



FUTURE PIPE INDUSTRIES

**Fiberstrong™ RP & Fiberstrong™ RV
Aboveground fitting dimensions
For laminated (Butt-strap) joints**

Polyester & Vinylester pipe systems

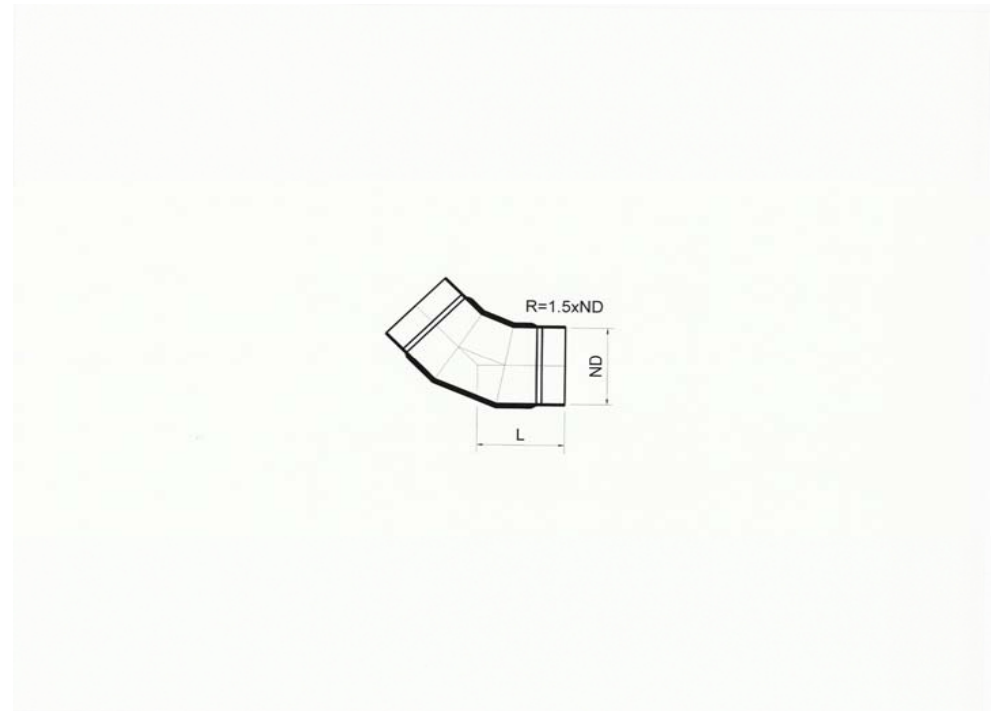
Future Pipe Industries, Inc.
Gulfport, MS

www.futurepipe.com/usa

(For pressure and diameters larger than those shown in this publications, contact the nearest sales office)

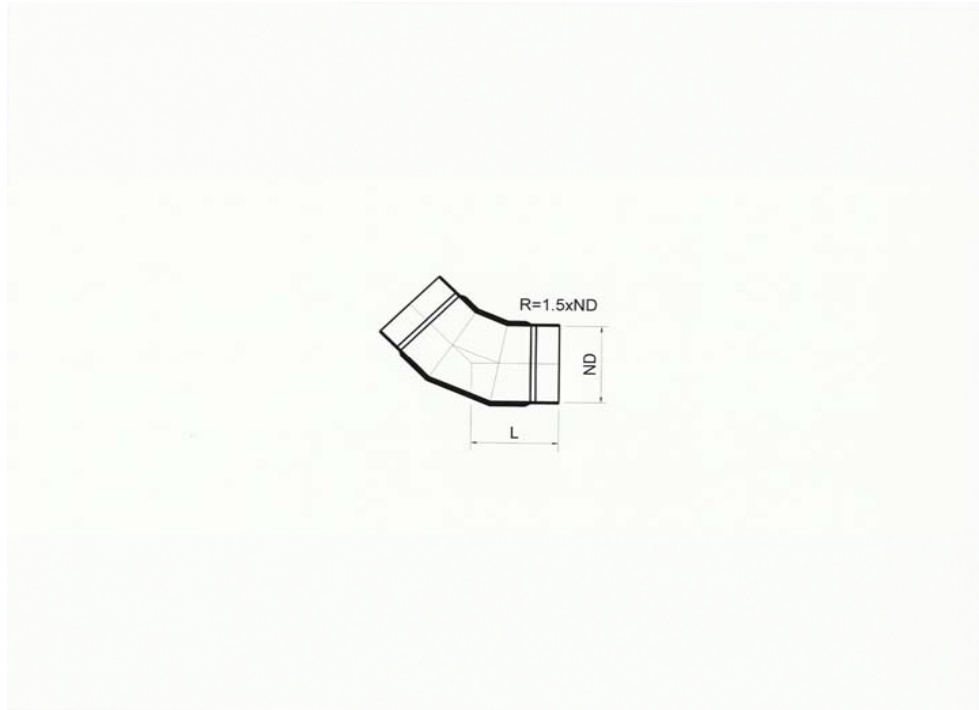
ND inch	50 psig	100 psig	150 psig	175 psig
	L inch	L inch	L inch	L inch
3	6.7	6.7	6.7	6.7
4	6.7	6.7	6.7	6.7
6	7.1	7.1	7.1	7.1
8	7.1	7.1	7.9	8.3
10	7.5	7.9	9.1	9.8
12	7.9	9.1	10.6	11.4
14	11.0	12.2	13.8	14.6
16	11.8	13.4	15.0	16.1
18	12.6	14.6	16.5	17.7
20	13.8	15.7	17.7	18.9
22	14.6	16.9	19.3	20.5
24	15.4	18.1	20.5	22.0
28	17.3	20.5	23.2	25.2
30	18.5	21.3	24.4	26.4
31	19.3	22.4	25.6	28.0
36	21.3	24.8	28.7	31.1
39	24.8	29.1	33.1	35.8
42	26.8	31.5	35.8	39.0
48	28.7	33.9	38.6	41.7
52	30.7	36.2	41.3	44.9
56	32.3	38.2	43.7	47.6
60	34.3	40.6	46.5	50.8
64	36.2	42.5	49.2	53.5
66	38.2	45.3	52.0	
70	40.2	47.6	54.7	
74	41.7	49.6	57.5	
78	45.7	53.9	61.8	
82	47.6	56.3	64.6	
86	49.6	58.7	67.3	
90	51.6	61.0	70.1	
94	53.1	64.0	72.4	
98	55.0	65.4	75.6	

o to 30 Deg Elbow - PL x PL
R=1.5 x ND



o to 30 Deg Elbow - PL x PL
R=1.5 x ND

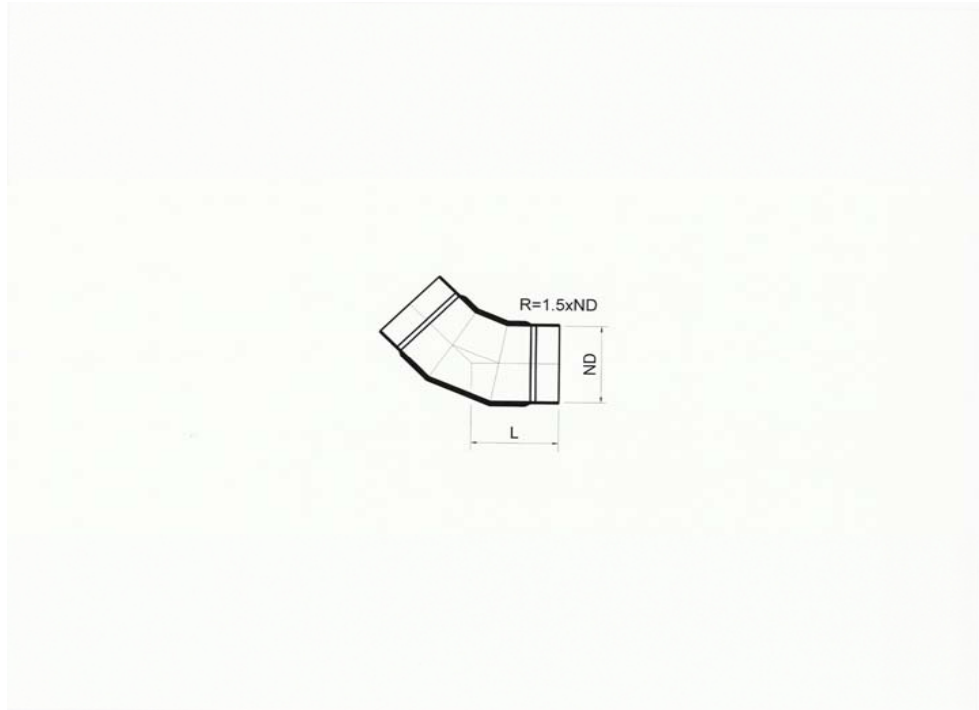
ND inch	50 psig	100 psig	150 psig	175 psig
	L inch	L inch	L inch	L inch
3	7.5	7.5	7.5	7.5
4	7.9	7.9	7.9	7.9
6	8.7	8.7	8.7	8.7
8	9.4	9.4	10.2	10.6
10	10.2	11.0	11.8	12.6
12	11.4	12.6	13.8	14.6
14	15.0	16.1	17.7	18.5
16	16.1	18.1	19.7	20.5
18	17.7	19.7	21.7	22.8
20	19.3	21.3	23.2	24.8
22	20.9	23.2	25.2	26.8
24	22.4	24.8	27.2	28.7
28	25.2	28.3	31.1	33.1
30	26.8	29.9	33.1	35.0
31	28.3	31.5	34.6	37.0
36	31.5	35.0	38.6	40.9
39	36.2	40.6	44.5	48.0
42	39.4	43.7	48.4	52.0
48	42.1	48.0	52.0	1,400
52	45.3	50.8	1,420	59.4
55	48.4	53.9	59.8	63.4
60	52.0	57.5	63.4	67.7
64	54.3	60.6	67.3	71.7
66	1,460	64.2	71.3	
70	60.2	67.7	75.2	
74	63.4	71.3	79.1	
78	68.1	76.4	84.6	
82	71.7	79.9	88.6	
86	74.4	83.5	92.1	
90	77.6	87.0	96.1	
94	80.3	90.2	99.6	
98	83.5	93.7	103.9	



31 to 45 Deg Elbow - PL x PL
R=1.5 x ND

31 to 45 Deg Elbow - PL x PL
R=1.5 x ND

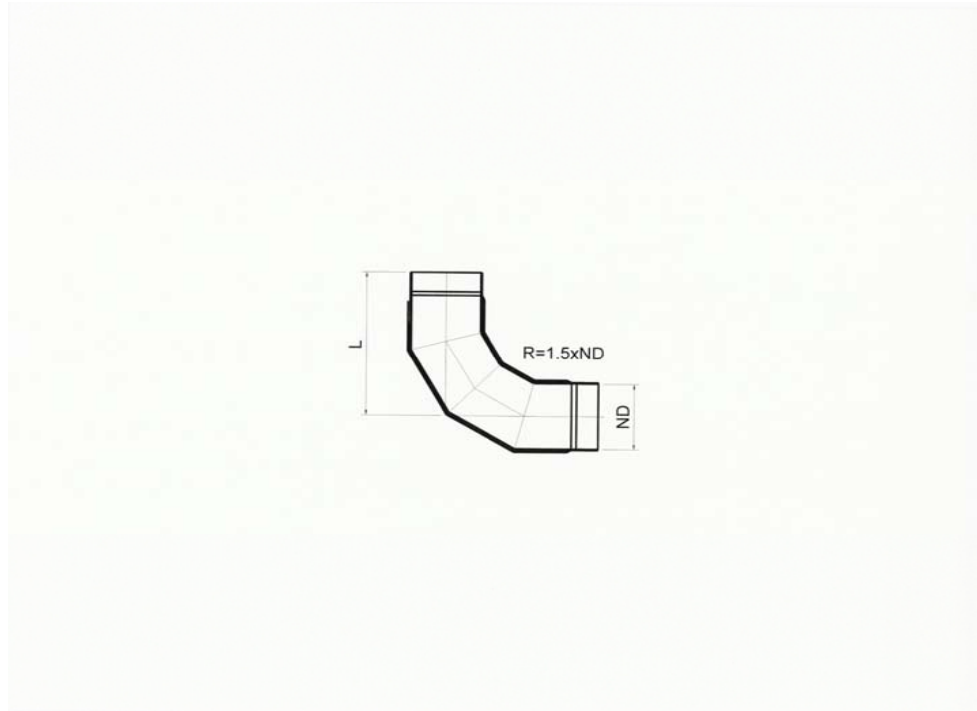
ND inch	50 psig	100 psig	150 psig	175 psig
	L	L	L	L
	inch	inch	inch	inch
3	7.9	7.9	7.9	7.9
4	8.7	8.7	8.7	8.7
6	9.8	9.8	9.8	9.8
8	11.0	11.0	11.4	11.8
10	12.2	12.6	13.8	14.6
12	13.4	14.6	16.1	16.9
14	17.3	18.9	20.1	21.3
16	18.9	20.9	22.4	23.2
18	20.9	22.8	24.8	26.0
20	22.8	24.8	26.8	28.3
22	24.8	27.2	29.1	30.7
24	26.4	29.1	31.5	33.1
28	30.3	33.1	35.8	37.8
30	32.3	35.0	38.2	40.2
31	33.9	37.0	40.2	42.5
36	37.8	41.3	44.9	48.0
39	42.0	48.0	51.6	53.9
42	46.9	51.6	1,420	60.0
48	50.4	55.5	60.2	63.4
52	54.3	59.8	65.0	68.5
56	57.9	63.8	69.3	73.2
60	61.8	68.1	74.0	78.3
64	65.4	72.0	78.3	82.0
66	69.3	76.4	83.1	
70	72.8	80.3	87.8	
74	76.8	84.3	92.1	
78	82.3	90.0	98.4	
82	86.2	94.0	103.1	
86	89.8	98.8	107.5	
90	93.3	102.8	112.2	
94	96.9	106.7	116.5	
98	100.8	111.0	121.3	



46 to 60 Deg Elbow - PL x PL
R=1.5 x ND

46 to 60 Deg Elbow - PL x PL
R=1.5 x ND

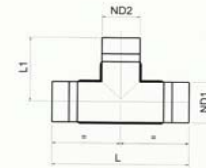
ND inch	50 psig L inch	100 psig L inch	150 psig L inch	175 psig L inch
3	9.8	9.8	9.8	9.8
4	11.0	11.0	11.0	11.0
6	13.4	13.4	13.4	13.4
8	15.7	15.7	16.5	16.9
10	18.1	18.9	19.7	20.5
12	20.9	22.0	23.6	24.4
14	26.0	27.6	28.7	29.9
16	28.7	30.7	32.3	33.1
18	32.3	33.9	35.8	37.0
20	36.0	37.4	39.4	40.6
22	38.6	40.9	42.9	44.5
24	41.3	44.1	46.5	48.0
28	47.6	50.8	53.5	55.5
30	50.8	53.9	1,450	60.0
31	53.5	1,450	60.2	62.2
36	60.2	63.8	67.3	1,770
39	68.1	72.4	76.4	79.1
42	74.4	79.1	83.5	86.0
48	80.3	85.4	90.2	93.3
52	87.0	92.1	97.2	100.8
56	92.9	98.8	104.3	108.3
60	99.2	105.5	111.4	115.7
64	105.1	111.8	118.1	122.4
66	111.8	118.5	125.6	
70	117.7	125.2	132.7	
74	124.0	131.9	139.8	
78	131.9	140.2	148.4	
82	138.6	146.9	155.5	
86	144.5	153.5	162.6	
90	150.8	160.2	169.7	
94	156.7	166.5	176.4	
98	163.4	173.2	183.5	



61 to 90 Deg Elbow - PL x PL
R=1.5 x ND

61 to 90 Deg Elbow - PL x PL
R=1.5 x ND

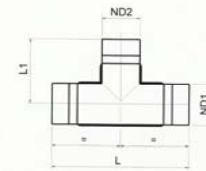
ND1 inch	ND2 inch	50 psig		100 psig		150 psig		175 psig	
		L inch	L1 inch	L inch	L1 inch	L inch	L1 inch	L inch	L1 inch
4	3	15.7	8.3	15.7	8.3	15.7	8.3	15.7	8.3
4	4	16.5	8.3	16.5	8.3	16.5	8.3	16.5	8.3
6	3	15.7	9.1	15.7	9.1	15.7	9.1	15.7	9.1
6	4	16.5	9.1	16.5	9.1	16.5	9.1	16.5	9.1
6	6	18.1	9.1	18.1	9.1	18.1	9.1	18.1	9.1
8	3	15.7	10.2	15.7	10.2	15.7	10.2	16.5	10.2
8	4	16.5	10.2	16.5	10.2	16.5	10.2	17.3	10.2
8	6	18.1	10.2	18.1	10.2	18.9	10.2	18.9	10.2
8	8	20.5	10.2	20.5	10.2	21.3	10.6	22.0	11.0
10	4	16.5	11.0	16.5	11.0	17.3	11.0	18.1	11.0
10	6	18.1	11.0	18.9	11.0	19.7	11.0	20.5	11.0
10	8	20.5	11.0	20.5	11.0	22.0	11.8	23.6	12.2
10	10	22.0	11.0	23.6	11.8	25.2	12.6	26.8	13.4
12	4	16.5	12.2	17.3	12.2	18.9	12.2	19.7	12.2
12	6	18.1	12.2	19.7	12.2	20.5	12.2	21.3	12.2
12	8	20.5	12.2	21.3	12.2	23.6	13.0	24.4	13.4
12	10	22.0	12.2	24.4	13.0	26.8	13.8	28.3	14.6
12	12	25.2	12.6	27.6	13.8	29.9	15.0	31.5	15.7
14	4	21.3	13.4	22.0	13.4	23.6	13.4	24.4	13.4
14	6	22.8	13.4	24.4	13.4	25.2	13.4	26.8	13.4
14	8	25.2	13.4	26.0	13.4	28.3	13.8	29.9	14.2
14	10	26.8	13.4	29.1	13.8	31.5	15.0	33.1	15.7
14	12	29.9	13.4	32.3	14.6	34.6	16.1	37.0	16.9
14	14	32.3	14.2	36.0	15.7	37.8	16.9	40.2	18.1
16	6	23.6	14.2	25.2	14.2	26.8	14.2	27.6	14.2
16	8	25.2	14.2	26.8	14.2	29.1	15.0	30.7	15.4
16	10	27.6	14.2	29.9	15.0	32.3	15.7	33.9	16.5
16	12	29.9	14.6	33.1	15.7	36.2	16.9	37.8	17.7
16	14	33.1	15.4	36.2	16.5	39.4	18.1	40.9	18.9
16	16	36.0	15.7	38.6	17.3	41.7	18.9	44.1	20.1
18	8	26.0	15.4	27.6	15.4	30.7	15.7	31.5	16.1
18	10	28.3	15.4	30.7	15.7	33.9	16.9	36.0	17.7



Standard Tee - PL x PL

Standard Tee - PL x PL

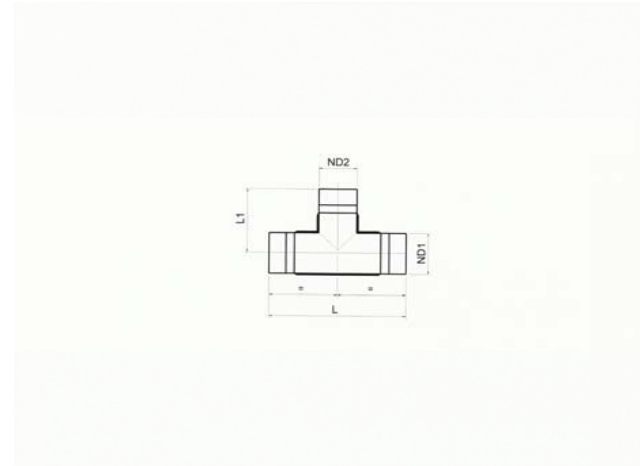
ND1 inch	ND2 inch	50 psig		100 psig		150 psig		175 psig	
		L	L1	L	L1	L	L1	L	L1
		inch	inch	inch	inch	inch	inch	inch	inch
18	12	30.7	15.4	33.9	16.5	37.0	18.1	38.6	18.9
18	14	33.9	16.1	37.0	17.7	40.2	18.9	41.7	20.1
18	16	36.2	16.5	39.4	18.5	42.0	20.1	44.9	20.9
18	18	38.6	17.3	42.5	19.3	46.5	21.3	48.8	22.4
20	8	26.8	16.1	28.3	16.1	31.5	16.9	33.1	17.3
20	10	29.1	16.1	31.5	16.9	34.6	17.7	36.2	18.5
20	12	31.5	16.5	34.6	17.7	37.8	18.9	40.2	19.7
20	14	34.6	17.3	37.8	18.5	40.9	20.1	42.0	20.9
20	16	37.0	17.7	40.2	19.3	44.1	20.9	46.5	22.0
20	18	39.4	18.5	42.0	20.1	48.0	22.0	49.6	23.2
20	20	42.5	19.3	46.5	21.3	50.4	23.2	52.8	24.4
24	10	29.9	20.5	33.1	20.9	36.2	22.0	38.6	22.8
24	12	33.1	20.5	36.2	21.7	40.2	23.2	42.5	24.0
24	14	36.0	21.3	39.4	22.8	42.0	24.0	45.7	25.2
24	16	37.8	21.7	42.5	23.6	45.7	25.2	48.8	26.0
24	18	40.9	22.4	44.9	24.4	48.8	26.4	52.0	27.6
24	20	42.0	23.2	48.0	25.2	52.0	27.2	56.0	28.7
24	24	48.8	24.4	54.3	27.2	60.0	29.5	62.2	31.1
28	12	33.9	22.4	37.8	23.6	41.7	25.2	44.9	26.0
28	14	37.0	23.2	40.9	24.8	44.9	26.0	48.0	27.2
28	16	39.4	23.6	44.1	25.6	48.0	27.2	52.0	28.0
28	18	41.7	24.4	46.5	26.4	52.0	28.3	54.3	29.5
28	20	44.9	25.2	49.6	27.2	54.3	29.1	56.0	30.7
28	24	50.4	26.4	54.3	29.1	60.6	31.5	64.6	33.1
28	28	55.9	28.0	61.4	30.7	66.0	33.5	70.0	36.0
30	12	34.6	23.6	38.6	24.8	42.0	26.0	45.7	26.8
30	14	37.8	24.4	41.7	25.6	46.5	27.2	48.8	28.0
30	16	40.2	24.8	44.9	26.4	48.8	28.0	52.0	29.1
30	18	42.5	25.6	48.0	27.2	52.0	29.1	56.0	30.3
30	20	45.7	26.4	50.4	28.3	56.0	30.3	60.0	31.5
30	24	52.0	27.6	57.9	29.9	62.2	32.3	65.4	33.9
30	28	56.7	28.7	62.2	31.9	68.5	34.6	72.4	36.6



Standard Tee - PL x PL

Standard Tee - PL x PL

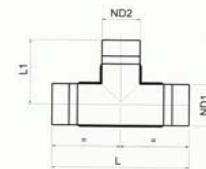
ND1 inch	ND2 inch	50 psig		100 psig		150 psig		175 psig	
		L	L1	L	L1	L	L1	L	L1
		inch	inch	inch	inch	inch	inch	inch	inch
30	30	60.0	29.5	65.4	32.7	71.7	35.8	75.6	37.8
31	14	37.8	25.6	42.5	26.8	48.0	28.3	49.6	29.1
31	16	40.2	26.0	45.7	27.6	49.6	29.1	52.8	30.3
31	18	42.0	26.8	48.0	28.3	52.8	30.3	1,440	31.5
31	20	45.7	27.6	52.0	29.5	1,420	31.5	59.8	32.7
31	24	52.0	28.7	1,460	31.1	64.0	33.5	66.1	35.0
31	28	1,440	29.9	64.0	33.1	69.3	35.8	73.2	37.8
31	31	62.2	31.1	69.3	34.6	75.6	37.8	79.5	39.8
36	14	39.4	27.6	44.1	28.7	49.6	30.3	52.0	31.1
36	16	41.7	28.0	48.0	29.5	52.0	31.1	56.0	32.3
36	18	44.9	28.7	49.6	30.3	56.0	32.3	60.0	33.5
36	20	48.0	29.5	52.8	31.5	1,480	33.5	62.2	34.6
36	24	52.8	30.7	60.0	33.1	65.4	36.0	68.5	37.0
36	28	1,480	31.9	64.6	35.0	71.7	37.8	75.6	39.8
36	30	61.4	32.7	67.7	35.8	74.0	39.0	78.0	40.9
36	31	63.8	33.1	70.0	36.6	78.0	39.8	81.9	41.7
39	16	48.0	29.9	52.8	31.5	1,480	33.1	61.4	34.3
39	18	49.6	30.7	1,400	32.3	61.4	34.3	65.4	36.0
39	20	52.8	31.5	1,480	33.5	64.6	36.0	68.5	36.6
39	24	1,480	32.7	64.6	35.0	70.0	37.4	74.0	39.0
39	28	63.8	33.9	70.1	37.0	77.2	39.8	81.9	41.7
39	30	66.1	34.6	73.2	37.8	80.3	40.9	85.0	42.9
39	31	69.3	35.0	76.4	38.6	83.5	41.7	88.2	43.7
39	36	74.0	36.6	81.9	40.2	89.8	44.1	95.3	46.5
39	39	79.5	37.8	88.2	42.1	96.1	46.1	101.6	48.8
42	16	48.0	31.9	54.3	33.9	59.8	36.0	63.8	36.2
42	18	52.0	32.7	1,460	34.6	64.0	36.6	67.7	37.8
42	20	53.5	33.5	60.6	36.0	66.1	37.4	70.0	39.0
42	24	60.0	34.6	66.1	37.4	73.2	39.8	77.2	41.3
42	28	64.6	36.2	72.4	39.0	79.5	41.7	84.3	43.7
42	31	70.1	37.4	78.0	40.6	85.8	43.7	90.0	46.1
42	36	75.6	39.0	84.3	42.5	92.1	46.1	97.6	48.4



Standard Tee - PL x PL

Standard Tee - PL x PL

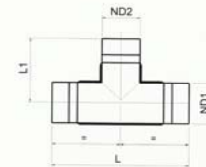
ND1 inch	ND2 inch	50 psig		100 psig		150 psig		175 psig	
		L	L1	L	L1	L	L1	L	L1
		inch	inch	inch	inch	inch	inch	inch	inch
42	39	81.1	42.1	89.8	44.1	98.4	48.4	103.9	50.8
42	42	86.0	42.0	96.1	46.1	104.7	50.4	111.0	53.5
48	20	1,400	36.0	62.2	37.4	68.5	39.4	72.4	40.9
48	24	60.6	36.6	67.7	39.4	74.0	41.7	79.5	42.0
48	28	66.1	38.2	74.0	40.9	81.1	43.7	85.8	45.7
48	31	71.7	39.4	79.5	42.5	87.4	45.7	92.9	48.0
48	36	77.2	40.9	85.8	44.5	93.7	48.0	99.2	50.4
48	39	81.9	44.1	91.3	46.1	100.0	50.4	105.5	52.8
48	42	88.2	45.3	97.6	48.0	107.1	52.4	112.6	55.5
48	48	92.9	46.5	103.1	49.6	112.6	54.3	118.9	58.0
52	20	56.7	37.8	63.8	39.8	70.1	41.7	74.0	42.9
52	24	62.2	39.0	69.3	41.3	77.2	43.7	81.9	45.3
52	28	67.7	40.2	75.6	42.0	83.5	46.1	88.2	48.0
52	31	73.2	41.3	81.1	44.9	89.8	48.0	95.3	50.0
52	36	78.0	42.9	87.4	46.5	96.1	50.4	101.6	52.8
52	39	83.5	46.1	92.9	48.4	102.4	52.4	107.9	55.0
52	42	89.8	47.6	99.2	50.0	108.7	54.7	115.0	58.0
52	48	94.0	48.8	104.7	52.0	115.0	56.7	121.3	61.0
52	52	100.8	50.4	111.0	53.5	121.3	59.0	128.3	64.0
55	8	42.5	34.6	48.0	36.6	53.5	37.4	58.0	39.0
55	24	64.0	40.9	70.0	42.0	78.0	45.7	84.3	48.0
55	28	68.5	42.1	77.2	45.3	85.0	48.0	90.0	50.0
55	31	74.0	42.0	82.0	46.9	91.3	50.0	97.6	52.0
55	36	79.5	44.9	89.0	48.4	97.6	52.4	103.9	54.7
55	39	85.0	48.0	94.0	50.4	103.9	54.3	110.2	58.0
55	42	90.0	49.6	100.8	52.0	111.0	56.7	117.3	61.0
55	48	96.1	50.8	106.3	53.9	116.5	59.0	123.6	64.0
55	52	101.6	52.4	112.6	55.5	123.6	60.6	130.7	67.0
55	55	107.1	53.5	118.1	57.0	129.9	64.0	137.0	70.0
60	28	70.1	44.1	78.0	48.0	87.4	50.0	92.9	52.0
60	31	75.6	45.3	84.3	48.8	93.7	52.0	100.0	53.9
60	36	81.1	46.9	90.0	50.4	100.0	54.3	106.3	56.0



Standard Tee - PL x PL

Standard Tee - PL x PL

ND1 inch	ND2 inch	50 psig		100 psig		150 psig		175 psig	
		L	L1	L	L1	L	L1	L	L1
		inch	inch	inch	inch	inch	inch	inch	inch
60	39	85.8	48.0	96.1	52.4	106.3	56.3	112.6	60.0
60	42	92.1	49.6	102.4	53.9	112.6	58.7	119.7	61.4
60	48	96.9	50.8	107.9	1,420	118.9	60.6	126.0	63.8
60	52	103.1	52.4	114.2	1,460	125.2	62.6	133.1	66.1
60	55	107.9	53.5	119.7	60.0	131.5	65.0	139.4	68.5
60	60	113.4	54.7	126.0	61.0	137.8	66.0	146.5	71.3
64	28	70.0	46.5	80.3	49.2	89.0	52.0	95.3	53.9
64	31	76.4	47.6	85.8	50.8	95.3	53.9	101.6	56.3
64	36	81.9	49.2	92.1	52.8	101.6	1,430	108.7	58.7
64	39	87.4	50.4	97.6	54.3	107.9	58.7	115.0	61.0
64	42	92.9	51.6	103.9	56.3	115.0	60.6	122.0	63.8
64	48	98.4	52.8	109.4	57.9	120.5	62.6	128.3	65.7
64	52	103.9	54.3	115.7	59.8	127.6	65.0	136.0	68.5
64	55	109.4	55.5	121.3	61.4	133.9	66.0	141.7	70.0
64	60	115.0	1,450	127.6	64.0	140.2	69.3	148.0	73.2
64	64	120.5	1,480	133.1	64.6	146.5	71.3	155.1	75.6
66	31	78.0	49.6	88.2	52.8	97.6	1,420		
66	36	83.5	52.0	93.7	54.7	103.9	1,480		
66	39	89.0	52.4	100.0	1,430	110.2	60.6		
66	42	94.0	53.5	105.5	1,480	117.3	62.6		
66	48	100.0	54.7	111.8	59.8	122.8	64.6		
66	52	105.5	1,430	118.1	61.8	129.9	66.0		
66	55	111.0	1,460	123.6	63.4	136.2	68.9		
66	60	116.5	60.0	129.1	65.0	142.5	71.3		
66	64	122.0	60.2	136.0	66.5	148.8	73.2		
66	66	127.6	61.8	140.9	68.5	155.1	75.6		
70	31	79.5	53.5	89.8	57.1	100.0	60.2		
70	36	85.0	1,400	95.3	1,490	106.3	62.6		
70	39	89.8	1,430	101.6	60.6	112.6	64.6		
70	42	96.1	57.9	107.1	62.2	118.9	66.0		
70	48	100.8	60.0	113.4	64.2	125.2	68.9		
70	52	107.1	60.6	119.7	65.7	131.5	70.0		

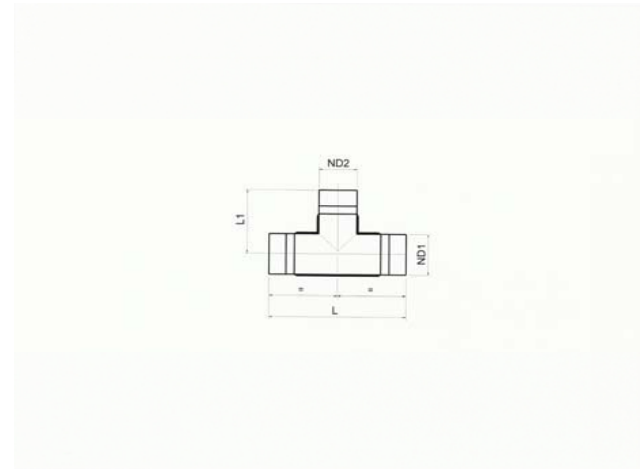


Standard Tee - PL x PL

Standard Tee - PL x PL

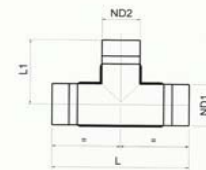
ND1 inch	ND2 inch	50 psig		100 psig		150 psig	
		L inch	L1 inch	L inch	L1 inch	L inch	L1 inch
70	56	111.8	61.8	125.2	67.3	137.8	73.2
70	60	117.3	64.0	130.7	69.3	144.1	75.2
70	64	122.8	64.2	137.0	70.0	150.4	77.2
70	66	128.3	65.7	142.5	72.8	156.7	79.5
70	70	133.9	66.0	148.8	74.4	163.8	81.9
74	36	85.8	1,450	96.9	60.6	107.9	64.6
74	39	91.3	58.3	103.1	62.6	114.2	66.5
74	42	96.9	59.8	108.7	64.2	121.3	68.9
74	48	102.4	61.0	115.0	66.1	126.8	70.0
74	52	107.9	62.6	121.3	67.7	133.9	72.8
74	56	113.4	63.8	126.8	69.3	140.2	75.2
74	60	118.9	65.0	132.3	71.3	146.5	77.2
74	64	124.4	66.1	138.6	72.8	152.8	79.1
74	66	129.9	67.7	144.1	74.0	159.1	81.5
74	70	136.0	68.9	150.4	76.4	165.4	83.9
74	74	140.9	70.5	155.9	78.0	171.7	85.8
78	36	91.3	60.0	102.4	62.6	114.2	66.5
78	39	96.1	60.2	108.7	64.6	120.5	68.5
78	42	102.4	61.8	114.2	66.1	126.8	70.0
78	48	107.1	64.0	120.5	68.1	133.1	72.8
78	52	113.4	64.6	126.8	69.7	139.4	74.0
78	55	118.1	65.7	132.3	71.3	145.7	77.2
78	60	123.6	66.0	137.8	73.2	152.0	79.1
78	64	129.1	68.1	144.1	74.0	158.3	81.1
78	66	134.6	69.7	149.6	76.8	164.6	83.5
78	70	140.2	70.0	155.9	78.3	171.7	85.8
78	74	145.7	72.4	161.4	79.9	178.0	87.8
78	78	151.2	73.6	167.7	81.9	183.5	89.8
82	36	92.9	61.4	103.9	65.0	115.7	68.5
82	39	97.6	62.6	110.2	66.5	122.0	70.0
82	42	103.9	63.8	115.7	68.5	129.1	72.8
82	48	108.7	65.0	122.0	70.1	134.6	74.0

Standard Tee - PL x PL



Standard Tee - PL x PL

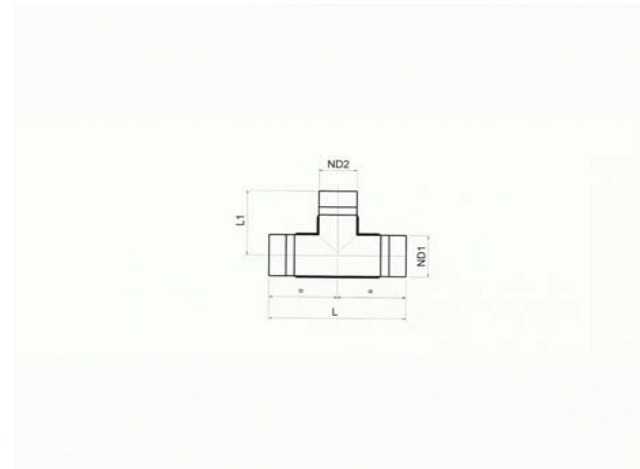
ND1 inch	ND2 inch	50 psig		100 psig		150 psig	
		L	L1	L	L1	L	L1
		inch	inch	inch	inch	inch	inch
82	52	115.0	66.5	128.3	72.0	141.7	77.2
82	55	119.7	67.7	133.9	73.6	148.0	79.1
82	60	125.2	69.3	139.4	75.2	154.3	81.5
82	64	130.7	70.5	145.7	76.8	160.6	83.5
82	66	136.2	72.0	151.2	78.0	166.9	85.8
82	70	141.7	73.2	157.5	80.7	173.2	87.8
82	74	148.0	74.4	164.0	82.3	179.5	90.2
82	78	152.8	75.6	169.3	83.9	185.8	92.1
82	82	158.3	77.2	175.6	85.8	192.1	94.1
86	39	99.2	64.6	111.8	68.5	124.4	72.8
86	42	104.7	65.7	118.1	70.5	130.7	74.0
86	48	110.2	66.0	123.6	72.0	137.0	76.8
86	52	115.7	67.4	129.9	74.0	143.3	79.1
86	55	121.3	69.7	136.0	75.6	149.6	81.1
86	60	126.8	71.3	141.7	77.2	155.9	83.5
86	64	132.3	72.4	148.0	78.0	162.2	85.4
86	66	137.8	74.0	153.5	80.7	168.5	87.8
86	70	143.3	75.2	159.8	82.0	175.6	89.8
86	74	148.8	76.4	165.4	84.3	181.9	92.1
86	78	153.5	77.6	170.9	85.8	187.4	94.1
86	82	159.8	79.1	177.2	87.8	194.0	96.1
86	86	164.6	80.3	182.7	89.4	200.8	98.4
90	42	106.3	68.1	119.7	72.4	133.1	77.2
90	48	111.0	69.3	125.2	74.4	138.6	79.1
90	52	117.3	70.0	131.5	76.0	145.7	81.1
90	56	122.0	72.0	137.0	77.6	152.0	83.5
90	60	127.6	73.2	143.3	79.5	158.3	85.4
90	64	133.1	74.4	148.8	81.1	164.6	87.4
90	66	138.6	76.0	155.1	83.1	170.9	89.8
90	70	144.1	77.2	161.4	84.6	177.2	92.1
90	74	149.6	78.0	166.9	86.2	183.5	94.1
90	78	155.1	79.9	172.4	88.2	189.8	96.1



Standard Tee - PL x PL

Standard Tee - PL x PL

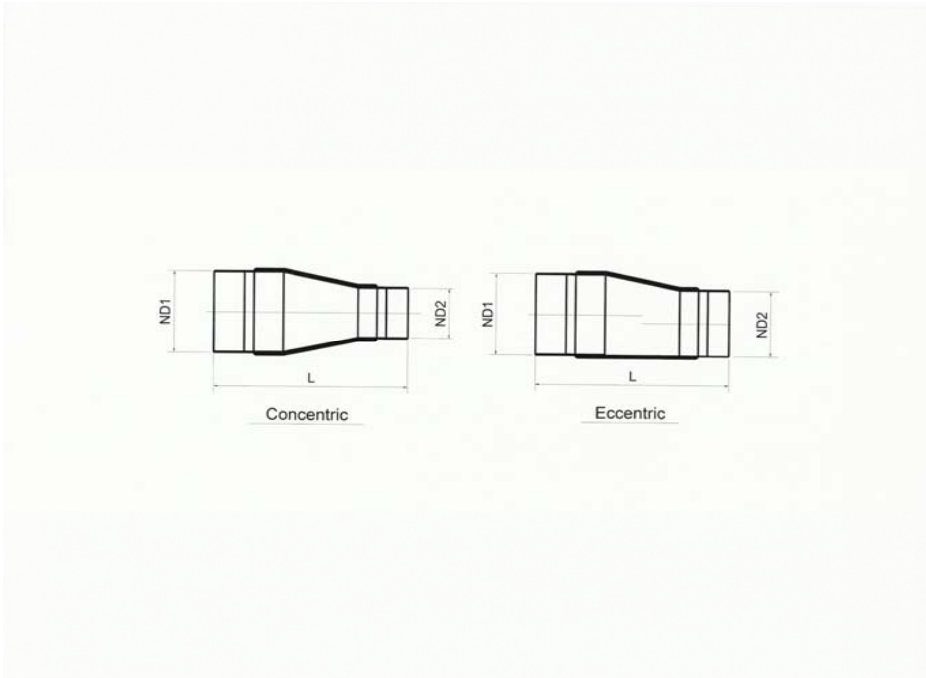
ND1 inch	ND2 inch	50 psig		100 psig		150 psig	
		L	L1	L	L1	L	L1
		inch	inch	inch	inch	inch	inch
90	82	160.6	81.5	178.0	89.8	196.1	98.4
90	86	166.1	82.0	184.3	91.7	202.4	100.4
90	90	171.7	83.9	190.6	93.3	209.4	102.8
94	42	107.1	70.1	121.3	74.4	134.6	79.1
94	48	112.6	71.3	126.8	76.4	140.9	81.1
94	52	118.1	72.8	133.1	78.0	148.0	83.1
94	55	123.6	74.0	138.6	79.5	153.5	85.4
94	60	129.1	75.2	144.9	81.5	159.8	87.4
94	64	134.6	76.4	150.4	83.1	166.1	89.4
94	66	140.2	78.0	156.7	85.0	172.4	91.7
94	70	145.7	79.1	164.0	86.0	179.5	94.1
94	74	151.2	80.7	168.5	88.2	185.8	96.1
94	78	155.9	81.9	174.0	90.2	191.3	98.0
94	82	162.2	83.5	180.3	91.7	198.4	100.4
94	86	166.9	84.6	185.8	93.7	204.7	102.4
94	90	173.2	85.8	192.1	95.3	211.0	104.7
94	94	178.0	87.0	197.6	96.9	217.3	106.7
98	48	114.2	73.2	128.3	78.3	143.3	83.1
98	52	119.7	74.0	134.6	79.9	149.6	85.0
98	55	125.2	76.0	140.2	81.5	155.9	87.4
98	60	130.7	77.2	146.5	83.5	162.2	89.4
98	64	136.2	78.3	152.0	85.0	168.5	91.3
98	66	141.7	79.9	158.3	87.0	174.8	93.7
98	70	148.0	81.1	164.6	88.6	181.9	96.1
98	74	152.8	82.0	170.1	90.2	188.2	98.0
98	78	157.5	83.9	175.6	92.1	193.7	100.0
98	82	163.8	85.4	181.9	93.7	200.8	102.4
98	86	168.5	86.0	187.4	95.7	207.1	104.3
98	90	174.8	87.8	193.7	97.2	213.4	106.7
98	94	179.5	89.0	199.2	98.8	219.7	108.7
98	98	185.0	90.0	205.5	100.8	226.0	111.0



Standard Tee - PL x PL

Standard Tee - PL x PL

ND1 inch	ND2 inch	50 psig	100 psig	150 psig	175 psig
		L inch	L inch	L inch	L inch
4	3	13.8	13.8	13.8	13.8
6	3	18.9	18.9	18.9	18.9
6	4	16.9	16.9	16.9	16.9
8	3	23.6	23.6	24.0	24.4
8	4	21.7	21.7	22.0	22.4
8	6	16.9	16.9	17.3	17.7
10	4	26.8	27.2	28.0	28.7
10	6	21.7	22.0	22.8	23.6
10	8	16.9	17.3	18.5	19.7
12	4	31.5	32.7	33.9	34.6
12	6	26.8	28.0	29.1	29.9
12	8	21.7	22.8	24.4	25.6
12	10	16.9	18.5	20.5	22.0
14	4	39.4	40.6	41.7	42.9
14	6	34.3	36.0	36.6	37.8
14	8	29.5	30.7	32.3	33.9
14	10	24.4	26.0	28.0	29.9
14	12	19.7	22.0	24.4	26.4
16	6	39.8	41.3	42.9	43.7
16	8	34.6	36.2	38.2	39.4
16	10	29.9	31.9	34.3	35.8
16	12	24.8	27.6	30.3	31.9
16	14	22.8	25.6	28.3	30.3
18	8	40.6	42.1	44.5	45.7
18	10	36.0	37.4	40.2	41.7
18	12	30.7	33.5	36.6	38.2
18	14	28.3	31.1	34.3	36.2
18	16	24.0	27.2	30.7	32.3
20	8	46.1	47.6	50.0	51.6
20	10	41.3	42.0	46.1	48.0
20	12	36.2	39.0	42.1	44.1
20	14	34.3	37.0	40.2	42.5



Reducer - PL x PL
Concentric
Eccentric

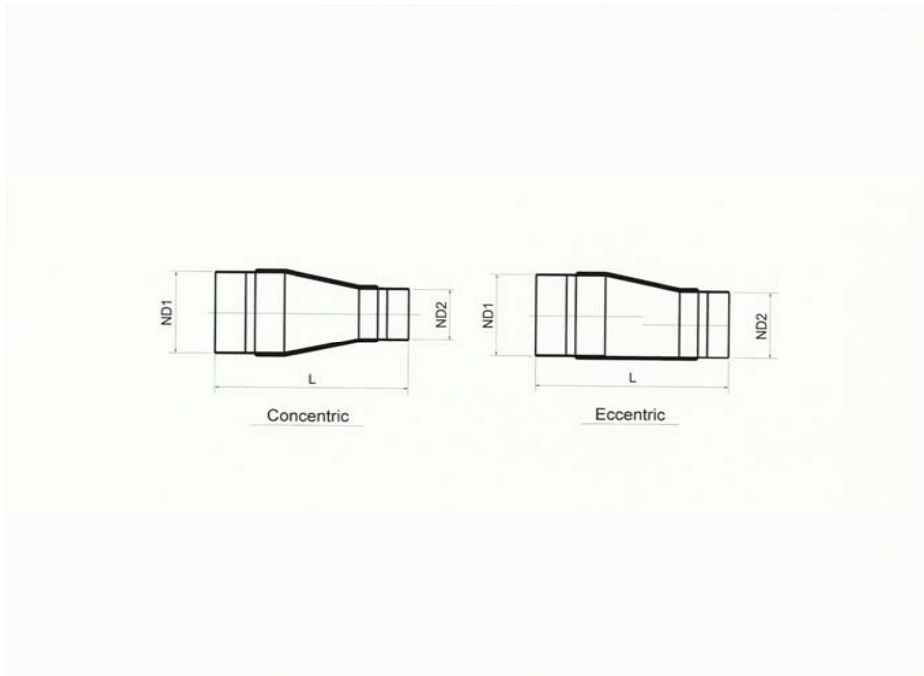
Reducer - PL x PL

Concentric
Eccentric

ND1 inch	ND2 inch	50 psig L inch	100 psig L inch	150 psig L inch	175 psig L inch
20	16	29.5	32.7	36.2	38.2
20	18	25.6	28.7	32.7	34.6
24	10	52.4	1,400	57.9	60.2
24	12	48.0	50.8	53.9	56.3
24	14	45.3	48.8	52.0	54.7
24	16	40.6	44.5	48.0	50.4
24	18	36.6	40.6	44.5	46.9
24	20	32.3	36.2	40.2	42.9
28	12	58.3	62.2	65.7	68.5
28	14	56.3	60.2	63.8	66.0
28	16	51.6	1,420	59.8	62.6
28	18	47.6	52.0	1,430	60.0
28	20	42.0	47.6	52.0	1,400
28	24	34.6	39.8	44.1	47.6
30	12	64.2	68.1	72.0	74.0
30	14	61.8	65.7	69.7	72.8
30	16	1,460	61.8	66.1	68.9
30	18	53.1	57.5	62.2	65.0
30	20	49.2	53.5	1,480	61.4
30	24	40.6	45.7	50.4	53.9
30	28	31.9	37.4	42.5	46.5
31	14	67.3	71.7	75.6	78.0
31	16	62.6	67.3	71.7	74.4
31	18	1,490	63.4	68.1	70.0
31	20	54.3	60.0	63.8	66.0
31	24	45.7	52.0	1,420	59.4
31	28	37.0	42.9	48.0	52.0
36	14	78.0	83.1	87.8	90.9
36	16	74.0	78.0	83.9	86.0
36	18	70.1	74.0	80.3	83.1
36	20	65.7	70.5	76.0	79.1
36	24	1,450	62.6	68.1	71.7

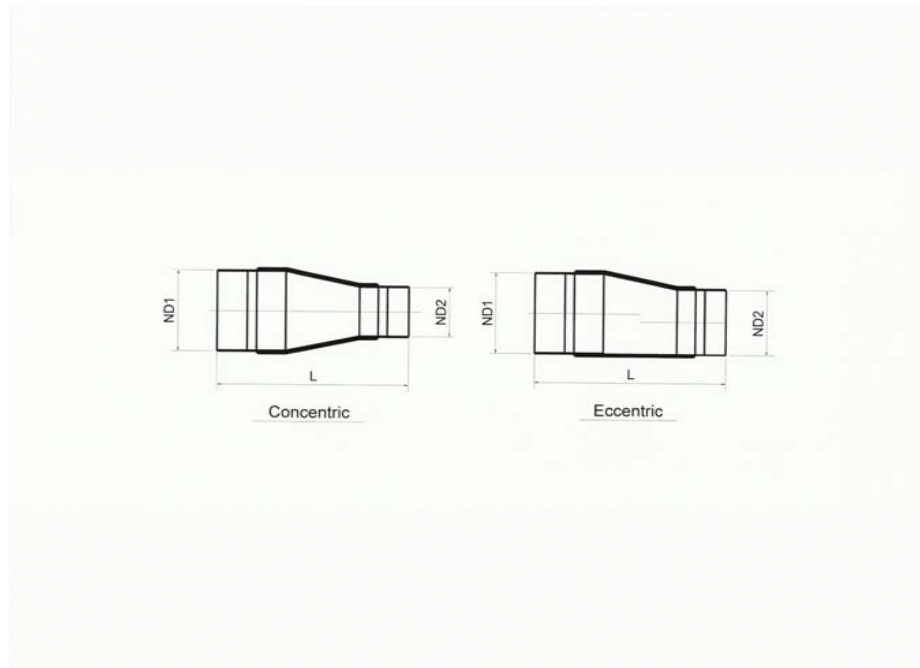
Reducer - PL x PL

Concentric
Eccentric



Reducer - PL x PL
Concentric
Eccentric

ND1 inch	ND2 inch	50 psig	100 psig	150 psig	175 psig
		L inch	L inch	L inch	L inch
36	28	48.4	54.3	60.2	64.2
36	30	44.5	50.4	56.7	60.6
36	31	39.8	46.1	52.4	56.3
39	16	87.0	92.1	97.6	100.8
39	18	83.1	88.2	94.1	97.2
39	20	78.0	83.9	89.8	93.3
39	24	70.1	76.0	81.9	85.8
39	28	61.4	67.7	74.0	78.3
39	30	1,460	63.8	70.5	74.0
39	31	52.8	59.4	66.1	70.5
39	36	44.5	52.0	1,490	64.0
42	16	98.0	103.9	109.4	113.0
42	18	94.1	100.0	105.9	109.4
42	20	89.8	95.7	101.6	105.5
42	24	81.1	87.8	93.7	98.0
42	28	72.4	79.5	85.8	90.0
42	31	63.8	71.3	78.0	82.0
42	36	55.5	64.0	70.5	75.2
42	39	48.8	56.7	64.6	69.7
48	20	100.8	107.1	113.4	117.3
48	24	92.1	99.2	105.5	109.8
48	28	83.5	90.9	97.6	102.4
48	31	74.0	82.0	89.8	94.0
48	36	66.5	74.4	82.3	87.0
48	39	59.8	68.1	76.4	81.5
48	42	52.0	60.2	68.5	74.0
52	20	112.2	118.5	125.2	129.5
52	24	103.5	110.6	117.3	122.0
52	28	94.9	102.4	109.4	114.6
52	31	86.2	94.1	101.6	106.7
52	36	78.0	85.8	94.1	99.2
52	39	71.3	79.5	88.2	93.7



Reducer - PL x PL
Concentric
Eccentric

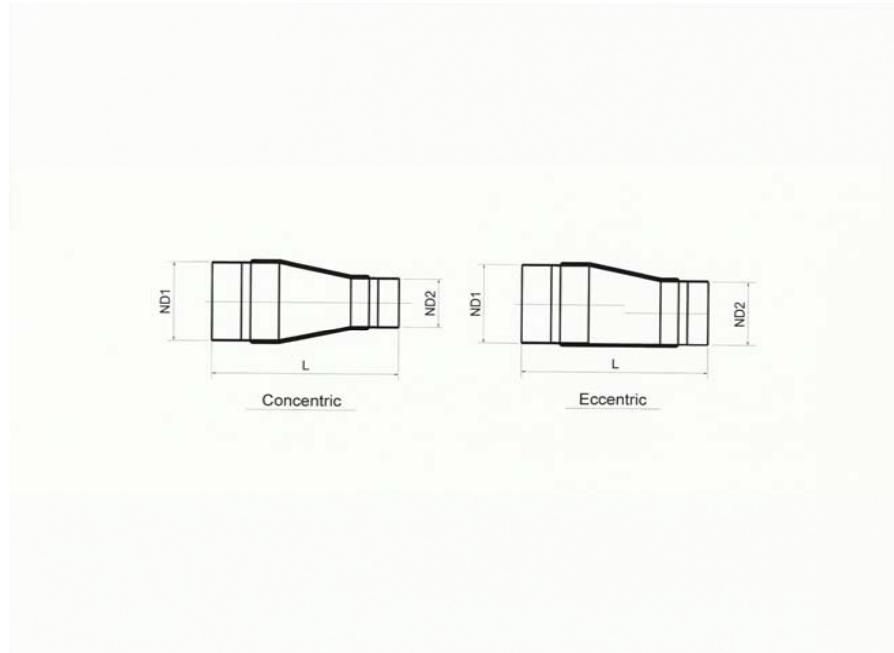
Reducer - PL x PL

Concentric
Eccentric

ND1 inch	ND2 inch	50 psig L inch	100 psig L inch	150 psig L inch	175 psig L inch
52	42	62.6	71.7	80.3	86.2
52	48	53.9	63.4	72.4	78.3
55	8	148.0	153.1	158.7	162.6
55	24	114.6	122.0	129.1	134.3
55	28	105.9	113.8	121.3	126.8
55	31	97.2	105.5	113.4	118.9
55	36	89.0	97.2	105.9	111.4
55	39	82.3	90.9	100.0	105.9
55	42	73.6	83.1	92.1	98.4
55	48	65.0	74.0	84.3	90.0
55	52	1,440	66.5	76.4	83.1
60	28	116.9	125.2	133.1	139.0
60	31	108.3	116.9	125.2	131.1
60	36	100.0	108.7	117.7	123.6
60	39	93.3	102.4	111.8	118.1
60	42	84.6	94.0	103.9	110.6
60	48	76.0	86.2	96.1	102.8
60	52	67.7	78.0	88.2	95.3
60	56	60.0	69.7	80.3	87.8
64	28	128.0	136.6	144.9	150.8
64	31	119.3	128.3	137.0	142.9
64	36	111.0	120.1	129.5	136.0
64	39	104.3	113.8	123.6	129.9
64	42	95.7	105.9	115.7	122.4
64	48	87.0	97.6	107.9	114.6
64	52	78.0	89.4	100.0	107.1
64	55	70.1	81.1	92.1	99.6
64	60	61.4	72.8	84.3	92.1
66	31	130.7	140.2	149.2	
66	36	122.4	131.9	141.7	
66	39	115.7	125.6	135.8	
66	42	107.1	117.7	128.0	

Reducer - PL x PL

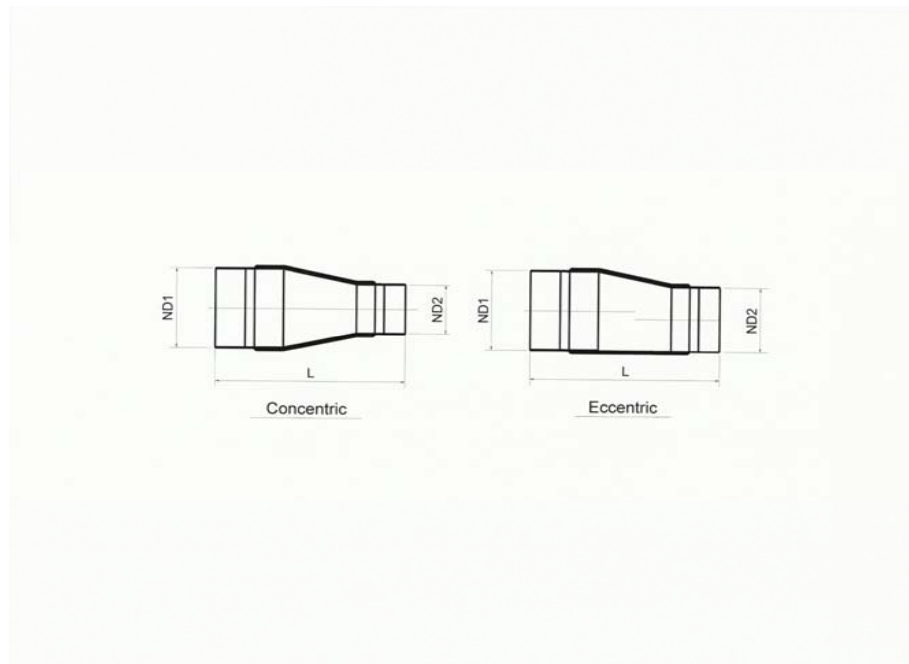
Concentric
Eccentric



Reducer - PL x PL
Concentric
Eccentric

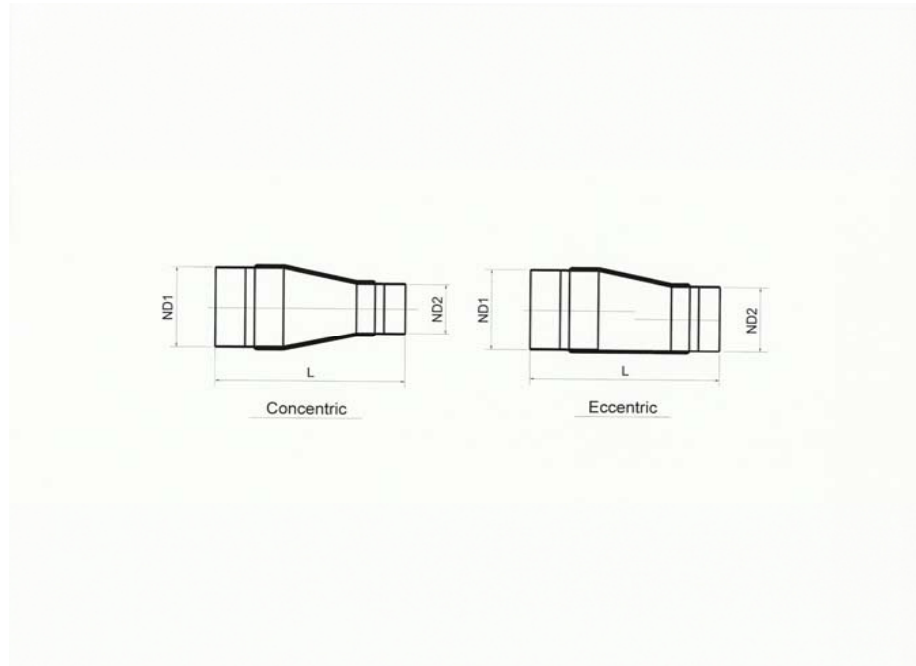
ND 1 inch	ND2 inch	50 psig L inch	100 psig L inch	150 psig L inch
66	48	98.4	109.4	120.1
66	52	90.2	101.2	112.2
66	55	81.5	92.9	104.3
66	60	72.8	84.6	96.5
66	64	64.2	76.4	88.6
70	31	141.7	151.6	161.0
70	36	133.5	143.3	153.5
70	39	126.8	137.0	147.6
70	42	118.1	129.1	139.8
70	48	109.4	120.9	131.9
70	52	101.2	112.6	124.0
70	55	92.5	104.3	116.1
70	60	83.9	96.1	108.3
70	64	75.2	87.8	100.4
70	66	66.0	79.9	92.9
74	36	144.5	154.7	165.4
74	39	137.8	148.4	159.4
74	42	129.1	140.6	151.6
74	48	120.5	132.3	143.7
74	52	112.2	124.0	135.8
74	55	103.5	115.7	128.0
74	60	94.9	107.5	120.1
74	64	86.2	99.2	112.2
74	66	78.0	91.3	104.7
74	70	69.3	83.1	96.9
78	36	157.5	168.1	179.1
78	39	150.8	161.8	173.2
78	42	142.1	153.9	165.4
78	48	133.5	145.7	157.5
78	52	125.2	137.4	149.6
78	55	116.5	129.1	141.7
78	60	107.9	120.9	133.9

Reducer - PL x PL
Concentric
Eccentric



Reducer - PL x PL
Concentric
Eccentric

ND 1 inch	ND2 inch	50 psig L inch	100 psig L inch	150 psig L inch
78	64	99.2	112.6	126.0
78	66	90.9	104.7	118.5
78	70	82.3	96.5	110.6
78	74	73.6	88.2	102.8
82	36	168.9	179.5	190.9
82	39	162.2	173.2	185.0
82	42	153.5	165.4	177.2
82	48	144.9	157.1	169.3
82	52	136.6	148.8	161.4
82	55	128.0	140.6	153.5
82	60	119.3	132.3	145.7
82	64	110.6	124.0	137.8
82	66	102.4	116.1	130.3
82	70	93.7	107.9	122.4
82	74	85.0	99.6	114.6
82	78	78.3	93.3	108.7
86	39	173.2	185.0	196.9
86	42	164.6	177.2	189.0
86	48	155.9	168.9	181.1
86	52	147.6	160.6	173.2
86	56	139.0	152.4	165.4
86	60	130.3	144.1	157.5
86	64	121.7	135.8	149.6
86	66	113.4	128.0	142.1
86	70	104.7	119.7	134.3
86	74	96.1	111.4	126.4
86	78	89.4	105.1	120.5
86	82	81.1	96.9	112.6
90	42	175.6	188.6	200.8
90	48	166.9	180.3	192.9
90	52	158.7	172.0	185.0
90	56	150.0	163.8	177.2
90	60	141.3	155.5	169.3



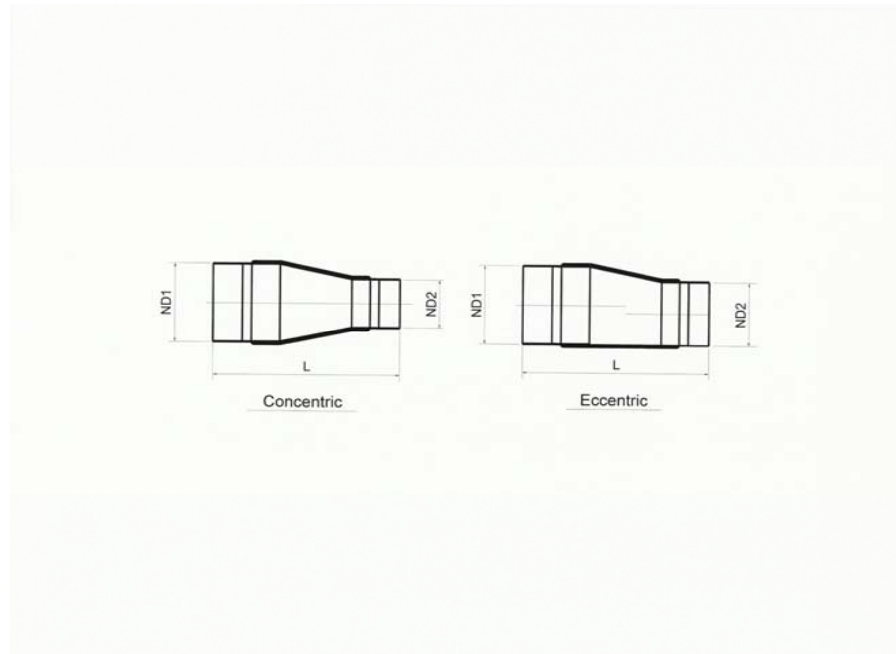
Reducer - PL x PL
Concentric
Eccentric

Reducer - PL x PL

Concentric
Eccentric

ND 1 inch	ND2 inch	50 psig L inch	100 psig L inch	150 psig L inch
90	64	132.7	148.0	161.4
90	66	124.4	139.4	153.9
90	70	115.7	131.1	146.1
90	74	107.1	122.8	138.2
90	78	100.4	116.5	132.3
90	82	92.1	108.3	124.4
90	86	83.5	100.4	116.5
94	42	186.6	200.0	212.6
94	48	178.0	191.7	204.7
94	52	169.7	183.5	196.9
94	56	161.0	175.2	189.0
94	60	152.4	166.9	181.1
94	64	143.7	158.7	173.2
94	66	136.0	150.8	165.7
94	70	126.8	142.5	157.9
94	74	118.1	134.3	150.0
94	78	111.4	128.0	144.1
94	82	103.1	119.7	136.2
94	86	94.0	111.8	128.3
94	90	85.8	103.5	120.5
98	48	189.4	203.1	216.9
98	52	181.1	194.9	209.1
98	56	172.4	186.6	201.2
98	60	163.8	178.3	193.3
98	64	155.1	170.1	185.4
98	66	146.9	162.2	178.0
98	70	138.2	153.9	170.1
98	74	129.5	145.7	162.2
98	78	122.8	139.4	156.3
98	82	114.6	131.1	148.4
98	86	105.9	123.2	140.6
98	90	97.2	115.0	132.7
98	94	88.6	106.7	124.8

Reducer - PL/PL
Concentric
Eccentric



Reducer - PL x PL
Concentric
Eccentric

ND inch	100 psig		150 psig		175 psig	
	L inch	TF inch	L inch	TF inch	L inch	TF inch
14	-	-	20	2.2	20	2.4
16	20	2.2	20	2.4	20	2.6
18	20	2.4	20	2.6	20	2.8
20	20	2.4	20	2.8	20	3.0
24	20	2.6	20	3.0	20	3.1
28	30	2.8	30	3.1	30	3.3
30	30	2.8	30	3.3	30	3.5
31	30	3.0	30	3.5	30	3.7
36	30	3.0	30	3.7	30	3.9
39	39	3.1	39	3.9	39	4.3
42	39	3.3	39	4.1	39	4.7
48	39	3.5	39	4.3	39	5.1
52	39	3.9	39	5.1		
56	39	4.1	39	5.3		

Flange - PL x FF

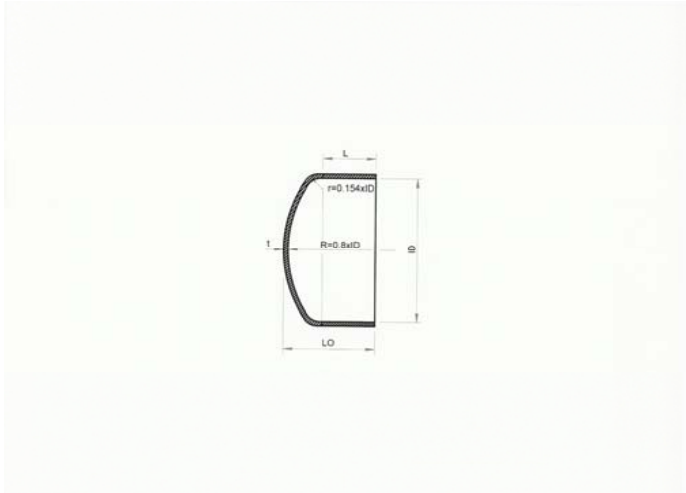
ND inch	100 psig		150 psig	
	L inch	TF inch	L inch	TF inch
60	-	-	39	5.7
64	-	-	39	6.1
66	-	-	39	6.5
70	-	-	39	6.9
74	60	7.1	60	8.3
78	60	7.5	60	8.7
82	60	7.9	69	9.1
86	60	8.3	69	9.4
90	60	8.5	69	9.8
94	60	8.9	69	10.2
98	69	9.1	69	10.6

Flange - PL x FF



Flange - PL x FF

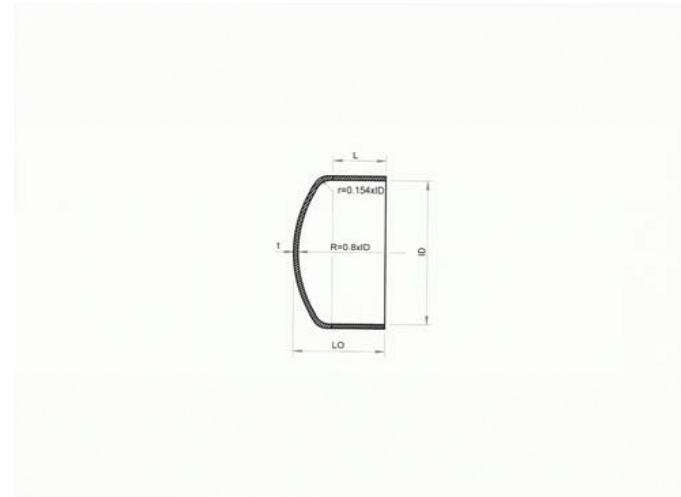
ND inch	R inch	r inch	50 psig			85 psig		
			L (inch)	Lo (inch)	t (inch)	L (inch)	Lo (inch)	t (inch)
4	3.1	0.6	3.0	4.1	0.2	3.0	4.1	0.2
6	4.7	0.9	3.0	4.6	0.2	3.0	4.6	0.2
8	6.3	1.2	3.0	5.2	0.2	3.0	5.2	0.2
10	7.9	1.5	3.0	5.7	0.2	3.0	5.7	0.2
12	9.4	1.8	3.0	6.1	0.2	3.5	6.7	0.2
14	11.0	2.1	3.5	7.2	0.2	4.1	7.8	0.2
16	12.6	2.4	3.9	8.1	0.2	4.7	9.0	0.2
18	14.2	2.7	4.3	9.1	0.2	5.3	10.1	0.2
20	15.7	3.0	4.9	10.1	0.2	5.9	11.2	0.3
24	18.9	3.6	5.9	12.2	0.2	6.9	13.2	0.3
28	22.0	4.2	6.9	14.2	0.3	8.1	15.4	0.4
31	25.2	4.9	7.7	16.0	0.3	9.3	17.7	0.4
36	28.3	5.5	8.7	18.0	0.3	10.4	19.9	0.5
39	31.5	6.1	9.6	20.0	0.4	11.6	22.1	0.5
42	34.6	6.7	10.6	22.1	0.4	12.6	24.2	0.6
48	37.8	7.3	11.6	24.1	0.4	13.8	26.4	0.6
52	40.9	7.9	12.6	26.1	0.5	15.0	28.7	0.7
56	44.1	8.5	13.6	28.1	0.5	16.1	30.9	0.7
60	48.0	9.1	14.6	30.2	0.5	17.3	33.1	0.8
64	50.4	9.7	15.4	32.0	0.6	18.3	35.2	0.8
66	53.5	10.3	16.3	34.0	0.6	19.5	37.4	0.9
70	56.7	10.9	17.3	36.0	0.7	20.7	39.6	0.9
74	59.8	11.5	18.3	38.0	0.7	21.9	41.9	1.0
78	64.0	12.1	19.3	40.1	0.7	23.0	44.1	1.0



Restrained End Cap Details, PL

Restrained End Cap Details, PL

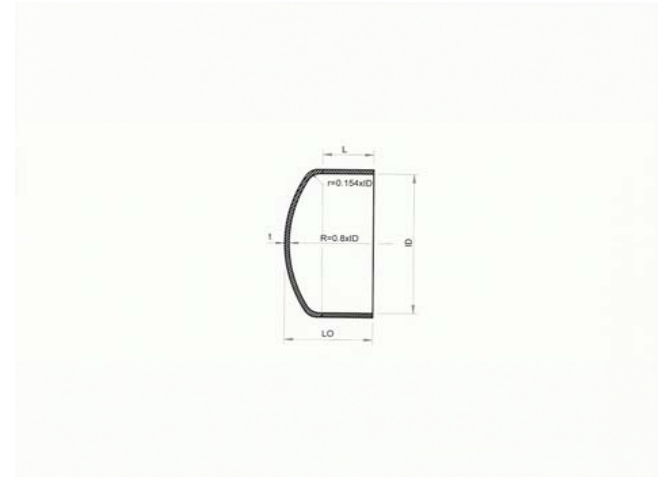
ND inch	R inch	r inch	100 psig			150 psig		
			L (inch)	La (inch)	t (inch)	L (inch)	La (inch)	t (inch)
4	3.1	0.6	3.0	4.1	0.2	3.0	4.1	0.2
6	4.7	0.9	3.0	4.6	0.2	3.0	4.6	0.2
8	6.3	1.2	3.0	5.2	0.2	3.1	5.4	0.2
10	7.9	1.5	3.1	5.9	0.2	3.9	6.7	0.2
12	9.4	1.8	3.7	6.9	0.2	4.7	8.0	0.2
14	11.0	2.1	4.3	8.1	0.2	5.3	9.1	0.3
16	12.6	2.4	5.1	9.4	0.2	6.1	10.4	0.3
18	14.2	2.7	5.7	10.5	0.3	6.9	11.8	0.3
20	15.7	3.0	6.3	11.6	0.3	7.7	13.1	0.4
24	18.9	3.6	7.5	13.9	0.4	9.3	15.7	0.5
28	22.0	4.2	8.7	16.1	0.4	10.6	18.2	0.5
31	25.2	4.9	10.0	18.6	0.5	12.2	20.9	0.6
36	28.3	5.5	11.2	20.8	0.5	13.8	23.5	0.7
39	31.5	6.1	12.4	23.0	0.6	15.2	25.9	0.8
42	34.6	6.7	13.8	25.5	0.7	16.7	28.6	0.8
48	37.8	7.3	15.0	27.7	0.7	18.3	31.2	0.9
52	40.9	7.9	16.1	30.0	0.8	19.7	33.7	1.0
56	44.1	8.5	17.3	32.2	0.8	21.3	36.3	1.1
60	48.0	9.1	18.7	34.7	0.9	22.8	39.0	1.1
64	50.4	9.7	19.9	36.9	1.0	24.2	41.5	1.2
66	53.5	10.3	21.1	39.2	1.0	25.8	44.1	1.3
70	56.7	10.9	22.4	41.6	1.1	27.4	46.8	1.4
74	59.8	11.5	23.6	43.8	1.1	28.9	49.4	1.4
78	64.0	12.1	24.8	46.1	1.2	30.3	51.9	1.5



Restrained End Cap Details, PL

Restrained End Cap Details, PL

ND inch	R inch	r inch	175 psig			225 psig		
			L(inch)	La (inch)	t (inch)	L (inch)	La (inch)	t (inch)
4	3.1	0.6	3.0	4.1	0.2	3.0	4.1	0.2
6	4.7	0.9	3.0	4.6	0.2	3.1	4.8	0.2
8	6.3	1.2	3.5	5.7	0.2	4.1	6.4	0.2
10	7.9	1.5	4.3	7.1	0.2	5.3	8.1	0.3
12	9.4	1.8	5.1	8.4	0.3	6.3	9.6	0.3
14	11.0	2.1	6.1	9.9	0.3	7.3	11.2	0.4
16	12.6	2.4	6.9	11.3	0.4	8.3	12.8	0.5
18	14.2	2.7	7.7	12.6	0.4	9.4	14.5	0.5
20	15.7	3.0	8.7	14.1	0.4	10.4	16.0	0.6
24	18.9	3.6	10.2	16.8	0.5	12.4	19.1	0.7
28	22.0	4.2	12.0	19.6	0.6	14.6	22.4	0.8
31	25.2	4.9	13.6	22.3	0.7	16.5	25.5	0.9
36	28.3	5.5	15.4	25.2	0.8			
39	31.5	6.1	17.1	28.0	0.9			
42	34.6	6.7	18.7	30.7	1.0			
48	37.8	7.3	20.5	33.5	1.1			
52	40.9	7.9	22.2	36.5	1.1			
56	44.1	8.5	23.8	39.1	1.2			
60	48.0	9.1	25.6	42.0	1.3			
64	50.4	9.7	27.2	44.6	1.4			



Restrained End Cap Details, PL

Restrained End Cap Details, PL