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 **TUBE LINE®**
STAINLESS

 **TUBE TEC®**

 **BRITE LINE®**

Buttweld Fittings Catalog

ASME/ANSI B16.9
All Dimensions in Inches

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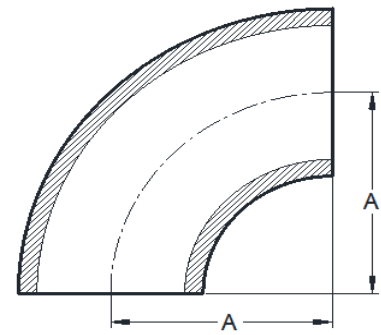


170 Tubeway Drive
Carol Stream, IL 60188
Phone 630-690-7000
Fax 630-690-9701

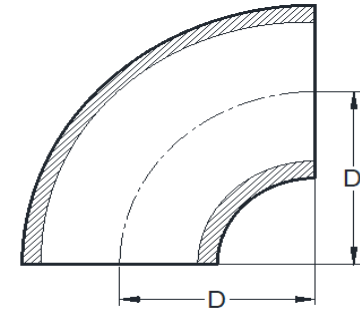
301 Brown Avenue
Sanford, FL 32771
Phone 407-323-0940
Fax 321-257-1005

Butt Weld Elbows and Return Bends

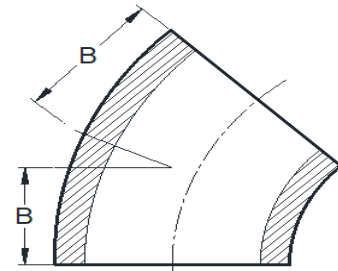
Nominal Pipe Size	Outside Diameter O.D.	Center to Ends			Return Bends			
		A	B	D	O	K	O ₁	K ₁
½	0.84	1.50	0.62	...	3.00	1.88	...	...
¾	1.05	1.50	0.75	...	3.00	2.00	...	...
1	1.32	1.50	0.88	1.00	3.00	2.19	2.00	1.62
1 ¼	1.66	1.88	1.00	1.25	3.75	2.75	2.50	2.06
1 ½	1.90	2.25	1.12	1.50	4.50	3.25	3.00	2.44
2	2.38	3.00	1.38	2.00	6.00	4.19	4.00	3.19
2 ½	2.88	3.75	1.75	2.50	7.50	5.19	5.00	3.94
3	3.50	4.50	2.00	3.00	9.00	6.25	6.00	4.75
3 ½	4.00	5.25	2.25	3.50	10.50	7.25	7.00	5.50
4	4.50	6.00	2.50	4.00	12.00	8.25	8.00	6.25
5	5.56	7.50	3.12	5.00	15.00	10.31	10.00	7.75
6	6.62	9.00	3.75	6.00	18.00	12.31	12.00	9.31
8	8.62	12.00	5.00	8.00	24.00	16.31	16.00	12.31
10	10.75	15.00	6.25	10.00	30.00	20.38	20.00	15.38
12	12.75	18.00	7.50	12.00	36.00	24.38	24.00	18.38
14	14.00	21.00	8.75	14.00	42.00	28.00	28.00	21.00
16	16.00	24.00	10.00	16.00	48.00	32.00	32.00	24.00
18	18.00	27.00	11.25	18.00	54.00	36.00	36.00	27.00
20	20.00	30.00	12.50	20.00	60.00	40.00	40.00	30.00
22	22.00	33.00	13.50	22.00	66.00	44.00	44.00	33.00
24	24.00	36.00	15.00	24.00	72.00	48.00	48.00	36.00
26	26.00	39.00	16.00					
28	28.00	42.00	17.25					
30	30.00	45.00	18.50					
32	32.00	48.00	19.75					
34	34.00	51.00	21.00					
36	36.00	54.00	22.25					
38	38.00	57.00	23.62					
40	40.00	60.00	24.88					
42	42.00	63.00	26.00					
44	44.00	66.00	27.38					
46	46.00	69.00	28.62					
48	48.00	72.00	29.88					



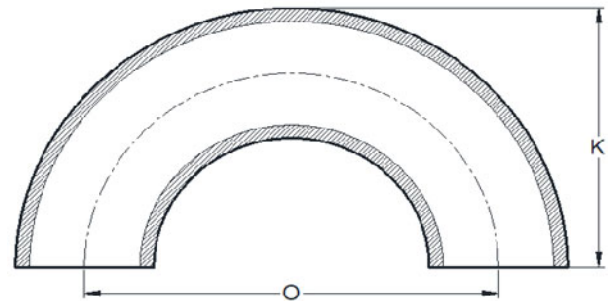
90° ELBOW/ LONG RADIUS



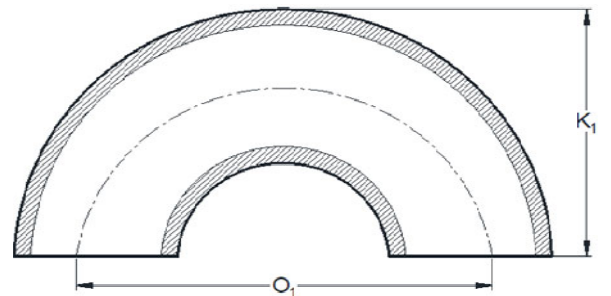
90° ELBOW/ SHORT RADIUS



45° ELBOW



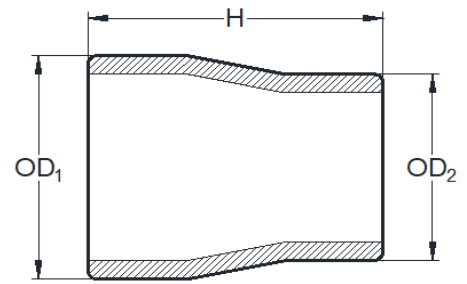
180° RETURN/ LONG RADIUS



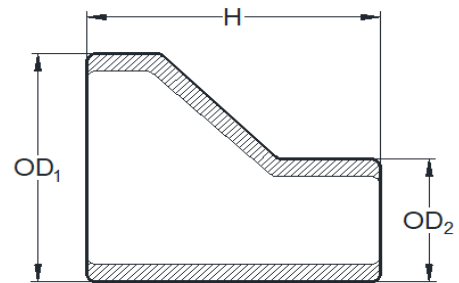
180° RETURN/ SHORT RADIUS

Butt Weld Tees and Reducers

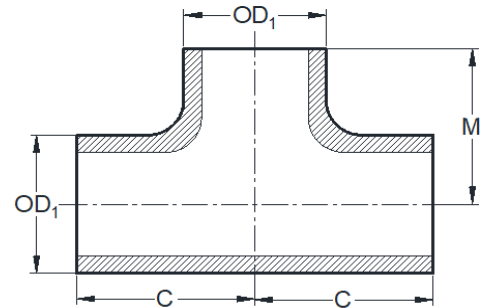
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
½	½	0.84	0.84	1.00	1.00	-
¾	¾	1.05	1.05	1.12	1.12	-
	½	1.05	0.84	1.12	1.12	1.50
1	1	1.32	1.32	1.50	1.50	-
	¾	1.32	1.05	1.50	1.50	2.00
	½	1.32	0.84	1.50	1.50	2.00
1 ¼	1 ¼	1.66	1.66	1.88	1.88	-
	1	1.66	1.32	1.88	1.88	2.00
	¾	1.66	1.05	1.88	1.88	2.00
	½	1.66	0.84	1.88	1.88	2.00
1 ½	1 ½	1.90	1.90	2.25	2.25	-
	1 ¼	1.90	1.66	2.25	2.25	2.50
	1	1.90	1.32	2.25	2.25	2.50
	¾	1.90	1.05	2.25	2.25	2.50
	½	1.90	0.84	2.25	2.25	2.50
2	2	2.38	2.38	2.50	2.50	-
	1 ½	2.38	1.90	2.50	2.38	3.00
	1 ¼	2.38	1.66	2.50	2.25	3.00
	1	2.38	1.32	2.50	2.00	3.00
	¾	2.38	1.05	2.50	1.75	3.00
2 ½	2 ½	2.88	2.88	3.00	3.00	-
	2	2.88	2.38	3.00	2.75	3.50
	1 ½	2.88	1.90	3.00	2.62	3.50
	1 ¼	2.88	1.66	3.00	2.50	3.50
	1	2.88	1.32	3.00	2.25	3.50
3	3	3.50	3.50	3.38	3.38	-
	2 ½	3.50	2.88	3.38	3.25	3.50
	2	3.50	2.38	3.38	3.00	3.50
	1 ½	3.50	1.90	3.38	2.88	3.50
	1 ¼	3.50	1.66	3.38	2.75	3.50
3 ½	3 ½	4.00	4.00	3.75	3.75	-
	3	4.00	3.50	3.75	3.62	4.00
	2 ½	4.00	2.88	3.75	3.50	4.00
	2	4.00	2.38	3.75	3.25	4.00
	1 ½	4.00	1.90	3.75	3.12	4.00
	1 ¼	4.00	1.66	-	-	4.00



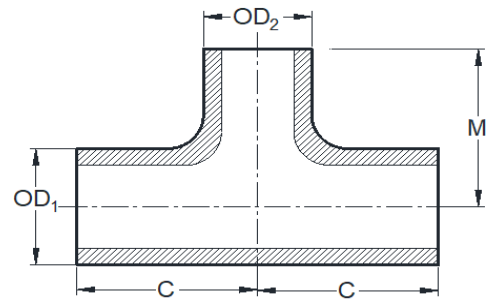
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EXCENTRIC REDUCER



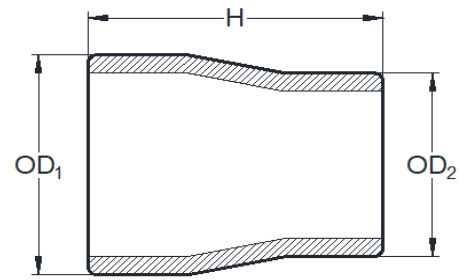
STRAIGHT TEE



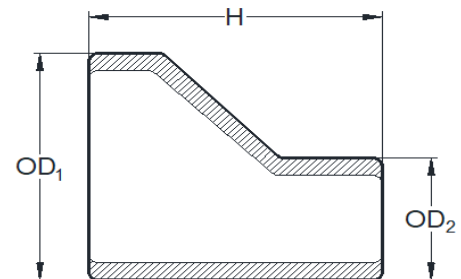
REDUCING TEE

Butt Weld Tees and Reducers

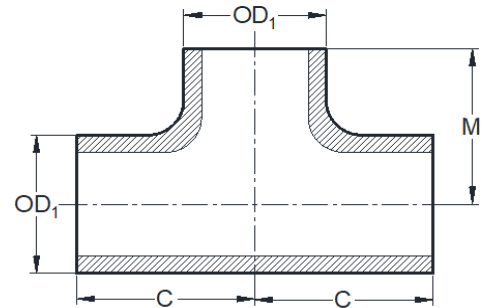
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
4	4	4.50	4.50	4.12	4.12	-
	3½	4.50	4.00	4.12	4.00	4.00
	3	4.50	3.50	4.12	3.88	4.00
	2½	4.50	2.88	4.12	3.75	4.00
	2	4.50	2.38	4.12	3.50	4.00
	1½	4.50	1.90	4.12	3.38	4.00
5	5	5.56	5.56	4.88	4.88	-
	4	5.56	4.50	4.88	4.62	5.00
	3½	5.56	4.00	4.88	4.50	5.00
	3	5.56	3.50	4.88	4.38	5.00
	2½	5.56	2.88	4.88	4.25	5.00
	2	5.56	2.38	4.88	4.12	5.00
6	6	6.62	6.62	5.62	5.62	-
	5	6.62	5.56	5.62	5.38	5.50
	4	6.62	4.50	5.62	5.12	5.50
	3½	6.62	4.00	5.62	5.00	5.50
	3	6.62	3.50	5.62	4.88	5.50
	2½	6.62	2.88	5.62	4.75	5.50
8	8	8.62	8.62	7.00	7.00	-
	6	8.62	6.62	7.00	6.62	6.00
	5	8.62	5.56	7.00	6.38	6.00
	4	8.62	4.50	7.00	6.12	6.00
	3½	8.62	4.00	7.00	6.00	6.00
10	10	10.75	10.75	8.50	8.50	-
	8	10.75	8.62	8.50	8.00	7.00
	6	10.75	6.62	8.50	7.62	7.00
	5	10.75	5.56	8.50	7.50	7.00
	4	10.75	4.50	8.50	7.25	7.00
12	12	12.75	12.75	10.00	10.00	-
	10	12.75	10.75	10.00	9.50	8.00
	8	12.75	8.62	10.00	9.00	8.00
	6	12.75	6.62	10.00	8.62	8.00
	5	12.75	5.56	10.00	8.50	8.00
14	14	14.00	14.00	11.00	11.00	-
	12	14.00	12.75	11.00	10.62	13.00
	10	14.00	10.75	11.00	10.12	13.00
	8	14.00	8.62	11.00	9.75	13.00
	6	14.00	6.62	11.00	9.38	13.00



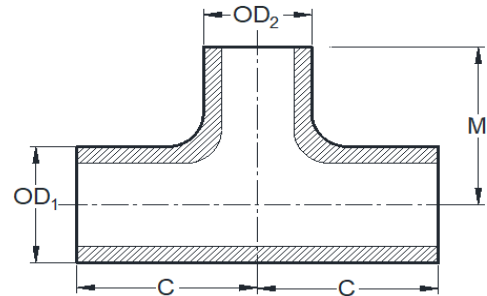
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ECCENTRIC REDUCER



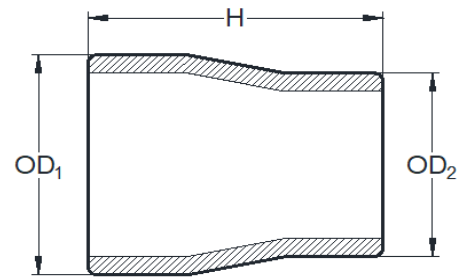
STRAIGHT TEE



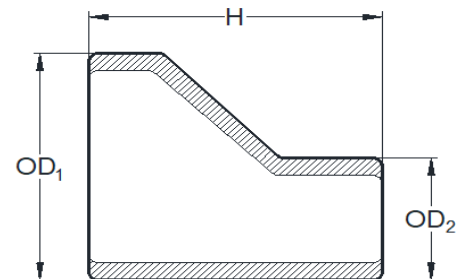
REDUCING TEE

Butt Weld Tees and Reducers

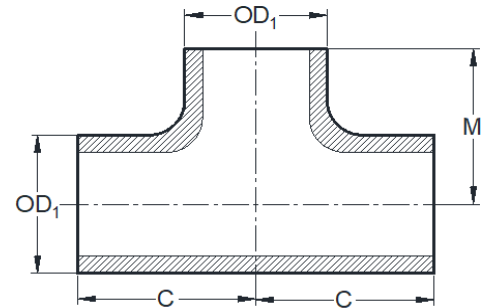
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
16	16	16.00	-	12.00	12.00	-
	14	16.00	14.00	12.00	12.00	14.00
	12	16.00	12.75	12.00	11.62	14.00
	10	16.00	10.75	12.00	11.12	14.00
	8	16.00	8.62	12.00	10.75	14.00
	6	16.00	6.62	12.00	10.38	-
18	18	18.00	18.00	13.50	13.50	-
	16	18.00	16.00	13.50	13.00	15.00
	14	18.00	14.00	13.50	13.00	15.00
	12	18.00	12.75	13.50	12.62	15.00
	10	18.00	10.75	13.50	12.12	15.00
	8	18.00	8.62	13.50	11.75	-
20	20	20.00	20.00	15.00	15.00	-
	18	20.00	18.00	15.00	14.50	20.00
	16	20.00	16.00	15.00	14.00	20.00
	14	20.00	14.00	15.00	14.00	20.00
	12	20.00	12.75	15.00	13.62	20.00
	10	20.00	10.75	15.00	13.12	-
	8	20.00	8.62	15.00	12.75	-
22	22	22.00	-	16.50	16.50	-
	20	22.00	20.00	16.50	16.00	20.00
	18	22.00	18.00	16.50	15.50	20.00
	16	22.00	16.00	16.50	15.00	20.00
	14	22.00	14.00	16.50	15.00	20.00
	12	22.00	12.75	16.50	14.62	-
	10	22.00	10.75	16.50	14.12	-
24	24	24.00	-	17.00	17.00	-
	22	24.00	22.00	17.00	17.00	20.00
	20	24.00	20.00	17.00	17.00	20.00
	18	24.00	18.00	17.00	16.50	20.00
	16	24.00	16.00	17.00	16.00	20.00
	14	24.00	14.00	17.00	16.00	-
	12	24.00	12.75	17.00	15.62	-
	10	24.00	10.75	17.00	15.12	-



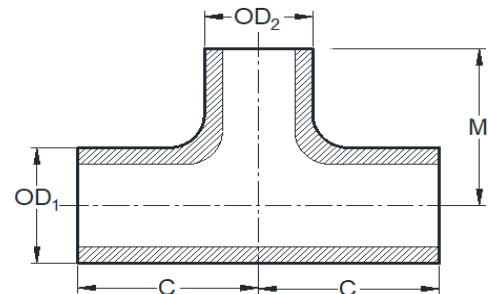
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ECCENTRIC REDUCER



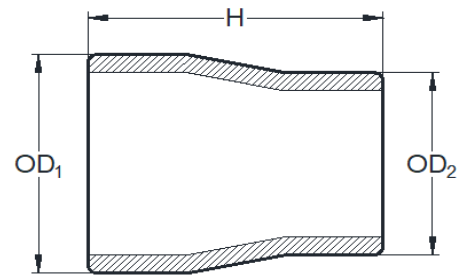
STRAIGHT TEE



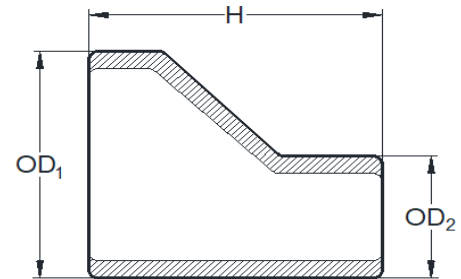
REDUCING TEE

Butt Weld Tees and Reducers

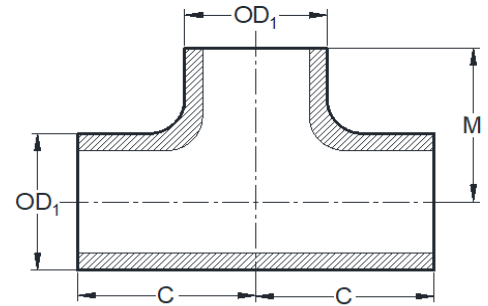
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
26	26	26.00	-	19.50	19.50	-
	24	26.00	24.00	19.50	19.00	24.00
	22	26.00	22.00	19.50	18.50	24.00
	20	26.00	20.00	19.50	18.00	24.00
	18	26.00	18.00	19.50	17.50	24.00
	16	26.00	16.00	19.50	17.00	-
	14	26.00	14.00	19.50	17.00	-
	12	26.00	12.75	19.50	16.62	-
28	28	28.00	-	20.50	20.50	-
	26	28.00	26.00	20.50	20.50	24.00
	24	28.00	24.00	20.50	20.00	24.00
	22	28.00	22.00	20.50	19.50	-
	20	28.00	20.00	20.50	19.00	24.00
	18	28.00	18.00	20.50	18.50	24.00
	16	28.00	16.00	20.50	18.00	-
	14	28.00	14.00	20.50	18.00	-
30	30	30.00	-	22.00	22.00	-
	28	30.00	28.00	22.00	21.50	24.00
	26	30.00	26.00	22.00	21.50	24.00
	24	30.00	24.00	22.00	21.00	24.00
	22	30.00	22.00	22.00	20.50	-
	20	30.00	20.00	22.00	20.00	24.00
	18	30.00	18.00	22.00	19.50	-
	16	30.00	16.00	22.00	19.00	-
	14	30.00	14.00	22.00	19.00	-
	12	30.00	12.75	22.00	18.62	-
	10	30.00	10.75	22.00	18.12	-
32	32	32.00	-	23.50	23.50	-
	30	32.00	30.00	23.50	23.00	24.00
	28	32.00	28.00	23.50	22.50	24.00
	26	32.00	26.00	23.50	22.50	24.00
	24	32.00	24.00	23.50	22.00	24.00
	22	32.00	22.00	23.50	21.50	-
	20	32.00	20.00	23.50	21.00	-
	18	32.00	18.00	23.50	20.50	-
	16	32.00	16.00	23.50	20.00	-
	14	32.00	14.00	23.50	20.00	-



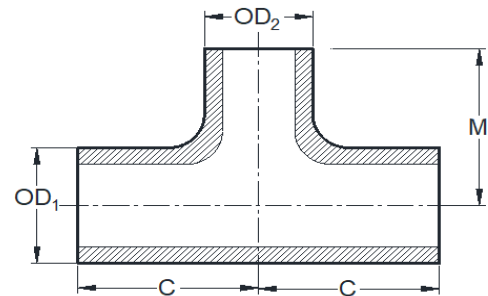
CONCENTRIC REDUCER



ECCENTRIC REDUCER



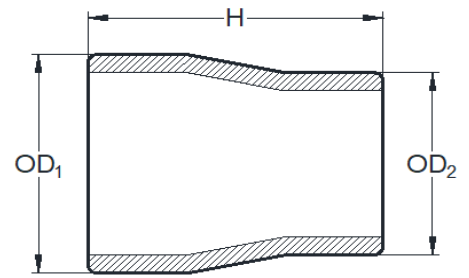
STRAIGHT TEE



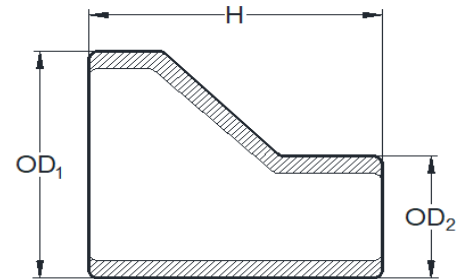
REDUCING TEE

Butt Weld Tees and Reducers

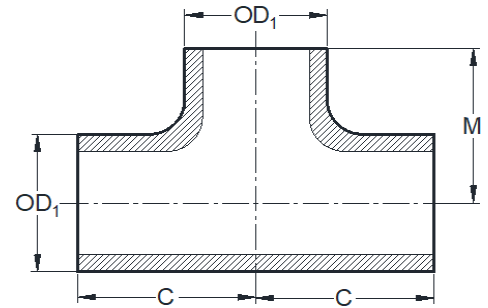
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
34	34	34.00	-	25.00	25.00	-
	32	34.00	32.00	25.00	24.50	24.00
	30	34.00	30.00	25.00	24.00	24.00
	28	34.00	28.00	25.00	23.50	-
	26	34.00	26.00	25.00	23.50	24.00
	24	34.00	24.00	25.00	23.00	24.00
	22	34.00	22.00	25.00	22.50	-
	20	34.00	20.00	25.00	22.00	-
	18	34.00	18.00	25.00	21.50	-
	16	34.00	16.00	25.00	21.00	-
36	36	36.00	-	26.50	26.50	-
	34	36.00	34.00	26.50	26.00	24.00
	32	36.00	32.00	26.50	25.50	24.00
	30	36.00	30.00	26.50	25.00	24.00
	28	36.00	28.00	26.50	24.50	-
	26	36.00	26.00	26.50	24.50	24.00
	24	36.00	24.00	26.50	24.00	24.00
	22	36.00	22.00	26.50	23.50	-
	20	36.00	20.00	26.50	23.00	-
	18	36.00	18.00	26.50	22.50	-
38	38	38.00	-	28.00	28.00	-
	36	38.00	36.00	28.00	28.00	24.00
	34	38.00	34.00	28.00	27.50	24.00
	32	38.00	32.00	28.00	27.00	24.00
	30	38.00	30.00	28.00	26.50	24.00
	28	38.00	28.00	28.00	25.50	24.00
	26	38.00	26.00	28.00	25.50	24.00
	24	38.00	24.00	28.00	25.00	-
	22	38.00	22.00	28.00	24.50	-
	20	38.00	20.00	28.00	24.00	-
38	18	38.00	18.00	28.00	23.50	-



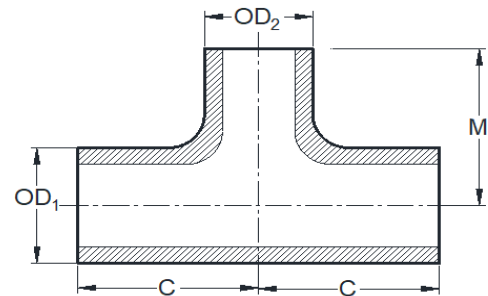
CONCENTRIC REDUCER



ECCENTRIC REDUCER



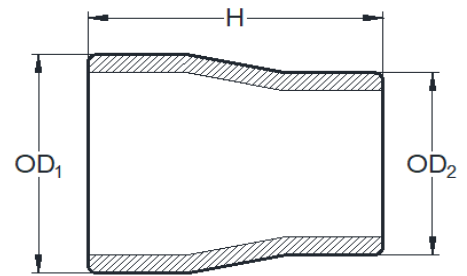
STRAIGHT TEE



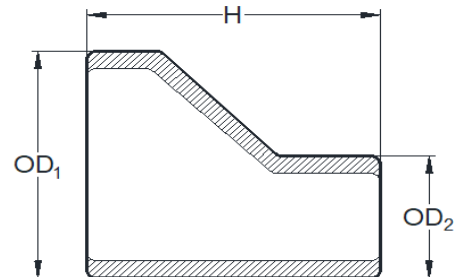
REDUCING TEE

Butt Weld Tees and Reducers

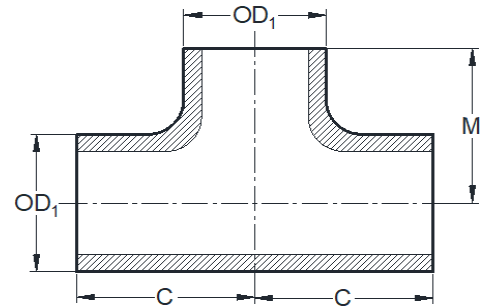
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
40	40	40.00	-	29.50	29.50	-
	38	40.00	38.00	29.50	29.50	24.00
	36	40.00	36.00	29.50	29.00	24.00
	34	40.00	34.00	29.50	28.50	24.00
	32	40.00	32.00	29.50	28.00	24.00
	30	40.00	30.00	29.50	27.50	24.00
	28	40.00	28.00	29.50	26.50	-
	26	40.00	26.00	29.50	26.50	-
	24	40.00	24.00	29.50	26.00	-
	22	40.00	22.00	29.50	25.50	-
	20	40.00	20.00	29.50	25.00	-
	18	40.00	18.00	29.50	24.50	-
42	42	42.00	-	30.00	28.00	-
	40	42.00	40.00	30.00	28.00	24.00
	38	42.00	38.00	30.00	28.00	24.00
	36	42.00	36.00	30.00	28.00	24.00
	34	42.00	34.00	30.00	28.00	24.00
	32	42.00	32.00	30.00	28.00	24.00
	30	42.00	30.00	30.00	28.00	24.00
	28	42.00	28.00	30.00	27.50	-
	26	42.00	26.00	30.00	27.50	-
	24	42.00	24.00	30.00	26.00	-
	22	42.00	22.00	30.00	26.00	-
	20	42.00	20.00	30.00	26.00	-
	18	42.00	18.00	30.00	25.50	-
	16	42.00	16.00	30.00	25.00	-
44	44	44.00	-	32.00	30.00	-
	42	44.00	42.00	32.00	30.00	24.00
	40	44.00	40.00	32.00	29.50	24.00
	38	44.00	38.00	32.00	29.00	24.00
	36	44.00	36.00	32.00	28.50	24.00
	34	44.00	34.00	32.00	28.50	-
	32	44.00	32.00	32.00	28.00	-
	30	44.00	30.00	32.00	28.00	-
	28	44.00	28.00	32.00	27.50	-
	26	44.00	26.00	32.00	27.50	-
	24	44.00	24.00	32.00	27.50	-
	22	44.00	22.00	32.00	27.00	-
	20	44.00	20.00	32.00	27.00	-



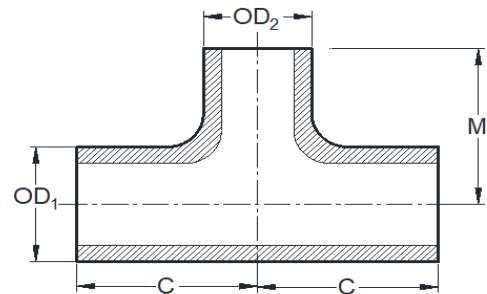
CONCENTRIC REDUCER



ECCENTRIC REDUCER



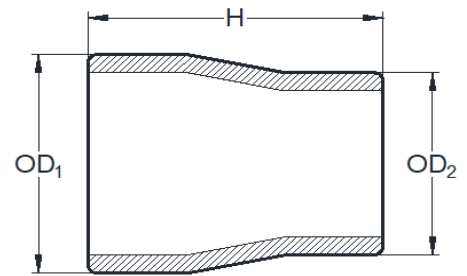
STRAIGHT TEE



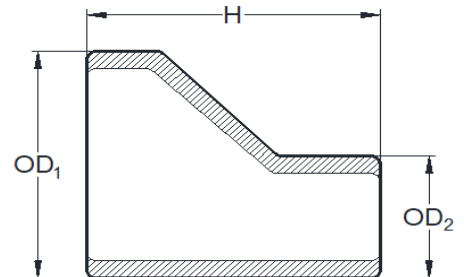
REDUCING TEE

Butt Weld Tees and Reducers

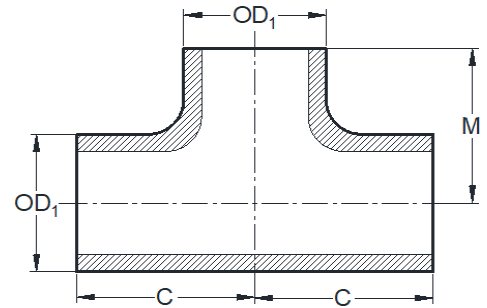
Nominal Pipe Size		Outside Diameter		Center to End		Length
NPS X	NPS	OD ₁	OD ₂	Run C	Outlet M	H
46	46	46.00	-	33.50	31.50	-
	44	46.00	44.00	33.50	31.50	28.00
	42	46.00	42.00	33.50	31.00	28.00
	40	46.00	40.00	33.50	30.50	28.00
	38	46.00	38.00	33.50	30.00	28.00
	36	46.00	36.00	33.50	30.00	-
	34	46.00	34.00	33.50	29.50	-
	32	46.00	32.00	33.50	29.50	-
	30	46.00	30.00	33.50	29.00	-
	28	46.00	28.00	33.50	29.00	-
	26	46.00	26.00	33.50	29.00	-
	24	46.00	24.00	33.50	28.50	-
48	48	48.00	-	35.00	33.00	-
	46	48.00	46.00	35.00	33.00	28.00
	44	48.00	44.00	35.00	33.00	28.00
	42	48.00	42.00	35.00	32.00	28.00
	40	48.00	40.00	35.00	32.00	28.00
	38	48.00	38.00	35.00	32.00	-
	36	48.00	36.00	35.00	31.00	-
	34	48.00	34.00	35.00	31.00	-
	32	48.00	32.00	35.00	31.00	-
	30	48.00	30.00	35.00	30.00	-
	28	48.00	28.00	35.00	30.00	-
	26	48.00	26.00	35.00	30.00	-
	24	48.00	24.00	35.00	29.00	-
	22	48.00	22.00	35.00	29.00	-



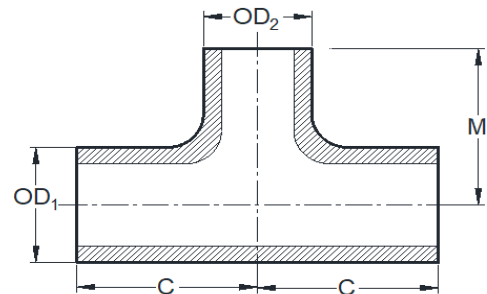
CONCENTRIC REDUCER



ECCENTRIC REDUCER



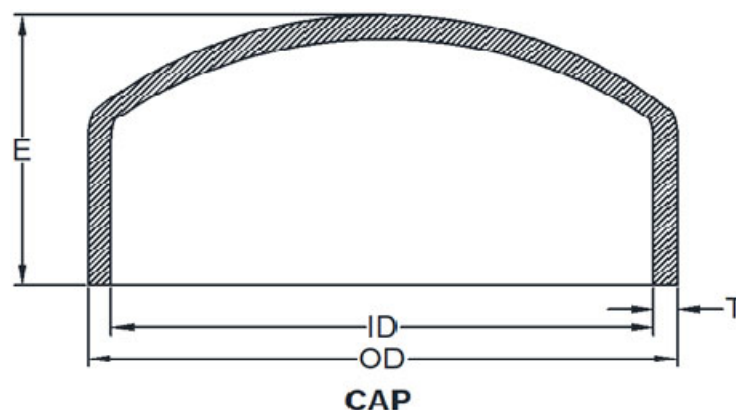
STRAIGHT TEE



REDUCING TEE

Butt Weld Caps

Nominal Pipe Size	Outside Diameter, OD	Length, E (Note 1)	Limiting Wall Thickness For Length, E	Length, E ₁ (Note 2)
½	0.84	1.00	0.18	1.00
¾	1.05	1.00	0.15	1.00
1	1.32	1.50	0.18	1.50
1 ¼	1.66	1.50	0.19	1.50
1 ½	1.90	1.50	0.20	1.50
2	2.38	1.50	0.22	1.75
2 ½	2.88	1.50	0.28	2.00
3	3.50	2.00	0.30	2.50
3 ½	4.00	2.50	0.32	3.00
4	4.50	2.50	0.34	3.00
5	5.56	3.00	0.38	3.50
6	6.62	3.50	0.43	4.00
8	8.62	4.00	0.50	5.00
10	10.75	5.00	0.50	6.00
12	12.75	6.00	0.50	7.00
14	14.00	6.50	0.50	7.50
16	16.00	7.00	0.50	8.00
18	18.00	8.00	0.50	9.00
20	20.00	9.00	0.50	10.00
22	22.00	10.00	0.50	10.00
24	24.00	10.50	0.50	12.00
26	26.00	10.50	...	...
28	28.00	10.50	...	...
30	30.00	10.50	...	...
32	32.00	10.50	...	...
34	34.00	10.50	...	...
36	36.00	10.50	...	...
38	38.00	12.00	...	...
40	40.00	12.00	...	...
42	42.00	12.00	...	...
44	44.00	13.50	...	...
46	46.00	13.50	...	...
48	48.00	13.50	...	...



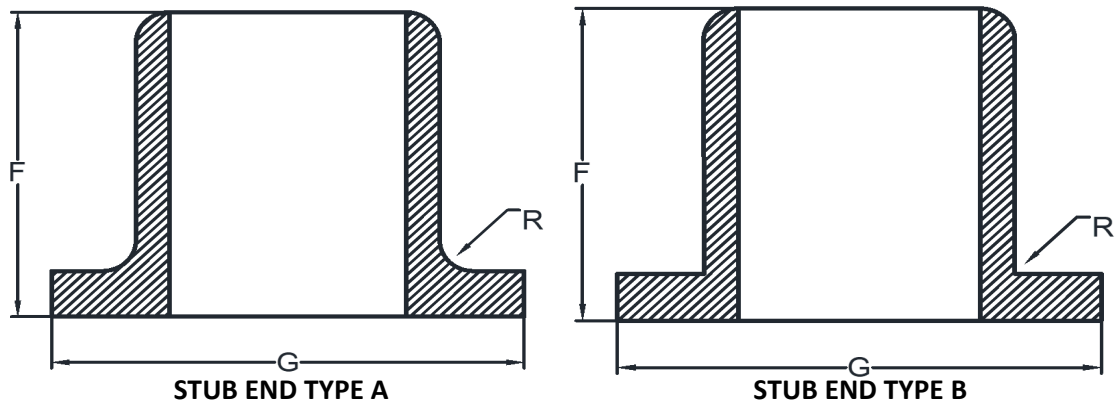
Notes:

1) Length E applies for thickness not greater than given in column "Limiting wall thickness for length E."

2) Length E₁ applies for thickness greater than given in column "Limiting wall thickness for length E" for NPS 24 and smaller. For NPS 26 and larger, length E₁ shall be by agreement between the manufacturer and purchaser

The shape of these caps shall be ellipsoidal and conform to the requirements given in the ASME Boiler and Pressure Vessel Code.

Buttweld Stub Ends



Nominal Pipe Size	Short Pattern Length, F	Long Pattern Length F	Diameter of Lap, G	Corner Radius		O.D. of Barrel	
				Type A, R	Type B, R	Max.	Min.
½	2.00	3.00	1.38	0.12	0.03	0.896	0.809
¾	2.00	3.00	1.69	0.12	0.03	1.106	1.019
1	2.00	4.00	2.00	0.12	0.03	1.376	1.284
1 ¼	2.00	4.00	2.50	0.19	0.03	1.716	1.629
1 ½	2.00	4.00	2.88	0.25	0.03	1.965	1.869
2	2.50	6.00	3.62	0.31	0.03	2.456	2.344
2 ½	2.50	6.00	4.12	0.31	0.03	2.966	2.844
3	2.50	6.00	5.00	0.38	0.03	3.596	3.469
3 ½	3.00	6.00	5.50	0.38	0.03	4.096	3.969
4	3.00	6.00	6.19	0.44	0.03	4.593	4.469
5	3.00	8.00	7.31	0.44	0.06	5.683	5.532
6	3.50	8.00	8.50	0.50	0.06	6.743	6.594
8	4.00	8.00	10.62	0.50	0.06	8.743	8.594
10	5.00	10.00	12.75	0.50	0.06	10.913	10.719
12	6.00	10.00	15.00	0.50	0.06	12.913	12.719
14	6.00	12.00	16.25	0.50	0.06	14.170	13.969
16	6.00	12.00	18.50	0.50	0.06	16.180	15.969
18	6.00	12.00	21.00	0.50	0.06	18.190	17.969
20	6.00	12.00	23.00	0.50	0.06	20.240	19.969
22	6.00	12.00	25.25	0.50	0.06	22.240	21.969
24	6.00	12.00	27.25	0.50	0.06	24.240	23.969

Butt Weld Fitting Tolerances

All Fittings				Elbows and Tees	180° Returns			Caps	Reducers and Stub Ends
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Center to End Length A,B,C,D,M	Center to Center Length O,O ₁	Back to Face Length K,K ₁	Alignment of Ends U	Overall Length E	Overall Length F,H
½ - 2 ½	+0.060 / -0.030	+ / -0.030	Not Less Than 87 ½ Percent of the Specified Nominal Wall Thickness	+ / -0.060	+ / -0.250	+ / -0.250	+ / -0.030	+ / -0.120	+ / -0.060
3 - 3 ½	+ / -0.060	+ / -0.060		+ / -0.060	+ / -0.250	+ / -0.250	+ / -0.030	+ / -0.120	+ / -0.060
4	+ / -0.060	+ / -0.060		+ / -0.060	+ / -0.250	+ / -0.250	+ / -0.030	+ / -0.120	+ / -0.060
5 to 8	+0.090 / -0.060	+ / -0.060		+ / -0.060	+ / -0.250	+ / -0.250	+ / -0.030	+ / -0.250	+ / -0.060
10 to 18	+0.160 / -0.120	+ / -0.120		+ / -0.090	+ / -0.380	+ / -0.250	+ / -0.060	+ / -0.250	+ / -0.090
20 to 24	+0.250 / -0.190	+ / -0.190		+ / -0.090	+ / -0.380	+ / -0.250	+ / -0.060	+ / -0.250	+ / -0.090
26 to 30	+0.250 / -0.190	+ / -0.190		+ / -0.120	...	...	...	+ / -0.380	+ / -0.190
32 to 48	+0.250 / -0.190	+ / -0.190		+ / -0.190	...	...	...	+ / -0.380	+ / -0.190

All Fittings				Stub Ends			Angularity Tolerances Elbows and Tees		
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Inside Diameter at End	Wall Thickness	Diameter of Lap G	Radius R	Lap Thickness T	Nominal Pipe Size (NPS)	Off Angle Q	Off Plane P
½ - 2 ½	+0.060 / -0.030	+ / -0.030	Not Less Than 87 ½ Percent of the Specified Nominal Wall Thickness	+0 / -0.030	+0 / -0.030	+0.060 / -0	½ - 4	+ / -0.030	+ / -0.060
3 - 3 ½	+ / -0.060	+ / -0.060		+0 / -0.030	+0 / -0.030	+0.060 / -0	5 to 8	+ / -0.060	+ / -0.120
4	+ / -0.060	+ / -0.060		+0 / -0.030	+0 / -0.060	+0.060 / -0	10 to 12	+ / -0.090	+ / -0.190
5 to 8	+0.090 / -0.060	+ / -0.060		+0 / -0.030	+0 / -0.060	+0.060 / -0	14 to 16	+ / -0.090	+ / -0.250
10 to 18	+0.160 / -0.120	+ / -0.120		+0 / -0.060	+0 / -0.060	+0.120 / -0	18 to 24	+ / -0.120	+ / -0.380
20 to 24	+0.250 / -0.190	+ / -0.190		+0 / -0.060	+0 / -0.060	+0.120 / -0	26 to 30	+ / -0.190	+ / -0.380
26 to 30	+0.250 / -0.190	+ / -0.190		...	...	...	32 to 42	+ / -0.190	+ / -0.500
32 to 48	+0.250 / -0.190	+ / -0.190		...	...	...	44 to 48	+ / -0.190	+ / -0.750

Butt Weld Fitting Weights

Nominal Pipe Size	90° Elbows - Long Radius				90° Elbows - Short Radius				45° Elbows - Long Radius			
	SCH 5S	SCH 10S	SCH 40S	SCH 80S	SCH 5S	SCH 10S	SCH 40S	SCH 80S	SCH 5S	SCH 10S	SCH 40S	SCH 80S
½	0.12	0.14	0.18	0.23	...	...	...	...	0.06	0.07	0.09	0.12
¾	0.13	0.15	0.19	0.25	...	...	...	...	0.06	0.07	0.09	0.12
1	0.19	0.30	0.35	0.48	0.17	0.23	0.26	0.38	0.12	0.19	0.25	0.31
1 ¼	0.31	0.50	0.56	0.88	0.31	0.38	0.45	0.63	0.19	0.25	0.38	0.50
1 ½	0.38	0.69	0.88	1.13	0.43	0.49	0.63	0.88	0.25	0.38	0.50	0.63
2	0.64	1.13	1.56	2.00	0.63	0.81	1.13	1.55	0.31	0.56	0.88	1.13
2 ½	1.50	1.88	3.00	4.00	1.25	1.35	2.25	2.88	0.75	1.06	1.69	2.19
3	2.00	2.69	4.81	6.56	1.75	2.17	3.31	4.20	1.06	1.38	2.38	3.31
3 ½	2.62	3.75	6.25	8.80	2.35	3.05	4.54	5.35	1.16	1.66	3.13	4.40
4	3.31	4.75	9.19	13.63	3.12	3.79	6.88	9.06	1.66	2.38	4.60	6.82
5	6.50	8.00	15.13	21.13	4.94	6.12	11.63	16.10	3.25	4.00	7.57	10.56
6	10.00	12.00	24.00	36.00	7.75	9.15	17.50	26.00	5.00	6.00	12.00	18.00
8	17.30	23.50	47.50	73.00	15.44	17.63	37.60	54.80	8.65	11.75	23.75	36.50
10	32.00	43.00	85.00	114.00	27.40	35.00	63.00	99.80	16.00	21.50	42.50	57.00
12	51.00	60.00	131.00	175.00	35.00	40.00	80.00	125.00	25.50	30.00	65.50	87.50
14	68.00	80.00	155.00	206.00	44.00	52.00	101.00	135.00	34.00	40.00	75.00	103.00
16	100.00	105.00	202.00	269.00	65.00	68.00	131.00	175.00	50.00	52.50	101.00	134.00
18	125.00	132.00	269.00	350.00	81.00	86.00	175.00	228.00	62.50	66.00	131.00	175.00
20	165.00	220.00	330.00	439.00	107.00	143.00	215.00	285.00	82.50	110.00	165.00	219.00
24	280.00	310.00	464.00	617.00	182.00	202.00	302.00	401.00	140.00	155.00	232.00	308.00

Nominal Pipe Size	180° Returns - Long Radius				180° Returns - Short Radius				Caps			
	SCH 5S	SCH 10S	SCH 40S	SCH 80S	SCH 5S	SCH 10S	SCH 40S	SCH 80S	SCH 5S	SCH 10S	SCH 40S	SCH 80S
½	0.21	0.26	0.34	0.43	...	...	...	...	0.08	0.09	0.10	0.11
¾	0.30	0.41	0.50	0.69	...	...	...	...	0.11	0.12	0.13	0.14
1	0.53	0.75	0.76	1.38	0.32	0.36	0.46	0.59	0.18	0.19	0.35	0.29
1 ¼	1.00	1.26	1.66	2.50	0.44	0.60	0.78	1.03	0.20	0.28	0.38	0.39
1 ½	1.28	1.75	2.33	3.00	0.60	0.84	1.12	1.50	0.22	0.31	0.50	0.54
2	2.10	3.13	4.38	6.21	0.92	1.40	2.00	2.76	0.36	0.38	0.60	0.75
2 ½	3.58	5.88	7.75	9.70	1.86	2.40	3.96	5.28	0.50	0.56	1.00	1.12
3	5.20	9.81	12.83	17.18	2.44	3.40	6.24	8.44	0.86	0.88	1.56	1.87
3 ½	6.55	10.50	15.60	22.00	3.24	4.60	8.76	12.10	1.20	1.25	2.25	2.50
4	12.00	13.60	24.50	34.30	4.20	6.00	11.90	16.50	1.25	1.44	2.69	3.54
5	13.00	16.00	31.00	43.00	8.40	10.40	20.20	28.60	2.00	2.25	4.06	5.63
6	20.00	24.00	48.00	72.00	12.60	16.40	31.20	47.00	2.75	3.00	7.12	10.00
8	35.00	47.00	95.00	146.00	21.00	28.40	63.00	95.00	4.50	5.50	12.50	16.38
10	64.00	86.00	170.00	228.00	40.00	50.00	111.00	150.00	9.50	10.80	20.30	27.30
12	102.00	120.00	262.00	350.00	68.00	78.00	164.00	216.00	14.00	14.40	28.80	36.60
14	130.00	156.00	325.00	400.00	86.00	104.00	210.00	278.00	17.00	18.00	35.70	48.00
16	179.00	204.00	412.00	550.00	120.00	136.00	276.00	364.00	30.00	32.00	48.50	65.00
18	228.00	258.00	510.00	690.00	154.00	176.00	350.00	462.00	38.00	39.60	59.40	79.20
20	320.00	370.00	640.00	830.00	212.00	244.00	430.00	572.00	55.00	60.00	75.00	88.00
24	520.00	612.00	890.00	1200.00	356.00	406.00	626.00	830.00	75.00	76.00	98.00	135.00

Butt Weld Fitting Weights

Nominal Pipe Size	Tees - Straight & Reducing				Reducers - Concentric & Eccentric				Stub Ends			
	SCH 5S	SCH 10S	SCH 40S	SCH 80S	SCH 5S	SCH 10S	SCH 40S	SCH 80S	SCH 5S	SCH 10S	SCH 40S	SCH 80S
½	0.19	0.21	0.23	0.30	...	...	...	...	0.14	0.16	0.19	
¾	0.22	0.28	0.38	0.45	0.16	0.21	0.29	0.38	0.18	0.21	0.26	
1	0.40	0.63	0.65	0.85	0.17	0.25	0.34	0.45	0.25	0.35	0.38	
1 ¼	0.75	1.10	1.31	1.50	0.22	0.38	0.48	0.56	0.39	0.49	0.55	
1 ½	0.95	1.50	1.90	2.25	0.25	0.41	0.55	0.73	0.41	0.56	0.69	
2	1.20	1.87	2.83	3.50	0.38	0.64	0.91	1.22	0.71	0.94	1.35	
2 ½	2.15	3.10	4.85	6.90	0.64	0.95	1.62	2.06	0.95	1.25	1.77	
3	3.40	3.90	7.30	9.80	0.78	1.10	2.06	2.74	1.23	1.60	2.50	
3 ½	5.50	5.88	9.00	12.00	1.07	1.58	2.99	3.95	1.63	1.90	3.58	
4	7.20	7.63	11.63	17.00	1.25	1.79	3.59	4.76	1.90	2.40	4.13	
5	13.00	13.45	20.75	25.00	2.60	3.14	6.17	8.33	2.80	3.25	6.15	
6	17.20	17.80	24.25	30.00	3.38	4.06	8.91	12.52	3.88	4.75	7.88	
8	31.00	34.50	46.10	62.00	4.83	6.73	16.66	20.40	5.90	7.10	13.38	
10	55.00	59.00	78.00	110.00	8.73	10.92	24.29	31.50	8.90	11.30	22.20	
12	83.00	87.00	137.00	185.00	14.30	16.74	34.88	45.24	15.30	18.00	31.50	
14	89.00	107.00	175.00	210.00	25.64	31.27	62.54	83.35	19.00	24.00	37.80	
16	115.00	130.00	220.00	265.00	34.71	39.44	78.89	103.12	25.00	28.00	45.00	
18	149.00	169.00	286.00	344.00	42.14	47.89	95.79	125.75	34.00	38.00	60.00	
20	171.00	228.00	358.00	430.00	73.87	81.96	146.25	193.50	43.00	48.00	66.00	
24	298.00	343.00	498.00	600.00	100.34	100.34	173.67	230.00	57.00	60.00	85.00	

CORE PIPE®
Nominal Inside Diameter

Nominal Pipe Size	Outside Diameter O.D.	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	SCH 40	STD	B16.5
½	0.84	0.710	0.674	-	-	-	0.622	0.622	0.622	0.620
¾	1.05	0.920	0.884	-	-	-	0.824	0.824	0.824	0.820
1	1.32	1.190	1.102	-	-	-	1.054	1.054	1.054	1.050
1 ¼	1.66	1.530	1.442	-	-	-	1.380	1.380	1.380	1.380
1 ½	1.90	1.770	1.682	-	-	-	1.610	1.610	1.610	1.610
2	2.38	2.250	2.162	-	-	-	2.072	2.072	2.072	2.070
2 ½	2.88	2.714	2.640	-	-	-	2.474	2.474	2.474	2.470
3	3.50	3.334	3.260	-	-	-	3.068	3.068	3.068	3.070
3 ½	4.00	3.834	3.760	-	-	-	3.548	3.548	3.548	3.550
4	4.50	4.334	4.260	-	-	-	4.026	4.026	4.026	4.030
5	5.56	5.342	5.292	-	-	-	5.044	5.044	5.044	5.050
6	6.62	6.402	6.352	-	-	-	6.060	6.060	6.060	-
6	6.63	6.412	6.362	-	-	-	6.070	6.070	6.070	6.070
8	8.62	8.402	8.324	-	8.120	8.066	7.976	7.976	7.976	-
8	8.63	8.412	8.334	-	8.130	8.076	7.986	7.986	7.986	7.980
10	10.75	10.482	10.420	-	10.250	10.136	10.020	10.020	10.020	10.020
12	12.75	12.438	12.390	-	12.250	12.090	12.000	11.938	12.000	12.000
14	14.00	13.688	13.624	13.500	13.376	13.250	-	13.124	13.250	-
16	16.00	15.670	15.624	15.500	15.376	15.250	-	15.000	15.250	-
18	18.00	17.670	17.624	17.500	17.376	17.124	-	16.876	17.250	-
20	20.00	19.624	19.564	19.500	19.250	19.000	-	18.812	19.250	-
22	22.00	21.624	21.564	21.500	21.250	21.000	-		21.250	-
24	24.00	23.564	23.500	23.500	23.250	22.876	-	22.624	23.250	-
26	26.00			25.376	25.000				25.250	
28	28.00			27.376	27.000	26.750			27.250	
30	30.00	29.500		29.376	29.000	28.750			29.250	
32	32.00			31.376	31.000	30.750		30.624	31.250	
34	34.00			33.312	33.000	32.750		32.624	33.250	
36	36.00			35.376	35.000	34.750		34.500	35.250	
38	38.00									
40	40.00									
42	42.00								41.250	
44	44.00									
46	46.00									
48	48.00								47.250	

CORE PIPE®
Nominal Inside Diameter

Nominal Pipe Size	Outside Diameter O.D.	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 160	XXS
½	0.84		0.546	0.546	0.546			0.464	0.252
¾	1.05		0.742	0.742	0.742			0.612	0.434
1	1.32		0.962	0.962	0.962			0.820	0.604
1 ¼	1.66		1.278	1.278	1.278			1.160	0.896
1 ½	1.90		1.500	1.500	1.500			1.338	1.100
2	2.38		1.944	1.944	1.944			1.692	1.508
2 ½	2.88		2.328	2.328	2.328			2.130	1.776
3	3.50		2.900	2.900	2.900			2.624	2.300
3 ½	4.00		3.364	3.364	3.364			-	-
4	4.50		3.826	3.826	3.826			3.438	3.152
5	5.56		4.810	4.810	4.810			4.310	4.060
6	6.62		5.756	5.756	5.756			5.182	4.892
6	6.63		5.766	5.766	5.766			5.192	4.902
8	8.62		7.620	7.620	7.620			6.808	6.870
8	8.63		7.630	7.630	7.630			6.818	6.880
10	10.75		9.750	9.750	9.562			8.500	8.750
12	12.75		11.750	11.750	11.374			10.126	10.750
14	14.00		-	13.000	12.500			11.188	-
16	16.00		-	15.000	14.312			12.812	-
18	18.00		-	17.000	16.124			14.438	-
20	20.00		-	19.000	17.938			16.062	-
22	22.00		-	21.000	19.750			17.750	-
24	24.00		-	23.000	21.562			19.312	-
26	26.00			25.000					
28	28.00			27.000					
30	30.00			29.000					
32	32.00			31.000					
34	34.00			33.000					
36	36.00			35.000					
38	38.00								
40	40.00								
42	42.00			41.000					
44	44.00								
46	46.00								
48	48.00			47.000					

CORE PIPE®
Nominal Wall Thickness

Nominal Pipe Size	Outside Diameter O.D.	SCH 5S	SCH 10S	SCH 10	SCH 20	SCH 30	SCH 40S	SCH 40	STD	B16.5
½	0.84	.065/.057	.083/.073	-	-	-	.109/.095	.109/.095	.109/.095	
¾	1.05	.065/.057	.083/.073	-	-	-	.113/.099	.113/.099	.113/.099	
1	1.32	.065/.057	.109/.095	-	-	-	.133/.116	.133/.116	.133/.116	
1 ¼	1.66	.065/.057	.109/.095	-	-	-	.140/.122	.140/.122	.140/.122	
1 ½	1.90	.065/.057	.109/.095	-	-	-	.145/.127	.145/.127	.145/.127	
2	2.38	.065/.057	.109/.095	-	-	-	.154/.135	.154/.135	.154/.135	
2 ½	2.88	.083/.073	.120/.105	-	-	-	.203/.178	.203/.178	.203/.178	
3	3.50	.083/.073	.120/.105	-	-	-	.216/.189	.216/.189	.216/.189	
3 ½	4.00	.083/.073	.120/.105	-	-	-	.226/.198	.226/.198	.226/.198	
4	4.50	.083/.073	.120/.105	-	-	-	.237/.207	.237/.207	.237/.207	
5	5.56	.109/.095	.134/.117	-	-	-	.258/.226	.258/.226	.258/.226	
6	6.62	.109/.095	.134/.117	-	-	-	.280/.245	.280/.245	.280/.245	
8	8.63	.109/.095	.148/.130	-	.250/.219	.277/.242	.322/.282	.322/.282	.322/.282	
10	10.75	.134/.117	.165/.144	-	.250/.219	.307/.269	.365/.319	.365/.319	.365/.319	
12	12.75	.156/.136	.180/.158	-	.250/.219	.300/.289	.375/.328	.406/.355	.375/.328	
14	14.00	.156/.136	.188/.164	.250/.219	.312/.273	.375/.328	.375/.328	.438/.383	.375/.328	
16	16.00	.165/.144	.188/.164	.250/.219	.312/.273	.375/.328	.375/.328	.500/.438	.375/.328	
18	18.00	.165/.144	.188/.164	.250/.219	.312/.273	.438/.383	.375/.328	.562/.492	.375/.328	
20	20.00	.188/.164	.218/.191	.250/.219	.375/.328	.500/.438	.375/.328	.594/.520	.375/.328	
22	22.00	.188/.164	.218/.191	.252/.219	.375/.328	.500/.438	-	-	.375/.328	
24	24.00	.218/.191	.250/.219	.250/.219	.375/.328	.562/.492	.375/.328	.688/.602	.375/.328	
26	26.00	-	.312/.273	-	.500/.438	-	-	-	.375/.328	
28	28.00	-	.312/.273	-	.500/.438	.625/.547	-	-	.375/.328	
30	30.00	.250/.219	.312/.273	-	.500/.438	.625/.547	-	-	.375/.328	
32	32.00	-	.312/.273	-	.500/.438	.625/.547	-	.688/.602	.375/.328	
34	34.00	-	.312/.273	-		.625/.547	-	.750/.656	.375/.328	
36	36.00	-	.312/.273	-	-	-	-	-	.375/.328	
38	38.00	-	-	-	-	-	-	-	.375/.328	
40	40.00	-	-	-	-	-	-	-	.375/.328	
42	42.00	-	-	-	-	-	-	-	.375/.328	
44	44.00	-	-	-	-	-	-	-	.375/.328	
46	46.00	-	-	-	-	-	-	-	.375/.328	
48	48.00	-	-	-	-	-	-	-	.375/.328	

CORE PIPE®
Nominal Wall Thickness

Nominal Pipe Size	Outside Diameter O.D.	SCH 60	SCH 80S	XS	SCH 80	SCH 100	SCH 120	SCH 160	XXS
½	0.84		.147/.129	.147/.129	.147/.129			.188/.164	.294/.257
¾	1.05		.154/.135	.154/.135	.154/.135			.219/.192	.308/.270
1	1.32		.179/.157	.179/.157	.179/.157			.250/.219	.358/.313
1 ¼	1.66		.191/.167	.191/.167	.191/.167			.250/.219	.382/.334
1 ½	1.90		.200/.175	.200/.175	.200/.175			.281/.246	.400/.350
2	2.38		.218/.191	.218/.191	.218/.191			.344/.301	.436/.382
2 ½	2.88		.276/.242	.276/.242	.276/.242			.375/.328	.552/.483
3	3.50		.300/.262	.300/.262	.300/.262			.438/.383	.600/.525
3 ½	4.00		.318/.278	.318/.278	.318/.278			-	-
4	4.50		.337/.295	.337/.295	.337/.295			.531/.465	.674/.590
5	5.56		.375/.328	.375/.328	.375/.328			.625/.547	.750/.656
6	6.62		.432/.378	.432/.378	.432/.378			.719/.629	.864/.756
8	8.63		.500/.438	.500/.438	.500/.438			.906/.793	.875/.766
10	10.75		.500/.438	.500/.438	.594/.520			1.125/.984	1.000/.875
12	12.75		.500/.438	.500/.438	.688/.602			1.312/1.148	1.000/.875
14	14.00		.500/.438	.500/.438	.750/.656			1.406/1.230	-
16	16.00		.500/.438	.500/.438	.844/.738			1.594/1.395	-
18	18.00		.500/.438	.500/.438	.938/.821			1.781/1.558	-
20	20.00		.500/.438	.500/.438	1.031/.902			1.969/1.723	-
22	22.00		-	.500/.438	1.125/.984			2.125/1.859	-
24	24.00		.500/.438	.500/.438	1.219/1.067			2.344/2.051	-
26	26.00		-	.500/.438	-			-	-
28	28.00		-	.500/.438	-			-	-
30	30.00		-	.500/.438	-			-	-
32	32.00		-	.500/.438	-			-	-
34	34.00		-	.500/.438	-			-	-
36	36.00		-	.500/.438	-			-	-
38	38.00		-	.500/.438	-			-	-
40	40.00		-	.500/.438	-			-	-
42	42.00		-	.500/.438	-			-	-
44	44.00		-	.500/.438	-			-	-
46	46.00		-	.500/.438	-			-	-
48	48.00		-	.500/.438	-			-	-