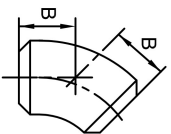


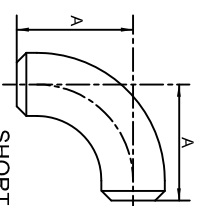
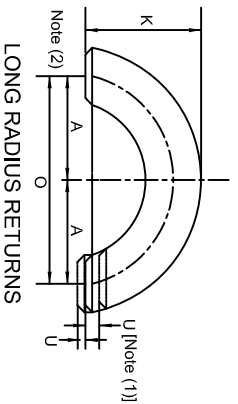
LONG RADIUS ELBOWS



Center-to-End

Nominal Pipe Size (NPS)	Outside Diameter at Bevel	90-deg Elbows, A	45-deg 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
3 1/2	4.00	5.25	2.25
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
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
50	50.00	75.00	31.00
52	52.00	78.00	32.25
54	54.00	81.00	33.50
56	56.00	84.00	34.75
58	58.00	87.00	36.00
60	60.00	90.00	37.25

GENERAL NOTE: All dimensions are in inches.



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-Center, O	Back-to-Face, K	Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End, A
1/2	0.84	3.00	1.88	1	1.32	1.00
3/4	1.05	3.00	2.00	1 1/4	1.66	1.25
1	1.32	3.00	2.19	1 1/2	1.90	1.50
1 1/4	1.66	3.75	2.75	2	2.38	2.00
1 1/2	1.90	4.50	3.25	2 1/2	2.88	2.50
2	2.38	6.00	4.19	3	3.50	3.00
2 1/2	2.88	7.50	5.19	3 1/2	4.00	3.50
3	3.50	9.00	6.25	4	4.50	4.00
3 1/2	4.00	10.50	7.25	5	5.56	5.00
4	4.50	12.00	8.25	6	6.62	6.00
5	5.56	15.00	10.31	8	8.62	8.00
6	6.62	18.00	12.31	10	10.75	10.00
8	8.62	24.00	16.31	12	12.75	12.00
10	10.75	30.00	20.38	14	14.00	14.00
12	12.75	36.00	24.38	16	16.00	16.00
14	14.00	42.00	28.00	18	18.00	18.00
16	16.00	48.00	32.00	20	20.00	20.00
18	18.00	54.00	36.00	22	22.00	22.00
20	20.00	60.00	40.00	24	24.00	24.00
22	22.00	66.00	44.00			
24	24.00	72.00	48.00			

GENERAL NOTE: All dimensions are in inches.

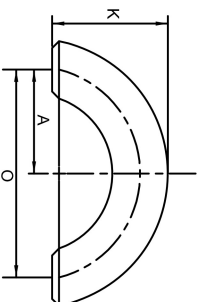
NOTES:

(1) See Table I-12 for tolerance for alignment of ends U.

(2) Dimension A is equal to one-half of dimension O.

GENERAL NOTE: All dimensions are in inches.

SHORT RADIUS 180-DEG RETURNS



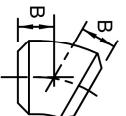
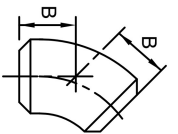
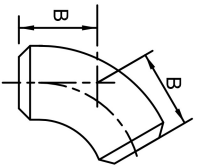
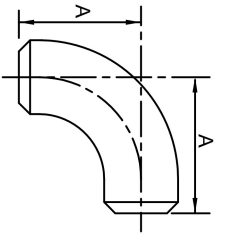
Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-Center, O	Back-to-Face, K
1	1.32	2.00	1.62
1 1/4	1.66	2.50	2.06
1 1/2	1.90	3.00	2.44
2	2.38	4.00	3.19
2 1/2	2.88	5.00	3.94
3	3.50	6.00	4.75
3 1/2	4.00	7.00	5.50
4	4.50	8.00	6.25
5	5.56	10.00	7.75
6	6.62	12.00	9.31
8	8.62	16.00	12.31
10	10.75	20.00	15.38
12	12.75	24.00	18.38
14	14.00	28.00	21.00
16	16.00	32.00	24.00
18	18.00	36.00	27.00
20	20.00	40.00	30.00
22	22.00	44.00	33.00
24	24.00	48.00	36.00

GENERAL NOTES:

- (a) All dimensions are in inches.
- (2) Dimension A is equal to one-half of dimension O.

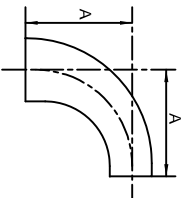


3R ELBOWS



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End			
		90-deg Elbows, A	60-deg Elbows, B	45-deg Elbows, B	30-deg Elbows, B
3/4	1.05	2.25		0.94	
1	1.32	3.00		1.25	
1 1/4	1.66	3.75		1.56	
1 1/2	1.90	4.50		1.88	
2	2.38	6.00		2.50	
2 1/2	2.88	7.50		3.12	
3	3.50	9.00		3.75	
3 1/2	4.00	10.50		4.38	
4	4.50	12.00		5.00	
5	5.56	15.00		6.19	
6	6.62	18.00		7.44	
8	8.62	24.00		9.94	
10	10.75	30.00		12.44	
12	12.75	36.00		14.88	
14	14.00	42.00		17.38	
16	16.00	48.00	27.69	19.88	12.88
18	18.00	54.00	31.18	22.38	14.44
20	20.00	60.00	34.62	24.88	16.06
22	22.00	66.00	38.12	27.31	17.69
24	24.00	72.00	41.62	29.81	19.31
26	26.00	78.00	45.00	32.31	20.88
28	28.00	84.00	48.50	34.75	22.50
30	30.00	90.00	52.00	37.25	24.06
32	32.00	96.00	55.44	39.75	25.75
34	34.00	102.00	58.94	42.25	27.38
36	36.00	108.00	62.44	44.69	28.94
38	38.00	114.00	65.88	47.25	30.56
40	40.00	120.00	69.25	49.75	32.19
42	42.00	126.00	72.75	52.19	33.75
44	44.00	132.00	76.25	54.69	35.38
46	46.00	138.00	79.69	57.19	37.00
48	48.00	144.00	83.19	59.69	38.62
50	50.00	150.00	86.62	62.12	40.19
52	52.00	156.00	90.06	64.62	41.81
54	54.00	162.00	93.50	67.12	43.44
56	56.00	168.00	97.00	69.56	45.00
58	58.00	174.00	100.44	72.06	46.62
60	60.00	180.00	103.94	74.56	48.25

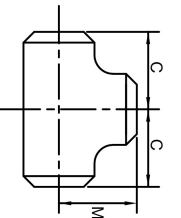
GENERAL NOTE: All dimensions are in inches.



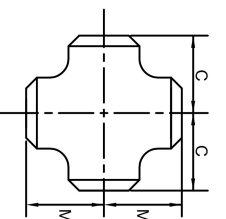
LONG RADIUS REDUCING ELBOWS

Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center- to- end, A	Nominal Pipe Size (NPS)	Outside Diameter at Bevel		Center- to- End, A
	Large End	Small End			Large End	Small End	
2 x 1 1/2	2.38	1.90	3.00	10 x 8	10.75	8.62	15.00
2 x 1 1/4	2.38	1.66	3.00	10 x 6	10.75	6.62	15.00
2 x 1	2.38	1.32	3.00	10 x 5	10.75	5.56	15.00
2 1/2 x 2	2.88	2.38	3.75	12 x 10	12.75	10.75	18.00
2 1/2 x 1 1/2	2.88	1.90	3.75	12 x 8	12.75	8.62	18.00
2 1/2 x 1 1/4	2.88	1.66	3.75	12 x 6	12.75	6.62	18.00
3 x 2 1/2	3.50	2.88	4.50	14 x 12	14.00	12.75	21.00
3 x 2	3.50	2.38	4.50	14 x 10	14.00	10.75	21.00
3 x 1 1/2	3.50	1.90	4.50	14 x 8	14.00	8.62	21.00
3 1/2 x 3	4.00	3.50	5.25	16 x 14	16.00	14.00	24.00
3 1/2 x 2 1/2	4.00	2.88	5.25	16 x 12	16.00	12.75	24.00
3 1/2 x 2	4.00	2.38	5.25	16 x 10	16.00	10.75	24.00
4 x 3 1/2	4.50	4.00	6.00	18 x 16	18.00	16.00	27.00
4 x 3	4.50	3.50	6.00	18 x 14	18.00	14.00	27.00
4 x 2 1/2	4.50	2.88	6.00	18 x 12	18.00	12.75	27.00
4 x 2	4.50	2.38	6.00	18 x 10	18.00	10.75	27.00
5 x 4	5.56	4.50	7.50	20 x 18	20.00	18.00	30.00
5 x 3 1/2	5.56	4.00	7.50	20 x 16	20.00	16.00	30.00
5 x 3	5.56	3.50	7.50	20 x 14	20.00	14.00	30.00
5 x 2 1/2	5.56	2.88	7.50	20 x 12	20.00	12.75	30.00
6 x 5	6.62	5.56	9.00	20 x 10	20.00	10.75	30.00
6 x 4	6.62	4.50	9.00	24 x 22	24.00	22.00	36.00
6 x 3 1/2	6.62	4.00	9.00	24 x 20	24.00	20.00	36.00
6 x 3	6.62	3.50	9.00	24 x 18	24.00	18.00	36.00
8 x 6	8.62	6.62	12.00	24 x 16	24.00	16.00	36.00
8 x 5	8.62	5.56	12.00	24 x 14	24.00	14.00	36.00
8 x 4	8.62	4.50	12.00	24 x 12	24.00	12.75	36.00

GENERAL NOTE: All dimensions are in inches.



TEES AND CROSSES



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Run, C	Center-to-End	Outlet, M [Notes (1) and (2)]
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
3 1/2	4.00	3.75		3.75
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		13.50
20	20.00	15.00		15.00
22	22.00	16.50		16.50
24	24.00	17.00		17.00
26	26.00	19.50		19.50
28	28.00	20.50		20.50
30	30.00	22.00		22.00
32	32.00	23.50		23.50
34	34.00	25.00		25.00
36	36.00	26.50		26.50
38	38.00	28.00		28.00
40	40.00	29.50		29.50
42	42.00	30.00		28.00
44	44.00	32.00		30.00
46	46.00	33.50		31.50
48	48.00	35.00		33.00
50	50.00	36.75		34.50
52	52.00	38.50		35.75
54	54.00	40.00		37.25
56	56.00	41.50		38.50
58	58.00	43.00		40.00
60	60.00	44.00		41.50

GENERAL NOTE: All dimensions are in inches.

NOTES:

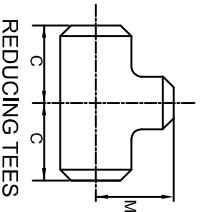
(1) Outlet dimension M for NPS 26 and larger is recommended but not required.

(2) Dimension applicable to crosses NPS 24 and smaller.



ALLIED GROUP

REDUCING TEES



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End		Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Center-to-End		
		Run, C	Outlet, M [Notes (1)]			Run, C	Outlet, M [Notes (1)]	
1/2 x 1/2 x 3/8	0.84	0.68	1.00	5 x 5 x 4	5.56	4.50	4.88	4.62
1/2 x 1/2 x 1/4	0.84	0.54	1.00	5 x 5 x 3 1/2	5.56	4.00	4.88	4.50
3/4 x 3/4 x 1/2	1.05	0.84	1.12	5 x 5 x 3	5.56	3.50	4.88	4.38
3/4 x 3/4 x 3/8	1.05	0.68	1.12	5 x 5 x 2 1/2	5.56	2.88	4.88	4.25
1 x 1 x 3/4	1.32	1.05	1.50	5 x 5 x 2	5.56	2.38	4.88	4.12
1 x 1 x 1/2	1.32	0.84	1.50	6 x 6 x 5	6.62	5.56	5.62	5.38
1 1/4 x 1 1/4 x 1	1.66	1.32	1.88	6 x 6 x 4	6.62	4.50	5.62	5.12
1 1/4 x 1 1/4 x 3/4	1.66	1.05	1.88	6 x 6 x 3 1/2	6.62	4.00	5.62	5.00
1 1/4 x 1 1/4 x 1/2	1.66	0.84	1.88	6 x 6 x 3	6.62	3.50	5.62	4.88
1 1/2 x 1 1/2 x 1 1/4	1.90	1.66	2.25	6 x 6 x 2 1/2	6.62	2.88	5.62	4.75
1 1/2 x 1 1/2 x 1	1.90	1.32	2.25	8 x 8 x 6	8.62	6.62	7.00	6.62
1 1/2 x 1 1/2 x 3/4	1.90	1.05	2.25	8 x 8 x 5	8.62	5.56	7.00	6.38
1 1/2 x 1 1/2 x 1/2	1.90	0.84	2.25	8 x 8 x 4	8.62	4.50	7.00	6.12
2 x 2 x 1 1/2	2.38	1.90	2.50	8 x 8 x 3 1/2	8.62	4.00	7.00	6.00
2 x 2 x 1 1/4	2.38	1.66	2.50	10 x 10 x 8	10.75	8.62	8.50	8.00
2 x 2 x 1	2.38	1.32	2.50	10 x 10 x 6	10.75	6.62	8.50	7.62
2 x 2 x 3/4	2.38	1.05	2.50	10 x 10 x 5	10.75	5.56	8.50	7.50
2 1/2 x 2 1/2 x 2	2.88	2.38	3.00	10 x 10 x 4	10.75	4.50	8.50	7.25
2 1/2 x 2 1/2 x 1 1/2	2.88	1.90	3.00	12 x 12 x 10	12.75	10.75	10.00	9.50
2 1/2 x 2 1/2 x 1 1/4	2.88	1.66	3.00	12 x 12 x 8	12.75	8.62	10.00	9.00
2 1/2 x 2 1/2 x 1	2.88	1.32	3.00	12 x 12 x 6	12.75	6.62	10.00	8.62
3 x 3 x 2 1/2	3.50	2.88	3.38	12 x 12 x 5	12.75	5.56	10.00	8.50
3 x 3 x 2	3.50	2.38	3.38	14 x 14 x 12	14.00	12.75	11.00	10.62
3 x 3 x 1 1/2	3.50	1.90	3.38	14 x 14 x 10	14.00	10.75	11.00	10.12
3 x 3 x 1 1/4	3.50	1.66	3.38	14 x 14 x 8	14.00	8.62	11.00	9.75
3 1/2 x 3 1/2 x 3	4.00	3.50	3.75	14 x 14 x 6	14.00	6.62	11.00	9.38
3 1/2 x 3 1/2 x 2 1/2	4.00	2.88	3.75	16 x 16 x 14	16.00	14.00	12.00	12.00
3 1/2 x 3 1/2 x 2	4.00	2.38	3.75	16 x 16 x 12	16.00	12.75	12.00	11.62
3 1/2 x 3 1/2 x 1 1/2	4.00	1.90	3.75	16 x 16 x 10	16.00	10.75	12.00	11.12
4 x 4 x 3 1/2	4.50	4.00	4.12	16 x 16 x 8	16.00	8.62	12.00	10.75
4 x 4 x 3	4.50	3.50	4.12	16 x 15 x 6	16.00	6.62	12.00	10.38
4 x 4 x 2 1/2	4.50	2.88	4.12	18 x 18 x 16	18.00	16.00	13.50	13.00
4 x 4 x 2	4.50	2.38	4.12	18 x 18 x 14	18.00	14.00	13.50	13.00
4 x 4 x 1 1/2	4.50	1.90	4.12	18 x 18 x 12	18.00	12.75	13.50	12.62
				18 x 18 x 10	18.00	10.75	13.50	12.12
				18 x 18 x 8	18.00	8.62	13.50	11.75

GENERAL NOTE: All dimensions are in inches.

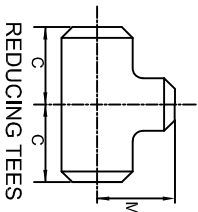
NOTES:

(1) Outlet dimension M for run sizes 14 and larger is recommended but not required.



ALLIED GROUP

REDUCING TEES



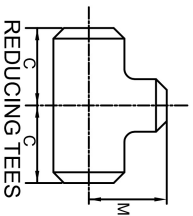
Nominal Pipe Size (NPS)	Run	Outside Diameter at Bevel	Outlet	Center-to-End		Nominal Pipe Size (NPS)	Run	Outside Diameter at Bevel	Outlet	Center-to-End	
				Run, C	Outlet, M [Note (1)]					Run, C	Outlet, M [Note (1)]
20 x 20 x 18	20.00	18.00	15.00	14.50	30 x 30 x 18	30.00	18.00	22.00	19.50		
20 x 20 x 16	20.00	16.00	15.00	14.00	30 x 30 x 16	30.00	16.00	22.00	19.00		
20 x 20 x 14	20.00	14.00	15.00	14.00	30 x 30 x 14	30.00	14.00	22.00	19.00		
20 x 20 x 12	20.00	12.75	15.00	13.62	30 x 30 x 12	30.00	12.75	22.00	18.62		
20 x 20 x 10	20.00	10.75	15.00	13.12	30 x 30 x 10	30.00	10.75	22.00	18.12		
20 x 20 x 8	20.00	8.62	15.00	12.75	32 x 32 x 30	32.00	30.00	23.50	23		
22 x 22 x 20	22.00	20.00	16.50	15.00	32 x 32 x 28	32.00	28.00	23.50	22.50		
22 x 22 x 18	22.00	18.00	16.50	15.50	32 x 32 x 26	32.00	26.00	23.50	22.50		
22 x 22 x 16	22.00	16.00	16.50	15.00	32 x 32 x 24	32.00	24.00	23.50	22.00		
22 x 22 x 14	22.00	14.00	16.50	15.00	32 x 32 x 22	32.00	22.00	23.50	21.50		
22 x 22 x 12	22.00	12.75	16.50	14.62	32 x 32 x 20	32.00	20.00	23.50	21.00		
22 x 22 x 10	22.00	10.75	16.50	14.12	32 x 32 x 18	32.00	18.00	23.50	20.50		
24 x 24 x 22	24.00	22.00	17.00	17.00	32 x 32 x 16	32.00	16.00	23.50	20.00		
24 x 24 x 20	24.00	20.00	17.00	17.00	32 x 32 x 14	32.00	14.00	23.50	20.00		
24 x 24 x 18	24.00	18.00	17.00	16.50	34 x 34 x 32	34.00	32.00	25.00	24.50		
24 x 24 x 16	24.00	16.00	17.00	15.00	34 x 34 x 30	34.00	30.00	25.00	24.00		
24 x 24 x 14	24.00	14.00	17.00	15.00	34 x 34 x 28	34.00	28.00	25.00	23.50		
24 x 24 x 12	24.00	12.75	17.00	15.62	34 x 34 x 26	34.00	26.00	25.00	23.50		
24 x 24 x 10	24.00	10.75	17.00	15.12	34 x 34 x 24	34.00	24.00	25.00	23.00		
26 x 26 x 24	26.00	24.00	19.50	19.00	34 x 34 x 22	34.00	22.00	25.00	22.50		
26 x 26 x 22	26.00	22.00	19.50	18.50	34 x 34 x 20	34.00	20.00	25.00	22.00		
26 x 26 x 20	26.00	20.00	19.50	18.00	34 x 34 x 18	34.00	18.00	25.00	21.50		
26 x 26 x 18	26.00	18.00	19.50	17.50	34 x 34 x 16	34.00	16.00	25.00	21.00		
26 x 26 x 16	26.00	16.00	19.50	17.00	36 x 36 x 34	36.00	34.00	26.50	26.00		
26 x 26 x 14	26.00	14.00	19.50	17.00	36 x 36 x 32	36.00	32.00	26.50	25.50		
26 x 26 x 12	26.00	12.75	19.50	16.62	36 x 36 x 30	36.00	30.00	26.50	25.00		
28 x 28 x 26	28.00	26.00	20.50	20.50	36 x 36 x 28	36.00	28.00	26.50	24.50		
28 x 28 x 24	28.00	24.00	20.50	20.00	36 x 36 x 26	36.00	26.00	26.50	24.50		
28 x 28 x 22	28.00	22.00	20.50	19.50	36 x 36 x 24	36.00	24.00	26.50	24.00		
28 x 28 x 20	28.00	20.00	20.50	19.00	36 x 36 x 22	36.00	22.00	26.50	23.50		
28 x 28 x 18	28.00	18.00	20.50	18.50	36 x 36 x 20	36.00	20.00	26.50	23.00		
28 x 28 x 16	28.00	16.00	20.50	18.00	36 x 36 x 18	36.00	18.00	26.50	22.50		
28 x 28 x 14	28.00	14.00	20.50	18.00	36 x 36 x 16	36.00	16.00	26.50	22.00		
28 x 28 x 12	28.00	12.75	20.50	17.62	38 x 38 x 36	38.00	36.00	28.00	28.00		
30 x 30 x 28	30.00	28.00	22.00	21.50	38 x 38 x 34	38.00	34.00	28.00	27.50		
30 x 30 x 26	30.00	26.00	22.00	21.00	38 x 38 x 32	38.00	32.00	28.00	27.00		
30 x 30 x 24	30.00	24.00	22.00	21.00	38 x 38 x 30	38.00	30.00	28.00	26.50		
30 x 30 x 22	30.00	22.00	22.00	20.50	38 x 38 x 30	38.00	30.00	28.00	26.50		
30 x 30 x 20	30.00	20.00	22.00	20.00	38 x 38 x 28	38.00	28.00	28.00	25.50		

(Cont'd)

GENERAL NOTE: All dimensions are in inches.

NOTES:

(1) Outlet dimension M for run sizes 14 and larger is recommended but not required.



REDUCING TEES

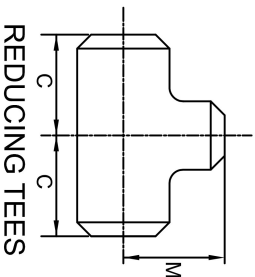
(Cont'd)

Nominal Pipe Size (NPS)	Run	Outside Diameter at Bevel	Outlet	Center-to-End Run, C	Outlet, M [Note (1)]	Nominal Pipe Size (NPS)	Run	Outside Diameter at Bevel	Outlet	Center-to-End Run, C	Outlet, M [Note (1)]
38 x 38 x 26	38.00		26.00	28.00	25.50	44 x 44 x 30	44.00	30.00	32.00		28.00
38 x 38 x 24	38.00		24.00	28.00	25.00	44 x 44 x 28	44.00	28.00	32.00		27.50
38 x 38 x 22	38.00		22.00	28.00	24.50	44 x 44 x 26	44.00	26.00	32.00		27.50
38 x 38 x 20	38.00		20.00	28.00	24.00	44 x 44 x 24	44.00	24.00	32.00		27.50
38 x 38 x 18	38.00		18.00	28.00	23.50	44 x 44 x 22	44.00	22.00	32.00		27.00
40 x 40 x 38	40.00		38.00	29.50	29.50	44 x 44 x 20	44.00	20.00	32.00		27.00
40 x 40 x 36	40.00		36.00	29.50	29.00	46 x 46 x 44	46.00	44.00	33.50		31.50
40 x 40 x 34	40.00		34.00	29.50	28.50	46 x 46 x 42	46.00	42.00	33.50		31.00
40 x 40 x 32	40.00		32.00	29.50	28.00	46 x 46 x 40	46.00	40.00	33.50		30.50
40 x 40 x 30	40.00		30.00	29.50	27.50	46 x 46 x 38	46.00	38.00	33.50		30.00
40 x 40 x 28	40.00		28.00	29.50	26.50	46 x 46 x 36	46.00	36.00	33.50		30.00
40 x 40 x 26	40.00		26.00	29.50	26.50	46 x 46 x 34	46.00	34.00	33.50		29.50
40 x 40 x 24	40.00		24.00	29.50	26.00	46 x 46 x 32	46.00	32.00	33.50		29.50
40 x 40 x 22	40.00		22.00	29.50	25.50	46 x 46 x 30	46.00	30.00	33.50		29.00
40 x 40 x 20	40.00		20.00	29.50	25.00	46 x 46 x 28	46.00	28.00	33.50		29.00
40 x 40 x 18	40.00		18.00	29.50	24.50	46 x 46 x 26	46.00	26.00	33.50		29.00
42 x 42 x 40	42.00		40.00	30.00	28.00	46 x 46 x 24	46.00	24.00	33.50		28.50
42 x 42 x 38	42.00		38.00	30.00	28.00	46 x 46 x 22	46.00	22.00	33.50		28.50
42 x 42 x 36	42.00		36.00	30.00	28.00						
42 x 42 x 34	42.00		34.00	30.00	28.00	48 x 48 x 46	48.00	46.00	35.00		33.00
42 x 42 x 32	42.00		32.00	30.00	28.00	48 x 48 x 44	48.00	44.00	35.00		33.00
42 x 42 x 30	42.00		30.00	30.00	28.00	48 x 48 x 42	48.00	42.00	35.00		32.00
42 x 42 x 28	42.00		28.00	30.00	27.50	48 x 48 x 40	48.00	40.00	35.00		32.00
42 x 42 x 26	42.00		26.00	30.00	27.50	48 x 48 x 38	48.00	38.00	35.00		32.00
42 x 42 x 24	42.00		24.00	30.00	26.00	48 x 48 x 36	48.00	36.00	35.00		31.00
42 x 42 x 22	42.00		22.00	30.00	26.00	48 x 48 x 34	48.00	34.00	35.00		31.00
42 x 42 x 20	42.00		20.00	30.00	26.00	48 x 48 x 32	48.00	32.00	35.00		31.00
42 x 42 x 18	42.00		18.00	30.00	25.50	48 x 48 x 30	48.00	30.00	35.00		30.00
42 x 42 x 16	42.00		16.00	30.00	25.00	48 x 48 x 28	48.00	28.00	35.00		30.00
44 x 44 x 42	44.00		42.00	32.00	30.00	48 x 48 x 26	48.00	26.00	35.00		30.00
44 x 44 x 40	44.00		40.00	32.00	29.50	48 x 48 x 24	48.00	24.00	35.00		29.00
44 x 44 x 38	44.00		38.00	32.00	29.00	48 x 48 x 22	48.00	22.00	35.00		29.00
44 x 44 x 36	44.00		36.00	32.00	28.50	48 x 48 x 20	48.00	20.00	35.00		29.00
44 x 44 x 34	44.00		34.00	32.00	28.50	48 x 48 x 18	48.00	18.00	35.00		28.50
44 x 44 x 32	44.00		32.00	32.00	28.00	48 x 48 x 16	48.00	16.00	35.00		28.00

GENERAL NOTE: All dimensions are in inches.

NOTES:

(1) Outlet dimension M for run sizes 14 and larger is recommended but not required.



REDUCING TEES

(Cont'd)

Nominal Pipe Size (NPS)	Run	Outside Diameter at Bevel	Outlet	Center-to-End Run C	Outlet-M [Note (1)]	Nominal Pipe Size (NPS)	Run	Outside Diameter at Bevel	Outlet	Center-to-End Run C	Outlet-M [Note (1)]
50 x 50 x 48	50.00	48.00	48.00	36.75	34.50	56 x 56 x 54	56.00	54.00	41.50	38.50	
50 x 50 x 42	50.00	42.00	42.00	36.75	33.00	56 x 56 x 48	56.00	48.00	41.50	37.00	
50 x 50 x 36	50.00	36.00	36.00	36.75	32.50	56 x 56 x 42	56.00	42.00	41.50	36.50	
50 x 50 x 30	50.00	30.00	30.00	36.75	31.50	56 x 56 x 36	56.00	36.00	41.50	35.50	
50 x 50 x 24	50.00	24.00	24.00	36.75	30.00	56 x 56 x 30	56.00	30.00	41.50	33.75	
50 x 50 x 20	50.00	20.00	20.00	36.75	30.00	56 x 56 x 24	56.00	24.00	41.50	33.75	
52 x 52 x 50	52.00	50.00	50.00	38.50	35.75	58 x 58 x 56	58.00	56.00	43.00	40.00	
52 x 52 x 48	52.00	48.00	48.00	38.50	35.75	58 x 58 x 54	58.00	54.00	43.00	40.00	
52 x 52 x 42	52.00	42.00	42.00	38.50	34.50	58 x 58 x 48	58.00	48.00	43.00	38.50	
52 x 52 x 36	52.00	36.00	36.00	38.50	34.00	58 x 58 x 42	58.00	42.00	43.00	37.50	
52 x 52 x 30	52.00	30.00	30.00	38.50	32.75	58 x 58 x 36	58.00	36.00	43.00	36.50	
52 x 52 x 24	52.00	24.00	24.00	38.50	31.25	58 x 58 x 30	58.00	30.00	43.00	35.00	
54 x 54 x 52	54.00	52.00	52.00	40.00	37.25	60 x 60 x 58	60.00	58.00	44.00	41.50	
54 x 54 x 48	54.00	48.00	48.00	40.00	37.25	60 x 60 x 54	60.00	54.00	44.00	40.50	
54 x 54 x 42	54.00	42.00	42.00	40.00	35.63	60 x 60 x 48	60.00	48.00	44.00	40.00	
54 x 54 x 36	54.00	36.00	36.00	40.00	35.00	60 x 60 x 42	60.00	42.00	44.00	39.00	
54 x 54 x 30	54.00	30.00	30.00	40.00	34.00	60 x 60 x 36	60.00	36.00	44.00	38.00	
54 x 54 x 24	54.00	24.00	24.00	40.00	31.38	60 x 60 x 30	60.00	30.00	44.00	36.00	

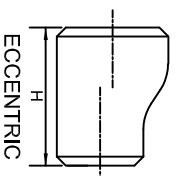
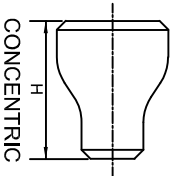
GENERAL NOTE: All dimensions are in inches.

NOTE:

(1) Outlet dimension M is recommended but not mandatory (consult fitting manufacturer).



REDUCERS



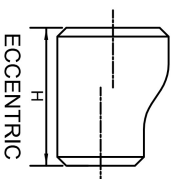
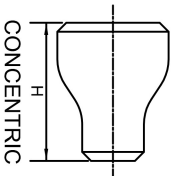
Nominal Pipe Size (NPS)	Outside Diameter at Bevel			End-to-End, H	Nominal Pipe Size (NPS)	Outside Diameter at Bevel		
	Large End	Small End	End-to-End, H			Large End	Small End	End-to-End, H
3/4 x 1/2	1.05	0.84	1.50	5 x 4	5.56	4.50	5.00	
3/4 x 3/8	1.05	0.68	1.50	5 x 3 1/2	5.56	4.00	5.00	
1 x 3/4	1.32	1.05	2.00	5 x 3	5.56	3.50	5.00	
1 x 1/2	1.32	0.84	2.00	5 x 2 1/2	5.56	2.88	5.00	
1 1/4 x 1	1.66	1.32	2.00	5 X 2	5.56	2.38	5.00	
1 1/4 x 3/4	1.66	1.05	2.00	6 X 5	6.62	5.56	5.50	
1 1/4 x 1/2	1.66	0.84	2.00	6 X 4	6.62	4.50	5.50	
1 1/2 x 1 1/4	1.90	1.66	2.50	6 X 3 1/2	6.62	4.00	5.50	
1 1/2 x 1	1.90	1.32	2.50	6 X 3	6.62	3.50	5.50	
1 1/2 x 3/4	1.90	1.05	2.50	6 X 2 1/2	6.62	2.88	5.50	
1 1/2 x 1/2	1.90	0.84	2.50	8 X 6	8.62	6.62	6.00	
2 x 1 1/2	2.38	1.90	3.00	8 X 5	8.62	5.56	6.00	
2 x 1 1/4	2.38	1.66	3.00	8 x 4	8.62	4.50	6.00	
2 x 1	2.38	1.32	3.00	8 x 3 1/2	8.62	4.00	6.00	
2 x 3/4	2.38	1.05	3.00	10 x 8	10.75	8.62	7.00	
2 1/2 x 2	2.88	2.38	3.50	10 x 6	10.75	6.62	7.00	
2 1/2 x 1 1/2	2.88	1.90	3.50	10 x 5	10.75	5.56	7.00	
2 1/2 x 1 1/4	2.88	1.66	3.50	10 x 4	10.75	4.50	7.00	
2 1/2 x 1	2.88	1.32	3.50	12 x 10	12.75	10.75	8.00	
3 x 2 1/2	3.50	2.88	3.50	12 x 8	12.75	8.62	8.00	
3 x 2	3.50	2.38	3.50	12 x 6	12.75	6.62	8.00	
3 x 1 1/2	3.50	1.90	3.50	12 x 5	12.75	5.56	8.00	
3 x 1 1/4	3.50	1.66	3.50	14 x 12	14.00	12.75	13.00	
3 1/2 x 3	4.00	3.50	4.00	14 x 10	14.00	10.75	13.00	
3 1/2 x 2 1/2	4.00	2.88	4.00	14 x 8	14.00	8.62	13.00	
3 1/2 x 2	4.00	2.38	4.00	14 x 6	14.00	6.62	13.00	
3 1/2 x 1 1/2	4.00	1.90	4.00	16 x 14	16.00	14.00	14.00	
3 1/2 x 1 1/4	4.00	1.66	4.00	16 x 12	16.00	12.75	14.00	
4 x 3 1/2	4.50	4.00	4.00	16 x 10	16.00	10.75	14.00	
4 x 3	4.50	3.50	4.00	16 x 8	16.00	8.62	14.00	
4 x 2 1/2	4.50	2.88	4.00	18 x 16	18.00	16.00	15.00	
4 x 2	4.50	2.38	4.00	18 x 14	18.00	14.00	15.00	
4 x 1 1/2	4.50	1.90	4.00	18 x 12	18.00	12.75	15.00	
				18 x 10	18.00	10.75	15.00	

GENERAL NOTE:

- (a) All dimensions are in inches
- (b) While the figure illustrates a bell-shaped reducer, the use of a conical reducer is not prohibited.



REDUCERS

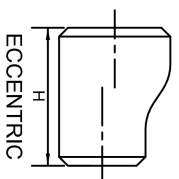
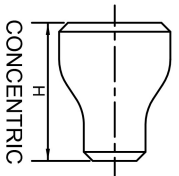


Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End-to-End, H	Nominal Pipe Size (NPS)	Outside Diameter at Bevel		End-to-End, H
	Large End	Small End			Large End	Small End	
20 x 18	20.00	18.00	20.00	38 x 36	38.00	36.00	24.00
20 x 16	20.00	16.00	20.00	38 x 34	38.00	34.00	24.00
20 x 14	20.00	14.00	20.00	38 x 32	38.00	32.00	24.00
20 x 12	20.00	12.75	20.00	38 x 30	38.00	30.00	24.00
22 x 20	22.00	20.00	20.00	38 x 28	38.00	28.00	24.00
22 x 18	22.00	18.00	20.00	38 x 26	38.00	26.00	24.00
22 x 16	22.00	16.00	20.00	38 x 24	38.00	24.00	24.00
22 x 14	22.00	14.00	20.00	38 x 22	38.00	22.00	24.00
24 x 20	24.00	20.00	20.00	38 x 20	38.00	20.00	24.00
24 x 18	24.00	18.00	20.00	40 x 38	40.00	38.00	24.00
24 x 16	24.00	16.00	20.00	40 x 36	40.00	36.00	24.00
26 x 24	26.00	24.00	24.00	40 x 34	40.00	34.00	24.00
26 x 22	26.00	24.00	24.00	40 x 32	40.00	32.00	24.00
26 x 20	26.00	20.00	24.00	40 x 30	40.00	30.00	24.00
26 x 18	26.00	18.00	24.00	40 x 28	40.00	28.00	24.00
28 x 26	28.00	26.00	24.00	40 x 26	40.00	26.00	24.00
28 x 24	28.00	24.00	24.00	40 x 24	40.00	24.00	24.00
28 x 22	28.00	22.00	24.00	40 x 22	40.00	22.00	24.00
28 x 20	28.00	20.00	24.00	40 x 20	40.00	20.00	24.00
28 x 18	28.00	18.00	24.00	42 x 40	42.00	40.00	24.00
30 x 28	30.00	28.00	24.00	42 x 38	42.00	38.00	24.00
30 x 26	30.00	26.00	24.00	42 x 36	42.00	36.00	24.00
30 x 24	30.00	24.00	24.00	42 x 34	42.00	34.00	24.00
30 x 22	30.00	22.00	24.00	42 x 32	42.00	32.00	24.00
30 x 20	30.00	20.00	24.00	42 x 30	42.00	30.00	24.00
32 x 30	32.00	30.00	24.00	42 x 28	42.00	28.00	24.00
32 x 28	32.00	28.00	24.00	42 x 26	42.00	26.00	24.00
32 x 26	32.00	26.00	24.00	42 x 24	42.00	24.00	24.00
32 x 24	32.00	24.00	24.00	42 x 22	42.00	22.00	24.00
34 x 32	34.00	32.00	24.00	44 x 42	44.00	42.00	24.00
34 x 30	34.00	30.00	24.00	44 x 40	44.00	40.00	24.00
34 x 28	34.00	28.00	24.00	44 x 38	44.00	38.00	24.00
34 x 26	34.00	26.00	24.00	44 x 36	44.00	36.00	24.00
34 x 24	34.00	24.00	24.00	44 x 34	44.00	34.00	24.00
36 x 34	36.00	34.00	24.00	44 x 32	44.00	32.00	24.00
36 x 32	36.00	32.00	24.00	44 x 30	44.00	30.00	24.00
36 x 30	36.00	30.00	24.00	44 x 28	44.00	28.00	24.00
36 x 28	36.00	28.00	24.00	44 x 26	44.00	26.00	24.00
36 x 26	36.00	26.00	24.00	44 x 24	44.00	24.00	24.00
36 x 24	36.00	24.00	24.00	44 x 22	44.00	22.00	24.00

GENERAL NOTE:

- (a) All dimensions are in inches
- (b) While the figure illustrates a bell-shaped reducer, the use of a conical reducer is not prohibited.

REDUCERS



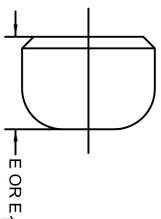
Nominal Pipe Size (NPS)	Outside Diameter at Bevel			End-to-End H	Nominal Pipe Size (NPS)	Outside Diameter at Bevel			End-to-End H
	Large End	Small End	Small End			Large End	Small End	Small End	
46 x 44	46.00	44.00	44.00	28.00	52 x 50	52.00	50.00	50.00	28.00
46 x 42	46.00	42.00	42.00	28.00	52 x 48	52.00	48.00	48.00	28.00
46 x 40	46.00	40.00	40.00	28.00	52 x 42	52.00	42.00	42.00	28.00
46 x 38	46.00	38.00	38.00	28.00	52 x 36	52.00	36.00	36.00	28.00
46 x 36	46.00	36.00	36.00	28.00	52 x 30	52.00	30.00	30.00	28.00
46 x 34	46.00	34.00	34.00	28.00	52 x 24	52.00	24.00	24.00	28.00
46 x 32	46.00	32.00	32.00	28.00					
46 x 30	46.00	30.00	30.00	28.00	54 x 52	54.00	52.00	52.00	28.00
46 x 28	46.00	28.00	28.00	28.00	54 x 48	54.00	48.00	48.00	28.00
46 x 26	46.00	26.00	26.00	28.00	54 x 42	54.00	42.00	42.00	28.00
46 x 24	46.00	24.00	24.00	28.00	54 x 36	54.00	36.00	36.00	28.00
					54 x 30	54.00	30.00	30.00	28.00
					54 x 24	54.00	24.00	24.00	28.00
48 x 46	48.00	46.00	46.00	28.00					
48 x 44	48.00	44.00	44.00	28.00	56 x 54	56.00	54.00	54.00	28.00
48 x 42	48.00	42.00	42.00	28.00	56 x 48	56.00	48.00	48.00	28.00
48 x 40	48.00	40.00	40.00	28.00	56 x 42	56.00	42.00	42.00	28.00
48 x 38	48.00	38.00	38.00	28.00	56 x 36	56.00	36.00	36.00	28.00
48 x 36	48.00	36.00	36.00	28.00	56 x 30	56.00	30.00	30.00	28.00
48 x 34	48.00	34.00	34.00	28.00	56 x 24	56.00	24.00	24.00	28.00
48 x 32	48.00	32.00	32.00	28.00					
48 x 30	48.00	30.00	30.00	28.00	58 x 56	58.00	56.00	56.00	28.00
48 x 28	48.00	28.00	28.00	28.00	58 x 54	58.00	54.00	54.00	28.00
48 x 26	48.00	26.00	26.00	28.00	58 x 48	58.00	48.00	48.00	28.00
48 x 24	48.00	24.00	24.00	28.00	58 x 42	58.00	42.00	42.00	28.00
					58 x 36	58.00	36.00	36.00	28.00
					58 x 30	58.00	30.00	30.00	28.00
50 x 48	50.00	48.00	48.00	28.00					
50 x 42	50.00	42.00	42.00	28.00	60 x 58	60.00	58.00	58.00	28.00
50 x 36	50.00	36.00	36.00	28.00	60 x 54	60.00	54.00	54.00	28.00
50 x 30	50.00	30.00	30.00	28.00	60 x 48	60.00	48.00	48.00	28.00
50 x 24	50.00	24.00	24.00	28.00	60 x 42	60.00	42.00	42.00	28.00
50 x 20	50.00	20.00	20.00	28.00	60 x 36	60.00	36.00	36.00	28.00
					60 x 30	60.00	30.00	30.00	28.00

GENERAL NOTE:

- (a) All dimensions are in inches
- (b) While the figure illustrates a bell-shaped reducer, the use of a conical reducer is not prohibited.



CAPS



Nominal Pipe Size (NPS)	Outside Diameter at Bevel	Length, E [Note (1)]	Limiting Wall Thickness for Length, E	Length, E1 [Note (2)]
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
3 1/2	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	...	...
50	50.00	14.50	1.0	16.00
52	52.00	14.50	1.0	16.00
54	54.00	16.00	1.0	17.50
56	56.00	16.00	1.0	17.50
58	58.00	16.50	1.0	18.00
60	60.00	16.50	1.0	18.00

GENERAL NOTES:

(a) All dimensions are in inches.

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

NOTES:

(1) Length E applies for thickness not exceeding that given in column "Limiting Wall Thickness for Length, E."

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