



KUMKANG
STEEL PIPE FITTINGS

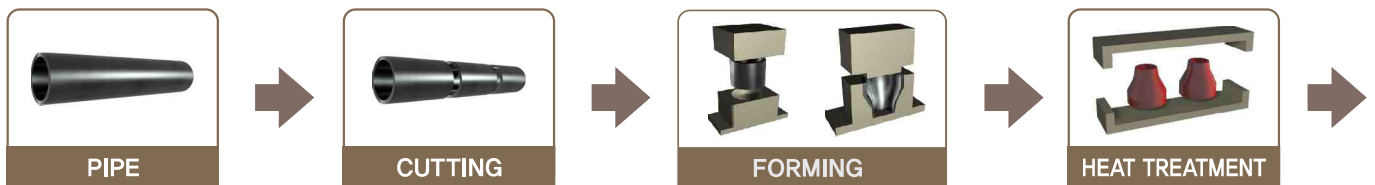
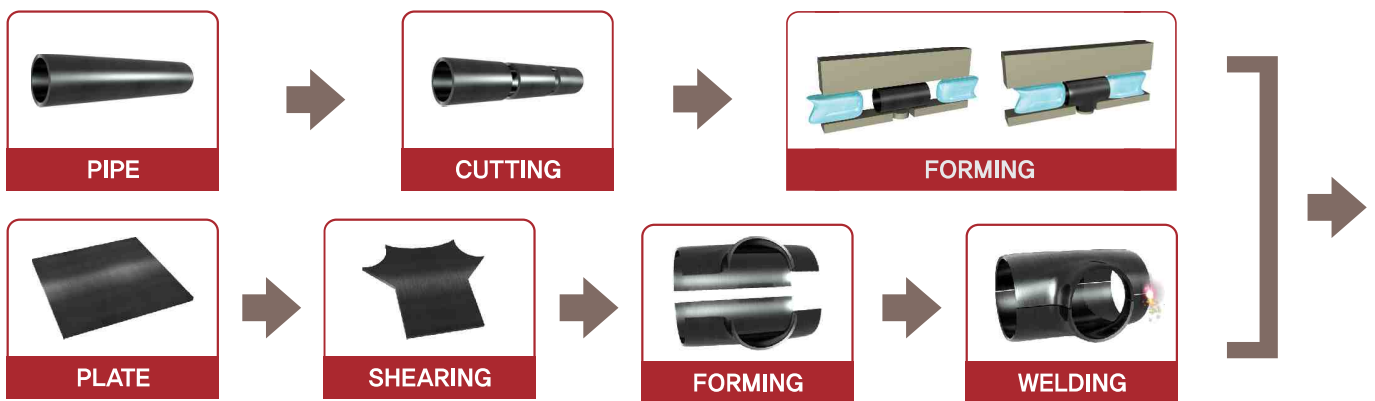
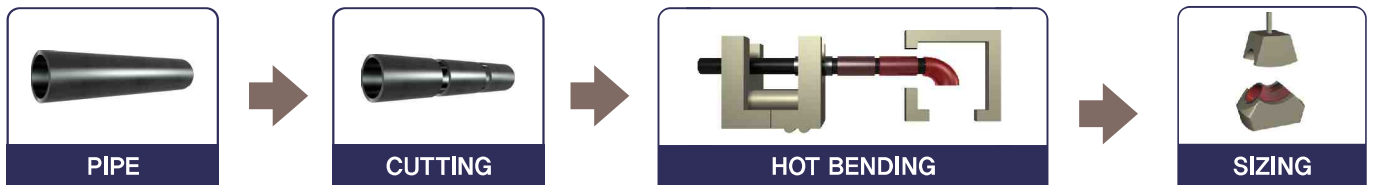


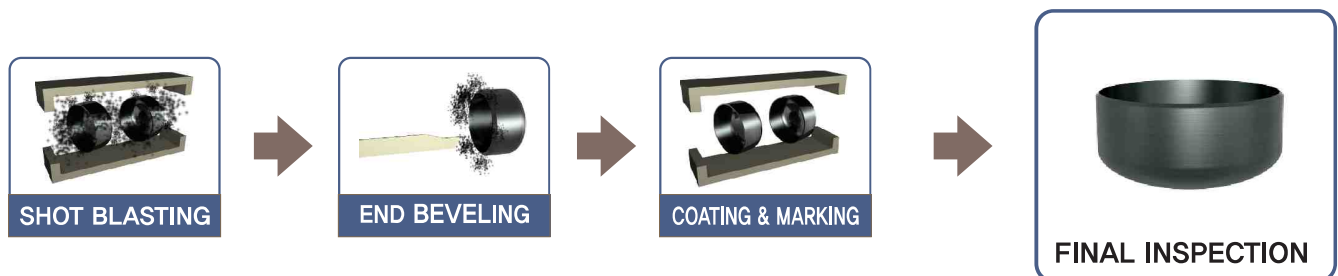
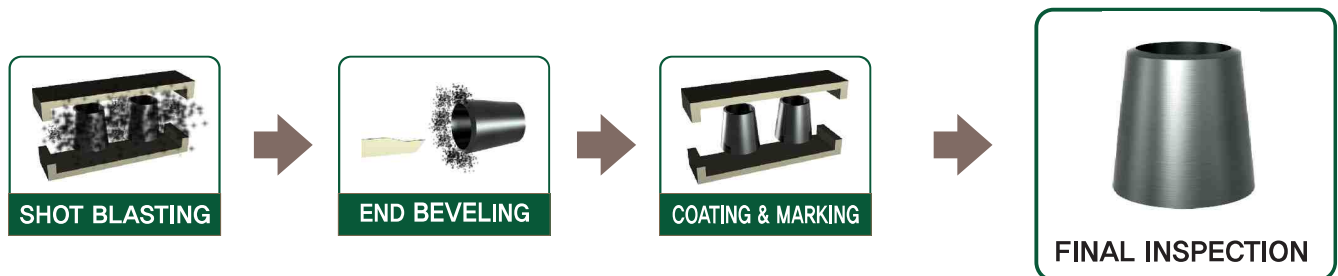
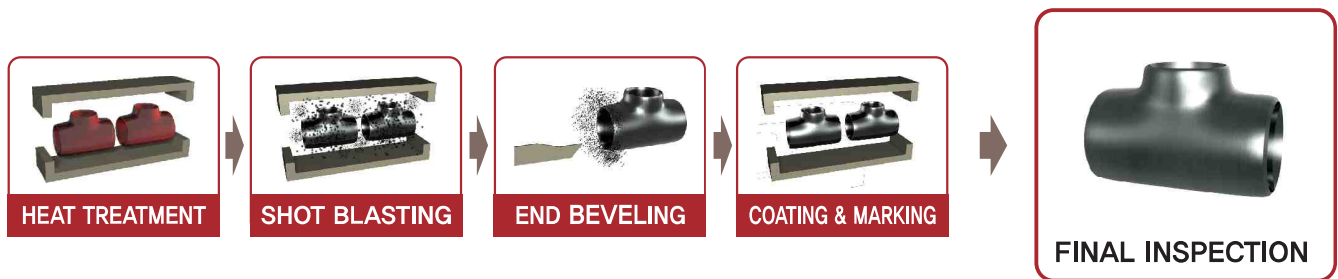
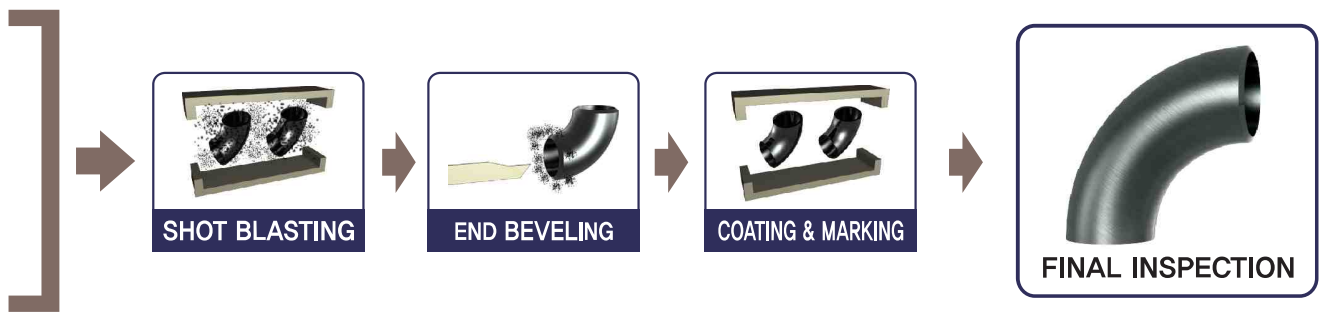
KUMKANG STEEL PIPE FITTINGS

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Process





Specifications

KS : KOREAN INDUSTRIAL STANDARDS

KS B 1522	Steel Butt Welding Pipe Fittings for Ordinary use.
KS B 1541	Steel Butt-Welding Pipe Fittings.
KS B 1543	Steel Plate Butt-Welding Pipe Fittings.
KS B 1542	Steel Socket-Welding Pipe Fittings.

JIS : JAPANESE INDUSTRIAL STANDARDS

JIS B 2311	Steel Butt-Welding Pipe Fittings for Ordinary use.
JIS B 2312	Steel Butt-Welding Pipe Fittings.
JIS B 2313	Steel Plate Butt-Welding Pipe Fittings.
JIS B 2316	Steel Socket-Welding Pipe Fittings.

ASME : AMERICAN SOCIETY OF MECHANICAL ENGINEERS

ASME B 16.5	Pipe Flanges and Flanged Fittings.
ASME B 16.9	Factory Made Wrought Steel Butt-Welding Fittings.
ASME B 16.11	Forged Steel Fittings, Socket-Welding and Threaded.
ASME B 16.25	Butt-Welding Ends.
ASME B 16.28	Wrought Steel Butt-Welding Short Radius Elbow and Returns.
ASME B 36.10	Welded and Seamless Wrought Steel Pipe.
ASME B 36.19	Stainless Steel Pipe.
ASME B 16.49	Factory-Made Wrought steel buttwelding induction bends for transportation and distribution system.
ASME B 31.1	Power Piping
ASME SECTION II	Materials.
ASME SECTION III	Rules for Construction of Nuclear Facility Components.
ASME SECTION V	Nondestructive Examination.
ASME SECTION VIII	Rules for Construction of Pressure Vessels.
ASME SECTION IX	Welding and Brazing Qualification.

BS EN : BRITISH STANDARD

BS EN 10253-1	Butt-Welding Pipe Fittings. Part1 : Wrought Carbon Steel for Genrnl use and without specific Inspection Requirements.
BS EN 10253-2	Butt-Welding Pipe Fittings. Part2 : Non Alloy and Ferritic Alloy Steels with Specific Inspection Requirements.
BS EN 10253-3	Butt-Welding Pipe Fittings. Part3 : Wrough Austenitic and Austenitic-Ferritic (Duplex) Stainless steels without Specific Inspection Requirements.
BS EN 10253-4	Butt-Welding Pipe Fittings. Part4 : Wrough Austenitic and Austenitic-Ferritic (Duplex) Stainless steels with Specific Inspection Requirements.

ASTM : AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM A 105	Carbon Steel Forgings for Piping Applications.
ASTM A 106	Seamless Carbon Steel Pipe for Hige-Temperature Service.
ASTM A 181	Forgings, Carbon Steel, for General-Purpose Piping.
ASTM A 182	Forged or Rolled Alloy-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.
ASTM A 234	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
ASTM A 350	Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components.
ASTM A 403	Wrought Austenitic Stainless Steel Piping Fittings.
ASTM A 420	Piping Fittings of Wrought Carbon Steel and Alloy Steel for Low-Temperature Service.
ASTM A 694	Carbon and Alloy Steel Forgings for Pipe Flanges, Fittings, Valves, and Parts for High-Pressure Transmission Service.
ASTM A 815	Wrought Ferritic, Ferrite/ Austenitic, and Martensitic Stainless Steel Piping Fittings.
ASTM A 860	Wrought High-Strenght Low-Alloy Steel Butt Welding Fittings.
ASTM A 53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
ASTM B 366	Factory-Made Wrought Nickel and Nickel Alloy Fittings.

MSS : MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY

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

API : AMERICAN PETROLEUM INSTITUTE

API 5L	Seamless and Welded Steel Line-Pipe.
API 5LX	Seamless and Welded High-Test Line-Pipes.

TPA-IBS-98 : Tube & Pipe Assocation International

TPA-IBS-98	Recommended Standard for Induction Bending of Pipe and Tube.
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PFI : Pipe Fabrication Institute Standard

PFI ES-24	Pipe Bending Methods, Tolerances, Process and Material Requirements.
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General Illustration

► Wrought Steel Butt-Welding Fittings (Carbon & Alloy Steel)

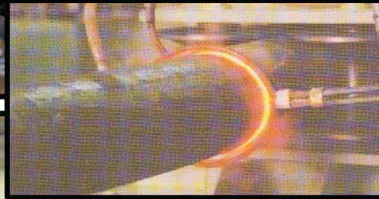
A long, smooth 90-degree elbow fitting.	A long, smooth 180-degree elbow fitting.	A concentric reducer fitting, tapering from a larger diameter to a smaller diameter.	A concentric reducer fitting, tapering from a larger diameter to a smaller diameter.
A short, smooth 90-degree elbow fitting.	A short, smooth 180-degree elbow fitting.	An eccentric reducer fitting, tapering from a larger diameter to a smaller diameter with one flat side.	An eccentric reducer fitting, tapering from a larger diameter to a smaller diameter with one flat side.
A long, smooth 45-degree elbow fitting.	A straight tee fitting, joining two pipes at a 90-degree angle.	A reducing tee fitting, joining a larger pipe and a smaller pipe at a 90-degree angle.	A cap fitting, used to close the end of a pipe.

► Stainless Steel Butt-Welding Fittings

A long, smooth 90-degree elbow fitting made of stainless steel.	A concentric reducer fitting made of stainless steel, tapering from a larger diameter to a smaller diameter.	A straight tee fitting made of stainless steel, joining two pipes at a 90-degree angle.
A short, smooth 90-degree elbow fitting made of stainless steel.	An eccentric reducer fitting made of stainless steel, tapering from a larger diameter to a smaller diameter with one flat side.	A reducing tee fitting made of stainless steel, joining a larger pipe and a smaller pipe at a 90-degree angle.
A long, smooth 45-degree elbow fitting made of stainless steel.	A cap fitting made of stainless steel, used to close the end of a pipe.	

► Forged Steel Outlet Fittings

A socket outlet fitting, used for connecting a pipe to a flange.	A welding outlet fitting, used for connecting a pipe to a flange.	A thread outlet fitting, used for connecting a pipe to a flange.
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· Manufacturing Standard

ASTM B16.49

DIN 2605

· Bending Radius (R)

3D 10D

· Bending Angle (θ)

15° 30° 45° 60° 90° 180°

· Straight Length (L)

500mm 1500mm

· Outside Diameter (D)

$D \leq 630\text{mm}$

· Wall Thickness (T)

$T \leq 120\text{mm}$

· End Bevel

In accordance with welding bevel of butt-welding fittings

· General Material

1) Carbon & Alloy Steel :

ASTM A234 WPB, WPC, WP1, WP11, WP22, WP5

ASTM A860 (MSS SP-75) WPHY42, WPHY46, WPHY52, WPHY60, WPHY65, WPHY70

ASTM A420 WPL6

ASTM A515

ASTM A516

API 5L

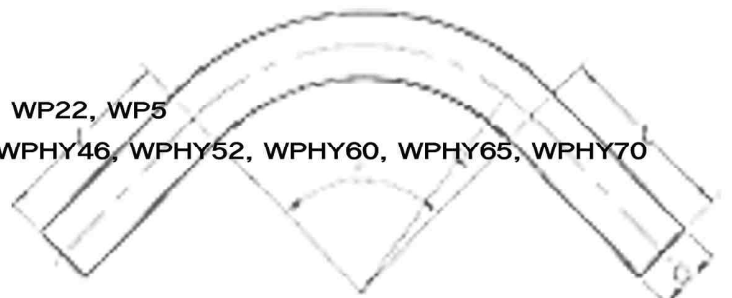
PSL 1 A25, A, B, X42, X46, X52, X56, X60, X65, X70

PSL 2 B, X42, X46, X52, X56, X60, X65, X70, X80

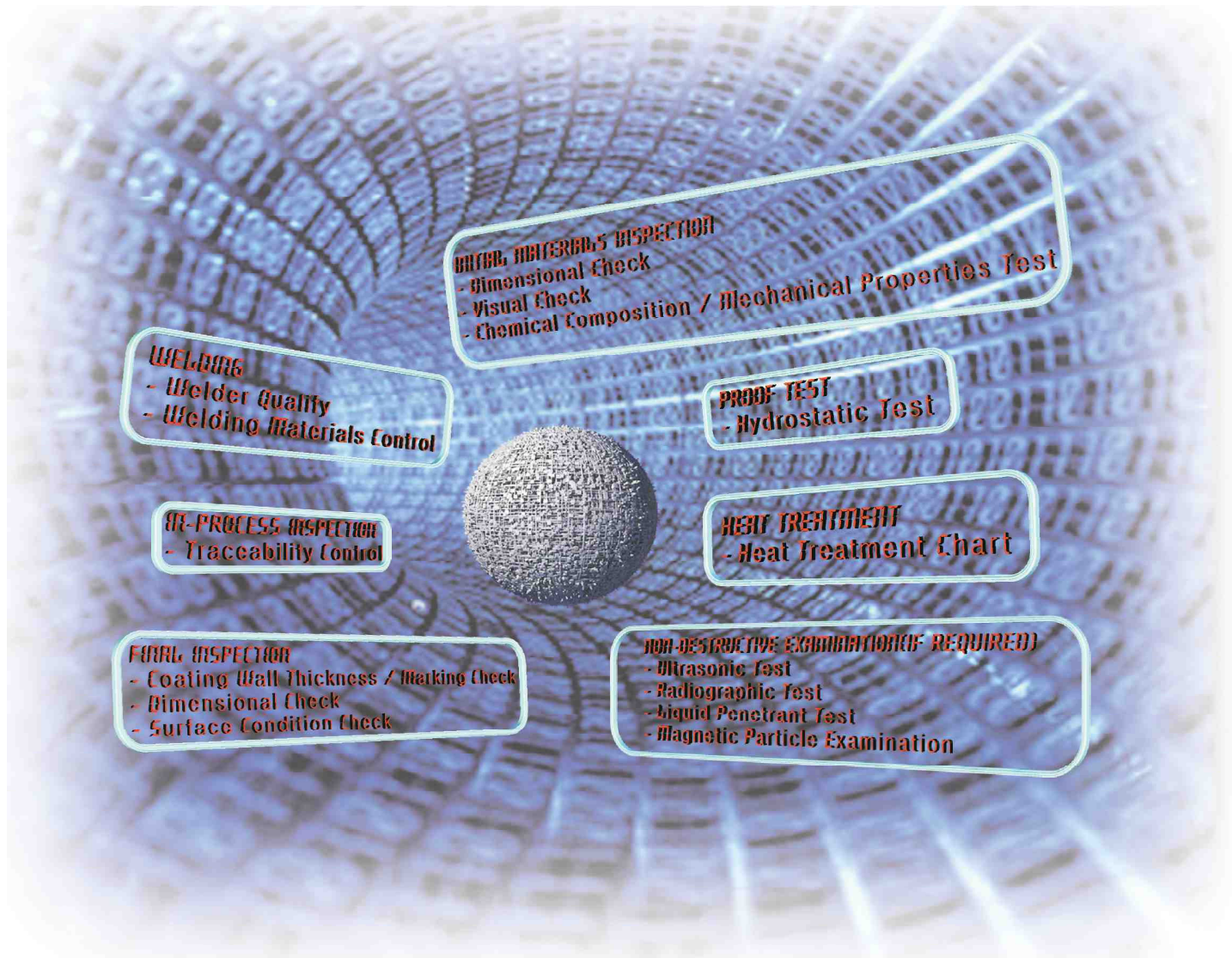
2) Stainless Steel :

ASTM A403 WP304, WP304L, WP304H, WP316, WP316L, WP317L, WP321, WP321H

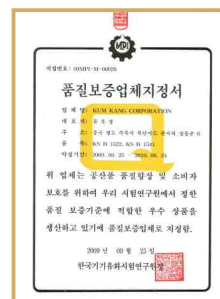
N.B.: Bends can also be designed based on the client's requirement of technical drawing.



Quality Assurance



Certifications





WROUGHT STEEL BUTT-WELDING PIPE FITTINGS

A S M E

CO N TENTS

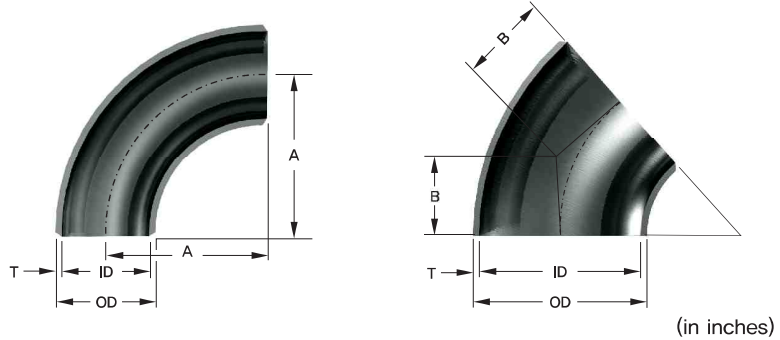
• 90°,45° Elbow (STD, Sch40, XS, Sch80)	8
• 90°,45° Elbow (Sch20, Sch60, Sch100, Sch120,Sch140, Sch160, XXS)	12
• 180° Elbow, Cap (STD, Sch40, XS, Sch80)	13
• 180° Elbow, Cap (Sch20, Sch60, Sch100, Sch120,Sch140, Sch160, XXS)	14
• Tees (STD, Sch40, XS, Sch80)	15
• Tees (Sch20, Sch60, Sch100, Sch120,Sch140, Sch160, XXS)	19
• Reducer (STD, Sch40, XS, Sch80)	23
• Reducer (Sch20, Sch60, Sch100, Sch120,Sch140, Sch160, XXS)	27

Wrought Steel Butt-Welding Pipe Fittings

90° Elbows (Long)
45° Elbows (Long)

STD (Sch 40)

ASME B16.9



Nominal Pipe Size	Outside Diameter O.D	Inside Diameter I.D	Wall Thickness T	Center to End A	Center to End B
1/2	0.840	0.622	0.109	1 1/2	5/8
3/4	1.050	0.824	0.113	1 1/8	3/4
1	1.315	1.049	0.133	1 1/2	7/8
1 1/4	1.660	1.380	0.140	1 7/8	1
1 1/2	1.900	1.610	0.145	2 1/4	1 1/8
2	2.375	2.067	0.154	3	1 3/8
2 1/2	2.875	2.469	0.203	3 3/4	1 3/4
3	3.500	3.068	0.216	4 1/2	2
3 1/2	4.000	3.548	0.226	5 1/4	2 1/4
4	4.500	4.026	0.237	6	2 1/2
5	5.563	5.047	0.258	7 1/2	3 1/8
6	6.625	6.065	0.280	9	3 3/4
8	8.625	7.891	0.322	12	5
10	10.750	10.020	0.365	15	6 1/4
* 12	12.750	12.000	0.375	18	7 1/2
12	12.750	11.938	0.406	18	7 1/2
14	14.000	13.250	0.375	21	8 3/4
* 14	14.000	13.124	0.438	21	8 3/4
16	16.000	15.250	0.375	24	10
* 16	16.000	15.000	0.500	24	10
18	18.000	17.250	0.375	27	11 1/4
* 18	18.000	16.876	0.562	27	11 1/4
20	20.000	19.250	0.375	30	12 1/2
* 20	20.000	18.812	0.594	30	12 1/2
22	22.000	21.250	0.375	33	13 1/2
24	24.000	23.250	0.375	36	15
* 24	24.000	22.624	0.688	36	15
26	26.000	25.250	0.375	39	16
28	28.000	27.250	0.375	42	17 1/4
30	30.000	29.250	0.375	45	18 1/2
32	32.000	31.250	0.375	48	19 3/4
* 32	32.000	30.624	0.688	48	19 3/4
34	34.000	33.250	0.375	51	21
* 34	34.000	32.624	0.688	51	21
36	36.000	35.250	0.375	54	22 1/4
* 36	36.000	34.500	0.750	54	22 1/4
38	38.000	37.250	0.375	57	23 5/8
40	40.000	39.250	0.375	60	24 7/8
42	42.000	41.250	0.375	63	26
44	44.000	43.250	0.375	66	27 3/8
46	46.000	45.250	0.375	69	28 5/8
48	48.000	47.250	0.375	72	29 7/8

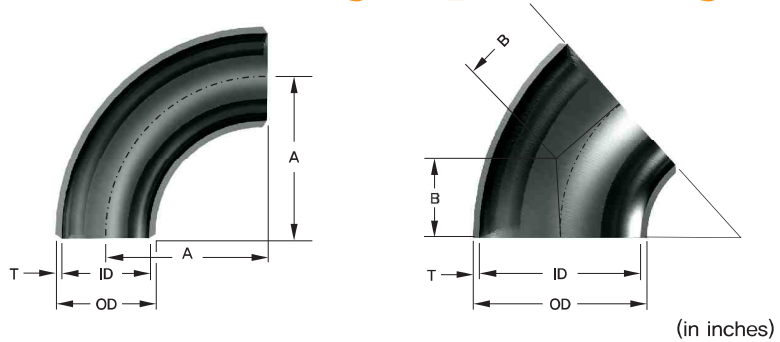
※ Asterisks(*) De note Sch40

Wrought Steel Butt-Welding Pipe Fittings

90° Elbows (Long)
45° Elbows (Long)

XS (Sch 80)

ASME B16.9



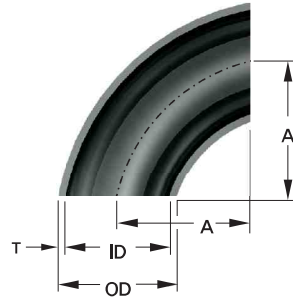
Nominal Pipe Size	Outside Diameter O.D	Inside Diameter I.D	Wall Thickness T	Center to End A	Center to End B
1/2	0.840	0.546	0.147	1 1/2	5/8
3/4	1.050	0.742	0.154	1 1/8	3/4
1	1.315	0.957	0.179	1 1/2	7/8
1 1/4	1.660	1.278	0.191	1 7/8	1
1 1/2	1.900	1.500	0.200	2 1/4	1 1/8
2	2.375	1.939	0.218	3	1 3/8
2 1/2	2.875	2.323	0.276	3 3/4	1 3/4
3	3.500	2.900	0.300	4 1/2	2
3 1/2	4.000	3.364	0.318	5 1/4	2 1/4
4	4.500	3.826	0.337	6	2 1/2
5	5.563	4.813	0.375	7 1/2	3 1/8
6	6.625	5.761	0.432	9	3 3/4
8	8.625	7.625	0.500	12	5
10	10.750	9.750	0.500	15	6 1/4
*10	10.750	9.562	0.594	15	6 1/4
12	12.750	11.750	0.500	18	7 1/2
*12	12.750	11.374	0.688	18	7 1/2
14	14.000	13.000	0.500	21	8 3/4
*14	14.000	12.500	0.750	21	8 3/4
16	16.000	15.000	0.500	24	10
*16	16.000	14.312	0.844	24	10
18	18.000	17.000	0.500	27	11 1/4
*18	18.000	16.124	0.938	27	11 1/4
20	20.000	19.000	0.500	30	12 1/2
*20	20.000	17.938	1.031	30	12 1/2
22	22.000	21.000	0.500	33	13 1/2
*22	22.000	19.750	1.125	33	13 1/2
24	24.000	23.000	0.500	36	15
*24	24.000	21.562	1.129	36	15
26	26.000	25.000	0.500	39	16
28	28.000	27.000	0.500	42	17 1/4
30	30.000	29.000	0.500	45	18 1/2
32	32.000	31.000	0.500	48	19 3/4
34	34.000	33.000	0.500	51	21
36	36.000	35.000	0.500	54	22 1/4
38	38.000	37.000	0.500	57	23 5/8
40	40.000	39.000	0.500	60	24 7/8
42	42.000	41.000	0.500	63	26
44	44.000	43.000	0.500	66	27 3/8
46	46.000	45.000	0.500	69	28 5/8
48	48.000	47.000	0.500	72	29 7/8

※ Asterisks(*) De note Sch80

Wrought Steel Butt-Welding Pipe Fittings

90° Elbows (Short)

STD (Sch 40)



ASME B16.9

(in inches)

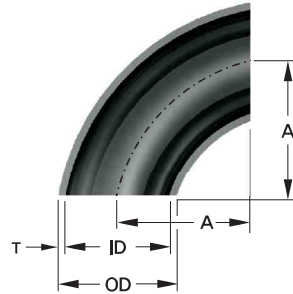
Nominal Pipe Size	Outside Diameter O.D	Inside Diameter I.D	Wall Thickness T	Center to End A
1	1.315	1.049	0.133	1
1 1/4	1.660	1.380	0.140	1 1/4
1 1/2	1.900	1.610	0.145	1 1/2
2	2.375	2.067	0.154	2
2 1/2	2.875	2.469	0.203	2 1/2
3	3.500	3.068	0.216	3
3 1/2	4.000	3.548	0.226	3 1/2
4	4.500	4.026	0.237	4
5	5.563	5.047	0.258	5
6	6.625	6.065	0.280	6
8	8.625	7.891	0.322	8
10	10.750	10.020	0.365	10
12	12.750	12.000	0.375	12
* 12	12.750	11.938	0.406	12
14	14.000	13.250	0.375	14
* 14	14.000	13.124	0.438	14
16	16.000	15.250	0.375	16
* 16	16.000	15.000	0.500	16
18	18.000	17.250	0.375	18
* 18	18.000	16.876	0.562	18
20	20.000	19.250	0.375	20
* 20	20.000	18.812	0.594	20
22	22.000	21.250	0.375	22
24	24.000	23.250	0.375	24
* 24	24.000	22.624	0.688	24
26	26.000	25.250	0.375	26
28	28.000	27.250	0.375	28
30	30.000	29.250	0.375	30
32	32.000	31.250	0.375	32
* 32	32.000	30.624	0.688	32
34	34.000	33.250	0.375	34
* 34	34.000	32.624	0.688	34
36	36.000	35.250	0.375	36
* 36	36.000	34.500	0.750	36
38	38.000	37.250	0.375	38
40	40.000	39.250	0.375	40
42	42.000	41.250	0.375	42
44	44.000	43.250	0.375	44
46	46.000	45.250	0.375	46
48	48.000	47.250	0.375	48

※ Asterisks(*) De note Sch40

Wrought Steel Butt-Welding Pipe Fittings

90° Elbows (Short)

XS (Sch 80)



ASME B16.9

(in inches)

Nominal Pipe Size	Outside Diameter O.D	Inside Diameter I.D	Wall Thickness T	Center to End A
1	1.315	0.957	0.179	1 1/2
1 1/4	1.660	1.278	0.191	1 7/8
1 1/2	1.900	1.500	0.200	2 1/4
2	2.375	1.939	0.218	3
2 1/2	2.875	2.323	0.276	3 3/4
3	3.500	2.900	0.300	4 1/2
3 1/2	4.000	3.364	0.318	5 1/4
4	4.500	3.826	0.337	6
5	5.563	4.813	0.375	7 1/2
6	6.625	5.761	0.432	9
8	8.625	7.625	0.500	12
10	10.750	9.750	0.500	15
* 10	10.750	9.562	0.594	15
12	12.750	11.750	0.500	18
* 12	12.750	11.374	0.688	18
14	14.000	13.000	0.500	21
* 14	14.000	12.500	0.750	21
16	16.000	15.000	0.500	24
* 16	16.000	14.312	0.844	24
18	18.000	17.000	0.500	27
* 18	18.000	16.124	0.938	27
20	20.000	19.000	0.500	30
* 20	20.000	17.938	1.031	30
22	22.000	21.000	0.500	33
* 22	22.000	19.750	1.125	33
24	24.000	23.000	0.500	36
* 24	24.000	21.562	1.129	36
26	26.000	25.000	0.500	39
28	28.000	27.000	0.500	42
30	30.000	29.000	0.500	45
32	32.000	31.000	0.500	48
34	34.000	33.000	0.500	51
36	36.000	35.000	0.500	54
38	38.000	37.000	0.500	57
40	40.000	39.000	0.500	60
42	42.000	41.000	0.500	63
44	44.000	43.000	0.500	66
46	46.000	45.000	0.500	69
48	48.000	47.000	0.500	72

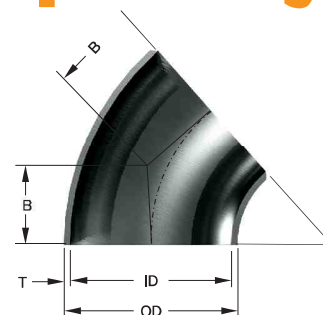
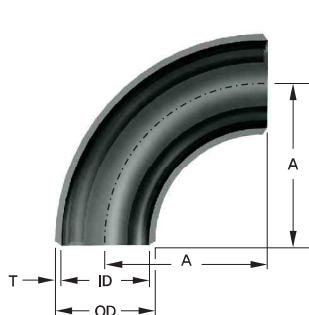
※ Asterisks(*) De note Sch80

Wrought Steel Butt-Welding Pipe Fittings

**90° Elbows (Long, Short)
45° Elbows (Long)**

Sch 20, 60, 100, 120,
140, 160, XXS

ASME B16.9



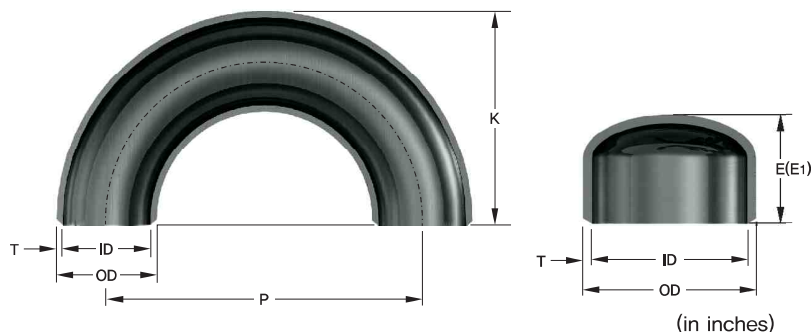
(in inches)

Nominal Pipe Size	Outside Diameter O.D	Wall Thickness T							Center to End		
									A		B
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	XXS	Long	Short	Long
1/2	0.840	—	—	—	—	—	0.188	0.294	1 1/2	—	5/8
3/4	1.050	—	—	—	—	—	0.219	0.308	1 1/2	—	3/4
1	1.315	—	—	—	—	—	0.250	0.358	1 1/2	1	7/8
1 1/4	1.660	—	—	—	—	—	0.250	0.382	1 7/8	1 1/4	1
1 1/2	1.900	—	—	—	—	—	0.281	0.400	2 1/4	1 1/2	1 1/8
2	2.375	—	—	—	—	—	0.344	0.436	3	2	1 3/8
2 1/2	2.875	—	—	—	—	—	0.375	0.552	3 3/4	2 1/2	1 3/4
3	3.500	—	—	—	—	—	0.438	0.600	4 1/2	3	2
4	4.500	—	—	—	0.438	—	0.531	0.674	6	4	2 1/2
5	5.563	—	—	—	0.500	—	0.625	0.750	7 1/2	5	3 1/8
6	6.625	—	—	—	0.562	—	0.719	0.864	9	6	3 3/4
8	8.625	0.250	0.406	0.594	0.719	0.812	0.906	0.875	12	8	5
10	10.750	0.250	0.500	0.719	0.844	1.000	1.125	1.000	15	10	6 1/4
12	12.750	0.250	0.562	0.844	1.000	1.125	1.312	1.000	18	12	7 1/2
14	14.000	0.312	0.594	0.938	1.094	1.250	1.406	—	21	14	8 3/4
16	16.000	0.312	0.656	1.031	1.219	1.438	1.594	—	24	16	10
18	18.000	0.312	0.750	1.156	1.375	1.562	1.781	—	27	18	11 1/4
20	20.000	0.375	0.812	1.281	1.500	1.750	1.969	—	30	20	12 1/2
22	22.000	0.375	0.875	1.375	1.625	1.875	2.215	—	33	22	13 1/2
24	24.000	0.375	0.969	1.531	1.812	2.062	2.344	—	36	24	15

Wrought Steel Butt-Welding Pipe Fittings

180° Elbows (Long, Short) Caps

STD (Sch 40), XS (Sch 80)



ASME B16.9

Nominal Pipe Size	Outside Diameter O.D	STD (Sch 40)		XS (Sch 80)		Length E	Limiting Wall Thickness For Length E	Length E ₁	Long		Short	
		ID	T	ID	T				P	K	P	K
1/2	0.840	0.622	0.109	0.546	0.147	1.00	0.18	1.00	3.00	1.88	—	—
3/4	1.050	0.824	0.113	0.742	0.154	1.00	0.18	1.00	2.25	1.69	—	—
1	1.315	1.049	0.133	0.957	0.179	1.50	0.18	1.50	3.00	2.19	2.00	1.62
1 1/4	1.660	1.380	0.140	1.278	0.191	1.50	0.19	1.50	3.75	2.75	2.50	2.06
1 1/2	1.900	1.610	0.145	1.500	0.200	1.50	0.20	1.50	4.50	3.25	3.00	2.44
2	2.375	2.067	0.154	1.939	0.218	1.50	0.22	1.75	6.00	4.19	4.00	3.19
2 1/2	2.875	2.469	0.203	2.323	0.276	1.50	0.28	2.00	7.50	5.19	5.00	3.94
3	3.500	3.068	0.216	2.900	0.300	2.00	0.30	2.50	9.00	6.25	6.00	4.75
3 1/2	4.000	3.548	0.226	3.364	0.318	2.50	0.32	3.00	10.50	7.25	7.00	5.50
4	4.500	4.026	0.237	3.826	0.337	2.50	0.34	3.00	12.00	8.25	8.00	6.25
5	5.563	5.047	0.258	4.813	0.375	3.00	0.38	3.50	15.00	10.31	10.00	7.75
6	6.625	6.065	0.280	5.761	0.432	3.50	0.43	4.00	18.00	12.31	12.00	9.31
8	8.625	7.891	0.322	7.625	0.500	4.00	0.50	5.00	24.00	16.31	16.00	12.31
10	10.750	10.020	0.365	9.750	0.500	5.00	0.50	6.00	30.00	20.38	20.00	15.38
*10	10.750	—	—	9.562	0.594	5.00	0.50	6.00	30.00	20.38	20.00	15.38
12	12.750	12.000	0.375	11.750	0.500	6.00	0.50	7.00	36.00	24.38	24.00	18.38
*12	12.750	11.938	0.406	11.374	0.688	6.00	0.50	7.00	36.00	24.38	24.00	18.38
14	14.000	13.250	0.375	13.000	0.500	6.50	0.50	7.50	42.00	28.00	28.00	21.00
*14	14.000	13.124	0.438	12.500	0.750	6.50	0.50	7.50	42.00	28.00	28.00	21.00
16	16.000	15.250	0.375	15.000	0.500	7.00	0.50	8.00	48.00	32.00	32.00	24.00
*16	16.000	15.000	0.500	14.312	0.844	7.00	0.50	8.00	48.00	32.00	32.00	24.00
18	18.000	17.250	0.375	17.000	0.500	8.00	0.50	9.00	54.00	36.00	36.00	27.00
*18	18.000	16.876	0.562	16.124	0.938	8.00	0.50	9.00	54.00	36.00	36.00	27.00
20	20.000	19.250	0.375	19.000	0.500	9.00	0.50	10.00	60.00	40.00	40.00	30.00
*20	20.000	18.812	0.594	17.938	1.031	9.00	0.50	10.00	60.00	40.00	40.00	30.00
22	22.000	21.250	0.375	21.000	0.500	10.00	0.50	10.00	66.00	44.00	44.00	33.00
*22	22.000	—	—	19.750	1.125	10.00	0.50	10.00	66.00	44.00	44.00	33.00
24	24.000	23.250	0.375	23.000	0.500	10.50	0.50	12.00	72.00	48.00	48.00	36.00
*24	24.000	22.624	0.688	21.562	1.219	10.50	0.50	12.00	72.00	48.00	48.00	36.00
26	26.000	25.250	0.375	25.000	0.500	10.50	—	—	—	—	—	—
28	28.000	27.250	0.375	27.000	0.500	10.50	—	—	—	—	—	—
30	30.000	29.250	0.375	29.000	0.500	10.50	—	—	—	—	—	—
32	32.000	31.250	0.375	31.000	0.500	10.50	—	—	—	—	—	—
*32	32.000	30.624	0.688	—	—	10.50	—	—	—	—	—	—
34	34.000	33.250	0.375	33.000	0.500	10.50	—	—	—	—	—	—
*34	34.000	32.624	0.688	—	—	10.50	—	—	—	—	—	—
36	36.000	35.250	0.375	35.000	0.500	10.50	—	—	—	—	—	—
*36	36.000	34.500	0.750	—	—	10.50	—	—	—	—	—	—
38	38.000	37.250	0.375	37.000	0.500	12.00	—	—	—	—	—	—
40	40.000	39.250	0.375	39.000	0.500	12.00	—	—	—	—	—	—
42	42.000	41.250	0.375	41.000	0.500	12.00	—	—	—	—	—	—
44	44.000	43.250	0.375	43.000	0.500	13.50	—	—	—	—	—	—
46	46.000	45.250	0.375	45.000	0.500	13.50	—	—	—	—	—	—
48	48.000	47.250	0.375	47.000	0.500	13.50	—	—	—	—	—	—

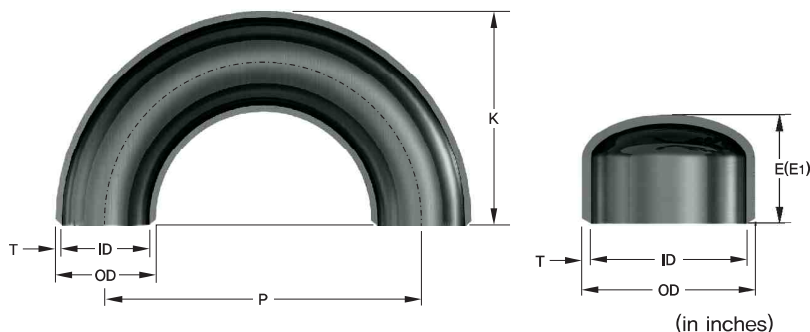
※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

180° Elbows (Long, Short) Caps

Sch 20, 60, 100, 120, 140
160, XXS

ASME B16.9

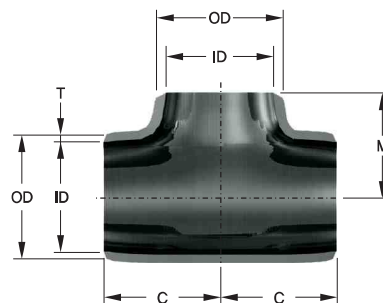


Nominal Pipe Size	Outside Diameter O.D	Wall Thickness T							Length E	Limiting Wall Thickness For Length E	Length E ₁	Long		Short	
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	XXS				P	K	P	K
1/2	0.840	—	—	—	—	—	0.188	0.294	1.00	0.18	1.00	3.00	1.88	—	—
3/4	1.050	—	—	—	—	—	0.219	0.308	1.00	0.18	1.00	2.25	1.69	—	—
1	1.315	—	—	—	—	—	0.250	0.358	1.50	0.18	1.50	3.00	2.19	2.00	1.62
1 1/4	1.660	—	—	—	—	—	0.250	0.382	1.50	0.19	1.50	3.75	2.75	2.50	2.06
1 1/2	1.900	—	—	—	—	—	0.281	0.400	1.50	0.20	1.50	4.50	3.25	3.00	2.44
2	2.375	—	—	—	—	—	0.344	0.436	1.50	0.22	1.75	6.00	4.19	4.00	3.19
2 1/2	2.875	—	—	—	—	—	0.375	0.552	1.50	0.28	2.00	7.50	5.19	5.00	3.94
3	3.500	—	—	—	—	—	0.438	0.600	2.00	0.30	2.50	9.00	6.25	6.00	4.75
4	4.500	—	—	—	0.438	—	0.531	0.674	2.50	0.34	3.00	12.00	8.25	8.00	6.25
5	5.563	—	—	—	0.500	—	0.625	0.750	3.00	0.38	3.50	15.00	10.31	10.00	7.75
6	6.625	—	—	—	0.562	—	0.719	0.864	3.50	0.43	4.00	18.00	12.31	12.00	9.31
8	8.625	0.250	0.406	0.594	0.719	0.812	0.906	0.875	4.00	0.50	5.00	24.00	16.31	16.00	12.31
10	10.750	0.250	0.500	0.719	0.844	1.000	1.125	1.000	5.00	0.50	6.00	30.00	20.38	20.00	15.38
12	12.750	0.250	0.562	0.844	1.000	1.125	1.312	1.000	6.00	0.50	7.00	36.00	24.38	24.00	18.38
14	14.000	0.312	0.594	0.938	1.094	1.250	1.406	—	6.50	0.50	7.50	42.00	28.00	28.00	21.00
16	16.000	0.312	0.656	1.031	1.219	1.438	1.594	—	7.00	0.50	8.00	48.00	32.00	32.00	24.00
18	18.000	0.312	0.750	1.156	1.375	1.562	1.781	—	8.00	0.50	9.00	54.00	36.00	36.00	27.00
20	20.000	0.375	0.812	1.281	1.500	1.750	1.969	—	9.00	0.50	10.00	60.00	40.00	40.00	30.00
22	22.000	0.375	0.875	1.375	1.625	1.875	2.125	—	10.00	0.50	10.00	66.00	44.00	44.00	33.00
24	24.000	0.375	0.969	1.531	1.812	2.062	2.344	—	10.50	0.50	12.00	72.00	48.00	48.00	36.00

Wrought Steel Butt-Welding Pipe Fittings

Tees (Straight)

STD (Sch 40) , XS (Sch 80)



ASME B16.9

(in inches)

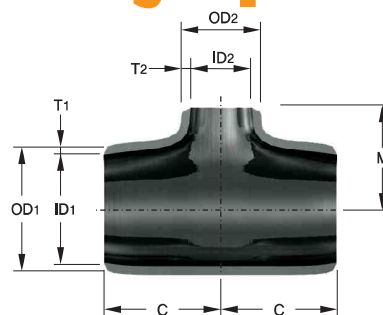
Nominal Pipe Size	Outside Diameter O.D	STD(Sch 40)		XS(Sch 80)		Center to End	
		I.D	T	I.D	T	Run C	Outlet M
1/2	0.840	0.622	0.109	0.546	0.147	1	1
3/4	1.050	0.824	0.113	0.742	0.154	1 1/8	1 1/8
1	1.315	1.049	0.133	0.957	0.179	1 1/2	1 1/2
1 1/4	1.660	1.380	0.140	1.278	0.191	1 7/8	1 7/8
1 1/2	1.900	1.610	0.145	1.500	0.200	2 1/4	2 1/4
2	2.375	2.067	0.154	1.939	0.218	2 1/2	2 1/2
2 1/2	2.875	2.469	0.203	2.323	0.276	3	3
3	3.500	3.068	0.216	2.900	0.300	3 3/8	3 3/8
3 1/2	4.000	3.548	0.226	3.364	0.318	3 3/4	3 3/4
4	4.500	4.026	0.237	3.826	0.337	4 1/8	4 1/8
5	5.563	5.047	0.258	4.813	0.375	4 7/8	4 7/8
6	6.625	6.065	0.280	5.761	0.432	5 5/8	5 5/8
8	8.625	7.891	0.322	7.625	0.500	7	7
10	10.750	10.020	0.365	9.750	0.500	8 1/2	8 1/2
* 10	10.750	—	—	9.562	0.594	8 1/2	8 1/2
12	12.750	12.000	0.375	11.750	0.500	10	10
* 12	12.750	11.938	0.406	11.374	0.688	10	10
14	14.000	13.250	0.375	13.000	0.500	11	11
* 14	14.000	13.124	0.438	12.500	0.750	11	11
16	16.000	15.250	0.375	15.000	0.500	12	12
* 16	16.000	15.000	0.500	14.312	0.844	12	12
18	18.000	17.250	0.375	17.000	0.500	13 1/2	13 1/2
* 18	18.000	16.876	0.562	16.124	0.938	13 1/2	13 1/2
20	20.000	19.250	0.375	19.000	0.500	15	15
* 20	20.000	18.812	0.594	17.938	1.031	15	15
22	22.000	21.250	0.375	21.000	0.500	16 1/2	16 1/2
* 22	22.000	—	—	19.750	1.125	16 1/2	16 1/2
24	24.000	23.250	0.375	23.000	0.500	17	17
* 24	24.000	22.624	0.688	21.562	1.219	17	17
26	26.000	25.250	0.375	25.000	0.500	19 1/2	19 1/2
28	28.000	27.250	0.375	27.000	0.500	20 1/2	20 1/2
30	30.000	29.250	0.375	29.000	0.500	22	22
32	32.000	31.250	0.375	31.000	0.500	23 1/2	23 1/2
* 32	32.000	30.624	0.688	—	—	23 1/2	23 1/2
34	34.000	33.250	0.375	33.000	0.500	25	25
* 34	34.000	32.624	0.688	—	—	25	25
36	36.000	35.250	0.375	35.000	0.500	26 1/2	26 1/2
* 36	36.000	34.500	0.750	—	—	26 1/2	26 1/2
38	38.000	37.250	0.375	37.000	0.500	28	28
40	40.000	39.250	0.375	39.000	0.500	29 1/2	29 1/2
42	42.000	41.250	0.375	41.000	0.500	30	28
44	44.000	43.250	0.375	43.000	0.500	32	30
46	46.000	45.250	0.375	45.000	0.500	33 1/2	31 1/2
48	48.000	47.250	0.375	47.000	0.500	35	33

※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Tees (Reducing)

STD (Sch 40), XS (Sch 80)



ASME B16.9

(in inches)

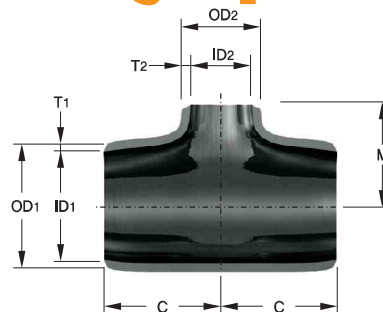
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD(Sch 40)		XS(Sch 80)		Center to End	
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Run C	Outlet M
3/4 X 3/4 X 1/2	1.050	0.840	0.113	0.109	0.154	0.147	1 1/8	1 1/8
1 X 1 X 3/4	1.135	1.050	0.133	0.113	0.179	0.154	1 1/2	1 1/2
1 X 1 X 1/2	1.135	0.840	0.133	0.109	0.179	0.147	1 1/2	1 1/2
1 1/4 X 1 1/4 X 1	1.660	1.315	0.140	0.133	0.191	0.179	1 7/8	1 7/8
1 1/4 X 1 1/4 X 3/4	1.660	1.050	0.140	0.113	0.191	0.154	1 7/8	1 7/8
1 1/2 X 1 1/2 X 1 1/4	1.900	1.660	0.145	0.140	0.200	0.191	2 1/4	2 1/4
1 1/2 X 1 1/2 X 1	1.900	1.315	0.145	0.133	0.200	0.179	2 1/4	2 1/4
1 1/2 X 1 1/2 X 3/4	1.900	1.050	0.145	0.113	0.200	0.154	2 1/4	2 1/4
2 X 2 X 1 1/2	2.375	1.900	0.154	0.145	0.218	0.200	2 1/2	2 3/8
2 X 2 X 1 1/4	2.375	1.660	0.154	0.140	0.218	0.191	2 1/2	2 1/4
2 X 2 X 1	2.375	1.315	0.154	0.133	0.218	0.179	2 1/2	2
2 1/2 X 2 1/2 X 2	2.875	2.375	0.203	0.154	0.276	0.218	3	2 3/4
2 1/2 X 2 1/2 X 1 1/2	2.875	1.900	0.203	0.145	0.276	0.200	3	2 5/8
2 1/2 X 2 1/2 X 1 1/4	2.875	1.660	0.203	0.140	0.276	0.191	3	2 1/2
3 X 3 X 2 1/2	3.500	2.875	0.216	0.203	0.300	0.276	3 3/8	3 1/4
3 X 3 X 2	3.500	2.375	0.216	0.154	0.300	0.218	3 3/8	3
3 X 3 X 1 1/2	3.500	1.900	0.216	0.145	0.300	0.200	3 3/8	2 7/8
3 1/2 X 3 1/2 X 3	4.000	3.500	0.226	0.216	0.318	0.300	3 3/4	3 5/8
3 1/2 X 3 1/2 X 2 1/2	4.000	2.875	0.226	0.203	0.318	0.276	3 3/4	3 1/2
3 1/2 X 3 1/2 X 2	4.000	2.375	0.226	0.154	0.318	0.218	3 3/4	3 1/4
3 1/2 X 3 1/2 X 1 1/2	4.000	1.900	0.226	0.145	0.318	0.200	3 3/4	3 1/8
4 X 4 X 3 1/2	4.500	4.000	0.237	0.226	0.337	0.318	4 1/8	4
4 X 4 X 3	4.500	3.500	0.237	0.216	0.337	0.300	4 1/8	3 7/8
4 X 4 X 2 1/2	4.500	2.875	0.237	0.203	0.337	0.276	4 1/8	3 3/4
4 X 4 X 2	4.500	2.375	0.237	0.154	0.337	0.218	4 1/8	3 1/2
5 X 5 X 4	5.563	4.500	0.258	0.237	0.375	0.337	4 7/8	4 5/8
5 X 5 X 3 1/2	5.563	4.000	0.258	0.226	0.375	0.318	4 7/8	4 1/2
5 X 5 X 3	5.563	3.500	0.258	0.216	0.375	0.300	4 7/8	4 3/8
5 X 5 X 2 1/2	5.563	2.875	0.258	0.203	0.375	0.276	4 7/8	4 1/4
6 X 6 X 5	6.625	5.563	0.280	0.258	0.432	0.375	5 5/8	5 3/8
6 X 6 X 4	6.625	4.500	0.280	0.237	0.432	0.337	5 5/8	5 1/8
6 X 6 X 3 1/2	6.625	4.000	0.280	0.226	0.432	0.318	5 5/8	5
6 X 6 X 3	6.625	3.500	0.280	0.216	0.432	0.300	5 5/8	4 7/8
8 X 8 X 6	8.625	6.625	0.322	0.280	0.500	0.432	7	6 5/8
8 X 8 X 5	8.625	5.563	0.322	0.258	0.500	0.375	7	6 3/8
8 X 8 X 4	8.625	4.500	0.322	0.237	0.500	0.337	7	6 1/8
10 X 10 X 8	10.750	8.625	0.365	0.322	0.500	0.500	8 1/2	8
10 X 10 X 6	10.750	6.625	0.365	0.280	0.500	0.432	8 1/2	7 5/8
10 X 10 X 5	10.750	5.563	0.365	0.258	0.500	0.375	8 1/2	7 1/2
*10 X 10 X 8	10.750	8.625	—	—	0.594	0.500	8 1/2	8
*10 X 10 X 6	10.750	6.625	—	—	0.594	0.432	8 1/2	7 5/8
*10 X 10 X 5	10.750	5.563	—	—	0.594	0.375	8 1/2	7 1/2

※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Tees (Reducing)

STD (Sch 40), XS (Sch 80)



ASME B16.9

(in inches)

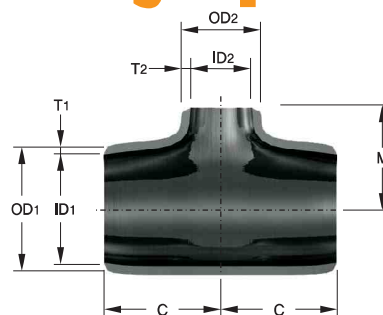
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD(Sch 40)		XS(Sch 80)		Center to End	
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Run C	Outlet M
12 × 12 × 10	12.750	10.750	0.375	0.365	0.500	0.500	10	9 1/2
12 × 12 × 8	12.750	8.625	0.375	0.322	0.500	0.500	10	9
12 × 12 × 6	12.750	6.625	0.375	0.280	0.500	0.432	10	8 5/8
* 12 × 12 × 10	12.750	10.750	0.406	0.365	0.688	0.594	10	9 1/2
* 12 × 12 × 8	12.750	8.625	0.406	0.322	0.688	0.500	10	9
* 12 × 12 × 6	12.750	6.625	0.406	0.280	0.688	0.432	10	8 5/8
14 × 14 × 12	14.000	12.750	0.375	0.375	0.500	0.500	11	10 5/8
14 × 14 × 10	14.000	10.750	0.375	0.365	0.500	0.500	11	10 1/8
14 × 14 × 8	14.000	8.625	0.375	0.322	0.500	0.500	11	9 3/4
* 14 × 14 × 12	14.000	12.750	0.438	0.406	0.750	0.688	11	10 5/8
* 14 × 14 × 10	14.000	10.750	0.438	0.365	0.750	0.594	11	10 1/8
* 14 × 14 × 8	14.000	8.625	0.438	0.322	0.750	0.500	11	9 3/4
16 × 16 × 14	16.000	14.000	0.375	0.375	0.500	0.500	12	12
16 × 16 × 12	16.000	12.750	0.375	0.375	0.500	0.500	12	11 5/8
16 × 16 × 10	16.000	10.750	0.375	0.365	0.500	0.500	12	11 1/8
* 16 × 16 × 14	16.000	14.000	0.500	0.438	0.844	0.750	12	12
* 16 × 16 × 12	16.000	12.750	0.500	0.406	0.844	0.688	12	11 5/8
* 16 × 16 × 10	16.000	10.750	0.500	0.365	0.844	0.594	12	11 1/8
18 × 18 × 16	18.000	16.000	0.375	0.375	0.500	0.500	13 1/2	13
18 × 18 × 14	18.000	14.000	0.375	0.375	0.500	0.500	13 1/2	13
18 × 18 × 12	18.000	12.750	0.375	0.375	0.500	0.500	13 1/2	12 5/8
* 18 × 18 × 16	18.000	16.000	0.562	0.500	0.938	0.844	13 1/2	13
* 18 × 18 × 14	18.000	14.000	0.562	0.438	0.938	0.750	13 1/2	13
* 18 × 18 × 12	18.000	12.750	0.562	0.406	0.938	0.688	13 1/2	12 5/8
20 × 20 × 18	20.000	18.000	0.375	0.375	0.500	0.500	15	14 1/2
20 × 20 × 16	20.000	16.000	0.375	0.375	0.500	0.500	15	14
20 × 20 × 14	20.000	14.000	0.375	0.375	0.500	0.500	15	14
* 20 × 20 × 18	20.000	18.000	0.594	0.562	1.031	0.938	15	14 1/2
* 20 × 20 × 16	20.000	16.000	0.594	0.500	1.031	0.844	15	14
* 20 × 20 × 14	20.000	14.000	0.594	0.438	1.031	0.750	15	14
22 × 22 × 20	22.000	20.000	0.375	0.375	0.500	0.500	16 1/2	16
22 × 22 × 18	22.000	18.000	0.375	0.375	0.500	0.500	16 1/2	15 1/2
22 × 22 × 16	22.000	16.000	0.375	0.375	0.500	0.500	16 1/2	15
* 22 × 22 × 20	22.000	20.000	—	—	1.125	1.031	16 1/2	16
* 22 × 22 × 18	22.000	18.000	—	—	1.125	0.938	16 1/2	15 1/2
* 22 × 22 × 16	22.000	16.000	—	—	1.125	0.844	16 1/2	15
24 × 24 × 22	24.000	22.000	0.375	0.375	0.500	0.500	17	17
24 × 24 × 20	24.000	20.000	0.375	0.375	0.500	0.500	17	17
24 × 24 × 18	24.000	18.000	0.375	0.375	0.500	0.500	17	16 1/2
* 24 × 24 × 22	24.000	22.000	—	—	1.219	1.125	17	17
* 24 × 24 × 20	24.000	20.000	0.688	0.594	1.219	1.031	17	17
* 24 × 24 × 18	24.000	18.000	0.688	0.562	1.219	0.938	17	16 1/2

※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Tees (Reducing)

STD (Sch 40), XS (Sch 80)



ASME B16.9

(in inches)

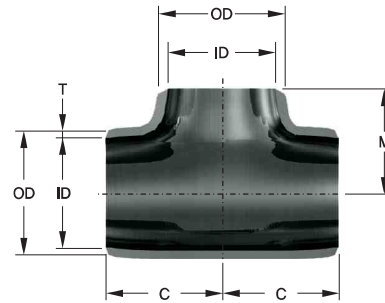
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD(Sch 40)		XS(Sch 80)		Center to End	
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Run C	Outlet M
26 × 26 × 22	26,000	22,000	0.375	0.375	0.500	0.500	19 1/2	18 1/2
26 × 26 × 18	26,000	18,000	0.375	0.375	0.500	0.500	19 1/2	17 1/2
26 × 26 × 16	26,000	16,000	0.375	0.375	0.500	0.500	19 1/2	17
28 × 28 × 24	28,000	24,000	0.375	0.375	0.500	0.500	20 1/2	20
28 × 28 × 20	28,000	20,000	0.375	0.375	0.500	0.500	20 1/2	19
28 × 28 × 18	28,000	18,000	0.375	0.375	0.500	0.500	20 1/2	18 1/2
30 × 30 × 26	30,000	26,000	0.375	0.375	0.500	0.500	22	21 1/2
30 × 30 × 22	30,000	22,000	0.375	0.375	0.500	0.500	22	20 1/2
30 × 30 × 20	30,000	20,000	0.375	0.375	0.500	0.500	22	20
32 × 32 × 28	32,000	28,000	0.375	0.375	0.500	0.500	23 1/2	22 1/2
32 × 32 × 24	32,000	24,000	0.375	0.375	0.500	0.500	23 1/2	22
32 × 32 × 22	32,000	22,000	0.375	0.375	0.500	0.500	23 1/2	21 1/2
* 32 × 32 × 24	32,000	24,000	0.688	0.688	—	—	23 1/2	22
34 × 34 × 30	34,000	30,000	0.375	0.375	0.500	0.500	25	24
34 × 34 × 26	34,000	26,000	0.375	0.375	0.500	0.500	25	23 1/2
34 × 34 × 22	34,000	22,000	0.375	0.375	0.500	0.500	25	22 1/2
36 × 36 × 32	36,000	32,000	0.375	0.375	0.500	0.500	26 1/2	25 1/2
36 × 36 × 28	36,000	28,000	0.375	0.375	0.500	0.500	26 1/2	24 1/2
36 × 36 × 24	36,000	24,000	0.375	0.375	0.500	0.500	26 1/2	24
* 36 × 36 × 32	36,000	32,000	0.750	0.688	—	—	26 1/2	25 1/2
* 36 × 36 × 24	36,000	24,000	0.750	0.688	—	—	26 1/2	24
38 × 38 × 34	38,000	34,000	0.375	0.375	0.500	0.500	28	27 1/2
38 × 38 × 30	38,000	30,000	0.375	0.375	0.500	0.500	28	26 1/2
38 × 38 × 26	38,000	26,000	0.375	0.375	0.500	0.500	28	25 1/2
40 × 40 × 36	40,000	36,000	0.375	0.375	0.500	0.500	29 1/2	29
40 × 40 × 32	40,000	32,000	0.375	0.375	0.500	0.500	29 1/2	28
40 × 40 × 28	40,000	28,000	0.375	0.375	0.500	0.500	29 1/2	26 1/2
42 × 42 × 38	42,000	38,000	0.375	0.375	0.500	0.500	30	28
42 × 42 × 32	42,000	34,000	0.375	0.375	0.500	0.500	30	28
42 × 42 × 28	42,000	30,000	0.375	0.375	0.500	0.500	30	28
44 × 44 × 40	44,000	40,000	0.375	0.375	0.500	0.500	32	29 1/2
44 × 44 × 36	44,000	36,000	0.375	0.375	0.500	0.500	32	28 1/2
44 × 44 × 32	44,000	32,000	0.375	0.375	0.500	0.500	32	28
46 × 46 × 42	46,000	42,000	0.375	0.375	0.500	0.500	33 1/2	31
46 × 46 × 38	46,000	38,000	0.375	0.375	0.500	0.500	33 1/2	30
46 × 46 × 34	46,000	34,000	0.375	0.375	0.500	0.500	33 1/2	29 1/2
48 × 48 × 44	48,000	44,000	0.375	0.375	0.500	0.500	35	33
48 × 48 × 40	48,000	40,000	0.375	0.375	0.500	0.500	35	32
48 × 48 × 36	48,000	36,000	0.375	0.375	0.500	0.500	35	31

※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Tees (Straight)

Sch 20, 60, 100, 120, 140, 160, XXS



ASME B16.9

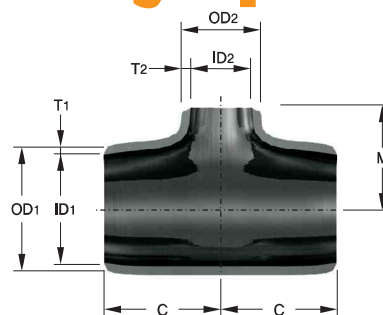
(in inches)

Nominal Pipe Size	Outside Diameter O.D	Wall Thickness T							Center to End	
		Sch 20	Sch 60	Sch 100	Sch 120	Sch 140	Sch 160	XXS	Run C	Outlet M
1/2	0.840	—	—	—	—	—	0.188	0.294	1	1
3/4	1.050	—	—	—	—	—	0.219	0.308	1 1/8	1 1/8
1	1.315	—	—	—	—	—	0.250	0.358	1 1/2	1 1/2
1 1/4	1.660	—	—	—	—	—	0.250	0.382	1 7/8	1 7/8
1 1/2	1.900	—	—	—	—	—	0.281	0.400	2 1/4	2 1/4
2	2.375	—	—	—	—	—	0.344	0.436	2 1/2	2 1/2
2 1/2	2.875	—	—	—	—	—	0.375	0.552	3	3
3	3.500	—	—	—	—	—	0.438	0.600	3 3/8	3 3/8
4	4.500	—	—	—	0.438	—	0.531	0.674	4 1/8	4 1/8
5	5.563	—	—	—	0.500	—	0.625	0.750	4 7/8	4 7/8
6	6.625	—	—	—	0.562	—	0.719	0.864	5 5/8	5 5/8
8	8.625	0.250	0.406	0.594	0.719	0.812	0.906	0.875	7	7
10	10.750	0.250	0.500	0.719	0.844	1.000	1.125	1.000	8 1/2	8 1/2
12	12.750	0.250	0.562	0.844	1.000	1.125	1.312	1.000	10	10
14	14.000	0.312	0.594	0.938	1.094	1.250	1.406	—	11	11
16	16.000	0.312	0.656	1.031	1.219	1.438	1.594	—	12	12
18	18.000	0.312	0.750	1.156	1.375	1.562	1.781	—	13 1/2	13 1/2
20	20.000	0.375	0.812	1.281	1.500	1.750	1.969	—	15	15
22	22.000	0.375	0.875	1.375	1.625	1.875	2.215	—	16 1/2	16 1/2
24	24.000	0.375	0.969	1.531	1.812	2.062	2.344	—	17	17

Wrought Steel Butt-Welding Pipe Fittings

Tees (Reducing)

Sch 120, 160, XXS



ASME B16.9

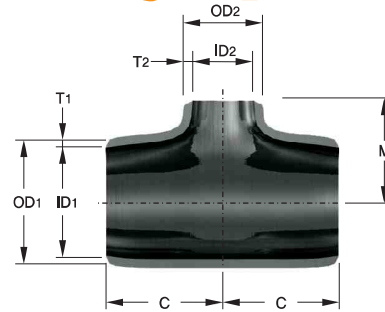
(in inches)

Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Sch 120		Sch 160		XXS		Center to End	
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Run C	Outlet M
3/4 × 3/4 × 1/2	1.050	0.840	—	—	0.219	0.188	0.308	0.294	1 1/8	1 1/8
1 × 1 × 3/4	1.135	1.050	—	—	0.250	0.219	0.358	0.308	1 1/2	1 1/2
1 × 1 × 1/2	1.135	0.840	—	—	0.250	0.188	0.358	0.294	1 1/2	1 1/2
1 1/4 × 1 1/4 × 1	1.660	1.315	—	—	0.250	0.250	0.382	0.358	1 7/8	1 7/8
1 1/4 × 1 1/4 × 3/4	1.660	1.050	—	—	0.250	0.219	0.382	0.308	1 7/8	1 7/8
1 1/2 × 1 1/2 × 1/4	1.900	1.660	—	—	0.281	0.250	0.400	0.382	2 1/4	2 1/4
1 1/2 × 1 1/2 × 1	1.900	1.315	—	—	0.281	0.250	0.400	0.358	2 1/4	2 1/4
1 1/2 × 1 1/2 × 3/4	1.900	1.050	—	—	0.281	0.219	0.400	0.308	2 1/4	2 1/4
2 × 2 × 1 1/2	2.375	1.900	—	—	0.344	0.281	0.436	0.400	2 1/2	2 3/8
2 × 2 × 1 1/4	2.375	1.660	—	—	0.344	0.250	0.436	0.382	2 1/2	2 1/4
2 × 2 × 1	2.375	1.315	—	—	0.344	0.250	0.436	0.358	2 1/2	2
2 1/2 × 2 1/2 × 2	2.875	2.375	—	—	0.375	0.344	0.552	0.436	3	2 3/4
2 1/2 × 2 1/2 × 1 1/2	2.875	1.900	—	—	0.375	0.281	0.552	0.400	3	2 5/8
3 × 3 × 2 1/2	3.500	2.875	—	—	0.438	0.375	0.600	0.552	3 3/8	3 1/4
3 × 3 × 2	3.500	2.375	—	—	0.438	0.344	0.600	0.436	3 3/8	3
4 × 4 × 3	4.500	3.500	—	—	0.531	0.438	0.674	0.600	4 1/8	3 7/8
4 × 4 × 2 1/2	4.500	2.875	—	—	0.531	0.375	0.674	0.552	4 1/8	3 3/4
4 × 4 × 2	4.500	2.375	—	—	0.531	0.344	0.674	0.436	4 1/8	3 1/2
5 × 5 × 4	5.563	4.500	0.500	0.438	0.625	0.531	0.750	0.674	4 7/8	4 5/8
5 × 5 × 3	5.563	3.500	—	—	0.625	0.438	0.750	0.600	4 7/8	4 3/8
5 × 5 × 2 1/2	5.563	2.875	—	—	0.625	0.375	0.750	0.552	4 7/8	4 1/4
6 × 6 × 5	6.625	5.563	0.562	0.500	0.719	0.625	0.864	0.750	5 5/8	5 3/8
6 × 6 × 4	6.625	4.500	0.562	0.438	0.719	0.531	0.864	0.674	5 5/8	5 1/8
6 × 6 × 3	6.625	3.500	—	—	0.719	0.438	0.864	0.600	5 5/8	4 7/8
8 × 8 × 6	8.625	6.625	0.719	0.562	0.906	0.719	0.875	0.864	7	6 5/8
8 × 8 × 5	8.625	5.563	0.719	0.500	0.926	0.625	0.875	0.750	7	6 3/8
8 × 8 × 4	8.625	4.500	0.719	0.438	0.906	0.531	0.875	0.674	7	6 1/8

Wrought Steel Butt-Welding Pipe Fittings

Tees (Reducing)

Sch 20, 60, 100, 120



ASME B16.9

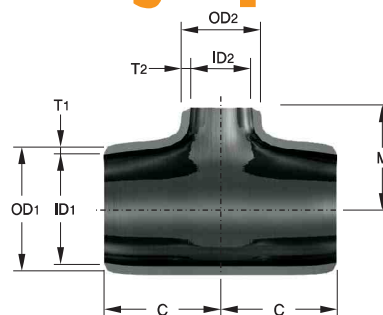
(in inches)

Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Sch 20		Sch 60		Sch 100		Sch 120		Center to End	
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Run C	Outlet M
10 × 10 × 8	10.750	8.625	0.250	0.250	0.500	0.406	0.719	0.594	0.844	0.719	8 1/2	8
10 × 10 × 6	10.750	6.625	—	—	—	—	—	—	0.844	0.562	8 1/2	7 5/8
10 × 10 × 5	10.750	5.563	—	—	—	—	—	—	0.844	0.500	8 1/2	7 1/2
12 × 12 × 10	12.750	10.750	0.250	0.250	0.562	0.500	0.844	0.719	1.000	0.844	10	9 1/2
12 × 12 × 8	12.750	8.625	0.250	0.250	0.562	0.406	0.844	0.594	1.000	0.719	10	9
12 × 12 × 6	12.750	6.625	—	—	—	—	—	—	1.000	0.562	10	8 5/8
14 × 14 × 12	14.000	12.750	0.312	0.250	0.594	0.562	0.938	0.844	1.094	1.000	11	10 5/8
14 × 14 × 10	14.000	10.750	0.312	0.250	0.594	0.500	0.938	0.719	1.094	0.844	11	10 1/8
14 × 14 × 8	14.000	8.625	0.312	0.250	0.594	0.406	0.938	0.594	1.094	0.719	11	9 3/4
16 × 16 × 14	16.000	14.000	0.312	0.312	0.656	0.594	1.031	0.938	1.219	1.094	12	12
16 × 16 × 12	16.000	12.750	0.312	0.250	0.656	0.562	1.031	0.844	1.219	1.000	12	11 5/8
16 × 16 × 10	16.000	10.750	0.312	0.250	0.656	0.500	1.031	0.719	1.219	0.844	12	11 1/8
18 × 18 × 16	18.000	16.000	0.312	0.312	0.750	0.656	1.156	1.031	1.375	1.219	13 1/2	13
18 × 18 × 14	18.000	14.000	0.312	0.312	0.750	0.594	1.156	0.938	1.375	1.094	13 1/2	13
18 × 18 × 12	18.000	12.750	0.312	0.250	0.750	0.562	1.156	0.844	1.375	1.000	13 1/2	12 5/8
20 × 20 × 18	20.000	18.000	0.375	0.312	0.812	0.750	1.281	1.156	1.500	1.375	15	14 1/2
20 × 20 × 16	20.000	16.000	0.375	0.312	0.812	0.656	1.281	1.031	1.500	1.219	15	14
20 × 20 × 14	20.000	14.000	0.375	0.312	0.812	0.594	1.281	0.938	1.500	1.094	15	14
22 × 22 × 20	22.000	20.000	0.375	0.375	0.875	0.812	1.375	1.281	1.625	1.500	16 1/2	16
22 × 22 × 18	22.000	18.000	0.375	0.312	0.875	0.750	1.375	1.156	1.625	1.375	16 1/2	15 1/2
22 × 22 × 16	22.000	16.000	0.375	0.312	0.875	0.656	1.375	1.031	1.625	1.219	16 1/2	15
24 × 24 × 22	24.000	22.000	0.375	0.375	0.969	0.875	1.531	1.375	1.812	1.625	17	17
24 × 24 × 20	24.000	20.000	0.375	0.375	0.969	0.812	1.531	1.281	1.812	1.500	17	17
24 × 24 × 18	24.000	18.000	0.375	0.312	0.969	0.750	1.531	1.156	1.812	1.375	17	16 1/2

Wrought Steel Butt-Welding Pipe Fittings

Tees (Reducing)

Sch 140, 160, XXS



ASME B16.9

(in inches)

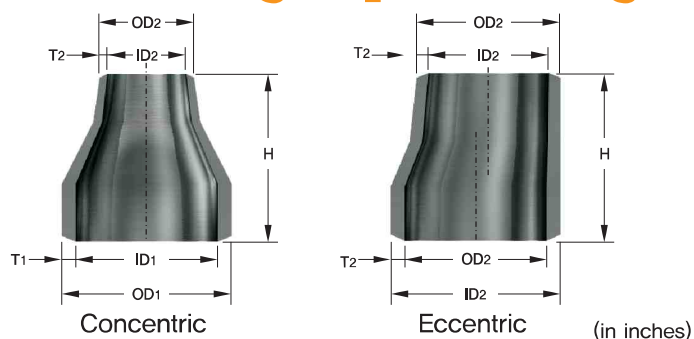
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Sch 140		Sch 160		XXS		Center to End	
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Run C	Outlet M
10 × 10 × 8	10.750	8.625	1.000	0.812	1.125	0.906	1.000	0.875	8 1/2	8
10 × 10 × 6	10.750	6.625	—	—	1.125	0.719	1.000	0.864	8 1/2	7 5/8
10 × 10 × 5	10.750	5.563	—	—	1.125	0.625	1.000	0.750	8 1/2	7 1/2
12 × 12 × 10	12.750	10.750	1.125	1.000	1.312	1.125	1.000	1.000	10	9 1/2
12 × 12 × 8	12.750	8.625	1.125	0.812	1.312	0.906	1.000	0.875	10	9
12 × 12 × 6	12.750	6.625	—	—	1.312	0.719	1.000	0.864	10	8 5/8
14 × 14 × 12	14.000	12.750	1.250	1.125	1.406	1.312	—	—	11	10 5/8
14 × 14 × 10	14.000	10.750	1.125	1.000	1.406	1.125	—	—	11	10 1/8
14 × 14 × 8	14.000	8.625	1.250	0.812	1.406	0.906	—	—	11	9 3/4
16 × 16 × 14	16.000	14.000	1.438	1.250	1.594	1.406	—	—	12	12
16 × 16 × 12	16.000	12.750	1.438	1.125	1.594	1.312	—	—	12	11 5/8
16 × 16 × 10	16.000	10.750	1.438	1.000	1.594	1.125	—	—	12	11 1/8
18 × 18 × 16	18.000	16.000	1.562	1.438	1.781	1.574	—	—	13 1/2	13
18 × 18 × 14	18.000	14.000	1.562	1.250	1.781	1.406	—	—	13 1/2	13
18 × 18 × 12	18.000	12.750	1.562	1.125	1.781	1.312	—	—	13 1/2	12 5/8
20 × 20 × 18	20.000	18.000	1.750	1.562	1.969	1.781	—	—	15	14 1/2
20 × 20 × 16	20.000	16.000	1.750	1.438	1.969	1.594	—	—	15	14
20 × 20 × 14	20.000	14.000	1.750	1.250	1.769	1.406	—	—	15	14
22 × 22 × 20	22.000	20.000	1.875	1.750	2.125	1.969	—	—	16 1/2	16
22 × 22 × 18	22.000	18.000	1.875	1.562	2.125	1.781	—	—	16 1/2	15 1/2
22 × 22 × 16	22.000	16.000	1.875	1.438	2.125	1.594	—	—	16 1/2	15
24 × 24 × 22	24.000	22.000	2.062	1.875	2.344	2.125	—	—	17	17
24 × 24 × 20	24.000	20.000	2.062	1.750	2.344	1.969	—	—	17	17
24 × 24 × 18	24.000	18.000	2.062	1.562	2.344	1.781	—	—	17	16 1/2

Wrought Steel Butt-Welding Pipe Fittings

Reducers

STD (Sch 40) , XS (Sch 80)

ASME B16.9



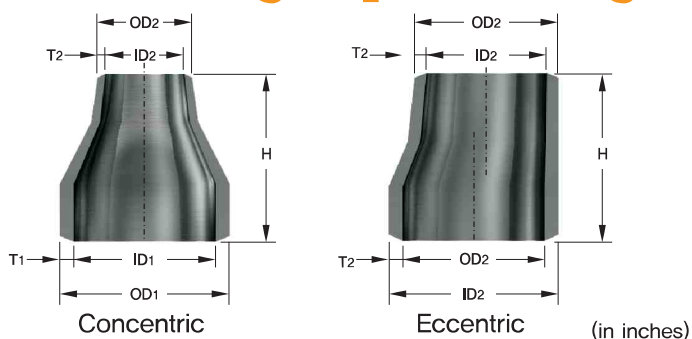
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD (Sch 40)				STD (Sch 80)				End to End H
			Large End		Small End		Large End		Small End		
			I.D ₁	T ₁	I.D ₂	T ₂	I.D ₁	T ₁	I.D ₂	T ₂	
3/4 × 1/2	1.050	0.840	0.824	0.113	0.622	0.109	0.742	0.154	0.546	0.147	1 1/2
1 × 3/4	1.135	1.050	1.049	0.133	0.824	0.113	0.957	0.179	0.742	0.154	2
1 × 1/2	1.135	0.840	1.049	0.133	0.622	0.109	0.957	0.179	0.546	0.147	2
1 1/4 × 1	1.660	1.315	1.380	0.140	1.049	0.133	1.278	0.191	0.957	0.179	2
1 1/4 × 3/4	1.660	1.050	1.380	0.140	0.824	0.113	1.278	0.191	0.742	0.154	2
1 1/4 × 1/2	1.660	0.840	1.380	0.140	0.622	0.109	1.278	0.191	0.546	0.147	2
1 1/2 × 1/4	1.900	1.660	1.610	0.145	1.380	0.140	1.500	0.200	1.278	0.191	2 1/2
1 1/2 × 1	1.900	1.315	1.610	0.145	1.049	0.133	1.500	0.200	0.957	0.179	2 1/2
1 1/2 × 3/4	1.900	1.050	1.610	0.145	0.824	0.113	1.500	0.200	0.742	0.154	2 1/2
2 × 1 1/2	2.375	1.900	2.067	0.154	1.610	0.145	1.939	0.218	1.500	0.200	3
2 × 1 1/4	2.375	1.660	2.067	0.154	1.380	0.140	1.939	0.218	1.278	0.191	3
2 × 1	2.375	1.315	2.067	0.154	1.049	0.133	1.939	0.218	0.957	0.179	3
2 × 3/4	2.375	1.050	2.067	0.154	0.824	0.113	1.939	0.218	0.742	0.154	3
2 1/2 × 2	2.875	2.375	2.469	0.203	2.067	0.154	2.323	0.276	1.939	0.218	3 1/2
2 1/2 × 1 1/2	2.875	1.900	2.469	0.203	1.610	0.145	2.323	0.276	1.500	0.200	3 1/2
2 1/2 × 1 1/4	2.875	1.660	2.469	0.203	1.380	0.140	2.323	0.276	1.278	0.191	3 1/2
2 1/2 × 1	2.875	1.315	2.469	0.203	1.049	0.133	2.323	0.276	0.957	0.179	3 1/2
3 × 2 1/2	3.500	2.875	3.068	0.216	2.469	0.203	2.900	0.300	2.323	0.276	3 1/2
3 × 2	3.500	2.375	3.068	0.216	2.067	0.154	2.900	0.300	1.939	0.218	3 1/2
3 × 1 1/2	3.500	1.900	3.068	0.216	1.610	0.145	2.900	0.300	1.500	0.200	3 1/2
3 × 1 1/4	3.500	1.660	3.068	0.216	1.380	0.140	2.900	0.300	1.278	0.191	3 1/2
3 1/2 × 3	4.000	3.500	3.548	0.226	3.068	0.216	3.364	0.318	2.900	0.300	4
3 1/2 × 2 1/2	4.000	2.875	3.548	0.226	2.469	0.203	3.364	0.318	2.323	0.276	4
3 1/2 × 2	4.000	2.375	3.548	0.226	2.067	0.154	3.364	0.318	1.939	0.218	4
3 1/2 × 1 1/2	4.000	1.900	3.548	0.226	1.610	0.145	3.364	0.318	1.500	0.200	4
4 × 3 1/2	4.500	4.000	4.026	0.237	3.548	0.226	3.826	0.337	3.364	0.318	4
4 × 3	4.500	3.500	4.026	0.237	3.608	0.216	3.826	0.337	2.900	0.300	4
4 × 2 1/2	4.500	2.875	4.026	0.237	2.469	0.203	3.826	0.337	2.323	0.276	4
4 × 2	4.500	2.375	4.026	0.237	2.607	0.154	3.826	0.337	1.939	0.218	4
5 × 4	5.563	4.500	5.047	0.258	4.026	0.237	4.813	0.375	3.826	0.337	5
5 × 3 1/2	5.563	4.000	5.047	0.258	3.548	0.226	4.813	0.375	3.364	0.318	5
5 × 3	5.563	3.500	5.047	0.258	3.068	0.216	4.813	0.375	2.900	0.300	5
5 × 2 1/2	5.563	2.875	5.047	0.258	2.469	0.203	4.813	0.375	2.323	0.276	5

Wrought Steel Butt-Welding Pipe Fittings

Reducers

STD (Sch 40) , XS (Sch 80)

ASME B16.9



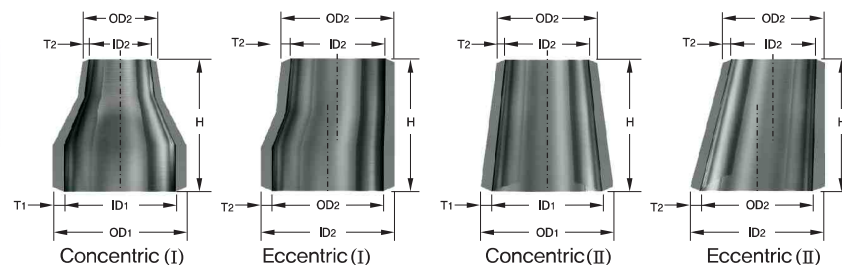
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD (Sch 40)				STD (Sch 80)				End to End H
			Large End		Small End		Large End		Small End		
			I.D ₁	T ₁	I.D ₂	T ₂	I.D ₁	T ₁	I.D ₂	T ₂	
6 × 5	6.625	5.563	6.065	0.280	5.047	0.258	5.761	0.432	4.813	0.375	5 1/2
6 × 4	6.625	4.500	6.065	0.280	4.026	0.237	5.761	0.432	3.826	0.337	5 1/2
6 × 3 1/2	6.625	4.000	6.065	0.280	3.548	0.226	5.761	0.432	3.364	0.318	5 1/2
6 × 3	6.625	3.500	6.065	0.280	3.068	0.216	5.761	0.432	2.900	0.300	5 1/2
6 × 2 1/2	6.625	2.875	6.065	0.280	2.469	0.203	5.761	0.432	2.323	0.276	5 1/2
8 × 6	8.625	6.625	7.981	0.322	6.065	0.280	7.625	0.500	5.761	0.432	6
8 × 5	8.625	5.563	7.981	0.322	5.047	0.258	7.625	0.500	4.813	0.375	6
8 × 4	8.625	4.500	7.981	0.322	4.026	0.237	7.625	0.500	3.826	0.337	6
8 × 3 1/2	8.625	4.000	7.981	0.322	3.548	0.226	7.625	0.500	3.364	0.318	6
10 × 8	10.750	8.625	10.020	0.365	7.981	0.322	9.750	0.500	7.625	0.500	7
10 × 6	10.750	6.625	10.020	0.365	6.065	0.280	9.750	0.500	5.761	0.432	7
10 × 5	10.750	5.563	10.020	0.365	5.047	0.258	9.750	0.500	4.813	0.375	7
10 × 4	10.750	4.500	10.020	0.365	4.026	0.237	9.750	0.500	3.826	0.337	7
* 10 × 8	10.750	8.625	—	—	—	—	9.562	0.594	7.625	0.500	7
* 10 × 6	10.750	6.625	—	—	—	—	9.562	0.594	5.761	0.432	7
* 10 × 5	10.750	5.563	—	—	—	—	9.562	0.594	4.813	0.375	7
* 10 × 4	10.750	4.500	—	—	—	—	9.562	0.594	3.826	0.337	7
12 × 10	12.750	10.750	12.000	0.375	10.020	0.365	11.750	0.500	9.750	0.500	8
12 × 8	12.750	8.625	12.000	0.375	7.981	0.322	11.750	0.500	7.625	0.500	8
12 × 8	12.750	6.625	12.000	0.375	6.065	0.280	11.750	0.500	5.761	0.432	8
12 × 5	12.750	5.563	12.000	0.375	5.047	0.258	11.750	0.500	4.813	0.375	8
* 12 × 10	12.750	10.750	11.938	0.406	10.020	0.365	11.374	0.688	9.562	0.594	8
* 12 × 8	12.750	8.625	11.938	0.406	7.981	0.322	11.374	0.688	7.625	0.500	8
* 12 × 6	12.750	6.625	11.938	0.406	6.065	0.280	11.374	0.688	5.761	0.432	8
* 12 × 5	12.750	5.563	11.938	0.406	5.047	0.258	11.374	0.688	4.813	0.375	8
14 × 12	14.000	12.750	13.250	0.375	12.000	0.375	13.000	0.500	11.750	0.500	13
14 × 10	14.000	10.750	13.250	0.375	10.020	0.365	13.000	0.500	9.750	0.500	13
14 × 8	14.000	8.625	13.250	0.375	7.981	0.322	13.000	0.500	7.625	0.500	13
* 14 × 12	14.000	12.750	13.124	0.438	11.938	0.406	12.500	0.750	11.374	0.688	13
* 14 × 10	14.000	10.750	13.124	0.438	10.020	0.365	12.500	0.750	9.562	0.594	13
* 14 × 8	14.000	8.625	13.124	0.438	7.981	0.322	12.500	0.750	7.625	0.500	13

※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Reducers

STD (Sch 40), XS (Sch 80)



ASME B16.9

(in inches)

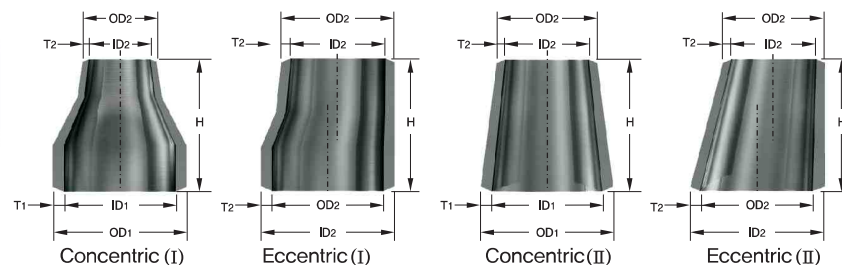
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD (Sch 40)				STD (Sch 80)				End to End H
			Large End		Small End		Large End		Small End		
			I,D ₁	T ₁	I,D ₂	T ₂	I,D ₁	T ₁	I,D ₂	T ₂	
16 × 14	16.000	14.000	15.250	0.375	13.250	0.375	15.000	0.500	13.000	0.500	14
16 × 12	16.000	12.750	15.250	0.375	12.000	0.375	15.000	0.500	11.750	0.500	14
16 × 10	16.000	10.750	15.250	0.375	10.020	0.365	15.000	0.500	9.750	0.500	14
* 16 × 14	16.000	14.000	15.000	0.500	13.124	0.438	14.312	0.844	12.500	0.750	14
* 16 × 12	16.000	12.750	15.000	0.500	11.938	0.406	14.312	0.844	11.374	0.688	14
* 16 × 10	16.000	10.750	15.000	0.500	10.020	0.365	14.312	0.844	9.562	0.594	14
18 × 16	18.000	16.000	17.250	0.375	15.250	0.375	17.000	0.500	15.000	0.500	15
18 × 14	18.000	14.000	17.250	0.375	13.250	0.375	17.000	0.500	13.000	0.500	15
18 × 12	18.000	12.750	17.250	0.375	12.000	0.375	17.000	0.500	11.750	0.500	15
* 18 × 16	18.000	16.000	16.876	0.562	15.000	0.500	16.124	0.938	14.312	0.844	15
* 18 × 14	18.000	14.000	16.876	0.562	13.124	0.438	16.124	0.938	12.500	0.750	15
* 18 × 12	18.000	12.750	16.876	0.562	11.938	0.406	16.124	0.938	11.374	0.688	15
20 × 18	20.000	18.000	19.250	0.375	17.250	0.375	19.000	0.500	17.000	0.500	20
20 × 16	20.000	16.000	19.250	0.375	15.250	0.375	19.000	0.500	15.000	0.500	20
20 × 14	20.000	14.000	19.250	0.375	13.250	0.375	19.000	0.500	13.000	0.500	20
* 20 × 18	20.000	18.000	18.812	0.562	16.876	0.562	17.938	1.031	16.124	0.938	20
* 20 × 16	20.000	16.000	18.812	0.562	15.000	0.500	17.938	1.031	14.312	0.844	20
* 20 × 14	20.000	14.000	18.812	0.562	13.124	0.438	17.938	1.031	12.500	0.750	20
22 × 20	22.000	20.000	21.250	0.375	19.250	0.375	21.000	0.500	19.000	0.500	20
22 × 18	22.000	18.000	21.250	0.375	17.250	0.375	21.000	0.500	17.000	0.500	20
22 × 16	22.000	16.000	21.250	0.375	15.250	0.375	21.000	0.500	15.000	0.500	20
* 22 × 20	22.000	20.000	—	—	—	—	19.750	1.125	17.938	1.031	20
* 22 × 18	22.000	18.000	—	—	—	—	19.750	1.125	16.124	0.938	20
* 22 × 16	22.000	16.000	—	—	—	—	19.750	1.125	14.312	0.844	20
24 × 22	24.000	22.000	23.250	0.375	21.250	0.375	23.000	0.500	21.000	0.500	20
24 × 20	24.000	20.000	23.250	0.375	19.250	0.375	23.000	0.500	19.000	0.500	20
24 × 18	24.000	18.000	23.250	0.375	17.250	0.375	23.000	0.500	17.000	0.500	20
* 24 × 22	24.000	22.000	—	—	—	—	21.562	1.129	19.750	1.125	20
* 24 × 20	24.000	20.000	22,624	0.688	18.812	0.594	21.562	1.219	17.938	1.031	20
* 24 × 18	24.000	18.000	22,624	0.688	16.876	0.562	21.562	1.219	16.124	0.938	20
26 × 22	26.000	22.000	25.250	0.375	21.250	0.375	25.000	0.500	21.000	0.500	24
26 × 18	26.000	18.000	25.250	0.375	17.250	0.375	25.000	0.500	17.000	0.500	24
26 × 16	26.000	16.000	25.250	0.375	15.250	0.375	25.000	0.500	15.000	0.500	24
28 × 24	28.000	24.000	27.250	0.375	23.250	0.375	27.000	0.500	23.000	0.500	24
28 × 20	28.000	20.000	27.250	0.375	19.250	0.375	27.000	0.500	19.000	0.500	24
28 × 18	28.000	18.000	27.250	0.375	17.250	0.375	27.000	0.500	17.000	0.500	24

※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Reducers

STD (Sch 40), XS (Sch 80)



ASME B16.9

(in inches)

Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	STD (Sch 40)				STD (Sch 80)				End to End H
			Large End		Small End		Large End		Small End		
			I,D ₁	T ₁	I,D ₂	T ₂	I,D ₁	T ₁	I,D ₂	T ₂	
30 × 26	30.000	26.000	29,250	0.375	25,250	0.375	29.000	0.500	25.000	0.500	24
30 × 22	30.000	22.000	29,250	0.375	21,250	0.375	29.000	0.500	21.000	0.500	24
30 × 20	30.000	20.000	29,250	0.375	19,250	0.375	29.000	0.500	19.000	0.500	24
32 × 28	32.000	28.000	31,250	0.375	27,250	0.375	31.000	0.500	27.000	0.500	24
32 × 24	32.000	24.000	31,250	0.375	23,250	0.375	31.000	0.500	23.000	0.500	24
32 × 22	32.000	22.000	31,250	0.375	21,250	0.375	31.000	0.500	21.000	0.500	24
* 32 × 24	32.000	24.000	30,624	0.688	22,264	0.688	—	—	—	—	24
34 × 30	34.000	30.000	33,250	0.375	29,250	0.375	33.000	0.500	29.000	0.500	24
34 × 26	34.000	26.000	33,250	0.375	25,250	0.375	33.000	0.500	25.000	0.500	24
34 × 22	34.000	22.000	33,250	0.375	21,250	0.375	33.000	0.500	21.000	0.500	24
36 × 32	36.000	32.000	35,250	0.375	31,250	0.375	35.000	0.500	31.000	0.500	24
36 × 28	36.000	28.000	35,250	0.375	27,250	0.375	35.000	0.500	27.000	0.500	24
36 × 24	36.000	24.000	35,250	0.375	23,250	0.375	35.000	0.500	23.000	0.500	24
* 36 × 32	36.000	32.000	34,500	0.750	30,624	0.688	—	—	—	—	24
* 36 × 24	36.000	24.000	34,500	0.750	22,624	0.688	—	—	—	—	24
38 × 34	38.000	34.000	37,250	0.375	33,250	0.375	37.000	0.500	33.000	0.500	24
38 × 30	38.000	30.000	37,250	0.375	29,250	0.375	37.000	0.500	29.000	0.500	24
38 × 26	38.000	26.000	37,250	0.375	29,250	0.375	37.000	0.500	25.000	0.500	24
40 × 36	40.000	36.000	39,250	0.375	35,250	0.375	39.000	0.500	35.000	0.500	24
40 × 32	40.000	32.000	39,250	0.375	31,250	0.375	39.000	0.500	31.000	0.500	24
40 × 28	40.000	28.000	39,250	0.375	27,250	0.375	39.000	0.500	27.000	0.500	24
42 × 38	42.000	38.000	41,250	0.375	37,250	0.375	41.000	0.500	37.000	0.500	24
42 × 34	42.000	34.000	41,250	0.375	33,250	0.375	41.000	0.500	33.000	0.500	24
42 × 30	42.000	30.000	41,250	0.375	29,250	0.375	41.000	0.500	29.000	0.500	24
44 × 40	44.000	40.000	43,250	0.375	39,250	0.375	43.000	0.500	39.000	0.500	24
44 × 36	44.000	36.000	43,250	0.375	35,250	0.375	43.000	0.500	35.000	0.500	24
44 × 32	44.000	32.000	43,250	0.375	31,250	0.375	43.000	0.500	31.000	0.500	24
46 × 42	46.000	42.000	45,250	0.375	41,250	0.375	45.000	0.500	41.000	0.500	28
46 × 38	46.000	38.000	45,250	0.375	37,250	0.375	45.000	0.500	37.000	0.500	28
46 × 34	46.000	34.000	45,250	0.375	33,250	0.375	45.000	0.500	33.000	0.500	28
48 × 44	48.000	44.000	47,250	0.375	43,250	0.375	47.000	0.500	43.000	0.500	28
48 × 40	48.000	40.000	47,250	0.375	39,250	0.375	47.000	0.500	39.000	0.500	28
48 × 36	48.000	36.000	47,250	0.375	35,250	0.375	47.000	0.500	37.000	0.500	28

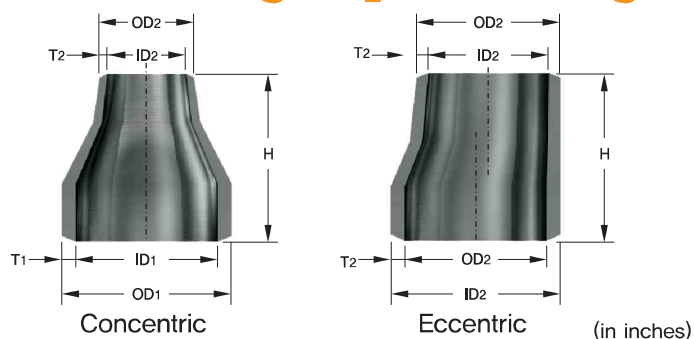
※ Asterisks(*) De note Sch40 and Sch80

Wrought Steel Butt-Welding Pipe Fittings

Reducers

Sch 120, 160, XXS

ASME B16.9

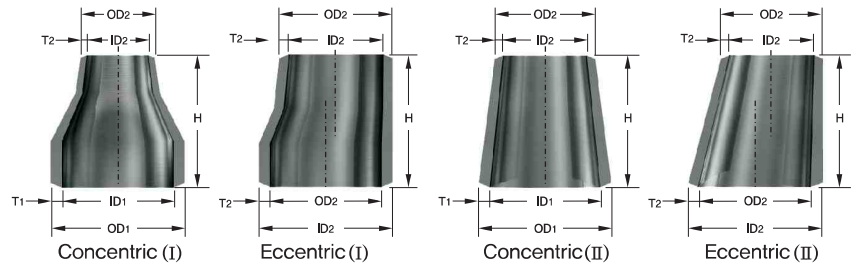


Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Sch 120		Sch 160		XXS		End to End H
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	
3/4 × 1/2	1.050	0.840	—	—	0.219	0.188	0.308	0.294	1 1/2
1 × 3/4	1.135	1.050	—	—	0.250	0.219	0.358	0.308	2
1 × 1/2	1.135	0.840	—	—	0.250	0.188	0.358	0.294	2
1 1/4 × 1	1.660	1.315	—	—	0.250	0.250	0.382	0.358	2
1 1/4 × 3/4	1.660	1.050	—	—	0.250	0.219	0.382	0.308	2
1 1/2 × 1 1/4	1.900	1.660	—	—	0.281	0.250	0.400	0.382	2 1/2
1 1/2 × 1	1.900	1.315	—	—	0.281	0.250	0.400	0.358	2 1/2
1 1/2 × 3/4	1.900	1.050	—	—	0.281	0.219	0.400	0.308	3 1/2
2 × 1 1/2	2.375	1.900	—	—	0.344	0.281	0.436	0.400	3
2 × 1 1/4	2.375	1.660	—	—	0.344	0.250	0.436	0.382	3
2 × 1	2.375	1.315	—	—	0.344	0.250	0.436	0.358	3
2 1/2 × 2	2.875	2.375	—	—	0.375	0.344	0.552	0.436	3 1/2
2 1/2 × 1 1/2	2.875	1.900	—	—	0.375	0.281	0.552	0.400	3 1/2
2 1/2 × 1 1/4	2.875	1.660	—	—	0.375	0.250	0.552	0.382	3 1/2
3 × 2 1/2	3.500	2.875	—	—	0.438	0.375	0.600	0.552	3 1/2
3 × 2	3.500	2.375	—	—	0.438	0.344	0.600	0.436	3 1/2
3 × 1 1/2	3.500	1.900	—	—	0.438	0.281	0.600	0.400	3 1/2
3 × 1 1/4	3.500	1.660	—	—	0.438	0.250	0.600	0.382	3 1/2
4 × 3	4.500	3.500	—	—	0.531	0.438	0.674	0.600	4
4 × 2 1/2	4.500	2.875	—	—	0.531	0.375	0.674	0.552	4
4 × 2	4.500	2.375	—	—	0.531	0.344	0.674	0.436	4
5 × 4	5.563	4.500	0.500	0.438	0.625	0.531	0.750	0.674	5
5 × 3	5.563	3.500	—	—	0.625	0.438	0.750	0.600	5
5 × 2 1/2	5.563	2.875	—	—	0.625	0.375	0.750	0.552	5
6 × 5	6.625	5.563	0.562	0.500	0.719	0.625	0.864	0.750	5 1/2
6 × 4	6.625	4.500	0.562	0.438	0.719	0.531	0.864	0.674	5 1/2
6 × 3	6.625	3.500	—	—	0.719	0.438	0.864	0.600	5 1/2
6 × 2 1/2	6.625	2.875	—	—	0.719	0.375	0.864	0.552	5 1/2
8 × 6	8.625	6.625	0.719	0.562	0.906	0.719	0.875	0.864	6
8 × 5	8.625	5.563	0.719	0.500	0.906	0.625	0.875	0.750	6
8 × 4	8.625	4.500	0.719	0.438	0.906	0.531	0.875	0.674	6

Wrought Steel Butt-Welding Pipe Fittings

Reducers

Sch 20, 60, 100, 120



ASME B16.9

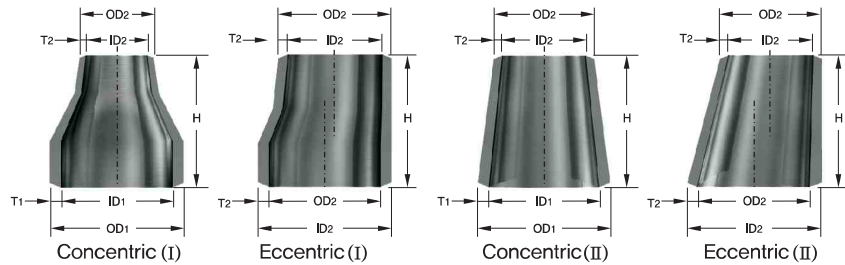
(in inches)

Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Sch 20		Sch 60		Sch 100		Sch 120		End to End C
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	
10 × 8	10.750	8.625	0.250	0.250	0.500	0.406	0.719	0.594	0.844	0.719	7
10 × 6	10.750	6.625	—	—	—	—	—	—	0.844	0.562	7
10 × 5	10.750	5.563	—	—	—	—	—	—	0.844	0.500	7
10 × 4	10.750	4.500	—	—	—	—	—	—	0.844	0.438	7
12 × 10	12.750	10.750	0.250	0.250	0.562	0.500	0.844	0.719	1.000	0.844	8
12 × 8	12.750	8.625	0.250	0.250	0.562	0.406	0.844	0.594	1.000	0.719	8
12 × 6	12.750	6.625	—	—	—	—	—	—	1.000	0.562	8
14 × 12	14.000	12.750	0.312	0.250	0.594	0.562	0.938	0.844	1.094	1.000	13
14 × 10	14.000	10.750	0.312	0.250	0.594	0.500	0.938	0.719	1.094	0.844	13
14 × 8	14.000	8.625	0.312	0.250	0.594	0.406	0.938	0.594	1.094	0.719	13
16 × 14	16.000	14.000	0.312	0.312	0.656	0.594	1.031	0.938	1.219	1.094	14
16 × 12	16.000	12.750	0.312	0.250	0.656	0.562	1.031	0.844	1.219	1.000	14
16 × 10	16.000	10.750	0.312	0.250	0.656	0.500	1.031	0.719	1.219	0.844	14
18 × 16	18.000	16.000	0.312	0.312	0.750	0.656	1.156	1.031	1.375	1.219	15
18 × 14	18.000	14.000	0.312	0.312	0.750	0.594	1.156	0.938	1.375	1.094	15
18 × 12	18.000	12.750	0.312	0.250	0.750	0.562	1.156	0.844	1.375	1.000	15
20 × 18	20.000	18.000	0.375	0.312	0.812	0.750	1.281	1.156	1.500	1.375	20
20 × 16	20.000	16.000	0.375	0.312	0.812	0.656	1.281	1.031	1.500	1.219	20
20 × 14	20.000	14.000	0.375	0.312	0.812	0.594	1.281	0.938	1.500	1.094	20
22 × 20	22.000	20.000	0.375	0.375	0.875	0.812	1.375	1.281	1.625	1.500	20
22 × 18	22.000	18.000	0.375	0.312	0.875	0.750	1.375	1.156	1.625	1.375	20
22 × 16	22.000	16.000	0.375	0.312	0.875	0.656	1.375	1.031	1.625	1.219	20
24 × 22	24.000	22.000	0.375	0.375	0.969	0.875	1.531	1.375	1.812	1.625	20
24 × 20	24.000	20.000	0.375	0.375	0.969	0.812	1.531	1.281	1.812	1.500	20
24 × 18	24.000	18.000	0.375	0.312	0.969	0.750	1.531	1.156	1.812	1.375	20

Wrought Steel Butt-Welding Pipe Fittings

Reducers

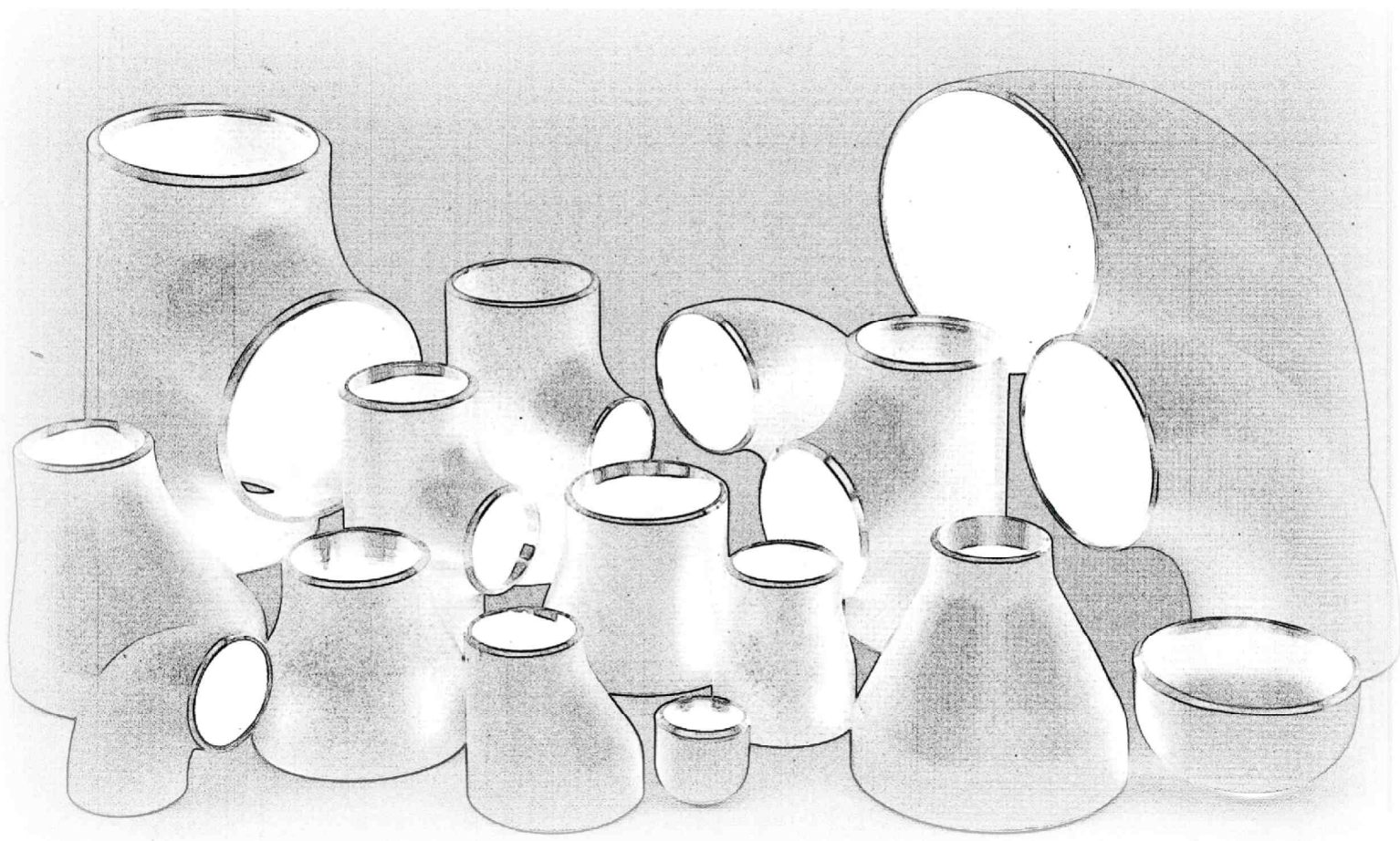
Sch 140, 160, XXS



ASME B16.9

(in inches)

Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Sch 140		Sch 160		XXS		End to End H
			Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	Large End T ₁	Small End T ₂	
10 × 8	10.750	8.625	1.000	0.812	1.125	0.906	1.000	0.875	7
10 × 6	10.750	6.625	—	—	1.125	0.719	1.000	0.864	7
10 × 5	10.750	5.563	—	—	1.125	0.625	1.000	0.750	7
10 × 4	10.750	4.500	—	—	1.125	0.531	1.000	0.674	7
12 × 10	12.750	10.750	1.125	1.000	1.312	1.125	1.000	1.000	8
12 × 8	12.750	8.625	1.125	0.812	1.312	0.906	1.000	0.875	8
12 × 6	12.750	6.625	—	—	1.312	0.719	1.000	0.864	8
14 × 12	14.000	12.750	1.250	1.125	1.406	1.312	—	—	13
14 × 10	14.000	10.750	1.250	1.000	1.406	1.125	—	—	13
14 × 8	14.000	8.625	1.250	0.812	1.406	0.906	—	—	13
16 × 14	16.000	14.000	1.438	1.250	1.594	1.406	—	—	14
16 × 12	16.000	12.750	1.438	1.125	1.594	1.312	—	—	14
16 × 10	16.000	10.750	1.438	1.000	1.594	1.125	—	—	14
18 × 16	18.000	16.000	1.562	1.438	1.781	1.574	—	—	15
18 × 14	18.000	14.000	1.562	1.250	1.781	1.406	—	—	15
18 × 12	18.000	12.750	1.562	1.125	1.781	1.312	—	—	15
20 × 18	20.000	18.000	1.750	1.562	1.969	1.781	—	—	20
20 × 16	20.000	16.000	1.750	1.438	1.969	1.594	—	—	20
20 × 14	20.000	14.000	1.750	1.250	1.769	1.406	—	—	20
22 × 20	22.000	20.000	1.875	1.750	2.125	1.969	—	—	20
22 × 18	22.000	18.000	1.875	1.562	2.125	1.781	—	—	20
22 × 16	22.000	16.000	1.875	1.438	2.125	1.594	—	—	20
24 × 22	24.000	22.000	2.062	1.875	2.344	2.125	—	—	20
24 × 20	24.000	20.000	2.062	1.750	2.344	1.969	—	—	20
24 × 18	24.000	18.000	2.062	1.562	2.344	1.781	—	—	20





STAINLESS STEEL BUTT-WELDING PIPE FITTINGS



CO N TENTS

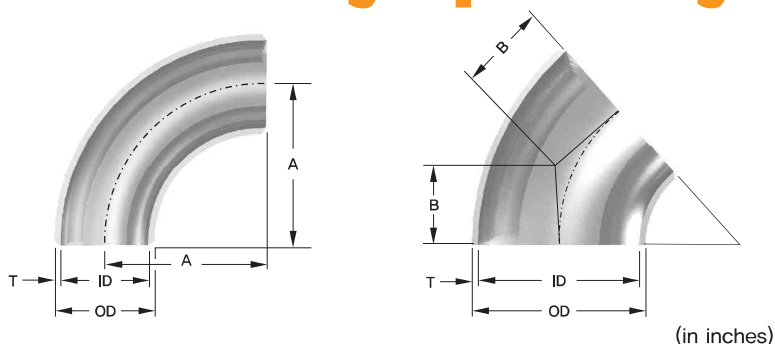
• 90°,45° Elbow (Sch5, Sch10, Sch40, Sch80)	32
• 180° Elbow, Cap(Sch5, Sch10, Sch40, Sch80)	33
• Tees (Sch5, Sch10, Sch40, Sch80)	34
• Reducer (Sch5, Sch10, Sch40, Sch80)	37

Stainless Steel Butt-Welding Pipe Fittings

**90° Elbows (Long, Short)
45° Elbows (Long)**

Sch 5S, 10S, 40S, 80S

ASME B16.9



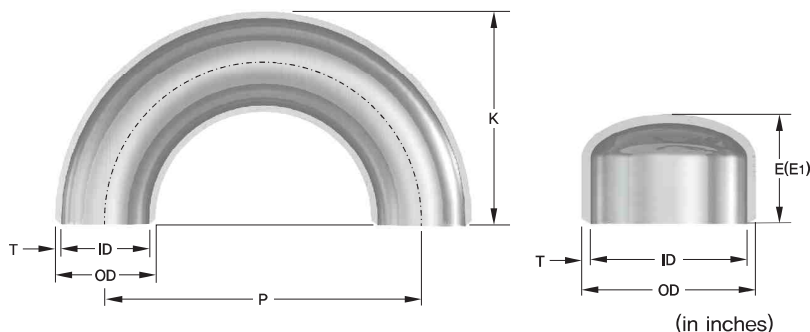
Nominal Pipe Size	Outside Diameter O.D	5S	10S		40S		80S	Center to End		
		T	ID	T	ID	T	T	Long		Short
								A	B	A
1/2	0.840	0.065	0.674	0.083	0.622	0.109	0.147	1 1/2	5/8	—
3/4	1.050	0.065	0.884	0.083	0.824	0.113	0.154	1 1/8	3/4	—
1	1.315	0.065	1.097	0.109	1.049	0.133	0.179	1 1/2	7/8	1
1 1/4	1.660	0.065	1.442	0.109	1.380	0.140	0.191	1 7/8	1	1 1/4
1 1/2	1.900	0.065	1.682	0.109	1.610	0.145	0.200	2 1/4	1 1/8	1 1/2
2	2.375	0.065	2.157	0.109	2.067	0.154	0.218	3	1 3/8	2
2 1/2	2.875	0.083	2.635	0.120	2.469	0.203	0.276	3 3/4	1 3/4	2 1/2
3	3.500	0.083	3.260	0.120	3.068	0.216	0.300	4 1/2	2	3
3 1/2	4.000	0.083	3.760	0.120	3.548	0.226	0.318	5 1/4	2 1/4	3 1/2
4	4.500	0.083	4.260	0.120	4.026	0.237	0.337	6	2 1/2	4
5	5.563	0.109	5.295	0.134	5.047	0.258	0.375	7 1/2	3 1/8	5
6	6.625	0.109	6.357	0.134	6.065	0.280	0.432	9	3 3/4	6
8	8.625	0.109	8.329	0.148	7.981	0.322	0.500	12	5	8
10	10.750	0.134	10.420	0.165	10.020	0.365	0.500	15	6 1/4	10
12	12.750	0.156	12.390	0.180	12.000	0.375	0.500	18	7 1/2	12
14	14.000	0.156	13.624	0.188	—	—	—	21	8 3/4	14
16	16.000	0.165	15.624	0.188	—	—	—	24	10	16
18	18.000	0.165	17.624	0.188	—	—	—	27	11 1/4	18
20	20.000	0.188	19.564	0.218	—	—	—	30	12 1/2	20
22	22.000	0.188	21.564	0.218	—	—	—	33	13 1/2	22
24	24.000	0.218	23.500	0.250	—	—	—	36	15	24
30	30.000	0.250	—	—	—	—	—	45	18 1/2	30

Stainless Steel Butt-Welding Pipe Fittings

180° Elbows (Long, Short) Caps

Sch 5S, 10S, 40S, 80S

ASME B16.9

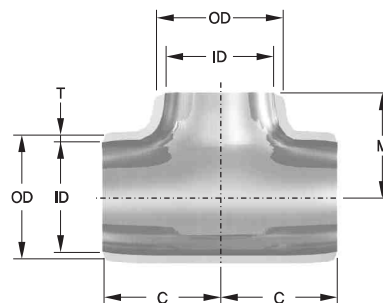


Nominal Pipe Size	Outside Diameter O.D	Wall Thickness T				Length E	Limiting Wall Thickness For Length E	Length E ₁	Long		Short	
		5S	10S	40S	80S				P	K	P	K
1/2	0,840	0,065	0,083	0,109	0,147	1,00	0,18	1,00	3,00	1,88	—	—
3/4	1,050	0,065	0,083	0,113	0,154	1,00	0,18	1,00	2,25	1,69	—	—
1	1,315	0,065	0,109	0,133	0,179	1,50	0,18	1,50	3,00	2,19	2,00	1,62
1 1/4	1,660	0,065	0,109	0,140	0,191	1,50	0,19	1,50	3,75	2,75	2,50	2,06
1 1/2	1,900	0,065	0,109	0,145	0,200	1,50	0,20	1,50	4,50	3,25	3,00	2,44
2	2,375	0,065	0,109	0,154	0,218	1,50	0,22	1,75	6,00	4,19	4,00	3,19
2 1/2	2,875	0,083	0,120	0,203	0,276	1,50	0,28	2,00	7,50	5,19	5,00	3,94
3	3,500	0,083	0,120	0,216	0,300	2,00	0,30	2,50	9,00	6,25	6,00	4,75
3 1/2	4,000	0,083	0,120	0,226	0,318	2,50	0,32	3,00	10,50	7,25	7,00	5,50
4	4,500	0,083	0,120	0,237	0,337	2,50	0,34	3,00	12,00	8,25	8,00	6,25
5	5,563	0,109	0,134	0,258	0,375	3,00	0,38	3,50	15,00	10,31	10,00	7,75
6	6,625	0,109	0,134	0,280	0,432	3,50	0,43	4,00	18,00	12,31	12,00	9,31
8	8,625	0,109	0,148	0,322	0,500	4,00	0,50	5,00	24,00	16,31	16,00	12,31
10	10,750	0,134	0,165	0,365	0,500	5,00	0,50	6,00	30,00	20,38	20,00	15,38
12	12,750	0,156	0,180	0,375	0,500	6,00	0,50	7,00	36,00	24,38	24,00	18,38
14	14,000	0,156	0,188	—	—	6,50	0,50	7,50	42,00	28,00	28,00	21,00
16	16,000	0,165	0,188	—	—	7,00	0,50	8,00	48,00	32,00	32,00	24,00
18	18,000	0,165	0,188	—	—	8,00	0,50	9,00	54,00	36,00	36,00	27,00
20	20,000	0,188	0,218	—	—	9,00	0,50	10,00	60,00	40,00	40,00	30,00
22	22,000	0,188	0,218	—	—	10,00	0,50	10,00	66,00	44,00	44,00	33,00
24	24,000	0,218	0,250	—	—	10,50	0,50	12,00	72,00	48,00	48,00	36,00
30	30,000	0,250	0,312	—	—	10,50	—	—	—	—	—	—

Stainless Steel Butt-Welding Pipe Fittings

Tees (Straight)

Sch 5S, 10S, 40S, 80S



ASME B16.9

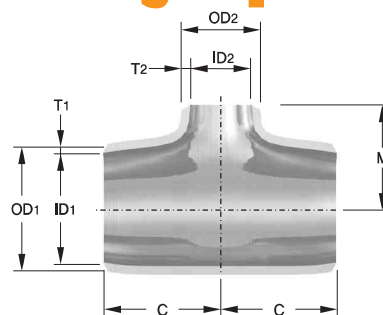
(in inches)

Nominal Pipe Size	Outside Diameter O.D	5S	10S		40S		80S	Center to End	
		T	ID	T	ID	T	T	Run C	Outlet M
1/2	0.840	0.065	0.674	0.083	0.622	0.019	0.147	1	1
3/4	1.050	0.065	0.884	0.083	0.824	0.113	0.154	1 1/8	1 1/8
1	1.315	0.065	1.097	0.109	1.049	0.133	0.179	1 1/2	1 1/2
1 1/4	1.660	0.065	1.442	0.109	1.380	0.140	0.191	1 7/8	1 7/8
1 1/2	1.900	0.065	1.682	0.109	1.610	0.145	0.200	2 1/4	2 1/4
2	2.375	0.065	2.157	0.109	2.067	0.154	0.218	2 1/2	2 1/2
2 1/2	2.875	0.083	2.635	0.120	2.469	0.203	0.276	3	3
3	3.500	0.083	3.260	0.120	3.068	0.216	0.300	3 3/8	3 3/8
3 1/2	4.000	0.083	3.760	0.120	3.548	0.226	0.318	3 3/4	3 3/4
4	4.500	0.083	4.260	0.120	4.026	0.237	0.337	4 1/8	4 1/8
5	5.563	0.109	5.295	0.134	5.047	0.258	0.375	4 7/8	4 7/8
6	6.625	0.109	6.357	0.134	6.065	0.280	0.432	5 5/8	5 5/8
8	8.625	0.109	8.329	0.148	7.981	0.322	0.500	7	7
10	10.750	0.134	10.420	0.165	10.020	0.365	0.500	8 1/2	8 1/2
12	12.750	0.156	12.390	0.180	12.000	0.375	0.500	10	10
14	14.000	0.156	13.624	0.188	—	—	—	11	11
16	16.000	0.165	15.624	0.188	—	—	—	12	12
18	18.000	0.165	17.624	0.188	—	—	—	13 1/2	13 1/2
20	20.000	0.188	19.564	0.218	—	—	—	15	15
22	22.000	0.188	21.564	0.218	—	—	—	16 1/2	16 1/2
24	24.000	0.218	23.500	0.250	—	—	—	17	17
30	30.000	0.250	—	—	—	—	—	22	22

Stainless Steel Butt-Welding Pipe Fittings

Tees (Reducing)

Sch 5S, 10S, 40S, 80S



ASME B16.9

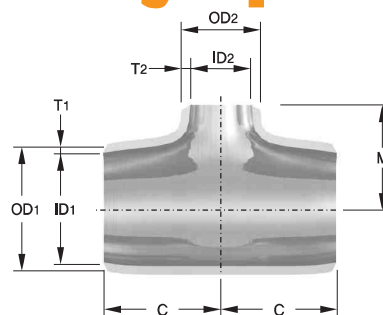
(in inches)

Nominal Pipe Size	Outside Diameter O,D ₁	Outside Diameter O,D ₂	Wall Thickness T								Center to End	
			5S		10S		40S		80S		Run C	Outlet M
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
3/4 × 3/4 × 1/2	1.050	0.840	0.065	0.065	0.083	0.083	0.113	0.109	0.154	0.147	1 1/8	1 1/8
1 × 1 × 3/4	1.135	1.050	0.065	0.065	0.109	0.083	0.133	0.113	0.179	0.154	1 1/2	1 1/2
1 × 1 × 1/2	1.135	0.840	0.065	0.065	0.109	0.083	0.133	0.109	0.179	0.147	1 1/2	1 1/2
1 1/4 × 1 1/4 × 1	1.660	1.315	0.065	0.065	0.109	0.109	0.140	0.133	0.191	0.179	1 7/8	1 7/8
1 1/4 × 1 1/4 × 3/4	1.660	1.050	0.065	0.065	0.109	0.083	0.140	0.113	0.191	0.154	1 7/8	1 7/8
1 1/2 × 1 1/2 × 1 1/4	1.900	1.660	0.065	0.065	0.109	0.109	0.145	0.140	0.200	0.191	2 1/4	2 1/4
1 1/2 × 1 1/2 × 1	1.900	1.315	0.065	0.065	0.109	0.109	0.145	0.133	0.200	0.179	2 1/4	2 1/4
1 1/2 × 1 1/2 × 3/4	1.900	1.050	0.065	0.065	0.109	0.083	0.145	0.113	0.200	0.154	2 1/4	2 1/4
2 × 2 × 1 1/2	2.375	1.900	0.065	0.065	0.109	0.109	0.154	0.145	0.218	0.200	2 1/2	2 3/8
2 × 2 × 1 1/4	2.375	1.660	0.065	0.065	0.109	0.109	0.154	0.140	0.218	0.191	2 1/2	2 1/4
2 × 2 × 1	2.375	1.315	0.065	0.065	0.109	0.109	0.154	0.133	0.218	0.179	2 1/2	2
2 1/2 × 2 1/2 × 2	2.875	2.375	0.083	0.065	0.120	0.109	0.203	0.154	0.276	0.218	3	2 3/4
2 1/2 × 2 1/2 × 1 1/2	2.875	1.900	0.083	0.065	0.120	0.109	0.203	0.145	0.276	0.200	3	2 5/8
2 1/2 × 2 1/2 × 1 1/4	2.875	1.660	0.083	0.065	0.120	0.109	0.203	0.140	0.276	0.191	3	2 1/2
3 × 3 × 2 1/2	3.500	2.875	0.083	0.065	0.120	0.120	0.216	0.203	0.300	0.276	3 3/8	3 1/4
3 × 3 × 2	3.500	2.375	0.083	0.065	0.120	0.109	0.216	0.154	0.300	0.218	3 3/8	3
3 × 3 × 1 1/2	3.500	1.900	0.083	0.065	0.120	0.109	0.216	0.145	0.300	0.200	3 3/8	2 7/8
3 1/2 × 3 1/2 × 3	4.000	3.500	0.083	0.083	0.120	0.120	0.226	0.216	0.318	0.300	3 3/4	3 5/8
3 1/2 × 3 1/2 × 2 1/2	4.000	2.875	0.083	0.083	0.120	0.120	0.226	0.203	0.318	0.276	3 3/4	3 1/2
3 1/2 × 3 1/2 × 2	4.000	2.375	0.083	0.065	0.120	0.109	0.226	0.154	0.318	0.218	3 3/4	3 1/4
3 1/2 × 3 1/2 × 1 1/2	4.000	1.900	0.083	0.065	0.120	0.109	0.226	0.145	0.318	0.200	3 3/4	3 1/8
4 × 4 × 3 1/2	4.500	4.000	0.083	0.083	0.120	0.120	0.237	0.226	0.337	0.318	4 1/8	4
4 × 4 × 3	4.500	3.500	0.083	0.083	0.120	0.120	0.237	0.216	0.337	0.300	4 1/8	3 7/8
4 × 4 × 2 1/2	4.500	2.875	0.083	0.083	0.120	0.120	0.237	0.203	0.337	0.276	4 1/8	3 3/4
4 × 4 × 2	4.500	2.375	0.083	0.065	0.120	0.120	0.237	0.154	0.337	0.218	4 1/8	3 1/2
5 × 5 × 4	5.563	4.500	0.109	0.083	0.134	0.120	0.258	0.237	0.375	0.337	4 7/8	4 5/8
5 × 5 × 3 1/2	5.563	4.000	0.109	0.083	0.134	0.120	0.258	0.226	0.375	0.318	4 7/8	4 1/2
5 × 5 × 3	5.563	3.500	0.109	0.083	0.134	0.120	0.258	0.216	0.375	0.300	4 7/8	4 3/8
5 × 5 × 2 1/2	5.563	2.875	0.109	0.083	0.134	0.120	0.258	0.203	0.375	0.276	4 7/8	4 1/4
6 × 6 × 5	6.625	5.563	0.109	0.109	0.134	0.134	0.280	0.258	0.432	0.375	5 5/8	5 3/8
6 × 6 × 4	6.625	4.500	0.109	0.083	0.134	0.120	0.280	0.237	0.432	0.337	5 5/8	5 1/8
6 × 6 × 3 1/2	6.625	4.000	0.109	0.083	0.134	0.120	0.280	0.226	0.432	0.318	5 5/8	5
6 × 6 × 3	6.625	3.500	0.109	0.083	0.134	0.120	0.280	0.216	0.432	0.300	5 5/8	4 7/8

Stainless Steel Butt-Welding Pipe Fittings

Tees (Reducing)

Sch 5S, 10S, 40S, 80S



ASME B16.9

(in inches)

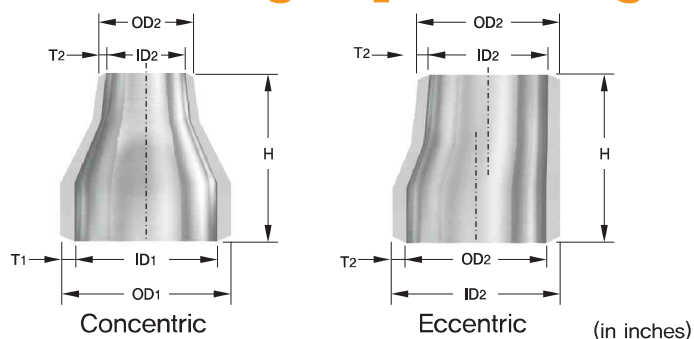
Nominal Pipe Size	Outside Diameter O,D ₁	Outside Diameter O,D ₂	Wall Thickness T								Center to End	
			5S		10S		40S		80S		Run C	Outlet M
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂		
8 × 8 × 6	8.625	6.625	0.109	0.109	0.148	0.134	0.322	0.280	0.500	0.432	7	6 5/8
8 × 8 × 5	8.625	5.563	0.109	0.109	0.148	0.134	0.322	0.258	0.500	0.375	7	6 3/8
8 × 8 × 4	8.625	4.500	0.109	0.083	0.148	0.120	0.322	0.237	0.500	0.337	7	6 1/8
10 × 10 × 8	10.750	8.625	0.134	0.109	0.165	0.148	0.365	0.322	0.500	0.500	8 1/2	8
10 × 10 × 6	10.750	6.625	0.134	0.109	0.165	0.134	0.365	0.280	0.500	0.432	8 1/2	7 5/8
10 × 10 × 5	10.750	5.563	0.134	0.109	0.165	0.134	0.365	0.258	0.500	0.375	8 1/2	7 1/2
12 × 12 × 10	12.750	10.750	0.156	0.134	0.180	0.165	0.375	0.365	0.500	0.500	10	9 1/2
12 × 12 × 8	12.750	8.625	0.156	0.109	0.180	0.148	0.375	0.322	0.500	0.500	10	9
12 × 12 × 6	12.750	6.625	0.156	0.109	0.180	0.134	0.375	0.280	0.500	0.432	10	8 5/8
14 × 14 × 12	14.000	12.750	0.156	0.156	0.188	0.180	—	—	—	—	11	10 5/8
14 × 14 × 10	14.000	10.750	0.156	0.134	0.188	0.165	—	—	—	—	11	10 1/8
14 × 14 × 8	14.000	8.625	0.156	0.109	0.188	0.148	—	—	—	—	11	9 3/4
16 × 16 × 14	16.000	14.000	0.165	0.156	0.188	0.188	—	—	—	—	12	12
16 × 16 × 12	16.000	12.750	0.165	0.156	0.188	0.180	—	—	—	—	12	11 5/8
16 × 16 × 10	16.000	10.750	0.165	0.134	0.188	0.165	—	—	—	—	12	11 1/8
18 × 18 × 16	18.000	16.000	0.165	0.165	0.188	0.188	—	—	—	—	13 1/2	13
18 × 18 × 14	18.000	14.000	0.165	0.156	0.188	0.188	—	—	—	—	13 1/2	13
18 × 18 × 12	18.000	12.750	0.165	0.156	0.188	0.180	—	—	—	—	13 1/2	12 3/8
20 × 20 × 18	20.000	18.000	0.188	0.165	0.218	0.188	—	—	—	—	15	14 1/2
20 × 20 × 16	20.000	16.000	0.188	0.165	0.218	0.188	—	—	—	—	15	14
20 × 20 × 14	20.000	14.000	0.188	0.156	0.218	0.188	—	—	—	—	15	14
22 × 22 × 20	22.000	20.000	0.188	0.188	0.218	0.218	—	—	—	—	16 1/2	16
22 × 22 × 18	22.000	18.000	0.188	0.165	0.218	0.188	—	—	—	—	16 1/2	15 1/2
22 × 22 × 16	22.000	16.000	0.188	0.165	0.218	0.188	—	—	—	—	16 1/2	15
24 × 24 × 22	24.000	22.000	0.218	0.188	0.250	0.218	—	—	—	—	17	17
24 × 24 × 20	24.000	20.000	0.218	0.188	0.250	0.218	—	—	—	—	17	17
24 × 24 × 18	24.000	18.000	0.218	0.165	0.250	0.188	—	—	—	—	17	16 1/2
30 × 30 × 24	30.000	24.000	0.250	0.218	—	—	—	—	—	—	22	21
30 × 30 × 22	30.000	22.000	0.250	0.188	—	—	—	—	—	—	22	20 1/2
30 × 30 × 20	30.000	20.000	0.250	0.188	—	—	—	—	—	—	22	20

Stainless Steel Butt-Welding Pipe Fittings

Reducers

Sch 5S, 10S, 40S, 80S

ASME B16.9



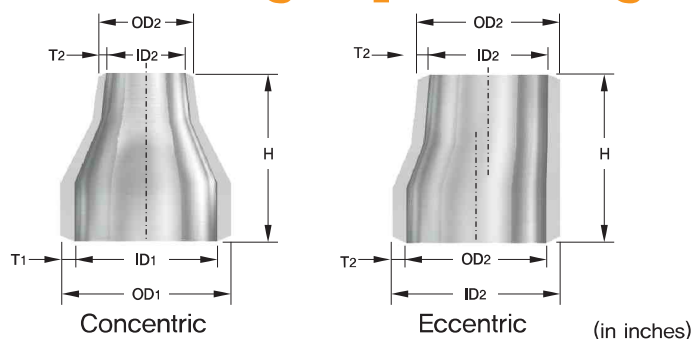
Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Wall Thickness T								End to End H
			5S		10S		40S		80S		
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	
3/4 × 1/2	1,050	0,840	0,065	0,065	0,083	0,083	0,113	0,109	0,154	0,147	1 1/2
1 × 3/4	1,135	1,050	0,065	0,065	0,109	0,083	0,133	0,113	0,179	0,154	2
1 × 1/2	1,135	0,840	0,065	0,065	0,109	0,083	0,133	0,109	0,179	0,147	2
1 1/4 × 1	1,660	1,315	0,065	0,065	0,109	0,109	0,140	0,133	0,191	0,179	2
1 1/4 × 3/4	1,660	1,050	0,065	0,065	0,109	0,083	0,140	0,113	0,191	0,154	2
1 1/4 × 1/2	1,660	0,840	0,065	0,065	0,109	0,109	0,140	0,109	0,191	0,147	2
1 1/2 × 1/4	1,900	1,660	0,065	0,065	0,109	0,109	0,145	0,140	0,200	0,191	2 1/2
1 1/2 × 1	1,900	1,315	0,065	0,065	0,109	0,083	0,145	0,133	0,200	0,179	2 1/2
1 1/2 × 3/4	1,900	1,050	0,065	0,065	0,109	0,083	0,145	0,113	0,200	0,154	2 1/2
1 1/2 × 1/2	1,900	0,840	0,065	0,065	0,109	0,083	0,145	0,109	0,200	0,147	2 1/2
2 × 1 1/2	2,375	1,900	0,065	0,065	0,109	0,109	0,154	0,145	0,218	0,200	3
2 × 1 1/4	2,375	1,660	0,065	0,065	0,109	0,109	0,154	0,140	0,218	0,191	3
2 × 1	2,375	1,315	0,065	0,065	0,109	0,109	0,154	0,133	0,218	0,179	3
2 × 3/4	2,375	1,050	0,065	0,065	0,109	0,000	0,154	0,113	0,218	0,154	3
2 1/2 × 2	2,875	2,375	0,083	0,065	0,120	0,083	0,203	0,154	0,276	0,218	3 1/2
2 1/2 × 1 1/2	2,875	1,900	0,083	0,065	0,120	0,109	0,203	0,145	0,276	0,200	3 1/2
2 1/2 × 1 1/4	2,875	1,660	0,083	0,065	0,120	0,109	0,203	0,140	0,276	0,191	3 1/2
3 × 2 1/2	3,500	2,875	0,083	0,083	0,120	0,109	0,216	0,203	0,300	0,276	3 1/2
3 × 2	3,500	2,375	0,083	0,065	0,120	0,120	0,216	0,154	0,300	0,218	3 1/2
3 × 1 1/2	3,500	1,900	0,083	0,065	0,120	0,109	0,216	0,145	0,300	0,200	3 1/2
3 × 1 1/4	3,500	1,660	0,083	0,065	0,120	0,109	0,216	0,140	0,300	0,191	3 1/2
3 1/2 × 3	4,000	3,500	0,083	0,083	0,120	0,120	0,120	0,216	0,318	0,300	4
3 1/2 × 2 1/2	4,000	2,875	0,083	0,083	0,120	0,120	0,120	0,203	0,318	0,276	4
3 1/2 × 2	4,000	2,375	0,083	0,065	0,120	0,109	0,109	0,154	0,318	0,218	4
4 × 3 1/2	4,500	4,000	0,083	0,083	0,120	0,120	0,120	0,226	0,337	0,318	4
4 × 3	4,500	3,500	0,083	0,083	0,120	0,120	0,120	0,216	0,337	0,300	4
4 × 2 1/2	4,500	2,875	0,083	0,083	0,120	0,120	0,120	0,203	0,337	0,276	4
4 × 2	4,500	2,375	0,083	0,065	0,120	0,109	0,109	0,154	0,337	0,218	4
5 × 4	5,563	4,500	0,109	0,083	0,134	0,120	0,120	0,237	0,375	0,337	5
5 × 3 1/2	5,563	4,000	0,109	0,083	0,134	0,120	0,120	0,226	0,375	0,318	5
5 × 3	5,563	3,500	0,109	0,083	0,134	0,120	0,120	0,216	0,375	0,300	5
5 × 2 1/2	5,563	2,875	0,109	0,083	0,134	0,120	0,120	0,203	0,375	0,276	5
6 × 5	6,625	5,563	0,109	0,109	0,134	0,134	0,134	0,258	0,432	0,375	5 1/2
6 × 4	6,625	4,500	0,109	0,083	0,134	0,120	0,120	0,237	0,432	0,337	5 1/2
6 × 3 1/2	6,625	4,000	0,109	0,083	0,134	0,120	0,120	0,226	0,432	0,318	5 1/2
6 × 3	6,625	3,500	0,109	0,083	0,134	0,120	0,120	0,216	0,432	0,300	5 1/2

Stainless Steel Butt-Welding Pipe Fittings

Reducers

Sch 5S, 10S, 40S, 80S

ASME B16.9



Nominal Pipe Size	Outside Diameter O.D ₁	Outside Diameter O.D ₂	Wall Thickness T								End to End H
			5S		10S		40S		80S		
			T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	T ₁	T ₂	
8 × 6	8.625	6.625	0.109	0.109	0.148	0.134	0.322	0.280	0.500	0.432	6
8 × 5	8.625	5.563	0.109	0.109	0.148	0.134	0.322	0.258	0.500	0.375	6
8 × 4	8.625	4.500	0.109	0.083	0.148	0.120	0.322	0.237	0.500	0.337	6
10 × 8	10.750	8.625	0.134	0.109	0.165	0.148	0.365	0.322	0.500	0.500	7
10 × 6	10.750	6.625	0.134	0.109	0.165	0.134	0.365	0.280	0.500	0.432	7
10 × 5	10.750	5.563	0.134	0.109	0.165	0.134	0.365	0.258	0.500	0.375	7
12 × 10	12.750	10.750	0.156	0.134	0.180	0.165	0.375	0.365	0.500	0.500	8
12 × 8	12.750	8.625	0.156	0.109	0.180	0.148	0.375	0.322	0.500	0.500	8
12 × 6	12.750	6.625	0.156	0.109	0.180	0.134	0.375	0.280	0.500	0.432	8
14 × 12	14.000	12.750	0.156	0.156	0.188	0.180	—	—	—	—	13
14 × 10	14.000	10.750	0.156	0.134	0.188	0.165	—	—	—	—	13
14 × 8	14.000	8.625	0.156	0.109	0.188	0.148	—	—	—	—	13
16 × 14	16.000	14.000	0.165	0.156	0.188	0.188	—	—	—	—	14
16 × 12	16.000	12.750	0.165	0.156	0.188	0.180	—	—	—	—	14
16 × 10	16.000	10.750	0.165	0.134	0.188	0.165	—	—	—	—	14
18 × 16	18.000	16.000	0.165	0.165	0.188	0.188	—	—	—	—	15
18 × 14	18.000	14.000	0.165	0.156	0.188	0.188	—	—	—	—	15
18 × 12	18.000	12.750	0.165	0.156	0.188	0.180	—	—	—	—	15
20 × 18	20.000	18.000	0.188	0.165	0.218	0.188	—	—	—	—	20
20 × 16	20.000	16.000	0.188	0.165	0.218	0.188	—	—	—	—	20
20 × 14	20.000	14.000	0.188	0.156	0.218	0.188	—	—	—	—	20
22 × 20	22.000	20.000	0.188	0.188	0.218	0.218	—	—	—	—	20
22 × 18	22.000	18.000	0.188	0.165	0.218	0.188	—	—	—	—	20
22 × 16	22.000	16.000	0.188	0.165	0.218	0.188	—	—	—	—	20
24 × 22	24.000	22.000	0.218	0.188	0.250	0.218	—	—	—	—	20
24 × 20	24.000	20.000	0.218	0.188	0.250	0.218	—	—	—	—	20
24 × 18	24.000	18.000	0.218	0.165	0.250	0.188	—	—	—	—	20
30 × 24	30.000	24.000	0.250	0.218	—	—	—	—	—	—	24
30 × 22	30.000	22.000	0.250	0.188	—	—	—	—	—	—	24
30 × 20	30.000	20.000	0.250	0.188	—	—	—	—	—	—	24



STEEL BUTT-WELDING PIPE FITTINGS

KS / JIS

CO N TENTS

CARBON STEEL BUTT-WELDING PIPE FITTINGS

• O,D,I,D & Wall Thickness KS B 1522 / JIS B 2311 (SPP,SGP,SPPG,SPW400)	40
• O,D,I,D & Wall Thickness KS B 1541 / JIS B 2312 (Sch40, Sch80, Sch120, Sch160)	42
• O,D,I,D & Wall Thickness KS B 1543 / JIS B 2313 (LG, STD, Sch40, Sch80)	43

STAINLESS STEEL BUTT-WELDING PIPE FITTINGS

• O,D,I,D & Wall Thickness KS B 1541 / JIS B 2312 (Sch5, Sch10, Sch20, Sch80, Sch120, Sch160)	44
• O,D,I,D & Wall Thickness KS B 1543 / JIS B 2313 (Sch5, Sch10, Sch20)	45

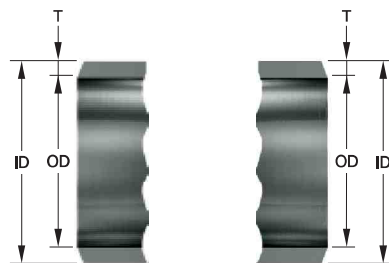
FITTING DIMENSIONS

• 45°,90°,180° Elbow & Cap (KS B 1522 / JIS B 2311, KS B 1541 / JIS B 2312, KS B 1543 / JIS B 2313)	46
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Steel Butt-Welding Pipe Fittings

O.D, I.D & Wall Thickness

SPP,SGP,SPPG



KS B 1522 / JIS B 2311

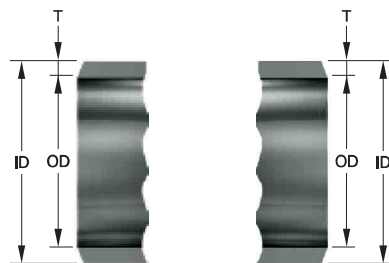
(mm)

Nominal Pipe Size		Outside Diameter O.D	Inside Diameter I.D	Wall Thickness T
A	B			
1/2	15	21.7	16.1	2.8
3/4	20	27.2	21.6	2.8
1	25	34.0	27.6	3.2
1 1/4	32	42.7	35.7	3.5
1 1/2	40	48.6	41.6	3.5
2	50	60.5	52.9	3.8
2 1/2	65	76.3	67.9	4.2
3	80	89.1	80.7	4.2
3 1/2	90	101.6	93.2	4.2
4	100	114.3	105.3	4.5
5	125	139.8	130.8	4.5
6	150	165.2	155.2	5.0
8	200	216.3	204.7	5.8
10	250	267.4	254.2	6.6
12	300	318.5	304.7	6.9
14	350	355.6	339.8	7.9
16	400	406.4	390.6	7.9
18	450	457.2	441.4	7.9
20	500	508.0	492.2	7.9

Steel Butt-Welding Pipe Fittings

**O.D, I.D &
Wall Thickness**

SPW 400



KS B 1522 / JIS B 2311

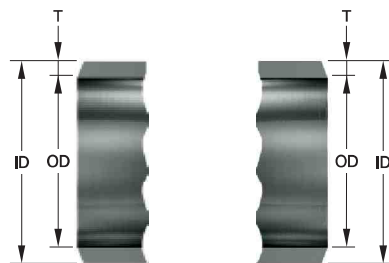
(mm)

Nominal Pipe Size		Outside Diameter	LG		STD		XS	
A	B		ID	T	ID	T	ID	T
6	150	165.2	155.2	5.0	—	—	—	—
8	200	216.3	204.7	5.8	—	—	—	—
10	250	267.4	254.2	6.6	—	—	—	—
12	300	318.5	304.7	6.9	—	—	—	—
14	350	355.6	339.8	7.9	—	—	—	—
16	400	406.4	390.6	7.9	—	—	—	—
18	450	457.2	441.4	7.9	—	—	—	—
20	500	508.0	492.3	7.9	489.0	9.5	—	—
22	550	558.8	543.0	7.9	539.8	9.5	533.4	12.7
24	600	609.6	593.8	7.9	590.6	9.5	584.2	12.7
26	650	660.4	644.6	7.9	641.4	9.5	635.0	12.7
28	700	711.2	695.4	7.9	692.2	9.5	685.8	12.7
30	750	762.0	746.2	7.9	743.0	9.5	736.6	12.7
32	800	812.8	797.0	7.9	793.8	9.5	787.4	12.7
34	850	863.6	847.8	7.9	844.6	9.5	838.2	12.7
36	900	914.4	898.6	7.9	895.4	9.5	889.0	12.7
38	950	965.2	949.4	7.9	946.2	9.5	939.8	12.7
40	1000	1016.0	1000.2	7.9	997.0	9.5	990.6	12.7
42	1050	1066.8	—	—	1047.8	9.5	1041.4	12.7
44	1100	1117.6	—	—	1098.6	9.5	1092.2	12.7
46	1150	1168.4	—	—	1149.4	9.5	1143.0	12.7
48	1200	1219.2	—	—	1200.2	9.5	1193.8	12.7

Steel Butt-Welding Pipe Fittings

**O.D, I.D &
Wall Thickness**

Sch 40, 80, 120, 160



KS B 1541 / JIS B 2312

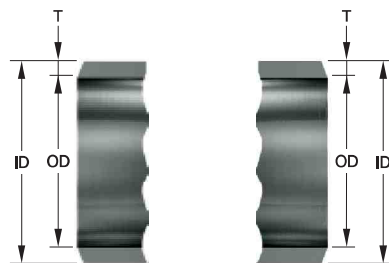
(mm)

Nominal Pipe Size		Outside Diameter O.D	Sch40		Sch80		Sch120		Sch160	
A	B		ID	T	ID	T	ID	T	ID	T
1/2	15	21.7	16.1	2.8	14.3	3.7	—	—	—	—
3/4	20	27.2	21.4	2.9	19.4	3.9	—	—	—	—
1	25	34.0	27.2	3.4	25.0	4.5	—	—	—	—
1 1/4	32	42.7	35.5	3.6	32.9	4.9	—	—	—	—
1 1/2	40	48.6	41.2	3.7	38.4	5.1	—	—	34.4	7.1
2	50	60.5	52.7	3.9	49.5	5.5	—	—	43.1	8.7
2 1/2	65	76.3	65.9	5.2	62.3	7.0	—	—	57.3	9.5
3	80	89.1	78.1	5.5	73.9	7.6	—	—	66.9	11.1
3 1/2	90	101.6	90.2	5.7	85.4	8.1	—	—	76.2	12.7
4	100	114.3	102.3	6.0	97.1	8.6	92.1	11.1	87.3	13.5
5	125	139.8	126.6	6.6	120.8	9.5	114.4	12.7	108.0	15.9
6	150	165.2	151.0	7.1	143.2	11.0	136.6	14.3	128.8	18.2
8	200	216.3	199.9	8.2	190.9	12.7	179.9	18.2	170.3	23.0
10	250	267.4	248.8	9.3	237.2	15.1	224.6	21.4	210.2	28.6
12	300	318.5	297.9	10.3	283.7	17.4	267.7	25.4	251.9	33.3
14	350	355.6	333.4	11.1	317.6	19.0	300.0	27.8	284.2	35.7
16	400	406.4	381.0	12.7	363.6	21.4	344.6	30.9	325.4	40.5
18	450	457.2	428.6	14.3	409.6	23.8	387.4	34.9	366.8	45.2
20	500	508.0	477.8	15.1	455.6	26.2	431.8	38.1	408.0	50.0

Steel Butt-Welding Pipe Fittings

O.D, I.D & Wall Thickness

LG, STD, XS, Sch40, 80



KS B 1543 / JIS B 2313

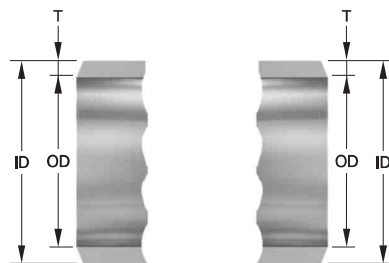
(mm)

Nomina Pipe Size		Outside Diameter O,D	LG		STD		XS		Sch40		Sch80	
A	B		ID	T	ID	T	ID	T	ID	T	ID	T
1/2	15	21.7	—	—	—	—	—	—	16.1	2.8	14.3	3.7
3/4	20	27.2	—	—	—	—	—	—	21.4	2.9	19.4	3.9
1	25	34.0	—	—	—	—	—	—	27.2	3.4	25.0	4.5
1 1/4	32	42.7	—	—	—	—	—	—	35.5	3.6	32.9	4.9
1 1/2	40	48.6	—	—	—	—	—	—	41.2	3.7	38.4	5.1
2	50	60.5	—	—	—	—	—	—	52.7	3.9	49.5	5.5
2 1/2	65	76.3	—	—	—	—	—	—	65.9	5.2	62.3	7.0
3	80	89.1	—	—	—	—	—	—	78.1	5.5	73.9	7.6
3 1/2	90	101.6	—	—	—	—	—	—	90.2	5.7	85.4	8.1
4	100	114.3	—	—	—	—	—	—	102.3	6.0	97.1	8.6
5	125	139.8	—	—	—	—	—	—	126.6	6.6	120.8	9.5
6	150	165.2	—	—	—	—	—	—	151.0	7.1	143.2	11.0
8	200	216.3	—	—	—	—	—	—	199.9	8.2	190.9	12.7
10	250	267.4	—	—	—	—	—	—	248.8	9.3	237.2	15.1
12	300	318.5	—	—	—	—	—	—	297.9	10.3	283.7	17.4
14	350	355.6	339.8	7.9	336.6	9.5	330.2	12.7	333.4	11.1	317.6	19.0
16	400	406.4	390.6	7.9	387.4	9.5	381.0	12.7	381.0	12.7	363.6	21.4
18	450	457.2	441.4	7.9	438.2	9.5	431.8	12.7	428.6	14.3	409.6	23.8
20	500	508.0	492.2	7.9	489.0	9.5	482.6	12.7	477.8	15.1	455.6	26.2
22	550	558.8	543.0	7.9	539.8	9.5	533.4	12.7	—	—	501.6	28.6
24	600	609.6	593.8	7.9	590.6	9.5	584.2	12.7	574.8	17.4	547.6	31.0
26	650	660.4	644.6	7.9	641.4	9.5	635.0	12.7	—	—	—	—
28	700	711.2	695.4	7.9	692.2	9.5	685.8	12.7	—	—	—	—
30	750	762.0	746.2	7.9	743.0	9.5	736.6	12.7	—	—	—	—
32	800	812.8	797.0	7.9	793.8	9.5	787.4	12.7	778.0	17.4	—	—
34	850	863.6	847.8	7.9	844.6	9.5	838.2	12.7	828.8	17.4	—	—
36	900	914.4	898.6	7.9	895.4	9.5	889.0	12.7	876.4	19.0	—	—
38	950	965.2	949.4	7.9	946.2	9.5	939.8	12.7	—	—	—	—
40	1000	1016.0	1000.2	7.9	997.0	9.5	990.6	12.7	—	—	—	—
42	1050	1066.8	1051.0	7.9	1047.8	9.5	1041.4	12.7	—	—	—	—
44	1100	1117.6	1101.8	7.9	1098.6	9.5	1092.2	12.7	—	—	—	—
46	1150	1168.4	1152.6	7.9	1149.4	9.5	1143.0	12.7	—	—	—	—
48	1200	1219.2	1203.4	7.9	1200.2	9.5	1193.8	12.7	—	—	—	—

Stainless Steel Butt-Welding Pipe Fittings

O.D, I.D & Wall Thickness

Sch 5, 10, 20, 40, 80, 120, 160



KS B 1541 / JIS B 2312

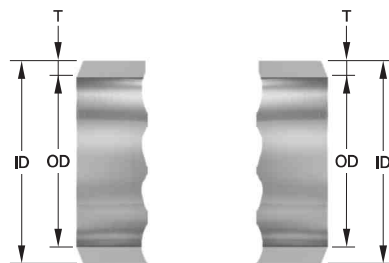
(mm)

Nomina Pipe Size		Outside Diameter O.D	Sch5		Sch10		Sch20		Sch40		Sch80		Sch120		Sch160	
A	B		ID	T	ID	T	ID	T	ID	T	ID	T	ID	T	ID	T
1/2	15	21.7	18.4	1.65	17.5	2.1	16.7	2.5	16.1	2.8	14.3	3.7	—	—	—	—
3/4	20	27.2	23.9	1.65	23.0	2.1	22.2	2.5	21.4	2.9	19.4	3.9	—	—	—	—
1	25	34.0	30.7	1.65	28.4	2.8	28.0	3.0	27.2	3.4	25.0	4.5	—	—	—	—
1 1/4	32	42.7	39.4	1.65	37.1	2.8	36.7	3.0	35.5	3.6	32.9	4.9	—	—	—	—
1 1/2	40	48.6	45.3	1.65	43.0	2.8	42.6	3.0	41.2	3.7	38.4	5.1	—	—	34.4	7.1
2	50	60.5	57.2	1.65	54.9	2.8	53.5	3.5	52.7	3.9	49.5	5.5	—	—	43.1	8.7
2 1/2	65	76.3	72.1	2.1	70.3	3.0	69.3	3.5	65.9	5.2	62.3	7.0	—	—	57.3	9.5
3	80	89.1	84.9	2.1	83.1	3.0	81.1	4.0	78.1	5.5	73.9	7.6	—	—	66.9	11.1
3 1/2	90	101.6	97.4	2.1	95.6	3.0	93.6	4.0	90.2	5.7	85.4	8.1	—	—	76.2	12.7
4	100	114.3	110.1	2.1	108.3	3.0	106.3	4.0	102.3	6.0	97.1	8.6	92.1	11.1	87.3	13.5
5	125	139.8	134.2	2.8	133.0	3.4	129.8	5.0	126.6	6.6	120.8	9.5	114.4	12.7	108.0	15.9
6	150	165.2	159.6	2.8	158.4	3.4	155.2	5.0	151.0	7.1	143.2	11.0	136.6	14.3	128.8	18.2
8	200	216.3	210.7	2.8	208.3	4.0	203.3	6.5	199.9	8.2	190.9	12.7	179.9	18.2	170.3	23.0
10	250	267.4	260.6	3.4	259.4	4.0	254.4	6.5	248.8	9.3	237.2	15.1	224.6	21.4	210.2	28.6
12	300	318.5	310.5	4.0	309.5	4.5	305.5	6.5	297.9	10.3	283.7	17.4	267.7	25.4	251.9	33.3
14	350	355.6	—	—	—	—	—	—	333.4	11.1	317.6	19.0	300.0	27.8	284.2	35.7
16	400	406.4	—	—	—	—	—	—	381.0	12.7	363.6	21.4	344.6	30.9	325.4	40.5
18	450	457.2	—	—	—	—	—	—	428.6	14.3	409.6	23.8	387.4	34.9	366.8	45.2
20	500	508.0	—	—	—	—	—	—	477.8	15.1	455.6	26.2	431.8	38.1	408.0	50.0

Stainless Steel Butt-Welding Pipe Fittings

**O.D, I.D &
Wall Thickness**

Sch 5, 10, 20



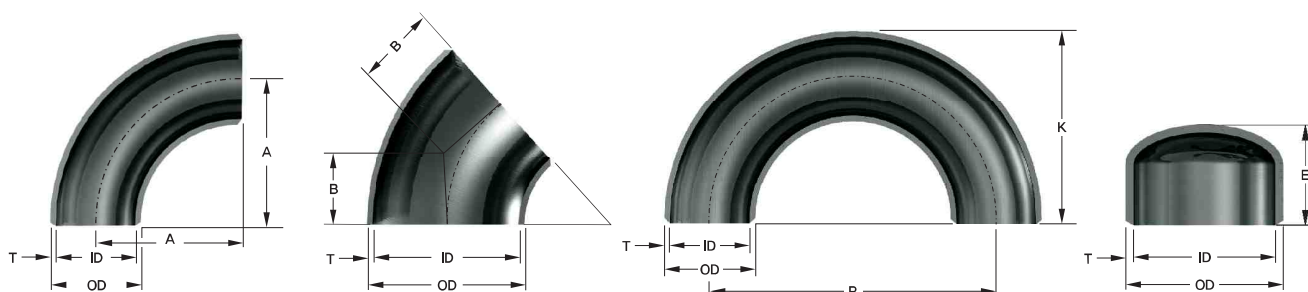
KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D	Sch5		Sch10		Sch20	
A	B		ID	T	ID	T	ID	T
1/2	15	21.7	18.4	1.65	17.5	2.1	16.7	2.5
3/4	20	27.2	23.9	1.65	23.0	2.1	22.2	2.5
1	25	34.0	30.7	1.65	28.4	2.8	28.0	3.0
1 1/4	32	42.7	39.4	1.65	37.1	2.8	36.7	3.0
1 1/2	40	48.6	45.3	1.65	43.0	2.8	42.6	3.0
2	50	60.5	57.2	1.65	54.9	2.8	53.5	3.5
2 1/2	65	76.3	72.1	2.1	70.3	3.0	69.3	3.5
3	80	89.1	84.9	2.1	83.1	3.0	81.1	4.0
3 1/2	90	101.6	97.4	2.1	95.6	3.0	93.6	4.0
4	100	114.3	110.1	2.1	108.3	3.0	106.3	4.0
5	125	139.8	134.2	2.8	133.0	3.4	129.8	5.0
6	150	165.2	159.6	2.8	158.4	3.4	155.2	5.0
8	200	216.3	210.7	2.8	208.3	4.0	203.3	6.5
10	250	267.4	260.6	3.4	259.4	4.0	254.4	6.5
12	300	318.5	310.5	4.0	309.5	4.5	305.5	6.5
14	350	355.6	347.6	4.0	346.0	4.8	339.8	7.9
16	400	406.4	398.0	4.2	396.8	4.8	390.6	7.9
18	450	457.2	448.8	4.2	447.6	4.8	441.4	7.9
20	500	508.0	498.4	4.8	497.0	5.5	492.2	7.9
22	550	558.8	549.2	4.8	547.8	5.5	—	—
24	600	609.6	598.6	5.5	596.8	6.4	—	—
30	750	762.0	749.2	6.4	746.2	7.9	—	—

Fitting Dimensions

45° Elbow (Long)
90° Elbow (Long, Short)
180° Elbow (Long, Short)
Cap



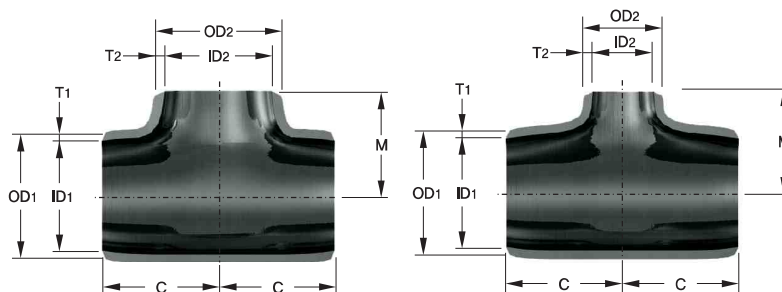
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D	Center to End			Center to Center		End to End		
A	B		45° Elbow B	90° Elbow A		180° Elbow P		180° Elbow K		Cap
			Long	Long	Short	Long	Short	Long	Short	E
1/2	15	21.7	15.8	38.1	—	76.2	—	49.0	—	25.4
3/4	20	27.2	15.8	38.1	—	76.2	—	51.7	—	25.4
1	25	34.0	15.8	38.1	25.4	76.2	50.8	55.1	42.4	38.1
1 1/4	32	42.7	19.7	47.6	31.8	95.2	63.6	69.0	53.2	38.1
1 1/2	40	48.6	23.7	57.2	38.1	114.4	76.2	81.5	62.4	38.1
2	50	60.5	31.6	76.2	50.8	152.4	101.6	106.5	81.1	38.1
2 1/2	65	76.3	39.5	95.3	63.5	190.6	127.0	133.5	101.7	38.1
3	80	89.1	47.3	114.3	76.2	228.6	152.4	158.9	120.8	50.8
3 1/2	90	101.6	55.3	133.4	88.9	266.8	177.8	184.2	139.7	63.5
4	100	114.3	63.1	152.4	101.6	304.8	203.2	209.6	158.8	63.5
5	125	139.8	78.9	190.5	127.0	381.0	254.0	260.4	196.9	76.2
6	150	165.2	94.7	228.6	152.4	457.2	304.8	311.2	235.0	88.9
8	200	216.3	126.3	304.8	203.2	609.6	406.4	413.0	311.4	101.6
10	250	267.4	157.8	381.0	254.0	762.0	508.0	514.7	387.7	127.0
12	300	318.5	189.4	457.2	304.8	914.4	609.6	616.5	464.1	152.4
14	350	355.6	220.9	533.4	355.6	1066.8	711.2	711.2	533.4	165.1
16	400	406.4	252.5	609.6	406.4	1219.2	812.8	812.8	609.6	177.8
18	450	457.2	284.1	685.8	457.2	—	—	—	—	203.2
20	500	508.0	315.6	762.0	508.0	—	—	—	—	228.6
22	550	558.8	347.2	838.2	558.8	—	—	—	—	—
24	600	609.6	378.7	914.4	609.6	—	—	—	—	—
26	650	660.4	410.3	990.6	660.4	—	—	—	—	—
28	700	711.2	441.9	1066.8	711.2	—	—	—	—	—
30	750	762.0	473.4	1143.0	762.0	—	—	—	—	—
32	800	812.8	505.0	1219.2	812.8	—	—	—	—	—
34	850	863.6	536.6	1295.4	863.6	—	—	—	—	—
36	900	914.4	568.1	1371.6	914.4	—	—	—	—	—
38	950	965.2	599.7	1447.8	965.2	—	—	—	—	—
40	1000	1016.0	631.2	1524.0	1016.0	—	—	—	—	—
42	1050	1066.8	662.8	1600.2	1066.8	—	—	—	—	—
44	1100	1117.6	694.4	1676.4	1117.6	—	—	—	—	—
46	1150	1168.4	725.9	1752.6	1168.4	—	—	—	—	—
48	1200	1219.2	757.5	1828.8	1219.2	—	—	—	—	—

Fitting Dimensions

Tees



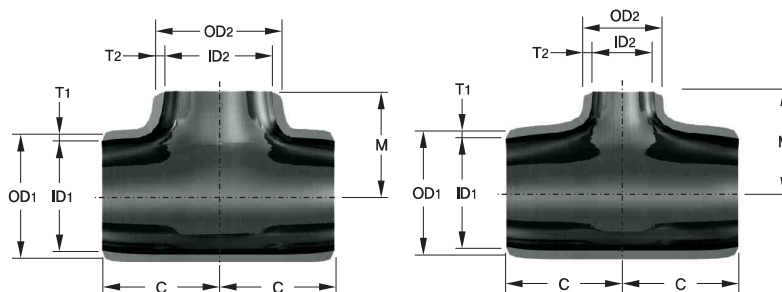
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size			Outside Diameter O.D ₁	Outside Diameter O.D ₂	Centerto End	
A	B				C	M
1/2	15		21.7	21.7	25.4	25.4
3/4	20		27.2	27.2	28.6	28.6
3/4 × 3/4 × 1/2	20 × 20 × 15		27.2	21.7	28.6	28.6
1	25		34.0	34.0	38.1	38.1
1 × 1 × 3/4	25 × 25 × 20		34.0	27.2	38.1	38.1
1 × 1 × 1/2	25 × 25 × 15		34.0	21.7	38.1	38.1
1 1/4	32		42.7	42.7	47.6	47.6
1 1/4 × 1 1/4 × 1	32 × 32 × 25		42.7	34.0	47.6	47.6
1 1/4 × 1 1/4 × 3/4	32 × 32 × 20		42.7	27.2	47.6	47.6
1 1/4 × 1 1/4 × 1/2	32 × 32 × 15		42.7	21.7	47.6	47.6
1 1/2	40		48.6	48.6	57.2	57.2
1 1/2 × 1 1/2 × 1/4	40 × 40 × 32		48.6	42.7	57.2	57.2
1 1/2 × 1 1/2 × 1	40 × 40 × 25		48.6	34.0	57.2	57.2
1 1/2 × 1 1/2 × 3/4	40 × 40 × 20		48.6	27.2	57.2	57.2
1 1/2 × 1 1/2 × 1/2	40 × 40 × 15		48.6	21.7	57.2	57.2
2	50		60.5	60.5	63.5	63.5
2 × 2 × 1 1/2	50 × 50 × 40		60.5	48.6	63.5	60.3
2 × 2 × 1 1/4	50 × 50 × 32		60.5	42.7	63.5	57.2
2 × 2 × 1	50 × 50 × 25		60.5	34.0	63.5	50.8
2 × 2 × 3/4	50 × 50 × 20		60.5	27.2	63.5	44.5
2 1/2	65		76.3	76.3	76.2	76.2
2 1/2 × 2 1/2 × 2	65 × 65 × 50		76.3	60.5	76.2	69.9
2 1/2 × 2 1/2 × 1 1/2	65 × 65 × 40		76.3	48.6	76.2	66.7
2 1/2 × 2 1/2 × 1 1/4	65 × 65 × 32		76.3	42.7	76.2	63.5
2 1/2 × 2 1/2 × 1	65 × 65 × 25		76.3	34.0	76.2	57.2
3	80		89.1	89.1	85.7	85.7
3 × 3 × 2 1/2	80 × 80 × 65		89.1	76.3	85.7	82.6
3 × 3 × 2	80 × 80 × 50		89.1	60.5	85.7	76.2
3 × 3 × 1 1/2	80 × 80 × 40		89.1	48.6	85.7	73.0
3 × 3 × 1 1/4	80 × 80 × 32		89.1	42.7	85.7	69.9
3 1/2	90		101.6	101.6	95.3	95.3
3 1/2 × 3 1/2 × 3	90 × 90 × 80		101.6	89.1	95.3	92.1
3 1/2 × 3 1/2 × 2 1/2	90 × 90 × 65		101.6	76.3	95.3	88.9
3 1/2 × 3 1/2 × 2 1/2	90 × 90 × 50		101.6	60.5	95.3	82.6
3 1/2 × 3 1/2 × 1 1/2	90 × 90 × 40		101.6	48.6	95.3	79.4
4	100		114.3	114.3	104.8	104.8
4 × 4 × 3 1/2	100 × 100 × 90		114.3	101.6	104.8	101.6

Fitting Dimensions

Tees



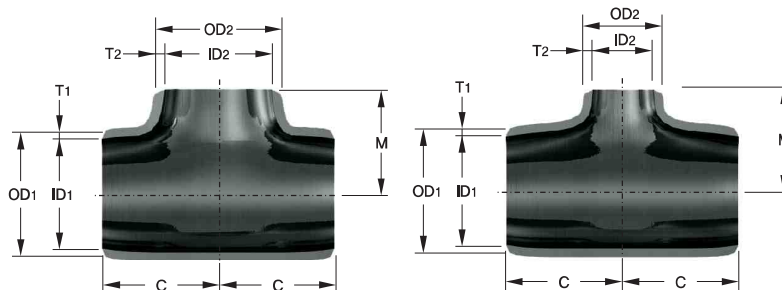
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D ₁	Outside Diameter O.D ₂	Centerto End	
A	B			C	M
4 × 4 × 3	100 × 100 × 80	114.3	89.1	104.8	98.4
4 × 4 × 2 1/2	100 × 100 × 65	114.3	76.3	104.8	95.3
4 × 4 × 2	100 × 100 × 50	114.3	60.5	104.8	88.9
4 × 4 × 1 1/2	100 × 100 × 40	114.3	48.6	104.8	85.7
5	125	139.8	139.8	123.8	123.8
5 × 5 × 4	125 × 125 × 100	139.8	114.3	123.8	117.5
5 × 5 × 3	125 × 125 × 90	139.8	101.6	123.8	114.3
5 × 5 × 3	125 × 125 × 80	139.8	89.1	123.8	111.1
5 × 5 × 2 1/2	125 × 125 × 65	139.8	76.3	123.8	108.0
5 × 5 × 2	125 × 125 × 50	139.8	60.5	123.8	104.8
6	150	165.2	165.2	142.9	142.9
6 × 6 × 5	150 × 150 × 125	165.2	139.8	142.9	136.5
6 × 6 × 4	150 × 150 × 100	165.2	114.3	142.9	130.2
6 × 6 × 3 1/2	150 × 150 × 90	165.2	101.6	142.9	127.0
6 × 6 × 3	150 × 150 × 80	165.2	89.1	142.9	123.8
6 × 6 × 2 1/2	150 × 150 × 65	165.2	76.3	142.9	120.7
8	200	216.3	216.3	177.8	177.8
8 × 8 × 6	200 × 200 × 150	216.3	165.2	177.8	168.3
8 × 8 × 5	200 × 200 × 125	216.3	139.8	177.8	161.9
8 × 8 × 4	200 × 200 × 100	216.3	114.3	177.8	155.6
8 × 8 × 3 1/2	200 × 200 × 90	216.3	101.6	177.8	152.4
10	250	267.4	267.4	215.9	215.9
10 × 10 × 8	250 × 250 × 200	267.4	216.3	215.9	203.2
10 × 10 × 6	250 × 250 × 150	267.4	165.2	215.9	193.7
10 × 10 × 5	250 × 250 × 125	267.4	139.8	215.9	190.5
10 × 10 × 4	250 × 250 × 100	267.4	114.3	215.9	184.2
12	300	318.5	318.5	254.0	254.0
12 × 12 × 10	300 × 300 × 250	318.5	267.4	254.0	241.3
12 × 12 × 8	300 × 300 × 200	318.5	216.3	254.0	228.6
12 × 12 × 6	300 × 300 × 150	318.5	165.2	254.0	219.1
12 × 12 × 5	300 × 300 × 125	318.5	139.8	254.0	215.9
14	350	355.6	355.6	279.4	279.4
14 × 14 × 12	350 × 350 × 300	355.6	318.5	279.4	269.9
14 × 14 × 10	350 × 350 × 250	355.6	267.4	279.4	257.2
14 × 14 × 8	350 × 350 × 200	355.6	216.3	279.4	247.7
14 × 14 × 6	350 × 350 × 150	355.6	165.2	279.4	238.1
16	400	406.4	406.4	304.8	304.8

Fitting Dimensions

Tees



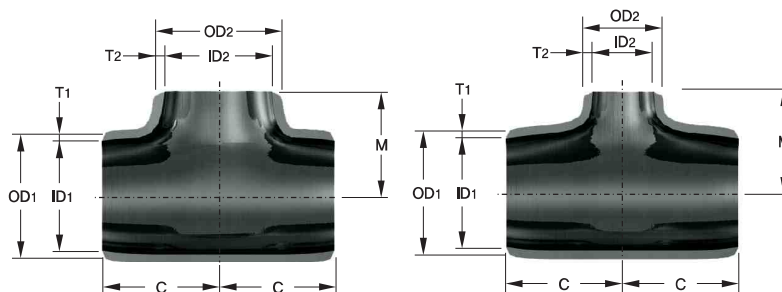
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D ₁	Outside Diameter O.D ₂	Centerto End	
A	B			C	M
16 × 16 × 14	400 × 400 × 350	406.4	355.6	304.8	304.8
16 × 16 × 12	400 × 400 × 300	406.4	318.5	304.8	295.3
16 × 16 × 10	400 × 400 × 250	406.4	267.4	304.8	282.6
16 × 16 × 8	400 × 400 × 200	406.4	216.3	304.8	273.1
16 × 16 × 6	400 × 400 × 150	406.4	165.2	304.8	263.5
18	450	457.2	457.2	342.9	342.9
18 × 18 × 16	450 × 450 × 400	457.2	406.4	342.9	330.2
18 × 18 × 14	450 × 450 × 350	457.2	355.6	342.9	330.2
18 × 18 × 12	450 × 450 × 300	457.2	318.5	342.9	320.7
18 × 18 × 10	450 × 450 × 250	457.2	267.4	342.9	308.0
20	500	508.0	508.0	381.0	381.0
20 × 20 × 18	500 × 500 × 450	508.0	457.2	381.0	368.3
20 × 20 × 16	500 × 500 × 400	508.0	406.4	381.0	355.6
20 × 20 × 14	500 × 500 × 350	508.0	355.6	381.0	355.6
20 × 20 × 12	500 × 500 × 300	508.0	318.5	381.0	346.1
20 × 20 × 10	500 × 500 × 250	508.0	267.4	381.0	333.4
20 × 20 × 8	500 × 500 × 200	508.0	216.3	381.0	323.9
22	550	558.8	558.8	419.1	419.1
22 × 22 × 20	550 × 550 × 500	558.8	508.0	419.1	406.4
22 × 22 × 18	550 × 550 × 450	558.8	457.2	419.1	393.7
22 × 22 × 16	550 × 550 × 400	558.8	406.4	419.1	381.0
24	600	609.6	609.6	431.8	431.8
24 × 24 × 22	600 × 600 × 550	609.6	558.8	431.8	431.8
24 × 24 × 20	600 × 600 × 500	609.6	508.0	431.8	431.8
24 × 24 × 18	600 × 600 × 450	609.6	457.2	431.8	419.1
26	650	660.4	660.4	495.3	495.3
26 × 26 × 24	650 × 650 × 600	660.4	609.6	495.3	482.6
26 × 26 × 22	650 × 650 × 550	660.4	558.8	495.3	469.9
26 × 26 × 20	650 × 650 × 500	660.4	508.0	495.3	457.2
28	700	711.2	711.2	520.7	520.7
28 × 28 × 26	700 × 700 × 650	711.2	660.4	520.7	520.7
28 × 28 × 24	700 × 700 × 600	711.2	609.6	520.7	508.0
28 × 28 × 22	700 × 700 × 550	711.2	558.8	520.7	495.3
30	750	762.0	762.0	558.8	558.8
30 × 30 × 28	750 × 750 × 700	762.0	711.2	558.8	546.1
30 × 30 × 26	750 × 750 × 650	762.0	660.4	558.8	546.1
30 × 30 × 24	750 × 750 × 600	762.0	609.6	558.8	533.4

Fitting Dimensions

Tees



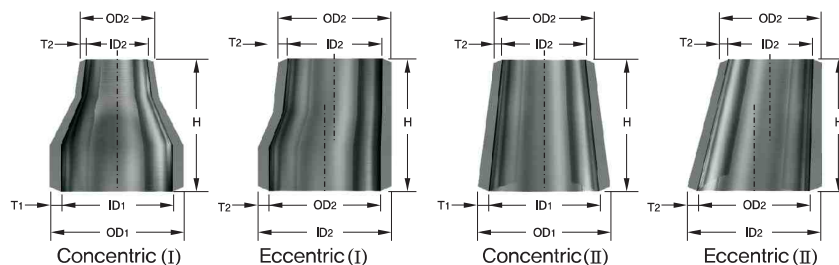
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D ₁	Outside Diameter O.D ₂	Centerto End	
A	B			C	M
32	800	812.8	812.8	596.9	596.9
32 × 32 × 30	800 × 800 × 750	812.8	762.0	596.9	584.2
32 × 32 × 28	800 × 800 × 700	812.8	711.2	596.9	571.5
32 × 32 × 26	800 × 800 × 650	812.8	660.4	596.9	571.5
34	850	863.6	863.6	635.0	635.0
34 × 34 × 32	850 × 850 × 800	863.6	812.8	635.0	622.3
34 × 34 × 30	850 × 850 × 750	863.6	762.0	635.0	609.6
34 × 34 × 28	850 × 850 × 700	863.6	711.2	635.0	596.9
36	900	914.4	914.4	673.1	673.1
36 × 36 × 34	900 × 900 × 850	914.4	863.6	673.1	660.4
36 × 36 × 32	900 × 900 × 800	914.4	812.8	673.1	647.7
36 × 36 × 30	900 × 900 × 750	914.4	762.0	673.1	635.0
38	950	965.2	965.2	711.2	711.2
38 × 38 × 36	950 × 950 × 900	965.2	914.4	711.2	711.2
38 × 38 × 34	950 × 950 × 850	965.2	863.6	711.2	698.5
38 × 38 × 32	950 × 950 × 800	965.2	812.8	711.2	685.8
40	1000	1016.0	1016.0	749.3	749.3
40 × 40 × 38	1000 × 1000 × 950	1016.0	965.2	749.3	749.3
40 × 40 × 36	1000 × 1000 × 900	1016.0	914.4	749.3	736.6
40 × 40 × 34	1000 × 1000 × 850	1016.0	863.6	749.3	723.9
42	1050	1066.8	1066.8	762.0	762.0
42 × 42 × 40	1050 × 1050 × 1000	1066.8	1016.0	762.0	711.2
42 × 42 × 38	1050 × 1050 × 950	1066.8	965.2	762.0	711.2
42 × 42 × 36	1050 × 1050 × 900	1066.8	914.4	762.0	711.2
44	1100	1117.6	1117.6	812.8	812.8
44 × 44 × 42	1100 × 1100 × 1050	1117.6	1066.8	812.8	762.0
44 × 44 × 40	1100 × 1100 × 1000	1117.6	1016.0	812.8	749.3
44 × 44 × 38	1100 × 1100 × 950	1117.6	965.2	812.8	736.6
46	1150	1168.4	1168.4	850.9	850.9
46 × 46 × 44	1150 × 1150 × 1100	1168.4	1117.6	850.9	800.1
46 × 46 × 42	1150 × 1150 × 1050	1168.4	1066.8	850.9	787.4
46 × 46 × 40	1150 × 1150 × 1000	1168.4	1016.0	850.9	774.7
48	1200	1219.2	1219.2	889.0	889.0
48 × 48 × 46	1200 × 1200 × 1150	1219.2	1168.4	889.0	838.2
48 × 48 × 44	1200 × 1200 × 1100	1219.2	1117.6	889.0	838.2
48 × 48 × 42	1200 × 1200 × 1050	1219.2	1066.8	889.0	812.8

Fitting Dimensions

Reducers



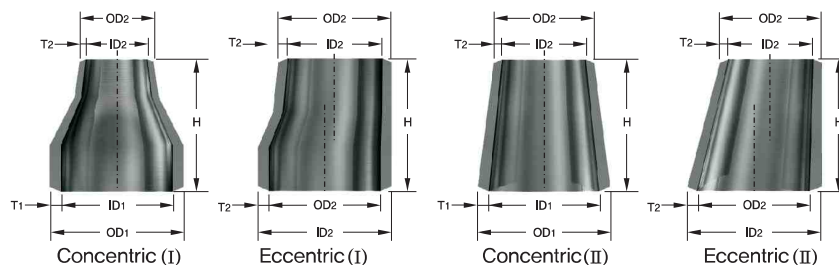
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D ₁	Outside Diameter O.D ₂	End to End H
A	B			
3/4 × 1/2	20 × 15	27.2	21.7	38.1
1 × 3/4	25 × 20	34.0	27.2	50.8
1 × 1/2	25 × 15	34.0	21.7	50.8
1 1/4 × 1	32 × 25	42.7	34.0	50.8
1 1/4 × 3/4	32 × 20	42.7	27.2	50.8
1 1/4 × 1/2	32 × 15	42.7	21.7	50.8
1 1/2 × 1 1/4	40 × 32	48.6	42.7	63.5
1 1/2 × 1	40 × 25	48.6	34.0	63.5
1 1/2 × 3/4	40 × 20	48.6	27.2	63.5
1 1/2 × 1/2	40 × 15	48.6	21.7	63.5
2 × 1 1/2	50 × 40	60.5	48.6	76.2
2 × 1 1/4	50 × 32	60.5	42.7	76.2
2 × 1	50 × 25	60.5	34.0	76.2
2 × 3/4	50 × 20	60.5	27.2	76.2
2 1/2 × 2	65 × 50	76.3	60.5	88.9
2 1/2 × 1 1/2	65 × 40	76.3	48.6	88.9
2 1/2 × 1 1/4	65 × 32	76.3	42.7	88.9
2 1/2 × 1	65 × 25	76.3	34.0	88.9
3 × 2 1/2	80 × 65	89.1	76.3	88.9
3 × 2	80 × 50	89.1	60.5	88.9
3 × 1 1/2	80 × 40	89.1	48.6	88.9
3 × 1 1/4	80 × 32	89.1	42.7	88.9
3 1/2 × 3	90 × 80	101.6	89.1	101.6
3 1/2 × 2 1/2	90 × 65	101.6	76.3	101.6
3 1/2 × 2 1/2	90 × 50	101.6	60.5	101.6
3 1/2 × 1 1/2	90 × 40	101.6	48.6	101.6
3 1/2 × 1 1/4	90 × 32	101.6	42.7	101.6
4 × 3 1/2	100 × 90	114.3	101.6	101.6
4 × 3	100 × 80	114.3	89.1	101.6
4 × 2 1/2	100 × 65	114.3	76.3	101.6
4 × 2	100 × 50	114.3	60.5	101.6
4 × 1 1/2	100 × 40	114.3	48.6	101.6
5 × 4	125 × 100	139.8	114.3	127.0
5 × 3	125 × 90	139.8	101.6	127.0
5 × 3	125 × 80	139.8	89.1	127.0
5 × 2 1/2	125 × 65	139.8	76.3	127.0
5 × 2	125 × 50	139.8	60.5	127.0
6 × 5	150 × 125	165.2	139.8	139.7
6 × 4	150 × 100	165.2	114.3	139.7
6 × 3 1/2	150 × 90	165.2	101.6	139.7
6 × 3	150 × 80	165.2	89.1	139.7
6 × 2 1/2	150 × 65	165.2	76.3	139.7

Fitting Dimensions

Reducers



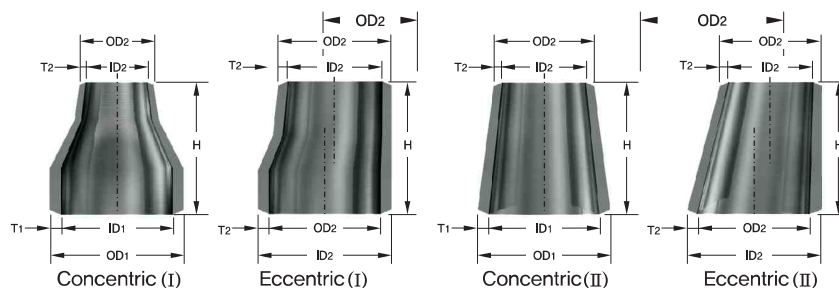
KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D ₁	Outside Diameter O.D ₂	End to End H
A	B			
8 × 6	200 × 150	216.3	165.2	152.4
8 × 5	200 × 125	216.3	139.8	152.4
8 × 4	200 × 100	216.3	114.3	152.4
8 × 3 1/2	200 × 90	216.3	101.6	152.4
10 × 8	250 × 200	267.4	216.3	177.8
10 × 6	250 × 150	267.4	165.2	177.8
10 × 5	250 × 125	267.4	139.8	177.8
10 × 4	250 × 100	267.4	114.3	177.8
12 × 10	300 × 250	318.5	267.4	203.2
12 × 8	300 × 200	318.5	216.3	203.2
12 × 6	300 × 150	318.5	165.2	203.2
12 × 5	300 × 125	318.5	139.8	203.2
14 × 12	350 × 300	355.6	318.5	330.2
14 × 10	350 × 250	355.6	267.4	330.2
14 × 8	350 × 200	355.6	216.3	330.2
14 × 6	350 × 150	355.6	165.2	330.2
16 × 14	400 × 350	406.4	355.6	330.2
16 × 12	400 × 300	406.4	318.5	330.2
16 × 10	400 × 250	406.4	267.4	330.2
16 × 8	400 × 200	406.4	216.3	330.2
18 × 16	450 × 400	457.2	406.4	330.2
18 × 14	450 × 350	457.2	355.6	355.6
18 × 12	450 × 300	457.2	318.5	355.6
18 × 10	450 × 250	457.2	267.4	355.6
20 × 18	500 × 450	508.0	457.2	355.6
20 × 16	500 × 400	508.0	406.4	381.0
20 × 14	500 × 350	508.0	355.6	381.0
20 × 12	500 × 300	508.0	318.5	381.0
22 × 20	550 × 500	558.8	508.0	381.0
22 × 18	550 × 450	558.8	457.2	508.0
22 × 16	550 × 400	558.8	406.4	508.0
22 × 14	550 × 350	558.8	355.6	508.0
24 × 22	600 × 550	609.6	558.8	508.0
24 × 20	600 × 500	609.6	508.0	508.0
24 × 18	600 × 450	609.6	457.2	508.0
24 × 16	600 × 400	609.6	406.4	508.0
26 × 24	650 × 600	660.4	609.6	609.6
26 × 22	650 × 550	660.4	558.8	609.6
26 × 20	650 × 500	660.4	508.0	609.6
26 × 18	650 × 450	660.4	457.2	609.6
28 × 26	700 × 650	711.2	660.4	609.6
28 × 24	700 × 600	711.2	609.6	609.6

Fitting Dimensions

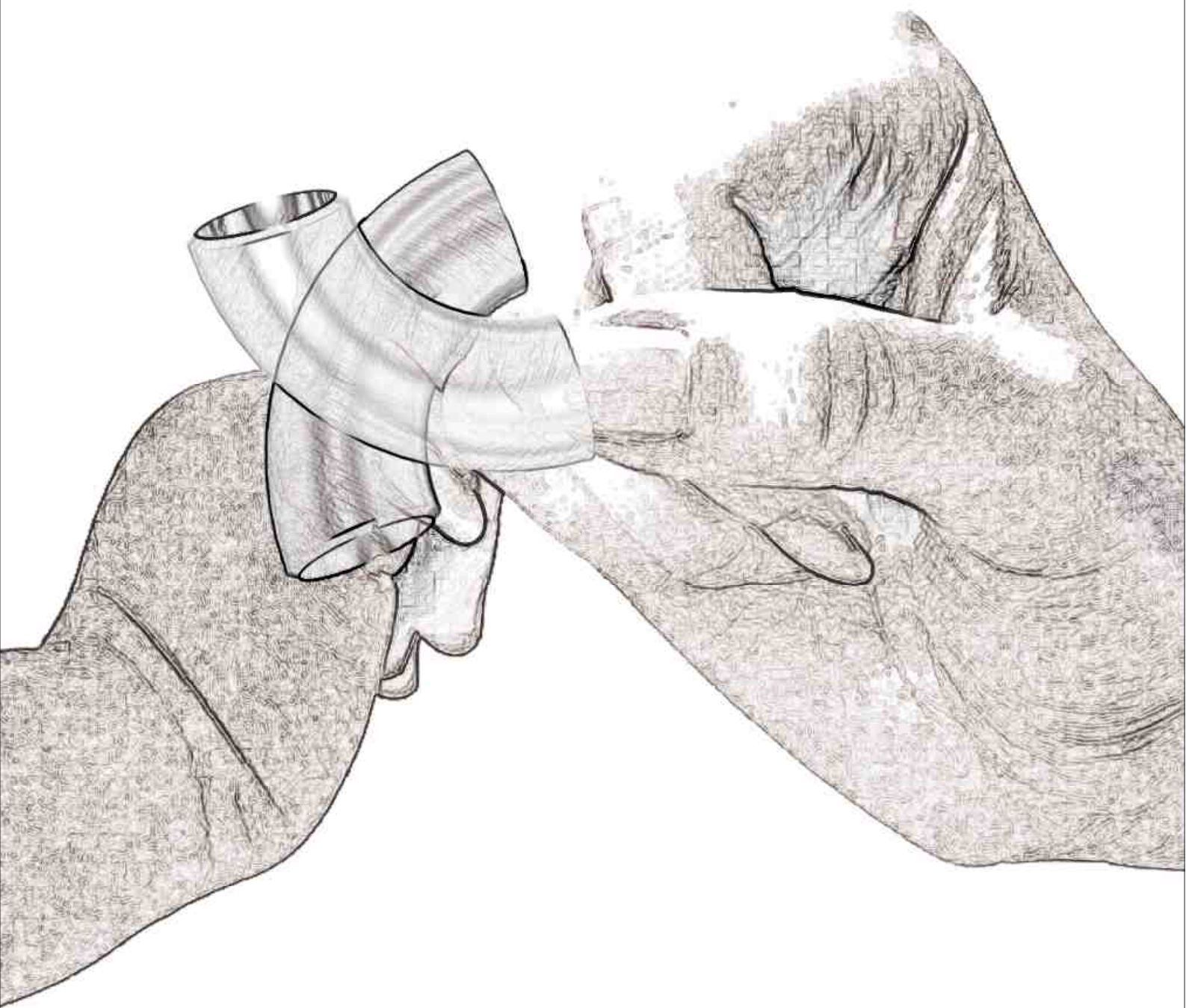
Reducers



KS B 1522 / JIS B 2311 KS B 1541 / JIS B 2312 KS B 1543 / JIS B 2313

(mm)

Nominal Pipe Size		Outside Diameter O.D ₁	Outside Diameter O.D ₂	End to End H
A	B			
28 × 22	700 × 550	711.2	558.8	609.6
28 × 20	700 × 500	711.2	508.0	609.6
30 × 28	750 × 700	762.0	711.2	609.6
30 × 26	750 × 650	762.0	660.4	609.6
30 × 24	750 × 600	762.0	609.6	609.6
30 × 22	750 × 550	762.0	558.8	609.6
32 × 30	800 × 750	812.8	762.0	609.6
32 × 28	800 × 700	812.8	711.2	609.6
32 × 26	800 × 650	812.8	660.4	609.6
32 × 24	800 × 600	812.8	609.6	609.6
34 × 32	850 × 800	863.6	812.8	609.6
34 × 30	850 × 750	863.6	762.0	609.6
34 × 28	850 × 700	863.6	711.2	609.6
34 × 26	850 × 650	863.6	660.4	609.6
36 × 34	900 × 850	914.4	863.6	609.6
36 × 32	900 × 800	914.4	812.8	609.6
36 × 30	900 × 750	914.4	762.0	609.6
36 × 28	900 × 700	914.4	711.2	609.6
38 × 36	950 × 900	965.2	914.4	609.6
38 × 34	950 × 850	965.2	863.6	609.6
38 × 32	950 × 800	965.2	812.8	609.6
38 × 30	950 × 750	965.2	762.0	609.6
40 × 38	1000 × 950	1016.0	965.2	609.6
40 × 36	1000 × 900	1016.0	914.4	609.6
40 × 34	1000 × 850	1016.0	863.6	609.6
40 × 32	1000 × 800	1016.0	812.8	609.6
42 × 40	1050 × 1000	1066.8	1016.0	609.6
42 × 38	1050 × 950	1066.8	965.2	609.6
42 × 36	1050 × 900	1066.8	914.4	609.6
42 × 34	1050 × 850	1066.8	863.6	609.6
44 × 42	1100 × 1050	1117.6	1066.8	609.6
44 × 40	1100 × 1000	1117.6	1016.0	609.6
44 × 38	1100 × 950	1117.6	965.2	609.6
44 × 36	1100 × 900	1117.6	914.4	609.6
46 × 44	1150 × 1100	1168.4	1117.6	711.2
46 × 42	1150 × 1050	1168.4	1066.8	711.2
46 × 40	1150 × 1000	1168.4	1016.0	711.2
46 × 38	1150 × 950	1168.4	965.2	711.2
48 × 46	1200 × 1150	1219.2	1168.4	711.2
48 × 44	1200 × 1100	1219.2	1117.6	711.2
48 × 42	1200 × 1050	1219.2	1066.8	711.2
48 × 40	1200 × 1000	1219.2	1016.0	711.2





Butt-Welding Pipe Fittings

Part1 : Wrought carbon steel for general use and without specific inspection requirements

Part2 : Non alloy and ferritic alloy steels with specific inspection requirements

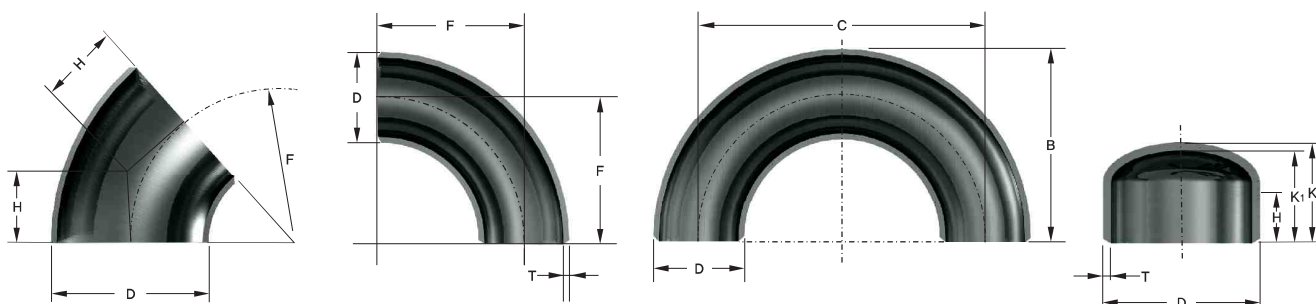
BS EN

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Butt-Welding Pipe Fittings

45° Elbows (Long)
90° Elbows (Long, Short)
180° Elbows (Long, Short)
Cap



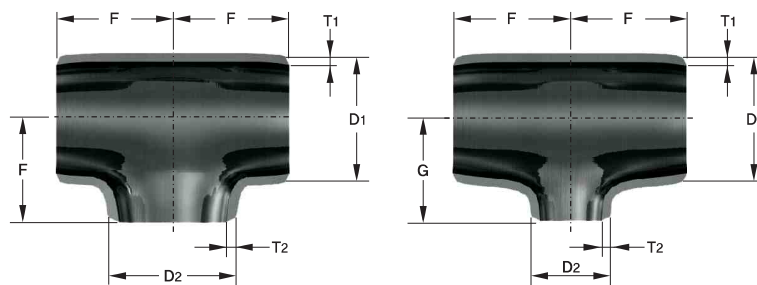
EN 10253-1

(mm)

DN	D	T	45 Long	90 Long	180 Long	90 Short 180 Short			Cap			
			H	F	C	B	F	C	B	H	K ₁	K ₂
15	21,3	2,0	12	29	56	38	—	—	—	—	—	—
20	26,9	2,3	12	29	57	43	25	50	39	—	—	25
25	33,7	2,6	16	38	76	56	25	50	42	4	11	25
32	42,4	2,6	20	48	95	70	32	64	53	4	11	25
40	48,3	2,6	24	57	114	83	38	76	62	4	11	38
50	60,3	2,9	35	76	152	106	51	102	81	6	16,5	38
65	76,1	2,9	44	95	191	132	63	127	102	6	18,5	38
80	88,9	3,2	47	114	229	159	76	152	121	8	23	51
100	114,3	3,6	63	152	305	210	102	203	159	8	26	64
125	139,7	4,0	79	190	381	262	127	254	197	12	35,5	64
150	168,3	4,5	95	229	457	313	152	305	237	15	44,5	76
175	193,7	5,6	112	270	540	367	—	—	—	20	56	89
200	219,1	6,3	127	305	610	414	203	406	313	30	68,5	102
250	273,0	6,3	159	381	762	518	254	508	391	40	90	127
300	323,9	7,1	190	457	914	619	305	610	467	40	99	152
350	355,6	8,0	222	533	1067	711	356	711	533	40	106	165
400	406,4	8,8	254	610	1219	813	406	813	610	50	125	178

Butt-Welding Pipe Fittings

Tees



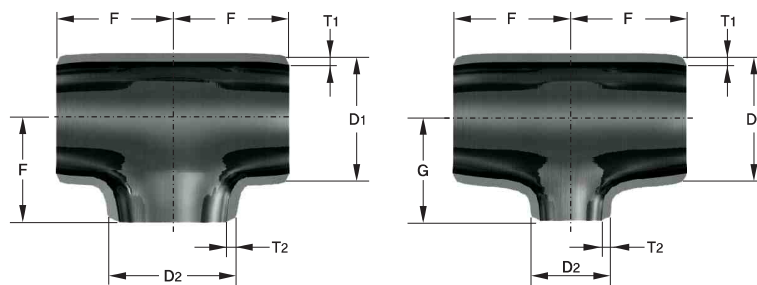
EN 10253-1

(mm)

Nominal Pipe Size		T ₁	T ₂	D ₁	D ₂	F	G
A	B						
3/4	20	2,3	2,3	26,9	26,9	29	29
1	25	2,6	2,6	33,7	33,7	38	38
1 × 1 × 1/2	25 × 25 × 15	2,6	2,0	33,7	21,3	38	38
1 × 1 × 3/4	25 × 25 × 20	2,6	2,3	33,7	26,9	38	38
1 1/2	40	2,6	2,6	48,3	48,3	57	57
1 1/2 × 1 1/2 × 1/2	40 × 40 × 15	2,6	2,0	48,3	21,3	57	57
1 1/2 × 1 1/2 × 3/4	40 × 40 × 20	2,6	2,3	48,3	26,9	57	57
1 1/2 × 1 1/2 × 1	40 × 40 × 25	2,6	2,6	48,3	33,7	57	57
1 1/2 × 1 1/2 × 1/4	40 × 40 × 32	2,6	2,6	48,3	42,4	57	57
2	50	2,9	2,9	60,3	60,3	64	64
2 × 2 × 3/4	50 × 50 × 20	2,9	2,3	60,3	26,9	64	44
2 × 2 × 1	50 × 50 × 25	2,9	2,6	60,3	33,7	64	51
2 × 2 × 1 1/4	50 × 50 × 32	2,9	2,6	60,3	42,4	64	57
2 × 2 × 1 1/2	50 × 50 × 40	2,9	2,6	60,3	48,3	64	60
2 1/2	65	2,9	2,9	76,1	76,1	76	76
2 1/2 × 2 1/2 × 1	65 × 65 × 25	2,9	2,6	76,1	33,7	76	57
2 1/2 × 2 1/2 × 1 1/4	65 × 65 × 32	2,9	2,6	76,1	42,4	76	64
2 1/2 × 2 1/2 × 1 1/2	65 × 65 × 40	2,9	2,6	76,1	48,3	76	67
2 1/2 × 2 1/2 × 2	65 × 65 × 50	2,9	2,9	76,1	60,3	76	70
3	80	3,2	3,2	88,9	88,9	86	86
3 × 3 × 1	80 × 80 × 25	3,2	2,6	88,9	33,7	86	67
3 × 3 × 1 1/4	80 × 80 × 32	3,2	2,6	88,9	42,4	86	70
3 × 3 × 1 1/2	80 × 80 × 40	3,2	2,6	88,9	48,4	86	73
3 × 3 × 2	80 × 80 × 50	3,2	2,9	88,9	60,3	86	76
3 × 3 × 2 1/2	80 × 80 × 65	3,2	2,9	88,9	76,1	86	83
4	100	3,6	3,6	114,3	114,3	105	105
4 × 4 × 1 1/2	100 × 100 × 40	3,6	2,6	114,3	48,3	105	86
4 × 4 × 2	100 × 100 × 50	3,6	2,9	114,3	60,3	105	89
4 × 4 × 2 1/2	100 × 100 × 65	3,6	2,9	114,3	76,1	105	95
4 × 4 × 3	100 × 100 × 80	3,6	3,2	114,3	88,9	105	98
5	125	4,0	4,0	139,7	139,7	124	124
5 × 5 × 2	125 × 125 × 50	4,0	2,9	139,7	60,3	124	105
5 × 5 × 2 1/2	125 × 125 × 65	4,0	2,9	139,7	76,1	124	108

Butt-Welding Pipe Fittings

Tees



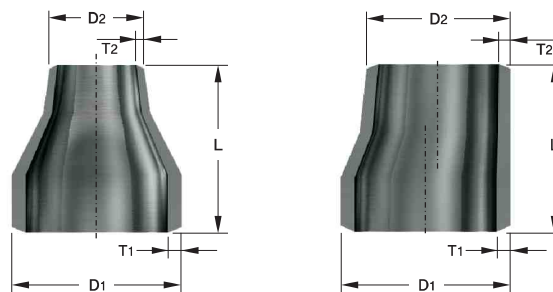
EN 10253-1

(mm)

Nominal Pipe Size		T ₁	T ₂	D ₁	D ₂	F	G
A	B						
5 × 5 × 3	125 × 125 × 80	4,0	3,2	139,7	88,9	124	111
5 × 5 × 4	125 × 125 × 100	4,0	3,6	139,7	114,3	124	117
6	150	4,5	4,5	168,3	168,3	143	143
6 × 6 × 2	150 × 150 × 50	4,5	2,9	168,3	60,3	143	117
6 × 6 × 2 1/2	150 × 150 × 65	4,5	2,9	168,3	76,1	143	121
6 × 6 × 3	150 × 150 × 80	4,5	3,2	168,3	88,9	143	124
6 × 6 × 4	150 × 150 × 100	4,5	3,6	168,3	114,3	143	130
6 × 6 × 5	150 × 150 × 125	4,5	4,0	168,3	139,7	143	137
8	200	6,3	6,3	219,1	219,1	178	178
8 × 8 × 3	200 × 200 × 80	6,3	3,2	219,1	88,9	178	152
8 × 8 × 4	200 × 200 × 100	6,3	3,6	219,1	114,3	178	156
8 × 8 × 5	200 × 200 × 125	6,3	4,0	219,1	139,7	178	162
8 × 8 × 6	200 × 200 × 150	6,3	4,5	219,1	168,3	178	168
10	250	6,3	6,3	273,1	273,1	216	216
10 × 10 × 4	250 × 250 × 100	6,3	3,6	273,1	114,3	216	184
10 × 10 × 5	250 × 250 × 125	6,3	4,0	273,1	139,7	216	191
10 × 10 × 6	250 × 250 × 150	6,3	4,5	273,1	168,3	216	194
10 × 10 × 8	250 × 250 × 200	6,3	6,3	273,1	219,1	216	203
12	300	7,1	7,1	323,9	323,9	254	254
12 × 12 × 6	300 × 300 × 150	7,1	4,5	323,9	168,3	254	219
12 × 12 × 8	300 × 300 × 200	7,1	6,3	323,9	219,1	254	229
12 × 12 × 10	300 × 300 × 250	7,1	6,3	323,9	273,0	254	241
14	350	8,0	8,0	355,6	355,6	279	279
14 × 14 × 6	350 × 350 × 150	8,0	4,5	355,6	168,3	279	238
14 × 14 × 8	350 × 350 × 200	8,0	6,3	355,6	219,1	279	248
14 × 14 × 10	350 × 350 × 250	8,0	6,3	355,6	273,0	279	257
14 × 14 × 12	350 × 350 × 300	8,0	7,1	355,6	323,9	279	270
16	400	8,8	8,8	406,4	406,4	305	305
16 × 16 × 6	400 × 400 × 150	8,8	4,5	406,4	168,3	305	264
16 × 16 × 8	400 × 400 × 200	8,8	6,3	406,4	219,1	305	273
16 × 16 × 10	400 × 400 × 250	8,8	6,3	406,4	273,0	305	283
16 × 16 × 12	400 × 400 × 300	8,8	7,1	406,4	323,9	305	295
16 × 16 × 14	400 × 400 × 350	8,8	8,0	406,4	355,6	305	305

Butt-Welding Pipe Fittings

Reducers



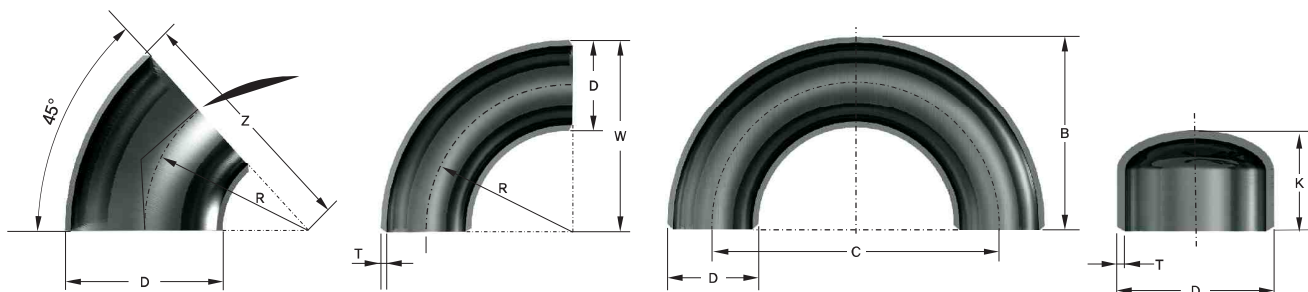
EN 10253-1

(mm)

Nominal Pipe Size		T ₁	T ₂	D ₁	D ₂	Length L
A	B					
3/4 × 1/2	20 × 15	2.3	2.0	26.9	21.3	38
1 × 3/4	25 × 20	2.6	2.0	33.7	26.9	35
1 × 1/2	25 × 15	2.6	2.0	33.7	21.3	51
1 1/4 × 1	32 × 25	2.6	2.6	42.4	33.7	51
1 1/4 × 3/4	32 × 20	2.6	2.3	42.4	26.9	39
1 1/4 × 1/2	32 × 15	2.6	2.0	42.4	21.3	51
1 1/2 × 1 1/4	40 × 32	2.6	2.6	48.3	42.4	38
1 1/2 × 1	40 × 25	2.6	2.6	48.3	33.7	55
1 1/2 × 3/4	40 × 20	2.6	2.3	48.3	26.9	67
2 × 1 1/2	50 × 40	2.9	2.6	60.3	48.3	50
2 × 1 1/4	50 × 32	2.9	2.6	60.3	42.4	61
2 × 1	50 × 25	2.9	2.6	60.3	33.7	77
2 1/2 × 2	65 × 50	2.9	2.9	76.1	60.3	63
2 1/2 × 1 1/2	65 × 40	2.9	2.6	76.1	48.3	84
2 1/2 × 1 1/4	65 × 32	2.9	2.6	76.1	42.4	95
3 × 2 1/2	80 × 65	3.2	2.9	88.9	76.1	56
3 × 2	80 × 50	3.2	2.9	88.9	60.3	86
3 × 1 1/2	80 × 40	3.2	2.6	88.9	48.3	108
4 × 3	100 × 80	3.6	3.2	114.3	88.9	90
4 × 2 1/2	100 × 65	3.6	2.9	114.3	76.1	114
4 × 2	100 × 50	3.6	2.9	114.3	60.3	143
5 × 4	125 × 100	4.0	3.6	139.7	114.3	88
5 × 3	125 × 80	4.0	3.2	139.7	88.9	135
5 × 2 1/2	125 × 65	4.0	2.9	139.7	76.1	159
6 × 5	150 × 125	4.5	4.0	168.3	139.7	94
6 × 4	150 × 100	4.5	3.6	168.3	114.3	141
6 × 3	150 × 80	4.5	3.2	168.3	88.9	189
8 × 6	200 × 150	6.3	4.5	219.1	168.3	130
8 × 5	200 × 125	6.3	4.0	219.1	139.7	170
8 × 4	200 × 100	6.3	3.6	219.1	114.3	210
10 × 8	250 × 200	6.3	6.3	273.0	219.1	130
10 × 6	250 × 150	6.3	4.5	273.0	168.3	220
10 × 5	250 × 125	6.3	4.0	273.0	139.7	250
12 × 10	300 × 250	7.1	6.3	323.9	273.0	130
12 × 8	300 × 200	7.1	6.3	323.9	219.1	215
12 × 6	300 × 150	7.1	4.5	323.9	168.3	290
14 × 12	350 × 300	8.0	7.1	355.6	323.9	100
14 × 10	350 × 250	8.0	6.3	355.6	273.0	125
14 × 8	350 × 200	8.0	6.3	355.6	219.1	255
16 × 14	400 × 350	8.8	8.0	406.4	355.6	130
16 × 12	400 × 300	8.8	7.1	406.4	323.9	175
16 × 10	400 × 250	8.8	6.3	406.4	273.0	250

Butt-Welding Pipe Fittings

45° Elbows (Long)
90° Elbows (Long, Short)
180° Elbows (Long, Short)
Cap



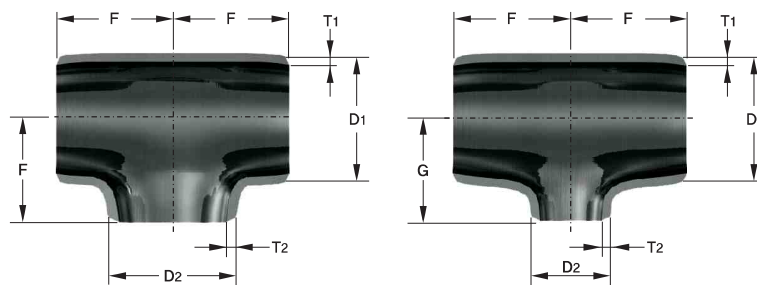
EN 10253-2

(mm)

DN	D	Long		B-W-Z	Short		B-W	K
		R	C		R	C		
15	21.3	38	76	49	25	50	36	25
20	26.9	38	76	51	25	50	39	25
25	33.7	38	76	56	25	50	42	25
32	42.4	48	96	69	32	64	53	38
40	48.3	57	114	82	38	76	62	38
50	60.3	76	152	106	51	102	81	38
65	76.1	95	190	133	63	127	102	38
80	88.9	114	228	159	76	152	121	51
100	114.3	152	304	210	102	203	159	64
125	139.7	190	380	260	127	254	197	76
150	168.3	229	457	313	152	305	237	89
200	219.1	305	610	414	203	406	313	102
250	273	381	762	518	254	508	391	127
300	323.9	457	914	619	305	610	467	152
350	355.6	533	1066	711	356	711	533	165
400	406.4	610	1220	813	406	813	610	178
450	457	686	1372	914	457	914	686	203
500	508	762	1524	1016	508	1016	762	229
550	559	838	1676	1118	559	1118	838	254
600	610	914	1828	1219	610	1220	914	267
650	660	990	1980	1320	660	1320	990	267
700	711	1067	2134	1422	711	1422	1066	267
750	762	1143	2286	1524	762	1524	1143	267
800	813	1219	2438	1626	813	1626	1220	267
850	864	1296	2592	1728	864	1728	1296	267
900	914	1372	2744	1829	914	1828	1371	267
1000	1016	1524	3048	2032	1016	2032	1524	305
1050	1067	1600	3201	2134	1067	2134	1600	305
1100	1118	1677	3354	2236	1118	2236	1677	343
1150	1168	1752	3504	2336	1166	2332	1749	343
1200	1219	1829	3658	2438	1219	2438	1830	343

Butt-Welding Pipe Fittings

Tees



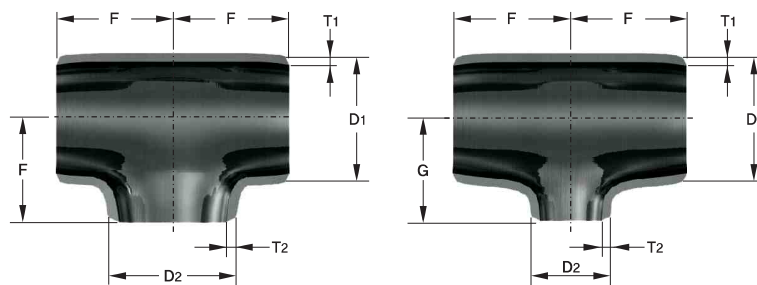
EN 10253-2

(mm)

Nominal Pipe Size		D ₁	D ₂	F	G
A	B				
3/4	20	26.9	26.9	29	29
3/4 × 3/4 × 1/2	20 × 20 × 15	26.9	21.3	29	29
1	25	33.7	33.7	38	38
1 × 1 × 1/2	25 × 25 × 15	33.7	21.3	38	38
1 × 1 × 3/4	25 × 25 × 20	33.7	26.9	38	38
1 1/4	32	42.4	42.4	48	48
1 1/4 × 1 1/4 × 1/2	32 × 32 × 15	42.4	26.9	48	48
1 1/4 × 1 1/4 × 3/4	32 × 32 × 20	42.4	26.9	48	48
1 1/4 × 1 1/4 × 1	32 × 32 × 25	42.4	33.7	48	48
1 1/2	40	48.3	48.3	57	57
1 1/2 × 1 1/2 × 1/2	40 × 40 × 15	48.3	21.3	57	57
1 1/2 × 1 1/2 × 3/4	40 × 40 × 20	48.3	26.9	57	57
1 1/2 × 1 1/2 × 1	40 × 40 × 25	48.3	33.7	57	57
1 1/2 × 1 1/2 × 1/4	40 × 40 × 32	48.3	42.4	57	57
2	50	60.3	60.3	64	64
2 × 2 × 3/4	50 × 50 × 20	60.3	26.9	64	44
2 × 2 × 1	50 × 50 × 25	60.3	33.7	64	51
2 × 2 × 1 1/4	50 × 50 × 32	60.3	42.4	64	57
2 × 2 × 1 1/2	50 × 50 × 40	60.3	48.3	64	60
2 1/2	65	76.1	76.1	76	76
2 1/2 × 2 1/2 × 1	65 × 65 × 25	76.1	33.7	76	57
2 1/2 × 2 1/2 × 1 1/4	65 × 65 × 32	76.1	42.4	76	64
2 1/2 × 2 1/2 × 1 1/2	65 × 65 × 40	76.1	48.3	76	67
2 1/2 × 2 1/2 × 2	65 × 65 × 50	76.1	60.3	76	70
3	80	88.9	88.9	86	86
3 × 3 × 1	80 × 80 × 25	88.9	33.7	86	67
3 × 3 × 1 1/4	80 × 80 × 32	88.9	42.4	86	70
3 × 3 × 1 1/2	80 × 80 × 40	88.9	48.4	86	73
3 × 3 × 2	80 × 80 × 50	88.9	60.3	86	76
3 × 3 × 2 1/2	80 × 80 × 65	88.9	76.1	86	83
4	100	114.3	114.3	105	105
4 × 4 × 1 1/2	100 × 100 × 40	114.3	48.3	105	86
4 × 4 × 2	100 × 100 × 50	114.3	60.3	105	89
4 × 4 × 2 1/2	100 × 100 × 65	114.3	76.1	105	95
4 × 4 × 3	100 × 100 × 80	114.3	88.9	105	98
5	125	139.7	139.7	124	124

Butt-Welding Pipe Fittings

Tees



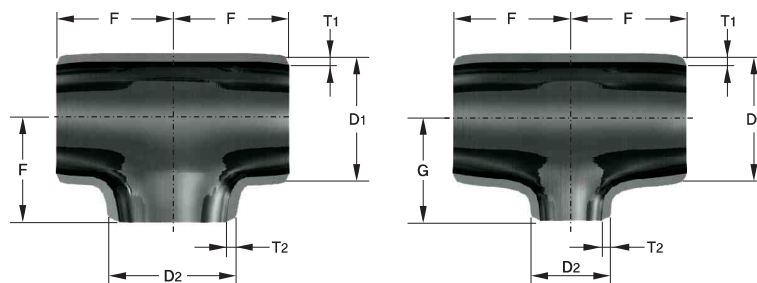
EN 10253-2

(mm)

Nominal Pipe Size		D ₁	D ₂	F	G
A	B				
5 × 5 × 2	125 × 125 × 50	139.7	60.3	124	105
5 × 5 × 2 ^{1/2}	125 × 125 × 65	139.7	76.1	124	108
5 × 5 × 3	125 × 125 × 80	139.7	88.9	124	111
5 × 5 × 4	125 × 125 × 100	139.7	114.3	124	117
6	150	168.3	168.3	143	143
6 × 6 × 2	150 × 150 × 50	168.3	60.3	143	117
6 × 6 × 2 ^{1/2}	150 × 150 × 65	168.3	76.1	143	121
6 × 6 × 3	150 × 150 × 80	168.3	88.9	143	124
6 × 6 × 4	150 × 150 × 100	168.3	114.3	143	130
6 × 6 × 5	150 × 150 × 125	168.3	139.7	143	137
8	200	219.1	219.1	178	178
8 × 8 × 3	200 × 200 × 80	219.1	88.9	178	152
8 × 8 × 4	200 × 200 × 100	219.1	114.3	178	156
8 × 8 × 5	200 × 200 × 125	219.1	139.7	178	162
8 × 8 × 6	200 × 200 × 150	219.1	168.3	178	168
10	250	273.1	273.1	216	216
10 × 10 × 4	250 × 250 × 100	273.1	114.3	216	184
10 × 10 × 5	250 × 250 × 125	273.1	139.7	216	191
10 × 10 × 6	250 × 250 × 150	273.1	168.3	216	194
10 × 10 × 8	250 × 250 × 200	273.1	219.1	216	203
12	300	323.9	323.9	254	254
12 × 12 × 6	300 × 300 × 150	323.9	168.3	254	219
12 × 12 × 8	300 × 300 × 200	323.9	219.1	254	229
12 × 12 × 10	300 × 300 × 250	323.9	273.0	254	241
14	350	355.6	355.6	279	279
14 × 14 × 6	350 × 350 × 150	355.6	168.3	279	238
14 × 14 × 8	350 × 350 × 200	355.6	219.1	279	248
14 × 14 × 10	350 × 350 × 250	355.6	273.0	279	257
14 × 14 × 12	350 × 350 × 300	355.6	323.9	279	270
16	400	406.4	406.4	305	305
16 × 16 × 6	400 × 400 × 150	406.4	168.3	305	264
16 × 16 × 8	400 × 400 × 200	406.4	219.1	305	273
16 × 16 × 10	400 × 400 × 250	406.4	273.0	305	283
16 × 16 × 12	400 × 400 × 300	406.4	323.9	305	295
16 × 16 × 14	400 × 400 × 350	406.4	355.6	305	305
18	450	457.0	457.0	343	343

Butt-Welding Pipe Fittings

Tees



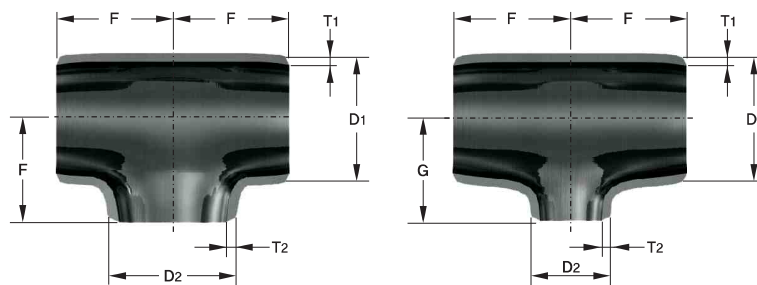
EN 10253-2

(mm)

Nominal Pipe Size		D ₁	D ₂	F	G
A	B				
18 × 18 × 8	450 × 450 × 200	457.0	219.1	343	298
18 × 18 × 10	450 × 450 × 250	457.0	273.0	343	308
18 × 18 × 12	450 × 450 × 300	457.0	323.9	343	321
18 × 18 × 14	450 × 450 × 350	457.0	355.6	343	330
18 × 18 × 16	450 × 450 × 400	457.0	406.4	343	330
20	500	508.0	508.0	381	381
20 × 20 × 10	500 × 500 × 250	508.0	273.0	381	333
20 × 20 × 12	500 × 500 × 300	508.0	323.9	381	346
20 × 20 × 16	500 × 500 × 400	508.0	406.4	381	356
20 × 20 × 18	500 × 500 × 450	508.0	457.0	381	368
22	550	559.0	559.0	419	419
22 × 22 × 10	550 × 550 × 250	559.0	273.0	419	359
22 × 22 × 12	550 × 550 × 300	559.0	323.9	419	371
22 × 22 × 16	550 × 550 × 400	559.0	406.4	419	381
22 × 22 × 20	550 × 550 × 500	559.0	508.0	419	406
24	600	610.0	610.0	432	432
24 × 24 × 10	600 × 600 × 250	610.0	273.0	432	384
24 × 24 × 12	600 × 600 × 300	610.0	323.9	432	397
24 × 24 × 16	600 × 600 × 400	610.0	406.4	432	406
24 × 24 × 20	600 × 600 × 500	610.0	508.0	432	432
26	650	660.0	660.0	495	495
26 × 26 × 12	650 × 650 × 300	660.0	323.9	495	422
26 × 26 × 14	650 × 650 × 350	660.0	355.6	495	432
26 × 26 × 16	650 × 650 × 400	660.0	406.4	495	432
26 × 26 × 20	650 × 650 × 500	660.0	508.0	495	457
28	700	711.0	711.0	521	521
28 × 28 × 12	700 × 700 × 300	711.0	323.9	521	448
28 × 28 × 16	700 × 700 × 400	711.0	406.4	521	457
28 × 28 × 20	700 × 700 × 500	711.0	508.0	521	483
28 × 28 × 24	700 × 700 × 600	711.0	610.0	521	508
30	750	762.0	762.0	559	559
30 × 30 × 16	750 × 750 × 400	762.0	406.4	559	483
30 × 30 × 20	750 × 750 × 500	762.0	508.0	559	508
30 × 30 × 24	750 × 750 × 600	762.0	610.0	559	533
32	800	813.0	813.0	602	602

Butt-Welding Pipe Fittings

Tees



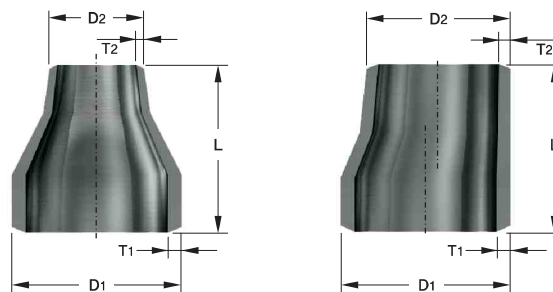
EN 10253-2

(mm)

Nominal Pipe Size				D ₁	D ₂	F	G
A	B						
32 × 32 × 16	800 ×	800 ×	400	813.0	406.4	602	508
32 × 32 × 20	800 ×	800 ×	500	813.0	508.0	602	533
32 × 32 × 24	800 ×	800 ×	600	813.0	610.0	602	559
32 × 32 × 28	800 ×	800 ×	700	813.0	711.0	602	572
34	850			864.0	864.0	635	635
34 × 34 × 16	850 ×	850 ×	400	864.0	406.4	635	533
34 × 34 × 20	850 ×	850 ×	500	864.0	508.0	635	559
34 × 34 × 24	850 ×	850 ×	600	864.0	610.0	635	584
34 × 34 × 28	850 ×	850 ×	700	864.0	711.0	635	597
36	900			914.0	914.0	673	673
36 × 36 × 16	900 ×	900 ×	400	914.0	406.4	673	559
36 × 36 × 20	900 ×	900 ×	500	914.0	508.0	673	584
36 × 36 × 24	900 ×	900 ×	600	914.0	610.0	673	610
36 × 36 × 28	900 ×	900 ×	700	914.0	711.0	673	622
36 × 36 × 32	900 ×	900 ×	800	914.0	813.0	673	648
40	1000			1016.0	1016.0	749	749
40 × 40 × 24	1000 ×	1000 ×	600	1016.0	610.0	749	660
40 × 40 × 28	1000 ×	1000 ×	700	1016.0	711.0	749	698
40 × 40 × 32	1000 ×	1000 ×	800	1016.0	813.0	749	711
40 × 40 × 36	1000 ×	1000 ×	900	1016.0	914.0	749	737
42	1050			1067.0	1067.0	762	762
46 × 46 × 24	1150 ×	1150 ×	600	1067.0	610.0	762	660
46 × 46 × 28	1150 ×	1150 ×	700	1067.0	711.0	762	698
46 × 46 × 32	1150 ×	1150 ×	800	1067.0	813.0	762	711
46 × 46 × 36	1150 ×	1150 ×	900	1067.0	914.0	762	711
44	1100			1118.0	1118.0	813	813
44 × 44 × 24	1100 ×	1100 ×	600	1118.0	610.0	813	698
44 × 44 × 28	1100 ×	1100 ×	700	1118.0	711.0	813	698
44 × 44 × 32	1100 ×	1100 ×	800	1118.0	813.0	813	711
44 × 44 × 36	1100 ×	1100 ×	900	1118.0	914.0	813	724
48	1200			1219.0	1219.0	889	889
48 × 48 × 28	1200 ×	1200 ×	700	1219.0	711.0	889	762
48 × 48 × 32	1200 ×	1200 ×	800	1219.0	813.0	889	787
48 × 48 × 36	1200 ×	1200 ×	900	1219.0	914.0	889	787
48 × 48 × 40	1200 ×	1200 ×	1000	1219.0	1016.0	889	813

Butt-Welding Pipe Fittings

Reducers



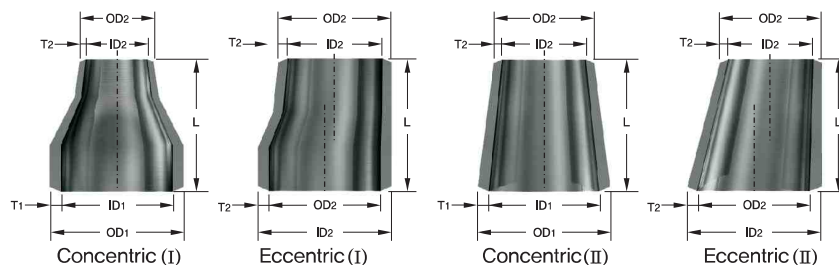
EN 10253-2

(mm)

Nominal Pipe Size		D1	D2	Length L
A	B			
3/4 × 1/2	20 × 15	26.9	21.3	38
1 × 3/4	25 × 20	33.7	26.9	51
1 × 1/2	25 × 15	33.7	21.3	51
1 1/4 × 1	32 × 25	42.4	33.7	51
1 1/4 × 3/4	32 × 20	42.4	26.9	51
1 1/4 × 1/2	32 × 15	42.4	21.3	51
1 1/2 × 1 1/4	40 × 32	48.3	42.4	64
1 1/2 × 1	40 × 25	48.3	33.7	64
1 1/2 × 3/4	40 × 20	48.3	26.9	64
2 × 1 1/2	50 × 40	60.3	48.3	76
2 × 1 1/4	50 × 32	60.3	42.4	76
2 × 1	50 × 25	60.3	33.7	76
2 × 3/4	50 × 20	60.3	26.9	76
2 1/2 × 2	65 × 50	76.1	60.3	89
2 1/2 × 1 1/2	65 × 40	76.1	48.3	89
2 1/2 × 1 1/4	65 × 32	76.1	42.4	89
2 1/2 × 1	65 × 25	76.1	33.7	89
3 × 2 1/2	80 × 65	88.9	76.1	89
3 × 2	80 × 50	88.9	60.3	89
3 × 1 1/2	80 × 40	88.9	48.3	89
3 × 1 1/4	80 × 32	88.9	42.4	89
4 × 3	100 × 80	114.3	88.9	102
4 × 2 1/2	100 × 65	114.3	76.1	102
4 × 2	100 × 50	114.3	60.3	102
4 × 1 1/2	100 × 40	114.3	48.3	102
5 × 4	125 × 100	139.7	114.3	127
5 × 3	125 × 80	139.7	88.9	127
5 × 2 1/2	125 × 65	139.7	76.1	127
5 × 2	125 × 50	139.7	60.3	127
6 × 5	150 × 125	168.3	139.7	140
6 × 4	150 × 100	168.3	114.3	140
6 × 3	150 × 80	168.3	88.9	140
6 × 2 1/2	150 × 65	168.3	76.1	140
8 × 6	200 × 150	219.1	168.3	152
8 × 5	200 × 125	219.1	139.7	152
8 × 4	200 × 100	219.1	114.3	152
8 × 3	200 × 80	219.1	88.9	152
10 × 8	250 × 200	273.0	219.1	178
10 × 6	250 × 150	273.0	168.3	178
10 × 5	250 × 125	273.0	139.7	178
10 × 4	250 × 100	273.0	114.3	178
12 × 10	300 × 250	323.9	273.0	203
12 × 8	300 × 200	323.9	219.1	203

Butt-Welding Pipe Fittings

Reducers



EN 10253-2

(mm)

Nominal Pipe Size		D ₁	D ₂	Length L
A	B			
12 × 6	300 × 150	323.9	168.3	203
12 × 5	300 × 125	323.9	139.7	203
14 × 12	350 × 300	355.6	323.9	330
14 × 10	350 × 250	355.6	273.0	330
14 × 8	350 × 200	355.6	219.1	330
14 × 6	350 × 150	355.6	168.3	330
16 × 14	400 × 350	406.4	355.6	356
16 × 12	400 × 300	406.4	323.9	356
16 × 10	400 × 250	406.4	273.0	356
16 × 8	400 × 200	406.4	219.1	356
18 × 16	450 × 400	457.0	406.4	381
18 × 14	450 × 350	457.0	355.6	381
18 × 12	450 × 300	457.0	323.9	381
18 × 10	450 × 250	457.0	273.0	381
20 × 18	500 × 450	508.0	457.0	508
20 × 16	500 × 400	508.0	406.4	508
20 × 14	500 × 350	508.0	355.6	508
20 × 12	500 × 300	508.0	323.9	508
22 × 20	550 × 500	559.0	508.0	508
22 × 18	550 × 450	559.0	457.0	508
22 × 16	550 × 400	559.0	406.4	508
22 × 14	550 × 350	559.0	355.6	508
24 × 22	600 × 550	610.0	559.0	508
24 × 20	600 × 500	610.0	508.0	508
24 × 18	600 × 450	610.0	457.0	508
24 × 16	600 × 400	610.0	406.4	508
28 × 24	700 × 600	711.0	610.0	610
28 × 20	700 × 500	711.0	508.0	610
28 × 18	700 × 450	711.0	457.0	610
32 × 28	800 × 700	813.0	711.0	610
32 × 24	800 × 600	813.0	610.0	610
32 × 22	800 × 550	813.0	559.0	610
32 × 20	800 × 500	813.0	508.0	610
36 × 32	900 × 800	914.0	813.0	610
36 × 28	900 × 700	914.0	711.0	610
36 × 24	900 × 600	914.0	610.0	610
40 × 36	1000 × 900	1016.0	914.0	610
40 × 32	1000 × 800	1016.0	813.0	610
40 × 28	1000 × 700	1016.0	711.0	610
48 × 44	1200 × 1100	1219.0	1016.0	711
48 × 36	1200 × 900	1219.0	914.0	711
48 × 32	1200 × 800	1219.0	813.0	711

Butt-Welding Pipe Fittings

Diameter & Thicknesses

EN 10253-2

(mm)

Nominal Pipe Size		Wall Thickness							
A	B	1	2	3	4	5	6	7	8
1/2	15	—	2.0	2.6	3.2	4.0	—	5.0	7.1
3/4	20	—	2.3	2.6	3.2	4.0	4.5	5.6	8.0
1	25	—	2.6	3.2	4.0	4.5	5.6	6.3	8.8
1 1/4	32	—	2.6	3.6	4.0	5.0	6.3	8.0	10.0
1 1/2	40	—	2.6	3.6	4.0	5.0	6.3	8.0	10.0
2	50	—	2.9	3.6	4.0	5.6	7.1	8.8	11.0
2 1/2	65	—	2.9	3.6	5.6	7.1	8.0	10.0	14.2
3	80	—	3.2	4.0	5.6	8.0	8.8	11.0	16.0
4	100	—	3.6	4.5	6.3	8.8	11.0	14.2	17.5
5	125	—	4.0	5.0	6.3	10.0	12.5	16.0	20.0
6	150	4.0	4.5	5.6	7.1	11.0	14.2	17.5	22.2
8	200	4.5	6.3	6.3	8.0	12.5	16.0	17.5	22.2
10	250	5.0	6.3	8.8	10.0	12.5	16.0	22.2	30.0
12	300	5.6	7.1	8.8	10.0	12.5	17.5	25.0	32.0
14	350	5.6	8.0	10.0	12.5	16.0	20.0	28.0	36.0
16	400	6.3	8.8	10.0	12.5	17.5	22.2	30.0	40.0
18	450	6.3	10.0	11.0	12.5	17.5	22.2	32.0	45.0
20	500	6.3	10.0	11.0	12.5	17.5	25.0	36.0	50.0
22	550	6.3	10.0	—	12.5	20.0	28.0	—	—
24	600	6.3	10.0	12.5	17.5	25.0	30.0	45.0	60.0
26	650	—	10.0	12.5	17.5	—	—	—	—
28	700	7.1	10.0	12.5	25.0	—	—	—	—
30	750	—	10.0	12.5	25.0	—	—	—	—
32	800	8.0	10.0	12.5	25.0	—	—	—	—
34	850	—	10.0	12.5	25.0	—	—	—	—
36	900	10.0	12.5	20.0	25.0	—	—	—	—
40	1000	10.0	12.5	20.0	25.0	—	—	—	—
42	1050	10.0	12.5	20.0	25.0	—	—	—	—
44	1100	10.0	12.5	20.0	25.0	—	—	—	—
48	1200	10.0	12.5	20.0	25.0	—	—	—	—



FORGED OUTLET FITTINGS

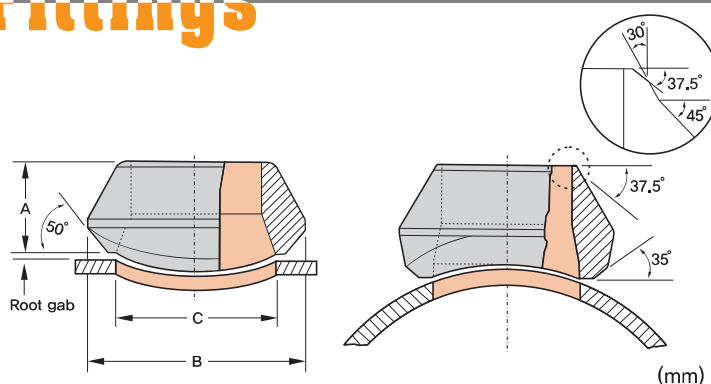
CO NTENTS

- Welding outlet

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Forged Outlet Fittings

Welding outlet

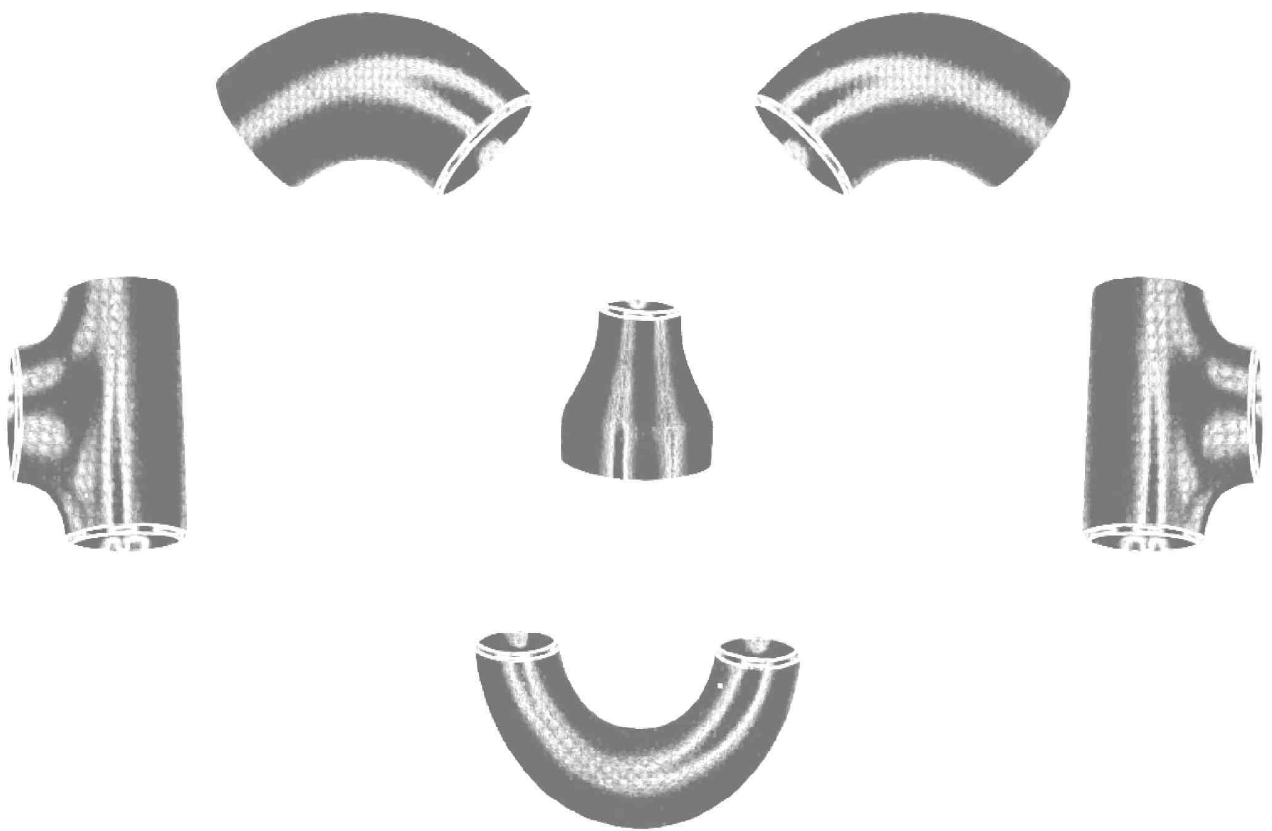


STD , XS

Outlet Size	A		B		C		APP'Weight(kg)	
	STD	XS	STD	XS	STD	XS	STD	XS
1/2	19.1	19.1	34.9	34.9	23.8	23.8	0.08	0.09
3/4	22.2	22.2	44.5	44.5	30.2	30.2	0.11	0.14
1	27.0	27.0	54.0	54.0	36.5	36.5	0.23	0.21
1 1/4	31.8	31.8	65.1	65.1	44.5	44.5	0.36	0.41
1 1/2	33.3	33.3	73.0	73.0	50.8	50.8	0.45	0.5
2	38.1	38.1	88.9	88.9	65.1	65.1	0.80	0.8
2 1/2	41.3	41.3	103.2	103.2	76.2	76.2	1.14	12.0
3	44.5	44.5	122.2	122.2	93.7	93.7	1.82	1.9
4	50.8	50.8	152.4	152.4	120.7	120.7	2.86	2.9
5	57.2	57.2	179.4	179.4	141.3	141.3	4.66	4.7
6	60.3	77.8	215.9	225.4	169.9	169.9	6.45	10.5
8	69.9	98.5	263.5	292.1	220.7	220.7	10.68	16.8
10	77.8	93.7	322.3	323.9	274.7	265.1	17.73	20.9
12	85.7	103.2	377.8	379.4	325.4	317.5	26.82	27.7
14	88.9	100.0	409.6	431.8	357.2	350.8	30.0	31.8
16	93.7	106.4	463.6	466.7	408.0	403.2	34.1	46.4
18	96.8	111.1	520.7	523.9	458.8	455.6	44.1	59.1
20	101.6	119.1	571.5	582.6	508.0	509.6	53.6	71.8
24	115.9	139.7	689.0	708.0	614.4	638.2	100.0	131.8
26	119.1	146.1	738.2	765.2	666.8	692.2	120.5	159.1

Sch160 , XXS

Outlet Size	A		B		C		APP'Weight(kg)	
	Sch160	XXS	Sch160	XXS	Sch160	XXS	Sch160	XXS
1/2	28.6	28.6	34.9	34.9	14.3	14.3	0.11	—
3/4	31.8	31.8	44.5	44.5	19.1	19.1	0.32	—
1	38.1	38.1	50.8	50.8	25.4	25.4	0.38	0.38
1 1/4	44.5	44.5	61.9	61.9	33.3	33.3	0.57	0.57
1 1/2	50.8	50.8	69.9	69.9	38.1	38.1	0.80	0.80
2	55.6	55.6	81.0	81.0	42.9	42.9	1.00	1.00
2 1/2	61.9	61.9	96.8	96.8	54.0	54.0	1.54	1.54
3	73.0	73.0	120.7	120.7	73.0	73.0	2.90	2.90
4	84.1	84.1	152.4	152.4	98.4	98.4	4.80	4.80
5	93.7	93.7	187.3	187.3	122.2	122.2	6.50	6.50
6	104.8	104.8	220.7	220.7	146.1	146.1	12.70	12.70
8	111.1	111.1	284.2	284.2	173.0	173.0	20.50	20.50
10	125.4	125.4	312.7	312.7	215.9	215.9	38.60	38.60





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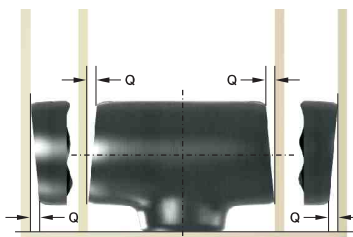
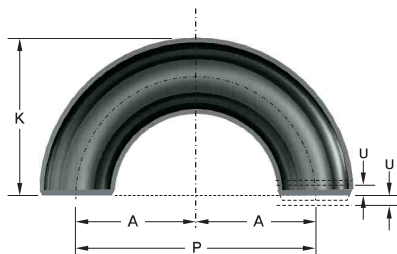
Dimensional Tolerances

ASME B16.9

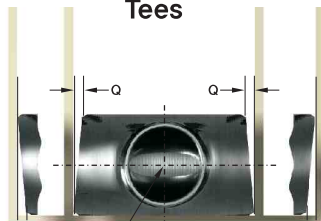
► Wrought Steel Butt-Welding Fittings

(in inches)

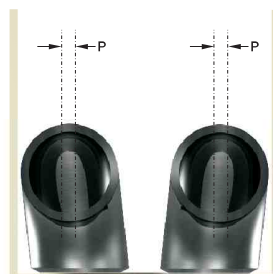
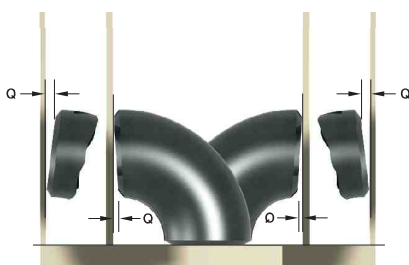
All Fittings				90° and 45° Elbows	Tees	Reducers	Caps	180° Returns		
Nominal Pipe Size	Outside Diameter at Bevel O,D	Inside Diameter at End I,D	Wall Thickness T	Center-to-End Dimension A,B	Center-to-End Dimension C,M	End-to-End Length E	Back-to-Face Length E	Center-to-Center Dimension P	Back-to-Face Dimension K	Alignment of Ends K
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								
5 ~ 8	+ 3/32 - 1/16									
10 ~ 18	+ 5/32 - 1/8	± 1/8		± 1/4	± 3/8	± 1/16				
20 ~ 24	+ 1/4 - 3/16	± 3/16					± 3/32	± 3/32		
26 ~ 30				± 1/8	± 1/8					
32 ~ 48				± 3/16	± 3/16				± 3/16	± 3/8



Tees



This End Flush Against Square

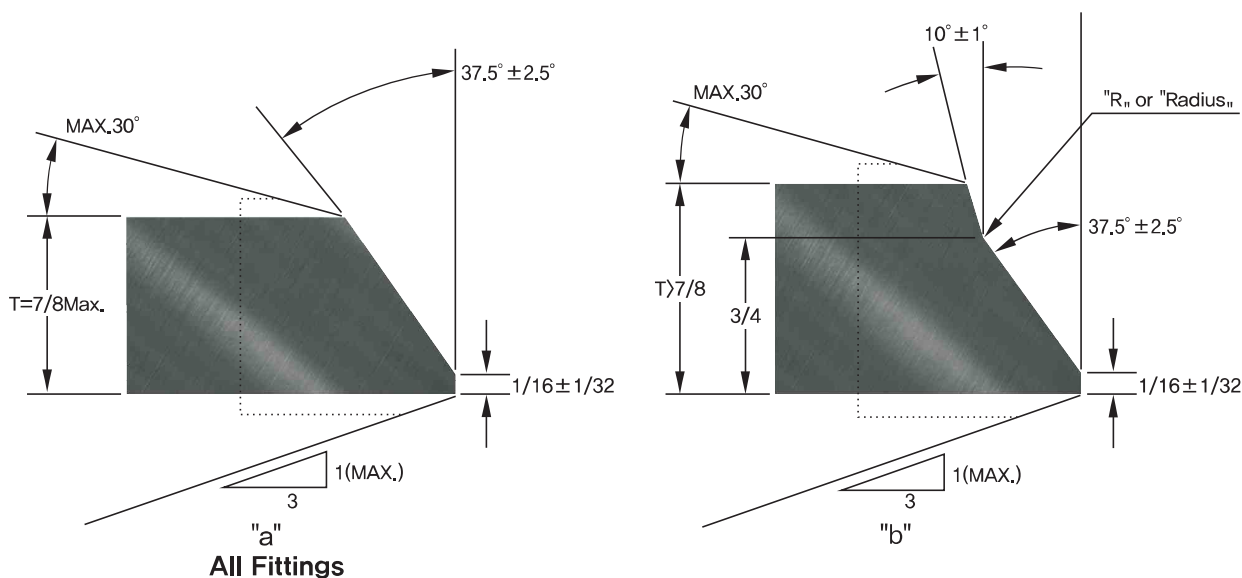


(in inches)

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		1/4
18 ~ 24	1/8	3/8
26 ~ 30	3/16	
32 ~ 42		1/2
44 ~ 48		3/4

ASME Welding End Preparations

ASME B16.9



(in inches)

Nominal Pipe Wall Thickness(t)	End Preparation
Less than X*	Cut Square or slightly chamfer , at Mfr's option
X* to 7/8 inclusive	Plain bevel as in sketch "a" above
more than 7/8	Compound bevel as in sketch "b" above

*X=3/16 for carbon steel, ferritic alloy steel or wrought iron,
1/8 for austenitic alloy steel

- Note : 1. End preparations are in accordance with ASME B16.9
2. End preparations conforming to customer specifications will be specially manufactured upon consultation.

ASME B 16.9 : $P = 2st/D$

Where,

P= Computed proof of test pressure

S= Actual tensile strength of the test fitting(determined on a specimen representative of the test fitting)

T= Nominal pipe wall thickness of the pipe that the fitting marking identifies

D= Specified outside diameter of pipe

Dimensional Tolerances

MSS SP-43

(in inches)

Nominal Pipe Size	All Fittings		90° and 45° Elbows	Tees	Reducers	Caps	180° Returns		
	Outside Diameter at Bevel O.D	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 O	Center-to-Center Dimension K	Alignment of Ends U
1/2 ~ 2 1/2	±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
2 ~ 3 1/2	±0.03		±0.06	±0.06	±0.06	±0.12	±0.25	±0.25	±0.03
4	±0.03		±0.06	±0.06	±0.06	±0.12	±0.25	±0.25	±0.03
5 ~ 8	+0.06 -0.03		±0.06	±0.06	±0.06	±0.25	±0.25	±0.25	±0.03
10 ~ 18	+0.09 -0.03		±0.09	±0.09	±0.09	±0.25	±0.38	±0.25	±0.06
20 ~ 24	+0.12 -0.03		±0.09	±0.09	±0.09	±0.25	±0.38	±0.25	±0.06

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

KS / JIS

KS B 1522 / JIS B 2311

(mm)

Item	Type of Pipe Fittings	Nominal Diameter							
		mm	15~65	80~100	125~200	250~450	500~600	650~750	800~1200
		inch	1/2~2 1/2	3~4	5~8	10~18	20~24	26~30	32~48
		Tolerance							
Outside Diameter, at End face (O.D)	All Pipe Fittings	± 2.0	± 2.5	± 3.5	+5.0 -4.5	+6.4 -4.8			
Inside Diameter, at End face (I.D)		± 2.0	± 2.5	± 3.5	± 4.5	± 4.8			
Wall Thickness (T)		+Not specified -15%							
Center-to-End Dimension (H,F)		45° Elbow 90° Elbow	± 2.0		± 3.2			± 4.8	
Center-to-Center Dimension (P)	180° Elbow	± 6.4		± 9.5		-			
Back-to-Face Dimension (K)		± 6.4				-			
Alignment of Ends (Max.) (U)		1.6		3.2		-			
Center-to-End Dimension (C,M)	Tees	± 2.0		± 3.2			± 4.8		
End-to-End Dimension (H)	Reducer	± 2.0		± 3.2			± 4.8		
Back-to-Face Dimension (E)	Cap	± 3.2		± 6.4			-		

Dimensional Tolerances

KS / JIS

KS B 1541 / JIS B 2312

(mm)

Item	Type of Pipe Fittings	Nominal Diameter					
		mm	15~65	80~100	125~200	250~450	500
		inch	1/2~2 1/2	3 ~ 4	5 ~ 8	10~18	20~24
		Tolerance					
Outside Diameter, at End face (O,D)	All Pipe Fittings	+ 1.6 - 0.8		± 1.6	± 2.4 - 1.6	+4.0 -3.2	+6.4 -4.8
Inside Diameter, at End face (I,D)		± 0.8		± 1.6		± 3.2	± 4.8
Wall Thickness (T)		+Not specified -12.5%					
Center-to-End Dimension (H,F)	45° Elbow 90° Elbow	± 1.6				± 2.4	
Center-to-Center Dimension (P)	180° Elbow	± 6.4				± 9.5	
Back-to-Face Dimension (K)		± 6.4					
Alignment of Ends (Max.) (U)		1.6				3.2	
Center-to-End Dimension (C,M)	Tees	± 1.6				± 2.4	
End-to-End Dimension (H)	Reducer	± 1.6				± 2.4	
Back-to-Face Dimension (E)	Cap	± 3.2			± 6.4		

KS B 1543 / JIS B 2313

(mm)

Item	Type of Pipe Fittings	Nominal Diameter							
		mm	15~65	80~100	125~200	250~450	500~600	650~750	800~1200
		inch	1/2~2 1/2	3~4	5~8	10~18	20~24	26~30	32~48
		Tolerance							
Outside Diameter, at End face (O.D)	All Pipe Fittings	+ 1.6 - 0.8	± 1.6	+2.4 -0.8	+4.0 -3.2	+6.4 -4.8			
Inside Diameter, at End face (I.D)		± 2.0	± 1.6	± 3.2	± 4.8				
Wall Thickness (T)		+Not specified -12.5%							
Center-to-End Dimension (H,F)		45° Elbow 90° Elbow	± 1.6			± 2.4	± 3.2	± 4.8	
Center-to-Center Dimension (P)	180° Elbow	± 6.4			± 9.5	-			
Back-to-Face Dimension (K)		± 6.4			-				
Alignment of Ends (Max.) (U)		1.6			3.2	-			
Center-to-End Dimension (C,M)	Reducer	± 1.6			± 2.4	± 3.2	± 4.8		
End-to-End Dimension (H)	Tees	± 1.6			± 2.4	± 4.8			

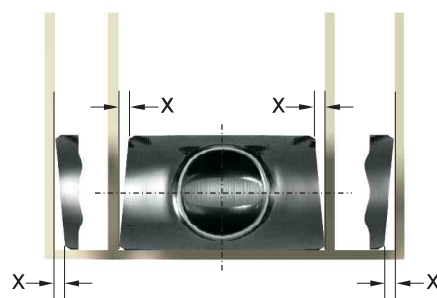
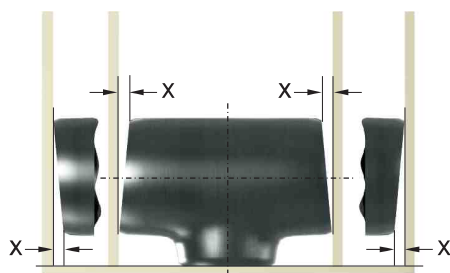
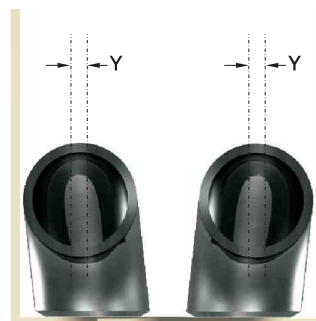
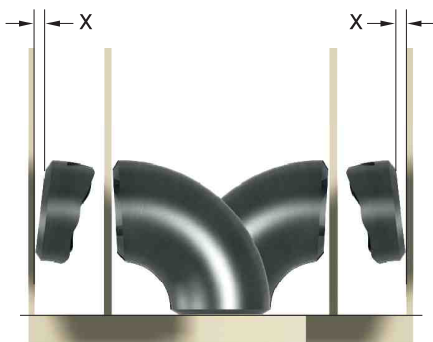
Dimensional Tolerances

KS / JIS

KS B 1522 / JIS B 2311, KS B 1541 / JIS B 2312, KS B 1543 / JIS B 2313

(mm)

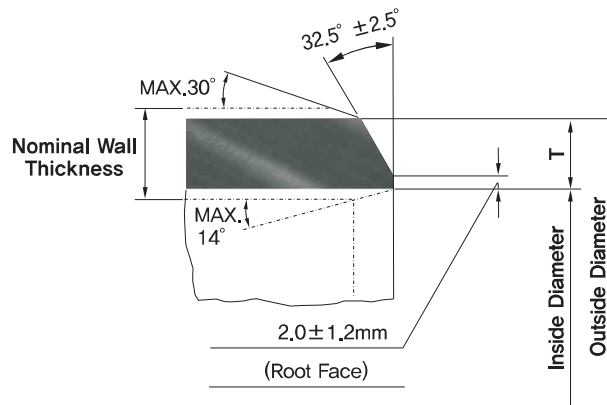
Type of Pipe Fittings	Item	Nominal Diameter								
		mm	15~100	125~200	250~300	350~400	450~600	650~750	800~1050	1100~1200
		inch	1/2 ~ 4	5~8	10~12	14~16	18~24	26~30	32~42	44~48
		Tolerance								
All Pipe Fittings	Off Angle (X)		0.8	1.6	2.4		3.2	4.8		
	Off Plane (Y)		1.6	3.2	4.8	6.4	9.5		12.7	19.1



KS/JIS Welding End Preparations

► Steel Butt-Welding Pipe Fittings For Ordinary Use and Fuel Gas

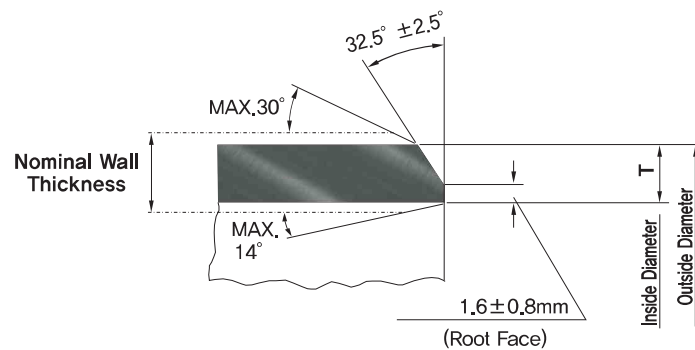
KS B 1522 / JIS B 2311



► Steel Butt-Welding Pipe Fittings and Steel Plate Butt-Welding Pipe Fittings

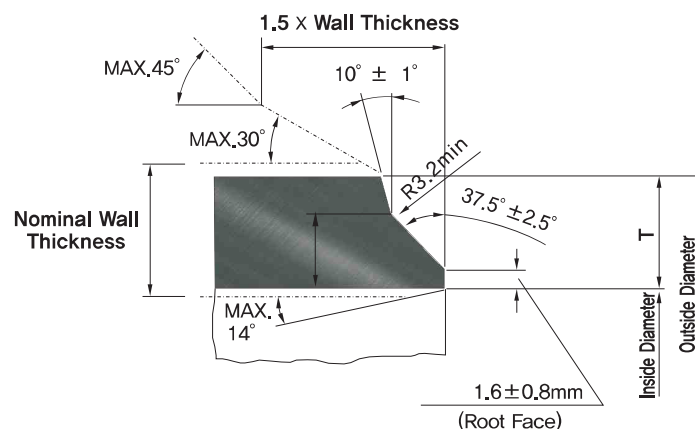
KSB 1541 / JIS B 2312, KSB 1543 / JIS B 2313

A : In the Case Where " T " is 22.4mm or Less



Where, $T \leq 22.4\text{mm}$

B : In the Case Where " T " Is Over 22.4mm



Where, $T > 22.4\text{mm}$

Dimensional Tolerances

BS EN 10253-1/ BS EN 10253-2

Diameter Tolerances

(mm)

BS EN 10253-1	BS EN 10253-2
$\leq 273,0\text{mm} : \pm 1\% \text{ or } \pm 0,5\text{mm}$	$D \leq 273,0\text{mm} : \pm 1\% \text{ or } \pm 0,5\text{mm}$
$> 273,0\text{mm} : 2\%$	$\leq 273,0\text{mm} < D \leq 610\text{mm} : 2\%$
	$D > 610\text{mm} : 1\%$

Wall thickness tolerances at the welding ends

BS EN 10253-1				BS EN 10253-2			
D mm	T mm	Tolerance		D mm	T mm	Tolerance	
		Minus	Plus			Minus	Plus
$\leq 406,4$	≤ 4		+20%	≤ 610	≤ 4	-12,5%	+20%
	> 4	-12,5%	+15%		> 4		
> 610	Seamless			> 610	Seamless	-12,5%	+20%
	Welded				Welded		
	≤ 10				≤ 10	-0,35mm	+20%
	> 10				> 10	-0,5mm	

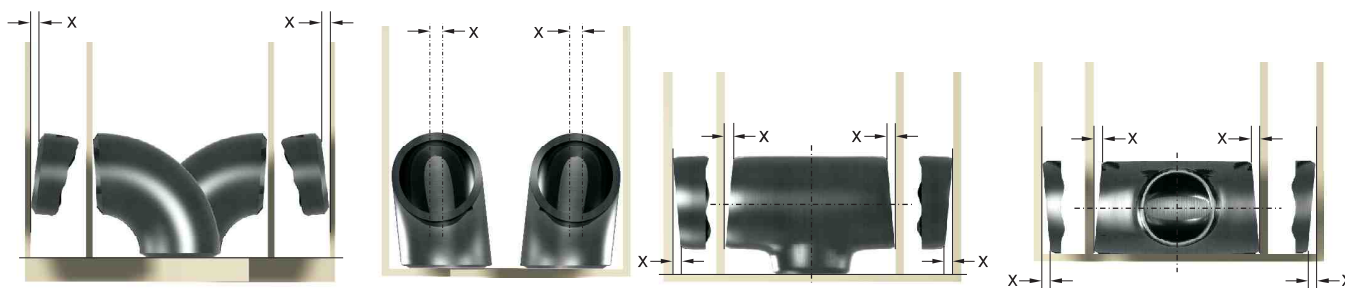
Tolerances on specific dimensions in millimetres

(mm)

BS EN 10253-1						BS EN 10253-2					
D	F-G-H	B	C	K	L	D	F-G-L-W	B-Z	C	h	P
$\leq 114,3$	± 2	± 7	± 7	± 4	± 2	$\leq 114,3$	± 2	± 7	± 7	± 4	2
$114,3 < D \leq 219,1$	± 2	± 7	± 7	± 7	± 3	$114,3 < D \leq 219,1$	± 2	± 7	± 7	± 7	4
$219,1 < D \leq 406,4$	± 3	± 7	± 10	± 7	± 5	$219,1 < D \leq 406,4$	± 3	± 7	± 10	± 7	6
						$406,4 < D \leq 762$	± 3	± 10	± 10	± 7	7
						$762 < D$	± 5	± 12	± 10	± 10	9

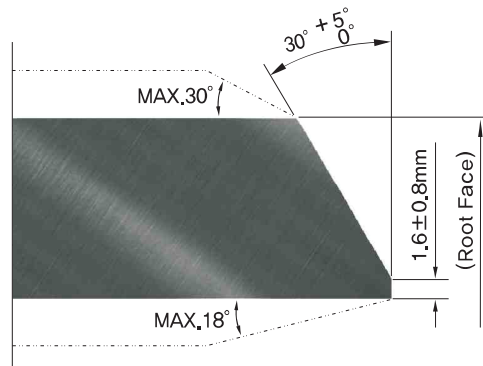
Tolerances on the form of fittings

The tolerance on the form of every type of fitting (out-of-squareness, alignment) is following :
 $X \leq 1\%$ of the outside diameter at the point measured or 1mm, whichever is the greater



BS EN Welding End Preparations

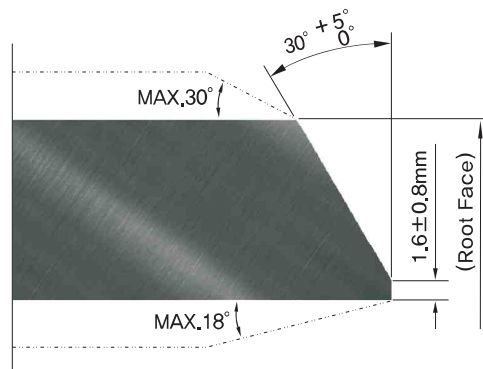
BS EN 10253-1



End Finishing

At the manufacture's option, for specified wall thickness below 3mm, the ends may be slightly chamfered. For wall thicknesses equal to or above 3mm, the ends shall be bevelled with an angle of $30^\circ -0 +5^\circ$ with a face of $1.6\text{mm} \pm 0.8\text{mm}$. Where necessary the dimensions at the welding ends may be achieved by taper boring of the inside surface with an angle of 18° and/or of the outside surface with an angle of 30° , the angles being related to the axis of the fitting.

BS EN 10253-2



End Finishing

At the manufacture's option, for specified wall thickness below 3mm, the ends may be square cut or slightly chamfered. For wall thicknesses equal to or above 3mm and 22mm the ends shall be bevelled with an angle of $30^\circ -0 +5^\circ$ with a face of $1.6\text{mm} \pm 0.8\text{mm}$.

For wall thicknesses above 22mm the type of bevel shall be agreed.

For wall thicknesses above 3mm, where machining at the welding ends is necessary, the wall thickness may be reduced by taper boring, the taper being not larger than :

- external : 30°
- internal : 18°

Approx Weight Equation

90° Elbow

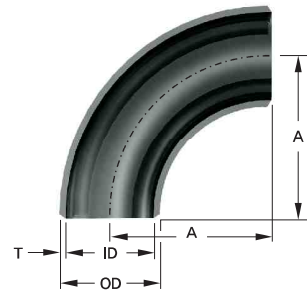
$$AW = 3.8699 \times A \times T \times (OD - T) \times 10^{-5}$$

AW : Approx Weight (Unit : Kgs)

T : Wall Thickness (mm)

OD : Outside Diameter (mm)

A : Radius (mm)



45° Elbow

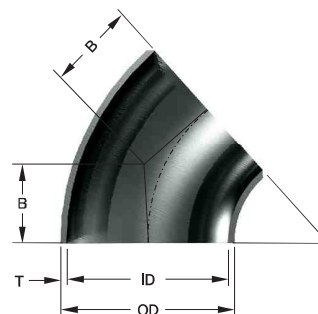
$$AW = 1.9350 \times B \times T \times (OD - T) \times 10^{-5}$$

AW : Approx Weight (Unit : Kgs)

T : Wall Thickness (mm)

OD : Outside Diameter (mm)

A : Radius (mm)



Tee

$$AW = 2.24649 \{ 2CT_1(OD_1 - T) +$$

$$T_2(OD_2 - T_2)(M - OD_2/2) \} \times 10^{-5}$$

AW : Approx Weight (Unit : Kgs)

T₁ : Wall Thickness (mm)

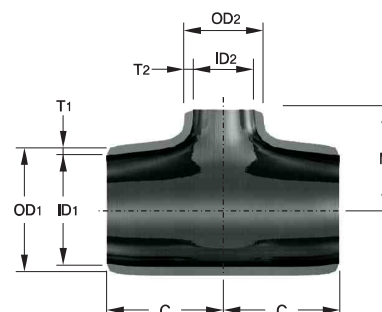
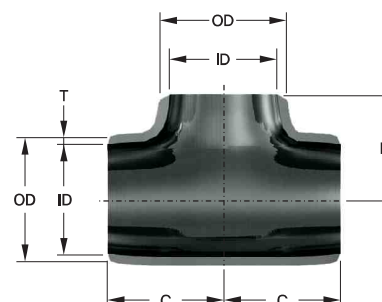
OD₁ : Outside Diameter (mm)

T₂ : Wall Thickness (mm)

OD₂ : Outside Diameter (mm)

C : Center to End Diameter (mm)

M : Center to End Diameter (mm)



Approx Weight Equation

Reducer

$$AW = 2.4649 \times H \times T \times$$

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

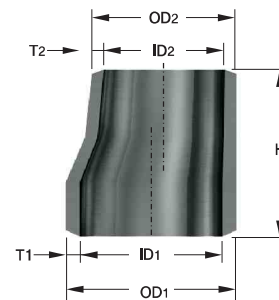
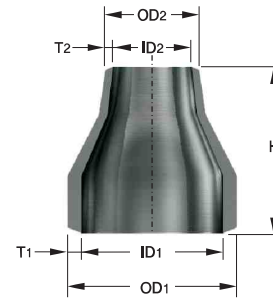
AW : Approx Weight (Unit :Kgs)

T : Wall Thickness (mm)

OD₁ : Outside Diameter (mm)

OD₂ : Outside Diameter (mm)

H : Length (mm)



CAP

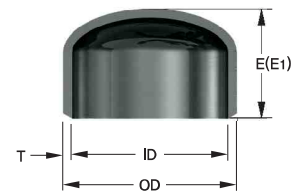
$$AW = 7.85 \times \pi / 4 (OD + E)^2 \times T \times 10^{-6}$$

AW : Approx Weight (Unit : Kgs)

OD₁ : Outside Diameter (mm)

T : Wall Thickness (mm)

E : End to End (mm)



Butt-Welding Fittings Approx Weight List

90° Elbow

(kg)

Nominal Pipe size		Long							Short						
A	B	SGP	STD	S40	XS	S80	XXS	S160	SGP	STD	S40	XS	S80	XXS	S160
1/2	15	0.08	0.08	0.08	0.10	0.10	0.15	0.12	—	—	—	—	—	—	—
3/4	20	0.10	0.11	0.11	0.14	0.14	0.22	0.13	—	—	—	—	—	—	—
1	25	0.15	0.16	0.16	0.20	0.20	0.36	0.25	0.10	0.11	0.11	0.14	0.14	0.22	0.17
1 1/4	32	0.26	0.26	0.26	0.35	0.35	0.64	0.42	0.17	0.18	0.18	0.23	0.23	0.39	0.28
1 1/2	40	0.35	0.37	0.37	0.50	0.50	0.93	0.65	0.24	0.25	0.25	0.33	0.33	0.57	0.43
2	50	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 1/2	65	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
3	80	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
4	100	2.91	3.84	3.84	5.36	5.36	10.20	8.02	1.94	2.56	2.56	3.58	3.58	6.79	2.35
5	125	4.49	6.48	6.48	9.13	9.13	17.60	14.70	2.99	4.32	4.32	6.09	6.09	11.80	9.79
6	150	7.09	9.94	9.94	15.00	15.00	29.10	24.20	4.73	6.63	6.63	10.00	10.00	19.50	16.20
8	200	14.40	20.10	20.10	30.50	30.50	51.40	53.20	9.61	13.40	13.40	20.30	20.30	34.30	35.50
10	250	25.40	35.40	35.40	47.70	57.00	82.00	103.00	16.90	23.60	23.60	31.80	38.00	61.00	68.60
12	300	38.10	52.00	57.00	68.70	94.00	130.00	171.00	25.40	34.60	38.00	45.80	63.00	87.00	114.00
14	350	56.70	67.90	79.10	89.90	133.00	—	236.00	37.80	45.30	53.00	60.00	89.00	—	158.00
16	400	74.30	89.00	118.00	118.00	195.00	—	350.00	49.50	59.10	79.00	78.30	130.00	—	234.00
18	450	94.20	113.00	169.00	150.00	275.00	—	495.00	62.80	75.30	113.00	99.90	183.00	—	330.00
20	500	116.00	140.00	220.00	186.00	373.00	—	676.00	77.70	93.10	147.00	124.00	249.00	—	451.00
22	550	141.00	169.00	—	225.00	493.00	—	886.00	94.10	113.00	—	150.00	329.00	—	591.00
24	600	168.00	202.00	366.00	268.00	636.00	—	1160.00	112.00	135.00	244.00	179.00	424.00	—	773.00
26	650	198.00	237.00	—	315.00	—	—	—	132.00	158.00	—	210.00	—	—	—
28	700	230.00	276.00	—	367.00	—	—	—	154.00	184.00	—	245.00	—	—	—
30	750	264.00	316.00	—	421.00	—	—	—	176.00	211.00	—	281.00	—	—	—
32	800	301.00	361.00	654.00	480.00	—	—	—	201.00	241.00	436.00	320.00	—	—	—
34	850	340.00	408.00	739.00	543.00	—	—	—	227.00	272.00	493.00	362.00	—	—	—
36	900	380.00	457.00	904.00	608.00	—	—	—	253.00	304.00	603.00	405.00	—	—	—
38	950	425.00	510.00	—	679.00	—	—	—	283.00	340.00	—	453.00	—	—	—
40	1000	471.00	565.00	—	753.00	—	—	—	314.00	377.00	—	502.00	—	—	—
42	1050	518.00	622.00	—	828.00	—	—	—	346.00	416.00	—	554.00	—	—	—
44	1100	570.00	684.00	—	912.00	—	—	—	380.00	456.00	—	608.00	—	—	—
46	1150	623.00	748.00	—	997.00	—	—	—	415.00	499.00	—	665.00	—	—	—
48	1200	677.00	814.00	—	1085.00	—	—	—	452.00	543.00	—	724.00	—	—	—

180° Elbow

(kg)

Nominal Pipe size		Long							Short						
A	B	SGP	STD	S40	XS	S80	XXS	S160	SGP	STD	S40	XS	S80	XXS	S160
1/2	15	0.16	0.16	0.16	0.20	0.20	—	—	—	—	—	—	—	—	—
3/4	20	0.21	0.22	0.22	0.28	0.28	—	—	—	—	—	—	—	—	—
1	25	0.30	0.32	0.32	0.40	0.40	0.72	0.50	0.22	0.22	0.22	0.28	0.28	—	—
1 1/4	32	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 1/2	40	0.70	0.74	0.74	1.00	1.00	1.86	1.30	0.48	0.50	0.50	0.66	0.66	—	—
2	50	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 1/2	65	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
3	80	3.16	4.08	4.08	5.48	5.48	10.50	7.66	2.10	2.72	2.72	3.66	3.66	6.98	5.10
4	100	5.83	7.68	7.68	10.70	10.70	20.40	16.10	3.88	5.12	5.12	7.16	7.16	13.60	10.70
5	125	8.98	13.00	13.00	18.30	18.30	35.20	29.40	5.98	8.64	8.64	12.20	12.20	23.50	19.60
6	150	14.20	19.90	19.90	30.00	30.00	58.20	48.40	9.46	13.30	13.30	20.00	20.00	39.00	32.40
8	200	28.80	40.20	40.20	61.00	61.00	103.00	106.00	19.20	26.80	26.80	40.60	40.60	68.60	71.00
10	250	50.80	70.80	70.80	95.40	114.00	164.00	206.00	33.80	47.20	47.20	63.60	76.00	122.00	138.00
12	300	76.20	104.00	114.00	137.00	188.00	260.00	342.00	50.80	69.20	76.00	91.60	126.00	174.00	228.00
14	350	114.00	136.00	158.00	180.00	266.00	—	472.00	75.60	90.60	106.00	120.00	178.00	—	316.00
16	400	149.00	178.00	236.00	236.00	390.00	—	700.00	99.00	118.00	158.00	156.00	260.00	—	468.00
18	450	189.00	226.00	338.00	300.00	550.00	—	990.00	125.00	150.00	226.00	199.00	366.00	—	660.00
20	500	232.00	280.00	440.00	372.00	746.00	—	1352.00	155.00	186.00	294.00	248.00	498.00	—	902.00
22	550	282.00	338.00	—	450.00	986.00	—	1772.00	188.00	226.00	—	300.00	658.00	—	1182.00
24	600	336.00	404.00	732.00	536.00	1272.00	—	2320.00	224.00	270.00	488.00	358.00	848.00	—	1546.00

Butt-Welding Fittings Approx Weight List

45° Elbow

(kg)

Nominal Pipe size		Long							Short						
A	B	SGP	STD	S40	XS	S80	XXS	S160	SGP	STD	S40	XS	S80	XXS	S160
1/2	15	0,04	0,04	0,04	0,05	0,05	—	—	—	—	—	—	—	—	—
3/4	20	0,05	0,06	0,06	0,07	0,07	—	—	—	—	—	—	—	—	—
1	25	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 1/4	32	1,13	0,13	0,13	0,18	0,18	0,32	0,21	0,09	0,09	0,09	0,12	0,12	—	—
1 1/2	40	0,18	0,19	0,19	0,25	0,25	0,47	0,33	0,12	0,13	0,13	0,17	0,17	0,57	0,45
2	50	0,32	0,33	0,33	0,45	0,45	0,85	0,67	0,22	0,22	0,22	0,30	0,30	1,10	0,75
2 1/2	65	0,60	0,69	0,69	0,90	0,90	1,72	1,17	0,38	0,46	0,46	0,60	0,60	1,75	1,28
3	80	0,79	1,02	1,02	1,37	1,37	2,63	1,92	0,53	0,68	0,68	0,92	0,92	3,40	2,68
4	100	1,46	1,92	1,92	2,68	2,68	5,09	4,01	0,97	1,28	1,28	1,79	1,79	5,88	4,90
5	125	2,25	3,24	3,24	4,57	4,57	8,80	7,35	1,50	2,16	2,16	3,05	3,05	9,75	8,10
6	150	3,55	4,97	4,97	7,50	7,50	14,50	12,10	2,36	3,32	3,32	5,00	5,00	17,20	17,80
8	200	7,20	10,10	10,10	15,30	15,30	25,70	26,60	4,80	6,71	6,71	10,20	10,20	30,50	34,30
10	250	12,70	17,70	17,70	23,90	28,50	41,00	51,50	8,46	11,80	11,80	15,90	19,00	43,50	57,00
12	300	19,00	26,00	28,50	34,40	47,00	65,00	85,50	12,70	17,30	19,00	22,90	31,50	—	79,00
14	350	28,40	34,00	40,10	45,00	66,50	—	118,00	18,00	22,60	26,50	30,00	44,50	—	117,00
16	400	37,20	44,50	59,00	59,00	97,50	—	175,00	24,00	29,50	39,20	39,20	65,00	—	165,00
18	450	47,10	56,50	84,50	75,00	138,00	—	247,00	31,00	37,60	56,50	50,00	91,50	—	225,00
20	500	58,30	70,00	110,00	93,00	187,00	—	338,00	38,00	46,60	73,50	62,00	124,00	—	295,00
22	550	70,50	84,50	—	113,00	257,00	—	443,00	47,00	56,50	—	75,00	164,00	—	386,00
24	600	84,10	101,00	183,00	134,00	318,00	—	580,00	56,00	67,30	122,00	89,50	212,00	—	—
26	650	99,00	119,00	—	158,00	—	—	—	66,00	79,10	—	105,00	—	—	—
28	700	115,00	138,00	—	184,00	—	—	—	77,00	92,00	—	122,00	—	—	—
30	750	132,00	158,00	—	211,00	—	—	—	87,00	105,00	—	140,00	—	—	—
32	800	150,00	180,00	327,00	240,00	—	—	—	101,00	120,00	218,00	160,00	—	—	—
34	850	170,00	204,00	369,00	272,00	—	—	—	114,00	136,00	246,00	181,00	—	—	—
36	900	190,00	228,00	452,00	304,00	—	—	—	127,00	152,00	301,00	202,00	—	—	—
38	950	212,00	255,00	—	339,00	—	—	—	142,00	170,00	—	226,00	—	—	—
40	1000	235,00	282,00	—	376,00	—	—	—	157,00	189,00	—	251,00	—	—	—
42	1050	259,00	311,00	—	414,00	—	—	—	173,00	208,00	—	277,00	—	—	—
44	1100	285,00	342,00	—	456,00	—	—	—	190,00	228,00	—	304,00	—	—	—
46	1150	312,00	374,00	—	498,00	—	—	—	208,00	250,00	—	332,00	—	—	—
48	1200	339,00	407,00	—	542,00	—	—	—	226,00	272,00	—	362,00	—	—	—

Caps

(kg)

Nominal Pipe size									Nominal Pipe size								
A	B	SGP	STD	S40	XS	S80	XXS	S160	A	B	SGP	STD	S40	XS	S80	XXS	S160
1/2	15	0,03	0,04	0,04	0,05	0,05	—	—	18	450	21,2	25,5	41,5	34,1	69,0	—	131
3/4	20	0,04	0,05	0,05	0,07	0,07	—	—	20	500	26,4	31,8	54,1	42,5	93,7	—	179
1	25	0,08	0,11	0,11	0,15	0,15	—	—	22	550	31,5	38,8	—	51,7	116	—	219
1 1/4	32	0,11	0,14	0,14	0,2	0,2	—	—	24	600	36,6	45,1	90,1	60,1	160	—	307
1 1/2	40	0,15	0,17	0,17	0,24	0,24	0,50	0,35	26	650	41,0	50,5	—	67,3	—	—	—
2	50	0,23	0,24	0,24	0,33	0,33	0,68	0,54	28	700	45,5	56,2	—	74,9	—	—	—
2 1/2	65	0,34	0,42	0,42	0,57	0,57	1,13	0,77	30	750	50,3	62,1	—	82,8	—	—	—
3	80	0,51	0,67	0,67	0,92	0,92	1,92	1,4	32	800	55,4	68,4	126	91,2	—	—	—
4	100	0,88	1,17	1,17	1,68	1,68	3,51	2,76	34	850	60,8	75,0	138	100	—	—	—
5	125	1,29	1,9	1,9	2,73	2,73	5,82	4,85	36	900	66,4	81,9	164	109	—	—	—
6	150	1,99	2,83	2,83	4,38	4,38	9,38	7,81	38	950	76,8	94,7	—	126	—	—	—
8	200	3,61	5,11	5,11	7,91	7,91	14,7	15,2	40	1000	83,0	102	—	137	—	—	—
10	250	6,33	8,92	8,92	12,2	16,4	25,7	28,9	42	1050	90,0	110	—	147	—	—	—
12	300	9,43	13,1	13,1	17,4	26,4	36,4	47,7	44	1100	103	126	—	167	—	—	—
14	350	13,2	15,9	18,6	21,2	34,9	—	61,2	46	1150	109	134	—	179	—	—	—
16	400	16,6	20,0	26,7	26,7	49,0	—	130,0	48	1200	116	143	—	191	—	—	—

Butt-Welding Fittings Approx Weight List

Tee

(kg)

Nominal Pipe size								
A	B	SGP	STD	S40	XS	S80	XXS	S160
1/2	15	0,09	0,09	0,09	0,11	0,11	0,17	0,12
3/4	20	0,13	0,13	0,13	0,17	0,17	0,26	0,21
3/4 × 3/4 × 1/2	20 × 20 × 15	0,12	0,12	0,12	0,16	0,16	0,24	0,19
1	25	0,24	0,25	0,25	0,32	0,32	0,53	0,41
1 × 1 × 3/4	25 × 25 × 20	0,23	0,24	0,24	0,30	0,30	0,49	0,38
1 × 1 × 1/2	25 × 25 × 15	0,22	0,23	0,23	0,29	0,29	0,47	0,37
1 1/4	32	0,42	0,43	0,43	0,56	0,56	0,95	0,69
1 1/4 × 1 1/4 × 1	32 × 32 × 25	0,39	0,40	0,40	0,53	0,53	0,89	0,65
1 1/4 × 1 1/4 × 3/4	32 × 32 × 20	0,37	0,37	0,37	0,48	0,48	0,84	0,62
1 1/4 × 1 1/4 × 1/2	32 × 32 × 15	0,36	0,36	0,36	0,47	0,47	0,81	0,59
1 1/2	40	0,58	0,61	0,61	0,81	0,81	1,40	1,07
1 1/2 × 1 1/2 × 1/4	40 × 40 × 32	0,56	0,59	0,59	0,78	0,78	1,35	1,01
1 1/2 × 1 1/2 × 1	40 × 40 × 25	0,53	0,56	0,56	0,74	0,74	1,28	0,97
1 1/2 × 1 1/2 × 3/4	40 × 40 × 20	0,51	0,53	0,53	0,70	0,70	1,21	0,92
1 1/2 × 1 1/2 × 1/2	40 × 40 × 15	0,49	0,51	0,51	0,67	0,67	1,17	0,90
2	50	0,86	0,88	0,88	1,20	1,20	2,16	1,78
2 × 2 × 1 1/2	50 × 50 × 40	0,80	0,82	0,82	1,11	1,11	2,00	1,63
2 × 2 × 1 1/4	50 × 50 × 32	0,77	0,79	0,79	1,07	1,07	1,91	1,56
2 × 2 × 1	50 × 50 × 25	0,73	0,75	0,75	1,01	1,01	1,81	1,50
2 × 2 × 3/4	50 × 50 × 20	0,70	0,71	0,71	0,98	0,98	1,76	1,45
2 1/2	65	1,42	1,74	1,74	2,28	2,28	3,92	2,86
2 1/2 × 2 1/2 × 2	65 × 65 × 50	1,31	1,56	1,56	2,06	2,06	3,56	2,64
2 1/2 × 2 1/2 × 1 1/2	65 × 65 × 40	1,25	1,51	1,51	1,98	1,98	3,40	2,48
2 1/2 × 2 1/2 × 1 1/4	65 × 65 × 32	1,22	1,48	1,48	1,94	1,94	3,32	2,42
2 1/2 × 2 1/2 × 1	65 × 65 × 25	1,18	1,36	1,36	1,80	1,80	3,22	2,36
3	80	1,87	2,41	2,41	3,25	3,25	5,90	4,55
3 × 3 × 2 1/2	80 × 80 × 65	1,79	2,29	2,29	3,07	3,07	5,53	4,23
3 × 3 × 2	80 × 80 × 50	1,68	2,12	2,12	2,85	2,85	5,18	4,02
3 × 3 × 1 1/2	80 × 80 × 40	1,62	2,06	2,06	2,77	2,77	5,03	3,87
3 × 3 × 1 1/4	80 × 80 × 32	1,60	2,02	2,02	2,74	2,74	4,95	3,80
4	100	3,13	4,12	4,12	5,77	5,77	10,60	8,50
4 × 4 × 3	100 × 100 × 80	2,92	3,83	3,83	5,33	5,33	9,76	7,92
4 × 4 × 2 1/2	100 × 100 × 65	2,84	3,71	3,71	5,15	5,15	9,39	7,56
4 × 4 × 2	100 × 100 × 50	2,72	3,53	3,53	4,94	4,94	9,02	7,34
4 × 4 × 1 1/2	100 × 100 × 40	2,66	3,48	3,48	4,83	4,83	8,87	7,23
5	125	4,53	6,54	6,54	9,20	9,20	17,30	14,80
5 × 5 × 4	125 × 125 × 100	4,30	6,13	6,13	8,63	8,63	16,10	13,70
5 × 5 × 3	125 × 125 × 80	4,08	5,83	5,83	8,19	8,19	15,30	13,00
5 × 5 × 2 1/2	125 × 125 × 65	4,00	5,71	5,71	8,01	8,01	15,00	12,80
5 × 5 × 2	125 × 125 × 50	3,90	5,58	5,58	7,92	7,92	14,70	12,50
6	150	6,84	9,58	9,58	14,50	14,50	27,20	23,30
6 × 6 × 5	150 × 150 × 125	6,45	9,08	9,08	13,60	13,60	25,60	21,90
6 × 6 × 4	150 × 150 × 100	6,23	8,67	8,67	13,00	13,00	24,50	20,80
6 × 6 × 3	150 × 150 × 80	6,01	8,38	8,38	12,60	12,60	23,70	20,10
6 × 6 × 2 1/2	150 × 150 × 65	5,92	8,36	8,36	12,50	12,50	23,30	19,80
8	200	12,80	17,90	17,90	27,10	27,10	45,70	47,20
8 × 8 × 6	200 × 200 × 150	11,90	16,60	16,60	25,20	25,20	43,00	43,50
8 × 8 × 5	200 × 200 × 125	11,50	16,10	16,10	24,30	24,30	41,40	42,10
8 × 8 × 4	200 × 200 × 100	11,30	15,70	15,70	23,70	23,70	41,00	40,30
10	250	21,80	30,40	30,40	41,00	49,00	79,20	88,00
10 × 10 × 8	250 × 250 × 200	20,40	28,50	28,50	38,90	45,80	54,40	81,40
10 × 10 × 6	250 × 250 × 150	19,50	27,20	27,20	37,00	43,90	51,50	78,50
10 × 10 × 5	250 × 250 × 125	19,20	26,80	26,80	36,20	43,10	50,00	77,00
10 × 10 × 4	250 × 250 × 100	18,90	26,80	26,80	36,20	42,50	68,90	76,30
12	300	32,00	43,60	48,70	57,70	79,20	113,00	143,00
12 × 12 × 10	300 × 300 × 250	30,40	41,60	45,30	55,20	74,80	107,00	135,00
12 × 12 × 8	300 × 300 × 200	29,00	39,70	42,50	53,10	71,40	102,00	128,00
12 × 12 × 6	300 × 300 × 150	28,10	38,40	42,00	51,20	69,50	100,00	125,00
12 × 12 × 5	300 × 300 × 125	27,80	38,70	41,70	51,20	68,70	98,30	124,00
14	350	44,70	53,50	62,40	70,90	104,00	—	186,00
14 × 14 × 12	350 × 350 × 300	42,70	51,90	60,20	68,80	100,00	—	179,00
14 × 14 × 10	350 × 350 × 250	41,20	49,90	57,60	66,30	95,90	—	174,00
14 × 14 × 8	350 × 350 × 200	40,00	48,20	55,80	64,50	92,90	—	168,00
14 × 14 × 6	350 × 350 × 150	39,00	47,10	54,50	62,60	91,00	—	164,00
16	400	55,20	66,10	88,00	87,70	145,00	—	260,00
16 × 16 × 14	400 × 400 × 350	54,20	64,90	86,00	86,10	140,00	—	255,00
16 × 16 × 12	400 × 400 × 300	52,70	63,10	84,00	83,60	136,00	—	248,00
16 × 16 × 10	400 × 400 × 250	51,20	61,30	82,00	81,20	132,00	—	241,00
16 × 16 × 8	400 × 400 × 200	49,40	59,80	79,00	80,00	129,00	—	235,00
16 × 16 × 6	400 × 400 × 150	48,50	58,50	77,00	77,80	127,00	—	230,00

Butt-Welding Fittings Approx Weight List

TEE

(kg)

Nominal Pipe size								
A	B	SGP	STD	S40	XS	S80	XXS	S160
18	450	70,00	83,90	125,00	111,00	204,00	—	356,00
18 × 18 × 16	450 × 450 × 400	67,90	81,40	121,00	108,00	197,00	—	352,00
18 × 18 × 14	450 × 450 × 350	66,90	80,20	119,00	106,00	194,00	—	344,00
18 × 18 × 12	450 × 450 × 300	65,40	78,30	117,00	104,00	189,00	—	337,00
18 × 18 × 10	450 × 450 × 250	63,40	76,90	114,00	102,00	186,00	—	329,00
20	500	86,60	104,00	163,00	138,00	277,00	—	502,00
20 × 20 × 18	500 × 500 × 450	84,20	101,00	158,00	134,00	268,00	—	488,00
20 × 20 × 16	500 × 500 × 400	82,10	98,40	154,00	131,00	262,00	—	475,00
20 × 20 × 14	500 × 500 × 350	81,10	97,20	152,00	129,00	258,00	—	469,00
20 × 20 × 12	500 × 500 × 300	79,20	96,00	150,00	127,00	254,00	—	462,00
20 × 20 × 10	500 × 500 × 250	77,60	94,00	147,00	125,00	250,00	—	452,00
20 × 20 × 8	500 × 500 × 200	76,30	92,10	145,00	123,00	245,00	—	444,00
22	550	106,00	126,00	198,00	167,00	365,00	—	657,00
22 × 22 × 20	550 × 550 × 500	103,00	123,00	193,00	163,00	356,00	—	640,00
22 × 22 × 18	550 × 550 × 450	101,00	120,00	188,00	159,00	347,00	—	624,00
22 × 22 × 16	550 × 550 × 400	98,90	117,00	183,00	156,00	340,00	—	610,00
24	600	116,00	139,00	252,00	185,00	438,00	—	800,00
24 × 24 × 22	600 × 600 × 550	115,00	138,00	249,00	183,00	432,00	—	790,00
24 × 24 × 20	600 × 600 × 500	114,00	136,00	247,00	181,00	427,00	—	782,00
24 × 24 × 18	600 × 600 × 450	111,00	133,00	241,00	177,00	418,00	—	764,00
26	650	147,00	176,00	319,00	234,00	—	—	—
26 × 26 × 24	650 × 650 × 600	144,00	172,00	312,00	229,00	—	—	—
26 × 26 × 22	650 × 650 × 550	141,00	169,00	308,00	225,00	—	—	—
26 × 26 × 20	650 × 650 × 500	138,00	166,00	302,00	221,00	—	—	—
28	700	165,00	198,00	359,00	264,00	—	—	—
28 × 28 × 26	700 × 700 × 650	163,00	197,00	356,00	261,00	—	—	—
28 × 28 × 24	700 × 700 × 600	160,00	193,00	350,00	256,00	—	—	—
28 × 28 × 22	700 × 700 × 550	157,00	190,00	347,00	252,00	—	—	—
30	750	190,00	228,00	414,00	304,00	—	—	—
30 × 30 × 28	750 × 750 × 700	188,00	226,00	406,00	301,00	—	—	—
30 × 30 × 26	750 × 750 × 650	185,00	222,00	356,00	296,00	—	—	—
30 × 30 × 24	750 × 750 × 600	182,00	218,00	350,00	291,00	—	—	—
32	800	217,00	259,00	474,00	347,00	—	—	—
32 × 32 × 30	800 × 800 × 750	213,00	256,00	466,00	341,00	—	—	—
32 × 32 × 28	800 × 800 × 700	209,00	252,00	458,00	335,00	—	—	—
32 × 32 × 26	800 × 800 × 650	208,00	250,00	455,00	333,00	—	—	—
34	850	246,00	295,00	535,00	393,00	—	—	—
34 × 34 × 32	850 × 850 × 800	243,00	292,00	526,00	389,00	—	—	—
34 × 34 × 30	850 × 850 × 750	238,00	290,00	518,00	380,00	—	—	—
34 × 34 × 28	850 × 850 × 700	236,00	288,00	511,00	377,00	—	—	—
36	900	276,00	331,00	656,00	441,00	—	—	—
36 × 36 × 34	900 × 900 × 850	271,00	329,00	645,00	434,00	—	—	—
36 × 36 × 32	900 × 900 × 800	269,00	326,00	636,00	431,00	—	—	—
36 × 36 × 30	900 × 900 × 750	264,00	323,00	627,00	422,00	—	—	—
38	950	308,00	370,00	—	493,00	—	—	—
38 × 38 × 36	950 × 950 × 900	306,00	367,00	—	489,00	—	—	—
38 × 38 × 34	950 × 950 × 850	302,00	362,00	—	481,00	—	—	—
38 × 38 × 32	950 × 950 × 800	298,00	357,00	—	476,00	—	—	—
40	1000	342,00	411,00	—	547,00	—	—	—
40 × 40 × 38	1000 × 1000 × 950	340,00	408,00	—	543,00	—	—	—
40 × 40 × 36	1000 × 1000 × 900	335,00	402,00	—	536,00	—	—	—
40 × 40 × 34	1000 × 1000 × 850	331,00	397,00	—	529,00	—	—	—
42	1050	352,00	422,00	—	562,00	—	—	—
42 × 42 × 40	1050 × 1050 × 1000	350,00	420,00	—	559,00	—	—	—
42 × 42 × 38	1050 × 1050 × 950	348,00	418,00	—	557,00	—	—	—
42 × 42 × 36	1050 × 1050 × 900	346,00	416,00	—	554,00	—	—	—
44	1100	396,00	475,00	—	633,00	—	—	—
44 × 44 × 42	1100 × 1100 × 1050	394,00	473,00	—	630,00	—	—	—
44 × 44 × 40	1100 × 1100 × 1000	389,00	467,00	—	623,00	—	—	—
44 × 44 × 38	1100 × 1100 × 950	385,00	462,00	—	616,00	—	—	—
46	1150	434,00	521,00	—	695,00	—	—	—
46 × 46 × 44	1150 × 1150 × 1100	432,00	519,00	—	69,10	—	—	—
46 × 46 × 42	1150 × 1150 × 1050	427,00	513,00	—	683,00	—	—	—
46 × 46 × 40	1150 × 1150 × 1000	423,00	507,00	—	676,00	—	—	—
48	1200	474,00	569,00	—	759,00	—	—	—
48 × 48 × 46	1200 × 1200 × 1150	472,00	566,00	—	755,00	—	—	—
48 × 48 × 44	1200 × 1200 × 1100	470,00	564,00	—	751,00	—	—	—
48 × 48 × 42	1200 × 1200 × 1050	462,00	555,00	—	739,00	—	—	—

Butt-Welding Fittings Approx Weight List

REDUCER

(kg)

Nominal Pipe size								
A	B	SGP	STD	S40	XS	S80	XXS	S160
3/4 × 1/2	20 × 15	0,06	0,06	0,06	0,08	0,08	—	—
1 × 3/4	25 × 20	0,11	0,12	0,12	0,15	0,15	0,25	0,19
1 × 1/2	25 × 15	0,10	0,11	0,11	0,14	0,14	0,22	0,17
1 1/4 × 1	32 × 25	0,16	0,16	0,16	0,21	0,21	0,35	0,25
1 1/4 × 3/4	32 × 20	0,15	0,15	0,15	0,19	0,19	0,31	0,23
1 1/4 × 1/2	32 × 15	0,13	0,14	0,14	0,18	0,18	—	—
1 1/2 × 1 1/4	40 × 32	0,24	0,25	0,25	0,33	0,33	0,57	0,43
1 1/2 × 1	40 × 25	0,21	0,22	0,22	0,30	0,30	0,50	0,38
1 1/2 × 3/4	40 × 20	0,20	0,21	0,21	0,27	0,27	0,45	0,35
1 1/2 × 1/2	40 × 15	0,18	0,18	0,18	0,24	0,24	0,40	0,32
2 × 1 1/2	50 × 40	0,37	0,38	0,38	0,51	0,51	0,91	0,75
2 × 1 1/4	50 × 32	0,35	0,36	0,36	0,48	0,48	0,85	0,70
2 × 1	50 × 25	0,31	0,33	0,33	0,44	0,44	0,77	0,64
2 × 3/4	50 × 20	0,29	0,30	0,30	0,40	0,40	0,69	0,58
2 1/2 × 2	65 × 50	0,60	0,73	0,73	0,95	0,95	1,68	1,20
2 1/2 × 1 1/2	65 × 40	0,55	0,67	0,67	0,87	0,87	1,51	1,08
2 1/2 × 1 1/4	65 × 32	0,52	0,64	0,64	0,83	0,83	1,42	1,02
2 1/2 × 1	65 × 25	0,48	0,56	0,56	0,73	0,73	1,23	0,93
3 × 2 1/2	80 × 65	0,73	0,94	0,94	1,25	1,25	2,25	1,71
3 × 2	80 × 50	0,66	0,85	0,85	1,13	1,13	2,01	1,57
3 × 1 1/2	80 × 40	0,62	0,79	0,79	1,04	1,04	1,83	1,44
3 × 1 1/4	80 × 32	0,59	0,75	0,75	1,00	1,00	1,74	1,37
4 × 3	100 × 80	1,10	1,45	1,45	2,02	2,02	3,65	3,00
4 × 2 1/2	100 × 65	1,04	1,37	1,37	1,90	1,90	3,41	2,76
4 × 2	100 × 50	0,97	1,27	1,27	1,76	1,76	3,11	2,58
4 × 1 1/2	100 × 40	0,91	1,19	1,19	1,64	1,64	2,89	2,41
5 × 4	125 × 100	1,74	2,50	2,50	3,52	3,52	6,47	5,59
5 × 3	125 × 80	1,58	2,27	2,27	3,18	3,18	5,78	5,30
5 × 2 1/2	125 × 65	1,50	2,16	2,16	3,02	3,02	5,46	4,70
5 × 2	125 × 50	1,41	2,03	2,03	2,85	2,85	5,12	4,43
6 × 5	150 × 125	2,55	3,57	3,57	5,38	5,38	9,89	8,63
6 × 4	150 × 100	2,36	3,30	3,30	4,96	4,96	8,98	7,88
6 × 3	150 × 80	2,18	3,04	3,04	4,56	4,56	8,21	7,21
6 × 2 1/2	150 × 65	2,09	2,94	2,94	4,38	4,38	7,88	6,80
8 × 6	200 × 150	4,17	5,71	5,71	8,63	8,63	14,30	15,00
8 × 5	200 × 125	3,87	5,40	5,40	8,14	8,14	13,40	14,00
8 × 4	200 × 100	3,67	5,10	5,10	7,68	7,68	12,60	13,10
10 × 8	250 × 200	6,87	9,58	9,58	12,90	15,40	24,30	27,50
10 × 6	250 × 150	6,32	8,78	8,78	11,80	14,20	22,10	25,10
10 × 5	250 × 125	6,06	8,42	8,42	11,30	14,50	21,10	23,90
10 × 4	250 × 100	5,80	8,20	8,20	11,00	14,00	20,50	22,60
12 × 10	300 × 250	9,97	13,60	14,70	18,00	24,80	35,00	44,60
12 × 8	300 × 200	9,29	12,70	13,70	16,70	22,70	33,00	41,00
12 × 6	300 × 150	8,69	11,80	12,80	15,60	21,40	32,00	38,00
12 × 5	300 × 125	8,39	11,70	12,60	15,30	20,60	31,00	36,40
14 × 12	350 × 300	21,20	25,40	29,50	33,60	49,80	—	88,50
14 × 10	350 × 250	19,70	23,60	27,40	31,20	46,10	—	81,60
14 × 8	350 × 200	18,30	21,80	25,40	28,90	42,20	—	74,70
14 × 6	350 × 150	16,90	20,30	23,60	26,80	39,10	—	68,30
16 × 14	400 × 350	25,90	31,00	41,10	41,10	67,70	—	121,00
16 × 12	400 × 300	24,10	29,60	39,20	39,20	65,00	—	116,00
16 × 10	400 × 250	22,40	27,80	36,80	36,80	60,80	—	108,00
16 × 8	400 × 200	21,70	26,20	34,50	34,50	56,60	—	99,90
18 × 16	450 × 400	31,50	37,80	56,20	50,10	91,40	—	165,00
18 × 14	450 × 350	29,80	35,70	53,00	47,40	86,40	—	155,00
18 × 12	450 × 300	27,70	33,20	51,70	44,00	83,00	—	149,00
18 × 10	450 × 250	27,10	32,70	48,40	43,20	78,50	—	140,00
20 × 18	500 × 450	47,00	56,40	88,40	74,90	150,00	—	—
20 × 16	500 × 400	44,70	53,50	83,90	71,10	142,00	—	—
20 × 14	500 × 350	42,40	50,80	79,60	67,40	136,00	—	233,00
20 × 12	500 × 300	40,80	49,20	76,90	65,10	130,00	—	—

Butt-Welding Fittings Approx Weight List

REDUCER

(kg)

Nominal Pipe size								
A	B	SGP	STD	S40	XS	S80	XXS	S160
22 × 20	550 × 500	52,10	62,40	98,00	82,90	181,00	—	—
22 × 18	550 × 450	49,50	59,40	93,20	78,90	172,00	—	—
22 × 16	550 × 400	47,00	56,40	98,40	74,80	164,00	—	—
22 × 14	550 × 350	45,30	54,30	83,60	72,10	156,00	—	—
24 × 22	600 × 550	57,10	68,40	124,00	91,00	215,00	—	—
24 × 20	600 × 500	54,80	65,70	119,00	87,30	206,00	—	—
24 × 18	600 × 450	52,60	63,00	114,00	83,80	197,00	—	—
24 × 16	600 × 400	50,40	60,50	109,00	80,30	185,00	—	—
26 × 24	650 × 600	74,50	89,40	162,00	119,00	—	—	—
26 × 22	650 × 550	71,50	85,80	155,00	114,00	—	—	—
26 × 20	650 × 500	68,50	82,10	148,00	109,00	—	—	—
26 × 18	650 × 450	66,30	79,50	142,00	106,00	—	—	—
28 × 26	700 × 650	80,60	96,60	175,00	129,00	—	—	—
28 × 24	700 × 600	77,50	93,00	168,00	124,00	—	—	—
28 × 22	700 × 550	74,50	89,40	162,00	119,00	—	—	—
28 × 20	700 × 500	72,40	88,80	155,00	115,00	—	—	—
30 × 28	750 × 700	86,60	104,00	188,00	138,00	—	—	—
30 × 26	750 × 650	83,60	100,00	182,00	133,00	—	—	—
30 × 24	750 × 600	80,60	96,60	175,00	129,00	—	—	—
30 × 22	750 × 550	78,50	94,20	168,00	125,00	—	—	—
32 × 30	800 × 750	92,60	111,00	202,00	148,00	—	—	—
32 × 28	800 × 700	89,60	108,00	195,00	143,00	—	—	—
32 × 26	800 × 650	86,60	104,00	188,00	138,00	—	—	—
32 × 24	800 × 600	84,60	102,00	184,00	135,00	—	—	—
34 × 32	850 × 800	98,70	118,00	215,00	158,00	—	—	—
34 × 30	850 × 750	95,60	115,00	208,00	153,00	—	—	—
34 × 28	850 × 700	92,60	111,00	205,00	148,00	—	—	—
34 × 26	850 × 650	90,70	109,00	200,00	145,00	—	—	—
36 × 34	900 × 850	104,60	125,60	250,00	167,30	—	—	—
36 × 32	900 × 800	101,60	122,00	243,00	162,40	—	—	—
36 × 30	900 × 750	98,60	118,40	238,00	157,60	—	—	—
36 × 28	900 × 700	95,60	114,70	234,00	152,80	—	—	—
38 × 36	950 × 900	112,00	133,00	—	177,00	—	—	—
38 × 34	950 × 850	108,00	129,00	—	172,00	—	—	—
38 × 32	950 × 800	105,00	126,00	—	167,00	—	—	—
38 × 30	950 × 750	103,00	124,00	—	165,00	—	—	—
40 × 38	1000 × 950	117,00	140,00	—	187,00	—	—	—
40 × 36	1000 × 900	114,00	137,00	—	182,00	—	—	—
40 × 34	1000 × 850	111,00	133,00	—	177,00	—	—	—
40 × 32	1000 × 800	109,00	131,00	—	174,00	—	—	—
42 × 40	1050 × 1000	123,00	147,00	—	196,00	—	—	—
42 × 38	1050 × 950	120,00	144,00	—	192,00	—	—	—
42 × 36	1050 × 900	117,00	140,00	—	187,00	—	—	—
42 × 34	1050 × 850	115,00	138,00	—	184,00	—	—	—
44 × 42	1100 × 1050	129,00	155,00	—	206,00	—	—	—
44 × 40	1100 × 1000	126,00	151,00	—	201,00	—	—	—
44 × 38	1100 × 950	123,00	147,00	—	196,00	—	—	—
44 × 36	1100 × 900	121,00	146,00	—	194,00	—	—	—
46 × 44	1150 × 1100	157,00	189,00	—	252,00	—	—	—
46 × 42	1150 × 1050	154,00	185,00	—	246,00	—	—	—
46 × 40	1150 × 1000	150,00	180,00	—	241,00	—	—	—
46 × 38	1150 × 950	148,00	178,00	—	237,00	—	—	—
48 × 46	1200 × 1150	164,00	197,00	—	263,00	—	—	—
48 × 44	1200 × 1100	161,00	193,00	—	257,00	—	—	—
48 × 42	1200 × 1050	157,00	189,00	—	252,00	—	—	—
48 × 40	1200 × 1000	155,00	186,00	—	248,00	—	—	—

Comparison of ASTM Specifications and Similar Standards

Steel Composition	ASTM Specification and Grade				KS Specification and Grade		
	Marking Symbol	Pipe	Plate	Forging	Marking Symbol	Pipe	Plate
Carbon Steel	—	A120	A283-A	—	SPP,SPW400	SPP	SS400
	—	A53-B	A284	—	PS370,PG38(W),PG38,PT38(W),PT38	SPPS380	SWS41B
	—	A53-B	A284	—	PH410,PG42(W),PG42,PT42(W),PT42	SPPS420	SWS41B
					PT38,PT38(W)	SPHT38	SBB42
					PT42,PT42(W)	SPHT42	SBB42
	WPB	A106-B	A515-60 or 70 A516-60 or 70	A105	PT49,PT49(W)	SPHT49	SBB42
	WPC	A106-C	A515-70 A516-70	A105	HT49,HT49(W)	SPHT49	SBB49
Low Temperature Steel	WPL6	A333 & A334-6	A516-60	A350-LF2	PL39	STPL39	SLAL39
	WPL3	A333 & A334-3	A203-D	A350-LF3	—	—	—
	WPL9	A333 & A334-9	A203-A	A350-LF9	—	—	—
Alloy Steel	WP1	A335-P1	A204-B	A182-F1	PA12,FA12	SPA12	SBB46M
	WP12	A335-P12	A387-12	A182-F12	PA22,FA22	SPA22	SCMV2
	WP11	A335-P11	A387-11	A182-F11	PA23,FA23	SPA23	SCMV3
	WP22	A335-P22	A387-22	A182-F22	PA24,FA24	SPA24	SCMV4
	WP5	A335-P5	A387-5	A182-F5	PA25,FA25	SPA25	SCMV6
	WP7	A335-P7	A387-7	A182-F7	—	—	—
	WP9	A335-P9	A387-9	A182-F9	—	—	—
	WP91	A335-P91	A387-F91	A182-F91	—	—	—
Stainless Steel	WP304	A312-TP304	A240-Type 304	A182-F304	STS304,STS304W,STS304F	STS304TP	STS304
	WP304H	A312-TP304H	A240-Type 304H	A182-F304H	—	—	—
	WP304L	A312-TP304L	A240-Type 304L	A182-F304L	STS304L,STS304LW,STS304LF	STS304LTP	STS304L
	WP309	A312-TP309	A240-Type 309S	—	STS309S,STS309SW,STS309SF	STS309TP	STS309S
	WP310	A312-TP310	A240-Type 310S	A182-F310	STS310S,STS310SW,STS310SF	STS310TP	STS310S
	WP316	A312-TP316	A240-Type 316	A182-F316	STS316,STS316W,STS316F	STS316TP	STS316
	WP316H	A312-TP316H	A240-Type 316H	A182-F316H	STS316H,STS316HF	STS316HTP	—
	WP316L	A312-TP316L	A240-Type 316L	A182-F316L	STS316L,STS316LW,STS316LF	STS316LTP	STS316L
	WP317L	A312-TP317L	A240-Type 317L	A182-F317L	STS317L,STS317LW	STS317LTP	STS317L
	WP321	A312-TP321	A240-Type 321	A182-F321	STS321,STS321W,STS321F	STS321TP	STS321
	WP321H	A312-TP321H	A240-Type 321H	A182-F321H	—	—	—
	WP347	A312-TP347	A240-Type 347	A182-F347	STS347,STS347W,STS347F	STS347TP	STS347
	WP347H	A312-TP347H	A240-Type 347H	A182-F347H	STS347H,STS347HF	STS347HTP	—

Comparison of ASTM Specifications and Similar Standards

JIS Specification and Grade			B.S.Specification and Grade	DIN Specification and Grade	Steel Composition
Marking Symbol	Pipe	Plate	Pipe	Pipe	
FSGP or SGP	SGP(STPY400)	SS400	1387-M	2440-ST33-1	Carbon Steel
PG370(W),PS370(W),PT370(W),PT370	STPG370	SM41B	3602-ERW 23	1626-ST37	Carbon Steel
PG410(W),PS410(W),PT410(W),PT410	STPG410	SM41B	3602-ERW 27	-	Carbon Steel
PS370,PT370(W)	STPT370	SB42	3602-Steel 23	17175-ST35,8	Carbon Steel
PS410,PT410(W)	STPT410	SB42	3602-Steel 27	17175-ST45,8	Carbon Steel
PS480,PT480(W)	STPT480	Sb49	3602-Steel 35	-	Carbon Steel
PL380(W)	STPL380	-	3603-Steel 27 LT 30	-	Carbon Steel
PL450(W)	STPL450	-	3603-Steel 503 LT 100	-	3½% Ni Steel
PL690(W)	STPL690	-	-	-	2% Ni-1% Cu Steel
PA12(W),FA12	STPA12	-	-	17175-15 Mo3	Carbon-Molybdenum Steel
PA22(W),FA22	STPA22	-	3603-HF620	17175-13 Cr Mo44	1% Cr-171% Molybdenum Steel
PA23(W),FA23	STPA23	-	3603-HF621	-	1¼% Cr-½% Molybdenum Steel
PA24(W),FA24	STPA24	SCMV4	3603-HF622,27	17175-10 Cr Mo910	2¼% Cr-1% Molybdenum Steel
PA25(W),FA25	STPA25	-	3603-HF625	-	5% Cr-½% Molybdenum Steel
-	-	-	-	-	7% Cr-½% Molybdenum Steel
PA26(W),FA26	STPA26	-	-	-	9% Cr-1% Molybdenum Steel
-	-	-	-	-	9% Cr-1% MO-0,2%V+Cb+N
SUS304,SUS304W,SUS304F	SUS304TP	SUS304	3605-801	17440-X5 Cr Ni189	18% Cr-8% Ni Steel
-	SUS304HTP	-	3605-811	-	18% Cr-8% Ni-(0,04-0,10)% C Steel
SUS304L,SUS304LW,SUS304LF	SUS304LTP	SUS304L	3605-811L	17440-X2 Cr Ni189	18% Ni-0,035% C Steel
SUS309S,SUS309SW,SUS309SF	SUS309STP	SUS309S	-	-	22% Cr-12% Ni Steel
SUS310S,SUS310SW,SUS310SF	SUS310STP	SUS310S	3605-805S	-	25% Cr-20% Ni Steel
SUS316,SUS316W,SUS316F	SUS316TP	SUS316	3605-845	17440-X5 Cr Ni Mo1810	18% Cr-8% Ni-Mo Steel
SUS316H,SUS316HF	SUS316HTP	-	3605-855	-	18% Cr-8% Ni-Mo(0,04-0,10)% C Steel
SUS316L,SUS316LW,SUS316LF	SUS316LTP	SUS316L	3605-845L	17440-X2 Cr Ni Mo1810	18% Cr-8% Ni-Mo-0,035% C Steel
SUS317L,SUS317LW	SUS317LTP	SUS317L	-	-	18% Cr-12% Ni-3,5% Mo-Low C
SUS321,SUS321W,SUS321F	SUS321TP	SUS321	3605-822Ti	17440-X10 Cr Ni Ti189	18% Cr-8% Ni-Ti Steel
-	SUS321HTP	-	3605-832Ti	-	18% Cr-8% Ni-Ti-(0,04-0,10)% C Steel
SUS347,SUS347W,SUS347F	SUS347TP	SUS347	3605-822Nb	17440-X1 Cr Ni Nb189	18% Cr-8% Ni-Cb+Ta Steel
SUS347H,SUS347HF	SUS347HTP	-	3605-832Nb	-	18% Cr-8% Ni-Cb+Ta(0,04-0,10)%C Steel



KUMKANG CORPORATION
