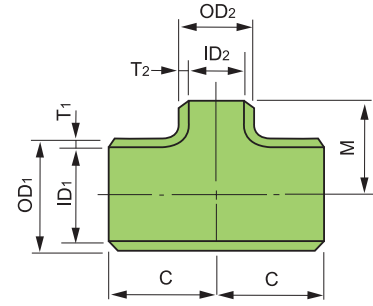
TEE

Straight and Reducing Outlet Tees

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(STRAIGHT)



(REDUCING)

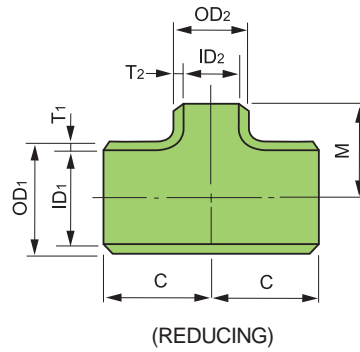
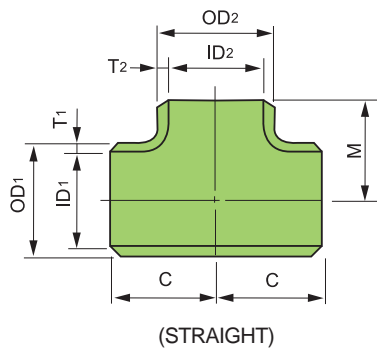
Nominal Pipe Size	Dimensions				Wall Thickness									
	Outside Diameter at Bevel : D ₁ /D ₂		Center to End		Sch. 20		Sch. 30		Std		Sch.40		Sch. 60	
	OD ₁	OD ₂	C	M	t ₁	t ₂	t ₁	t ₂	t ₁	t ₂	t ₁	t ₂	t ₁	t ₂
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
5 × 5	141.22	141.22	124.0	124.0	-	-	-	-	6.55	6.55	6.55	6.55	-	-
5 × 4	141.22	114.30	124.0	117.3	-	-	-	-	6.55	6.02	6.55	6.02	-	-
5 × 3	141.22	88.90	124.0	111.3	-	-	-	-	6.55	5.49	6.55	5.49	-	-
5 × 2 1/2	141.22	73.15	124.0	108.0	-	-	-	-	6.55	5.16	6.55	5.16	-	-
5 × 2	141.22	60.45	124.0	104.6	-	-	-	-	6.55	3.91	6.55	3.91	-	-
6 × 6	168.15	168.15	142.7	143.7	-	-	-	-	7.11	7.11	7.11	7.11	-	-
6 × 5	168.15	141.22	142.7	136.7	-	-	-	-	7.11	6.55	7.11	6.55	-	-
6 × 4	168.15	114.30	142.7	130.0	-	-	-	-	7.11	6.02	7.11	6.02	-	-
6 × 3	168.15	88.90	142.7	124.0	-	-	-	-	7.11	5.49	7.11	5.49	-	-
6 × 2 1/2	168.15	73.15	142.7	120.7	-	-	-	-	7.11	5.16	7.11	5.16	-	-
8 × 8	218.95	218.95	177.8	177.8	6.35	6.35	7.04	7.04	8.18	8.18	8.18	8.18	10.31	10.31
8 × 6	218.95	168.15	177.8	168.1	-	-	-	-	8.18	7.11	8.18	7.11	-	-
8 × 5	218.95	141.22	177.8	162.1	-	-	-	-	8.18	6.55	8.18	6.55	-	-
8 × 4	218.95	114.30	177.8	155.4	-	-	-	-	8.18	6.02	8.18	6.02	-	-
10 × 10	273.05	273.05	215.9	215.9	6.35	6.35	7.80	7.80	9.27	9.27	9.27	9.27	12.70	12.70
10 × 8	273.05	218.95	215.9	203.2	6.35	6.35	7.80	7.04	9.27	8.18	9.27	8.18	12.70	10.31
10 × 6	273.05	168.15	215.9	193.5	-	-	-	-	9.27	7.11	9.27	7.11	-	-
10 × 5	273.05	141.22	215.9	190.5	-	-	-	-	9.27	6.55	9.27	6.55	-	-
10 × 4	273.05	114.30	215.9	184.2	-	-	-	-	9.27	6.02	9.27	6.02	-	-
12 × 12	323.85	323.85	254.0	254.0	6.35	6.35	8.38	8.38	9.53	9.53	10.31	10.31	14.27	14.27
12 × 10	323.85	273.05	254.0	241.3	6.35	6.35	8.38	7.80	9.53	9.27	10.31	9.27	14.27	12.70
12 × 8	323.85	218.95	254.0	228.6	6.35	6.35	8.38	7.04	9.53	8.18	10.31	8.18	14.27	10.31
12 × 6	323.85	168.15	254.0	218.9	-	-	-	-	9.53	7.11	10.31	7.11	-	-
12 × 5	323.85	141.22	254.0	215.9	-	-	-	-	9.53	6.55	10.31	6.55	-	-
14 × 14	355.60	355.60	279.4	279.4	7.92	7.92	9.53	9.53	9.53	9.53	11.13	11.13	15.09	15.09
14 × 12	355.60	323.85	279.4	269.7	7.92	6.35	9.53	8.38	9.53	9.53	11.13	10.31	15.09	14.27
14 × 10	355.60	273.05	279.4	257.0	7.92	6.35	9.53	7.80	9.53	9.27	11.13	9.27	15.09	12.70
14 × 8	355.60	218.95	279.4	247.7	7.92	6.35	9.53	7.04	9.53	8.18	11.13	8.18	15.09	10.31
14 × 6	355.60	168.15	279.4	238.3	-	-	-	-	9.53	7.11	11.13	7.11	-	-
16 × 16	406.40	406.40	304.8	304.8	7.92	7.92	9.53	9.53	9.53	9.53	12.70	12.70	16.66	16.66
16 × 14	406.40	355.60	304.8	304.8	7.92	7.92	9.53	9.53	9.53	9.53	12.70	11.13	16.66	15.09
16 × 12	406.40	323.85	304.8	295.1	7.92	6.35	9.53	8.38	9.53	9.53	12.70	10.31	16.66	14.27
16 × 10	406.40	273.05	304.8	282.4	7.92	6.35	9.53	7.80	9.53	9.27	12.70	9.27	16.66	12.70
16 × 8	406.40	218.95	304.8	273.1	7.92	6.35	9.53	7.04	9.53	8.18	12.70	8.18	16.66	10.31
16 × 6	406.40	168.15	304.8	263.7	-	-	-	-	9.53	7.11	12.70	7.11	-	-



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Wall Thickness														Nominal Pipe Size
XS		Sch. 80		Sch. 100		Sch. 120		Sch. 140		Sch. 160		XXS		
t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	
9.53	9.53	9.53	9.53	-	-	12.70	12.70	-	-	15.88	15.88	19.05	19.05	5 × 5
9.53	8.56	9.53	8.56	-	-	12.70	11.13	-	-	15.88	13.49	19.05	17.12	5 × 4
9.53	7.62	9.53	7.62	-	-	-	-	-	-	15.88	11.13	19.05	15.24	5 × 3
9.53	7.01	9.53	7.01	-	-	-	-	-	-	15.88	9.53	19.05	14.02	5 × 2 1/2
9.53	5.54	9.53	5.54	-	-	-	-	-	-	15.88	8.74	19.05	11.07	5 × 2
10.97	10.97	10.97	10.97	-	-	14.27	14.27	-	-	18.26	18.26	21.95	21.95	6 × 6
10.97	9.53	10.97	9.53	-	-	14.27	12.70	-	-	18.26	15.88	21.95	19.05	6 × 5
10.97	8.56	10.97	8.56	-	-	14.27	11.13	-	-	18.26	13.49	21.95	17.12	6 × 4
10.97	7.62	10.97	7.62	-	-	-	-	-	-	18.26	11.13	21.95	15.24	6 × 3
10.97	7.01	10.97	7.01	-	-	-	-	-	-	18.26	9.53	21.95	14.02	6 × 2 1/2
12.70	12.70	12.70	12.70	15.09	15.09	18.26	18.26	20.62	20.62	23.01	23.01	22.23	22.23	8 × 8
12.70	10.97	12.70	10.97	-	-	18.26	14.27	-	-	23.01	18.26	22.23	21.95	8 × 6
12.70	9.53	12.70	9.53	-	-	18.26	12.70	-	-	23.01	15.88	22.23	19.05	8 × 5
12.70	8.56	12.70	8.56	-	-	18.26	11.13	-	-	23.01	13.49	22.23	17.12	8 × 4
12.70	12.70	15.09	15.09	18.26	18.26	21.44	21.44	25.40	25.40	28.58	28.58	25.40	25.40	10 × 10
12.70	12.70	15.09	12.70	18.26	15.09	21.44	18.26	25.40	20.62	28.58	23.01	25.40	22.23	10 × 8
12.70	10.97	15.09	10.97	-	-	21.44	14.27	-	-	28.58	18.26	25.40	21.95	10 × 6
12.70	9.53	15.09	9.53	-	-	21.44	12.70	-	-	28.58	15.88	25.40	19.05	10 × 5
12.70	8.56	15.09	8.56	-	-	21.44	11.13	-	-	28.58	13.49	25.40	17.12	10 × 4
12.70	12.70	17.48	17.48	21.44	21.44	25.40	25.40	28.58	28.58	33.32	33.32	25.40	25.40	12 × 12
12.70	12.70	17.48	15.09	21.44	18.26	25.40	21.44	28.58	25.40	33.32	28.58	25.40	25.40	12 × 10
12.70	12.70	17.48	12.70	21.44	15.09	25.40	18.26	28.58	20.62	33.32	23.01	25.40	22.23	12 × 8
12.70	10.97	17.48	10.97	-	-	25.40	14.27	-	-	33.32	18.26	25.40	21.95	12 × 6
12.70	9.53	17.48	9.53	-	-	25.40	12.70	-	-	33.32	15.88	25.40	19.05	12 × 5
12.70	12.70	19.05	19.05	23.83	23.83	27.79	27.79	31.75	31.75	35.71	35.71	-	-	14 × 14
12.70	12.70	19.05	17.48	23.83	21.44	27.79	25.40	31.75	28.58	35.71	33.32	-	-	14 × 12
12.70	12.70	19.05	15.09	23.83	18.26	27.79	21.44	31.75	25.40	35.71	28.58	-	-	14 × 10
12.70	12.70	19.05	12.70	23.83	15.09	27.79	18.26	31.75	20.62	35.71	23.01	-	-	14 × 8
12.70	10.97	19.05	10.97	-	-	27.79	14.27	-	-	35.71	18.26	-	-	14 × 6
12.70	12.70	21.44	21.44	26.19	26.19	30.96	30.96	36.53	36.53	40.49	40.49	-	-	16 × 16
12.70	12.70	21.44	19.05	26.19	23.83	30.96	27.79	36.53	31.75	40.49	35.71	-	-	16 × 14
12.70	12.70	21.44	17.48	26.19	21.44	30.96	25.40	36.53	28.58	40.49	33.32	-	-	16 × 12
12.70	12.70	21.44	15.09	26.19	18.26	30.96	21.44	36.53	25.40	40.49	28.58	-	-	16 × 10
12.70	12.70	21.44	12.70	26.19	15.09	30.96	18.26	36.53	20.62	40.49	23.01	-	-	16 × 8
12.70	10.97	21.44	10.97	-	-	30.96	14.27	-	-	40.49	18.26	-	-	16 × 6

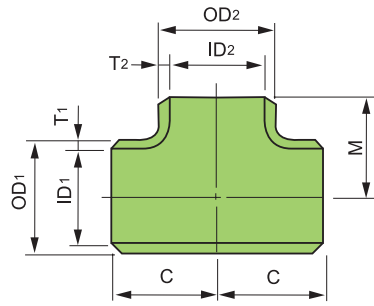


FITTINGS

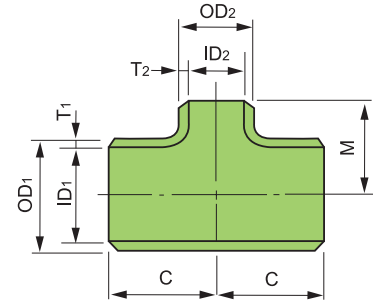
TEE

Straight and Reducing Outlet Tees

ASME / ANSI B 16.9

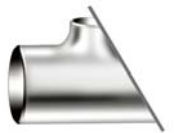


(STRAIGHT)



(REDUCING)

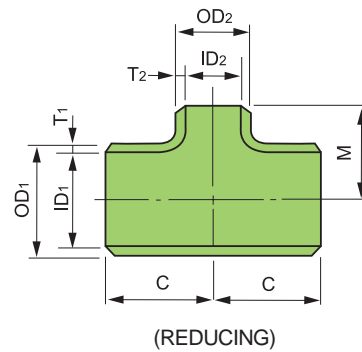
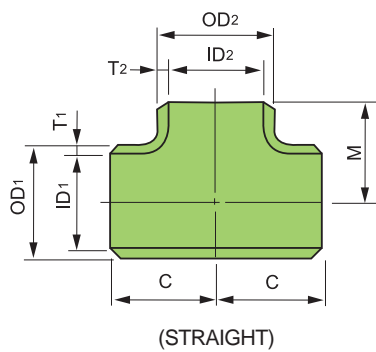
Nominal Pipe Size	Dimensions				Wall Thickness									
	Outside Diameter at Bevel : D ₁ /D ₂		Center to End		Sch. 20		Sch. 30		Std		Sch.40		Sch. 60	
	OD ₁	OD ₂	C	M	t ₁	t ₂	t ₁	t ₂	t ₁	t ₂	t ₁	t ₂	t ₁	t ₂
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
18 × 18	457.20	457.20	342.9	342.9	7.92	7.92	-	-	9.53	9.53	14.27	14.27	19.05	19.05
18 × 16	457.20	406.40	342.9	330.2	7.92	7.92	-	-	9.53	9.53	14.27	12.70	19.05	16.66
18 × 14	457.20	355.60	342.9	330.2	7.92	7.92	-	-	9.53	9.53	14.27	11.13	19.05	15.09
18 × 12	457.20	323.85	342.9	320.5	7.92	6.35	-	-	9.53	9.53	14.27	10.31	19.05	14.27
20 × 20	508.00	508.00	381.0	381.0	9.53	9.53	-	-	9.53	9.53	15.09	15.09	20.62	20.62
20 × 18	508.00	457.20	381.0	368.3	9.53	7.92	-	-	9.53	9.53	15.09	14.27	20.62	19.05
20 × 16	508.00	406.40	381.0	355.6	9.53	7.92	-	-	9.53	9.53	15.09	12.70	20.62	16.66
20 × 14	508.00	355.60	381.0	355.6	9.53	7.92	-	-	9.53	9.53	15.09	11.13	20.62	15.09
22 × 22	558.80	558.80	419.1	419.1	9.53	9.53	-	-	9.53	9.53	-	-	22.23	22.23
22 × 20	558.80	508.00	419.1	406.4	9.53	9.53	-	-	9.53	9.53	-	-	22.23	20.62
22 × 18	558.80	457.20	419.1	393.7	9.53	7.92	-	-	9.53	9.53	-	-	22.23	19.05
22 × 16	558.80	406.40	419.1	381.0	9.53	7.92	-	-	9.53	9.53	-	-	22.23	16.66
24 × 24	609.60	609.60	431.8	431.8	9.53	9.53	-	-	9.53	9.53	17.48	17.48	24.61	24.61
24 × 22	609.60	558.80	431.8	431.8	9.53	9.53	-	-	9.53	9.53	-	-	24.61	22.23
24 × 20	609.60	508.00	431.8	431.8	9.53	9.53	-	-	9.53	9.53	17.48	15.09	24.61	20.62
24 × 18	609.60	457.20	431.8	419.1	9.53	7.92	-	-	9.53	9.53	17.48	14.27	24.61	19.05
26 × 26	660.40	660.40	495.3	495.3	-	-	-	-	9.53	9.53	-	-	-	-
26 × 22	660.40	558.80	495.3	469.9	-	-	-	-	9.53	9.53	-	-	-	-
26 × 18	660.40	457.20	495.3	444.5	-	-	-	-	9.53	9.53	-	-	-	-
26 × 16	660.40	406.40	495.3	431.8	-	-	-	-	9.53	9.53	-	-	-	-
28 × 28	711.20	711.20	520.7	520.7	-	-	-	-	9.53	9.53	-	-	-	-
28 × 24	711.20	609.60	520.7	508.0	-	-	-	-	9.53	9.53	-	-	-	-
28 × 20	711.20	508.00	520.7	482.6	-	-	-	-	9.53	9.53	-	-	-	-
28 × 18	711.20	457.20	520.7	469.9	-	-	-	-	9.53	9.53	-	-	-	-
30 × 30	762.00	762.00	558.8	558.8	-	-	-	-	9.53	9.53	-	-	-	-
30 × 26	762.00	660.40	558.8	546.1	-	-	-	-	9.53	9.53	-	-	-	-
30 × 22	762.00	558.80	558.8	520.7	-	-	-	-	9.53	9.53	-	-	-	-
30 × 20	762.00	508.00	558.8	508.0	-	-	-	-	9.53	9.53	-	-	-	-
32 × 32	812.80	812.80	596.9	596.9	-	-	-	-	9.53	9.53	17.48	17.48	-	-
32 × 28	812.80	711.20	596.9	571.5	-	-	-	-	9.53	9.53	-	-	-	-
32 × 24	812.80	609.60	596.9	558.8	-	-	-	-	9.53	9.53	-	-	-	-
32 × 22	812.80	558.80	596.9	546.1	-	-	-	-	9.53	9.53	-	-	-	-



TEE

Straight and Reducing Outlet Tees

ASME / ANSI B 16.9



Wall Thickness														Nominal Pipe Size
XS		Sch. 80		Sch. 100		Sch. 120		Sch. 140		Sch. 160		XXS		
t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	
12.70	12.70	23.83	23.83	29.36	29.36	34.93	34.93	39.67	39.67	45.24	45.24	-	-	18 × 18
12.70	12.70	23.83	21.44	29.36	26.19	34.93	30.96	39.67	36.53	45.24	40.49	-	-	18 × 16
12.70	12.70	23.83	19.05	29.36	23.83	34.93	27.79	39.67	31.75	45.24	35.71	-	-	18 × 14
12.70	12.70	23.83	17.48	29.36	21.44	34.93	25.40	39.67	28.58	45.24	33.32	-	-	18 × 12
12.70	12.70	26.19	26.19	32.54	32.54	38.10	38.10	44.45	44.45	50.01	50.01	-	-	20 × 20
12.70	12.70	26.19	23.83	32.54	29.36	38.10	34.93	44.45	39.67	50.01	45.24	-	-	20 × 18
12.70	12.70	26.19	21.44	32.54	26.19	38.10	30.96	44.45	36.53	50.01	40.49	-	-	20 × 16
12.70	12.70	26.19	19.05	32.54	23.83	38.10	27.79	44.45	31.75	50.01	35.71	-	-	20 × 14
12.70	12.70	28.58	28.58	34.93	34.93	41.28	41.28	47.63	47.63	53.98	53.98	-	-	22 × 22
12.70	12.70	28.58	26.19	34.93	32.54	41.28	38.10	47.63	44.45	53.98	50.01	-	-	22 × 20
12.70	12.70	28.58	23.83	34.93	29.36	41.28	34.93	47.63	39.67	53.98	45.24	-	-	22 × 18
12.70	12.70	28.58	21.44	34.93	26.19	41.28	30.96	47.63	36.53	53.98	40.49	-	-	22 × 16
12.70	12.70	30.94	30.94	38.89	38.89	46.02	46.02	52.37	52.37	59.54	59.54	-	-	24 × 24
12.70	12.70	30.94	28.58	38.89	34.93	46.02	41.28	52.37	47.63	59.54	53.98	-	-	24 × 22
12.70	12.70	30.94	26.19	38.89	32.54	46.02	38.10	52.37	44.45	59.54	50.01	-	-	24 × 20
12.70	12.70	30.94	23.83	38.89	29.36	46.02	34.93	52.37	39.67	59.54	45.24	-	-	24 × 18
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 26
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 22
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 18
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 16
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 28
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 24
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 20
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 18
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 30
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 26
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 22
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 20
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 32
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 28
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 24
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 22

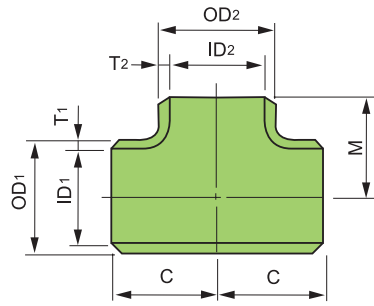


FITTINGS

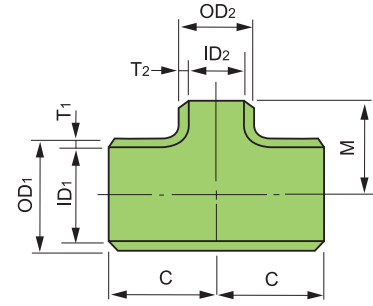
TEE

Straight and Reducing Outlet Tees

ASME / ANSI B 16.9



(STRAIGHT)



(REDUCING)

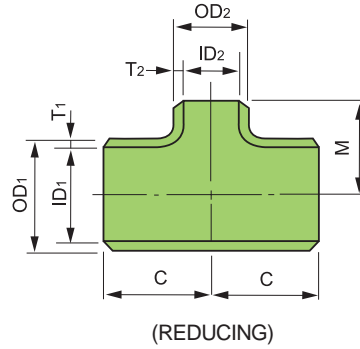
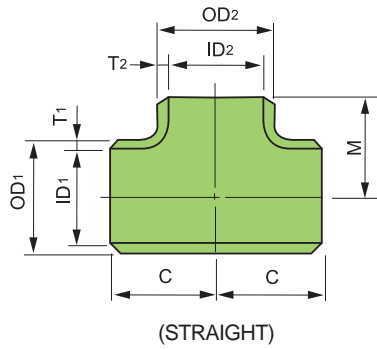
Nominal Pipe Size	Dimensions				Wall Thickness										
	Outside Diameter at Bevel : D ₁ /D ₂		Center to End		Sch. 20		Sch. 30		Std		Sch.40		Sch. 60		
	OD ₁ mm	OD ₂ mm	C mm	M mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
34 × 34	863.60	863.60	635.0	635.0	-	-	-	-	9.53	9.53	17.48	17.48	-	-	
34 × 32	863.60	812.80	635.0	-	-	-	-	-	9.53	9.53	17.48	17.48	-	-	
34 × 30	863.60	762.00	635.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-	
34 × 28	863.60	711.20	635.0	-	-	-	-	-	9.53	9.53	-	-	-	-	
36 × 36	914.40	914.40	673.1	673.1	-	-	-	-	9.53	9.53	19.05	19.05	-	-	
36 × 34	914.40	863.60	673.1	-	-	-	-	-	9.53	9.53	19.05	17.48	-	-	
36 × 32	914.40	812.80	673.1	647.7	-	-	-	-	9.53	9.53	19.05	17.48	-	-	
36 × 30	914.40	762.00	673.1	-	-	-	-	-	9.53	9.53	-	-	-	-	
38 × 38	965.20	965.20	711.2	711.2	-	-	-	-	9.53	9.53	-	-	-	-	
38 × 36	965.20	914.40	711.2	-	-	-	-	-	9.53	9.53	-	-	-	-	
38 × 34	965.20	863.60	711.2	698.5	-	-	-	-	9.53	9.53	-	-	-	-	
38 × 32	965.20	812.80	711.2	-	-	-	-	-	9.53	9.53	-	-	-	-	
40 × 40	1016.00	1016.00	749.3	749.3	-	-	-	-	9.53	9.53	-	-	-	-	
40 × 38	1016.00	965.20	749.3	-	-	-	-	-	9.53	9.53	-	-	-	-	
40 × 36	1016.00	914.40	749.3	736.6	-	-	-	-	9.53	9.53	-	-	-	-	
40 × 34	1016.00	863.60	749.3	-	-	-	-	-	9.53	9.53	-	-	-	-	
42 × 42	1066.80	1066.80	762.0	762.0	-	-	-	-	9.53	9.53	-	-	-	-	
42 × 40	1066.80	1016.00	762.0	-	-	-	-	-	9.53	9.53	-	-	-	-	
42 × 38	1066.80	965.20	762.0	711.2	-	-	-	-	9.53	9.53	-	-	-	-	
42 × 36	1066.80	914.40	762.0	-	-	-	-	-	9.53	9.53	-	-	-	-	
44 × 44	1117.60	1117.60	812.8	812.8	-	-	-	-	9.53	9.53	-	-	-	-	
44 × 42	1117.60	1066.80	812.8	-	-	-	-	-	9.53	9.53	-	-	-	-	
44 × 40	1117.60	1016.00	812.8	749.3	-	-	-	-	9.53	9.53	-	-	-	-	
44 × 38	1117.60	965.20	812.8	-	-	-	-	-	9.53	9.53	-	-	-	-	
46 × 46	1168.40	1168.40	850.9	850.9	-	-	-	-	9.53	9.53	-	-	-	-	
46 × 44	1168.40	1117.60	850.9	-	-	-	-	-	9.53	9.53	-	-	-	-	
46 × 42	1168.40	1066.80	850.9	787.4	-	-	-	-	9.53	9.53	-	-	-	-	
46 × 40	1168.40	1016.00	850.9	-	-	-	-	-	9.53	9.53	-	-	-	-	
48 × 48	1219.20	1219.20	889.0	889.0	-	-	-	-	9.53	9.53	-	-	-	-	
48 × 46	1219.20	1168.40	889.0	-	-	-	-	-	9.53	9.53	-	-	-	-	
48 × 44	1219.20	1117.60	889.0	838.2	-	-	-	-	9.53	9.53	-	-	-	-	
48 × 42	1219.20	1066.80	889.0	-	-	-	-	-	9.53	9.53	-	-	-	-	



TEE

Straight and Reducing Outlet Tees

ASME / ANSI B 16.9



Wall Thickness														Nominal Pipe Size	
XS		Sch. 80		Sch. 100		Sch. 120		Sch. 140		Sch. 160		XXS			inch
t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm		
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 34	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 32	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 30	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 28	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 36	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 34	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 32	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 30	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 38	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 36	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 34	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 32	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 40	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 38	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 36	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 34	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 42	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 40	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 38	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 36	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 44	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 42	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 40	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 38	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 46	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 44	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 42	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 40	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 48	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 46	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 44	
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 42	



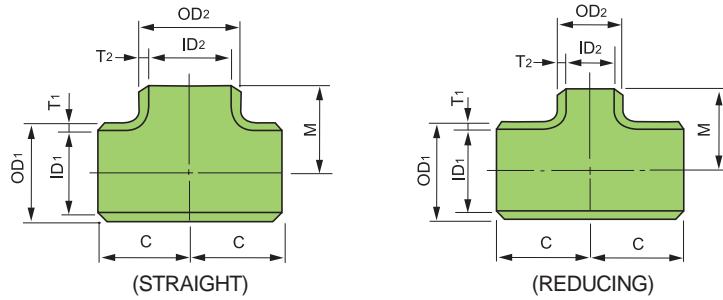
FITTINGS

TEE

Straight and Reducing

- Stainless Steel

ANSI B 16.9 MSS SP-43

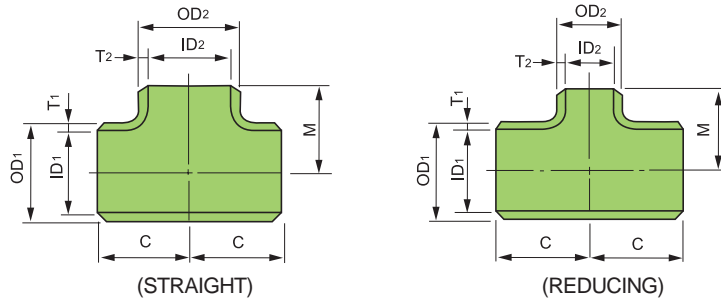


Nominal Pipe Size	Dimensions				Wall Thickness							
	Outside Diameter at Bevel : D ₁ /D ₂		Center to End		5s		10s		40s		80s	
	OD ₁ mm	OD ₂ mm	C mm	M mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm
1/2 × 1/2	21.34	21.34	25.4	25.4	1.65	1.65	2.11	2.11	2.77	2.77	3.73	3.73
3/4 × 3/4	26.67	26.67	28.5	28.5	1.65	1.65	2.11	2.11	2.87	2.87	3.91	3.91
3/4 × 1/2	26.67	21.34	28.5	28.5	1.65	1.65	2.11	2.11	2.87	2.77	3.91	3.73
1 × 1	33.40	33.40	38.1	38.1	1.65	1.65	2.77	2.77	3.38	3.38	4.55	4.55
1 × 3/4	33.40	26.67	38.1	38.1	1.65	1.65	2.77	2.11	2.87	2.87	4.55	3.91
1 × 1/2	33.40	21.34	38.1	38.1	1.65	1.65	2.77	2.11	2.87	2.77	4.55	3.73
1 1/4 × 1 1/4	42.16	42.16	47.8	47.8	1.65	1.65	2.77	2.77	3.56	3.56	4.85	4.85
1 1/4 × 1	42.16	33.40	47.8	47.8	1.65	1.65	2.77	2.77	3.56	2.87	4.85	4.55
1 1/4 × 3/4	42.16	26.67	47.8	47.8	1.65	1.65	2.77	2.11	3.56	2.77	4.85	3.91
1 1/2 × 1 1/2	48.26	48.26	57.2	57.2	1.65	1.65	2.77	2.77	3.68	3.68	5.08	5.08
1 1/2 × 1 1/4	48.26	42.16	57.2	57.2	1.65	1.65	2.77	2.77	3.68	3.56	5.80	4.85
1 1/2 × 1	48.26	33.40	57.2	57.2	1.65	1.65	2.77	2.77	3.68	2.87	5.80	4.55
1 1/2 × 3/4	48.26	26.67	57.2	57.2	1.65	1.65	2.77	2.11	3.68	2.77	5.80	3.91
2 × 2	60.32	60.32	63.5	63.5	1.65	1.65	2.77	2.77	3.91	3.91	5.54	5.54
2 × 1 1/2	60.32	48.26	63.5	60.5	1.65	1.65	2.77	2.77	3.91	3.68	5.54	5.08
2 × 1 1/4	60.32	42.16	63.5	57.2	1.65	1.65	2.77	2.77	3.91	3.56	5.54	4.85
2 × 1	60.32	33.40	63.5	50.8	1.65	1.65	2.77	2.77	3.91	3.38	5.54	4.55
2 1/2 × 2 1/2	73.02	73.02	76.2	76.2	2.11	1.65	3.05	3.05	5.16	5.16	7.01	7.01
2 1/2 × 2	73.02	60.32	76.2	69.9	2.11	1.65	3.05	2.77	5.16	3.91	7.01	5.54
2 1/2 × 1 1/2	73.02	48.26	76.2	66.6	2.11	2.11	3.05	2.77	5.16	3.68	7.01	5.08
2 1/2 × 1 1/4	73.02	42.16	76.2	63.5	2.11	1.65	3.05	2.77	5.16	3.56	7.01	4.85
3 × 3	88.90	88.90	85.7	85.7	2.11	2.11	3.05	3.05	5.49	5.49	7.62	7.62
3 × 2 1/2	88.90	73.02	85.7	82.6	2.11	2.11	3.05	3.05	5.49	5.16	7.62	7.01
3 × 2	88.90	60.32	85.7	76.2	2.11	1.65	3.05	2.77	5.49	3.91	7.62	5.54
3 × 1 1/2	88.90	48.26	85.7	73.2	2.11	1.65	3.05	2.77	5.49	3.68	7.62	5.08
3 1/2 × 3 1/2	101.60	101.60	95.3	95.3	2.11	2.11	3.05	3.05	5.74	5.74	8.08	8.08
3 1/2 × 3	101.60	88.90	95.3	92.0	2.11	2.11	3.05	3.05	5.74	5.49	8.08	7.62
3 1/2 × 2 1/2	101.60	73.02	95.3	88.9	2.11	2.11	3.05	3.05	5.74	5.16	8.08	7.01
3 1/2 × 2	101.60	60.32	95.3	82.6	2.11	1.65	3.05	2.77	5.74	3.91	8.08	5.54
3 1/2 × 1 1/2	101.60	48.26	95.3	79.3	2.11	1.65	3.05	2.77	5.74	3.68	8.08	5.08
4 × 4	114.30	114.30	104.7	104.7	2.11	2.11	3.05	3.05	6.02	6.02	8.56	8.56
4 × 3 1/2	114.30	101.60	104.7	101.6	2.11	2.11	3.05	3.05	6.02	5.74	8.56	8.08
4 × 3	114.30	88.90	104.7	98.6	2.11	2.11	3.05	3.05	6.02	5.49	8.56	7.62
4 × 2 1/2	114.30	73.02	104.7	95.3	2.11	2.11	3.05	3.05	6.02	5.16	8.56	7.01
4 × 2	114.30	60.32	104.7	88.9	2.11	1.65	3.05	2.77	6.02	3.91	8.56	5.54
5 × 5	141.30	141.30	124.0	124.0	2.77	2.77	3.40	3.40	6.55	6.55	9.53	9.53
5 × 4	141.30	114.30	124.0	117.3	2.77	2.11	3.40	3.05	6.55	6.02	9.53	8.56
5 × 3 1/2	141.30	101.60	124.0	114.3	2.77	2.11	3.40	3.05	6.55	5.74	9.53	8.08
5 × 3	141.30	88.90	124.0	111.3	2.77	2.11	3.40	3.05	6.55	5.49	9.53	7.62
5 × 2 1/2	141.30	73.02	124.0	108.0	2.77	2.11	3.40	3.05	6.55	5.16	9.53	7.01



TEE

Straight and Reducing Outlet Tees
ANSI B 16.9 MSS SP-43



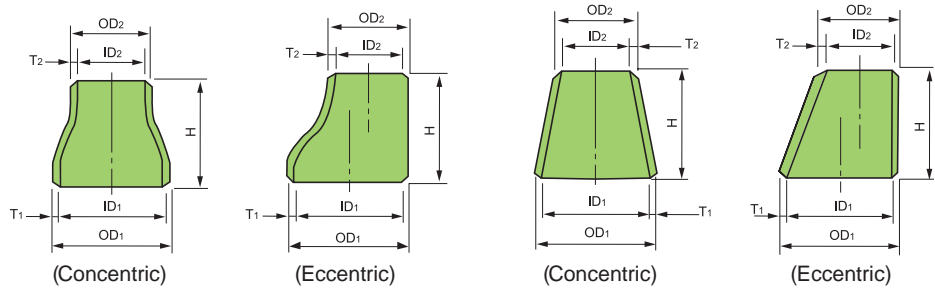
Nominal Pipe Size	Dimensions				Wall Thickness							
	Outside Diameter at Bevel : D ₁ /D ₂		Center to End		5s		10s		40s		80s	
	OD ₁ mm	OD ₂ mm	C mm	M mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm
6 × 6	168.30	168.30	142.8	142.8	2.77	2.77	3.40	3.40	7.11	7.11	10.97	10.97
6 × 5	168.30	141.30	142.8	136.7	2.77	2.77	3.40	3.40	7.11	6.55	10.97	9.53
6 × 4	168.30	114.30	142.8	130.0	2.77	2.11	3.40	3.05	7.11	6.02	10.97	8.56
6 × 3 1/2	168.30	101.60	142.8	127.0	2.77	2.11	3.40	3.05	7.11	5.74	10.97	8.08
6 × 3	168.30	88.90	142.8	124.0	2.77	2.11	3.40	3.05	7.11	5.49	10.97	7.62
8 × 8	219.08	219.08	177.8	177.8	2.77	2.77	3.76	3.76	8.18	8.18	12.70	12.70
8 × 6	219.08	168.30	177.8	168.1	2.77	2.77	3.76	3.40	8.18	7.11	12.70	10.97
8 × 5	219.08	141.30	177.8	162.1	2.77	2.77	3.76	3.40	8.18	6.55	12.70	9.53
8 × 4	219.08	114.30	177.8	155.5	2.77	2.11	3.76	3.05	8.18	6.02	12.70	8.56
10 × 10	273.05	273.05	215.9	215.9	3.40	3.40	4.19	4.19	9.27	9.27	12.70	12.70
10 × 8	273.05	219.08	215.9	203.2	3.40	2.77	4.19	3.76	9.27	8.18	12.70	12.70
10 × 6	273.05	168.30	215.9	193.5	3.40	2.77	4.19	3.40	9.27	7.11	12.70	10.97
10 × 5	273.05	141.30	215.9	190.5	3.40	2.77	4.19	3.40	9.27	6.55	12.70	9.53
12 × 12	323.80	323.80	254.0	254.0	3.96	3.96	4.57	4.57	9.52	9.52	12.70	12.70
12 × 10	323.80	273.05	254.0	241.3	3.96	3.40	4.57	4.19	9.52	9.27	12.70	12.70
12 × 8	323.80	219.08	254.0	228.6	3.96	2.77	4.57	3.76	9.52	8.18	12.70	12.70
12 × 6	323.80	168.30	254.0	219.0	3.96	2.77	4.57	3.40	9.52	7.11	12.70	10.97
14 × 14	355.60	355.60	279.4	279.4	3.96	3.96	4.78	4.78	-	-	-	-
14 × 12	355.60	323.80	279.4	269.7	3.96	3.96	4.78	4.57	-	-	-	-
14 × 10	355.60	273.05	279.4	257.0	3.96	3.40	4.78	4.19	-	-	-	-
14 × 8	355.60	219.08	279.4	247.7	3.96	2.77	4.78	3.76	-	-	-	-
16 × 16	406.40	406.40	304.8	304.8	4.19	4.19	4.78	4.78	-	-	-	-
16 × 14	406.40	355.60	304.8	304.8	4.19	3.96	4.78	4.78	-	-	-	-
16 × 12	406.40	323.80	304.8	295.1	4.19	3.96	4.78	4.57	-	-	-	-
16 × 10	406.40	273.05	304.8	282.4	4.19	3.40	4.78	4.19	-	-	-	-
18 × 18	457.20	457.20	342.9	342.9	4.19	4.19	4.78	4.78	-	-	-	-
18 × 16	457.20	406.40	342.9	330.2	4.19	4.19	4.78	4.78	-	-	-	-
18 × 14	457.20	355.60	342.9	330.2	4.19	3.96	4.78	4.78	-	-	-	-
18 × 12	457.20	323.80	342.9	320.6	4.19	3.96	4.78	4.57	-	-	-	-
20 × 20	508.00	508.00	381.0	381.0	4.78	4.78	5.54	5.54	-	-	-	-
20 × 18	508.00	457.20	381.0	368.3	4.78	4.19	5.54	4.78	-	-	-	-
20 × 16	508.00	406.40	381.0	355.6	4.78	4.19	5.54	4.78	-	-	-	-
20 × 14	508.00	355.60	381.0	355.6	4.78	3.96	5.54	4.78	-	-	-	-
22 × 22	558.80	558.80	419.1	419.1	4.78	4.78	5.54	5.54	-	-	-	-
22 × 20	558.80	508.00	419.1	406.4	4.78	4.78	5.54	5.54	-	-	-	-
22 × 18	558.80	457.20	419.1	393.7	4.78	4.19	5.54	4.78	-	-	-	-
22 × 16	558.80	406.40	419.1	381.0	4.78	4.19	5.54	4.78	-	-	-	-
24 × 24	609.60	609.60	431.8	431.8	5.54	5.54	6.35	6.35	-	-	-	-
24 × 22	609.60	558.80	431.8	431.8	5.54	4.78	6.35	5.54	-	-	-	-
24 × 20	609.60	508.00	431.8	431.8	5.54	4.78	6.35	5.54	-	-	-	-
24 × 18	609.60	457.20	431.8	419.1	5.54	4.19	6.35	4.78	-	-	-	-
30 × 30	762.00	762.00	558.8	558.8	6.35	6.35	-	-	-	-	-	-
30 × 24	762.00	609.60	558.8	533.4	6.35	5.54	-	-	-	-	-	-
30 × 22	762.00	558.80	558.8	520.7	6.35	4.78	-	-	-	-	-	-
30 × 20	762.00	508.00	558.8	508.0	6.35	4.78	-	-	-	-	-	-



FITTINGS

REDUCER

Concentric & Eccentric Reducer
ASME / ANSI B 16.9

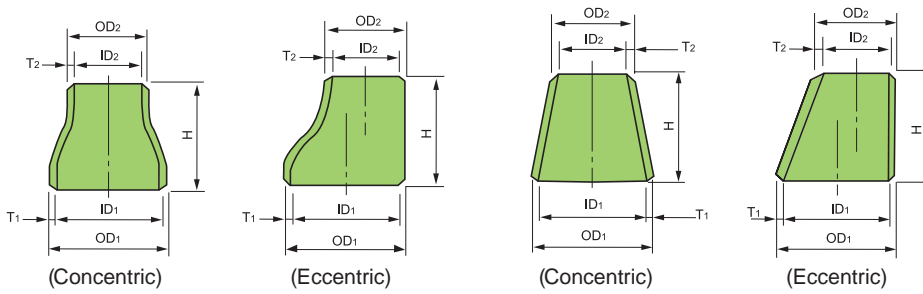


Nominal Pipe Size	Dimensions			Wall Thickness									
	Outside Diameter at Bevel : D ₁ /D ₂		End to End	Sch. 20		Sch. 30		STD		Sch. 40		Sch. 60	
	OD ₁ mm	OD ₂ mm		t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm
1 × 3/4	33.53	26.67	50.8	-	-	-	-	3.38	2.87	3.38	2.87	-	-
1 1/2 × 1 1/4	48.26	42.16	63.5	-	-	-	-	3.68	3.56	3.68	3.56	-	-
1 1/2 × 1	48.26	33.53	63.5	-	-	-	-	3.68	3.38	3.68	3.38	-	-
1 1/2 × 3/4	48.26	26.67	63.5	-	-	-	-	3.68	2.87	3.68	2.87	-	-
2 × 1 1/2	60.45	48.26	76.2	-	-	-	-	3.91	3.68	3.91	3.68	-	-
2 × 1 1/4	60.45	42.16	76.2	-	-	-	-	3.91	3.56	3.91	3.56	-	-
2 × 1	60.45	33.53	76.2	-	-	-	-	3.91	3.38	3.91	3.38	-	-
2 1/2 × 2	73.15	60.45	88.9	-	-	-	-	5.16	3.91	5.16	3.91	-	-
2 1/2 × 1 1/2	73.15	48.26	88.9	-	-	-	-	5.16	3.68	5.16	3.68	-	-
2 1/2 × 1 1/4	73.15	42.16	88.9	-	-	-	-	5.16	3.56	5.16	3.56	-	-
3 × 2 1/2	88.90	73.15	88.9	-	-	-	-	5.49	5.16	5.49	5.16	-	-
3 × 2	88.90	60.45	88.9	-	-	-	-	5.49	3.91	5.49	3.91	-	-
3 × 1 1/2	88.90	48.26	88.9	-	-	-	-	5.49	3.68	5.49	3.68	-	-
4 × 3	114.30	88.90	101.6	-	-	-	-	6.02	5.49	6.02	5.49	-	-
4 × 2 1/2	114.30	73.15	101.6	-	-	-	-	6.02	5.16	6.02	5.16	-	-
4 × 2	114.30	60.45	101.6	-	-	-	-	6.02	3.91	6.02	3.91	-	-
5 × 4	141.22	114.30	127.0	-	-	-	-	6.55	6.02	6.55	6.02	-	-
5 × 3	141.22	88.90	127.0	-	-	-	-	6.55	5.49	6.55	5.49	-	-
5 × 2 1/2	141.22	73.15	127.0	-	-	-	-	6.55	5.16	6.55	5.16	-	-
6 × 5	168.45	141.22	139.7	-	-	-	-	7.11	6.55	7.11	6.55	-	-
6 × 4	168.45	114.30	139.7	-	-	-	-	7.11	6.02	7.11	6.02	-	-
6 × 3	168.45	88.90	139.7	-	-	-	-	7.11	5.49	7.11	5.49	-	-
8 × 6	218.95	168.15	152.4	-	-	-	-	8.18	7.11	8.18	7.11	-	-
8 × 5	218.95	141.22	152.4	-	-	-	-	8.18	6.55	8.18	6.55	-	-
8 × 4	218.95	114.30	152.4	-	-	-	-	8.18	6.02	8.18	6.02	-	-
10 × 8	273.05	218.85	177.8	6.35	6.35	7.80	7.04	9.27	8.18	9.27	8.18	12.70	10.31
10 × 6	273.05	168.15	177.8	-	-	-	-	9.27	7.11	9.27	7.11	-	-
10 × 5	273.05	141.22	177.8	-	-	-	-	9.27	6.55	9.27	6.55	-	-
12 × 10	323.80	273.05	203.2	6.35	6.35	8.38	7.80	9.53	9.27	10.31	9.27	14.27	12.70
12 × 8	323.80	218.85	203.2	6.35	6.35	8.38	7.04	9.53	8.18	10.31	8.18	14.27	10.31
12 × 6	323.80	168.15	203.2	-	-	-	-	9.53	7.11	10.31	7.11	-	-
14 × 12	355.60	323.85	330.2	7.92	6.35	9.53	8.38	9.53	9.53	11.13	10.31	15.09	14.27
14 × 10	355.60	273.05	330.2	7.92	6.35	9.53	7.80	9.53	9.27	11.13	9.27	15.09	12.70
14 × 8	355.60	218.85	330.2	7.92	6.35	9.53	7.04	9.53	8.18	11.13	8.18	15.09	10.31
16 × 14	406.40	355.60	355.6	7.92	7.92	9.53	9.53	9.53	9.53	12.70	11.13	16.66	15.09
16 × 12	406.40	323.85	355.6	7.92	6.35	9.53	8.38	9.53	9.53	12.70	10.31	16.66	14.27
16 × 10	406.40	273.05	355.6	7.92	6.35	9.53	7.80	9.53	9.27	12.70	9.27	16.66	12.70
16 × 8	406.40	218.95	355.6	7.92	6.35	9.53	7.04	9.53	8.18	12.70	8.18	16.66	10.31
18 × 16	457.20	406.40	381.0	7.92	7.92	-	-	9.53	9.53	14.27	12.70	19.05	16.66
18 × 14	457.20	355.60	381.0	7.92	7.92	-	-	9.53	9.53	14.27	11.13	19.05	15.09
18 × 12	457.20	323.85	381.0	7.92	6.35	-	-	9.53	9.53	14.27	10.31	19.05	14.27
20 × 18	508.00	457.20	508.0	9.53	7.92	-	-	9.53	9.53	15.09	14.27	20.62	19.05
20 × 16	508.00	406.40	508.0	9.53	7.92	-	-	9.53	9.53	15.09	12.70	20.62	16.66
20 × 14	508.00	355.60	508.0	9.53	7.92	-	-	9.53	9.53	15.09	11.13	20.62	15.09



REDUCER

Concentric & Eccentric Reducer
ASME / ANSI B 16.9



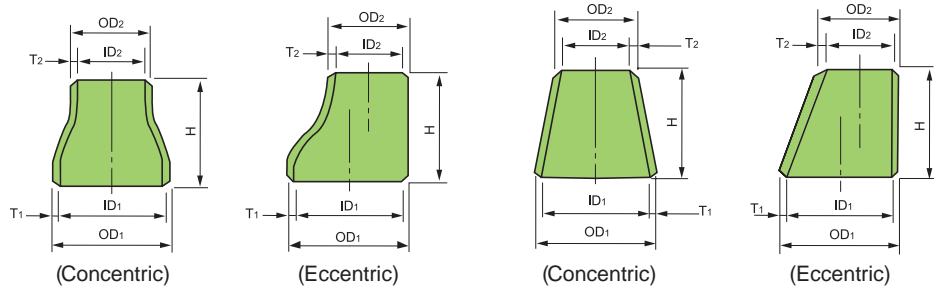
Wall Thickness														Nominal Pipe Size
XS		Sch. 80		Sch. 100		Sch. 120		Sch.140		Sch.160		XXS		
t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	
4.55	3.91	4.55	3.91	-	-	-	-	-	-	6.35	5.56	9.09	7.82	1 × 3/4
5.08	4.85	5.08	4.85	-	-	-	-	-	-	7.14	6.35	10.16	9.70	1 1/2 × 1 1/4
5.08	4.55	5.08	4.55	-	-	-	-	-	-	7.14	6.35	10.16	9.09	1 1/2 × 1
5.08	3.-91	5.08	3.-91	-	-	-	-	-	-	7.14	5.56	10.16	7.82	1 1/2 × 3/4
5.54	5.08	5.54	5.08	-	-	-	-	-	-	8.74	7.14	11.07	10.16	2 × 1 1/2
5.54	4.85	5.54	4.85	-	-	-	-	-	-	8.74	6.35	11.07	9.70	2 × 1 1/4
5.54	4.55	5.54	4.55	-	-	-	-	-	-	8.74	6.35	11.07	9.09	2 × 1
7.01	5.54	7.01	5.54	-	-	-	-	-	-	9.53	8.74	14.02	11.07	2 1/2 × 2
7.01	5.08	7.01	5.08	-	-	-	-	-	-	9.53	7.14	14.02	10.16	2 1/2 × 1 1/2
7.01	4.85	7.01	4.85	-	-	-	-	-	-	9.53	6.35	14.02	9.70	2 1/2 × 1 1/4
7.62	7.01	7.62	7.01	-	-	-	-	-	-	11.13	9.52	15.24	14.02	3 × 2 1/2
7.62	5.54	7.62	5.54	-	-	-	-	-	-	11.13	8.74	15.24	11.07	3 × 2
7.62	5.08	7.62	5.08	-	-	-	-	-	-	11.13	7.14	15.24	10.16	3 × 1 1/2
8.56	7.62	8.56	7.62	-	-	-	-	-	-	13.49	11.13	17.12	15.24	4 × 3
8.56	7.01	8.56	7.01	-	-	-	-	-	-	13.49	9.52	17.12	14.02	4 × 2 1/2
8.56	5.54	8.56	5.54	-	-	-	-	-	-	13.49	8.74	17.12	11.07	4 × 2
9.53	8.56	9.53	8.56	-	-	12.70	11.12	-	-	15.88	13.49	19.05	17.12	5 × 4
9.53	7.62	9.53	7.62	-	-	-	-	-	-	15.88	11.13	19.05	15.24	5 × 3
9.53	7.01	9.53	7.01	-	-	-	-	-	-	15.88	9.52	19.05	14.02	5 × 2 1/2
10.97	9.53	10.97	9.53	-	-	14.27	12.70	-	-	18.26	15.88	21.95	19.05	6 × 5
10.97	8.56	10.97	8.56	-	-	14.27	11.12	-	-	18.26	13.49	21.95	17.12	6 × 4
10.97	7.62	10.97	7.62	-	-	-	-	-	-	18.26	11.13	21.95	15.24	6 × 3
12.70	10.97	12.70	10.97	-	-	18.26	14.27	-	-	23.01	18.26	22.23	21.95	8 × 6
12.70	9.53	12.70	9.53	-	-	18.26	12.70	-	-	23.01	15.88	22.23	19.05	8 × 5
12.70	8.56	12.70	8.56	-	-	18.26	11.12	-	-	23.01	13.49	22.23	17.12	8 × 4
12.70	12.70	15.09	12.70	18.26	15.09	21.44	18.26	25.40	20.62	28.58	23.01	25.40	22.23	10 × 8
12.70	10.97	15.09	10.97	-	-	21.44	14.27	-	-	28.58	18.26	25.40	21.95	10 × 6
12.70	9.53	15.09	9.53	-	-	21.44	12.70	-	-	28.58	15.88	25.40	19.05	10 × 5
12.70	12.70	17.48	15.09	21.44	18.26	25.40	21.44	28.58	25.40	33.32	28.58	25.40	25.40	12 × 10
12.70	12.70	17.48	12.70	21.44	15.09	25.40	18.26	28.58	20.62	33.32	23.01	25.40	22.23	12 × 8
12.70	10.97	17.48	10.97	-	-	25.40	14.27	-	-	33.32	18.26	25.40	21.85	12 × 6
12.70	12.70	19.05	17.48	23.83	21.44	27.79	25.40	31.75	28.58	35.71	33.32	-	-	14 × 12
12.70	12.70	19.05	15.09	23.83	18.26	27.79	21.44	31.75	25.40	35.71	28.58	-	-	14 × 10
12.70	12.70	19.05	12.70	23.83	15.09	27.79	18.26	31.75	20.62	35.71	23.01	-	-	14 × 8
12.70	12.70	21.44	19.05	26.19	23.83	30.96	27.79	36.52	31.75	40.49	35.71	-	-	16 × 14
12.70	12.70	21.44	17.48	26.19	21.44	30.96	25.40	36.52	28.58	40.49	33.32	-	-	16 × 12
12.70	12.70	21.44	15.09	26.19	18.26	30.96	21.44	36.52	25.40	40.49	28.58	-	-	16 × 10
12.70	12.70	21.44	12.70	26.19	15.09	30.96	18.26	36.52	20.62	40.49	23.01	-	-	16 × 8
12.70	12.70	23.83	21.44	29.36	26.19	34.93	30.96	39.67	36.52	45.24	40.49	-	-	18 × 16
12.70	12.70	23.83	19.05	29.36	23.83	34.93	27.79	39.67	31.75	45.24	35.71	-	-	18 × 14
12.70	12.70	23.83	17.48	29.36	21.44	34.93	25.40	39.67	28.58	45.24	33.32	-	-	18 × 12
12.70	12.70	26.19	23.82	32.54	29.36	38.10	34.92	44.45	39.67	50.01	45.24	-	-	20 × 18
12.70	12.70	26.19	21.44	32.54	26.19	38.10	30.96	44.45	36.52	50.01	40.49	-	-	20 × 16
12.70	12.70	26.19	19.05	32.54	23.83	38.10	27.79	44.45	31.75	50.01	35.71	-	-	20 × 14



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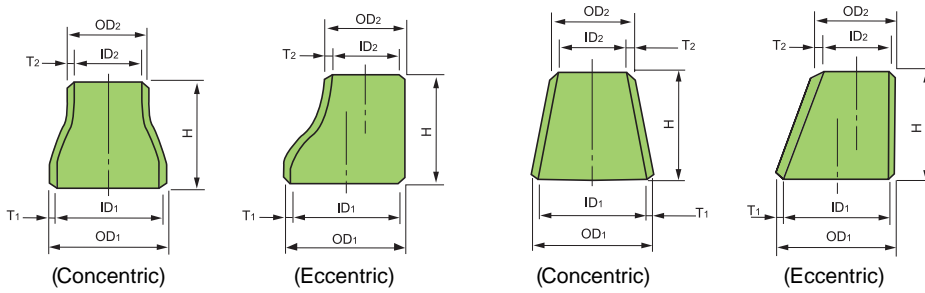


Nominal Pipe Size	Dimensions			Wall Thickness									
	Outside Diameter at Bevel : D ₁ /D ₂		End to End	Sch. 20		Sch. 30		STD		Sch. 40		Sch. 60	
	OD ₁ mm	OD ₂ mm		H mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm
22 × 20	558.8	508.0	508.0	9.53	9.53	-	-	9.53	9.53	-	-	22.23	20.62
22 × 18	558.8	457.2	508.0	9.53	7.92	-	-	9.53	9.53	-	-	22.23	19.05
22 × 16	558.8	406.4	508.0	9.53	7.92	-	-	9.53	9.53	-	-	22.23	16.66
24 × 22	609.6	558.8	508.0	9.53	9.53	-	-	9.53	9.53	17.48	-	24.61	22.23
24 × 20	609.6	508.0	508.0	9.53	9.53	-	-	9.53	9.53	17.48	15.09	24.61	20.62
24 × 18	609.6	457.2	508.0	9.53	7.92	-	-	9.53	9.53	17.48	14.27	24.61	19.05
26 × 22	660.4	558.8	609.6	-	-	-	-	9.53	9.53	-	-	-	-
26 × 18	660.4	457.2	609.6	-	-	-	-	9.53	9.53	-	-	-	-
26 × 16	660.4	406.4	609.6	-	-	-	-	9.53	9.53	-	-	-	-
28 × 24	711.2	609.6	609.6	-	-	-	-	9.53	9.53	-	-	-	-
28 × 20	711.2	508.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-
28 × 18	711.2	457.2	609.6	-	-	-	-	9.53	9.53	-	-	-	-
30 × 26	762.0	660.4	609.6	-	-	-	-	9.53	9.53	-	-	-	-
30 × 22	762.0	558.8	609.6	-	-	-	-	9.53	9.53	-	-	-	-
30 × 20	762.0	508.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-
32 × 28	812.8	711.2	609.6	-	-	-	-	9.53	9.53	-	-	-	-
32 × 24	812.8	609.6	609.6	-	-	-	-	9.53	9.53	17.48	17.48	-	-
32 × 22	812.8	558.8	609.6	-	-	-	-	9.53	9.53	-	-	-	-
34 × 30	863.6	762.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-
34 × 26	863.6	660.4	609.6	-	-	-	-	9.53	9.53	-	-	-	-
34 × 22	863.6	558.8	609.6	-	-	-	-	9.53	9.53	-	-	-	-
36 × 32	914.4	812.8	609.6	-	-	-	-	9.53	9.53	19.05	17.48	-	-
36 × 28	914.4	711.2	609.6	-	-	-	-	9.53	9.53	-	-	-	-
36 × 24	914.4	609.6	609.6	-	-	-	-	9.53	9.53	19.05	17.48	-	-
38 × 34	965.2	863.6	609.6	-	-	-	-	9.53	9.53	-	-	-	-
38 × 30	965.2	762.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-
38 × 26	965.2	660.4	609.6	-	-	-	-	9.53	9.53	-	-	-	-
40 × 36	1016.0	914.4	609.6	-	-	-	-	9.53	9.53	-	-	-	-
40 × 32	1016.0	812.8	609.6	-	-	-	-	9.53	9.53	-	-	-	-
40 × 28	1016.0	711.2	609.6	-	-	-	-	9.53	9.53	-	-	-	-
42 × 38	1066.8	965.2	609.6	-	-	-	-	9.53	9.53	-	-	-	-
42 × 34	1066.8	863.6	609.6	-	-	-	-	9.53	9.53	-	-	-	-
42 × 30	1066.8	762.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-
44 × 40	1117.6	1016.0	609.6	-	-	-	-	9.53	9.53	-	-	-	-
44 × 36	1117.6	914.4	609.6	-	-	-	-	9.53	9.53	-	-	-	-
44 × 32	1117.6	812.8	609.6	-	-	-	-	9.53	9.53	-	-	-	-
46 × 42	1168.4	1066.8	711.2	-	-	-	-	9.53	9.53	-	-	-	-
46 × 38	1168.4	965.2	711.2	-	-	-	-	9.53	9.53	-	-	-	-
46 × 34	1168.4	863.6	711.2	-	-	-	-	9.53	9.53	-	-	-	-
48 × 44	1219.2	1117.6	711.2	-	-	-	-	9.53	9.53	-	-	-	-
48 × 40	1219.2	1016.0	711.2	-	-	-	-	9.53	9.53	-	-	-	-
48 × 36	1219.2	914.4	711.2	-	-	-	-	9.53	9.53	-	-	-	-



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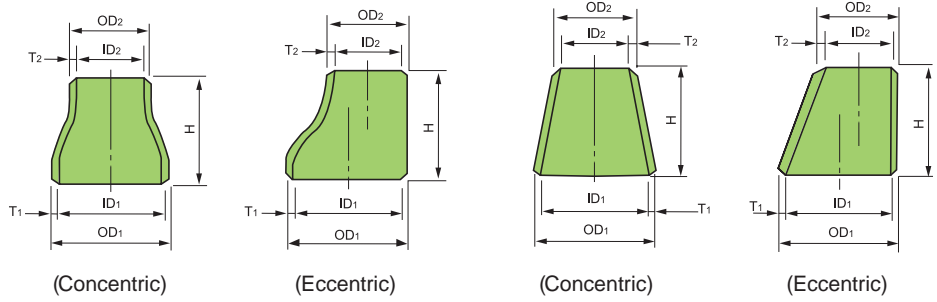
Wall Thickness														Nominal Pipe Size
XS		Sch. 80		Sch. 100		Sch. 120		Sch.140		Sch.160		XXS		
t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	
12.70	12.70	28.58	26.19	34.93	32.54	41.28	38.10	47.63	44.45	53.98	50.01	-	-	22 × 20
12.70	12.70	28.58	23.83	34.93	29.36	41.28	34.93	47.63	39.67	53.98	45.24	-	-	22 × 18
12.70	12.70	28.58	21.44	34.93	26.19	41.28	30.96	47.63	36.53	53.98	40.49	-	-	22 × 16
12.70	12.70	30.96	28.58	38.89	34.93	46.02	41.28	52.37	47.63	59.54	53.98	-	-	24 × 22
12.70	12.70	30.96	26.19	38.89	32.54	46.02	38.10	52.37	44.45	59.54	50.01	-	-	24 × 20
12.70	12.70	30.96	23.83	38.89	29.36	46.02	34.93	52.37	39.67	59.54	45.24	-	-	24 × 18
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 22
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 18
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	26 × 16
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 24
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 20
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	28 × 18
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 26
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 22
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	30 × 20
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 28
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 24
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	32 × 22
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 30
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 26
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	34 × 22
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 32
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 28
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	36 × 24
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 34
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 30
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	38 × 26
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 36
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 32
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	40 × 28
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 38
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 34
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	42 × 30
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 40
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 36
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	44 × 32
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 42
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 38
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	46 × 34
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 44
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 40
12.70	12.70	-	-	-	-	-	-	-	-	-	-	-	-	48 × 36



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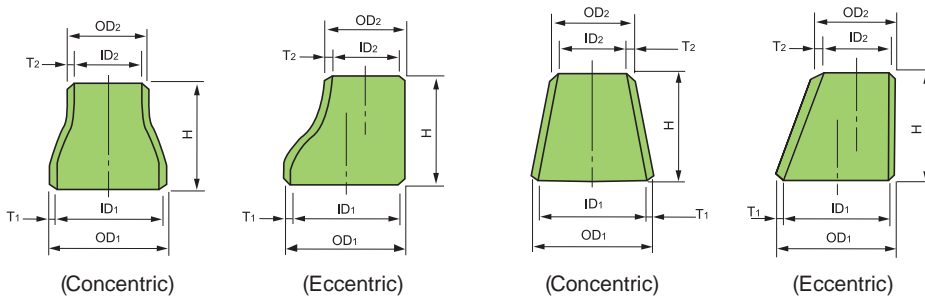


Nominal Pipe Size	Dimensions			Wall Thickness							
	Outside Diameter at Bevel : OD ₁ /OD ₂		End to End	5s		10s		40s		80s	
	OD ₁ mm	OD ₂ mm	H mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm
3/4 × 1/2	26.67	21.34	38.1	1.65	1.65	2.11	2.11	2.87	2.77	3.91	3.73
1 × 3/4	33.53	26.67	50.8	1.65	1.65	2.77	2.11	3.38	2.87	4.55	3.91
1 × 1/2	33.40	21.34	50.8	1.65	1.65	2.77	2.11	3.38	2.77	4.55	3.73
1 1/4 × 1	42.16	33.53	50.8	1.65	1.65	2.77	2.77	3.56	3.38	4.85	4.55
1 1/4 × 3/4	42.16	26.67	50.8	1.65	1.65	2.77	2.11	3.56	2.87	4.85	3.91
1 1/4 × 1/2	42.16	21.34	50.8	1.65	1.65	2.77	2.11	3.56	2.77	4.85	3.73
1 1/2 × 1 1/4	48.26	42.16	63.5	1.65	1.65	2.77	2.77	3.68	3.56	5.08	4.85
1 1/2 × 1	48.26	33.53	63.5	1.65	1.65	2.77	2.77	3.68	3.38	5.08	4.55
1 1/2 × 3/4	48.26	26.67	63.5	1.65	1.65	2.77	2.11	3.68	2.87	5.08	3.91
1 1/2 × 1/2	48.26	21.34	63.5	1.65	1.65	2.77	2.11	3.68	2.77	5.08	3.73
2 × 1 1/2	60.45	48.26	76.2	1.65	1.65	2.77	2.77	3.91	3.68	5.54	5.08
2 × 1 1/4	60.45	42.16	76.2	1.65	1.65	2.77	2.77	3.91	3.56	5.54	4.85
2 × 1	60.45	33.53	76.2	1.65	1.65	2.77	2.77	3.91	3.38	5.54	4.55
2 × 3/4	60.45	26.67	76.2	1.65	1.65	2.77	2.11	3.91	2.87	5.54	3.91
2 1/2 × 2	73.15	60.45	88.9	2.11	1.65	3.05	2.77	5.16	3.91	7.01	5.54
2 1/2 × 1 1/2	73.15	48.26	88.9	2.11	1.65	3.05	2.77	5.16	3.68	7.01	5.08
2 1/2 × 1 1/4	73.15	42.16	88.9	2.11	1.65	3.05	2.77	5.16	3.56	7.01	4.85
3 × 2 1/2	88.90	73.15	88.9	2.11	2.11	3.05	3.05	5.49	5.16	7.62	7.01
3 × 2	88.90	60.45	88.9	2.11	1.65	3.05	2.77	5.49	3.91	7.62	5.54
3 × 1 1/2	88.90	48.26	88.9	2.11	1.65	3.05	2.77	5.49	3.68	7.62	5.08
3 × 1 1/4	88.90	42.16	88.9	2.11	1.65	3.05	2.77	5.49	3.56	7.62	4.85
3 1/2 × 3	101.60	88.90	101.6	2.11	2.11	3.05	3.05	5.74	5.49	8.08	7.62
3 1/2 × 2 1/2	101.60	73.15	101.6	2.11	2.11	3.05	3.05	5.74	5.16	8.08	7.01
3 1/2 × 2	101.60	60.45	101.6	2.11	1.65	3.05	2.77	5.74	3.91	8.08	5.54
4 × 3 1/2	114.30	101.60	101.6	2.11	2.11	3.05	3.05	6.02	5.74	8.56	8.08
4 × 3	114.30	88.90	101.6	2.11	2.11	3.05	3.05	6.02	5.49	8.56	7.62
4 × 2 1/2	114.30	73.15	101.6	2.11	2.11	3.05	3.05	6.02	5.16	8.56	7.01
4 × 2	114.30	60.45	101.6	2.11	1.65	3.05	2.77	6.02	3.91	8.56	5.54
5 × 4	141.22	114.30	127.0	2.77	2.11	3.40	3.05	6.55	6.02	9.53	8.56
5 × 3 1/2	141.22	101.60	127.0	2.77	2.11	3.40	3.05	6.55	5.74	9.53	8.08
5 × 3	141.22	88.90	127.0	2.77	2.11	3.40	3.05	6.55	5.49	9.53	7.62
5 × 2 1/2	141.22	73.15	127.0	2.77	2.11	3.40	3.05	6.55	5.16	9.53	7.01
6 × 5	168.15	141.22	139.7	2.77	2.77	3.40	3.40	7.11	6.55	10.97	9.53
6 × 4	168.15	114.30	139.7	2.77	2.11	3.40	3.05	7.11	6.02	10.97	8.56
6 × 3 1/2	168.15	101.60	139.7	2.77	2.11	3.40	3.05	7.11	5.74	10.97	8.08
6 × 3	168.15	88.90	139.7	2.77	2.11	3.40	3.05	7.11	5.49	10.97	7.62



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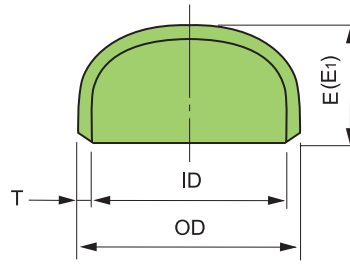
Nominal Pipe Size	Dimensions			Wall Thickness							
	Outside Diameter at Bevel : OD ₁ /OD ₂		End to End	5s		10s		40s		80s	
	OD ₁ mm	OD ₂ mm	H mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm	t ₁ mm	t ₂ mm
8 × 6	218.95	168.15	152.4	2.77	2.77	3.76	3.40	8.18	7.11	12.70	10.97
8 × 5	218.95	141.22	152.4	2.77	2.77	3.76	3.40	8.18	6.55	12.70	9.53
8 × 4	218.95	114.30	152.4	2.77	2.11	3.76	3.05	8.18	6.02	12.70	8.56
10 × 8	273.05	218.95	177.8	3.40	2.77	4.19	3.76	9.27	8.18	12.70	12.70
10 × 6	273.05	168.15	177.8	3.40	2.77	4.19	3.40	9.27	7.11	12.70	10.97
10 × 5	273.05	141.22	177.8	3.40	2.77	4.19	3.40	9.27	6.55	12.70	9.53
12 × 10	323.85	273.05	203.2	3.96	3.40	4.57	4.19	9.53	9.27	12.70	12.70
12 × 8	323.85	218.95	203.2	3.96	2.77	4.57	3.76	9.53	8.18	12.70	12.70
12 × 6	323.85	168.15	203.2	3.96	2.77	4.57	3.40	9.53	7.11	12.70	10.97
14 × 12	355.60	323.85	330.2	3.96	3.96	4.78	4.57	-	-	-	-
14 × 10	355.60	273.05	330.2	3.96	3.40	4.78	4.19	-	-	-	-
14 × 8	355.60	218.95	330.2	3.96	2.77	4.78	3.76	-	-	-	-
16 × 14	406.40	355.60	355.6	4.19	3.96	4.78	4.78	-	-	-	-
16 × 12	406.40	323.80	355.6	4.19	3.96	4.78	4.57	-	-	-	-
16 × 10	406.40	273.05	355.6	4.19	3.40	4.78	4.19	-	-	-	-
18 × 16	457.20	406.40	381.0	4.19	4.19	4.78	4.78	-	-	-	-
18 × 14	457.20	355.60	381.0	4.19	3.96	4.78	4.78	-	-	-	-
18 × 12	457.20	323.85	381.0	4.19	3.96	4.78	4.57	-	-	-	-
20 × 18	508.00	457.20	508.0	4.78	4.19	5.54	4.78	-	-	-	-
20 × 16	508.00	406.40	508.0	4.78	4.19	5.54	4.78	-	-	-	-
20 × 14	508.00	355.60	508.0	4.78	3.96	5.54	4.78	-	-	-	-
22 × 20	558.80	508.00	508.0	4.78	4.78	5.54	5.54	-	-	-	-
22 × 18	558.80	457.20	508.0	4.78	4.19	5.54	4.78	-	-	-	-
22 × 16	558.80	406.40	508.0	4.78	4.19	5.54	4.78	-	-	-	-
24 × 22	609.60	558.80	508.0	5.54	4.78	6.35	5.54	-	-	-	-
24 × 20	609.60	508.00	508.0	5.54	4.78	6.35	5.54	-	-	-	-
24 × 18	609.60	457.20	508.0	5.54	4.19	6.35	4.78	-	-	-	-
30 × 24	762.00	609.60	609.6	6.35	5.54	7.92	6.35	-	-	-	-
30 × 22	762.00	558.80	609.6	6.35	4.78	7.92	5.54	-	-	-	-
30 × 20	762.00	508.00	609.6	6.35	4.78	7.92	5.54	-	-	-	-



FITTINGS

CAP

ASME / ANSI B 16.9
MSS SP-43

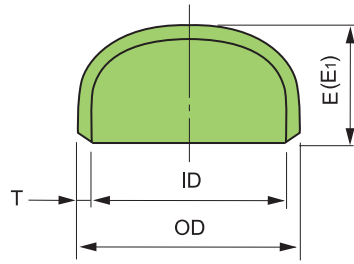


Nominal Pipe Size	Dimensions							Wall Thickness		
	Outside Diameter at Bevel:D OD		Inside Diameter at Bevel:D ID		Length			Sch. No.	t	
					E	Limiting Wall Thickness For Length	E ₁			
inch	inch	mm	inch	mm	mm	mm	mm	inch	mm	
1/2	0.840	21.34	0.710	18.04	25.4	4.57	25.4	5s	0.065	1.65
			0.674	17.12				10s	0.083	2.11
			0.622	15.80				Std/40 40s	0.109	2.77
			0.546	13.88				XS/80 80s	0.147	3.73
			0.464	11.78				160	0.188	4.78
			0.252	6.40				XXS	0.294	7.47
3/4	1.050	26.67	0.920	23.37	25.4	3.81	25.4	5s	0.065	1.65
			0.884	22.45				10s	0.083	2.11
			0.824	20.93				Std/40 40s	0.113	2.87
			0.742	18.85				XS/80 80s	0.154	3.91
			0.612	15.55				160	0.219	5.56
			0.434	11.03				XXS	0.308	7.82
1	1.320	33.53	1.185	30.10	38.1	4.57	38.1	5s	0.065	1.65
			1.097	27.86				10s	0.109	2.77
			1.049	26.64				Std/40 40s	0.133	3.38
			0.957	24.30				XS/80 80s	0.179	4.55
			0.815	20.70				160	0.250	6.35
			0.599	15.22				XXS	0.358	9.09
1 1/4	1.660	42.16	1.530	38.86	38.1	4.83	38.1	5s	0.065	1.65
			1.442	36.62				10s	0.109	2.77
			1.380	34.86				Std/40 40s	0.140	3.56
			1.278	32.46				XS/80 80s	0.191	4.85
			1.160	29.46				160	0.250	6.35
			0.896	22.76				XXS	0.382	9.70
1 1/2	1.900	48.26	1.770	44.96	38.1	5.08	38.1	5s	0.065	1.65
			1.682	42.72				10s	0.109	2.77
			1.610	40.90				Std/40 40s	0.145	3.68
			1.500	38.10				XS/80 80s	0.200	5.08
			1.338	33.98				160	0.281	7.14
			1.100	27.94				XXS	0.400	10.16
2	2.380	60.45	2.245	57.02	38.1	5.59	44.5	5s	0.065	1.65
			2.157	54.78				10s	0.109	2.77
			2.067	52.50				Std/40 40s	0.154	3.91
			1.939	49.24				XS/80 80s	0.218	5.54
			1.687	42.84				160	0.344	8.74
			1.503	38.18				XXS	0.436	11.07



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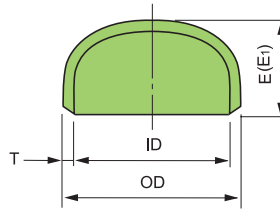
Nominal Pipe Size	Dimensions							Wall Thickness		
	Outside Diameter at Bevel:D OD		Inside Diameter at Bevel:D ID		Length			Sch. No.	t	
					E	Limiting Wall Thickness For Length	E ₁			
inch	inch	mm	inch	mm	mm	mm	mm	inch	mm	
2 1/2	2.880	73.15	2.709	68.80	38.1	7.11	50.8	5s	0.083	2.11
			2.635	66.92				10s	0.120	3.05
			2.469	62.70				Std/40 40s	0.203	5.16
			2.323	59.00				XS/80 80s	0.276	7.01
			2.125	54.09				160	0.375	9.53
			1.771	44.98				XXS	0.552	14.02
3	3.500	88.90	3.334	84.68	50.8	7.62	63.5	5s	0.083	2.11
			3.260	82.80				10s	0.120	3.05
			3.068	77.92				Std/40 40s	0.216	5.49
			2.900	73.66				XS/80 80s	0.300	7.62
			2.624	66.66				160	0.438	11.13
			2.300	58.42				XXS	0.600	15.24
4	4.500	114.30	4.334	110.08	63.5	8.64	76.2	5s	0.083	2.11
			4.260	108.20				10s	0.120	3.05
			4.026	102.26				Std/40 40s	0.237	6.02
			3.726	97.18				XS/80 80s	0.337	8.56
			3.624	92.06				120	0.438	11.13
			3.438	87.32				160	0.531	13.49
			3.125	80.06				XXS	0.674	17.12
5	5.560	141.22	5.345	135.76	76.2	9.65	88.9	5s	0.109	2.77
			5.295	134.50				10s	0.134	3.40
			5.047	128.20				Std/40 40s	0.258	6.55
			4.813	122.24				XS/80 80s	0.375	9.53
			4.563	115.90				120	0.500	12.70
			4.313	109.54				160	0.625	15.88
			4.063	103.20				XXS	0.750	19.05
6	6.620	168.15	6.407	162.76	88.9	10.92	101.6	5s	0.109	2.77
			6.357	161.50				10s	0.134	3.40
			6.065	154.08				Std/40 40s	0.280	7.11
			5.761	146.36				XS/80 80s	0.432	10.97
			5.501	139.76				120	0.562	14.27
			5.187	131.78				160	0.719	18.26
			4.897	124.40				XXS	0.864	21.95



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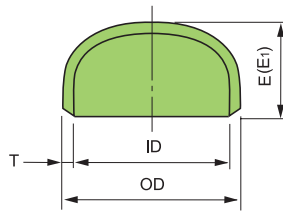


Nominal Pipe Size	Dimensions							Wall Thickness		
	Outside Diameter at Bevel:D OD		Inside Diameter at Bevel:D ID		Length			Sch. No.	t	
					E	Limiting Wall Thickness For Length	E ₁			
inch	inch	mm	inch	mm	mm	mm	mm	inch	mm	
8	8.620	218.95	8.407	213.54	101.6	12.70	127.0	5s	0.109	2.77
			8.329	211.56				10s	0.148	3.76
			7.981	202.72				STD/40 40s	0.322	8.18
			7.625	193.68				XS/80 80s	0.500	12.70
			8.125	206.38				20	0.250	6.35
			7.813	198.46				60	0.406	10.31
			7.437	188.90				100	0.594	15.09
			7.187	182.56				120	0.719	18.26
			7.001	178.54				140	0.812	20.62
			6.813	173.06				160	0.906	23.01
			6.875	174.64				XXS	0.875	22.23
10	10.750	273.05	10.482	266.25	127.0	12.70	152.4	5S	0.134	3.40
			10.420	264.67				10S	0.165	4.19
			10.020	254.51				STD/40 40S	0.365	9.27
			9.750	247.65				XS/80S 60	0.500	12.70
			9.562	242.87				80	0.594	15.09
			10.250	260.35				20	0.250	6.35
			9.312	236.53				100	0.719	18.26
			9.062	230.17				120	0.844	21.44
			8.750	222.25				140/XXS	1.000	25.40
			8.500	215.89				160	1.125	28.58
12	12.750	323.85	12.438	315.88	152.4	12.70	177.8	5S	0.156	3.96
			12.390	314.66				10S	0.180	4.57
			12.000	304.76				STD 40S	0.375	9.53
			11.750	298.40				XS/80S	0.500	12.70
			12.250	311.10				20	0.250	6.35
			11.938	303.18				40	0.406	10.31
			11.374	288.84				80	0.688	17.48
			11.062	280.92				100	0.844	21.44
			10.750	273.00				120	1.000	25.40
			10.500	266.64				140	1.125	28.58
			10.126	257.16				160	1.312	33.32



CAP

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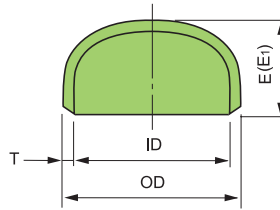
Nominal Pipe Size	Dimensions							Wall Thickness		
	Outside Diameter at Bevel:D OD		Inside Diameter at Bevel:D ID		Length			Sch. No.	t	
					E	Limiting Wall Thickness For Length	E ₁			
inch	inch	mm	inch	mm	mm	mm	mm	inch	mm	
14	14.000	355.60	13.688	347.68	165.1	12.70	190.5	5S	0.156	3.96
			13.624	346.04				10S	0.188	4.78
			13.250	336.56				STD	0.375	9.53
			13.376	339.76				20	0.312	7.92
			13.124	333.34				40	0.438	11.13
			13.000	330.20				XS	0.500	12.70
			12.812	325.42				60	0.594	15.09
			12.500	317.50				80	0.750	19.05
			12.124	307.94				100	0.938	23.83
			11.812	300.02				120	1.094	27.79
			11.500	292.10				140	1.250	31.75
			11.188	284.18				160	1.406	35.71
16	16.000	406.40	15.670	398.02	177.8	12.70	203.2	5S	0.165	4.19
			15.624	396.84				10S	0.188	4.78
			15.250	387.36				STD	0.375	9.53
			15.000	381.00				XS/40	0.500	12.70
			15.376	390.56				20	0.312	7.92
			14.688	373.08				60	0.656	16.66
			14.312	363.52				80	0.844	21.44
			13.938	354.02				100	1.031	26.19
			13.562	344.48				120	1.219	30.96
			13.124	333.36				140	1.438	36.53
			12.812	325.42				160	1.594	40.49
			18	18.000				457.20	17.670	448.82
17.624	447.64	10S			0.188	4.78				
17.250	438.16	STD			0.375	9.53				
17.000	431.80	XS			0.500	12.70				
17.736	441.36	20			0.312	7.92				
16.876	428.66	40			0.562	14.27				
16.500	419.10	60			0.750	19.05				
16.124	409.56	80			0.938	23.83				
15.688	398.48	100			1.156	29.36				
15.250	387.36	120			1.375	34.93				
14.876	377.86	140			1.562	39.67				
14.438	366.72	160			1.781	45.24				



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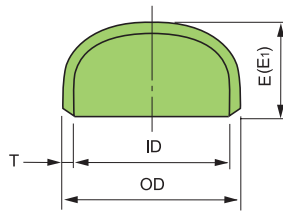


Nominal Pipe Size	Dimensions							Wall Thickness		
	Outside Diameter at Bevel:D OD		Inside Diameter at Bevel:D ID		Length			Sch. No.	t	
					E	Limiting Wall Thickness For Length	E ₁			
inch	inch	mm	inch	mm	mm	mm	mm	inch	mm	
20	20.000	508.0	19.624	499.44	228.6	12.70	254.0	5S	0.188	4.78
			19.564	496.92				10S	0.218	5.54
			19.250	488.96				STD/20	0.375	9.53
			19.000	482.60				XS	0.500	12.70
			18.812	477.82				40	0.594	15.09
			18.376	466.76				60	0.812	20.62
			17.938	455.62				80	1.031	26.19
			17.438	442.92				100	1.281	32.54
			17.000	431.80				120	1.500	38.10
			16.500	419.10				140	1.750	44.45
			16.062	407.98				160	1.969	50.01
22	22.000	558.80	21.624	549.24	254.0	12.70	254.0	5S	0.188	4.78
			21.564	547.72				10S	0.218	5.54
			21.250	539.76				STD/20	0.375	9.53
			21.000	533.40				XS	0.500	12.70
			20.250	514.36				60	0.875	22.23
			19.750	501.64				80	1.125	28.58
			19.250	488.96				100	1.375	34.93
			18.750	476.24				120	1.625	41.28
			18.250	463.56				140	1.875	47.63
			17.750	450.84				160	2.125	53.98
			24	24.000				609.60	23.564	598.52
23.500	596.90	10S			0.250	6.35				
23.250	590.56	STD/20			0.375	9.53				
23.000	584.20	XS			0.500	12.70				
22.624	574.64	40			0.688	17.48				
22.062	560.38	60			0.969	24.61				
21.562	547.68	80			1.218	30.94				
20.938	531.82	100			1.531	38.89				
20.376	517.56	120			1.812	46.02				
19.876	504.86	140			2.062	52.37				
19.312	490.52	160			2.344	59.54				



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Nominal Pipe Size	Dimensions							Wall Thickness		
	Outside Diameter at Bevel:D OD		Inside Diameter at Bevel:D ID		Length			Sch. No.	t	
					E	Limiting Wall Thickness For Length	E ₁			
inch	inch	mm	inch	mm	mm	mm	mm	inch	mm	
26	26.000	660.40	25.250	641.34	266.7	-	-	STD	0.375	9.53
			25.000	635.00				XS	0.500	12.70
28	28.000	711.20	27.250	692.14	266.7	-	-	STD	0.375	9.53
			27.000	685.80				XS	0.500	12.70
30	30.000	762.00	29.500	749.30	266.7	-	-	5S	0.250	6.35
			29.376	746.16				10S	0.312	7.92
			29.250	742.94				STD	0.375	9.53
			29.000	736.60				XS	0.500	12.70
32	32.000	812.80	31.250	793.74	266.7	-	-	STD	0.375	9.53
			31.200	787.40				XS	0.500	12.70
			30.624	777.84				40	0.688	17.48
34	34.000	863.60	33.250	844.54	266.7	-	-	STD	0.375	9.53
			33.000	838.20				XS	0.500	12.70
			32.624	828.64				40	0.688	17.48
36	36.000	914.40	35.250	895.34	266.7	-	-	STD	0.375	9.53
			35.000	888.60				XS	0.500	12.70
			34.500	875.90				40	0.750	19.05
38	38.000	965.20	37.250	946.14	304.8	-	-	STD	0.375	9.53
			37.000	939.80				XS	0.500	12.70
40	40.000	1016.00	39.250	996.94	304.8	-	-	STD	0.375	9.53
			39.000	990.60				XS	0.500	12.70
42	42.000	1066.80	41.250	1047.74	304.8	-	-	STD	0.375	9.53
			41.000	1041.40				XS	0.500	12.70
44	44.000	1117.60	43.250	1098.54	342.9	-	-	STD	0.375	9.53
			43.000	1092.20				XS	0.500	12.70
46	46.000	1168.40	45.250	1149.34	342.9	-	-	STD	0.375	9.53
			45.000	1143.00				XS	0.500	12.70
48	48.000	1219.20	47.250	1200.14	342.9	-	-	STD	0.375	9.53
			47.000	1193.80				XS	0.500	12.70



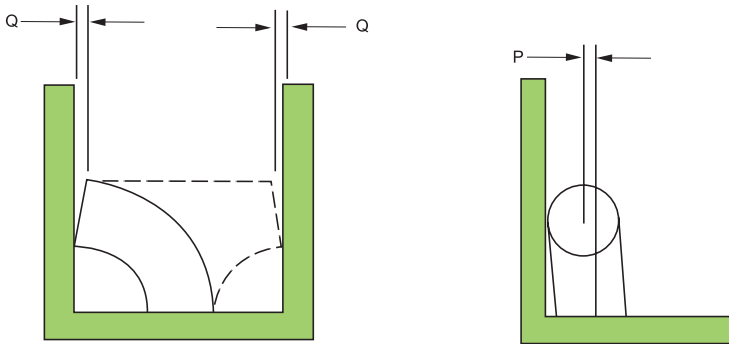
ANSI Dimensional Tolerance

ANSI B16.9, B16.28

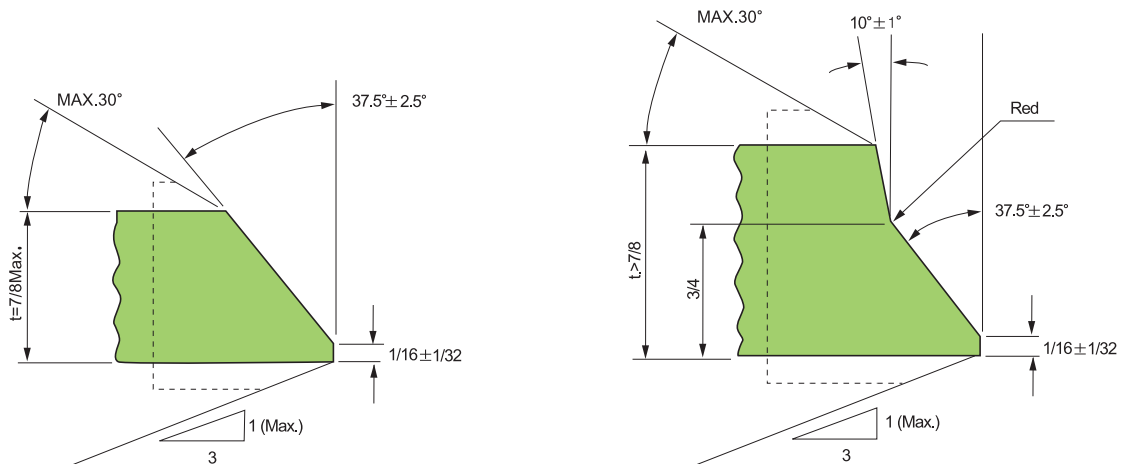
Unit : inch

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	Over-all Length H	Over-all Length E	Center-to-Center Dimension P	Back-to-Face Dimension K	Alignment of Ends U
1/2 ~ 2 1/2	+ 1/16 - 1/32	±1/32	Not less than 87 1/2% of nominal thickness	±1/16	±1/16	±1/16	±1/8	±1/4	±1/4	±1/32
3 ~ 4	±1/16	±1/16		±1/16	±1/16	±1/16	±1/8	±1/4	±1/4	±1/32
5 ~ 8	+ 3/32 - 1/16	±1/16		±1/16	±1/16	±1/16	±1/4	±1/4	±1/4	±1/32
10 ~ 18	+ 5/32 - 1/8	±1/8		±3/32	±3/32	±3/32	±1/4	±3/8	±1/4	±1/16
20 ~ 24	+ 1/4 - 3/16	±3/16		±3/32	±3/32	±3/32	±1/4	±3/8	±1/4	±1/16
26 ~ 30	+ 1/4 - 3/16	±3/16		±1/8	±1/8	±3/16	±3/8	-	-	-
32 ~ 48	+ 1/4 - 3/16	±3/16		±3/16	±3/16	±3/16	±3/8	-	-	-

Unit : inch

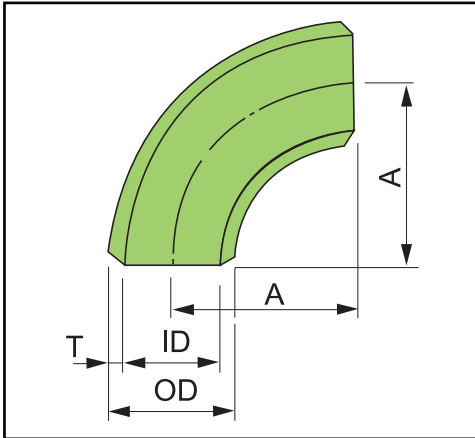


Nominal Pipe Size	Angularity Tolerance	
	Off Angle Q	Off Plane P
1/2 ~ 4	1/32	1/16
5 ~ 8	1/16	1/8
10 ~ 12	3/32	3/16
14 ~ 16	3/32	1/4
18 ~ 24	1/8	3/8
26 ~ 30	3/16	3/8
32 ~ 42	3/16	1/2
44 ~ 48	3/16	3/4





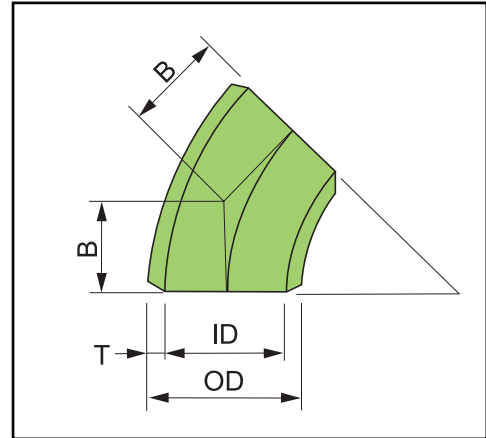
Approx Weight Estimate Equation



90° ELBOW

$$AW = 3.8699 \times A \times T \times (OD - T) \times 10^{-5}$$

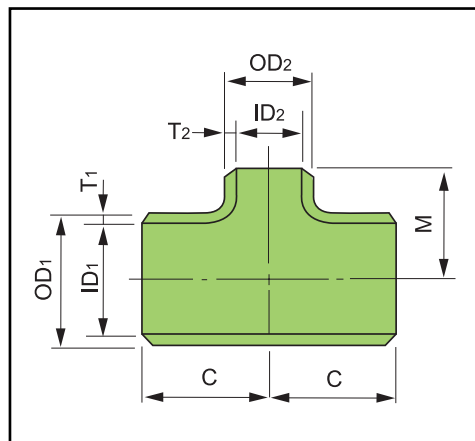
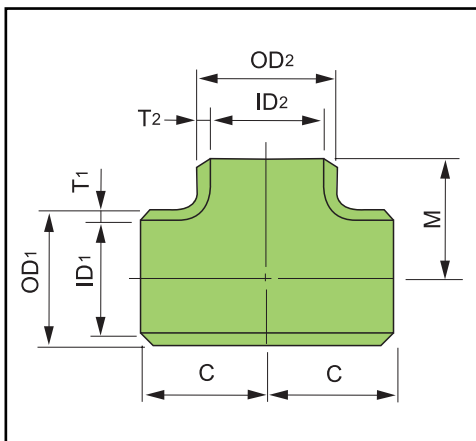
AW: Approx Weight (Unit: kgs)
 T: Wall Thickness (mm)
 OD: Outside Diameter (mm)
 A: Radius (mm)



45° ELBOW

$$AW = 1.9350 \times A \times T \times (OD - T) \times 10^{-5}$$

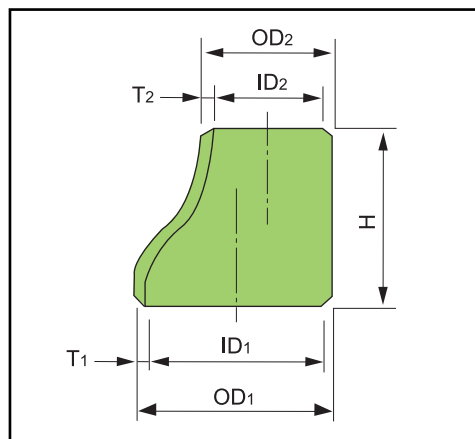
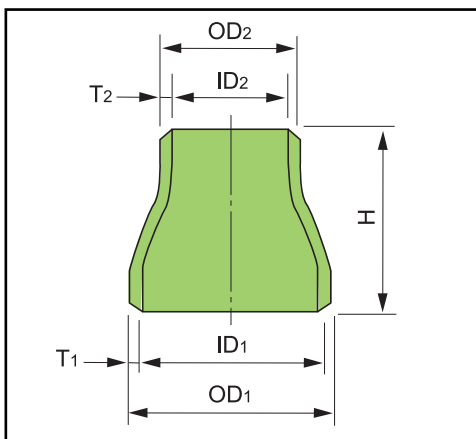
AW: Approx Weight (Unit: kgs)
 T: Wall Thickness (mm)
 OD: Outside Diameter (mm)
 A: Radius (mm)



TEE

$$AW = 2.4649 \{ 2CT_1(OD_1 - T) + T_2(OD_2 - T_2)(M - OD_1/2) \} \times 10^{-5}$$

AW: Approx Weight (Unit: kgs)
 T₁: Wall Thickness (mm)
 OD₁: Outside Diameter (mm)
 T₂: Wall Thickness (mm)
 OD₂: Outside Diameter (mm)
 C: Center to End Diameter (mm)
 M: Center to End Diameter (mm)



Reducer

$$AW = 2.4649 \times H \times T \times (OD_1/2 + OD_2/2 - T) \times 10^{-5}$$

AW: Approx Weight (Unit: kgs)
 T: Wall Thickness (mm)
 OD₁: Outside Diameter (mm)
 OD₂: Outside Diameter (mm)
 H: Length (mm)



FITTINGS

Butt Welding Fittings Approx Weight List

90° Elbows

Long & Short

Unit : Kgs

Nominal Pipe Size	Long							Short							Nominal Pipe Size
	SGP	STD	S40	XS	S80	XXS	S160	SGP	STD	S40	XS	S80	XXS	S160	
1/2	0.08	0.08	0.08	0.10	0.10	-	-	-	-	-	-	-	-	-	1/2
3/4	0.10	0.11	0.11	0.14	0.14	-	-	-	-	-	-	-	-	-	3/4
1	0.15	0.16	0.16	0.20	0.20	0.36	0.25	0.10	0.11	0.11	0.14	0.14	-	-	1
1 1/4	0.26	0.26	0.26	0.35	0.35	0.64	0.42	0.17	0.18	0.18	0.23	0.23	-	-	1 1/4
1 1/2	0.35	0.37	0.37	0.50	0.50	0.93	0.65	0.24	0.25	0.25	0.33	0.33	-	-	1 1/2
2	0.64	0.66	0.66	0.90	0.90	1.69	1.33	0.43	0.44	0.44	0.60	0.60	1.13	0.89	2
2 1/2	1.12	1.37	1.37	1.79	1.79	3.43	2.33	0.75	0.91	0.91	1.19	1.19	2.19	1.49	2 1/2
3	1.58	2.04	2.04	2.74	2.74	5.25	3.83	1.05	1.36	1.36	1.83	1.83	3.49	2.55	3
4	2.91	3.84	3.84	5.36	5.36	10.2	8.02	1.94	2.56	2.56	3.58	3.58	6.79	2.35	4
5	4.49	6.48	6.48	9.13	9.13	17.6	14.7	2.99	4.32	4.32	6.09	6.09	11.8	9.79	5
6	7.09	9.94	9.94	15.0	15.0	29.1	24.2	4.73	6.63	6.63	10.0	10.0	19.5	16.2	6
8	14.4	20.1	20.1	30.5	30.5	51.4	53.2	9.61	13.4	13.4	20.3	20.3	34.3	35.5	8
10	25.4	35.4	35.4	47.7	57.0	82.0	103	16.9	23.6	23.6	31.8	38.0	61.0	68.6	10
12	38.1	52.0	57.0	68.7	94.0	130	171	25.4	34.6	38.0	45.8	63.0	87.0	114	12
14	56.7	67.9	79.1	89.9	133	-	236	37.8	45.3	53.0	60.0	89.0	-	158	14
16	74.3	89.0	118	118	195	-	350	49.5	59.1	79.0	78.3	130	-	234	16
18	94.2	113	169	150	275	-	495	62.8	75.3	113	99.9	183	-	330	18
20	116	140	220	186	373	-	676	77.7	93.1	147	124	249	-	451	20
22	141	169	-	225	493	-	886	94.1	113	-	150	329	-	591	22
24	168	202	366	268	636	-	1160	112	135	244	179	424	-	773	24
26	198	237	-	315	-	-	-	132	158	-	210	-	-	-	26
28	230	276	-	367	-	-	-	154	184	-	245	-	-	-	28
30	264	316	-	421	-	-	-	176	211	-	281	-	-	-	30
32	301	361	654	480	-	-	-	201	241	436	320	-	-	-	32
34	340	408	739	543	-	-	-	227	272	493	362	-	-	-	34
36	380	457	904	608	-	-	-	253	304	603	405	-	-	-	36
38	425	510	-	679	-	-	-	283	340	-	453	-	-	-	38
40	471	565	-	753	-	-	-	314	377	-	502	-	-	-	40
42	518	622	-	828	-	-	-	346	416	-	554	-	-	-	42
44	570	684	-	912	-	-	-	380	456	-	608	-	-	-	44
46	623	748	-	997	-	-	-	415	499	-	665	-	-	-	46
48	677	814	-	1085	-	-	-	452	543	-	724	-	-	-	48



Butt Welding Fittings Approx Weight List

45° Elbows
Long & Short

Unit : Kgs

Nominal Pipe Size	Long							Short							Nominal Pipe Size
	SGP	STD	S40	XS	S80	XXS	S160	SGP	STD	S40	XS	S80	XXS	S160	
1/2	0.04	0.04	0.04	0.05	0.05	-	-	-	-	-	-	-	-	-	1/2
3/4	0.05	0.06	0.06	0.07	0.07	-	-	-	-	-	-	-	-	-	3/4
1	0.08	0.08	0.08	0.10	0.10	0.18	0.13	0.05	0.06	0.06	0.07	0.07	-	-	1
1 1/4	0.13	0.13	0.13	0.18	0.18	0.32	0.21	0.09	0.09	0.09	0.12	0.12	-	-	1 1/4
1 1/2	0.18	0.19	0.19	0.25	0.25	0.47	0.33	0.12	0.13	0.13	0.17	0.17	-	-	1 1/2
2	0.32	0.33	0.33	0.45	0.45	0.85	0.67	0.22	0.22	0.22	0.30	0.30	0.57	0.45	2
2 1/2	0.60	0.69	0.69	0.90	0.90	1.72	1.17	0.38	0.46	0.46	0.60	0.60	1.10	0.75	2 1/2
3	0.79	1.02	1.02	1.37	1.37	2.63	1.92	0.53	0.68	0.68	0.92	0.92	1.75	1.28	3
4	1.46	1.92	1.92	2.68	2.68	5.09	4.01	0.97	1.28	1.28	1.79	1.79	3.40	2.68	4
5	2.25	3.24	3.24	4.57	4.57	8.80	7.35	1.50	2.16	2.16	3.05	3.05	5.88	4.90	5
6	3.55	4.97	4.97	7.50	7.50	14.5	12.1	2.36	3.32	3.32	5.00	5.00	9.75	8.10	6
8	7.20	10.1	10.1	15.3	15.3	25.7	26.6	4.80	6.71	6.71	10.2	10.2	17.2	17.8	8
10	12.7	17.7	17.7	23.9	28.5	41.0	51.5	8.46	11.8	11.8	15.9	19.0	30.2	34.3	10
12	19.0	26.0	28.5	34.4	47.0	65.0	85.5	12.7	17.3	19.0	22.9	31.5	43.5	57.0	12
14	28.4	34.0	40.1	45.0	66.5	-	118	18.0	22.6	26.5	30.0	44.5	-	79.0	14
16	37.2	44.5	59.0	59.0	97.5	-	175	24.0	29.5	39.2	39.2	65.0	-	117	16
18	47.1	56.5	84.5	75.0	138	-	247	31.0	37.6	56.5	50.0	91.5	-	165	18
20	58.3	70.0	110	93.0	187	-	338	38.0	46.6	73.5	62.0	124	-	225	20
22	70.5	84.5	-	113	257	-	443	47.0	56.5	-	75.0	164	-	295	22
24	84.1	101	183	134	318	-	580	56.0	67.3	122	89.5	212	-	386	24
26	99.0	119	-	158	-	-	-	66.0	79.1	-	105	-	-	-	26
28	115	138	-	184	-	-	-	77.0	92.0	-	122	-	-	-	28
30	132	158	-	211	-	-	-	87.0	105	-	140	-	-	-	30
32	150	180	327	240	-	-	-	101	120	218	160	-	-	-	32
34	170	204	369	272	-	-	-	114	136	246	181	-	-	-	34
36	190	228	452	304	-	-	-	127	152	301	202	-	-	-	36
38	212	255	-	339	-	-	-	142	170	-	226	-	-	-	38
40	235	282	-	376	-	-	-	157	189	-	251	-	-	-	40
42	259	311	-	414	-	-	-	173	208	-	277	-	-	-	42
44	285	342	-	456	-	-	-	190	228	-	304	-	-	-	44
46	312	374	-	498	-	-	-	208	250	-	332	-	-	-	46
48	339	407	-	542	-	-	-	226	272	-	362	-	-	-	48



FITTINGS

Butt Welding Fittings Approx Weight List

180° Elbows

Long & Short

Unit : Kgs

Nominal Pipe Size	Long							Short							Nominal Pipe Size
	SGP	STD	S40	XS	S80	XXS	S160	SGP	STD	S40	XS	S80	XXS	S160	
1/2	0.16	0.16	0.16	0.20	0.20	-	-	-	-	-	-	-	-	-	1/2
3/4	0.21	0.22	0.22	0.28	0.28	-	-	-	-	-	-	-	-	-	3/4
1	0.30	0.32	0.32	0.40	0.40	0.72	0.50	0.20	0.22	0.22	0.28	0.28	-	-	1
1 1/4	0.51	0.52	0.52	0.70	0.70	1.28	0.84	0.34	0.36	0.36	0.46	0.46	-	-	1 1/4
1 1/2	0.70	0.74	0.74	1.00	1.00	1.86	1.30	0.48	0.50	0.50	0.66	0.66	-	-	1 1/2
2	1.28	1.32	1.32	1.80	1.80	3.38	2.66	0.86	0.88	0.88	1.20	1.20	2.26	1.78	2
2 1/2	2.24	2.74	2.74	3.58	3.58	6.86	4.66	1.50	1.82	1.82	2.38	2.38	4.38	2.98	2 1/2
3	3.16	4.08	4.08	5.48	5.48	10.5	7.66	2.10	2.72	2.72	3.66	3.66	6.98	5.10	3
4	5.83	7.68	7.68	10.7	10.7	20.4	16.1	3.88	5.12	5.12	7.16	7.16	13.6	10.7	4
5	8.98	13.0	13.0	18.3	18.3	35.2	29.4	5.98	8.64	8.64	12.2	12.2	23.5	19.6	5
6	14.2	19.9	19.9	30.0	30.0	58.2	48.4	9.46	13.3	13.3	20.2	20.2	39.0	32.4	6
8	28.8	40.2	40.2	61.0	61.0	103	106	19.2	26.8	26.8	40.6	40.6	68.6	71.0	8
10	50.8	70.8	70.8	95.4	114	164	206	33.8	47.2	47.2	63.6	76.0	122	138	10
12	76.2	104	114	137	188	260	342	50.8	69.2	76.0	91.6	126	174	228	12
14	114	136	158	180	266	-	472	75.6	90.6	106	120	178	-	316	14
16	149	178	236	236	390	-	700	99.0	118	158	156	260	-	468	16
18	189	226	338	300	550	-	990	125	150	226	199	366	-	660	18
20	232	280	440	372	746	-	1352	155	186	294	248	498	-	902	20
22	282	338	-	450	986	-	1772	188	226	-	300	658	-	1182	22
24	336	404	732	536	1272	-	2320	224	270	488	358	848	-	1546	24

Caps

Unit : Kgs

Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160	Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160
1/2	0.03	0.04	0.04	0.05	0.05	-	-	18	21.2	25.5	41.5	34.1	69.0	-	131
3/4	0.04	0.05	0.05	0.07	0.07	-	-	20	26.4	31.8	54.1	42.5	93.7	-	179
1	0.08	0.11	0.11	0.15	0.15	-	-	22	31.5	38.8	-	51.7	116	-	219
1 1/4	0.11	0.14	0.14	0.20	0.20	-	-	24	36.6	45.1	90.1	60.1	160	-	307
1 1/2	0.15	0.17	0.17	0.24	0.24	0.50	0.35	26	41.0	50.5	-	67.3	-	-	-
2	0.23	0.24	0.24	0.33	0.33	0.68	0.54	28	45.5	56.2	-	74.9	-	-	-
2 1/2	0.34	0.42	0.42	0.57	0.57	1.13	0.77	30	50.3	62.1	-	82.8	-	-	-
3	0.51	0.67	0.67	0.92	0.92	1.92	1.40	32	55.4	68.4	126	91.2	-	-	-
4	0.88	1.17	1.17	1.68	1.68	3.51	2.76	34	60.8	75.0	138	100	-	-	-
5	1.29	1.90	1.90	2.73	2.73	5.82	4.85	36	66.4	81.9	164	109	-	-	-
6	1.99	2.83	2.83	4.38	4.38	9.38	7.81	38	76.8	94.7	-	126	-	-	-
8	3.61	5.11	5.11	7.91	7.91	14.7	1.52	40	83.0	102	-	137	-	-	-
10	6.33	8.92	8.92	12.2	16.4	25.7	28.9	42	90.0	110	-	147	-	-	-
12	9.43	13.1	13.1	17.4	26.4	36.4	47.7	44	103	126	-	167	-	-	-
14	13.2	15.9	18.6	21.2	34.9	-	61.2	46	109	134	-	179	-	-	-
16	16.6	20.0	26.7	26.7	49.0	-	130	48	116	143	-	191	-	-	-



Butt Welding Fittings Approx Weight List

Tees

Unit : Kgs

Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160	Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160
1/2 × 1/2	0.09	0.09	0.09	0.11	0.11	-	-	10 × 10	21.8	30.4	30.4	41.0	60.8	96.7	96.7
3/4 × 3/4	0.13	0.13	0.13	0.17	0.17	-	-	× 8	20.4	28.5	28.5	38.9	51.9	89.7	89.7
× 1/2	0.12	0.12	0.12	0.16	0.16	-	-	× 6	19.5	27.2	27.2	37.0	50.0	80.9	80.9
1 × 1	0.24	0.25	0.25	0.32	0.32	-	-	× 5	19.2	26.8	26.8	36.2	49.2	79.6	79.6
× 3/4	0.23	0.24	0.24	0.30	0.30	-	-	12 × 12	32.0	43.6	58.4	57.7	95.8	155	155
× 1/2	0.22	0.23	0.23	0.29	0.29	-	-	× 10	30.4	41.6	55.2	55.2	90.5	146	146
1 1/4 × 1 1/4	0.42	0.43	0.43	0.56	0.56	-	-	× 8	29.0	39.7	53.1	53.1	77.1	139	139
× 1	0.39	0.40	0.40	0.53	0.53	-	-	× 6	28.1	38.4	51.2	51.2	75.2	136	136
1 1/2 × 1 1/2	0.58	0.61	0.61	0.81	0.81	-	-	14 × 14	44.7	53.5	83.2	70.9	129	-	201
× 1 1/4	0.56	0.59	0.59	0.78	0.78	-	-	× 12	42.7	51.9	79.4	68.8	123	-	192
× 1	0.53	0.56	0.56	0.74	0.74	-	-	× 10	41.2	49.9	76.1	66.3	108	-	184
× 3/4	0.51	0.53	0.53	0.70	0.70	-	-	× 8	40.0	48.2	63.7	64.5	103	-	178
2 × 2	0.86	0.88	0.88	1.20	1.20	-	-	16 × 16	55.2	66.1	110	87.7	173	-	334
× 1 1/2	0.80	0.82	0.82	1.11	1.11	-	-	× 14	54.2	64.9	95.2	86.1	158	-	280
× 1 1/4	0.77	0.79	0.79	1.09	1.07	-	-	× 12	52.7	63.1	91.4	83.6	152	-	263
× 1	0.73	0.75	0.75	1.01	1.01	-	-	× 10	51.2	61.3	88.1	81.2	147	-	255
2 1/2 × 2 1/2	1.42	1.74	1.74	2.28	2.28	4.20	3.63	18 × 18	70.0	83.9	156	111	253	-	470
× 2	1.31	1.56	1.56	2.06	2.06	3.56	3.56	× 16	67.9	81.4	135	108	228	-	416
× 1 1/2	1.25	1.51	1.51	1.98	1.98	3.40	3.40	× 14	66.9	20.2	132	106	223	-	375
× 1 1/4	1.22	1.48	1.48	1.94	1.94	-	-	× 12	65.4	78.3	128	104	217	-	368
3 × 3	1.87	2.41	2.41	3.25	3.25	7.00	5.87	20 × 20	86.6	104	204	138	353	-	631
× 2 1/2	1.79	2.29	2.29	3.07	3.07	9.49	5.45	× 18	84.2	101	188	134	306	-	528
× 2	1.68	2.12	2.12	2.85	2.85	5.17	5.17	× 16	82.1	98.4	181	131	294	-	508
× 1 1/2	1.62	2.06	2.06	2.77	2.77	-	-	× 14	81.1	97.2	178	129	289	-	491
4 × 4	3.13	4.12	4.12	5.77	5.77	12.8	9.76	22 × 22	106	126	-	167	453	-	835
× 3	2.92	3.83	3.83	5.33	5.33	11.4	9.05	× 20	103	123	-	163	386	-	740
× 2 1/2	2.84	3.71	3.71	5.15	5.15	11.3	7.74	× 18	101	120	-	159	373	-	696
× 2	2.72	3.53	3.53	4.94	4.94	9.01	7.30	× 16	98.9	117	-	156	354	-	656
5 × 5	4.53	6.54	6.54	9.20	9.20	20.2	22.2	24 × 24	116	139	299	185	548	-	1012
× 4	4.30	6.13	6.13	8.63	8.63	19.0	15.3	× 22	115	138	-	183	503	-	922
× 3	4.08	5.83	5.83	8.19	8.19	17.9	14.7	× 20	114	136	268	181	467	-	843
× 2 1/2	4.00	5.71	5.71	8.01	8.01	-	14.3	× 18	111	133	249	177	418	-	769
6 × 6	6.84	9.58	9.58	14.5	14.5	28.4	31.4	26 × 26	147	176	-	234	-	-	-
× 5	6.45	9.08	9.08	13.6	13.5	27.1	24.3	× 24	144	172	-	229	-	-	-
× 4	6.23	8.67	8.67	13.0	13.0	25.8	23.2	× 22	141	169	-	225	-	-	-
× 3	6.01	8.38	8.38	12.6	12.6	23.7	22.5	× 20	138	166	-	211	-	-	-
8 × 8	12.8	17.9	17.9	27.1	27.1	51.4	50.7	28 × 28	161	192	-	256	-	-	-
× 6	11.9	16.6	16.6	25.2	25.2	48.1	47.6	× 26	157	189	-	251	-	-	-
× 5	11.5	16.1	16.1	24.3	24.3	46.8	46.1	× 24	153	184	-	244	-	-	-
× 4	11.3	15.7	15.7	23.7	23.7	45.6	45.0	× 22	151	182	-	242	-	-	-



FITTINGS

Butt Welding Fittings Approx Weight List

Tees

Unit : Kgs

Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160	Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160
30 ×30	190	228	-	304	-	-	-	40 ×40	342	411	-	547	-	-	-
×28	188	226	-	301	-	-	-	×38	340	408	-	543	-	-	-
×26	185	222	-	296	-	-	-	×36	335	402	-	536	-	-	-
×24	182	218	-	291	-	-	-	×34	331	397	-	529	-	-	-
32 ×32	208	259	-	331	-	-	-	42 ×42	352	422	-	562	-	-	-
×30	203	244	-	325	-	-	-	×40	350	420	-	559	-	-	-
×28	200	240	-	319	-	-	-	×38	348	418	-	557	-	-	-
×26	199	138	-	317	-	-	-	×36	346	416	-	554	-	-	-
34 ×34	246	295	-	393	-	-	-	44 ×44	396	475	-	633	-	-	-
×32	243	292	-	389	-	-	-	×42	394	473	-	630	-	-	-
×30	238	290	-	380	-	-	-	×40	389	467	-	623	-	-	-
×28	236	288	-	377	-	-	-	×38	385	462	-	616	-	-	-
36 ×36	276	331	-	441	-	-	-	46 ×46	434	521	-	695	-	-	-
×34	271	329	-	434	-	-	-	×44	432	519	-	691	-	-	-
×32	269	326	-	431	-	-	-	×42	427	513	-	683	-	-	-
×30	264	323	-	422	-	-	-	×40	423	507	-	676	-	-	-
38 ×38	308	370	-	493	-	-	-	48 ×48	474	569	-	759	-	-	-
×36	306	367	-	489	-	-	-	×46	472	566	-	755	-	-	-
×34	302	362	-	481	-	-	-	×44	470	564	-	751	-	-	-
×32	298	357	-	476	-	-	-	×42	462	555	-	739	-	-	-

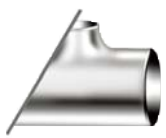


Butt Welding Fittings Approx Weight List

Reducers

Unit : Kgs

Nominal Pipe Size	SGP	STD	S40	XS	S80	XXS	S160	Nominal Pipe Size	SGP	STD	S40	XS	S80
1/2 × 1/2	0.06	0.06	0.06	0.08	0.08	-	-	20 × 18	47.0	56.4	88.4	74.9	150
3/4 × 3/4	0.11	0.12	0.12	0.15	0.15	0.25	0.19	× 16	44.7	53.5	83.9	71.1	142
× 1/2	0.10	0.11	0.11	0.14	0.14	0.22	0.17	× 14	42.4	50.8	79.6	67.4	136
1 1/4 × 1	0.16	0.16	0.16	0.21	0.21	0.35	0.25	22 × 20	52.1	62.4	-	82.9	181
× 3/4	0.15	0.15	0.15	0.19	0.19	0.31	0.23	× 18	49.5	59.4	-	78.9	172
× 1/2	0.13	0.14	0.14	0.18	0.18	-	-	× 16	47.0	56.4	-	74.8	164
1 1/2 × 1 1/4	0.24	0.25	0.25	0.33	0.33	0.57	0.43	24 × 22	57.1	68.4	-	91.0	215
× 1	0.21	0.22	0.22	0.30	0.30	0.50	0.38	× 20	54.8	65.7	119	87.3	206
× 3/4	0.20	0.21	0.21	0.27	0.27	0.45	0.35	× 18	52.6	63.0	114	83.8	197
2 × 1 1/2	0.37	0.38	0.38	0.51	0.51	0.91	0.75	26 × 24	74.5	89.4	-	119	-
× 1 1/4	0.35	0.36	0.36	0.48	0.48	0.85	0.70	× 22	71.5	85.8	-	114	-
× 1	0.31	0.33	0.33	0.44	0.44	0.77	0.64	× 20	68.5	82.1	-	109	-
2 1/2 × 2	0.60	0.73	0.73	0.95	0.95	1.68	1.20	28 × 26	80.6	96.6	-	129	-
× 1 1/2	0.55	0.67	0.67	0.87	0.87	1.51	1.08	× 24	77.5	93.0	-	124	-
× 1 1/4	0.52	0.64	0.64	0.83	0.83	1.42	1.02	× 22	74.5	89.4	-	119	-
3 × 2 1/2	0.73	0.94	0.94	1.25	1.25	2.25	1.71	30 × 28	86.6	104	-	138	-
× 2	0.66	0.85	0.85	1.13	1.13	2.01	1.57	× 26	83.6	100	-	133	-
× 1 1/2	0.62	0.79	0.79	1.04	1.04	1.83	1.44	× 24	80.6	96.6	-	129	-
4 × 3	1.10	1.45	1.45	2.01	2.02	3.65	3.00	32 × 30	92.6	111	-	148	-
× 2 1/2	1.04	1.37	1.37	1.90	1.90	3.41	2.76	× 28	89.6	108	-	143	-
× 2	0.97	1.27	1.27	1.76	1.76	3.11	2.58	× 26	86.6	104	-	138	-
5 × 4	1.74	2.50	2.50	3.52	3.52	6.47	5.59	34 × 32	98.7	118	-	158	-
× 3	1.58	2.27	2.27	3.18	3.18	5.78	5.30	× 30	95.6	115	-	153	-
× 2 1/2	1.50	2.16	2.16	3.02	3.02	5.46	4.70	× 28	92.6	111	-	148	-
6 × 5	2.55	3.57	3.57	5.38	5.38	9.89	8.63	36 × 34	105	126	-	167	-
× 4	2.36	3.30	3.30	4.96	4.96	8.98	7.88	× 32	102	122	-	163	-
× 3	2.18	3.04	3.04	4.56	4.56	8.21	7.21	× 30	98.7	118	-	158	-
8 × 6	4.17	5.71	5.71	8.63	8.63	14.3	15.0	38 × 36	112	133	-	177	-
× 5	3.87	5.40	5.40	8.14	8.14	13.4	14.0	× 34	108	129	-	172	-
× 4	3.67	5.10	5.10	7.68	7.68	12.6	13.1	× 32	105	126	-	167	-
10 × 8	6.87	9.58	9.58	12.9	15.4	24.3	27.5	40 × 38	117	140	-	187	-
× 6	6.32	8.78	8.78	11.8	14.2	22.1	25.1	× 36	114	137	-	182	-
× 5	6.06	8.42	8.42	11.3	13.5	21.1	23.9	× 34	111	133	-	177	-
12 × 10	9.97	13.6	14.7	18.0	24.8	34.3	44.6	42 × 40	123	147	-	196	-
× 8	9.29	12.7	13.7	16.7	22.7	31.7	41.0	× 38	120	144	-	192	-
× 6	8.69	11.8	12.8	15.6	21.4	29.4	38.0	× 36	117	140	-	187	-
14 × 12	21.2	25.4	29.5	33.6	49.8	-	88.5	44 × 42	129	155	-	206	-
× 10	19.7	23.6	27.4	31.2	46.1	-	81.6	× 40	126	151	-	201	-
× 8	18.3	21.8	25.4	28.9	42.2	-	74.7	× 38	123	147	-	196	-
16 × 14	25.9	31.0	41.1	41.1	67.7	-	121	46 × 44	157	189	-	252	-
× 12	24.1	29.6	39.2	39.2	65.0	-	116	× 42	154	185	-	246	-
× 10	22.4	27.8	36.8	36.8	60.8	-	108	× 40	150	180	-	241	-
18 × 16	31.5	37.8	56.2	50.1	91.4	-	165	48 × 46	164	197	-	263	-
× 14	29.8	35.7	53.0	47.4	86.4	-	155	× 44	161	193	-	257	-
× 12	27.7	33.2	51.0	44.0	83.0	-	149	× 42	157	189	-	252	-



Materials Specification for Butt-Welding Fittings

ASTM A234, A403 and A420

Marking Symbols	Materials	Chemical Composition(percent)						
		Max. or Range(Unless Otherwise Indicated)						
		Form	C	Si	Mn	P	S	M
WPB	A106 Gr.B	P	0.30	0.10min	0.29-1.06	0.050	0.058	-
	A515 Gr. 65	PL	0.28-0.33	0.13-0.45	0.90	0.035	0.040	-
	A515 Gr. 70	PL	0.31-0.35	0.13-0.45	1.30	0.035	0.040	-
WPC	A106 Gr. C	P	0.35	0.10min	0.29-1.06	0.048	0.058	-
WP1	A335 Gr. P1	P	0.28	0.10-0.50	0.30-0.90	0.045	0.045	-
	A204 Gr. B	PL	0.20-0.27	0.13-0.45	0.90	0.035	0.040	-
WP12	A335 Gr. P12	P	0.05-0.20	0.60	0.30-0.80	0.045	0.045	-
	A387 Gr. 12	PL	0.17	0.13-0.45	0.40-0.65	0.035	0.040	-
WP11	A335 Gr. P11	P	0.15	0.50-1.00	0.30-0.60	0.030	0.030	-
	A387 Gr. 11	PL	0.17	0.44-0.86	0.35-0.73	0.035	0.040	-
WP22	A335 Gr. P22	P	0.15	0.50	0.30-0.60	0.030	0.030	-
	A387 Gr. 22	PL	0.15-0.17	0.50	0.25-0.66	0.035	0.035	-
WP5	A335 Gr. P5	P	0.15	0.50	0.30-0.60	0.030	0.030	-
	A387 Gr. 5	PL	0.15	0.50	0.25-0.66	0.040	0.030	-
WP304	A312 Gr. TP304	P	0.08	0.75	2.00	0.040	0.030	8.00-11.0
	A240 Type 304	PL	0.08	1.00	2.00	0.045	0.030	8.00-10.50
WP304H	A312 Gr. TP 304H	P	0.04-0.10	0.75	2.00	0.040	0.030	8.00-11.00
	A240 Type 304H*	PL	0.04-0.10	1.00	2.00	0.045	0.030	8.00-10.50
WP304L	A312 Gr TP 304L+	P	0.035	0.75	2.00	0.040	0.030	8.00-13.00
	A240 Type 304L+	PL	0.030	1.00	2.00	0.045	0.030	8.00-12.00
WP309	A312 Gr. TP309	P	0.15	0.75	2.00	0.040	0.030	12.00-15.00
	A240 Type 309S	PL	0.08	1.00	2.00	0.045	0.030	12.00-15.00
WP310	A312 Gr. TP310	P	0.15	0.75	2.00	0.040	0.030	19.00-22.00
	A240 Type 310S	PL	0.08	1.00	2.00	0.045	0.030	19.00-22.00
WP347	A312 Gr. TP347	P	0.08	0.75	2.00	0.040	0.030	9.00-13.00
	A240 Type 347	PL	0.08	1.00	2.00	0.045	0.030	9.00-13.00
WP316	A312 Gr. TP316	P	0.08	0.75	2.00	0.040	0.030	11.00-14.00
	A240 Type 316	PL	0.08	1.00	2.00	0.045	0.030	10.00-14.00
WP316H	A312 Gr. TP 316H	P	0.04-0.10	0.75	2.00	0.040	0.030	11.00-14.00
	A240 Type 316H*	PL	0.04-0.10	1.00	2.00	0.045	0.030	10.00-14.00
WP316L	A312 Gr. TP316L	P	0.035	0.75	2.00	0.040	0.030	10.00-15.00
	A240 Type 316L+	PL	0.030	1.00	2.00	0.045	0.030	10.00-14.00
WP321	A312 Gr. TP321	P	0.08	0.75	2.00	0.040	0.030	9.00-13.00
	A240 Type 321	PL	0.08	1.00	2.00	0.045	0.030	9.00-12.00
WP321H	a312 Gr. TP 321H	P	0.04-0.10	0.75	2.00	0.040	0.030	9.00-13.00
	A240 Type 321H*	PL	0.04-0.10	1.00	2.00	0.045	0.030	9.00-13.00
WP347H	A312 Gr. TP 347H	P	0.04-0.10	0.75	2.00	0.040	0.030	9.00-13.00
	A240 Type 347H*	PL	0.04-0.10	1.00	2.00	0.045	0.030	9.00-13.00
WPL6	A333 end A334 Gr. 6	P	0.30	0.15-0.040	0.50-1.35	0.035	0.040	-
	A516 Gr 60	PL	0.21-0.27	0.13-.0.45	0.60-1.30	0.035	0.040	-
WPL3	A333 and A334 Gr. 3	P	0.19	0.18-0.37	0.31-0.64	0.050	0.050	3.18-3.82
	A203 Gr. D	PL	0.17-0.20	0.13-0.45	0.70-0.80	0.035	0.040	3.18-3.82

- Asterisks(*) denote that carbon content shall be 0.04 to 0.10%
- Daggers(+) denote that the minimum tensile strength shall be 65,000 psi(450 MPa) and that the minimum yield strength shall be 25,000 psi(170 MPa)
- The yield strength shall be determined by the offset method at 0.2% limiting permanent set in accordance with ASTM A370 Specification An alternative method of determining yield strength may be based on a total extension under load of 0.5%
- The basic minimum elongation for walls 3/16 " (7.94mm) and over in thickness shall be determined according to strip tests:all small sizes are tested in their full section
- P-denotes Pipe, PL Plate



Wrought Steel Butt-Welding Fittings

Chemical Composition(percent)			Tensile Requirements				Marking Symbols
Max. or Range(Unless Otherwise Indicated)			Other Elements	Tensile Strength Min. or Range Ksi(Mpa)	Yield Strength Min. Ksi(Mpa)	Longitudinal Elongation in 2 in.(50mm) Min., %	
Cr	Mo	Ti					
0.40	0.15	-	Ni 0.40	60 (415)	35(240)	30	WPB
-	-	-	Cu 0.40	65-85(450-585)	35(240)	23	
-	-	-	V 0.08	70-90(485-620)	38(260)	21	
0.40	0.15	-	-	70(485)	40(275)	30	WPC
-	0.44-0.65	-	-	55(380)	30(205)	30	WP1
-	0.41-0.64	-	-	70-90(485-620)	40(275)	21	
1.00-1.50	0.44-0.65	-	-	60(415)	30(205)	30	WP12
0.74-1.21	0.40-0.65	-	-	65-85(450-585)	40(275)	22	
1.00-1.50	0.44-0.65	-	-	60(415)	30(205)	30	WP11
0.94-1.56	0.40-0.70	-	-	70-100(515-690)	45(310)	22	
1.90-2.60	0.87-1.13	-	-	60(415)	30(205)	30	WP22
1.88-2.62	0.85-1.15	-	-	75-100(515-690)	45(310)	18	
4.00-6.00	0.45-0.65	-	-	60(415)	30(205)	30	WP5
4.00-6.00	0.40-0.70	-	-	75-100(515-690)	45(310)	18	
18.00-20.00	-	-	-	75(515)	30(205)	35	WP304
18.00-20.00	-	-	-	75(515)	30(205)	40	
18.00-20.00	-	-	-	75(515)	30(205)	35	WP304H
18.00-20.00	-	-	-	75(515)	30(205)	40	
18.00-20.00	-	-	-	70(485)	25(170)	35	WP304L
18.00-20.00	-	-	-	70(485)	25(170)	40	
22.40-24.00	-	-	-	75(515)	30(205)	35	WP309
22.40-24.00	-	-	-	75(515)	30(205)	40	
24.00-26.00	-	-	-	75(515)	30(205)	35	WP310
24.00-26.00	-	-	-	75(515)	30(205)	40	
17.00-20.00	-	-	Cb+Ta10 ×c-1.00	75(515)	30(205)	35	WP347
17.00-19.00	-	-	Cb+Ta10 ×c-1.10	75(515)	30(205)	40	
16.00-18.00	2.00-3.00	-	-	75(515)	30(205)	35	WP316
16.00-18.00	2.00-3.00	-	-	75(515)	30(205)	40	
16.00-18.00	2.00-3.00	-	-	75(515)	30(205)	35	WP316H
16.00-18.00	2.00-3.00	-	-	75(515)	30(205)	40	
16.00-18.00	2.00-3.00	-	-	70(485)	25(170)	35	WP316L
16.00-18.00	2.00-3.00	-	-	70(485)	25(170)	40	
17.00-20.00	-	5 ×c-0.60	-	75(515)	30(205)	35	WP321
17.00-19.00	-	5 ×c-0.70	-	75(515)	30(205)	40	
17.00-20.00	-	4 ×c-0.60	-	75(515)	30(205)	35	WP321H
17.00-19.00	-	4 ×c-0.70	-	75(515)	30(205)	40	
17.00-20.00	-	-	Cb+Ta8 ×c-1.0	75(515)	30(205)	35	WP347H
17.00-19.00	-	-	Cb+Ta8 ×c-1.0	75(515)	30(205)	40	
0.30	0.12	-	Ni 0.40	60(415)	35(241)	30	WPL6
0.30	0.12	-	Cb 0.02	60-80(415-550)	32(220)	25	
-	-	-	V 0.08	65(448)	35(241)	30	WPL3
-	-	-	-	65-85(450-585)	37(255)	23	



Comparison of ASTM Specification and Similar Standards

Steel Composition	ASTM Specification and Grade				KS Specification and Grade
	Marking Symbol	Pipe	Plate	Forging	Pipe
Carbon Steel	-	A120	A283-A	-	SPP
Carbon Steel	-	A53-B	A242	-	SPPS38
Carbon Steel	-	A53-B	A242	-	SPPS42
Carbon Steel	WPB	A106-B	A515-65 or 70	A181-2 and A105	SPHP42
Carbon Steel	WPC	A106-C	-	-	SPHP49
Carbon Steel	WPL6	A333 and A334-6	A516-60	A350-LF2	SPLT39
3 1/2% Ni Steel	WPL3	A333 and A334-3	A203-D	A350-LF3	-
Carbon-Molybdenum Steel	WP1	A335-P1	A204-B	A182-F1	SPA12
1% Cr-1/2% Molybdenum Steel	WP12	A335-P12	A387-12	A182-F12	SPA22
1 1/4% Cr-1/2% Molybdenum Steel	WP11	A335-P11	A387-11	A182-F11	SPA23
2 1/4% Cr-1% Molybdenum Steel	WP22	A335-P22	A387-22	A182-F22	SPA24
5% Cr-1/2% Molybdenum Steel	WP5	A335-P5	A387-5	A182-F5	SPA25
7% Cr-1/2% Molybdenum Steel	WP7	A335-P7	-	A182-F7	-
9% Cr-1% Molybdenum Steel	WP9	A335-P9	-	A182-F9	-
18% Cr-8% Ni Steel	WP304	A312-TP304	A240-Type304	A182-F304	STS304TP
18% Cr-8% Ni-(0.04-0.10)% C Steel	WP304H	A312-TP304H	A240-Type304H	A182-F304H	-
18% Cr-8% Ni-0.035% C Steel	WP304L	A312-TP304L	A240-Type304L	A182-F304L	STS304LTP
22% Cr-12% Ni Steel	WP309	A312-TP309	A240-Type309S	-	STS309STP
25% Cr-20% Ni Steel	WP310	A312-TP310	A240-Type310S	A182-F310	STS310STP
18% Cr-8% Ni-Cb+Ta Steel	WP347	A312-TP347	A240-Type347	A182-F347	STS347TP
18% Cr-8% Ni-Mo Steel	WP316	A312-TP316	A240-Type316	A182-F316	STS316TP
18% Cr-8% Ni-Mo-(0.04-0.10)% C Steel	WP316H	A312-TP316H	A240-Type316H	A182-F316H	STS316HTP
18% Cr-8% Ni-Mo-0.035% C Steel	WP316L	A312-TP316L	A240-Type316L	A182-F316L	STS316LTP
18% Cr-8% Ni-Ti Steel	WP321	A312-TP321	A240-Type321	A182-F321	STS321TP
18% Cr-8% Ni-Ti-(0.04-0.10)% C Steel	WP321H	A312-TP321H	A240-Type321H	A182-F321H	-
18% Cr-8% Ni-Cb+Ta-(0.04-0.10)% C Steel	WP347H	A312-TP347H	A240-Type347H	A182-F347H	STS347HTP



Comparison of ASTM Specification and Similar Standards

KS Specification and Grade	JIS Grade		B.S. Specification and Grade	DIN Specification and Grade	Steel Composition
	Pipe	Plate			
SS41	SGP	SS41	1378-M	2440-ST33-1	Carbon Steel
SWS41B	STPG38	SM41B	3602-ERW23	1626-ST37	Carbon Steel
SWS41B	STPG42	SM41B	3602-ERW27	-	Carbon Steel
SBB42	STPT42	SB42	3602-Steel 27	17175-St 45.8	Carbon Steel
SBB49	STPT49	SB49	3602-Steel 35	-	Carbon Steel
SLAL33	STPL39	-	3603-Steel 27 LT30	-	Carbon Steel
-	STPL46	-	3603-Steel 503 LT100	-	3 1/2% Ni Steel
SBB46M	STPA12	-	-	17175-15 Mo3	Carbon-Molybdenum Steel
SCMV2	STPA22	-	3604-HF620	17175-13Cr Mo44	1% Cr-1/2% Molybdenum Steel
SCMV3	STPA23	-	3604-HF621	-	1 1/4% Cr-1/2% Molybdenum Steel
SCMV4	STPA24	-	3604-HF622, 27	17175-10Cr Mo910	2 1/4% Cr-1% Molybdenum Steel
SCMV6	STPA25	-	3604-HF625	-	5% Cr-1/2% Molybdenum Steel
-	-	-	-	-	7% Cr-1/2% Molybdenum Steel
-	STPA26	-	-	-	9% Cr-1% Molybdenum Steel
STS304	SUS304TP	SUS304	3605-801	17440-X5Cr Ni189	18% Cr-8% Ni Steel
-	SUS304HTP	-	3605-811	-	18% Cr-8% Ni-(0.04-0.10)% C Steel
STS304L	SUS304LTP	SUS304L	3605-811L	17440-X2Cr Ni189	18% Cr-8% Ni-0.035% C Steel
STS309S	SUS309STP	SUS309S	-	-	22% Cr-12% Ni Steel
STS310S	SUS310STP	SUS310S	3605-805S	-	25% Cr-20% Ni Steel
STS347	SUS347TP	SUS347	3605-822 Nb	17440-X1Cr Ni Nb189	18% Cr-8% Ni-Cb+Ta Steel
STS316	SUS316TP	SUS316	3605-845	17440-X5Cr NiMo1810	18% Cr-8% Ni-Mo Steel
-	SUS316HTP	-	3605-855	-	18% Cr-8% Ni-Mo-(0.04-0.10)% C Steel
STS316L	SUS316LTP	SUS316L	3605-845L	17440-X2Cr NiMo1810	18% Cr-8% Ni-Mo-0.035% C Steel
STS321	SUS321TP	SUS321	3605-822Ti	17440-X10Cr NiTi189	18% Cr-8% Ni-Ti Steel
-	SUS321HTP	-	3605-832Ti	-	18% Cr-8% Ni-Ti-(0.04-0.10)% C Steel
-	SUS347HTP	-	3605-832Nb	-	18% Cr-8% Ni-Cb+Ta-(0.04-0.10)% C Steel



WALL THICKNESS OF WELDED AND SEAMLESS PIPE

Nominal Pipe Size		Outside Diameter		Nominal Wall Thickness							
A	B	KS/JIS	ANSI	SPP SGP	Sch 5s	Sch 10s	Sch 10	Sch 20s	Sch 20	Sch 30	Sch 40s
6	1/8	10.50	10.29	-	-	1.24	-	1.5	-	-	1.73
8	1/4	13.80	13.72	-	-	1.65	-	2.0	-	-	2.24
10	3/8	17.30	17.14	-	-	1.65	-	2.0	-	-	2.31
15	1/2	21.70	21.34	2.8	1.65	2.11	-	2.5	-	-	2.77
20	3/4	27.20	26.67	2.8	1.65	2.11	2.11	2.5	-	-	2.87
25	1	34.00	33.40	3.2	1.65	2.77	2.77	3.0	-	-	3.38
32	1 1/4	42.70	42.16	3.5	1.65	2.77	2.77	3.0	-	-	3.56
40	1 1/2	48.60	48.26	3.5	1.65	2.77	2.77	3.0	-	-	3.68
50	2	60.50	60.32	3.8	1.65	2.77	2.77	3.5	3.20	-	3.91
65	2 1/2	76.30	73.02	4.2	2.11	3.05	3.05	3.5	4.50	-	5.16
80	3	89.10	88.90	4.2	2.11	3.05	3.05	4.0	4.50	-	5.49
90	3 1/2	101.60	101.60	4.2	2.11	3.05	3.05	4.0	4.50	-	5.74
100	4	114.30	114.30	4.5	2.11	3.05	3.05	4.0	4.90	-	6.02
125	5	139.80	141.30	4.5	2.77	3.40	3.40	5.0	5.10	-	6.55
150	6	165.20	168.30	5.0	2.77	3.40	-	5.0	5.50	-	7.11
200	8	216.30	219.08	5.8	2.77	3.76	-	6.5	6.35	7.04	8.18
250	10	267.40	273.05	6.6	3.40	4.19	-	6.5	6.35	7.80	9.27
300	12	318.50	323.80	6.9	3.96	4.57	-	6.5	6.35	8.38	9.52
350	14	355.60	355.60	7.9	3.96	4.78	6.35	-	7.92	9.52	-
400	16	406.40	406.40	7.9	4.19	4.78	6.35	-	7.92	9.52	-
450	18	457.20	457.20	7.9	4.19	4.78	6.35	-	7.92	11.13	-
500	20	508.00	508.00	7.9	4.78	5.54	6.35	-	9.52	12.70	-
550	22	558.80	558.80	-	4.78	5.54	6.35	-	9.52	12.70	-
600	24	609.60	609.60	-	5.54	6.35	6.35	-	9.52	14.27	-
650	26	660.40	660.40	-	-	-	7.92	-	12.70	-	-
700	28	711.20	711.20	-	-	-	7.92	-	12.70	15.88	-
750	30	762.00	762.00	-	6.35	7.92	7.92	-	12.70	15.88	-
800	32	812.80	812.80	-	-	-	7.92	-	12.70	15.88	-
850	34	863.60	863.60	-	-	-	7.92	-	12.70	15.88	-
900	36	914.40	914.40	-	-	-	7.92	-	12.70	15.88	-
950	38	965.20	965.20	-	-	-	-	-	-	-	-
1000	40	1016.00	1016.00	-	-	-	-	-	-	-	-
1050	42	1066.80	1066.80	-	-	-	-	-	-	-	-
1100	44	1117.60	1117.60	-	-	-	-	-	-	-	-
1150	46	1168.40	1168.40	-	-	-	-	-	-	-	-
1200	48	1219.20	1219.20	-	-	-	-	-	-	-	-



WALL THICKNESS OF WELDED AND SEAMLESS PIPE

Nominal Wall Thickness											Nominal Pipe Size (inch)
STD	Sch 40	Sch 60	Sch 80s	XS	Sch 80	Sch 100	Sch 120	Sch140	Sch 160	XXS	
1.73	1.73	2.20	2.41	2.41	2.41	-	-	-	3.15	4.83	1/8
2.24	2.24	2.40	3.02	3.02	3.02	-	-	-	3.68	6.05	1/4
2.31	2.31	2.80	3.20	3.20	3.20	-	-	-	4.01	6.40	3/8
2.77	2.77	3.20	3.73	3.73	3.73	-	-	-	4.78	7.47	1/2
2.87	2.87	3.40	3.91	3.91	3.91	-	-	-	5.56	7.82	3/4
3.38	3.38	3.90	4.55	4.55	4.55	-	-	-	6.35	9.09	1
3.56	3.56	4.50	4.85	4.85	4.85	-	-	-	6.35	9.70	1 1/4
3.68	3.68	4.50	5.08	5.08	5.08	-	-	-	7.14	10.16	1 1/2
3.91	3.91	4.90	5.54	5.54	5.54	-	-	-	8.74	11.07	2
5.16	5.16	6.00	7.01	7.01	7.01	-	-	-	9.53	14.02	2 1/2
5.49	5.49	6.60	7.62	7.62	7.62	-	-	-	11.13	15.24	3
5.74	5.74	7.00	8.08	8.08	8.08	-	-	-	-	16.15	3 1/2
6.02	6.02	7.10	8.56	8.56	8.56	-	11.13	-	13.49	17.12	4
6.55	6.55	8.10	9.53	9.53	9.53	-	12.70	-	15.88	19.05	5
7.11	7.11	9.30	10.97	10.97	10.97	-	14.27	-	18.26	21.95	6
8.18	8.18	10.31	12.70	12.70	12.70	15.09	18.26	20.62	23.01	22.23	8
9.27	9.27	12.70	12.70	12.70	15.09	18.26	21.44	25.40	28.58	25.40	10
9.53	10.31	14.27	12.70	12.70	17.48	21.44	25.40	28.58	33.32	25.40	12
9.53	11.13	15.09	12.70	12.70	19.05	23.83	27.79	31.75	35.71	-	14
9.53	12.70	16.66	12.70	12.70	21.44	26.19	30.96	36.53	40.49	-	16
9.53	14.27	19.05	12.70	12.70	23.82	29.36	34.93	39.67	45.24	-	18
9.53	15.09	20.62	12.70	12.70	26.19	32.54	38.10	44.45	50.01	-	20
9.53	15.87	22.23	12.70	12.70	28.58	34.93	41.28	47.63	53.98	-	22
9.53	17.48	24.61	12.70	12.70	30.94	38.89	46.02	52.37	59.54	-	24
9.53	-	-	12.70	12.70	-	-	-	-	-	-	26
9.53	-	-	12.70	12.70	-	-	-	-	-	-	28
9.53	-	-	12.70	12.70	-	-	-	-	-	-	30
9.53	17.48	-	12.70	12.70	-	-	-	-	-	-	32
9.53	17.48	-	12.70	12.70	-	-	-	-	-	-	34
9.53	19.05	-	12.70	12.70	-	-	-	-	-	-	36
9.53	-	-	12.70	12.70	-	-	-	-	-	-	38
9.53	-	-	12.70	12.70	-	-	-	-	-	-	40
9.53	-	-	12.70	12.70	-	-	-	-	-	-	42
9.53	-	-	12.70	12.70	-	-	-	-	-	-	44
9.53	-	-	12.70	12.70	-	-	-	-	-	-	46
9.53	-	-	12.70	12.70	-	-	-	-	-	-	48

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