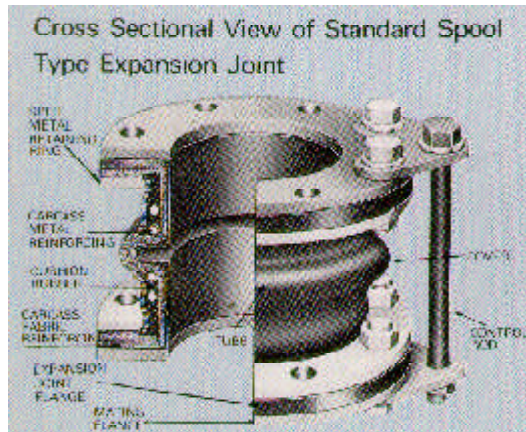


### Design feature of expansion joints



#### Construction

**Tube.** A protective, leakproof lining made of synthetic or natural rubber as left figure dictates. This is a seamless tube that extends through the bore to the outside edges of the flanges. Its purpose is to eliminate the possibility of the materials being handled penetrating the carcass and weakening the fabric. These tubes can be designed to cover service conditions for chemical, petroleum, sewage, gaseous and abrasive materials.

**Cover.** The exterior surface of the joint is formed from natural or synthetic rubber, depending on service requirements. The prime function of the cover is to protect the carcass from outside damage or abuse. Special polymers can be supplied to resist chemicals, oils, sunlight, acid fumes and ozone. Also a protective coating may be applied to the exterior of the joint for additional protection.

**Carcass.** The carcass or body of the expansion joint consists of fabric and metal reinforcement.

**Fabric Reinforcement.** The carcass fabric reinforcement is the flexible and supporting member between the tube and cover. Standard constructions normally utilize high quality synthetic fabric but natural fabrics are also used depending on pressure and temperature requirements. All fabric plies are impregnated with rubber or synthetic compounds to permit flexibility between the fabric plies allowing for service strain.

**Metal Reinforcement.** Wire or solid steel rings embedded in the carcass are used as strengthening members of the joint. This serves to permit the rated working pressure required and supplies the rigidity to the joint for vacuum service.

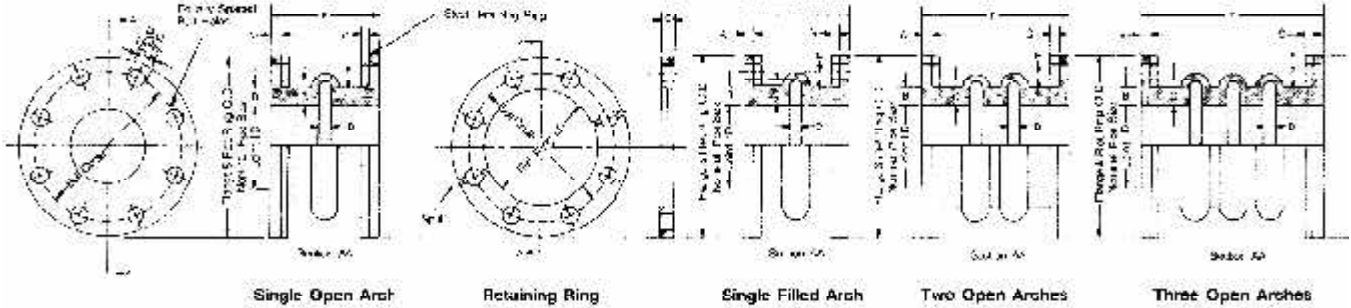
### Tolerances

Pipe size joint I.D.	Exp. Joint I.D.	Flange O.D.	Bolt Line	Face to Face length			
				0 to 6	7 to 12	14 to 18	20 & up
0 to 10	± 3/16	± 1/4	± 3/16	± 1/8	+ 1/8 - 3/16	± 3/16	+ 3/16 - 1/4
12 to 22	± 1/4	± 3/8	± 1/4	± 1/8	+ 1/8 - 3/16	± 3/16	+ 3/16 - 1/4
24 to 46	± 3/8	± 1/2	± 5/16	+1/8 - 3/16	± 3/16	+ 3/16 - 1/4	± 1/4
48 to 70	+ 3/8 - 1/2	+ 3/4 - 1/2	± 3/8	± 3/16	+ 3/16 - 1/4	± 1/4	+ 1/4 - 5/16
72	+ 3/8 - 5/8	+ 1 - 3/4	± 1/2	+ 3/16 - 1/4	± 1/4	+ 1/4 - 5/16	+ 1/4 - 3/8

### What are the superb features of Expansion joints

1. Reinforcing hard drawn steel wire embedded in elastomer for maximum pressure service.
2. Standard body fabric elastomer impregnated is a nylon an/or polyester tire cord having high tensile strength. The relationship of fabric plies to the body reinforcing wires determines positive/negative pressures of the products.
3. Elastomer cover selected for resistance to the atmosphere around the product. Choice of Natural, Neoprene, Nitrile, Butyl, Hypalon, EPDM, Gum and SBR elastomers.
4. Cushion rubber between reinforcing wires absorbs vibrations, sounds and electrolysis
5. Flange plies built in, for greater strength of the integral to the body retaining flange.
6. Lightweight: Expansion joint is relatively light in weight, requiring no special handling equipment, contributing to lower installation labor costs.
7. Unique O-Ring Seal O-Ring forms a tight seal against the metal flanges without the use of gaskets.

### Standard spool type expansion joints

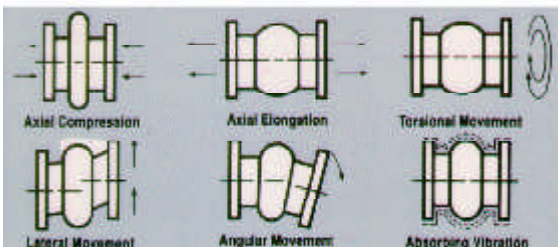


Nominal pipe size joint I.D.	Flange O.D.	Min. F to F Length			Dimensions					Ret. Ring I.D.	Bolt Holes			Control Unit Assy				Pressure/vacuum		Est.Wt. (lbs)	
		1 Arch	2 Arch	3 Arch	A	B	C	D	E		Bolt Circle	No.	Dia.	Plate thickness	No. of plates	Rod Dia.	No. of Rods	PSIG	In. Hg	Joint	Ret. Rings
1	4 1/4	6	10	12	9/16	7/8	1 1/8	1/2	7/16	2 3/8	3 1/8	4	5/8	3/8	4	1/2	2	200	26	1.4	2.3
1 1/4	4 5/8	6	10	12	9/16	7/8	1 1/8	1/2	7/16	2 5/8	3 1/2	4	5/8	3/8	4	1/2	2	200	26	1.8	2.5
1 1/2	8	6	10	12	9/16	7/8	1 1/8	1/2	7/16	2 7/8	3 7/8	4	5/8	3/8	4	1/2	2	200	26	22.2	3
2	9	6	10	12	9/16	29/32	1 1/4	1/2	1/2	3 5/8	4 3/4	4	3/4	3/8	4	5/8	2	300	26	2.7	4
2 1/2		6	10	12	9/16	29/32	1 1/4	1/2	1/2	4 1/8	5 1/2	4	3/4	3/8	4	5/8	2	200	26	3.7	5.5
3	1/2	6	10	12	9/16	29/32	1 1/4	1/2	1/2	4 5/8	6	4	3/4	3/8	4	5/8	2	200	26	4.3	6
4	9	6	10	12	9/16	7/8	1 1/4	1/2	1/2	5 7/8	7 1/2	8	3/4	3/8	4	5/8	2	200	26	5.7	75
5	10	6	10	12	9/16	7/8	1 1/4	1/2	1/2	6 7/8	8 1/2	8	7/8	3/8	4	5/8	2	190	26	7.6	8
6	11	6	10	12	5/8	1	1 1/4	1/2	1/2	7 7/8	9 1/2	8	7/8	1/2	4	5/8	2	190	26	8.6	9
8	13 1/2	6	10	14	3/4	1	1 1/2	3/4	5/8	9 7/8	11 3/4	8	7/8	1/2	4	3/4	2	190	26	12.7	12
10	16	8	12	14	3/4	1 5/32	1 1/2	3/4	11/16	12 1/8	14 1/4	12	1	3/4	4	7/8	2	190	26	18.3	18
12	19	8	12	14	3/4	1 5/32	1 1/2	3/4	11/16	14 1/2	17	12	1	3/4	4	1	2	190	26	26	25
14	21	8	12	16	7/8	1 5/32	2	3/4	3/4	16 1/2	18 3/4	12	1 1/8	3/4	4	1	2	130	26	33.3	27
16	23 1/2	8	12	16	7/8	1 5/32	2	3/4	3/4	18 1/2	21 1/4	16	1 1/8	3/4	4	1 1/8	2	110	26	42.1	33
18	25	8	12	16	7/8	1 5/32	2	3/4	3/4	20 1/2	22 3/4	16	1 1/4	3/4	4	1 1/8	2	110	26	46	33
20	27 1/2	8	12	16	1	1 5/32	2	7/8	25/32	22 5/8	25	20	1 1/4	3/4	4	1 1/8	2	100	26	51.6	38
22	29 1/2	10	14	18	1	1 5/32	2	7/8	25/32	24 5/8	27 1/4	20	1 3/8	1	4	1 1/4	2	100	26	63.4	44
24	32	10	14	18	1	1 5/32	2	7/8	25/32	26 5/8	29 1/2	20	1 3/8	1	4	1 1/4	2	90	26	70.6	48
26	34 1/4	10	14	18	1	1 3/16	2 1/4	1	13/16	28 7/8	31 3/4	24	1 3/8	1	4	1 1/4	2	90	26	84.4	57
28	36 1/2	10	14	18	1	1 3/16	2 1/4	1	13/16	30 7/8	34	28	1 3/8	1 1/4	4	1 3/8	2	90	26	86.5	62
30	38 3/4	10	14	18	1	1 3/16	2 1/4	1	13/16	32 7/8	36	28	1 3/8	1 1/4	4	1 1/2	2	90	26	97.7	66
32	41 3/4	10	14	18	1	1 3/16	2 1/4	1	13/16	34 7/8	38 1/2	28	1 5/8	1 1/4	4	1 1/2	2	90	26	100.6	75
34	43 3/4	10	14	18	1	1 3/16	2 1/4	1	13/16	37	40 1/2	32	1 5/8	1 1/2	4	1 5/8	2	90	26	103.2	78
36	46	10	14	18	1	1 3/16	2 1/4	1	13/16	39	42 3/4	32	1 5/8	1 1/2	4	1 3/4	2	90	26	112.1	81
38	48 3/4	10	14	18	1	1 3/16	2 1/4	1	13/16	41	45 1/4	32	1 5/8	1 1/2	4	1 3/4	2	90	26	125.2	95
40	50 3/4	10	14	18	1	1 3/16	2 1/4	1	13/16	43	47 1/4	36	1 5/8	1 1/2	6	1 1/2	3	90	26	144.1	106
42	53	12	14	18	1 3/16	1 1/4	2 1/2	1 1/8	29/32	45 1/4	49 1/2	36	1 5/8	1 1/2	6	1 5/8	3	80	26	167.9	116
44	55 1/4	12	14	18	1 3/16	1 1/4	2 1/2	1 1/8	29/32	47 1/4	51 3/4	40	1 5/8	1 1/2	6	1 5/8	3	80	26	178.4	127
46	57 1/4	12	14	18	1 3/16	1 1/4	2 1/2	1 1/8	29/32	49 1/4	53 3/4	40	1 5/8	1 1/2	6	1 5/8	3	80	26	186.7	132
48	59 1/2	12	14	18	1 3/16	1 1/4	2 1/2	1 1/8	29/32	51 1/4	56	44	1 5/8	1 1/2	6	1 3/4	3	80	26	195.2	138
50	61 3/4	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	53 1/4	58 1/4	44	1 7/8	1 1/2	6	1 3/4	3	70	26	200.1	154
52	64	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	55 1/4	60 1/2	44	1 7/8	1 1/2	6	1 3/4	3	70	26	213.2	157
54	66 1/4	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	57 1/4	62 3/4	44	1 7/8	1 1/2	6	2	3	70	26	224.5	160
56	68 3/4	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	59 1/4	65	48	1 7/8	1 1/2	6	2	3	70	26	237.6	174
58	71	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	61 1/4	67 1/4	48	1 7/8	1 1/2	6	2	3	70	26	250.3	182
60	73	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	63 1/4	69 1/4	52	1 7/8	1 3/4	6	2	3	70	26	262.3	190
62	75 3/4	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	65 1/4	71 3/4	52	1 7/8	1 3/4	8	2	4	70	26	275.8	212
64	78	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	67 1/4	74	52	1 7/8	1 3/4	8	2	4	70	26	288.4	224
66	80	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	69 1/4	76	52	1 7/8	1 7/8	8	2	4	70	26	302.6	236
68	82 1/4	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	71 1/4	78 1/4	56	1 7/8	1 7/8	8	2	4	70	26	318.6	248
70	84 1/2	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	73 1/4	80 1/2	56	1 7/8	1 7/8	8	2	4	70	26	326.7	262
72	86 1/2	12	14	18	1 3/16	1 3/8	2 1/2	1 1/8	29/32	75 1/4	82 1/2	60	1 7/8	1 7/8	8	2	4	70	26	335.5	278

- Notes
- Flange and ring dimensions shown are in accordance with 125/150 # Standards of: ANSI B16.1, B16.5, AWWA C207-78
  - Special pressure/vacuum ratings available upon request
  - Reduce movement by 50% with filled arches

- Number of arches required depends on anticipated total movement of the expansion joint. See movement capability heading below.
- Above weights are based on single open arch design
- Minimum thickness of retaining ring is 3/8"

### Movement Capability



Expansion Joint	4 Arch	5 Arch	6 Arch	8 Arch	10 Arch	12 Arch	14 Arch	16 Arch	18 Arch	20 Arch	22 Arch	24 Arch	26 Arch	28 Arch	30 Arch	32 Arch	34 Arch	36 Arch	38 Arch	40 Arch	42 Arch	44 Arch	46 Arch	48 Arch	50 Arch
Uniaxial Compression	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Biaxial Compression	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Uniaxial Extension	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Biaxial Extension	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Lateral Deflection	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Angular Deflection	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Absorbing Vibration	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
Number of Arches	1	2	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44