

Malaysia's leading supplier  
for pipe flanges & fittings



# Technical Data Handbook

## for Butt Weld Pipe Fittings



Certification & Approval



ISO 9001:2008  
Management System



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Malaysia's leading supplier  
for pipe flanges & fittings



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## OUR PROFILE

### Shinsei Industry Sdn. Bhd. (“SSI”) was founded on 17th April 2013 in Penang, Malaysia.

**It's a wholly-owned subsidiary of Shinsei Holdings Pte Ltd which is incorporated in the Republic of Singapore.**

SSI is the sole approved manufacturer for the Japanese brand name of forged flanges, . SSI and  are certified with PED, ISO 9001:2008 and SASOL.

 flanges has been in market since 2005 and are being used in various industries such as oil & gas, petrochemical, utilities, marine and shipbuilding and more. The  flanges & butt weld fittings markets reach include United States, Canada, Japan, Holland, Turkey, Belgium, Spain, France, South Africa, Brazil, Chile, Argentina, Mexico, UAE, Saudi Arabia, Australia, Singapore, Indonesia, Malaysia, Thailand, Vietnam and Taiwan.

SSI is located in the northern part of Malaysia, Penang city, which is a manufacturing hub with an efficient transportation network. The Company has an initial investment amount of US\$17 million.

SSI is able to supply different standards such as JIS, ANSI, DIN, BS, EN and custom made forged flanges & butt weld fittings ranging from 3/8” to 24”. With our unique, advance and complete set of forging facilities, we are also able to produce spare parts for machineries, motor vehicles and other industries requiring high quality with pressure and heat resistance forged spare parts.

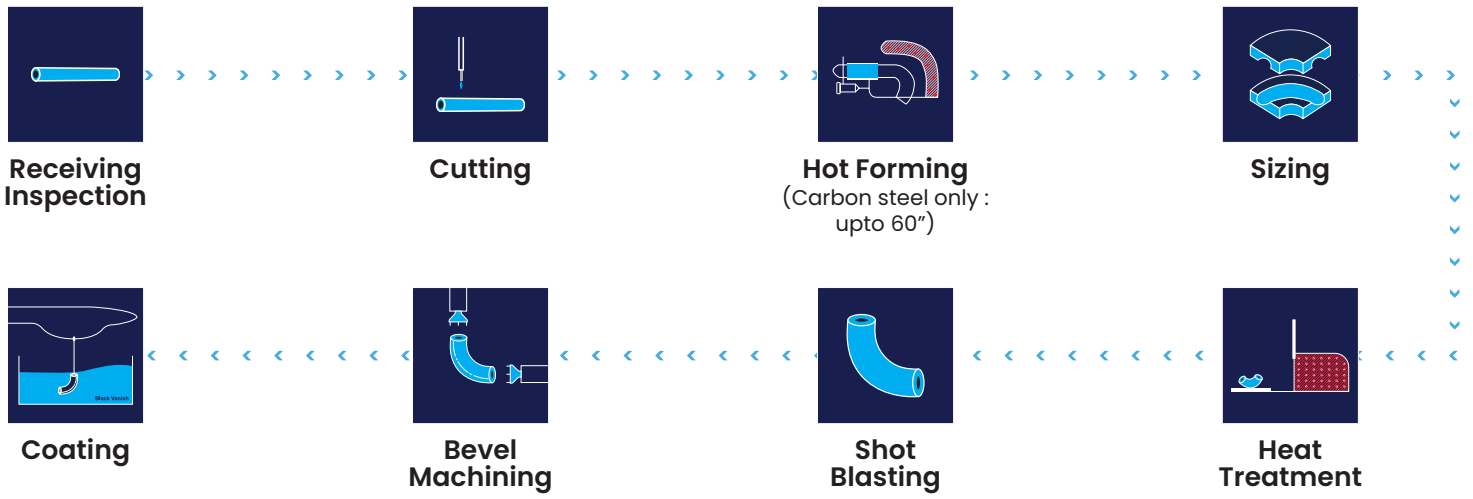
Coupled with the strong technical support from Japan, state of the art machinery and equipment, standardised management system, complete testing measures and a comprehensive range of after-sales services, SSI is committed to deliver the highest quality of forged steel flanges & butt weld fittings under the brand name

 to you!

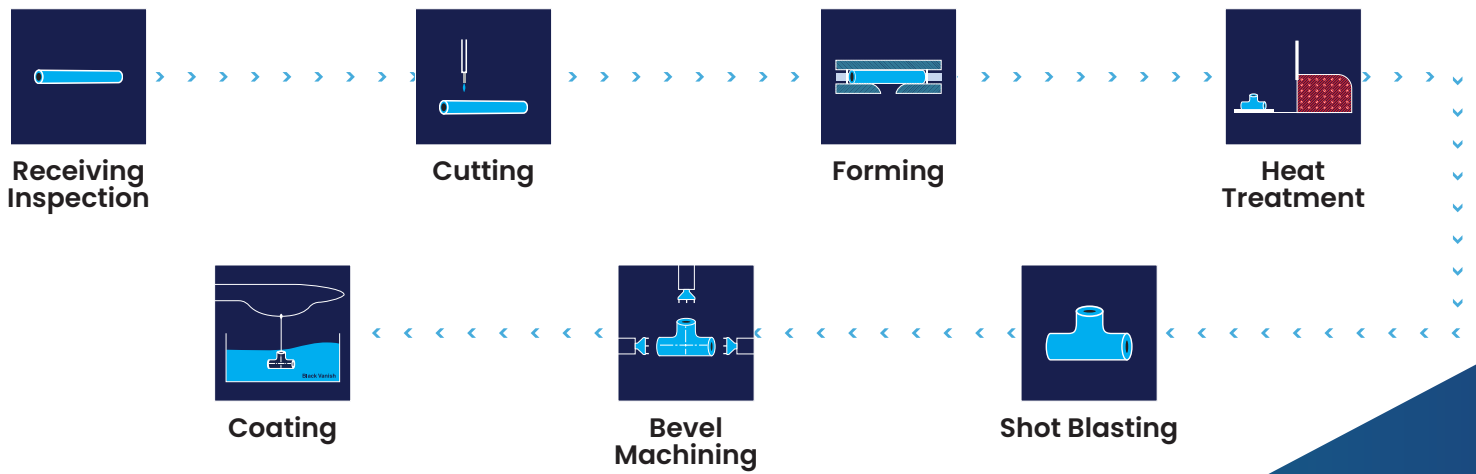
### QUALITY POLICY

To be a global leader in production of steel flanges & butt weld fittings who is committed to deliver high level of quality products and services through continual improvement initiatives in meeting customers' satisfaction.

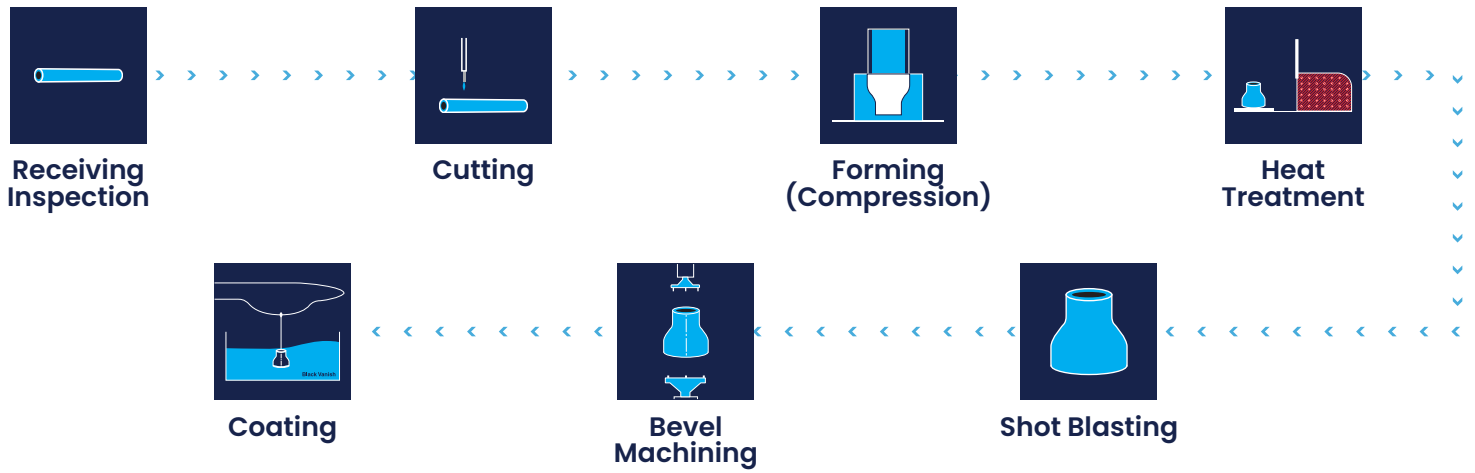
## ELBOW BY MANDREL



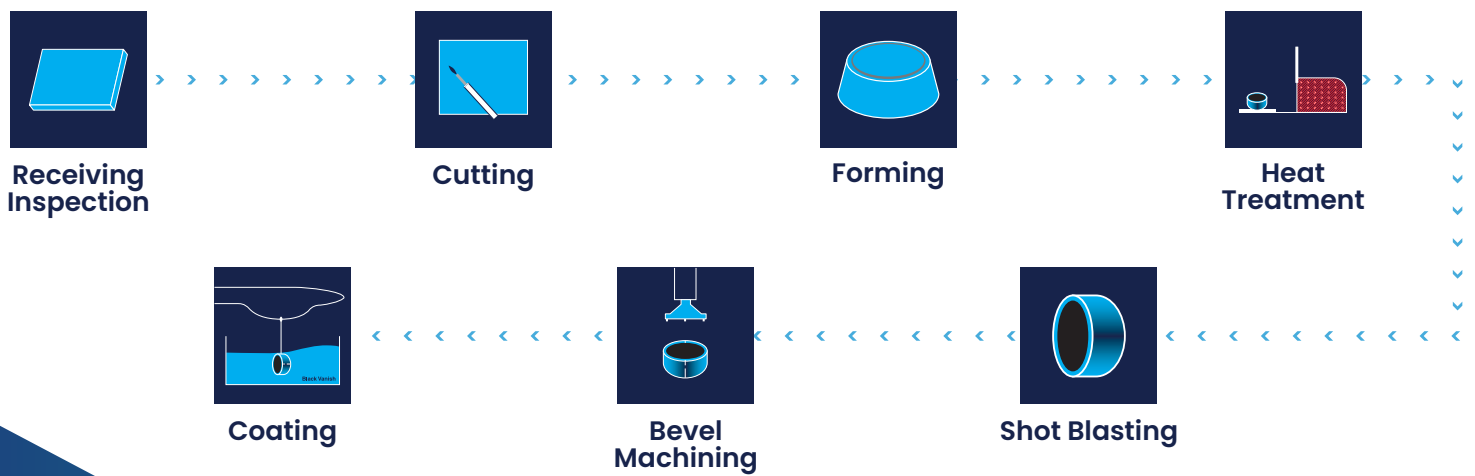
## TEE BY COLD FORMING



## REDUCER BY COLD FORMING



## CAP BY COLD FORMING



## KS : KOREAN INDUSTRIAL STANDARDS

<b>KS B 1522</b>	Steel Butt Welding Pipe Fittings for Ordinary use and Fuel Gas.
<b>KS B 1541</b>	Steel Butt Welding Pipe Fittings.
<b>KS B 1542</b>	Steel Socket Welding Pipe Fittings.
<b>KS B 1543</b>	Steel Plate Butt Welding Pipe Fittings.

## JIS : JAPANESE INDUSTRIAL STANDARDS

<b>JIS B 2311</b>	Steel Butt Welding Pipe Fittings for Ordinary use.
<b>JIS B 2312</b>	Steel Butt Welding Pipe Fittings.
<b>JIS B 2313</b>	Steel Plate Butt Welding Pipe Fittings.
<b>JIS B 2316</b>	Steel Socket Welding Pipe Fittings.

## ASTM : AMERICAN SOCIETY FOR TESTING AND MATERIALS

<b>ASTM A 105</b>	Carbon Steel Forgings for Piping Applications
<b>ASTM A 182</b>	Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for high Temperature Service
<b>ASTM A 234</b>	Piping Fittings of Carbon Steel and Alloy Steel for Moderate and High Temperature Service
<b>ASTM A 350</b>	Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components
<b>ASTM A 403</b>	Austenitic Stainless Steel Piping Fittings
<b>ASTM A 420</b>	Piping Fittings of Carbon Steel and Alloy Steel for Low-Temperature Service
<b>ASTM A 694</b>	Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service
<b>ASTM A 815</b>	Ferritic, Ferritic/Austenitic, and Martensitic Stainless Steel Piping Fittings
<b>ASTM A 860</b>	High-Strength Low-Alloy Steel Butt-Welding Fittings
<b>ASTM B 366</b>	Factory-Made Nickel and Nickel Alloy Fittings

## MSS : MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY

<b>MSS SP-25</b>	Standard Marketing System for Valves, Fittings, Flanges and Unions.
<b>MSS SP-43</b>	Stainless Steel Butt Welding Fittings.
<b>MSS SP-44</b>	Standard for Steel Pipe Line Flanges.
<b>MSS SP-75</b>	Specification for High Test Butt Welding Fittings.
<b>MSS SP-79</b>	Socket Welding Reducer Inserts.
<b>MSS SP-83</b>	Carbon Steel Pipe Union Socket welding and Threaded.
<b>MSS SP-87</b>	Factory-Made Butt Welding Fittings for Class 1 Nuclear Piping Applications.
<b>MSS SP-95</b>	Swage(d) Nipples and Bull Plugs.
<b>MSS SP-97</b>	Integrally Reinforced Forged Branch Outlet Fittings-socket Welding, Threaded and Butt Welding Ends.

## ASME : AMERICAN SOCIETY OF MECHANICAL ENGINEERS

### ASME : ASME BOILER AND PRESSURE VESSEL CODE AN INTERNATIONAL CODE

<b>ASME B 16.5</b>	Pipe Flanges and Flanged Fittings.
<b>ASME B 16.9</b>	Factory Made Steel Butt Welding Fittings.
<b>ASME B 16.11</b>	Forged Fittings, Socket welding and Threaded
<b>ASME B 16.25</b>	Butt Welding Ends.
<b>ASME B 36.10</b>	Welded and Seamless Steel Pipe.
<b>ASME B 36.19</b>	Stainless Steel Pipe.
<b>ASME B31.1</b>	Power piping.
<b>ASME B31.3</b>	Process piping.
<b>ASME SECTION II</b>	Materials.
<b>ASME SECTION III</b>	Rules for Construction of Nuclear Facility Components.
<b>ASME SECTION V</b>	Nondestructive Examination.
<b>ASME SECTION VIII</b>	Rule for Construction of Pressure Vessels.
<b>ASME SECTION IX</b>	Welding and Brazing Qualifications.

## API : AMERICAN PETROLEUM INSTITUTE

<b>API 5L</b>	Line Pipe.
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## Carbon & Alloy Steel



## Stainless Steel (6Mo / Duplex / Super Duplex)



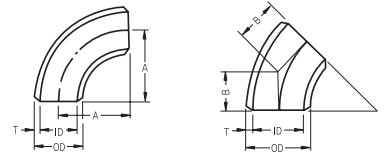


# CARBON STEEL BUTT WELD PIPE FITTINGS

## 90° Elbow (Long, Short)

## 45° Elbow (Long)

STD, Sch40, X-S, Sch80, Sch160, XX-S



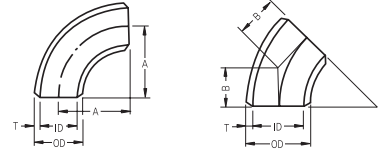
Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)			STD(mm)		Sch40(mm)		X-S(mm)		Sch80(mm)		Sch160(mm)		XX-S(mm)	
		Long	B	Short	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
1/2"	21.3	38	16		2.77	15.8	2.77	15.8	3.73	13.8	3.73	13.8	4.78	11.7	7.47	6.4
3/4"	26.7	38	19		2.87	21.0	2.87	21.0	3.91	18.9	3.91	18.9	5.56	15.6	7.82	11.1
1"	33.4	38	22	25	3.38	26.6	3.38	26.6	4.55	24.3	4.55	24.3	6.35	20.7	9.09	15.2
1.1/4"	42.2	48	25	32	3.56	35.1	3.56	35.1	4.85	32.5	4.85	32.5	6.35	29.5	9.70	22.8
1.1/2"	48.3	57	29	38	3.68	40.9	3.68	40.9	5.08	38.1	5.08	38.1	7.14	34.0	10.15	28.0
2"	60.3	76	35	51	3.91	52.5	3.91	52.5	5.54	49.2	5.54	49.2	8.74	42.8	11.07	38.2
2.1/2"	73.0	95	44	64	5.16	62.7	5.16	62.7	7.01	59.0	7.01	59.0	9.53	53.9	14.02	45.0
3"	88.9	114	51	76	5.49	77.9	5.49	77.9	7.62	73.7	7.62	73.7	11.13	66.6	15.24	58.4
3.1/2"	101.6	133	57	89	5.74	90.1	5.74	90.1	8.08	85.4	8.08	85.4				
4"	114.3	152	64	102	6.02	102.3	6.02	102.3	8.56	97.2	8.56	97.2	13.49	87.3	17.12	80.1
5"	141.3	190	79	127	6.55	128.2	6.55	128.2	9.53	122.2	9.53	122.2	15.88	109.5	19.05	103.2
6"	168.3	229	95	152	7.11	154.1	7.11	154.1	10.97	146.4	10.97	146.4	18.26	131.8	21.95	124.4
8"	219.1	305	127	203	8.18	202.7	8.18	202.7	12.70	193.7	12.70	193.7	23.01	173.1	22.23	174.6
10"	273.0	381	159	254	9.27	254.5	9.27	254.5	12.70	247.6	15.09	242.8	28.58	215.8	25.40	222.2
12"	323.8	457	190	305	9.53	304.7	10.31	303.2	12.70	298.4	17.48	288.8	33.32	257.2	25.40	273.0
14"	355.6	533	222	356	9.53	336.5	11.13	333.3	12.70	330.2	19.05	317.5	35.71	284.2		
16"	406.4	610	254	406	9.53	387.3	12.70	381.0	12.70	381.0	21.44	363.5	40.49	325.4		
18"	457.0	686	286	457	9.53	437.9	14.27	428.5	12.70	431.6	23.83	409.3	45.24	366.5		
20"	508.0	762	318	508	9.53	488.9	15.09	477.8	12.70	482.6	26.19	455.6	50.01	408.0		
22"	559.0	838	343	559	9.53	539.9			12.70	533.6	28.58	501.8	53.98	451.0		
24"	610.0	914	381	610	9.53	590.9	17.48	575.0	12.70	584.6	30.96	548.1	59.54	490.9		
26"	660.0	991	406		9.53	640.9			12.70	634.6						
28"	711.0	1067	438		9.53	691.9			12.70	685.6						
30"	762.0	1143	470		9.53	742.9			12.70	736.6						
32"	813.0	1219	502		9.53	793.9	17.48	778.0	12.70	787.6						
34"	864.0	1295	533		9.53	844.9	17.48	829.0	12.70	838.6						
36"	914.0	1372	565		9.53	894.9	19.05	875.9	12.70	888.6						
38"	965.0	1448	600		9.53	945.9			12.70	939.6						
40"	1016.0	1524	632		9.53	996.9			12.70	990.6						
42"	1067.0	1600	660		9.53	1047.9			12.70	1041.6						
44"	1118.0	1676	695		9.53	1098.9			12.70	1092.6						
46"	1168.0	1753	727		9.53	1148.9			12.70	1142.6						
48"	1219.0	1829	759		9.53	1199.9			12.70	1193.6						

# CARBON STEEL BUTT WELD PIPE FITTINGS

## 90° Elbow (Long, Short)

### 45° Elbow (Long)

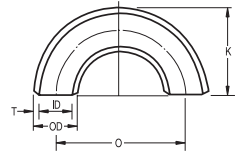
Sch20, Sch60, Sch100, Sch120, Sch140



Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)			Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120(mm)		Sch140(mm)	
		Long	B	Short	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
	OD	A	B	A	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
4"	114.3	152	64	64							11.13	92.0		
5"	141.3	190	79	79							12.70	115.9		
6"	168.3	229	95	95							14.27	139.8		
8"	219.1	305	127	127	6.35	206.4	10.31	198.5	15.09	188.9	18.26	182.6	20.62	177.9
10"	273.0	381	159	159	6.35	260.3	12.70	247.6	18.26	236.5	21.44	230.1	25.40	222.2
12"	323.8	457	190	190	6.35	311.1	14.27	295.3	21.44	280.9	25.40	273.0	28.58	266.6
14"	355.6	533	222	222	7.92	339.8	15.09	325.4	23.83	307.9	27.79	300.0	31.75	292.1
16"	406.4	610	254	254	7.92	390.6	16.66	373.1	26.19	354.0	30.96	344.5	36.53	333.3
18"	457.0	686	286	286	7.92	441.2	19.05	418.9	29.36	398.3	34.93	387.1	39.67	377.7
20"	508.0	762	318	318	9.53	488.9	20.62	466.8	32.54	442.9	38.10	431.8	44.45	419.1
22"	559.0	838	343	343	9.53	539.9	22.23	514.5	34.93	489.1	41.28	476.4	47.63	463.7
24"	610.0	914	381	381	9.53	590.9	24.61	560.8	38.89	532.2	46.02	518.0	52.37	505.3

## 180° Elbow (Long, Short)

STD, Sch40, X-S, Sch80, Sch160, XX-S

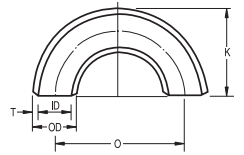


Nominal Pipe Size	Outside Dia. (mm)	Long (mm)		Short (mm)		STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
		A	B	A	B	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
	OD	A	B	A	B	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
1/2"	21.3	76	48			2.77	15.8	2.77	15.8	3.73	13.8	3.73	13.8	4.78	11.7	7.47	6.4
3/4"	26.7	76	51			2.87	21.0	2.87	21.0	3.91	18.9	3.91	18.9	5.56	15.6	7.82	11.1
1"	33.4	76	56	51	41	3.38	26.6	3.38	26.6	4.55	24.3	4.55	24.3	6.35	20.7	9.09	15.2
1.1/4"	42.2	95	70	64	52	3.56	35.1	3.56	35.1	4.85	32.5	4.85	32.5	6.35	29.5	9.70	22.8
1.1/2"	48.3	114	83	76	62	3.68	40.9	3.68	40.9	5.08	38.1	5.08	38.1	7.14	34.0	10.15	28.0
2"	60.3	152	106	102	81	3.91	52.5	3.91	52.5	5.54	49.2	5.54	49.2	8.74	42.8	11.07	38.2
2.1/2"	73.0	190	132	127	100	5.16	62.7	5.16	62.7	7.01	59.0	7.01	59.0	9.53	53.9	14.02	45.0
3"	88.9	229	159	152	121	5.49	77.9	5.49	77.9	7.62	73.7	7.62	73.7	11.13	66.6	15.24	58.4
3.1/2"	101.6	267	184	178	140	5.74	90.1	5.74	90.1	8.08	85.4	8.08	85.4				
4"	114.3	305	210	203	159	6.02	102.3	6.02	102.3	8.56	97.2	8.56	97.2	13.49	87.3	17.12	80.1
5"	141.3	381	262	254	197	6.55	128.2	6.55	128.2	9.53	122.2	9.53	122.2	15.88	109.5	19.05	103.2
6"	168.3	457	313	305	237	7.11	154.1	7.11	154.1	10.97	146.4	10.97	146.4	18.26	131.8	21.95	124.4
8"	219.1	610	414	406	313	8.18	202.7	8.18	202.7	12.70	193.7	12.70	193.7	23.01	173.1	22.23	174.6
10"	273.0	762	518	508	391	9.27	254.5	9.27	254.5	12.70	247.6	15.09	242.8	28.58	215.8	25.40	222.2
12"	323.8	914	619	610	467	9.53	304.7	10.31	303.2	12.70	298.4	17.48	288.8	33.32	257.2	25.40	273.0
14"	355.6	1067	711	711	533	9.53	336.5	11.13	333.3	12.70	330.2	19.05	317.5	35.71	284.2		
16"	406.4	1219	813	813	610	9.53	387.3	12.70	381.0	12.70	381.0	21.44	363.5	40.49	325.4		
18"	457.0	1372	914	914	686	9.53	437.9	14.27	428.5	12.70	431.6	23.83	409.3	45.24	366.5		
20"	508.0	1524	1016	1016	762	9.53	488.9	15.09	477.8	12.70	482.6	26.19	455.6	50.01	408.0		
22"	559.0	1676	1118	1118	838	9.53	539.9			12.70	533.6	28.58	501.8	53.98	451.0		
24"	610.0	1829	1219	1219	914	9.53	590.9	17.48	575.0	12.70	584.6	30.96	548.1	59.54	490.9		

# CARBON STEEL BUTT WELD PIPE FITTINGS

## 180° Elbow (Long, Short)

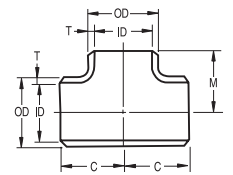
Sch20, Sch60, Sch100, Sch120, Sch140



Nominal Pipe Size	Outside Dia. (mm)	Long (mm)		Short (mm)		Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120 (mm)		Sch140 (mm)	
		A	B	A	B	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
4"	114.3	305	210	203	159							11.13	92.0		
5"	141.3	381	262	254	197							12.70	115.9		
6"	168.3	457	313	305	237							14.27	139.8		
8"	219.1	610	414	406	313	6.35	206.4	10.31	198.5	15.09	188.9	18.26	182.6	20.62	177.9
10"	273.0	762	518	508	391	6.35	260.3	12.70	247.6	18.26	236.5	21.44	230.1	25.40	222.2
12"	323.8	914	619	610	467	6.35	311.1	14.27	295.3	21.44	280.9	25.40	273.0	28.58	266.6
14"	355.6	1067	711	711	533	7.92	339.8	15.09	325.4	23.83	307.9	27.79	300.0	31.75	292.1
16"	406.4	1219	813	813	610	7.92	390.6	16.66	373.1	26.19	354.0	30.96	344.5	36.53	333.3
18"	457.0	1372	914	914	686	7.92	441.2	19.05	418.9	29.36	398.3	34.93	387.1	39.67	377.7
20"	508.0	1524	1016	1016	762	9.53	488.9	20.62	466.8	32.54	442.9	38.10	431.8	44.45	419.1
22"	559.0	1676	1118	1118	838	9.53	539.9	22.23	514.5	34.93	489.1	41.28	476.4	47.63	463.7
24"	610.0	1829	1219	1219	914	9.53	590.9	24.61	560.8	38.89	532.2	46.02	518.0	52.37	505.3

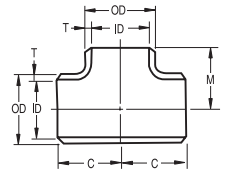
## Tee (Straight)

STD, Sch40, X-S, Sch80, Sch160, XX-S



Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)		STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
		Run C	Outlet M	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
1/2"	21.3	25	25	2.77	15.8	2.77	15.8	3.73	13.8	3.73	13.8	4.78	11.7	7.47	6.4
3/4"	26.7	29	29	2.87	21.0	2.87	21.0	3.91	18.9	3.91	18.9	5.56	15.6	7.82	11.1
1"	33.4	38	38	3.38	26.6	3.38	26.6	4.55	24.3	4.55	24.3	6.35	20.7	9.09	15.2
1.1/4"	42.2	48	48	3.56	35.1	3.56	35.1	4.85	32.5	4.85	32.5	6.35	29.5	9.70	22.8
1.1/2"	48.3	57	57	3.68	40.9	3.68	40.9	5.08	38.1	5.08	38.1	7.14	34.0	10.15	28.0
2"	60.3	64	64	3.91	52.5	3.91	52.5	5.54	49.2	5.54	49.2	8.74	42.8	11.07	38.2
2.1/2"	73.0	76	76	5.16	62.7	5.16	62.7	7.01	59.0	7.01	59.0	9.53	53.9	14.02	45.0
3"	88.9	86	86	5.49	77.9	5.49	77.9	7.62	73.7	7.62	73.7	11.13	66.6	15.24	58.4
3.1/2"	101.6	95	95	5.74	90.1	5.74	90.1	8.08	85.4	8.08	85.4				
4"	114.3	105	105	6.02	102.3	6.02	102.3	8.56	97.2	8.56	97.2	13.49	87.3	17.12	80.1
5"	141.3	124	124	6.55	128.2	6.55	128.2	9.53	122.2	9.53	122.2	15.88	109.5	19.05	103.2
6"	168.3	143	143	7.11	154.1	7.11	154.1	10.97	146.4	10.97	146.4	18.26	131.8	21.95	124.4
8"	219.1	178	178	8.18	202.7	8.18	202.7	12.70	193.7	12.70	193.7	23.01	173.1	22.23	174.6
10"	273.0	216	216	9.27	254.5	9.27	254.5	12.70	247.6	15.09	242.8	28.58	215.8	25.40	222.2
12"	323.8	254	254	9.53	304.7	10.31	303.2	12.70	298.4	17.48	288.8	33.32	257.2	25.40	273.0
14"	355.6	279	279	9.53	336.5	11.13	333.3	12.70	330.2	19.05	317.5	35.71	284.2		
16"	406.4	305	305	9.53	387.3	12.70	381.0	12.70	381.0	21.44	363.5	40.49	325.4		
18"	457.0	343	343	9.53	437.9	14.27	428.5	12.70	431.6	23.83	409.3	45.24	366.5		
20"	508.0	381	381	9.53	488.9	15.09	477.8	12.70	482.6	26.19	455.6	50.01	408.0		
22"	559.0	419	419	9.53	539.9			12.70	533.6	28.58	501.8	53.98	451.0		
24"	610.0	432	432	9.53	590.9	17.48	575.0	12.70	584.6	30.96	548.1	59.54	490.9		
26"	660.0	495	495	9.53	640.9			12.70	634.6						

# CARBON STEEL BUTT WELD PIPE FITTINGS



## Tee (Straight)

STD, Sch40, X-S, Sch80, Sch160, XX-S

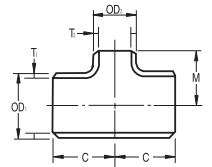
Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)		STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
		Run C	Outlet M	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D	T	I.D
28"	711.0	521	521	9.53	691.9			12.70	685.6						
30"	762.0	559	559	9.53	742.9			12.70	736.6						
32"	813.0	597	597	9.53	793.9	17.48	778.0	12.70	787.6						
34"	864.0	635	635	9.53	844.9	17.48	829.0	12.70	838.6						
36"	914.0	673	673	9.53	894.9	19.05	875.9	12.70	888.6						
38"	965.0	711	711	9.53	945.9			12.70	939.6						
40"	1016.0	749	749	9.53	996.9			12.70	990.6						
42"	1067.0	762	711	9.53	1047.9			12.70	1041.6						
44"	1118.0	813	762	9.53	1098.9			12.70	1092.6						
46"	1168.0	851	800	9.53	1148.9			12.70	1142.6						
48"	1219.0	889	838	9.53	1199.9			12.70	1193.6						

## Tee (Straight)

Sch20, Sch60, Sch100, Sch120

Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)		Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120 (mm)	
		Run C	Outlet M	A	B	T	I.D	T	I.D	T	I.D
4"	114.3	105	105							11.13	92.0
5"	141.3	124	124							12.70	115.9
6"	168.3	143	143							14.27	139.8
8"	219.1	178	178	6.35	206.4	10.31	198.5	15.09	188.9	18.26	182.6
10"	273.0	216	216	6.35	260.3	12.70	247.6	18.26	236.5	21.44	230.1
12"	323.8	254	254	6.35	311.1	14.27	295.3	21.44	280.9	25.40	273.0
14"	355.6	279	279	7.92	339.8	15.09	325.4	23.83	307.9	27.79	300.0
16"	406.4	305	305	7.92	390.6	16.66	373.1	26.19	354.0	30.96	344.5
18"	457.0	343	343	7.92	441.2	19.05	418.9	29.36	398.3	34.93	387.1
20"	508.0	381	381	9.53	488.9	20.62	466.8	32.54	442.9	38.10	431.8
22"	559.0	419	419	9.53	539.9	22.23	514.5	34.93	489.1	41.28	476.4
24"	610.0	432	432	9.53	590.9	24.61	560.8	38.89	532.2	46.02	518.0

# CARBON STEEL BUTT WELD PIPE FITTINGS



## Tee (Reducing)

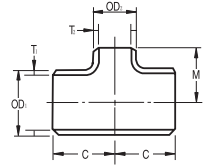
STD, Sch40, X-S, Sch80, Sch160, XX-S

Nominal Pipe Size (inch)	Outside Dia. (mm)		Center to End (mm)		STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
	OD1	OD2	Run C	Outlet M	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
3/4 X 3/4 X 1/2	26.7	21.3	29	29	2.87	2.77	2.87	2.77	3.91	3.73	3.91	3.73	5.56	4.78	7.82	7.47
1 X 1 X 3/4	33.4	26.7	38	38	3.38	2.87	3.38	2.87	4.55	3.91	4.55	3.91	6.35	5.56	9.09	7.82
1 X 1 X 1/2	33.4	21.3	38	38	3.38	2.77	3.38	2.77	4.55	3.73	4.55	3.73	6.35	4.78	9.09	7.47
1-1/4 X 1-1/4 X 1	42.2	33.4	48	48	3.56	3.38	3.56	3.38	4.85	4.55	4.85	4.55	6.35	6.35	9.70	9.09
1-1/4 X 1-1/4 X 3/4	42.2	26.7	48	48	3.56	2.87	3.56	2.87	4.85	3.91	4.85	3.91	6.35	5.56	9.70	7.82
1-1/2 X 1-1/2 X 1-1/4	48.3	42.2	57	57	3.68	3.56	3.68	3.56	5.08	4.85	5.08	4.85	7.14	6.35	10.15	9.70
1-1/2 X 1-1/2 X 1	48.3	33.4	57	57	3.68	3.38	3.68	3.38	5.08	4.55	5.08	4.55	7.14	6.35	10.15	9.09
1-1/2 X 1-1/2 X 3/4	48.3	26.7	57	57	3.68	2.87	3.68	2.87	5.08	3.91	5.08	3.91	7.14	5.56	10.15	7.82
2 X 2 X 1-1/2	60.3	48.3	64	60	3.91	3.68	3.91	3.68	5.54	5.08	5.54	5.08	8.74	7.14	11.07	10.15
2 X 2 X 1-1/4	60.3	42.2	64	57	3.91	3.56	3.91	3.56	5.54	4.85	5.54	4.85	8.74	6.35	11.07	9.70
2 X 2 X 1	60.3	33.4	64	51	3.91	3.38	3.91	3.38	5.54	4.55	5.54	4.55	8.74	6.35	11.07	9.09
2-1/2 X 2-1/2 X 2	73.0	60.3	76	70	5.16	3.91	5.16	3.91	7.01	5.54	7.01	5.54	9.53	8.74	14.02	11.07
2-1/2 X 2-1/2 X 1-1/2	73.0	48.3	76	67	5.16	3.68	5.16	3.68	7.01	5.08	7.01	5.08	9.53	7.14	14.02	10.15
2-1/2 X 2-1/2 X 1-1/4	73.0	42.2	76	64	5.16	3.56	5.16	3.56	7.01	4.85	7.01	4.85	9.53	6.35	14.02	9.70
3 X 3 X 2-1/2	88.9	73.0	86	83	5.49	5.16	5.49	5.16	7.62	7.01	7.62	7.01	11.13	9.53	15.24	14.02
3 X 3 X 2	88.9	60.3	86	76	5.49	3.91	5.49	3.91	7.62	5.54	7.62	5.54	11.13	8.74	15.24	11.07
3 X 3 X 1-1/2	88.9	48.3	86	73	5.49	3.68	5.49	3.68	7.62	5.08	7.62	5.08	11.13	7.14	15.24	10.15
3-1/2 X 3-1/2 X 3	101.6	88.9	95	92	5.74	5.49	5.74	5.49	8.08	7.62	8.08	7.62		11.13		15.24
3-1/2 X 3-1/2 X 2-1/2	101.6	73.0	95	89	5.74	5.16	5.74	5.16	8.08	7.01	8.08	7.01		9.53		14.02
3-1/2 X 3-1/2 X 2	101.6	60.3	95	83	5.74	3.91	5.74	3.91	8.08	5.54	8.08	5.54		8.74		11.07
3-1/2 X 3-1/2 X 1-1/2	101.6	48.3	95	79	5.74	3.68	5.74	3.68	8.08	5.08	8.08	5.08		7.14		10.15
4 X 4 X 3-1/2	114.3	101.6	105	102	6.02	5.74	6.02	5.74	8.56	8.08	8.56	8.08	13.49		17.12	
4 X 4 X 3	114.3	88.9	105	98	6.02	5.49	6.02	5.49	8.56	7.62	8.56	7.62	13.49	11.13	17.12	15.24
4 X 4 X 2-1/2	114.3	73.0	105	95	6.02	5.16	6.02	5.16	8.56	7.01	8.56	7.01	13.49	9.53	17.12	14.02
4 X 4 X 2	114.3	60.3	105	89	6.02	3.91	6.02	3.91	8.56	5.54	8.56	5.54	13.49	8.74	17.12	11.07
5 X 5 X 4	141.3	114.3	124	117	6.55	6.02	6.55	6.02	9.53	8.56	9.53	8.56	15.88	13.49	19.05	17.12
5 X 5 X 3-1/2	141.3	101.6	124	114	6.55	5.74	6.55	5.74	9.53	8.08	9.53	8.08	15.88		19.05	
5 X 5 X 3	141.3	88.9	124	111	6.55	5.49	6.55	5.49	9.53	7.62	9.53	7.62	15.88	11.13	19.05	15.24
5 X 5 X 2-1/2	141.3	73.0	124	108	6.55	5.16	6.55	5.16	9.53	7.01	9.53	7.01	15.88	9.53	19.05	14.02
6 X 6 X 5	168.3	141.3	143	137	7.11	6.55	7.11	6.55	10.97	9.53	10.97	9.53	18.26	15.88	21.95	19.05
6 X 6 X 4	168.3	114.3	143	130	7.11	6.02	7.11	6.02	10.97	8.56	10.97	8.56	18.26	13.49	21.95	17.12
6 X 6 X 3-1/2	168.3	101.6	143	127	7.11	5.74	7.11	5.74	10.97	8.08	10.97	8.08	18.26		21.95	
6 X 6 X 3	168.3	88.9	143	124	7.11	5.49	7.11	5.49	10.97	7.62	10.97	7.62	18.26	11.13	21.95	15.24
8 X 8 X 6	219.1	168.3	178	168	8.18	7.11	8.18	7.11	12.70	10.97	12.70	10.97	23.01	18.26	22.23	21.95
8 X 8 X 5	219.1	141.3	178	162	8.18	6.55	8.18	6.55	12.70	9.53	12.70	9.53	23.01	15.88	22.23	19.05
8 X 8 X 4	219.1	114.3	178	156	8.18	6.02	8.18	6.02	12.70	8.56	12.70	8.56	23.01	13.49	22.23	17.12
10 X 10 X 8	273.0	219.1	216	203	9.27	8.18	9.27	8.18	12.70	12.70	15.09	12.70	28.58	23.01	25.40	22.23
10 X 10 X 6	273.0	168.3	216	194	9.27	7.11	9.27	7.11	12.70	10.97	15.09	10.97	28.58	18.26	25.40	21.95
10 X 10 X 5	273.0	141.3	216	191	9.27	6.55	9.27	6.55	12.70	9.53	15.09	9.53	28.58	15.88	25.40	19.05
12 X 12 X 10	323.8	273.0	254	241	9.53	9.27	10.31	9.27	12.70	12.70	17.48	15.09	33.32	28.58	25.40	25.40
12 X 12 X 8	323.8	219.1	254	229	9.53	8.18	10.31	8.18	12.70	12.70	17.48	12.70	33.32	23.01	25.40	22.23
12 X 12 X 6	323.8	168.3	254	219	9.53	7.11	10.31	7.11	12.70	10.97	17.48	10.97	33.32	18.26	25.40	21.95
14 X 14 X 12	355.6	323.8	279	270	9.53	9.53	11.13	10.31	12.70	12.70	19.05	17.48	35.71	33.32		25.40
14 X 14 X 10	355.6	273.0	279	257	9.53	9.27	11.13	9.27	12.70	12.70	19.05	15.09	35.71	28.58		25.40

# CARBON STEEL BUTT WELD PIPE FITTINGS

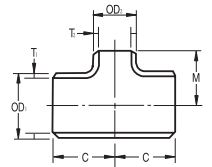
## Tee (Reducing)

STD, Sch40, X-S, Sch80, Sch160, XX-S



Nominal Pipe Size (inch)	Outside Dia. (mm)		Center to End (mm)		STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
	OD1	OD2	Run C	Outlet M	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
14 X 14 X 8	355.6	219.1	279	248	9.53	8.18	11.13	8.18	12.70	12.70	19.05	12.70	35.71	23.01		22.23
16 X 16 X 14	406.4	355.6	305	305	9.53	9.53	12.70	11.13	12.70	12.70	21.44	19.05	40.49	35.71		
16 X 16 X 12	406.4	323.8	305	295	9.53	9.53	12.70	10.31	12.70	12.70	21.44	17.48	40.49	33.32		25.40
16 X 16 X 10	406.4	273.0	305	283	9.53	9.27	12.70	9.27	12.70	12.70	21.44	15.09	40.49	28.58		25.40
18 X 18 X 16	457.0	406.4	343	330	9.53	9.53	14.27	12.70	12.70	12.70	23.83	21.44	45.24	40.49		
18 X 18 X 14	457.0	355.6	343	330	9.53	9.53	14.27	11.13	12.70	12.70	23.83	19.05	45.24	35.71		
18 X 18 X 12	457.0	323.8	343	321	9.53	9.53	14.27	10.31	12.70	12.70	23.83	17.48	45.24	33.32		25.40
20 X 20 X 18	508.0	457.0	381	368	9.53	9.53	15.09	14.27	12.70	12.70	26.19	23.83	50.01	45.24		
20 X 20 X 16	508.0	406.4	381	356	9.53	9.53	15.09	12.70	12.70	12.70	26.19	21.44	50.01	40.49		
20 X 20 X 14	508.0	355.6	381	356	9.53	9.53	15.09	11.13	12.70	12.70	26.19	19.05	50.01	35.71		
22 X 22 X 20	559.0	508.0	419	406	9.53	9.53		15.09	12.70	12.70	28.58	26.19	53.98	50.01		
22 X 22 X 18	559.0	457.0	419	394	9.53	9.53		14.27	12.70	12.70	28.58	23.83	53.98	45.24		
22 X 22 X 16	559.0	406.4	419	381	9.53	9.53		12.70	12.70	12.70	28.58	21.44	53.98	40.49		
24 X 24 X 22	610.0	559.0	432	432	9.53	9.53	17.48		12.70	12.70	30.96	28.58	59.54	53.98		
24 X 24 X 20	610.0	508.0	432	432	9.53	9.53	17.48	15.09	12.70	12.70	30.96	26.19	59.54	50.01		
24 X 24 X 18	610.0	457.0	432	419	9.53	9.53	17.48	14.27	12.70	12.70	30.96	23.83	59.54	45.24		
26 X 26 X 22	660.0	559.0	495	470	9.53	9.53			12.70	12.70		28.58		53.98		
26 X 26 X 18	660.0	457.0	495	444	9.53	9.53		14.27	12.70	12.70		23.83		45.24		
26 X 26 X 16	660.0	406.4	495	432	9.53	9.53		12.70	12.70	12.70		21.44		40.49		
28 X 28 X 24	711.0	610.0	521	508	9.53	9.53		17.48	12.70	12.70		30.96		59.54		
28 X 28 X 20	711.0	508.0	521	483	9.53	9.53		15.09	12.70	12.70		26.19		50.01		
28 X 28 X 18	711.0	457.0	521	470	9.53	9.53		14.27	12.70	12.70		23.83		45.24		
30 X 30 X 26	762.0	660.0	559	546	9.53	9.53			12.70	12.70						
30 X 30 X 22	762.0	559.0	559	521	9.53	9.53			12.70	12.70		28.58		53.98		
30 X 30 X 20	762.0	508.0	559	508	9.53	9.53		15.09	12.70	12.70		26.19		50.01		
32 X 32 X 28	813.0	711.0	597	559	9.53	9.53	17.48	17.48	12.70	12.70						
32 X 32 X 24	813.0	610.0	597	546	9.53	9.53	17.48	17.48	12.70	12.70		30.96		59.54		
32 X 32 X 22	813.0	559.0	597	559	9.53	9.53	17.48	17.48	12.70	12.70		28.58		53.98		
34 X 34 X 30	864.0	762.0	635	610	9.53	9.53	17.48		12.70	12.70						
34 X 34 X 26	864.0	660.0	635	597	9.53	9.53	17.48		12.70	12.70						
34 X 34 X 22	864.0	559.0	635	572	9.53	9.53	17.48		12.70	12.70		28.58		53.98		
36 X 36 X 32	914.0	813.0	673	648	9.53	9.53	19.05	17.48	12.70	12.70						
36 X 36 X 28	914.0	711.0	673	622	9.53	9.53	19.05		12.70	12.70						
36 X 36 X 24	914.0	610.0	673	610	9.53	9.53	19.05	17.48	12.70	12.70		30.96		59.54		
38 X 38 X 34	965.0	864.0	711	698	9.53	9.53		17.48	12.70	12.70						
38 X 38 X 30	965.0	762.0	711	673	9.53	9.53			12.70	12.70						
38 X 38 X 26	965.0	660.0	711	648	9.53	9.53			12.70	12.70						
40 X 40 X 36	1016.0	914.0	749	737	9.53	9.53		19.05	12.70	12.70						
40 X 40 X 32	1016.0	813.0	749	711	9.53	9.53		17.48	12.70	12.70						
40 X 40 X 28	1016.0	711.0	749	673	9.53	9.53			12.70	12.70						
42 X 42 X 38	1067.0	965.0	762	711	9.53	9.53			12.70	12.70						
42 X 42 X 34	1067.0	864.0	762	711	9.53	9.53		17.48	12.70	12.70						
42 X 42 X 30	1067.0	762.0	762	711	9.53	9.53			12.70	12.70						
44 X 44 X 40	1118.0	1016.0	813	749	9.53	9.53			12.70	12.70						

# CARBON STEEL BUTT WELD PIPE FITTINGS



## Tee (Reducing)

STD, Sch40, X-S, Sch80, Sch160, XX-S

Nominal Pipe Size (inch)	Outside Dia. (mm)		Center to End (mm)		STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
	OD1	OD2	Run C	Outlet M	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
44 X 44 X 36	1118.0	914.0	813	724	9.53	9.53		19.05	12.70	12.70						
44 X 44 X 32	1118.0	813.0	813	711	9.53	9.53		17.48	12.70	12.70						
46 X 46 X 42	1168.0	1067.0	851	787	9.53	9.53			12.70	12.70						
46 X 46 X 38	1168.0	965.0	851	762	9.53	9.53			12.70	12.70						
46 X 46 X 34	1168.0	864.0	851	749	9.53	9.53		17.48	12.70	12.70						
48 X 48 X 44	1219.0	1118.0	889	838	9.53	9.53			12.70	12.70						
48 X 48 X 40	1219.0	1016.0	889	813	9.53	9.53			12.70	12.70						
48 X 48 X 36	1219.0	914.0	889	787	9.53	9.53		19.05	12.70	12.70						

## Tee (Straight)

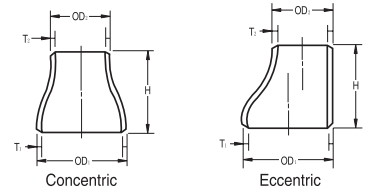
Sch20, Sch60, Sch100, Sch120, Sch140

Nominal Pipe Size (inch)	Outside Dia. (mm)		Center to End (mm)		Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120 (mm)		Sch140 (mm)	
	OD1	OD2	Run C	Outlet M	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
5 x 5 x 4	141.3	114.3	124	117							12.70	11.13		
6 x 6 x 5	168.3	141.3	143	137							14.27	12.70		
6 x 6 x 4	168.3	114.3	143	130							14.27	11.13		
8 x 8 x 6	219.1	168.3	178	168	6.35		10.31		15.09		18.26	14.27	20.62	
8 x 8 x 5	219.1	141.3	178	162	6.35		10.31		15.09		18.26	12.70	20.62	
8 x 8 x 4	219.1	114.3	178	156	6.35		10.31		15.09		18.26	11.13	20.62	
10 x 10 x 8	273.0	219.1	216	203	6.35	6.35	12.70	10.31	18.26	15.09	21.44	18.26	25.40	20.62
10 x 10 x 6	273.0	168.3	216	194	6.35		12.70		18.26		21.44	14.27	25.40	
10 x 10 x 5	273.0	141.3	216	191	6.35		12.70		18.26		21.44	12.70	25.40	
12 x 12 x 10	323.8	273.0	254	241	6.35	6.35	14.27	12.70	21.44	18.26	25.40	21.44	28.58	25.40
12 x 12 x 8	323.8	219.1	254	229	6.35	6.35	14.27	10.31	21.44	15.09	25.40	18.26	28.58	20.62
12 x 12 x 6	323.8	168.3	254	219	6.35		14.27		21.44		25.40	14.27	28.58	
14 x 14 x 12	355.6	323.8	279	270	7.92	6.35	15.09	14.27	23.83	21.44	27.79	25.40	31.75	28.58
14 x 14 x 10	355.6	273.0	279	257	7.92	6.35	15.09	12.70	23.83	18.26	27.79	21.44	31.75	25.40
14 x 14 x 8	355.6	219.1	279	248	7.92	6.35	15.09	10.31	23.83	15.09	27.79	18.26	31.75	20.62
16 x 16 x 14	406.4	355.6	305	305	7.92	7.92	16.66	15.09	26.19	23.83	30.96	27.79	36.53	31.75
16 x 16 x 12	406.4	323.8	305	295	7.92	6.35	16.66	14.27	26.19	21.44	30.96	25.40	36.53	28.58
16 x 16 x 10	406.4	273.0	305	283	7.92	6.35	16.66	12.70	26.19	18.26	30.96	21.44	36.53	25.40
18 x 18 x 16	457.0	406.4	343	330	7.92	7.92	19.05	16.66	29.36	26.19	34.93	30.96	39.67	36.53
18 x 18 x 14	457.0	355.6	343	330	7.92	7.92	19.05	15.09	29.36	23.83	34.93	27.79	39.67	31.75
18 x 18 x 12	457.0	323.8	343	321	7.92	6.35	19.05	14.27	29.36	21.44	34.93	25.40	39.67	28.58
20 x 20 x 18	508.0	457.0	381	368	9.53	7.92	20.62	19.05	32.54	29.36	38.10	34.93	44.45	39.67
20 x 20 x 16	508.0	406.4	381	356	9.53	7.92	20.62	16.66	32.54	26.19	38.10	30.96	44.45	36.53
20 x 20 x 14	508.0	355.6	381	356	9.53	7.92	20.62	15.09	32.54	23.83	38.10	27.79	44.45	31.75
22 x 22 x 20	559.0	508.0	419	406	9.53	9.53	22.23	20.62	34.93	32.54	41.28	38.10	47.63	44.45
22 x 22 x 18	559.0	457.0	419	394	9.53	7.92	22.23	19.05	34.93	29.36	41.28	34.93	47.63	39.67
22 x 22 x 16	559.0	406.4	419	381	9.53	7.92	22.23	16.66	34.93	26.19	41.28	30.96	47.63	36.53
24 x 24 x 22	610.0	559.0	432	432	9.53	9.53	24.61	22.23	38.89	34.93	46.02	41.28	52.37	47.63
24 x 24 x 20	610.0	508.0	432	432	9.53	9.53	24.61	20.62	38.89	32.54	46.02	38.10	52.37	44.45
24 x 24 x 18	610.0	457.0	432	419	9.53	7.92	24.61	19.05	38.89	29.36	46.02	34.93	52.37	39.67

# CARBON STEEL BUTT WELD PIPE FITTINGS

## Reducer

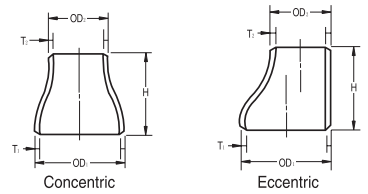
STD, Sch40, X-S, Sch80, Sch160, XX-S



Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
	OD1	OD2		H	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1
3/4 x 1/2	26.7	21.3	38	2.87	2.77	2.87	2.77	3.91	3.73	3.91	3.73	5.56	4.78	7.82	7.47
1 x 3/4	33.4	26.7	51	3.38	2.87	3.38	2.87	4.55	3.91	4.55	3.91	6.35	5.56	9.09	7.82
1 x 1/2	33.4	21.3	51	3.38	2.77	3.38	2.77	4.55	3.73	4.55	3.73	6.35	4.78	9.09	7.47
1-1/4 x 1	42.2	33.4	51	3.56	3.38	3.56	3.38	4.85	4.55	4.85	4.55	6.35	6.35	9.70	9.09
1-1/4 x 3/4	42.2	26.7	51	3.56	2.87	3.56	2.87	4.85	3.91	4.85	3.91	6.35	5.56	9.70	7.82
1-1/4 x 3/4	42.2	21.3	51	3.56	2.77	3.56	2.77	4.85	3.73	4.85	3.73	6.35	4.78	9.70	7.47
1-1/2 x 1-1/4	48.3	42.2	64	3.68	3.56	3.68	3.56	5.08	4.85	5.08	4.85	7.14	6.35	10.15	9.70
1-1/2 x 1	48.3	33.4	64	3.68	3.38	3.68	3.38	5.08	4.55	5.08	4.55	7.14	6.35	10.15	9.09
1-1/2 x 3/4	48.3	26.7	64	3.68	2.87	3.68	2.87	5.08	3.91	5.08	3.91	7.14	5.56	10.15	7.82
2 x 1-1/2	60.3	48.3	76	3.91	3.68	3.91	3.68	5.54	5.08	5.54	5.08	8.74	7.14	11.07	10.15
2 x 1-1/4	60.3	42.2	76	3.91	3.56	3.91	3.56	5.54	4.85	5.54	4.85	8.74	6.35	11.07	9.70
2 x 1	60.3	33.4	76	3.91	3.38	3.91	3.38	5.54	4.55	5.54	4.55	8.74	6.35	11.07	9.09
2 x 3/4	60.3	26.7	76	3.91	2.87	3.91	2.87	5.54	3.91	5.54	3.91	8.74	5.56	11.07	7.82
2-1/2 x 2	73.0	60.3	89	5.16	3.91	5.16	3.91	7.01	5.54	7.01	5.54	9.53	8.74	14.02	11.07
2-1/2 x 1-1/2	73.0	48.3	89	5.16	3.68	5.16	3.68	7.01	5.08	7.01	5.08	9.53	7.14	14.02	10.15
2-1/2 x 1-1/4	73.0	42.2	89	5.16	3.56	5.16	3.56	7.01	4.85	7.01	4.85	9.53	6.35	14.02	9.70
2-1/2 x 1	73.0	33.4	89	5.16	3.38	5.16	3.38	7.01	4.55	7.01	4.55	9.53	6.35	14.02	9.09
3 x 2-1/2	88.9	73.0	89	5.49	5.16	5.49	5.16	7.62	7.01	7.62	7.01	11.13	9.53	15.24	14.02
3 x 2	88.9	60.3	89	5.49	3.91	5.49	3.91	7.62	5.54	7.62	5.54	11.13	8.74	15.24	11.07
3 x 1-1/2	88.9	48.3	89	5.49	3.68	5.49	3.68	7.62	5.08	7.62	5.08	11.13	7.14	15.24	10.15
3 x 1-1/4	88.9	42.2	89	5.49	3.56	5.49	3.56	7.62	4.85	7.62	4.85	11.13	6.35	15.24	9.70
3-1/2 x 3	101.6	88.9	102	5.74	5.49	5.74	5.49	8.08	7.62	8.08	7.62		11.13		15.24
3-1/2 x 2-1/2	101.6	73.0	102	5.74	5.16	5.74	5.16	8.08	7.01	8.08	7.01		9.53		14.02
3-1/2 x 2	101.6	60.3	102	5.74	3.91	5.74	3.91	8.08	5.54	8.08	5.54		8.74		11.07
3-1/2 x 2	101.6	48.3	102	5.74	3.68	5.74	3.68	8.08	5.08	8.08	5.08		7.14		10.15
4 x 3-1/2	114.3	101.6	102	6.02	5.74	6.02	5.74	8.56	8.08	8.56	8.08	13.49		17.12	
4 x 3	114.3	88.9	102	6.02	5.49	6.02	5.49	8.56	7.62	8.56	7.62	13.49	11.13	17.12	15.24
4 x 2-1/2	114.3	73.0	102	6.02	5.16	6.02	5.16	8.56	7.01	8.56	7.01	13.49	9.53	17.12	14.02
4 x 2	114.3	60.3	102	6.02	3.91	6.02	3.91	8.56	5.54	8.56	5.54	13.49	8.74	17.12	11.07
5 x 4	141.3	114.3	127	6.55	6.02	6.55	6.02	9.53	8.56	9.53	8.56	15.88	13.49	19.05	17.12
5 x 3-1/2	141.3	101.6	127	6.55	5.74	6.55	5.74	9.53	8.08	9.53	8.08	15.88		19.05	
5 x 3	141.3	88.9	127	6.55	5.49	6.55	5.49	9.53	7.62	9.53	7.62	15.88	11.13	19.05	15.24
5 x 2-1/2	141.3	73.0	127	6.55	5.16	6.55	5.16	9.53	7.01	9.53	7.01	15.88	9.53	19.05	14.02
6 x 5	168.3	141.3	140	7.11	6.55	7.11	6.55	10.97	9.53	10.97	9.53	18.26	15.88	21.95	19.05
6 x 4	168.3	114.3	140	7.11	6.02	7.11	6.02	10.97	8.56	10.97	8.56	18.26	13.49	21.95	17.12
6 x 3-1/2	168.3	101.6	140	7.11	5.74	7.11	5.74	10.97	8.08	10.97	8.08	18.26		21.95	
6 x 3	168.3	88.9	140	7.11	5.49	7.11	5.49	10.97	7.62	10.97	7.62	18.26	11.13	21.95	15.24
6 x 2-1/2	168.3	73.0	140	7.11	5.16	7.11	5.16	10.97	7.01	10.97	7.01	18.26	9.53	21.95	14.02
8 x 6	219.1	168.3	152	8.18	7.11	8.18	7.11	12.70	10.97	12.70	10.97	23.01	18.26	22.23	21.95
8 x 5	219.1	141.3	152	8.18	6.55	8.18	6.55	12.70	9.53	12.70	9.53	23.01	15.88	22.23	19.05
8 x 4	219.1	114.3	152	8.18	6.02	8.18	6.02	12.70	8.56	12.70	8.56	23.01	13.49	22.23	17.12
8 x 3-1/2	219.1	101.6	152	8.18	5.74	8.18	5.74	12.70	8.08	12.70	8.08	23.01		22.23	
10 x 8	273.0	219.1	178	9.27	8.18	9.27	8.18	12.70	12.70	15.09	12.70	28.58	23.01	25.40	22.23
10 x 6	273.0	168.3	178	9.27	7.11	9.27	7.11	12.70	10.97	15.09	10.97	28.58	18.26	25.40	21.95



# CARBON STEEL BUTT WELD PIPE FITTINGS



## Reducer

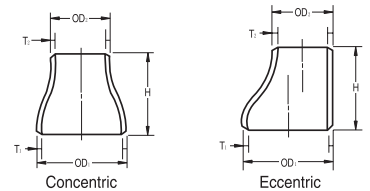
STD, Sch40, X-S, Sch80, Sch160, XX-S

Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
	OD1	OD2		H	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1
10 X 5	273.0	141.3	178	9.27	6.55	9.27	6.55	12.70	9.53	15.09	9.53	28.58	15.88	25.40	19.05
10 X 4	273.0	114.3	178	9.27	6.02	9.27	6.02	12.70	8.56	15.09	8.56	28.58	13.49	25.40	17.12
12 X 10	323.8	273.0	203	9.53	9.27	10.31	9.27	12.70	12.70	17.48	15.09	33.32	28.58	25.40	25.40
12 X 8	323.8	219.1	203	9.53	8.18	10.31	8.18	12.70	12.70	17.48	12.70	33.32	23.01	25.40	22.23
12 X 6	323.8	168.3	203	9.53	7.11	10.31	7.11	12.70	10.97	17.48	10.97	33.32	18.26	25.40	21.95
12 X 5	323.8	141.3	203	9.53	6.55	10.31	6.55	12.70	9.53	17.48	9.53	33.32	15.88	25.40	19.05
14 X 12	355.6	323.8	330	9.53	9.53	11.13	10.31	12.70	12.70	19.05	17.48	35.71	33.32		25.40
14 X 10	355.6	273.0	330	9.53	9.27	11.13	9.27	12.70	12.70	19.05	15.09	35.71	28.58		25.40
14 X 8	355.6	219.1	330	9.53	8.18	11.13	8.18	12.70	12.70	19.05	12.70	35.71	23.01		22.23
16 X 14	406.4	355.6	356	9.53	9.53	12.70	11.13	12.70	12.70	21.44	19.05	40.49	35.71		
16 X 12	406.4	323.8	356	9.53	9.53	12.70	10.31	12.70	12.70	21.44	17.48	40.49	33.32		25.40
16 X 10	406.4	273.0	356	9.53	9.27	12.70	9.27	12.70	12.70	21.44	15.09	40.49	28.58		25.40
18 X 16	457.0	406.4	381	9.53	9.53	14.27	12.70	12.70	12.70	23.83	21.44	45.24	40.49		
18 X 14	457.0	355.6	381	9.53	9.53	14.27	11.13	12.70	12.70	23.83	19.05	45.24	35.71		
18 X 12	457.0	323.8	381	9.53	9.53	14.27	10.31	12.70	12.70	23.83	17.48	45.24	33.32		25.40
20 X 18	508.0	457.0	508	9.53	9.53	15.09	14.27	12.70	12.70	26.19	23.83	50.01	45.24		
20 X 16	508.0	406.4	508	9.53	9.53	15.09	12.70	12.70	12.70	26.19	21.44	50.01	40.49		
20 X 14	508.0	355.6	508	9.53	9.53	15.09	11.13	12.70	12.70	26.19	19.05	50.01	35.71		
22 X 20	559.0	508.0	508	9.53	9.53		15.09	12.70	12.70	28.58	26.19	53.98	50.01		
22 X 18	559.0	457.0	508	9.53	9.53		14.27	12.70	12.70	28.58	23.83	53.98	45.24		
22 X 16	559.0	406.4	508	9.53	9.53		12.70	12.70	12.70	28.58	21.44	53.98	40.49		
24 X 22	610.0	559.0	508	9.53	9.53	17.48		12.70	12.70	30.96	28.58	59.54	53.98		
24 X 20	610.0	508.0	508	9.53	9.53	17.48	15.09	12.70	12.70	30.96	26.19	59.54	50.01		
24 X 18	610.0	457.0	508	9.53	9.53	17.48	14.27	12.70	12.70	30.96	23.83	59.54	45.24		
26 X 22	660.0	559.0	610	9.53	9.53			12.70	12.70		28.58		53.98		
26 X 18	660.0	457.0	610	9.53	9.53		14.27	12.70	12.70		23.83		45.24		
26 X 16	660.0	406.4		9.53	9.53		12.70	12.70	12.70		21.44		40.49		
28 X 24	711.0	610.0	610	9.53	9.53		17.48	12.70	12.70		30.96		59.54		
28 X 20	711.0	508.0	610	9.53	9.53		15.09	12.70	12.70		26.19		50.01		
28 X 18	711.0	457.0	610	9.53	9.53		14.27	12.70	12.70		23.83		45.24		
30 X 26	762.0	660.0	610	9.53	9.53			12.70	12.70						
30 X 22	762.0	559.0		9.53	9.53			12.70	12.70		28.58		53.98		
30 X 20	762.0	508.0	610	9.53	9.53		15.09	12.70	12.70		26.19		50.01		
32 X 28	813.0	711.0	610	9.53	9.53	17.48		12.70	12.70						
32 X 24	813.0	610.0	610	9.53	9.53	17.48	17.48	12.70	12.70		30.96		59.54		
32 X 22	813.0	559.0		9.53	9.53	17.48		12.70	12.70		28.58		53.98		
34 X 30	864.0	762.0	610	9.53	9.53	17.48		12.70	12.70						
34 X 26	864.0	660.0	610	9.53	9.53	17.48		12.70	12.70						
34 X 22	864.0	559.0		9.53	9.53	17.48		12.70	12.70		28.58		53.98		
36 X 32	914.0	813.0	610	9.53	9.53	19.05	17.48	12.70	12.70						
36 X 28	914.0	711.0		9.53	9.53	19.05		12.70	12.70						
36 X 24	914.0	610.0	610	9.53	9.53	19.05	17.48	12.70	12.70		30.96		59.54		
38 X 34	965.0	864.0	610	9.53	9.53		17.48	12.70	12.70						
38 X 30	965.0	762.0	610	9.53	9.53			12.70	12.70						

# CARBON STEEL BUTT WELD PIPE FITTINGS

## Reducer

STD, Sch40, X-S, Sch80, Sch160, XX-S



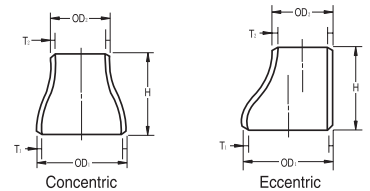
Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
	OD1	OD2		H	T1	T2	T1	T2	T1	T2	T1	T2	T1	T2	T1
38 X 26	965.0	660.0	610	9.53	9.53			12.70	12.70						
40 X 36	1016.0	914.0	610	9.53	9.53		19.05	12.70	12.70						
40 X 32	1016.0	813.0	610	9.53	9.53		17.48	12.70	12.70						
40 X 28	1016.0	711.0		9.53	9.53			12.70	12.70						
42 X 38	1067.0	965.0	610	9.53	9.53			12.70	12.70						
42 X 34	1067.0	864.0	610	9.53	9.53		17.48	12.70	12.70						
42 X 30	1067.0	762.0	610	9.53	9.53			12.70	12.70						
44 X 40	1118.0	1016.0	610	9.53	9.53			12.70	12.70						
44 X 36	1118.0	914.0	610	9.53	9.53	19.05	12.70	12.70							
44 X 32	1118.0	813.0		9.53	9.53	17.48	12.70	12.70							
46 X 42	1168.0	1067.0	711	9.53	9.53		12.70	12.70							
46 X 38	1168.0	965.0	711	9.53	9.53		12.70	12.70							
46 X 34	1168.0	864.0		9.53	9.53	17.48	12.70	12.70							
48 X 44	1219.0	1118.0	711	9.53	9.53		12.70	12.70							
48 X 40	1219.0	1016.0	711	9.53	9.53		12.70	12.70							
48 X 36	1219.0	914.0		9.53	9.53	19.05	12.70	12.70							

## Reducer

Sch20, Sch60, Sch100, Sch120, Sch140

Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120 (mm)		Sch140 (mm)	
	OD1	OD2		H	T1	T2	T1	T2	T1	T2	T1	T2	T1
5 X 4	141.3	114.3	127							12.70	11.13		
6 X 5	168.3	141.3	140							14.27	12.70		
6 X 4	168.3	114.3	140							14.27	11.13		
8 X 6	219.1	168.3	152	6.35		10.31		15.09		18.26	14.27	20.62	
8 X 5	219.1	141.3	152	6.35		10.31		15.09		18.26	12.70	20.62	
8 X 4	219.1	114.3	152	6.35		10.31		15.09		18.26	11.13	20.62	
10 X 8	273.0	219.1	178	6.35	6.35	12.70	10.31	18.26	15.09	21.44	18.26	25.40	20.62
10 X 6	273.0	168.3	178	6.35		12.70		18.26		21.44	14.27	25.40	
10 X 5	273.0	141.3	178	6.35		12.70		18.26		21.44	12.70	25.40	
10 X 4	273.0	114.3	178	6.35		12.70		18.26		21.44	11.13	25.40	
12 X 10	323.8	273.0	203	6.35	6.35	14.27	12.70	21.44	18.26	25.40	21.44	28.58	25.40
12 X 8	323.8	219.1	203	6.35	6.35	14.27	10.31	21.44	15.09	25.40	18.26	28.58	20.62
12 X 6	323.8	168.3	203	6.35		14.27		21.44		25.40	14.27	28.58	
14 X 12	355.6	323.8	330	7.92	6.35	15.09	14.27	23.83	21.44	27.79	25.40	31.75	28.58
14 X 10	355.6	273.0	330	7.92	6.35	15.09	12.70	23.83	18.26	27.79	21.44	31.75	25.40
14 X 8	355.6	219.1	330	7.92	6.35	15.09	10.31	23.83	15.09	27.79	18.26	31.75	20.62
16 X 14	406.4	355.6	356	7.92	7.92	16.66	15.09	26.19	23.83	30.96	27.79	36.53	31.75
16 X 12	406.4	323.8	356	7.92	6.35	16.66	14.27	26.19	21.44	30.96	25.40	36.53	28.58
16 X 10	406.4	273.0	356	7.92	6.35	16.66	12.70	26.19	18.26	30.96	21.44	36.53	25.40

# CARBON STEEL BUTT WELD PIPE FITTINGS



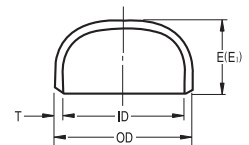
## Reducer

Sch20, Sch60, Sch100, Sch120, Sch140

Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120 (mm)		Sch140 (mm)	
	OD1	OD2		T1	T2	T1	T2	T1	T2	T1	T2	T1	T2
18 X 16	457.0	406.4	381	7.92	7.92	19.05	16.66	29.36	26.19	34.93	30.96	39.67	36.53
18 X 14	457.0	355.6	381	7.92	7.92	19.05	15.09	29.36	23.83	34.93	27.79	39.67	31.75
18 X 12	457.0	323.8	381	7.92	6.35	19.05	14.27	29.36	21.44	34.93	25.40	39.67	28.58
20 X 18	508.0	457.0	508	9.53	7.92	20.62	19.05	32.54	29.36	38.10	34.93	44.45	39.67
20 X 16	508.0	406.4	508	9.53	7.92	20.62	16.66	32.54	26.19	38.10	30.96	44.45	36.53
20 X 14	508.0	355.6	508	9.53	7.92	20.62	15.09	32.54	23.83	38.10	27.79	44.45	31.75
22 X 20	559.0	508.0	508	9.53	9.53	22.23	20.62	34.93	32.54	41.28	38.10	47.63	44.45
22 X 18	559.0	457.0	508	9.53	7.92	22.23	19.05	34.93	29.36	41.28	34.93	47.63	39.67
22 X 16	559.0	406.4	508	9.53	7.92	22.23	16.66	34.93	26.19	41.28	30.96	47.63	36.53
24 X 22	610.0	559.0	508	9.53	9.53	24.61	22.23	38.89	34.93	46.02	41.28	52.37	47.63
24 X 20	610.0	508.0	508	9.53	9.53	24.61	20.62	38.89	32.54	46.02	38.10	52.37	44.45
24 X 18	610.0	457.0	508	9.53	7.92	24.61	19.05	38.89	29.36	46.02	34.93	52.37	39.67

## Cap

STD, Sch40, X-S, Sch80, Sch160, XX-S

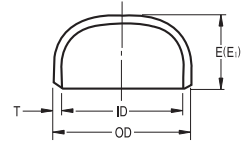


Nominal Pipe Size	Outside Dia. (mm)	Length (mm)	Limiting Wall Thickness	Length (mm)	STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
					T	I.D	T	I.D	T	I.D	T	I.D	T	I.D		
1/2"	21.3	25	4.57	25	2.77	15.8	2.77	15.8	3.73	13.8	3.73	13.8	4.78	11.7	7.47	6.4
3/4"	26.7	25	3.81	25	2.87	21.0	2.87	21.0	3.91	18.9	3.91	18.9	5.56	15.6	7.82	11.1
1"	33.4	38	4.57	38	3.38	26.6	3.38	26.6	4.55	24.3	4.55	24.3	6.35	20.7	9.09	15.2
1.1/4"	42.2	38	4.83	38	3.56	35.1	3.56	35.1	4.85	32.5	4.85	32.5	6.35	29.5	9.70	22.8
1.1/2"	48.3	38	5.08	38	3.68	40.9	3.68	40.9	5.08	38.1	5.08	38.1	7.14	34.0	10.15	28.0
2"	60.3	38	5.59	44	3.91	52.5	3.91	52.5	5.54	49.2	5.54	49.2	8.74	42.8	11.07	38.2
2.1/2"	73.0	38	7.11	51	5.16	62.7	5.16	62.7	7.01	59.0	7.01	59.0	9.53	53.9	14.02	45.0
3"	88.9	51	7.62	64	5.49	77.9	5.49	77.9	7.62	73.7	7.62	73.7	11.13	66.6	15.24	58.4
3.1/2"	101.6	64	8.13	76	5.74	90.1	5.74	90.1	8.08	85.4	8.08	85.4				
4"	114.3	64	8.64	76	6.02	102.3	6.02	102.3	8.56	97.2	8.56	97.2	13.49	87.3	17.12	80.1
5"	141.3	76	9.65	89	6.55	128.2	6.55	128.2	9.53	122.2	9.53	122.2	15.88	109.5	19.05	103.2
6"	168.3	89	10.92	102	7.11	154.1	7.11	154.1	10.97	146.4	10.97	146.4	18.26	131.8	21.95	124.4
8"	219.1	102	12.70	127	8.18	202.7	8.18	202.7	12.70	193.7	12.70	193.7	23.01	173.1	22.23	174.6
10"	273.0	127	12.70	152	9.27	254.5	9.27	254.5	12.70	247.6	15.09	242.8	28.58	215.8	25.40	222.2
12"	323.8	152	12.70	178	9.53	304.7	10.31	303.2	12.70	298.4	17.48	288.8	33.32	257.2	25.40	273.0
14"	355.6	165	12.70	191	9.53	336.5	11.13	333.3	12.70	330.2	19.05	317.5	35.71	284.2		
16"	406.4	178	12.70	203	9.53	387.3	12.70	381.0	12.70	381.0	21.44	363.5	40.49	325.4		
18"	457.0	203	12.70	229	9.53	437.9	14.27	428.5	12.70	431.6	23.83	409.3	45.24	366.5		
20"	508.0	229	12.70	254	9.53	488.9	15.09	477.8	12.70	482.6	26.19	455.6	50.01	408.0		
22"	559.0	254	12.70	254	9.53	539.9			12.70	533.6	28.58	501.8	53.98	451.0		
24"	610.0	267	12.70	305	9.53	590.9	17.48	575.0	12.70	584.6	30.96	548.1	59.54	490.9		
26"	660.0	267			9.53	640.9			12.70	634.6						
28"	711.0	267			9.53	691.9			12.70	685.6						

## CARBON STEEL BUTT WELD PIPE FITTINGS

### Cap

STD, Sch40, X-S, Sch80, Sch160, XX-S



Nominal Pipe Size	Outside Dia. (mm)	Length (mm)	Limiting Wall Thickness	Length (mm)	STD (mm)		Sch40 (mm)		X-S (mm)		Sch80 (mm)		Sch160 (mm)		XX-S (mm)	
					OD	L	Length E	E1	T	I.D	T	I.D	T	I.D	T	I.D
30"	762.0	267			9.53	742.9			12.70	736.6						
32"	813.0	267			9.53	793.9	17.48	778.0	12.70	787.6						
34"	864.0	267			9.53	844.9	17.48	829.0	12.70	838.6						
36"	914.0	267			9.53	894.9	19.05	875.9	12.70	888.6						
38"	965.0	305			9.53	945.9			12.70	939.6						
40"	1016.0	305			9.53	996.9			12.70	990.6						
42"	1067.0	305			9.53	1047.9			12.70							
44"	1118.0	343			9.53	1098.9			12.70							
46"	1168.0	343			9.53	1148.9			12.70							
48"	1219.0	343			9.53	1199.9			12.70							

### Cap

Sch20, Sch60, Sch100, Sch120, Sch140

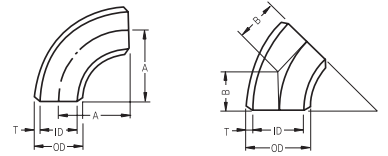
Nominal Pipe Size	Outside Dia. (mm)	Length (mm)	Limiting Wall Thickness	Length (mm)	Sch20 (mm)		Sch60 (mm)		Sch100 (mm)		Sch120 (mm)		Sch140 (mm)	
					OD	L	Length E	E1	T	I.D	T	I.D	T	I.D
4"	114.3	64	8.64	76							11.13	92.0		
5"	141.3	76	9.65	89							12.70	115.9		
6"	168.3	89	10.92	102							14.27	139.8		
8"	219.1	102	12.70	127	6.35	206.4	10.31	198.5	15.09	188.9	18.26	182.6	20.62	177.9
10"	273.0	127	12.70	152	6.35	260.3	12.70	247.6	18.26	236.5	21.44	230.1	25.40	222.2
12"	323.8	152	12.70	178	6.35	311.1	14.27	295.3	21.44	280.9	25.40	273.0	28.58	266.6
14"	355.6	165	12.70	191	7.92	339.8	15.09	325.4	23.83	307.9	27.79	300.0	31.75	292.1
16"	406.4	178	12.70	203	7.92	390.6	16.66	373.1	26.19	354.0	30.96	344.5	36.53	333.3
18"	457.0	203	12.70	229	7.92	441.2	19.05	418.9	29.36	398.3	34.93	387.1	39.67	377.7
20"	508.0	229	12.70	254	9.53	488.9	20.62	466.8	32.54	442.9	38.10	431.8	44.45	419.1
22"	559.0	254	12.70	254	9.53	539.9	22.23	514.5	34.93	489.1	41.28	476.4	47.63	463.7
24"	610.0	267	12.70	305	9.53	590.9	24.61	560.8	38.89	532.2	46.02	518.0	52.37	505.3

# STAINLESS STEEL BUTT WELD PIPE FITTINGS

## 90° Elbow (Long, Short)

## 45° Elbow (Long)

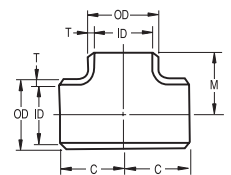
Sch5s, Sch10s, Sch40s, Sch80s



Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)			Sch5S (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
		Long	Short	A	T	I.D	T	I.D	T	I.D	T	I.D
1/2"	21.3	38	16		1.65	18.0	2.11	17.1	2.77	15.8	3.73	13.8
3/4"	26.7	38	19		1.65	23.4	2.11	22.5	2.87	21.0	3.91	18.9
1"	33.4	38	22	25	1.65	30.1	2.77	27.9	3.38	26.6	4.55	24.3
1.1/4"	42.2	48	25	32	1.65	38.9	2.77	36.7	3.56	35.1	4.85	32.5
1.1/2"	48.3	57	29	38	1.65	45.0	2.77	42.8	3.68	40.9	5.08	38.1
2"	60.3	76	35	51	1.65	57.0	2.77	54.8	3.91	52.5	5.54	49.2
2.1/2"	73.0	95	44	64	2.11	68.8	3.05	66.9	5.16	62.7	7.01	59.0
3"	88.9	114	51	76	2.11	84.7	3.05	82.8	5.49	77.9	7.62	73.7
3.1/2"	101.6	133	57	89	2.11	97.4	3.05	95.5	5.74	90.1	8.08	85.4
4"	114.3	152	64	102	2.11	110.1	3.05	108.2	6.02	102.3	8.56	97.2
5"	141.3	190	79	127	2.77	135.8	3.40	134.5	6.55	128.2	9.53	122.2
6"	168.3	229	95	152	2.77	162.8	3.40	161.5	7.11	154.1	10.97	146.4
8"	219.1	305	127	203	2.77	213.6	3.76	211.6	8.18	202.7	12.70	193.7
10"	273.0	381	159	254	3.40	266.2	4.19	264.6	9.27	254.5	12.70	247.6
12"	323.8	457	190	305	3.96	315.9	4.57	314.7	9.53	304.7	12.70	298.4
14"	355.6	533	222	356	3.96	347.7	4.78	346.0	9.53	336.5	12.70	330.2
16"	406.4	610	254	406	4.19	398.0	4.78	396.8	9.53	387.3	12.70	381.0
18"	457.0	686	286	457	4.19	448.6	4.78	447.4	9.53	437.9	12.70	431.6
20"	508.0	762	318	508	4.78	498.4	5.54	496.9	9.53	488.9	12.70	482.6
22"	559.0	838	343	559	4.78	549.4	5.54	547.9				
24"	610.0	914	381	610	5.54	598.9	6.35	597.3	9.53	590.9	12.70	584.6
30"	762.0	1143	470		6.35	749.3	7.92	746.2				

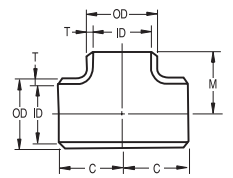
## Tee (Straight)

Sch5s, Sch10s, Sch40s, Sch80s



Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)		Sch5s (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
		Run C	I.D	T	I.D	T	I.D	T	I.D	T	I.D
1/2"	21.3	25	25	1.65	18.0	2.11	17.1	2.77	15.8	3.73	13.8
3/4"	26.7	29	29	1.65	23.4	2.11	22.5	2.87	21.0	3.91	18.9
1"	33.4	38	38	1.65	30.1	2.77	27.9	3.38	26.6	4.55	24.3
1.1/4"	42.2	48	48	1.65	38.9	2.77	36.7	3.56	35.1	4.85	32.5
1.1/2"	48.3	57	57	1.65	45.0	2.77	42.8	3.68	40.9	5.08	38.1
2"	60.3	64	64	1.65	57.0	2.77	54.8	3.91	52.5	5.54	49.2
2.1/2"	73.0	76	76	2.11	68.8	3.05	66.9	5.16	62.7	7.01	59.0
3"	88.9	86	86	2.11	84.7	3.05	82.8	5.49	77.9	7.62	73.7
3.1/2"	101.6	95	95	2.11	97.4	3.05	95.5	5.74	90.1	8.08	85.4
4"	114.3	105	105	2.11	110.1	3.05	108.2	6.02	102.3	8.56	97.2
5"	141.3	124	124	2.77	135.8	3.40	134.5	6.55	128.2	9.53	122.2
6"	168.3	143	143	2.77	162.8	3.40	161.5	7.11	154.1	10.97	146.4

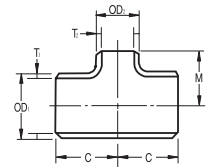
# STAINLESS STEEL BUTT WELD PIPE FITTINGS



## Tee (Straight)

Sch5s, Sch10s, Sch40s, Sch80s

Nominal Pipe Size	Outside Dia. (mm)	Center to End (mm)		Sch5s (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
		Run C	I.D	T	I.D	T	I.D	T	I.D	T	I.D
8"	219.1	178	178	2.77	213.6	3.76	211.6	8.18	202.7	12.70	193.7
10"	273.0	216	216	3.40	266.2	4.19	264.6	9.27	254.5	12.70	247.6
12"	323.8	254	254	3.96	315.9	4.57	314.7	9.53	304.7	12.70	298.4
14"	355.6	279	279	3.96	347.7	4.78	346.0	9.53	336.5	12.70	330.2
16"	406.4	305	305	4.19	398.0	4.78	396.8	9.53	387.3	12.70	381.0
18"	457.0	343	343	4.19	448.6	4.78	447.4	9.53	437.9	12.70	431.6
20"	508.0	381	381	4.78	498.4	5.54	496.9	9.53	488.9	12.70	482.6
22"	559.0	419	419	4.78	549.4	5.54	547.9				
24"	610.0	432	432	5.54	598.9	6.35	597.3	9.53	590.9	12.70	584.6
30"	762.0	559	559	6.35	749.3	7.92	746.2				

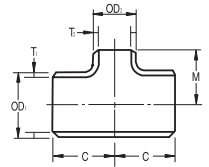


## Tee (Reducing)

Sch5s, Sch10s, Sch40s, Sch80s

Nominal Pipe Size (inch)	Outside Dia. (mm)		Center to End (mm)		Sch5s (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
	OD1	OD2	Run C	Outlet M	T1	T2	T1	T2	T1	T2	T1	T2
3/4 X 3/4 X 1/2	26.7	21.3	29	25	1.65	1.65	2.11	2.11	2.87	2.77	3.91	3.73
1 X 1 X 3/4	33.4	26.7	38	29	1.65	1.65	2.77	2.11	3.38	2.87	4.55	3.91
1 X 1 X 1/2	33.4	21.3	38	25	1.65	1.65	2.77	2.11	3.38	2.77	4.55	3.73
1-1/4 X 1-1/4 X 1	42.2	33.4	48	38	1.65	1.65	2.77	2.77	3.56	3.38	4.85	4.55
1-1/4 X 1-1/4 X 3/4	42.2	26.7	48	29	1.65	1.65	2.77	2.11	3.56	2.87	4.85	3.91
1-1/2 X 1-1/2 X 1-1/4	48.3	42.2	57	48	1.65	1.65	2.77	2.77	3.68	3.56	5.08	4.85
1-1/2 X 1-1/2 X 1	48.3	33.4	57	38	1.65	1.65	2.77	2.77	3.68	3.38	5.08	4.55
1-1/2 X 1-1/2 X 3/4	48.3	26.7	57	29	1.65	1.65	2.77	2.11	3.68	2.87	5.08	3.91
2 X 2 X 1-1/2	60.3	48.3	64	57	1.65	1.65	2.77	2.77	3.91	3.68	5.54	5.08
2 X 2 X 1-1/4	60.3	42.2	64	48	1.65	1.65	2.77	2.77	3.91	3.56	5.54	4.85
2 X 2 X 1	60.3	33.4	64	38	1.65	1.65	2.77	2.77	3.91	3.38	5.54	4.55
2-1/2 X 2-1/2 X 2	73.0	60.3	76	64	2.11	1.65	3.05	2.77	5.16	3.91	7.01	5.54
2-1/2 X 2-1/2 X 1-1/2	73.0	48.3	76	57	2.11	1.65	3.05	2.77	5.16	3.68	7.01	5.08
2-1/2 X 2-1/2 X 1-1/4	73.0	42.2	76	48	2.11	1.65	3.05	2.77	5.16	3.56	7.01	4.85
3 X 3 X 2-1/2	88.9	73.0	86	76	2.11	2.11	3.05	3.05	5.49	5.16	7.62	7.01
3 X 3 X 2	88.9	60.3	86	64	2.11	1.65	3.05	2.77	5.49	3.91	7.62	5.54
3 X 3 X 1-1/2	88.9	48.3	86	57	2.11	1.65	3.05	2.77	5.49	3.68	7.62	5.08
3-1/2 X 3-1/2 X 3	101.6	88.9	95	86	2.11	2.11	3.05	3.05	5.74	5.49	8.08	7.62
3-1/2 X 3-1/2 X 2-1/2	101.6	73.0	95	76	2.11	2.11	3.05	3.05	5.74	5.16	8.08	7.01
3-1/2 X 3-1/2 X 2	101.6	60.3	95	64	2.11	1.65	3.05	2.77	5.74	3.91	8.08	5.54
3-1/2 X 3-1/2 X 1-1/2	101.6	48.3	95	57	2.11	1.65	3.05	2.77	5.74	3.68	8.08	5.08
4 X 4 X 3-1/2	114.3	101.6	105	95	2.11	2.11	3.05	3.05	6.02	5.74	8.56	8.08
4 X 4 X 3	114.3	88.9	105	86	2.11	2.11	3.05	3.05	6.02	5.49	8.56	7.62
4 X 4 X 2-1/2	114.3	73.0	105	76	2.11	2.11	3.05	3.05	6.02	5.16	8.56	7.01
4 X 4 X 2	114.3	60.3	105	64	2.11	1.65	3.05	2.77	6.02	3.91	8.56	5.54

# STAINLESS STEEL BUTT WELD PIPE FITTINGS



## Tee (Reducing)

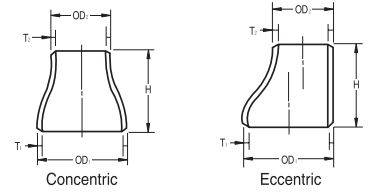
Sch5s, Sch10s, Sch40s, Sch80s

Nominal Pipe Size (inch)	Outside Dia. (mm)		Center to End (mm)		Sch5s (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
	OD1	OD2	Run C	Outlet M	T1	T2	T1	T2	T1	T2	T1	T2
5 X 5 X 4	141.3	114.3	124	105	2.77	2.11	3.40	3.05	6.55	6.02	9.53	8.56
5 X 5 X 3-1/2	141.3	101.6	124	95	2.77	2.11	3.40	3.05	6.55	5.74	9.53	8.08
5 X 5 X 3	141.3	88.9	124	86	2.77	2.11	3.40	3.05	6.55	5.49	9.53	7.62
5 X 5 X 2-1/2	141.3	73.0	124	76	2.77	2.11	3.40	3.05	6.55	5.16	9.53	7.01
6 X 6 X 5	168.3	141.3	143	124	2.77	2.77	3.40	3.40	7.11	6.55	10.97	9.53
6 X 6 X 4	168.3	114.3	143	105	2.77	2.11	3.40	3.05	7.11	6.02	10.97	8.56
6 X 6 X 3-1/2	168.3	101.6	143	95	2.77	2.11	3.40	3.05	7.11	5.74	10.97	8.08
6 X 6 X 3	168.3	88.9	143	86	2.77	2.11	3.40	3.05	7.11	5.49	10.97	7.62
8 X 8 X 6	219.1	168.3	178	143	2.77	2.77	3.76	3.40	8.18	7.11	12.70	10.97
8 X 8 X 5	219.1	141.3	178	124	2.77	2.77	3.76	3.40	8.18	6.55	12.70	9.53
8 X 8 X 4	219.1	114.3	178	105	2.77	2.11	3.76	3.05	8.18	6.02	12.70	8.56
10 X 10 X 8	273.0	219.1	216	178	3.40	2.77	4.19	3.76	9.27	8.18	12.70	12.70
10 X 10 X 6	273.0	168.3	216	143	3.40	2.77	4.19	3.40	9.27	7.11	12.70	10.97
10 X 10 X 5	273.0	141.3	216	124	3.40	2.77	4.19	3.40	9.27	6.55	12.70	9.53
12 X 12 X 10	323.8	273.0	254	216	3.96	3.40	4.57	4.19	9.53	9.27	12.70	12.70
12 X 12 X 8	323.8	219.1	254	178	3.96	2.77	4.57	3.76	9.53	8.18	12.70	12.70
12 X 12 X 6	323.8	168.3	254	143	3.96	2.77	4.57	3.40	9.53	7.11	12.70	10.97
14 X 14 X 12	355.6	323.8	279	254	3.96	3.96	4.78	4.57	9.53	9.53	12.70	12.70
14 X 14 X 10	355.6	273.0	279	216	3.96	3.40	4.78	4.19	9.53	9.27	12.70	12.70
14 X 14 X 8	355.6	219.1	279	178	3.96	2.77	4.78	3.76	9.53	8.18	12.70	12.70
16 X 16 X 14	406.4	355.6	305	279	4.19	3.96	4.78	4.78	9.53	9.53	12.70	12.70
16 X 16 X 12	406.4	323.8	305	254	4.19	3.96	4.78	4.57	9.53	9.53	12.70	12.70
16 X 16 X 10	406.4	273.0	305	216	4.19	3.40	4.78	4.19	9.53	9.27	12.70	12.70
18 X 18 X 16	457.0	406.4	343	305	4.19	4.19	4.78	4.78	9.53	9.53	12.70	12.70
18 X 18 X 14	457.0	355.6	343	279	4.19	3.96	4.78	4.78	9.53	9.53	12.70	12.70
18 X 18 X 12	457.0	323.8	343	254	4.19	3.96	4.78	4.57	9.53	9.53	12.70	12.70
20 X 20 X 18	508.0	457.0	381	343	4.78	4.19	5.54	4.78	9.53	9.53	12.70	12.70
20 X 20 X 16	508.0	406.4	381	305	4.78	4.19	5.54	4.78	9.53	9.53	12.70	12.70
20 X 20 X 14	508.0	355.6	381	279	4.78	3.96	5.54	4.78	9.53	9.53	12.70	12.70
22 X 22 X 20	559.0	508.0	419	381	4.78	4.78	5.54	5.54		9.53		12.70
22 X 22 X 18	559.0	457.0	419	343	4.78	4.19	5.54	4.78		9.53		12.70
22 X 22 X 16	559.0	406.4	419	305	4.78	4.19	5.54	4.78		9.53		12.70
24 X 24 X 22	610.0	559.0	432	419	5.54	4.78	6.35	5.54	9.53		12.70	
24 X 24 X 20	610.0	508.0	432	381	5.54	4.78	6.35	5.54	9.53	9.53	12.70	12.70
24 X 24 X 18	610.0	457.0	432	343	5.54	4.19	6.35	4.78	9.53	9.53	12.70	12.70
30 X 30 X 24	762.0	610.0	559	432	6.35	5.54	7.92	6.35		9.53		12.70
30 X 30 X 22	762.0	559.0	559	419	6.35	4.78	7.92	5.54				
30 X 30 X 20	762.0	508.0	559	381	6.35	4.78	7.92	5.54		9.53		12.70

# STAINLESS STEEL BUTT WELD PIPE FITTINGS

## Reducer

Sch5s, Sch10s, Sch40s, Sch80s



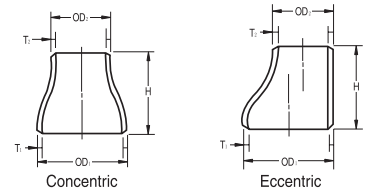
Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	Sch5s (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
	OD1	OD2		H	T1	T2	T1	T2	T1	T2	T1
3/4 X 1/2	26.7	21.3	38	1.65	1.65	2.11	2.11	2.87	2.77	3.91	3.73
1 X 3/4	33.4	26.7	51	1.65	1.65	2.77	2.11	3.38	2.87	4.55	3.91
1 X 1/2	33.4	21.3	51	1.65	1.65	2.77	2.11	3.38	2.77	4.55	3.73
1-1/4 X 1	42.2	33.4	51	1.65	1.65	2.77	2.77	3.56	3.38	4.85	4.55
1/4 X 3/4	42.2	26.7	51	1.65	1.65	2.77	2.11	3.56	2.87	4.85	3.91
1-1/4 X 1/2	42.2	21.3	51	1.65	1.65	2.77	2.11	3.56	2.77	4.85	3.73
1-1/2 X 1-1/4	48.3	42.2	64	1.65	1.65	2.77	2.77	3.68	3.56	5.08	4.85
1-1/2 X 1	48.3	33.4	64	1.65	1.65	2.77	2.77	3.68	3.38	5.08	4.55
1-1/2 X 3/4	48.3	26.7	64	1.65	1.65	2.77	2.11	3.68	2.87	5.08	3.91
1-1/2 X 1/2	48.3	21.3	64	1.65	1.65	2.77	2.11	3.68	2.77	5.08	3.73
2 X 1-1/2	60.3	48.3	76	1.65	1.65	2.77	2.77	3.91	3.68	5.54	5.08
2 X 1-1/4	60.3	42.2	76	1.65	1.65	2.77	2.77	3.91	3.56	5.54	4.85
2 X 1	60.3	33.4	76	1.65	1.65	2.77	2.77	3.91	3.38	5.54	4.55
2 X 3/4	60.3	26.7	76	1.65	1.65	2.77	2.11	3.91	2.87	5.54	3.91
2-1/2 X 2	73.0	60.3	89	2.11	1.65	3.05	2.77	5.16	3.91	7.01	5.54
2-1/2 X 1-1/2	73.0	48.3	89	2.11	1.65	3.05	2.77	5.16	3.68	7.01	5.08
2-1/2 X 1-1/4	73.0	42.2	89	2.11	1.65	3.05	2.77	5.16	3.56	7.01	4.85
3 X 2-1/2	88.9	73.0	89	2.11	2.11	3.05	3.05	5.49	5.16	7.62	7.01
3 X 2	88.9	60.3	89	2.11	1.65	3.05	2.77	5.49	3.91	7.62	5.54
3 X 1-1/2	88.9	48.3	89	2.11	1.65	3.05	2.77	5.49	3.68	7.62	5.08
3 X 1-1/4	88.9	42.2	89	2.11	1.65	3.05	2.77	5.49	3.56	7.62	4.85
3-1/2 X 3	101.6	88.9	102	2.11	2.11	3.05	3.05	5.74	5.49	8.08	7.62
3-1/2 X 2-1/2	101.6	73.0	102	2.11	2.11	3.05	3.05	5.74	5.16	8.08	7.01
3-1/2 X 2	101.6	60.3	102	2.11	1.65	3.05	2.77	5.74	3.91	8.08	5.54
4 X 3-1/2	114.3	101.6	102	2.11	2.11	3.05	3.05	6.02	5.74	8.56	8.08
4 X 3	114.3	88.9	102	2.11	2.11	3.05	3.05	6.02	5.49	8.56	7.62
4 X 2-1/2	114.3	73.0	102	2.11	2.11	3.05	3.05	6.02	5.16	8.56	7.01
4 X 2	114.3	60.3	102	2.11	1.65	3.05	2.77	6.02	3.91	8.56	5.54
5 X 4	141.3	114.3	127	2.77	2.11	3.40	3.05	6.55	6.02	9.53	8.56
5 X 3-1/2	141.3	101.6	127	2.77	2.11	3.40	3.05	6.55	5.74	9.53	8.08
5 X 3	141.3	88.9	127	2.77	2.11	3.40	3.05	6.55	5.49	9.53	7.62
5 X 2-1/2	141.3	73.0	127	2.77	2.11	3.40	3.05	6.55	5.16	9.53	7.01
6 X 5	168.3	141.3	140	2.77	2.77	3.40	3.40	7.11	6.55	10.97	9.53
6 X 4	168.3	114.3	140	2.77	2.11	3.40	3.05	7.11	6.02	10.97	8.56
6 X 3-1/2	168.3	101.6	140	2.77	2.11	3.40	3.05	7.11	5.74	10.97	8.08
6 X 3	168.3	88.9	140	2.77	2.11	3.40	3.05	7.11	5.49	10.97	7.62
8 X 6	219.1	168.3	152	2.77	2.77	3.76	3.40	8.18	7.11	12.70	10.97
8 X 5	219.1	141.3	152	2.77	2.77	3.76	3.40	8.18	6.55	12.70	9.53
8 X 4	219.1	114.3	152	2.77	2.11	3.76	3.05	8.18	6.02	12.70	8.56
10 X 8	273.0	219.1	178	3.40	2.77	4.19	3.76	9.27	8.18	12.70	12.70
10 X 6	273.0	168.3	178	3.40	2.77	4.19	3.40	9.27	7.11	12.70	10.97
10 X 5	273.0	141.3	178	3.40	2.77	4.19	3.40	9.27	6.55	12.70	9.53
12 X 10	323.8	273.0	203	3.96	3.40	4.57	4.19	9.53	9.27	12.70	12.70
12 X 8	323.8	219.1	203	3.96	2.77	4.57	3.76	9.53	8.18	12.70	12.70



## STAINLESS STEEL BUTT WELD PIPE FITTINGS

### Reducer

Sch5s, Sch10s, Sch40s, Sch80s



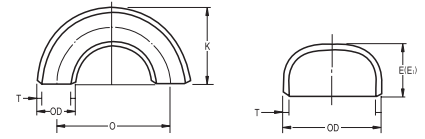
Nominal Pipe Size (inch)	Outside Dia. (mm)		End to End (mm)	Sch5s (mm)		Sch10s (mm)		Sch40s (mm)		Sch80s (mm)	
	OD1	OD2		H	T1	T2	T1	T2	T1	T2	T1
12 X 6	323.8	168.3	203	3.96	2.77	4.57	3.40	9.53	7.11	12.70	10.97
14 X 12	355.6	323.8	330	3.96	3.96	4.78	4.57	9.53	9.53	12.70	12.70
14 X 10	355.6	273.0	330	3.96	3.40	4.78	4.19	9.53	9.27	12.70	12.70
14 X 8	355.6	219.1	330	3.96	2.77	4.78	3.76	9.53	8.18	12.70	12.70
16 X 14	406.4	355.6	356	4.19	3.96	4.78	4.78	9.53	9.53	12.70	12.70
16 X 12	406.4	323.8	356	4.19	3.96	4.78	4.57	9.53	9.53	12.70	12.70
16 X 10	406.4	273.0	356	4.19	3.40	4.78	4.19	9.53	9.27	12.70	12.70
18 X 16	457.0	406.4	381	4.19	4.19	4.78	4.78	9.53	9.53	12.70	12.70
18 X 14	457.0	355.6	381	4.19	3.96	4.78	4.78	9.53	9.53	12.70	12.70
18 X 12	457.0	323.8	381	4.19	3.96	4.78	4.57	9.53	9.53	12.70	12.70
20 X 18	508.0	457.0	508	4.78	4.19	5.54	4.78	9.53	9.53	12.70	12.70
20 X 16	508.0	406.4	508	4.78	4.19	5.54	4.78	9.53	9.53	12.70	12.70
20 X 14	508.0	355.6	508	4.78	3.96	5.54	4.78	9.53	9.53	12.70	12.70
22 X 20	559.0	508.0	508	4.78	4.78	5.54	5.54		9.53		12.70
22 X 18	559.0	457.0	508	4.78	4.19	5.54	4.78		9.53		12.70
22 X 16	559.0	406.4	508	4.78	4.19	5.54	4.78		9.53		12.70
24 X 22	610.0	559.0	508	5.54	4.78	6.35	5.54	9.53		12.70	
24 X 20	610.0	508.0	508	5.54	4.78	6.35	5.54	9.53	9.53	12.70	12.70
24 X 18	610.0	457.0	508	5.54	4.19	6.35	4.78	9.53	9.53	12.70	12.70
30 X 24	762.0	610.0	610	6.35	5.54	7.92	6.35		9.53		12.70
30 X 22	762.0	559.0		6.35	4.78	7.92	5.54				
30 X 20	762.0	508.0	610	6.35	4.78	7.92	5.54		9.53		12.70

## STAINLESS STEEL BUTT WELD PIPE FITTINGS

### 180° Elbow (Long, Short)

#### Cap

Sch5s, Sch10s, Sch40s, Sch80s



Nominal Pipe Size	Outside Dia. (mm)	Wall Thickness				Length	Limiting Wall Thickness	Length	180° Elbow			
		Sch5s	Sch10s	Sch40s	Sch80s				Long		Short	
	OD1					E	Length E	E1	O	K	O	K
1/2"	21.3	1.65	2.11	2.77	3.73	25	4.57	25		48		
3/4"	26.7	1.65	2.11	2.87	3.91	25	3.81	25		51		
1"	33.4	1.65	2.77	3.38	4.55	38	4.57	38		56	51	41
1.1/4"	42.2	1.65	2.77	3.56	4.85	38	4.83	38	95	70	64	52
1.1/2"	48.3	1.65	2.77	3.68	5.08	38	5.08	38	114	83	76	62
2"	60.3	1.65	2.77	3.91	5.54	38	5.59	44	152	106	102	81
2.1/2"	73.0	2.11	3.05	5.16	7.01	38	7.11	51	190	132	127	100
3"	88.9	2.11	3.05	5.49	7.62	51	7.62	64	229	159	152	121
3.1/2"	101.6	2.11	3.05	5.74	8.08	64	8.13	76	267	184	178	140
4"	114.3	2.11	3.05	6.02	8.56	64	8.64	76	305	210	203	159
5"	141.3	2.77	3.40	6.55	9.53	76	9.65	89	381	262	254	197
6"	168.3	2.77	3.40	7.11	10.97	89	10.92	102	457	313	305	237
8"	219.1	2.77	3.76	8.18	12.70	102	12.70	127	610	414	406	313
10"	273.0	3.40	4.19	9.27	12.70	127	12.70	152	762	518	508	391
12"	323.8	3.96	4.57	9.53	12.70	152	12.70	178	914	619	610	467
14"	355.6	3.96	4.78	9.53	12.70	165	12.70	191	1067	711	711	533
16"	406.4	4.19	4.78	9.53	12.70	178	12.70	203	1219	813	813	610
18"	457.0	4.19	4.78	9.53	12.70	203	12.70	229	1372	914	914	686
20"	508.0	4.78	5.54	9.53	12.70	229	12.70	254	1524	1016	1016	762
22"	559.0	4.78	5.54			254	12.70	254	1676	1118	1118	838
24"	610.0	5.54	6.35	9.53	12.70	267	12.70	305	1829	1219	1219	914
30"	762.0	6.35	7.92			267						

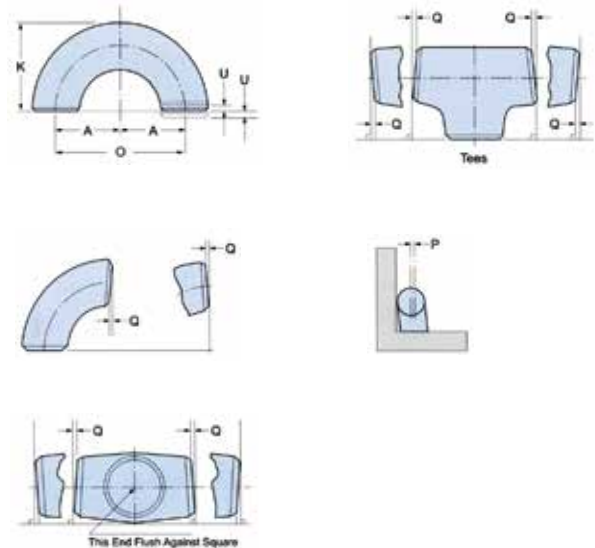
# DIMENSIONAL TOLERANCES

## ASME B16.9

### 1. Steel Butt Welding Fittings

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

• Dimensions are in inches.



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

• Dimensions are in inches.

## ASME B16.9

### 2. Forged Socket Welding Fittings

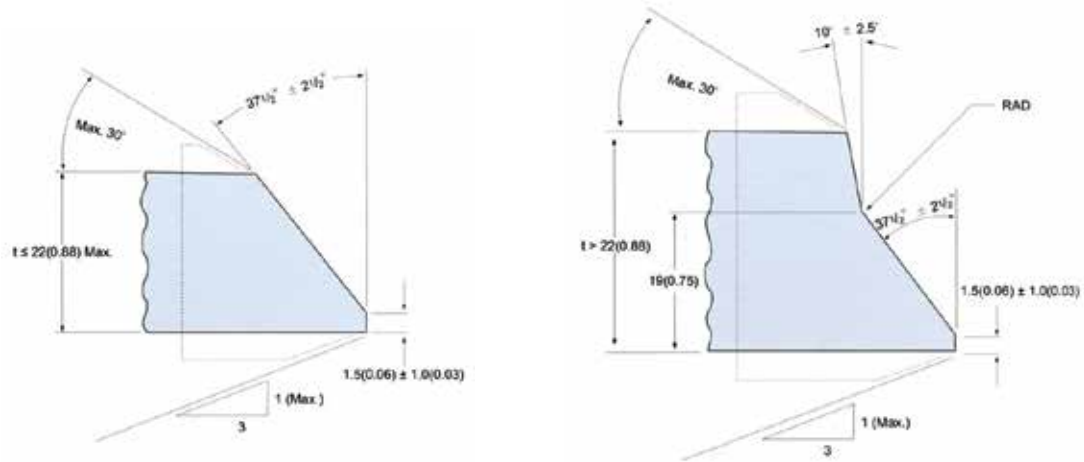
Nominal Pipe Size	All Fittings			
	Socket Bore Dia	Bore Dia. of Fittings	Concentricity of Bore	Consistence of Axis
1/8 ~ 1/4	+ 0.012 - 0.000	± 0.03	Socket and Fitting Bores within ± 0.030	Maximum variation in alignment of socket and fitting bores for 1/8 in 12
3/8 ~ 3/4	+ 0.012 - 0.000	± 0.03		
1 ~ 2	+ 0.012 - 0.000	± 0.03		
2 1/2 ~ 3	+ 0.012 - 0.000	± 0.06		

• Dimensions are in inches.

• Above table is followed accordingly to ASME B16.11

Nominal Pipe Size	Elbow, Tee, Cross	Coupling	Half Coupling
	Center to Bottom of Socket	Bottom to Bottom of Socket	Bottom of Socket to Opposite Face
1/8 ~ 1/4	± 0.03	± 0.06	± 0.03
3/8 ~ 3/4	± 0.06	± 0.12	± 0.06
1 ~ 2	± 0.08	± 0.16	± 0.08
2 1/2 ~ 3	± 0.10	± 0.20	± 0.10

## DIMENSIONAL TOLERANCES



(a) Plain Bevel

(b) Compound Bevel

Nominal Pipe Wall Thickness(t)	End Preparation
Less than x*	Cut Square of slightly chamfer, at Mfr's option
x* to 22(0.88), inclusive	Plain bevel as in sketch "a" above
more than 22(0.88)	Compound bevel as in sketch "b" above
*x=5(0.19) for carbon steel, ferritic alloy steel or iron; 3(0.12) for austenitic alloy steel	

- Notes : 1. End preparations are in accordance with ASME B16.25 Paragraph 4.2  
2. End preparations conforming to customer specifications will be specially manufactured upon consultation.

## BUTT-WELDING FITTINGS APPROX WEIGHT

### 90° Elbow (Long, Short)

#### Long

Nominal Pipe Size	SGP	STD	S40	X-S	S80	XX-S	S 160
1/2"	0.08	0.08	0.08	0.10	0.10	0.15	0.12
3/4"	0.10	0.11	0.11	0.14	0.14	0.22	0.13
1"	0.15	0.16	0.16	0.20	0.20	0.36	0.25
1.1/4"	0.26	0.26	0.26	0.35	0.35	0.64	0.42
1.1/2"	0.35	0.37	0.37	0.50	0.50	0.93	0.65
2"	0.64	0.66	0.66	0.90	0.90	1.69	1.33
2.1/2"	1.12	1.29	1.29	1.79	1.79	3.43	2.33
3"	1.58	2.04	2.04	2.74	2.74	5.25	3.83
4"	2.91	3.84	3.84	5.36	5.36	10.20	8.02
5"	4.49	6.48	6.48	9.13	9.13	17.60	14.70
6"	7.09	9.94	9.94	15.00	15.00	29.10	24.20
8"	14.40	20.10	20.10	30.50	30.50	51.40	53.20
10"	25.40	35.40	35.40	47.70	57.00	82.00	103.00
12"	38.10	52.00	57.00	68.70	94.00	134.00	171.00
14"	56.70	67.90	79.10	89.90	133.00	-	236.00
16"	74.30	89.00	118.00	118.00	195.00	-	350.00
18"	94.20	113.00	169.00	150.00	275.00	-	495.00
20"	116.00	140.00	220.00	186.00	373.00	-	676.00
22"	141.00	169.00	267.00	225.00	493.00	-	886.00
24"	168.00	202.00	366.00	268.00	636.00	-	1160.00
26"	198.00	237.00	430.00	315.00	-	-	-
28"	230.00	276.00	500.00	367.00	-	-	-
30"	264.00	316.00	575.00	421.00	-	-	-
32"	301.00	361.00	654.00	480.00	-	-	-
34"	340.00	408.00	739.00	543.00	-	-	-
36"	380.00	457.00	904.00	608.00	-	-	-
38"	425.00	510.00	-	679.00			
40"	471.00	565.00	-	753.00			
42"	518.00	622.00	-	828.00			
44"	570.00	684.00	-	912.00	-	-	-
46"	623.00	748.00	-	997.00	-	-	-
48"	677.00	814.00	-	1085.00	-	-	-
50"	735.00	884.00	-	1178.00	-	-	-
52"	796.00	956.00	-	1305.00	-	-	-
54"	857.00	1031.00	-	1375.00	-	-	-
56"	926.00	1109.00	-	1480.00			
58"	991.00	1190.00	-	1588.00			
60"	1060.00	1274.00	-	1700.00			

#### Short

Nominal Pipe Size	SGP	STD	S40	X-S	S80	XX-S	S 160
1/2"	-	-	-	-	-	-	-
3/4"	-	-	-	-	-	-	-
1"	0.10	0.11	0.11	0.14	0.14	0.22	0.17
1.1/4"	0.17	0.18	0.18	0.23	0.23	0.39	0.28
1.1/2"	0.24	0.25	0.25	0.33	0.33	0.57	0.43
2"	0.43	0.44	0.44	0.60	0.60	1.13	0.89
2.1/2"	0.75	0.91	0.91	1.19	1.19	2.19	1.46
3"	1.05	1.36	1.36	1.83	1.83	3.49	2.55
4"	1.94	2.56	2.56	3.58	3.58	6.79	2.35
5"	2.99	4.32	4.32	6.09	6.09	11.80	9.79
6"	4.73	6.63	6.63	10.00	10.00	19.50	16.20
8"	9.61	13.40	13.40	20.30	20.30	34.30	35.50
10"	16.90	23.60	23.60	31.80	38.00	61.00	68.60
12"	25.40	34.60	38.00	45.80	63.00	89.50	114.00
14"	37.80	45.30	53.00	60.00	89.00	-	158.00
16"	49.50	59.10	79.00	78.30	130.00	-	234.00
18"	62.80	75.30	113.00	99.90	183.00	-	330.00
20"	77.70	93.10	147.00	124.00	249.00	-	451.00
22"	94.10	113.00	178.00	150.00	329.00	-	591.00
24"	112.00	135.00	244.00	179.00	424.00	-	773.00
26"	132.00	158.00	287.00	210.00	-	-	-
28"	154.00	184.00	334.00	245.00	-	-	-
30"	176.00	211.00	383.00	281.00	-	-	-
32"	201.00	241.00	436.00	320.00	-	-	-
34"	227.00	272.00	493.00	362.00	-	-	-
36"	253.00	304.00	603.00	405.00	-	-	-
38"	283.00	340.00	-	453.00	-	-	-
40"	314.00	377.00	-	502.00	-	-	-
42"	346.00	416.00	-	554.00	-	-	-
44"	380.00	456.00	-	608.00	-	-	-
46"	415.00	499.00	-	665.00	-	-	-
48"	452.00	543.00	-	724.00	-	-	-
50"	490.00	589.00	-	786.00	-	-	-
52"	530.00	637.00	-	870.00	-	-	-
54"	572.00	688.00	-	917.00	-	-	-
56"	616.00	740.00	-	976.00	-	-	-
58"	661.00	794.00	-	1059.00	-	-	-
60"	707.00	849.00	-	1133.00	-	-	-

## BUTT-WELDING FITTINGS APPROX WEIGHT

### 45° Elbow (Long, Short)

#### Long

Nominal Pipe Size	SGP	STD	S40	X-S	S80	XX-S	S 160
1/2"	0.04	0.04	0.04	0.05	0.05	-	-
3/4"	0.05	0.06	0.06	0.07	0.07	-	-
1"	0.08	0.08	0.08	0.10	0.10	0.18	0.13
1.1/4"	0.13	0.13	0.13	0.18	0.18	0.32	0.21
1.1/2"	0.18	0.19	0.19	0.25	0.25	0.47	0.33
2"	0.32	0.33	0.33	0.45	0.45	0.85	0.67
2.1/2"	0.60	0.69	0.69	0.90	0.90	1.72	1.17
3"	0.79	1.02	1.02	1.37	1.37	2.63	1.92
4"	1.46	1.92	1.92	2.68	2.68	5.09	4.01
5"	2.25	3.24	3.24	4.57	4.57	8.80	7.35
6"	3.55	4.97	4.97	7.50	7.50	14.50	12.10
8"	7.20	10.10	10.10	15.30	15.30	25.70	26.60
10"	12.70	17.70	17.70	23.90	28.50	41.00	51.50
12"	19.00	26.00	28.50	34.40	47.00	65.00	85.50
14"	28.40	34.00	40.10	45.00	66.50	-	118.00
16"	37.20	44.50	59.00	59.00	97.50	-	175.00
18"	47.10	56.50	84.50	75.50	138.00	-	247.00
20"	58.30	70.00	110.00	93.00	187.00	-	338.00
22"	70.50	84.50	-	113.00	257.00	-	443.00
24"	84.10	101.00	183.00	134.00	318.00	-	580.00
26"	99.00	119.00	-	158.00	-	-	-
28"	115.00	138.00	-	184.00	-	-	-
30"	132.00	158.00	-	211.00	-	-	-
32"	150.00	180.00	327.00	240.00	-	-	-
34"	170.00	204.00	369.00	272.00	-	-	-
36"	190.00	228.00	452.00	304.00	-	-	-
38"	212.00	255.00	-	339.00	-	-	-
40"	235.00	282.00	-	376.00	-	-	-
42"	259.00	311.00	-	414.00	-	-	-
44"	285.00	342.00	-	456.00	-	-	-
46"	312.00	374.00	-	498.00	-	-	-
48"	339.00	407.00	-	542.00	-	-	-

#### Short

Nominal Pipe Size	SGP	STD	S40	X-S	S80	XX-S	S 160
1/2"	-	-	-	-	-	-	-
3/4"	-	-	-	-	-	-	-
1"	0.05	0.06	0.06	0.07	0.07	-	-
1.1/4"	0.09	0.09	0.09	0.12	0.12	-	-
1.1/2"	0.12	0.13	0.13	0.17	0.17	-	-
2"	0.22	0.22	0.22	0.30	0.30	0.57	0.45
2.1/2"	0.38	0.46	0.46	0.60	0.60	1.10	0.75
3"	0.53	0.68	0.68	0.92	0.92	1.75	1.28
4"	0.97	1.28	1.28	1.79	1.79	3.40	2.68
5"	1.50	2.16	2.16	3.05	3.05	5.88	4.90
6"	2.36	3.32	3.32	5.00	5.00	9.75	8.10
8"	4.80	6.71	6.71	10.20	10.20	17.20	17.80
10"	8.46	11.80	11.80	15.90	19.00	30.50	34.30
12"	12.70	17.30	19.00	22.90	31.50	43.50	57.00
14"	18.00	22.60	26.50	30.00	44.50	-	79.00
16"	24.00	29.50	39.20	39.20	65.00	-	117.00
18"	31.00	37.60	56.50	50.00	91.50	-	165.00
20"	38.00	46.60	73.50	62.00	124.00	-	225.00
22"	47.00	56.50	-	75.00	164.00	-	295.00
24"	56.00	67.30	122.00	89.50	212.00	-	386.00
26"	66.00	79.10	-	105.00	-	-	-
28"	77.00	92.00	-	122.00	-	-	-
30"	87.00	105.00	-	140.00	-	-	-
32"	101.00	120.00	218.00	160.00	-	-	-
34"	114.00	136.00	246.00	181.00	-	-	-
36"	127.00	152.00	301.00	202.00	-	-	-
38"	142.00	170.00	-	226.00	-	-	-
40"	157.00	189.00	-	251.00	-	-	-
42"	173.00	208.00	-	277.00	-	-	-
44"	190.00	228.00	-	304.00	-	-	-
46"	208.00	250.00	-	332.00	-	-	-
48"	226.00	272.00	-	362.00	-	-	-

## BUTT-WELDING FITTINGS APPROX WEIGHT

### Cap

Nominal Pipe Size	SGP	STD	S40	X-S	S80	XX-S	S 160
1/2"	0.03	0.04	0.04	0.05	0.05	0.10	0.06
3/4"	0.04	0.05	0.05	0.07	0.07	0.13	0.09
1"	0.08	0.11	0.11	0.15	0.15	0.29	0.20
1.1/4"	0.11	0.14	0.14	0.20	0.20	0.39	0.25
1.1/2"	0.15	0.17	0.17	0.24	0.24	0.50	0.35
2"	0.23	0.24	0.24	0.33	0.33	0.68	0.54
2.1/2"	0.34	0.42	0.42	0.57	0.57	1.33	0.77
3"	0.51	0.67	0.67	0.92	0.92	2.18	1.40
4"	0.88	1.17	1.17	1.68	1.68	3.80	2.76
5"	1.29	1.90	1.90	2.73	2.73	6.22	4.85
6"	1.99	2.83	2.83	4.38	4.38	9.85	7.81
8"	3.61	5.11	5.11	7.91	7.91	16.40	15.20
10"	6.33	8.92	8.92	12.20	16.40	28.35	28.90
12"	9.43	13.10	13.10	17.40	26.40	39.40	47.70
14"	13.20	15.90	18.60	21.20	34.90	-	61.20
16"	16.60	20.00	26.70	26.70	49.00	-	92.80

Nominal Pipe Size	SGP	STD	S40	X-S	S80	XX-S	S 160
18"	21.20	25.50	41.50	34.10	69.00	-	131.00
20"	26.40	31.80	54.10	42.50	93.70	-	179.00
22"	31.50	38.80	61.40	51.70	116.00	-	219.00
24"	36.60	45.10	90.10	60.10	160.00	-	307.00
26"	41.00	50.50	92.30	67.30	-	-	-
28"	45.50	56.20	103.00	74.90	-	-	-
30"	50.30	62.10	114.00	82.80	-	-	-
32"	55.40	68.40	126.00	91.20	-	-	-
34"	62.30	75.00	138.00	100.00	-	-	-
36"	68.00	81.90	164.00	109.00	-	-	-
38"	79.00	94.70	-	126.00	-	-	-
40"	95.00	102.00	-	137.00	-	-	-
42"	98.00	110.00	-	147.00	-	-	-
44"	103.00	126.00	-	167.00	-	-	-
46"	111.00	134.00	-	179.00	-	-	-
48"	118.00	143.00	-	191.00	-	-	-

### Tee

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
1/2 x 1/2	0.09	0.09	0.09	0.11	0.11	0.17	0.12
3/4 x 3/4	0.13	0.13	0.13	0.17	0.17	0.26	0.21
1/2	0.12	0.12	0.12	0.16	0.16	0.24	0.19
1 x 1	0.24	0.25	0.25	0.32	0.32	0.53	0.41
3/4	0.23	0.24	0.24	0.30	0.30	0.49	0.38
1/2	0.22	0.23	0.23	0.26	0.26	0.47	0.37
1-1/4 x 1-1/4	0.42	0.43	0.43	0.56	0.56	0.95	0.69
1	0.39	0.40	0.40	0.53	0.53	0.89	0.65
3/4	0.37	0.37	0.37	0.48	0.48	0.84	0.62
1/2	0.36	0.36	0.36	0.47	0.47	0.81	0.59
1-1/2 x 1-1/2	0.58	0.61	0.61	0.81	0.81	1.40	1.07
1-1/4	0.56	0.59	0.59	0.78	0.78	1.35	1.01
1	0.53	0.56	0.56	0.74	0.74	1.28	0.97
3/4	0.51	0.53	0.53	0.70	0.70	1.21	0.92
1/2	0.49	0.51	0.51	0.67	0.67	1.17	0.90
2 x 2	0.86	0.88	0.88	1.20	1.20	2.16	1.78
1-1/2	0.80	0.82	0.82	1.11	1.11	2.00	1.63
1-1/4	0.77	0.79	0.79	1.07	1.07	1.91	1.56
1	0.73	0.75	0.75	1.01	1.01	1.81	1.50
3/4	0.70	0.71	0.71	0.98	0.98	1.76	1.45

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
2-1/2 x 2-1/2	1.42	1.74	1.74	2.28	2.28	3.92	2.86
1-1/2	1.31	1.56	1.56	2.06	2.06	3.56	2.64
1-1/4	1.25	1.51	1.51	1.98	1.98	3.40	2.48
1	1.22	1.48	1.48	1.94	1.94	3.32	2.42
3/4	1.18	1.36	1.36	1.80	1.80	3.22	2.36
3 x 3	1.87	2.41	2.41	3.25	3.25	5.90	4.55
2-1/2	1.79	2.29	2.29	3.07	3.07	5.53	4.23
2	1.68	2.12	2.12	2.85	2.85	5.18	4.02
1-1/2	1.62	2.06	2.06	2.77	2.77	5.03	3.87
1-1/4	1.60	2.02	2.02	2.74	2.74	4.95	3.80
4 x 4	3.13	4.12	4.12	5.77	5.77	10.60	8.50
3	2.92	3.83	3.83	5.33	5.33	9.76	7.92
2-1/2	2.84	3.71	3.71	5.15	5.15	9.39	7.56
2	2.72	3.53	3.53	4.94	4.94	9.02	7.34
1-1/2	2.66	3.48	3.48	4.83	4.83	8.87	7.23
5 x 5	4.53	6.54	6.54	9.20	9.20	17.30	14.80
4	4.30	6.13	6.13	8.63	8.63	16.10	13.70
3	4.08	5.83	5.83	8.19	8.19	15.30	13.00
2-1/2	4.00	5.71	5.71	8.01	8.01	15.00	12.80
2	3.90	5.58	5.58	7.92	7.92	14.70	12.50

## BUTT-WELDING FITTINGS APPROX WEIGHT

### Tee

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
6 X 6	6.84	9.58	9.58	14.50	14.50	27.20	23.30
5	6.45	9.08	9.08	13.60	13.60	25.60	21.90
4	6.23	8.67	8.67	13.00	13.00	24.50	20.80
3	6.01	8.38	8.38	12.60	12.60	23.70	20.10
2-1/2	5.92	8.36	8.36	12.50	12.50	23.30	19.80
8 X 8	12.80	17.90	17.90	27.10	27.10	45.70	47.20
6	11.90	16.60	16.60	25.20	25.20	43.00	43.50
5	11.50	16.10	16.10	24.30	24.30	41.40	42.10
4	11.30	15.70	15.70	23.70	23.70	41.00	40.30
10 X 10	21.80	30.40	30.40	41.00	49.00	79.20	88.00
8	20.40	28.50	28.50	38.90	45.80	54.40	81.40
6	19.50	27.20	27.20	37.00	43.90	71.50	78.50
5	19.20	26.80	26.80	36.20	43.10	70.00	77.00
4	18.90	26.80	26.80	36.20	42.50	68.90	76.30
12 X 12	32.00	43.60	48.70	57.70	79.20	113.00	143.00
10	30.40	41.60	45.30	55.20	74.80	107.00	135.00
8	29.00	39.70	42.50	53.10	71.40	102.00	128.00
6	28.10	38.40	42.00	51.20	69.50	100.00	125.00
5	27.80	38.70	41.70	51.20	68.70	98.30	124.00
14 X 14	44.70	53.50	62.40	70.90	104.00	-	186.00
12	42.70	51.90	60.20	68.80	100.00	-	179.00
10	41.20	49.90	57.60	66.30	95.90	-	174.00
8	40.00	48.20	55.80	64.50	92.90	-	168.00
6	39.00	47.10	54.50	62.60	91.00	-	164.00
16 X 16	55.20	66.10	88.00	87.70	145.00	-	260.00
14	54.20	64.90	86.00	86.10	140.00	-	255.00
12	52.70	63.10	84.00	83.60	136.00	-	248.00
10	51.20	61.30	82.00	81.20	132.00	-	241.00
8	49.40	59.80	79.00	80.00	129.00	-	235.00
6	48.50	58.50	77.00	77.80	127.00	-	230.00
18 X 18	70.00	83.90	125.00	111.00	204.00	-	356.00
16	67.90	81.40	121.00	108.00	197.00	-	352.00
14	66.90	80.20	119.00	106.00	194.00	-	344.00
12	65.40	78.30	117.00	104.00	189.00	-	337.00
10	63.40	76.90	114.00	102.00	186.00	-	329.00
20 X 20	86.60	104.00	163.00	138.00	277.00	-	502.00
18	84.20	101.00	158.00	134.00	268.00	-	488.00
16	82.10	98.40	154.00	131.00	262.00	-	475.00
14	81.10	97.20	152.00	129.00	258.00	-	469.00
12	79.20	96.00	150.00	127.00	254.00	-	462.00
10	77.60	94.00	147.00	125.00	250.00	-	452.00
8	76.30	92.10	145.00	123.00	245.00	-	444.00
22 X 22	106.00	126.00	198.00	167.00	365.00	-	657.00
20	103.00	123.00	193.00	163.00	356.00	-	640.00
18	101.00	120.00	188.00	159.00	347.00	-	624.00
16	98.90	117.00	183.00	156.00	340.00	-	610.00

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
24 X 24	116.00	139.00	252.00	185.00	438.00	-	800.00
22	115.00	138.00	249.00	183.00	432.00	-	790.00
20	114.00	136.00	247.00	181.00	427.00	-	782.00
18	111.00	133.00	241.00	177.00	418.00	-	764.00
26 X 26	147.00	176.00	319.00	234.00	-	-	-
24	144.00	172.00	312.00	229.00	-	-	-
22	141.00	169.00	308.00	225.00	-	-	-
20	138.00	166.00	302.00	221.00	-	-	-
28 X 28	165.00	198.00	359.00	264.00	-	-	-
26	163.00	197.00	356.00	261.00	-	-	-
24	160.00	193.00	350.00	256.00	-	-	-
22	157.00	190.00	347.00	252.00	-	-	-
30 X 30	190.00	228.00	414.00	304.00	-	-	-
28	188.00	226.00	406.00	301.00	-	-	-
26	185.00	222.00	356.00	296.00	-	-	-
24	182.00	218.00	350.00	291.00	-	-	-
32 X 32	217.00	259.00	474.00	347.00	-	-	-
30	213.00	256.00	466.00	341.00	-	-	-
28	209.00	252.00	458.00	335.00	-	-	-
26	208.00	250.00	455.00	333.00	-	-	-
34 X 34	246.00	295.00	535.00	393.00	-	-	-
32	243.00	292.00	526.00	389.00	-	-	-
30	238.00	290.00	518.00	380.00	-	-	-
28	236.00	288.00	511.00	377.00	-	-	-
36 X 36	276.00	331.00	656.00	441.00	-	-	-
34	271.00	329.00	645.00	434.00	-	-	-
32	269.00	326.00	636.00	431.00	-	-	-
30	264.00	323.00	627.00	422.00	-	-	-
38 X 38	308.00	370.00	-	493.00	-	-	-
36	306.00	367.00	-	489.00	-	-	-
34	302.00	362.00	-	481.00	-	-	-
32	298.00	357.00	-	476.00	-	-	-
40 X 40	342.00	411.00	-	547.00	-	-	-
38	340.00	408.00	-	543.00	-	-	-
36	335.00	402.00	-	536.00	-	-	-
34	331.00	397.00	-	529.00	-	-	-
42 X 42	352.00	422.00	-	562.00	-	-	-
40	350.00	420.00	-	559.00	-	-	-
38	348.00	418.00	-	557.00	-	-	-
36	346.00	416.00	-	554.00	-	-	-
44 X 44	396.00	475.00	-	633.00	-	-	-
42	394.00	473.00	-	630.00	-	-	-
40	389.00	467.00	-	623.00	-	-	-
38	385.00	462.00	-	616.00	-	-	-



## BUTT-WELDING FITTINGS APPROX WEIGHT

### Tee

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
46 X 46	434.00	521.00	-	695.00	-	-	-
44	432.00	519.00	-	691.00	-	-	-
42	427.00	513.00	-	683.00	-	-	-
40	423.00	507.00	-	676.00	-	-	-

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
48 X 48	474.00	569.00	-	759.00	-	-	-
46	472.00	566.00	-	755.00	-	-	-
44	470.00	564.00	-	751.00	-	-	-
42	462.00	555.00	-	739.00	-	-	-

### Reducer

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
3/4 X 1/2	0.06	0.06	0.06	0.08	0.08	-	-
1 X 3/4	0.11	0.12	0.12	0.15	0.15	0.25	0.19
1/2	0.10	0.11	0.11	0.14	0.14	0.22	0.17
1-1/4 X 1	0.16	0.16	0.16	0.21	0.21	0.35	0.25
3/4	0.15	0.15	0.15	0.19	0.19	0.31	0.23
1/2	0.13	0.14	0.14	0.18	0.18	-	-
1-1/2 X 1-1/4	0.24	0.25	0.25	0.33	0.33	0.57	0.43
1	0.21	0.22	0.22	0.30	0.30	0.50	0.38
3/4	0.20	0.21	0.21	0.27	0.27	0.45	0.35
1/2	0.18	0.18	0.18	0.24	0.24	0.40	0.32
2 X 1-1/2	0.37	0.38	0.38	0.51	0.51	0.91	0.75
1-1/4	0.35	0.36	0.36	0.48	0.48	0.85	0.70
1	0.31	0.33	0.33	0.44	0.44	0.77	0.64
3/4	0.29	0.30	0.30	0.40	0.40	0.69	0.58
2-1/2 X 2	0.60	0.73	0.73	0.95	0.95	1.68	1.20
1-1/2	0.55	0.67	0.67	0.87	0.87	1.51	1.08
1-1/4	0.52	0.64	0.64	0.83	0.83	1.42	1.02
1	0.48	0.56	0.56	0.73	0.73	1.23	0.93
3 X 2-1/2	0.73	0.94	0.94	1.25	1.25	2.25	1.71
2	0.66	0.85	0.85	1.13	1.13	2.01	1.57
1-1/2	0.62	0.79	0.79	1.04	1.04	1.83	1.44
1-1/4	0.59	0.75	0.75	1.00	1.00	1.74	1.37
4 X 3	1.10	1.45	1.45	2.02	2.02	3.65	3.00
2-1/2	1.04	1.37	1.37	1.90	1.90	3.41	2.76
2	0.97	1.27	1.27	1.76	1.76	3.11	2.58
1-1/2	0.91	1.19	1.19	1.64	1.64	2.89	2.41
5 X 4	1.74	2.50	2.50	3.52	3.52	6.47	5.59
3	1.58	2.27	2.27	3.18	3.18	5.78	5.30
2-1/2	1.50	2.16	2.16	3.02	3.02	5.46	4.70
2	1.41	2.03	2.03	2.85	2.85	5.12	4.43
6 X 5	2.55	3.57	3.57	5.38	5.38	9.89	8.63
4	2.36	3.30	3.30	4.96	4.96	8.98	7.88
3	2.18	3.04	3.04	4.56	4.56	8.21	7.21
2-1/2	2.09	2.94	2.94	4.38	4.38	7.88	6.80

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
8 X 6	4.17	5.71	5.71	8.63	8.63	14.30	15.00
5	3.87	5.40	5.40	8.14	8.14	13.40	14.00
4	3.67	5.10	5.10	7.68	7.68	12.60	13.10
10 X 8	6.87	9.58	9.58	12.90	15.40	24.30	27.50
6	6.32	8.78	8.78	11.80	14.20	22.10	25.10
5	6.06	8.42	8.42	11.30	14.50	21.10	23.90
4	5.80	8.20	8.20	11.00	14.00	20.50	22.60
12 X 10	9.97	13.60	13.60	14.70	24.80	35.00	44.60
8	9.29	12.70	12.70	13.70	22.70	33.00	41.00
6	8.69	11.80	11.80	12.80	21.40	32.00	38.00
5	8.39	11.70	11.70	12.60	20.60	31.00	36.40
14 X 12	21.20	25.40	29.50	33.60	49.80	-	88.50
10	19.70	23.60	27.40	31.20	46.10	-	81.60
8	18.30	21.80	25.40	28.90	42.20	-	74.70
6	16.90	20.30	23.60	26.80	39.10	-	68.30
16 X 14	25.90	31.00	41.10	41.10	67.70	-	121.00
12	24.10	29.60	39.20	39.20	65.00	-	116.00
10	22.40	27.80	36.80	36.80	60.80	-	108.00
8	21.70	26.20	34.50	34.50	56.60	-	99.90
18 X 16	31.50	37.80	56.20	50.10	91.40	-	165.00
14	29.80	35.70	53.00	47.40	86.40	-	155.00
12	27.70	33.20	51.70	44.00	83.00	-	149.00
10	27.10	32.70	48.40	43.20	78.50	-	140.00
20 X 18	47.00	56.40	88.40	74.90	150.00	-	-
16	44.70	53.50	83.90	71.10	142.00	-	-
14	42.40	50.80	79.60	67.40	136.00	-	233.00
12	40.80	49.20	76.90	65.10	130.00	-	-
22 X 20	52.10	62.40	98.00	82.90	181.00	-	-
18	49.50	59.40	93.20	78.90	172.00	-	-
16	47.00	56.40	98.40	74.80	164.00	-	-
14	45.30	54.30	83.60	72.10	156.00	-	-

## BUTT-WELDING FITTINGS APPROX WEIGHT

### Reducer

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
24 X 22	57.10	68.40	124.00	91.00	215.00	-	-
20	54.80	65.70	119.00	87.30	206.00	-	-
18	52.60	63.00	114.00	83.80	197.00	-	-
16	50.40	60.50	109.00	80.30	185.00	-	-
26 X 24	74.50	89.40	162.00	119.00	-	-	-
22	71.50	85.80	155.00	114.00	-	-	-
20	68.50	82.10	148.00	109.00	-	-	-
18	66.30	79.50	142.00	106.00	-	-	-
28 X 26	80.60	96.60	175.00	129.00	-	-	-
24	77.50	93.00	168.00	124.00	-	-	-
22	74.50	89.40	162.00	119.00	-	-	-
20	72.40	88.80	155.00	115.00	-	-	-
30 X 28	86.60	104.00	188.00	138.00	-	-	-
26	83.60	100.00	182.00	133.00	-	-	-
24	80.60	96.60	175.00	129.00	-	-	-
22	78.50	94.20	168.00	125.00	-	-	-
32 X 30	92.60	111.00	202.00	148.00	-	-	-
28	89.60	108.00	195.00	143.00	-	-	-
26	86.60	104.00	188.00	138.00	-	-	-
24	84.60	102.00	184.00	135.00	-	-	-
34 X 32	98.70	118.00	215.00	158.00	-	-	-
30	95.60	115.00	208.00	153.00	-	-	-
28	92.60	111.00	205.00	148.00	-	-	-
26	90.70	109.00	200.00	145.00	-	-	-
36 X 34	104.60	125.60	250.00	167.30	-	-	-
32	101.60	122.00	243.00	162.40	-	-	-
30	98.60	118.40	238.00	157.60	-	-	-
28	95.60	114.70	234.00	152.80	-	-	-

Nominal Pipe Size (inch)	SGP	STD	S40	X-S	S80	XX-S	S 160
38 X 36	112.00	133.00	-	177.00	-	-	-
34	108.00	129.00	-	172.00	-	-	-
32	105.00	126.00	-	167.00	-	-	-
30	103.00	124.00	-	165.00	-	-	-
40 X 38	117.00	140.00	-	187.00	-	-	-
36	114.00	137.00	-	182.00	-	-	-
34	111.00	133.00	-	177.00	-	-	-
32	109.00	131.00	-	174.00	-	-	-
42 X 40	123.00	147.00	-	196.00	-	-	-
38	120.00	144.00	-	192.00	-	-	-
36	117.00	140.00	-	187.00	-	-	-
34	115.00	138.00	-	184.00	-	-	-
44 X 44	129.00	155.00	-	206.00	-	-	-
42	126.00	151.00	-	201.00	-	-	-
40	123.00	147.00	-	196.00	-	-	-
38	121.00	146.00	-	194.00	-	-	-
46 X 46	157.00	189.00	-	252.00	-	-	-
44	154.00	185.00	-	246.00	-	-	-
42	150.00	180.00	-	241.00	-	-	-
40	148.00	178.00	-	237.00	-	-	-
48 X 46	164.00	197.00	-	263.00	-	-	-
44	161.00	193.00	-	257.00	-	-	-
42	157.00	189.00	-	252.00	-	-	-
40	155.00	186.00	-	248.00	-	-	-





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