

DIMENSIONS OF LONG RADIUS ELBOWS

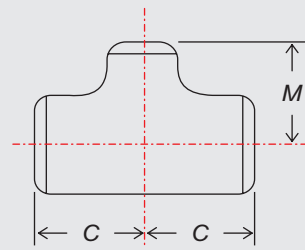
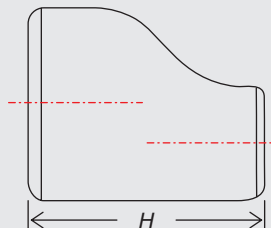
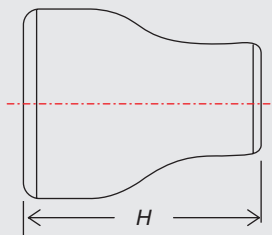
DIMENSIONS OF LONG RADIUS RETURNS

DIMENSIONS OF STRAIGHT TEES

Nominal Pipe Size (NPS)	Outside Diameter at bevel D	Center - to - Center	
		90° Elbows A	45° Elbows B
1/2	0.84	1.50	0.62
3/4	1.05	1.50	0.75
1	1.32	1.50	0.88
1 1/4	1.66	1.88	1.00
1 1/2	1.90	2.25	1.12
2	2.38	3.00	1.38
2 1/2	2.88	3.75	1.75
3	3.50	4.50	2.00
4	4.50	6.00	2.50
5	5.56	7.50	3.12
6	6.62	9.00	3.75
8	8.62	12.00	5.00
10	10.75	15.00	6.25
12	12.75	18.00	7.50
14	14.00	21.00	8.75
16	16.00	24.00	10.00
18	18.00	27.00	11.25
20	20.00	30.00	12.50
22	22.00	33.00	13.50
24	24.00	36.00	15.00

Nominal Pipe Size (NPS)	Outside Diameter at bevel D	Center-to-Center O	Back - to - Face K
3/4	1.05	3.00	2.00
1	1.32	3.00	2.19
1 1/4	1.66	3.75	2.75
1 1/2	1.90	4.50	3.25
2	2.38	6.00	4.19
2 1/2	2.88	7.50	5.19
3	3.50	9.00	6.25
4	4.50	12.00	8.25
5	5.56	15.00	10.31
6	6.62	18.00	12.31
8	8.62	24.00	16.31
10	10.75	30.00	20.38
12	12.75	36.00	24.38
14	14.00	42.00	28.00
16	16.00	48.00	32.00
18	18.00	54.00	36.00
20	20.00	60.00	40.00
22	22.00	66.00	44.00
24	24.00	72.00	48.00

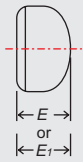
Nominal Pipe Size (NPS)	Outside Diameter at bevel D	Center - to - End	
		Run C	Outlet M
1/2	0.84	1.00	1.00
3/4	1.05	1.12	1.12
1	1.32	1.50	1.50
1 1/4	1.66	1.88	1.88
1 1/2	1.90	2.25	2.25
2	2.38	2.50	2.50
2 1/2	2.88	3.00	3.00
3	3.50	3.38	3.38
4	4.50	4.12	4.12
5	5.56	4.88	4.88
6	6.62	5.62	5.62
8	8.62	7.00	7.00
10	10.75	8.50	8.50
12	12.75	10.00	10.00
14	14.00	11.00	11.00
16	16.00	12.00	12.00
18	18.00	13.50	13.00
20	20.00	15.00	15.00
22	22.00	16.50	16.00
24	24.00	17.00	17.00



DIMENSIONS OF REDUCERS AND REDUCING TEES

Nominal Pipe Size (NPS)	Outside Diameter at Bevel D		End - to - End H	Center - to - End	
	Large End/Run	Small End/Outlet		Run C	Outlet M
			3/4 x 1/2		
1 x 3/4	1.32	1.05	2.00	1.50	1.50
1 x 1/2	1.32	0.84	2.00	1.50	1.50
1 1/4 x 1	1.66	1.32	2.00	1.88	1.88
1 1/4 x 3/4	1.66	1.05	2.00	1.88	1.88
1 1/4 x 1/2	1.66	0.84	2.00	1.88	1.88
1 1/2 x 1 1/4	1.90	1.66	2.50	2.25	2.25
1 1/2 x 1	1.90	1.32	2.50	2.25	2.25
1 1/2 x 3/4	1.90	1.05	2.50	2.25	2.25
1 1/2 x 1/2	1.90	0.84	2.50	2.25	2.25
2 x 1 1/2	2.38	1.90	3.00	2.50	2.38
2 x 1 1/4	2.38	1.66	3.00	2.50	2.25
2 x 1	2.38	1.32	3.00	2.50	2.00
2 x 3/4	2.38	1.05	3.00	2.50	1.75
2 1/2 x 2	2.88	2.38	3.50	3.00	2.75
2 1/2 x 1 1/2	2.88	1.90	3.50	3.00	2.62
2 1/2 x 1 1/4	2.88	1.66	3.50	3.00	2.50
2 1/2 x 1	2.88	1.32	3.50	3.00	2.25
3 x 2 1/2	3.50	2.88	3.50	3.38	3.25
3 x 2	3.50	2.38	3.50	3.38	3.00
3 x 1 1/2	3.50	1.90	3.50	3.38	2.88
3 x 1 1/4	3.50	1.66	3.50	3.38	2.75

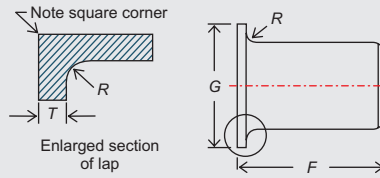
Nominal Pipe Size (NPS)	Outside Diameter at Bevel D		End - to - End H	Center - to - End	
	Large End/Run	Small End/Outlet		Run C	Outlet M
4 x 3	4.50	3.50	4.00	4.12	3.88
4 x 2 1/2	4.50	2.88	4.00	4.12	3.75
4 x 2	4.50	2.38	4.00	4.12	3.50
4 x 1 1/2	4.50	1.90	4.00	4.12	3.38
5 x 4	5.56	4.50	5.00	4.88	4.62
5 x 3	5.56	3.50	5.00	4.88	4.38
5 x 2 1/2	5.56	2.88	5.00	4.88	4.25
5 x 2	5.56	2.38	5.00	4.88	4.12
6 x 5	6.62	5.56	5.50	5.62	5.38
6 x 4	6.62	4.50	5.50	5.62	5.12
6 x 3	6.62	3.50	5.50	5.62	4.88
6 x 2 1/2	6.62	2.88	5.50	5.62	4.75
8 x 6	8.62	6.62	6.00	7.00	6.62
8 x 5	8.62	5.56	6.00	7.00	6.38
8 x 4	8.62	4.50	6.00	7.00	6.12
10 x 8	10.75	8.62	7.00	8.50	8.00
10 x 6	10.75	6.62	7.00	8.50	7.62
10 x 5	10.75	5.56	7.00	8.50	7.50
10 x 4	10.75	4.50	7.00	8.50	7.25
12 x 10	12.75	10.75	8.00	10.00	9.50
12 x 8	12.75	8.62	8.00	10.00	9.00
12 x 6	12.75	6.62	8.00	10.00	8.62
12 x 5	12.75	5.56	8.00	10.00	8.50



DIMENSIONS OF CAPS

Nominal Pipe Size (NPS)	Outside Diameter at Bevel D	Length E	Limiting Wall Thickness for Length E	Length E1
1/2	0.84	1.00	0.18	1.00
3/4	1.05	1.00	0.15	1.00
1	1.32	1.50	0.18	1.50
1 1/4	1.66	1.50	0.19	1.50
1 1/2	1.90	1.50	0.20	1.50
2	2.38	1.50	0.22	1.75
2 1/2	2.88	1.50	0.28	2.00
3	3.50	2.00	0.30	2.50
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

Length E applies for thickness not exceeding that given in column 'Limiting Wall...'.
Length E1 applies for thickness greater than that given in column 'Limiting Wall...' for NPS 24 and smaller.



DIMENSIONS OF LAP JOINT STUB ENDS

Nominal Pipe Size (NPS)	Outside Diameter at Bevel D	Long Pattern Length F	Short Pattern Length F	Radius of Fillet R	Diameter of Lap G	Outside Diameter of Barrel	
						Max.	Min.
1/2	0.84	3.00	2.00	0.12	1.38	0.896	0.809
3/4	1.05	3.00	2.00	0.12	1.69	1.106	1.019
1	1.32	4.00	2.00	0.12	2.00	1.376	1.284
1 1/4	1.66	4.00	2.00	0.19	2.50	1.716	1.629
1 1/2	1.90	4.00	2.00	0.25	2.88	1.965	1.869
2	2.38	6.00	2.50	0.31	3.62	2.456	2.344
2 1/2	2.88	6.00	2.50	0.31	4.12	2.966	2.844
3	3.50	6.00	2.50	0.38	5.00	3.596	3.469
4	4.50	6.00	3.00	0.44	6.19	4.593	4.469
5	5.56	8.00	3.00	0.44	7.31	5.683	5.532
6	6.62	8.00	3.50	0.50	8.50	6.743	6.594
8	8.62	8.00	4.00	0.50	10.62	8.743	8.594
10	10.75	10.00	5.00	0.50	12.75	10.913	10.719
12	12.75	10.00	6.00	0.50	15.00	12.913	12.719
14	14.00	12.00	6.00	0.50	16.25	14.170	13.969
16	16.00	12.00	6.00	0.50	18.50	16.180	15.969
18	18.00	12.00	6.00	0.50	21.00	18.190	17.969
20	20.00	12.00	6.00	0.50	23.00	20.240	19.969
22	22.00	12.00	6.00	0.50	25.25	22.240	21.969
24	24.00	12.00	6.00	0.50	27.25	24.240	23.969

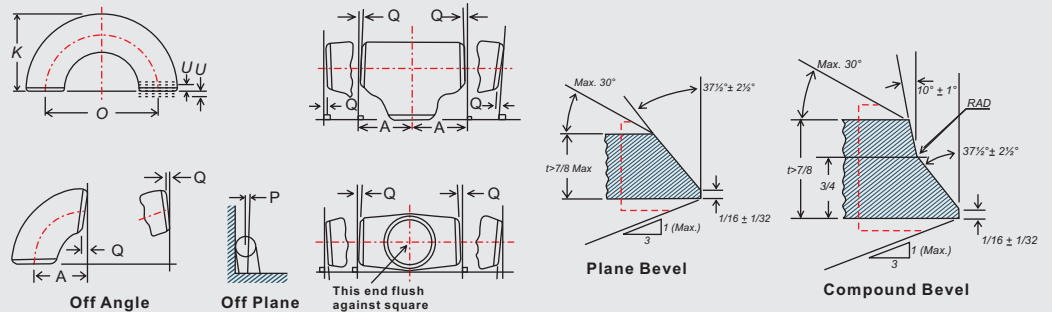
The lap thickness T shall not be less than nominal pipe wall thickness.

TOLERANCES

All Fittings				90° and 45° Elbows and Tees	Reducers and Lap Joint Stub Ends	Caps	180° Returns			Lap Joint Stub Ends	
Nominal Pipe Size (NPS)	Outside Diameter at Bevel D	Inside Diameter at End	Wall Thickness t	Center - to - End Dimension A, B, C, M	Overall Length F, H	Overall Length E	Center - to - Center Dimension O	Back - to - Face Dimension K	Alignment of Ends U	Outside Diameter of Lap G	Fillet Radius of Lap R
1/2 to 2 1/2	1	0.8	Not less than 87.5% of nominal thickness	2	2	4	7	7	1	+0-1	+0-1
3	1	1.6		2	2	4	7	7	1	+0-1	+0-1
4	+2-1	1.6		2	2	4	7	7	1	+0-1	+0-2
5 to 6	+3-1	1.6		2	2	7	7	7	1	+0-1	+0-2
8	2	1.6		2	2	7	7	7	1	+0-1	+0-2
10	+4-3	3.2		2	2	7	10	7	2	+0-2	+0-2
12 to 18	+4-3	3.2		3	3	7	10	7	2	+0-2	+0-2
20 to 24	+6-5	4.8		3	3	7	10	7	2	+0-2	+0-2

All dimensions are in mm (except NPS)

Nominal Pipe size (NPS)	Angularity Tol.	
	Off Angle Q	Off Plane P
1/2 to 4	1	2
5 to 8	2	4
10 to 12	3	5
14 to 16	3	7
18 to 24	4	10



All dimensions are in mm (except NPS)

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WROUGHT STEEL SEAMLESS BUTTWELDING FITTINGS ASME-ANSI B16.9

All dimensions are in inches unless otherwise specified