UNAFLEX®

"Excellence In Manufacturing"

RUBBER

EXPANSION JOINTS AND FLEXIBLE CONNECTORS

2000
REVISION

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United Engineers
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Arthur G. McKee

PUBLIC UTILITIES

Consolidated Edison Co. of N.Y., Inc.
Commonwealth Edison
Public Service of New Jersey
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Pennsylvania Electric Company
Virginia Electric Power Company
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Commonwealth Associates
Florida Power & Light
T.V.A.

SHIPBUILDING

Maryland Shipbuilding & Drydock Co.
Bethlehem Steel
Todd Shipyards
Norfolk Shipbuilding & Drydock Co.
Ellicott Machine
Savannah Machine & Foundry
American Shipbuilding
Avondale Ship
Newport News Ship & Drydock Co.
Alabama Shipbuilding & Drydock
Seatrain Shipbuilding & Drydock

MISCELLANEOUS

U.S. Navy
U.S. Air Force
N.A.S.A.
Federal Aviation Agency
U.S. Post Office
U.S. Army Engineers
New York City Housing Authority

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THE ADVANTAGES OF RUBBER EXPANSION JOINTS AND FLEXIBLE CONNECTORS

1. Prevents stress due to expansion and contraction.
2. Insulates against the transfer of noise and vibration.
3. Compensates for misalignment.
4. No electrolysis
5. Greater recovery from movement
6. Freedom from corrosion
7. Ease of installation
8. Small space requirements

Style 150 Page 6

- The heavy duty proven "industry work horse"
- Time tested performer
- Fabric and steel reinforced
- Constructed for maximum strength and reliability
- Available in multi-arch, taper, off set and special constructions
- For pressure and vacuum

Style 1000 Page 10

- Heavy Duty
- Double arch movements with single wide arch
- Reduced movement forces
- Fabric and steel reinforced
- Suitable for pressures up to 200 PSI and vacuum service.
- Available in multi-arch, offset and special constructions

Style 189 Page 15

- Lightweight construction
- Low spring rate forces
- Can be built to handle temperatures up to 350F
- Less force to move; allows maximum movements
- Available in multi-arch, taper, offset and for high temperature applications

Style 1100 Page 10

- Heavy Duty
- Self-Flushing
- Highly resistant to chemical and abrasion
- Available in a wide variety of elastomers
- Suitable for Vacuum service to 26" mercury

Style 200(XL) Page 7

- Extra - reinforced carcass
- For pressures to 300 PSI
- Available in high temperature constructions suitable for temperatures to 400F
- Available in multiple arch, taper, offset and special constructions

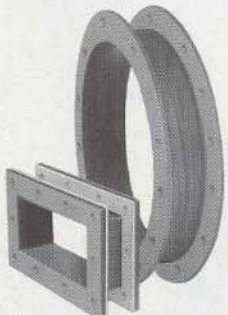
Duraperm Page 13

- The excellent chemical resistance of Teflon™ combined with the flexibility of rubber
- Thermal Stability
- Anti-stick properties
- Available in multiple arch, taper, offset and special constructions

Style 800 Page 12

- Minimizes water hammer and hydraulic shock
- Less force to move; allows maximum movements
- "All - in - one" design eliminates the need for retaining rings
- Also available in two arch design (Twin-Sphere) for greater movement capabilities

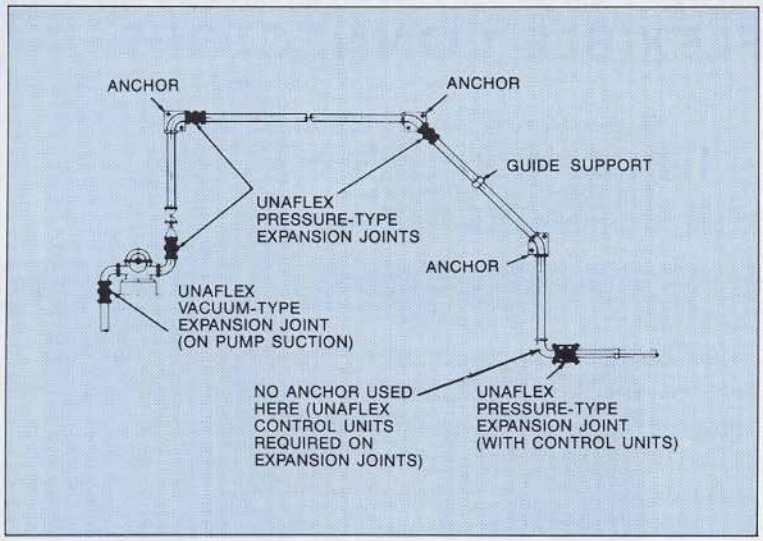
Style 600 Page 16

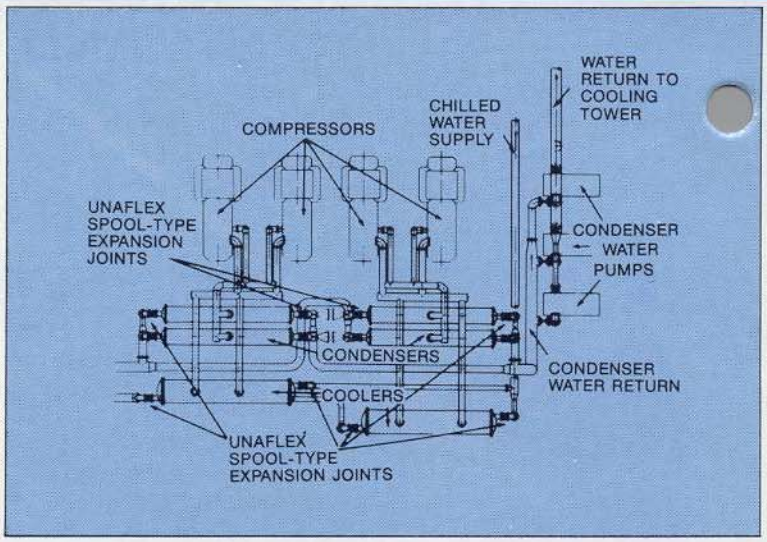


- Designed to absorb thermal movements and sound vibrations
- Liners and insulation can allow temperatures to 500F
- Available in multiple arch, taper, offset and special constructions
- Custom Drilled or undrilled

See our Style 2000 on page 19.

TYPICAL APPLICATIONS



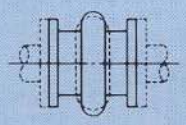


INDUSTRIAL APPLICATIONS Piping installations are one of the most important locations for UNAFLEX Expansion Joints as they compensate for the thermal expansion and contraction in the line as well as reduce the transmission of noise and vibration.

HEATING/AIR CONDITIONING AND VENTILATING UNAFLEX Expansion Joints are used on the header connections to the condenser and to the cooler as well as in the water circulating lines on both hot and chilled water lines. They will relieve stresses caused by changes in temperature as well as eliminate the transmission of noise and vibration.

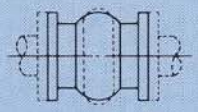
DEFINITION OF MOVEMENT

Axial Compression



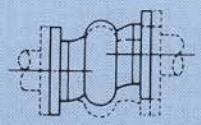
Reduction of face-to-face dimension measured along the axis.

Axial Elongation



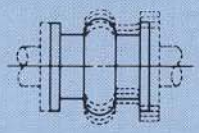
Increase of face-to-face dimension measured along the axis.

Transverse or Lateral Movement



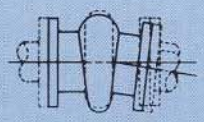
The movement of the joint perpendicular to the axis.

Vibration Absorption



The movement of the joint due to vibrations which are effectively intercepted and insulated against transmission to remainder of system.

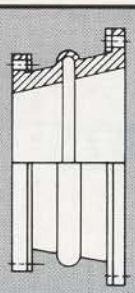
Angular Movement



The displacement of the longitudinal axis of the joint from its initial straight line position (a combination of axial elongation and axial compression).

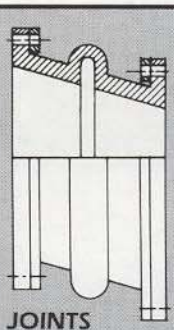
Flexibility is the Key

Unaflex offers the greatest variety of Expansion Joints available to industry. Extensive inventory of standard products



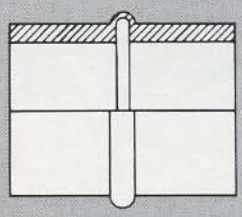
TAPERED JOINTS

Tapered joints are used to connect pipe lines of unequal diameter. They may be manufactured as concentric or eccentric, depending upon pipe alignment.



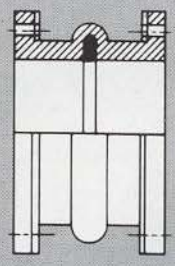
OFFSET JOINTS

Offset joints are used to correct initial pipe misalignment greater than ⅛ inch. Drawings must accompany orders or inquiries for offset joints.



SLEEVE-TYPE JOINTS

This type of joint is constructed as a standard spool-type joint minus the integral flanges. The I.D. of the sleeve end is the same as the O.D. of the pipe.



FILLED ARCHES

Filled arches are built as an integral part of the carcass. Their function is to reduce turbulence and prevent the collection of sediment in the archway. Although they are of low durometer filler stock, movement of the joint is reduced approximately 50%.

SEWAGE TREATMENT PLANTS
UNAFLEX Rubber Expansion Joints are used on the aeration lines, grit pump line, raw sewage lines and sludge pumps.

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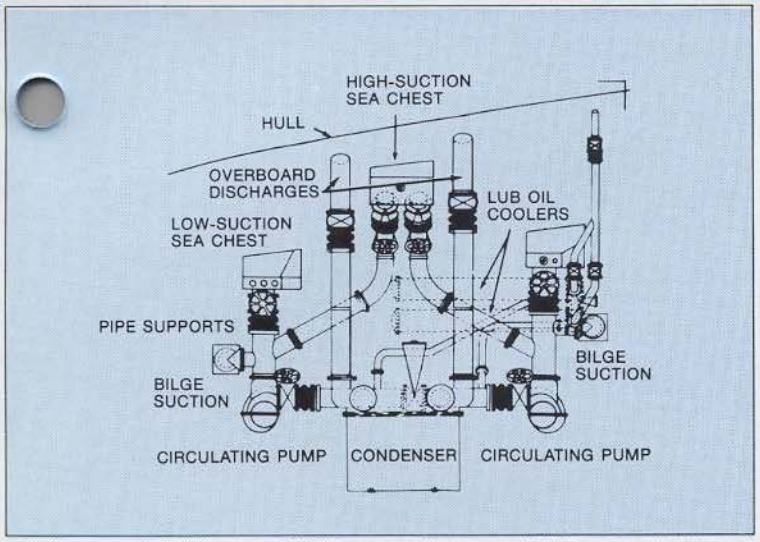
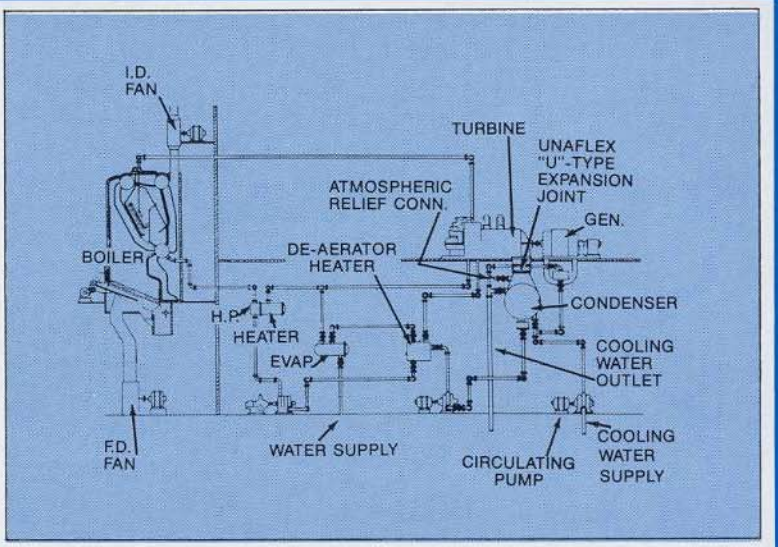


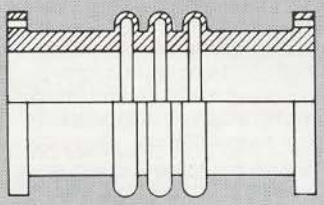


MARINE APPLICATIONS UNAFLEX Expansion Joints eliminate destructive electrolytic action as well as insulate the transmission of noise and vibration. They are approved by U.S. Navy and U.S. Coast Guard and conform to ABS requirements. Special fire retardant expansion joints conforming to MIL E-15330 D are also available.

CENTRAL POWER STATIONS Due to their compactness and ease with which they accommodate all types of movement, UNAFLEX Expansion Joints are adaptable to a variety of uses in central power plants. Applications include condenser auxiliary exhaust lines, connections to air ejector, condensate pump, and low-pressure feed suction lines. Special joints available for temperatures up to 350°F and 400°F in flue duct applications.

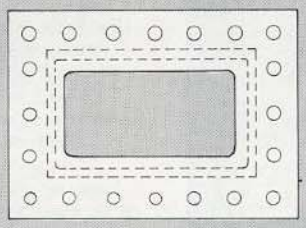
to our Success...

as represented in this catalog to custom variations of almost any configuration imaginable are capabilities we pride ourselves on.



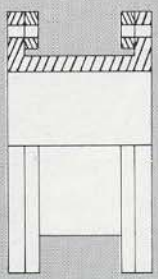
MULTIPLE ARCHES

The purpose of additional arches is to increase movement of the joint. Movement of a multiple arch joint can be calculated by multiplying the movement of a single arch joint by the number of arches.



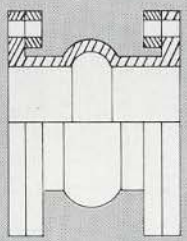
RECTANGULAR

Rectangular or square expansion joints are available in light-weight ducting constructions to heavy duty styles for connection between turbine and condensers.



NO ARCH

These joints are available for applications where vibration or sound is a factor but movement is not.



WIDE ARCH

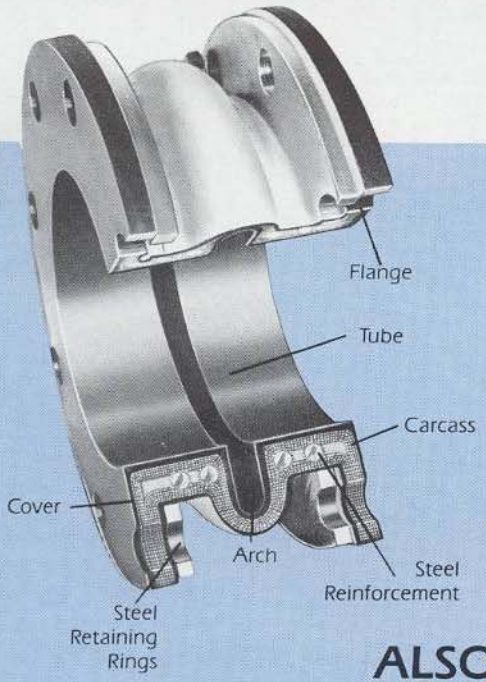
This type of joint is available when the greatest amount of movement in the shortest possible space is required. Wide arch constructions are available with all the above mentioned variations.

GENERAL ORDERING INFORMATION

To help us provide you with the best expansion joint for the service intended and at the lowest possible cost, please use the following checklist.

1. Specify style (140, 150, etc.) if determined.
2. Quantity required.
3. Pipe size – inner diameter(s) of the connecting flange(s).
4. Installed Face to Face Dimensions.
5. Flange drilling – if other than standard 125 lbs. ANSI, please provide flange O.D., bolt circle and number and diameter of bolt holes.
6. Medium conveyed – type of liquid, gas, vapor, etc.
7. Pressure and/or vacuum ranges.
8. Temperature range.
9. Movements – minimum and maximum axial compression, extension and lateral deflection.
10. Retaining Rings – if replacement joint, old retainers might be suitable for reinstallation.
11. Control Units – control units are recommended for use with all expansion joints. For the small additional charge, safety and longevity are enhanced. They must be used when piping support is insufficient.
12. Other conditions which will help us provide the best possible expansion joint for the service. A complete range of standard products as well as special constructions are available to serve every possible need.
13. Testing – specify if Hydrostatic or Vacuum testing is required. Nominal charges are made for these services.

"SUPREME" SPOOL TYPE -

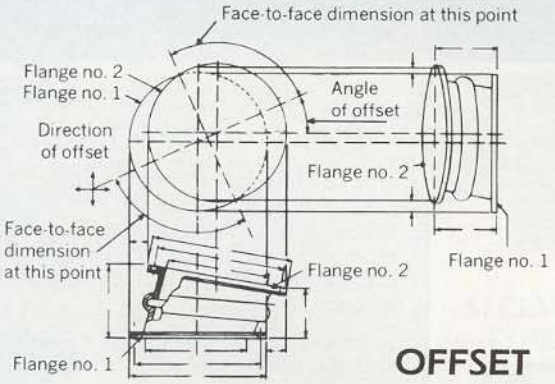


Unaflex "Supreme" Arch-type Expansion Joints are the WORKHORSE of our line. The arch design is the key that furnishes the flexibility required. Basic styles available in single, multiple or wide arch constructions are: Style 150 for pressure and vacuum, Style 200 for Heavy Duty pressure and vacuum, and Style 200XL for very high pressure service. Expansion Joints that handle up to 500°F are available.

Basic construction consists of tube, flange, carcass, internal steel reinforcements, cover and steel retaining rings.

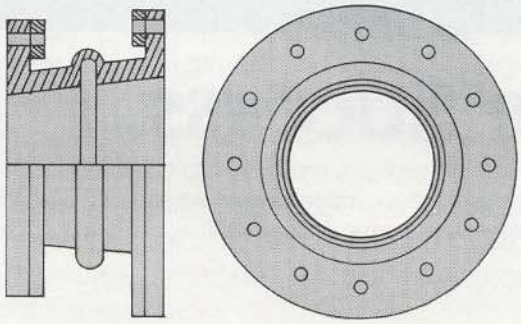
Unaflex Expansion Joints can be made with filled arches, multiple arches, Teflon™ (FEP) lined, sleeve ends, without arch, tapered (eccentric or concentric), offset, with enlarged arches and with special tube compounds for air, gas, oil, petroleum products, acids, slurries and chemicals of many kinds. Fire Retardant construction to ASTM F1123 specifications and readily available with complete testing and certification. All Supreme Expansion Joint constructions conform to U.S. Coast Guard requirements.

ALSO AVAILABLE IN TAPERED CONFIGURATION



OFFSET

Unaflex offset joints are custom-designed and built to remedy a specific misalignment of 1/8-inch or more, plus any nonparallelism of flange faces. They are available in our basic styles (150, 200 and 1000) as well as Navy style ASTM F1123. Conditions of offset and nonparallelism must be stated. Arrows indicate dimensions and other data that must accompany inquiry as well as points in General Ordering information. Offset joints can be made from targets supplied by customer. Flanges may be supplied blank for drilling on job sites.



CONCENTRIC

UNAFLEX "SUPREME" Tapered Spool - Type Expansion Joints are available in three types: Style 150 for pressure and vacuum; Style 200 for heavy duty vacuum and pressure; and Style 200 XL for extra high-pressure applications.

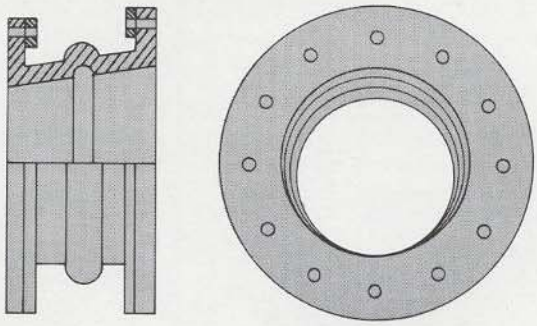
Tapered joints are used to connect flanges with different diameters, whether parallel or offset, with initial misalignment less than 1/8 inch.

Tapered joints can be made with the following variations: With filled arch, sleeve ends, without arch; with special tube materials; with larger arch; with straight section on smaller end of joint to assure clearance of bolts on eccentric type joints and on joints with considerable taper.

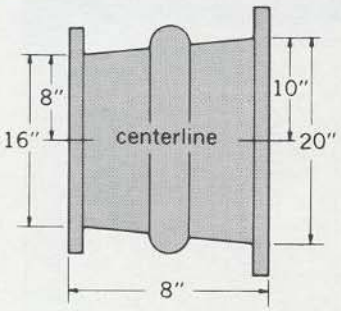
Both concentric and eccentric shapes are available in a wide variety of sizes. As with the regular Expansion joints, when piping is not anchored, control units must be used to prevent over-elongation of the joints.

For determining operating characteristics, use the largest I.D. dimension of the expansion joint for specifying (refer to chart on page 8).

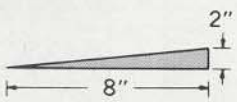
ECCENTRIC



Note: Unaflex Flexible Rubber Pipe can also be supplied in the tapered construction.



ENGINEERING DATA FOR TAPERED EXPANSION JOINTS



Example:
20" I.D. x 16" I.D. x 8" F-F
2/8 = .250 or 14° 29 minutes
Note: drawing not to scale.

The degree of taper should not exceed 25°. Where a taper is more than 15°, a filled arch is recommended. Where a filled arch is utilized, the available movement will be decreased 50% from that of an open arch.

Where a proposed taper is greater than 25°, we recommend a steel reducer be utilized and a spool-type expansion joint be used in the adjacent piping.

The above guides are generally applicable to concentric tapers. Where an eccentric taper exceeds 25° consult Unaflex engineering department.

STYLES 150, 200 AND 200 XL

CONSTRUCTION DETAILS

1. TUBE
The tube is a single piece of leakproof lining extending flange-to-flange. It can be furnished in natural rubber, neoprene, chorobutyl, hypalon, Viton®, Nitrile® or other compounds as desired. All of our rubber compounds are specifically formulated to provide maximum sound and heat insulation as well as abrasion resistance.

2. CARCASS
This is a strong, bias-ply construction, high-strength woven polyester reinforcing fabric between the tube and cover. The fabric will not rot or mildew and is thoroughly impregnated with a special friction compound to give maximum adhesion under pressure, vacuum and stress conditions.

3. STEEL REINFORCEMENTS
These are the chemically treated solid-round, endless steel rings embedded in the carcass (with Unaflex proprietary method to prevent ring migration) giving maximum strength to the expansion joint while under pressure or vacuum service. Round rings, as opposed to square or rectangular rings, are used so there will be no sharp edges which could cut into the reinforcing carcass while flexing causing premature wear to the expansion joint.

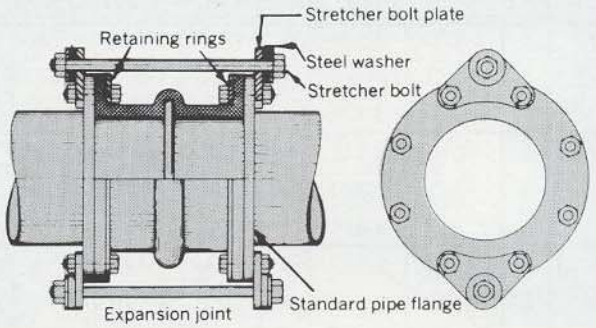
4. COVER
This is the exterior surface of the expansion joint, compounded of fire-retardant neoprene to withstand aging, cracking and corrosion. To further protect the exterior of the expansion joint, and to help resist acid and ozone attack, a special coating of yellow hypalon paint is applied.

5. FLANGES
Flanges are full-faced and made an integral part of the joint to insure a tight reliable seal. No gaskets are necessary. They are drilled to conform to the bolt holes of the companion metal flanges of the pipe line.

6. STEEL RETAINING RINGS
Steel retaining rings are made of flat-rolled steel, split, beveled and plated, and are required for installation.

7. HANDWRAPPED FINISH
Handwrapping the finish (although more time consuming in construction) insures individual attention so that maximum pressure for curing has been obtained.

Style 150 - For Pressure/Vacuum service
Style 189 - For High Temp and Low Spring rate, pressure limited to 25 Psi.
Style 200 - For Heavy Duty High Pressure/Vacuum service
Style 200XL - For very high pressures. Consult factory for construction details.
Style 1000 - Wide arch offers more movement. Hand wrapped build process offers a large variety of construction variations.
Style 1100 - Wide arch offers more movement. Molded design keeps cost low.



CONTROL UNITS – Excessive elongation, caused by shifting of pipe lines, may seriously damage rubber expansion joints. This damage can occur when: necessary support is not provided for the weight of the pipe line; low temperatures in the line are encountered; the lines on the pressure side of air compressors are not anchored properly. Such destructive elongation can be controlled with UNAFLEX control units. These units are recommended for use where such conditions occur, such as on air-conditioning units that are subjected to reduced temperatures.

In general, control units are always recommended as an additional safety factor, preventing damage to the connector and associated equipment. Our experts will recommend the units appropriate for your installation.

TEMPERATURE LIMITS FOR CONTINUOUS SERVICE

Style	Temp.	Style	Temp.
150	180°F	150HTS	300°F
200	180°F	200HTS	300°F
150HT	250°F	150V	400°F
200HT	250°F	200V	400°F
189SG	500°F (Low Pressure)		

STYLES 189-150-200-200XL-1000

Joint Size I.D. (in.)	Single Arch Min. f-f(in.)	Double Arch Min. f-f(in.)	Triple Arch Min. f-f(in.)
1/2 to 6	6	10/12*	12/16*
8	6	10/12*	14/18*
10	8	12/16*	14/20*
12	8	12/16*	14/20*
14 to 20	8	12/16*	16/20*
22 to 24	10	14/16*	18/22*
26 to 34	10	14/16*	18/22*
36 to 40	10	14/18*	18/22*
42 to 144	12	14/18*	18/22*

* Wide Arch Style 1000

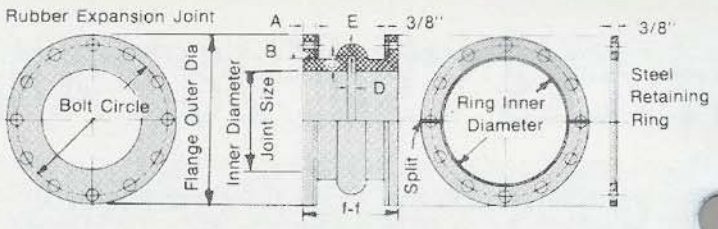
Note: These face - to - face dimensions are only a guide. Consult factory for special requirements.

SUGGESTIONS FOR INSTALLATION AND MAINTENANCE

1. Clean all foreign matter and remove burrs or sharp edges from flanges.
2. All pipe lines should be properly supported, so that the expansion joints do not carry the pipe load.
3. Remove burrs or sharp edges from flanges.
4. Do not install joints on raised face flanges of more than 1/16".
5. All pipes are to be lined up accurately before installing expansion joints. Offset joints should be installed where misalignment is greater than the lateral movement allowed by joint construction.
6. Paint flange face with a mixture of ordinary graphite mixed with enough glycerine to form a thin paste. This will assist removal if it should become necessary.
7. Bolts should be on the inside of the joint flange. Metal washer must be placed at the facing of the split retaining rings.
8. Bolts should be tightened by alternating around the flange and all tightened equally.
9. Slight gouges or abraded areas caused by tools or bolts during installation should be sealed with rubber cement and painted to prevent deterioration of the carcass.
10. Bolt tightness should be checked one week after going on stream and checked periodically thereafter.
11. Joints installed outdoors should have a neoprene cover. All joints should be painted with Unaflex Hypalon paint.
12. All joints should be painted with Unaflex Hypalon paint once a year.
13. If system is not anchored to insure against movement beyond maximum stated limits control units must be used.

DIMENSIONS FOR "SUPREME" SPOOL TYPE EXPANSION JOINTS SINGLE ARCH

We do not use marginal constructions which reduce safety factors and cause pressure reductions with slight operating pressure increases. All "Supreme" Expansion Joints have a minimum 4 to 1 safety factor at rated operating temperatures and pressures.



A - Flange Thickness
B - Body Thickness
C - Internal Arch Height
D - Arch Width
E - Arch Thickness

Note: Style **200XL** movements are the same as Style 200. Call for pressure ratings to match application.

Joint Size I.D.	Face -to- Face	Flange O.D.	Bolt Circle Dia.	No.of Bolt Holes	Bolt Hole Dia.	Ring I.D.	A	B	C	D	E	Style 150 Max P.S.I.	Style 200 Max P.S.I.	MOVEMENTS Axial Comp.	Axial Ext.	Trav. Defl.	WEIGHTS Joint Wt.	Ret. Rgs.	Ctrl. Units
1/2	6	3-1/2	2-3/8	4	9/16	1-1/4	1/2	7/8	1	1/2	3/8	165	200	1/2	1/4	1/2	1	1-1/2	6
3/4	6	3-7/8	2-3/4	4	9/16	1-5/8	1/2	7/8	1	1/2	3/8	165	200	1/2	1/4	1/2	1-1/2	2	6
1	6	4-1/4	3-1/8	4	5/8	1-7/8	9/16	7/8	1	1/2	3/8	165	200	1/2	1/4	1/2	2	2-1/4	6
1-1/4	6	4-5/8	3-1/2	4	5/8	2-1/8	9/16	7/8	1-1/8	1/2	7/16	165	200	1/2	1/4	1/2	2-1/2	2-1/2	6
1-1/2	6	5	3-7/8	4	5/8	2-3/8	9/16	7/8	1-1/8	1/2	7/16	165	200	1/2	1/4	1/2	3	3	6
2	6	6	4-3/4	4	3/4	3-1/8	9/16	29/32	1-1/4	1/2	1/2	165	200	1/2	1/4	1/2	4	4	7
2-1/2	6	7	5-1/2	4	3/4	4-1/8	9/16	29/32	1-1/4	1/2	1/2	165	200	1/2	1/4	1/2	4-1/2	5-1/2	7
3	6	7-1/2	6	4	3/4	4-5/8	9/16	29/32	1-1/4	1/2	1/2	165	200	1/2	1/4	1/2	5-1/2	6	7
4	6	9	7-1/2	8	3/4	5-7/8	9/16	7/8	1-1/4	1/2	1/2	165	200	1/2	1/4	1/2	8	7-1/2	8
5	6	10	8-1/2	8	7/8	6-7/8	9/16	7/8	1-1/4	1/2	1/2	140	200	1/2	1/4	1/2	9	8	8
6	6	11	9-1/2	8	7/8	7-7/8	5/8	1	1-1/4	1/2	1/2	140	200	1/2	1/4	1/2	11	9	9
8	6	13-1/2	11-3/4	8	7/8	9-7/8	3/4	1	1-1/2	3/4	5/8	100	190	3/4	1/4	1/2	15	12	12
10	8	16	14-1/4	12	1	12-1/8	3/4	1-5/32	1-1/2	3/4	11/16	100	190	3/4	1/4	1/2	23	16	16
12	8	19	17	12	1	14-1/2	3/4	1-5/32	1-1/2	3/4	11/16	100	190	3/4	3/8	1/2	34	22	16
14	8	21	18-3/4	12	1-1/8	16-1/2	7/8	1-5/32	2	3/4	3/4	85	130	3/4	3/8	1/2	40	25	20
16	8	23-1/2	21-1/4	16	1-1/8	18-1/2	7/8	1-5/32	2	3/4	3/4	65	110	3/4	3/8	1/2	47	27	20
18	8	25	22-3/4	16	1-1/4	20-1/2	7/8	1-5/32	2	3/4	3/4	65	110	3/4	3/8	1/2	56	29	21
20	8	27-1/2	25	20	1-1/4	22-5/8	1	1-5/32	2	7/8	25/32	65	110	7/8	3/8	1/2	67	35	21
22▪	10	29-1/2	27-1/4	20	1-3/8	24-5/8	1	1-5/32	2	7/8	25/32	60	100	7/8	7/16	1/2	70	44	32
24	10	32	29-1/2	20	1-3/8	26-5/8	1	1-5/32	2	7/8	25/32	60	100	7/8	7/16	1/2	79	46	32
26▪	10	34-1/4	31-3/4	24	1-3/8	28-7/8	1	1-3/16	2-1/4	1	13/16	55	90	1	1/2	1/2	100	50	32
28▪	10	36-1/2	34	28	1-3/8	30-7/8	1	1-3/16	2-1/4	1	13/16	55	90	1	1/2	1/2	102	55	32
30	10	38-3/4	36	28	1-3/8	32-7/8	1	1-3/16	2-1/4	1	13/16	55	90	1	1/2	1/2	117	58	32
34▪	10	43-3/4	40-1/2	32	1-5/8	37	1	1-3/16	2-1/4	1	13/16	55	90	1	1/2	1/2	122	91	43
36	10	46	42-3/4	32	1-5/8	39	1	1-3/16	2-1/4	1	13/16	55	90	1	1/2	1/2	143	99	43
40▪	10	50-3/4	47-1/4	36	1-5/8	43	1	1-3/16	2-1/4	1	13/16	55	90	1	1/2	1/2	173	108	43
42	12	53	49-1/2	36	1-5/8	45-1/4	1-3/16	1-1/4	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	193	110	44
44▪	12	55-1/4	51-3/4	40	1-3/4	47-1/4	1-3/16	1-1/4	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	198	136	44
48	12	59-1/2	56	44	1-5/8	51-1/4	1-3/16	1-1/4	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	211	154	87
50▪	12	61-3/4	58-1/4	44	1-7/8	53-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	240	163	87
54	12	66-1/4	62-3/4	44	2	57-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	265	185	87
56▪	12	68-3/4	65	48	2	59-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	288	203	87
60	12	73	69-1/4	52	2	63-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	309	215	87
62▪	12	75-3/4	71-3/4	52	2	65-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	325	230	87
66▪	12	80	76	52	2	69-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	55	80	1-1/8	1/2	1/2	350	255	87
72	12	86-1/2	82-1/2	60	2	75-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/8	1/2	1/2	385	300	87
78	12	93	89	64	2-1/8	81-1/4	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/8	1/2	1/2	410	325	103
84	12	99-3/4	95-1/2	64	2-1/4	87-1/2	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/8	9/16	1/2	435	350	113
96	12	113-1/4	108-1/2	68	2-1/2	99-3/8	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/8	9/16	1/2	460	375	125
102	12	120	114-1/2	72	2-5/8	105-1/2	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/16	9/16	1/2	485	400	137
108	12	126-3/4	120-3/4	72	2-5/8	111-1/2	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/16	9/16	1/2	510	425	139
120	12	140-1/4	132-3/4	76	2-7/8	123-1/2	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/16	9/16	1/2	535	560	151
132	12	153-3/4	145-3/4	80	3-1/8	135-1/2	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/16	9/16	1/2	560	585	163
144	12	167-1/4	158-1/4	84	3-3/8	147-1/2	1-3/16	1-3/8	2-1/2	1-1/8	29/32	45	70	1-1/16	9/16	1/2	585	610	176

Note: It is recommended customer verify bolt hole diameter for joints over 48".

Table 1: Optional Flange Drillings (other flange drillings available, consult factory)

I.D in-mm	American 250/300# Conforms to: ANSI B16.1 and B16.5 Flange Width	Flange O.D.	Bolt Circle	No. of Holes	Hole Dia.	British Standard 10:1962 Conforms to B.S-10 Table E. Flange Width	Flange O.D.	Bolt Circle	No. of Holes	Hole Dia.	I.D in-mm	Metric Series 1 Conforms to I.S.O. 2084-1974 Table NP-10 Flange Width	Flange O.D.	Bolt Circle	No. of Holes	Hole Dia.	J.I.S. Standard B-2212 Conforms to: J.I.S. 10KG/CM Flange Width	Flange O.D.	Bolt Circle	No. of Holes	Hole Dia.
1	.59	4.88	3.5	4	.75	.59	4.5	3.25	4	.563	1	.59	4.53	3.35	4	.55	.59	4.92	3.54	4	.75
25	15.0	124.0	89.0	4	19.0	15.0	114.3	82.6	4	14.2	25	15.0	115.0	85.0	4	14.0	15.0	125.0	90.0	4	19.0
1-1/4	.59	5.25	3.88	4	.75	.59	4.75	3.44	4	.563	1-1/4	.59	5.51	3.94	4	.71	.59	5.31	3.94	4	.75
32	15.0	133.0	98.0	4	19.0	15.0	120.7	87.3	4	14.2	32	15.0	140.0	100.0	4	18.0	15.0	135.0	100.0	4	19.0
1-1/2	.59	6.12	4.5	4	.88	.59	5.25	3.88	4	.563	1-1/2	.59	5.91	4.33	4	.71	.59	5.51	4.13	4	.75
40	15.0	156.0	114.0	4	22.2	15.0	133.4	98.4	4	14.2	40	15.0	150.0	110.0	4	18.0	15.0	140.0	105.0	4	19.0
2	.71	6.5	5.0	8	.75	.63	6.0	4.5	4	.75	2	.71	6.5	4.92	4	.71	.63	6.1	4.72	4	.75
50	18.0	165.0	127.0	8	19.0	16.0	152.4	114.3	4	19.0	50	18.0	165.0	125.0	4	18.0	16.0	155.0	120.0	4	19.0
2-1/2	.71	7.5	5.88	8	.88	.71	6.5	5.0	4	.75	2-1/2	.71	7.28	5.71	4	.71	.71	6.89	5.51	4	.75
65	18.0	191.0	149.0	8	22.2	18.0	165.1	127.0	4	19.0	65	18.0	185.0	145.0	4	18.0	18.0	175.0	140.0	4	19.0
3	.79	8.25	6.62	8	.88	.71	7.25	5.75	4	.75	3	.79	7.87	6.3	8	.71	.71	7.28	5.91	8	.75
80	20.0	210.0	168.0	8	22.2	18.0	184.2	146.1	4	19.0	80	20.0	200.0	160.0	8	18.0	18.0	185.0	150.0	8	19.0
3-1/2	.79	9.0	7.25	8	.88	.71	8.0	6.5	8	.75	3-1/2	.79	-	-	-	-	.71	7.68	6.3	8	.75
90	20.0	229.0	184.0	8	22.2	18.0	203.2	165.1	8	19.0	90	20.0	-	-	-	-	18.0	195.0	160.0	8	19.0
4	.79	10.0	7.88	8	.88	.71	8.5	7.0	8	.75	4	.79	8.66	7.09	8	.71	.71	8.27	6.89	8	.75
100	20.0	254.0	200.0	8	22.2	18.0	215.9	177.8	8	19.0	100	20.0	220.0	180.0	8	18.0	18.0	210.0	175.0	8	19.0
5	.87	11.0	9.25	8	.88	.79	10.0	8.25	8	.75	5	.87	9.84	8.27	8	.71	.79	9.84	8.27	8	.91
125	22.0	279.0	235.0	8	22.2	20.0	254.0	209.6	8	19.0	125	22.0	250.0	210.0	8	18.0	20.0	250.0	210.0	8	23.0
6	.87	12.5	10.62	12	.88	.87	11.0	9.25	8	.88	6	.87	11.22	9.45	8	.87	.87	11.02	9.45	8	.91
150	22.0	318.0	270.0	12	22.2	22.0	279.4	235.0	8	22.2	150	22.0	285.0	240.0	8	22.0	22.0	280.0	240.0	8	23.0
8	.94	15.0	13.0	12	1.0	.87	13.25	11.5	8	.88	8	.94	13.39	11.61	8	.87	.87	12.99	11.42	12	.91
200	24.0	381.0	330.0	12	25.4	22.0	336.6	292.1	8	22.2	200	24.0	340.0	295.0	8	22.0	22.0	330.0	290.0	12	23.0
10	1.02	17.5	15.25	16	1.12	.94	16.0	14.0	12	.88	10	1.02	15.55	13.79	12	.87	.94	15.75	13.98	12	.98
250	26.0	445.0	387.0	16	28.6	24.0	406.4	355.6	12	22.2	250	26.0	395.0	350.0	12	22.0	24.0	400.0	355.0	12	25.0
12	1.02	20.5	17.75	16	1.25	.94	18.0	16.0	12	1.0	12	1.02	17.52	15.75	12	.87	.94	17.52	15.75	16	.98
300	26.0	521.0	451.0	16	31.8	24.0	457.2	406.4	12	25.4	300	26.0	445.0	400.0	12	22.0	24.0	445.0	400.0	16	25.0
14	1.10	23.0	20.25	20	1.25	1.02	20.75	18.5	12	1.0	14	1.10	19.88	18.11	16	.87	1.02	19.29	17.52	16	.98
350	28.0	584.0	514.0	20	31.8	26.0	527.1	469.9	12	25.4	350	28.0	505.0	460.0	16	22.0	26.0	490.0	445.0	16	25.0
16	1.26	25.5	22.5	20	1.38	1.1	22.75	20.5	12	1.0	16	1.26	22.24	20.28	16	1.02	1.1	22.05	20.08	16	1.06
400	32.0	648.0	572.0	20	34.9	28.0	577.9	520.7	12	25.4	400	32.0	565.0	515.0	16	26.0	28.0	560.0	510.0	16	27.0
18	1.42	28.0	24.75	24	1.38	1.18	25.25	23.0	16	1.0	18	1.26	24.21	22.24	20	1.02	1.18	24.41	22.24	20	1.06
450	36.0	711.0	629.0	24	34.9	30.0	641.4	584.2	16	25.4	450	32.0	615.0	565.0	20	26.0	30.0	620.0	565.0	20	27.0
20	1.50	30.5	27.0	24	1.38	1.18	27.75	25.25	16	1.0	20	1.50	26.38	24.41	20	1.02	1.18	26.57	24.41	20	1.06
500	38.0	775.0	686.0	24	34.9	30.0	704.9	641.4	16	25.4	500	38.0	670.0	620.0	20	26.0	30.0	675.0	620.0	20	27.0
22	1.50	33.0	29.25	24	1.38	1.18	30.0	27.5	16	1.13	22	1.50	28.74	26.57	20	1.18	1.18	29.33	26.77	20	1.3
550	38.0	838.0	743.0	24	34.9	30.0	762.0	698.5	16	28.6	550	38.0	730.0	675.0	20	30.0	30.0	745.0	680.0	20	33.0
24	1.50	36.0	32.0	24	1.62	1.18	32.5	29.75	16	1.25	24	1.50	30.71	28.54	20	1.18	1.18	31.3	28.74	24	1.3
600	38.0	914.0	813.0	24	41.3	30.0	825.5	755.7	16	31.8	600	38.0	780.0	725.0	20	30.0	30.0	795.0	730.0	24	33.0
26	1.50	38.25	34.5	28	1.75	1.18	-	-	-	-	26	1.50	32.87	30.71	24	1.18	-	-	-	-	-
650	38.0	972.0	876.0	28	44.5	30.0	-	-	-	-	650	38.0	835.0	780.0	24	30.0	-	-	-	-	-
28	1.50	40.75	37.0	28	1.75	1.18	-	-	-	-	28	1.50	35.24	33.07	24	1.18	-	-	-	-	-
700	38.0	1035.0	940.0	28	44.5	30.0	-	-	-	-	700	38.0	895.0	840.0	24	30.0	-	-	-	-	-
30	1.50	43.0	39.25	28	2.0	1.18	39.25	36.5	20	1.38	30	1.50	37.99	35.43	24	1.3	-	-	-	-	-
750	38.0	1092.0	997.0	28	50.8	30.0	997.0	927.1	20	34.9	750	38.0	965.0	900.0	24	33.0	-	-	-	-	-

Table 2 : Standard / Special Drilling ▪ Expansion Joint Dimensions ▪ Control Units

Joint I.D.	125/150# Flange Dimensions Joints/Rings/Rods Flange O.D.	Bolt Circle	No. of Holes	Size of Holes	250/300# Flange Dimensions Joints/Rings/Rods Flange O.D.	Bolt Circle	No. of Holes	Hole Dia.	Weights of Ret. Rings 150# Rings Wt./#	300# Rings Wt./#	Exp. Joint I.D.	125/150# Flange Dimensions Joints/Rings/Rods Flange O.D.	Bolt Circle	No. of Holes	Size of Holes	250/300# Flange Dimensions Joints/Rings/Rods Flange O.D.	Bolt Circle	No. of Holes	Hole Dia.	Weights of Ret. Rings 150# Rings Wt./#	300# Rings Wt./#
1	4.25	3.125	4	.625	4.875	3.5	4	.750	1.9	2.9	10	16.0	14.25	12	1.0	17.5	15.25	16	1.125	17.0	23.0
1-1/4	4.625	3.5	4	.625	5.25	3.875	4	.750	2.4	3.0	12	19.0	17.0	12	1.0	20.5	17.75	16	1.25	24.1	31.3
1-1/2	5.0	3.875	4	.625	6.125	4.5	4	.875	2.6	4.4	14	21.0	18.75	12	1.125	23.0	20.25	20	1.25	26.8	37.0
2	6.0	4.75	4	.75	6.5	5.0	8	.75	3.6	4.3	16	23.5	21.25	16	1.125	25.5	22.5	20	1.375	32.1	45.0
2-1/2	7.0	5.5	4	.75	7.5	5.875	8	.875	5.3	5.5	18	25.0	22.75	16	1.25	28.0	24.75	24	1.375	33.6	58.0
3	7.5	6.0	4	.75	8.25	6.625	8	.875	5.6	6.0	20	27.5	25.0	20	1.25	30.5	27.0	24	1.375	35.9	67.0
3-1/2	8.5	7.0	8	.75	9.0	7.25	8	.875	6.5	7.0	22	29.5	27.25	20	1.375	33.0	29.25	24	1.625	38.5	80.0
4	9.0	7.5	8	.75	10.0	7.875	8	.875	7.3	10.0	24	32.0	29.5	20	1.375	36.0	32.0	24	1.625	47.3	91.0
5	10.0	8.5	8	.875	11.0	9.25	8	.875	7.9	11.6	30	38.75	36.0	28	1.375	43.0	39.25	28	2.0	66.0	120.0
6	11.0	9.5	8	.875	12.5	10.625	12	.875	9.1	14.5	36	46.0	42.75	32	1.625	50.0	46.0	32	2.25*	85.3	140.0
8	13.5	11.75	8	.875	15.0	13.0	12	1.0	14.0	19.6											

Table 3: Navy Drilling Specifications

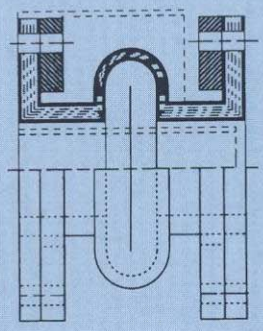
MIL-F-20042C - 50 LB.
MIL-F-20042C - 150 LB.
Bu Ships Drawing B-176

Joint Size (inches)	O.D.	B.C.	No. of Holes	Hole Dia.
1/4	3-1/4	2-1/8	3	9/16
3/8	3-3/8	2-1/4	3	9/16
1/2	3-9/16	2-7/16	3	9/16
3/4	3-13/16	2-11/16	4	9/16
1	4-1/4	3-1/8	4	9/16
1-1/4	4-1/2	3-3/8	4	9/16
1-1/2	5-1/16	3-15/16	6	9/16
2	5-9/16	4-7/16	6	9/16
2-1/2	6-1/8	5	6	9/16
3	6-5/8	5-1/2	8	9/16
3-1/2	7-3/16	6-1/16	8	9/16
4	7-11/16	6-9/16	8	9/16
4-1/2	8-3/16	7-1/16	10	9/16
5	9-1/16	7-13/16	10	11/16
5-1/2	9-9/16	8-5/16	10	11/16
6	10-1/8	8-7/8	12	11/16
6-1/2	10-5/8	9-3/8	12	11/16
7	11-5/16	10	12	11/16
7-1/2	11-7/8	10-9/16	12	11/16
8	12-3/8	11-1/16	14	11/16
8-1/2	12-15/16	11-5/8	14	11/16
9	13-15/16	12-3/8	14	13/16
9-1/2	14-1/2	12-15/16	14	13/16
10	15	13-7/16	15	13/16
11	16-9/16	15	16	13/16
12	17-5/8	16-1/16	18	13/16
14	19-1/8	17-3/8	19	15/16
15	25-1/8	18-3/8	20	15/16
16	21-3/16	19-7/16	20	15/16
18	23-1/4	21-1/2	22	15/16
20	25-13/16	23-13/16	24	1-1/16
22	27-7/8	25-7/8	26	1-1/16
24	30	28	28	1-1/16
25	31-1/2	29-1/4	29	1-3/16
26	32-9/16	30-5/16	30	1-3/16
28	34-11/16	32-7/16	32	1-3/16
30	36-13/16	34-9/16	35	1-3/16
32	39	36-3/4	36	1-3/16
33	40	37-3/4	36	1-3/16
34	41	38-3/4	36	1-3/16
35	42-7/8	40-3/8	36	1-5/16
36	43-7/8	41-3/8	36	1-5/16
38	46-1/8	43-5/8	36	1-5/16
40	48-1/8	45-5/8	36	1-5/16
42	50-1/4	47-3/4	38	1-5/16
46	54-1/2	52	40	1-5/16

Note: Navy joints to MIL-15330D, Class A types I and III are normally drilled to either MIL-F-20042C as above or to ANSI B16.5, Class 150, as specified by the customer. Unaflex is a major supplier of Rubber Expansion joints to the U.S. Navy. Our Style 150 NAVY is fire retardant and meets Government Specifications MIL-E-15330D (SH). Other specialty connectors are made to specifications for use on ship and submarine ducting systems as Fan Connectors, as flexible pipe on Fire Pumps and many other applications.

SUPERFLEX STYLE 1000

The Superflex 1000 provides double arch movements utilizing a single low profile wide arch. Manufactured utilizing tire industry technology the Style 1000 has been designed to provide greater strength and pressure capabilities. The construction combines woven polyester fabric and polyester tire cord into a fabric matrix bonded with an elastomer then reinforced with wire to create a product with superior performance characteristics.



The wide self-flushing arch provides more movement than a traditional spool type joint. When built with a filled arch for smooth bore service, (such as slurry applications) the movements are the same as single open arch spool type joints. The double reinforced construction gives longer life expectancy and is also available in a full range of elastomers to enable multi-purpose applications.

The primary difference between the Style 1000 and Style 1100 is in the manufacturing process.

The 1000 is hand-wrapped to allow for design variations including offsets, non-standard face to face dimensions, multi-arch configurations and special flanges or drillings while still offering wide arch movement.

The Style 1000 is available in these Elastomers and Constructions:

- Chlorobutyl
- EPDM
- Gum
- Hypalon
- Neoprene
- Nitrile
- SBR
- Silicone
- Viton®/ Flourel®
- Multi-Arch
- Offset
- Special ends
- Alternative drillings

(see page 9)

Optional liners and covers are available.

SUPERFLEX STYLE 1100

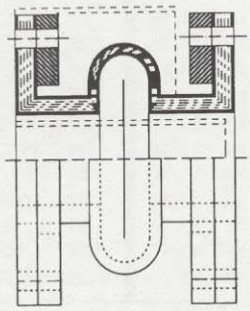
Unaflex's 1100 series has been designed to compete with the imports in terms of cost, and out perform the imports with a product that's made in America. The movements and benefits match the Style 1000 (above), if you don't need the customization options of the Style 1000... the Style 1100 is a value packed expansion joint.

The cover has been formulated with an ozone and temperature resistant compound which prevents the Style 1100 from cracking unlike the imports. This new manufacturing technology has provided a product that has excellent performance at competitive price.

Due to the molded construction all face to face dimensions are standard. Engineered to withstand full vacuum and high pressure, (see next page). the Style 1100 is an excellent performer with a super price. Specify Superflex!

Unaflex Style 1100 expansion joints offer an exceptional value by combining the best features of spool type joints with a competitive price. Available in many different elastomers.

The heavy-weight tube & carcass are designed to handle tough applications where chemicals and abrasives are a factor.



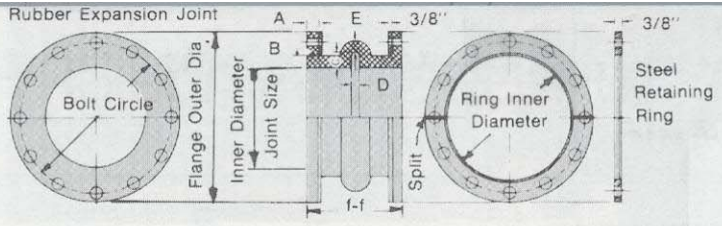
This drawing shows the 1100 Style construction. A wide self flushing arch allows greater movement and flexibility.

Available in sizes from 2" to 36"
See next page for dimension and movement details.

Optional liners and covers are available.

DIMENSIONS FOR "SUPERFLEX" STYLE 1000 & 1100 EXPANSION JOINTS WIDE ARCH

We do not use marginal constructions which reduce safety factors and cause pressure reductions with slight operating pressure increases. All "SUPERFLEX" Expansion Joints have a minimum 4 to 1 safety factor at rated operating temperatures and pressures.



A - Flange Thickness
B - Body Thickness
C - Internal Arch Height
D - Arch Width
E - Arch Thickness

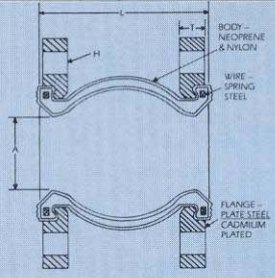
Note: Maximum diameter for Style 1100 is 36".

Joint Size I.D.	Face -to- Face	Flange O.D.	Bolt Circle Dia.	No.of Bolt Holes	Bolt Hole Dia.	Ring I.D.	A	B	C	D	E	Style 1000 Max P.S.I.	Style 1100 Max P.S.I.	Movements Axial Comp.	Movements Axial Ext.	Movements Trav. Defl.	Weights Joint Wt.	Weights Ret. Rgs.	Weights Ctrl. Units
1/2	6	3-1/2	2-3/8	4	9/16	1-1/4	1/2	7/8	1	1-3/4	3/8-	225	225	1-3/4	3/4	3/4	1	1-1/2	6
3/4	6	3-7/8	2-3/4	4	9/16	1-5/8	1/2	7/8	1	1-3/4	3/8-	225	225	1-3/4	3/4	3/4	1-1/2	2	6
1	6	4-1/4	3-1/8	4	5/8	1-7/8	9/16	7/8	1	1-3/4	3/8	225	225	1-3/4	3/4	3/4	2	2-1/4	6
1-1/4	6	4-5/8	3-1/2	4	5/8	2-1/8	9/16	7/8	1-1/8	1-3/4	7/16	225	225	1-3/4	3/4	3/4	2-1/2	2-1/2	6
1-1/2	6	5	3-7/8	4	5/8	2-3/8	9/16	7/8	1-1/8	1-3/4	7/16	225	225	1-3/4	3/4	3/4	3	3	6
2	6	6	4-3/4	4	3/4	3-1/8	9/16	29/32	1-1/4	1-3/4	1/2	225	225	1-3/4	3/4	3/4	4	4	7
2-1/2	6	7	5-1/2	4	3/4	4-1/8	9/16	29/32	1-1/4	1-3/4	1/2	225	225	1-3/4	3/4	3/4	4-1/2	5-1/2	7
3	6	7-1/2	6	4	3/4	4-5/8	9/16	29/32	1-1/4	1-3/4	1/2	225	225	1-3/4	3/4	3/4	5-1/2	6	7
4	6	9	7-1/2	8	3/4	5-7/8	9/16	7/8	1-1/4	1-3/4	1/2	225	225	1-3/4	3/4	3/4	8	7-1/2	8
5	6	10	8-1/2	8	7/8	6-7/8	9/16	7/8	1-1/4	1-3/4	1/2	225	225	1-3/4	3/4	3/4	9	8	8
6	6	11	9-1/2	8	7/8	7-7/8	5/8	1	1-1/4	1-3/4	1/2	225	225	1-3/4	3/4	1	11	9	9
8	6	13-1/2	11-3/4	8	7/8	9-7/8	3/4	1	1-1/2	1-3/4	5/8	225	225	1-3/4	3/4	1	15	12	12
10	8	16	14-1/4	12	1	12-1/8	3/4	1-5/32	1-1/2	1-3/4	11/16	225	225	1-3/4	3/4	1	23	16	16
12	8	19	17	12	1	14-1/2	3/4	1-5/32	1-1/2	1-3/4	11/16	225	225	1-3/4	3/4	1	34	22	16
14	8	21	18-3/4	12	1-1/8	16-1/2	7/8	1-5/32	2	1-3/4	3/4	225	225	1-3/4	3/4	1	40	25	20
16	8	23-1/2	21-1/4	16	1-1/8	18-1/2	7/8	1-5/32	2	1-3/4	3/4	160	160	1-3/4	3/4	1	47	27	20
18	8	25	22-3/4	16	1-1/4	20-1/2	7/8	1-5/32	2	1-3/4	3/4	160	160	1-3/4	3/4	1	56	29	21
20	8	27-1/2	25	20	1-1/4	22-5/8	1	1-5/32	2	1-3/4	25/32	130	130	1-3/4	3/4	1	67	35	21
22▪	10	29-1/2	27-1/4	20	1-3/8	24-5/8	1	1-5/32	2	1-3/4	25/32	130	-	1-3/4	3/4	1	70	44	32
24	10	32	29-1/2	20	1-3/8	26-5/8	1	1-5/32	2	1-3/4	25/32	130	130	1-3/4	1	1	79	46	32
26▪	10	34-1/4	31-3/4	24	1-3/8	28-7/8	1	1-3/16	2-1/4	1-3/4	13/16	110	-	1-3/4	1	1	100	50	32
28▪	10	36-1/2	34	28	1-3/8	30-7/8	1	1-3/16	2-1/4	1-3/4	13/16	110	-	1-3/4	1	1	102	55	32
30	10	38-3/4	36	28	1-3/8	32-7/8	1	1-3/16	2-1/4	1-3/4	13/16	95	100	1-3/4	1	1	117	58	32
34▪	10	43-3/4	40-1/2	32	1-5/8	37	1	1-3/16	2-1/4	1-3/4	13/16	95		1-3/4	1	1	122	91	43
36	10	46	42-3/4	32	1-5/8	39	1	1-3/16	2-1/4	2-1/4	13/16	90	100	2-1/4	1	1	143	99	43
40▪	10	50-3/4	47-1/4	36	1-5/8	43	1	1-3/16	2-1/4	2-1/4	13/16	90	-	2-1/4	1	1	173	108	43
42	12	53	49-1/2	36	1-5/8	45-1/4	1-3/16	1-1/4	2-1/2	2-1/4	29/32	90	-	2-1/4	1	1	193	110	44
44▪	12	55-1/4	51-3/4	40	1-3/4	47-1/4	1-3/16	1-1/4	2-1/2	2-1/4	29/32	90	-	2-1/4	1	1	198	136	44
48	12	59-1/2	56	44	1-5/8	51-1/4	1-3/16	1-1/4	2-1/2	2-1/4	29/32	90	-	2-1/4	1	1	211	154	87
50▪	12	61-3/4	58-1/4	44	1-7/8	53-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1	1	240	163	87
54	12	66-1/4	62-3/4	44	2	57-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	265	185	87
56▪	12	68-3/4	65	48	2	59-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	288	203	87
60	12	73	69-1/4	52	2	63-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	309	215	87
62▪	12	75-3/4	71-3/4	52	2	65-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	325	230	87
66▪	12	80	76	52	2	69-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	350	255	87
72	12	86-1/2	82-1/2	60	2	75-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	385	300	87
78	12	93	89	64	2-1/8	81-1/4	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	410	325	103
84	12	99-3/4	95-1/2	64	2-1/4	87-1/2	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	435	350	113
96	12	113-1/4	108-1/2	68	2-1/2	99-3/8	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	460	375	125
102	12	120	114-1/2	72	2-5/8	105-1/2	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	485	400	137
108	12	126-3/4	120-3/4	72	2-5/8	111-1/2	1-3/16	1-3/8	2-1/2	2-1/4	29/35	85	-	2-1/4	1-1/4	1	510	425	139
120	12	140-1/4	132-3/4	76	2-7/8	123-1/2	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	535	560	151
132	12	153-3/4	145-3/4	80	3-1/8	135-1/2	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	560	585	163
144	12	167-1/4	158-1/4	84	3-3/8	147-1/2	1-3/16	1-3/8	2-1/2	2-1/4	29/32	85	-	2-1/4	1-1/4	1	585	610	176

Note: It is recommended customer verify bolt hole diameter for joints over 48".

"UNASPHERE" STYLE 800

The Unasphere is precision molded of neoprene and nylon. It requires less force to move than conventional expansion joints allowing maximum deflection, elongation, and compression. The Unasphere will minimize water hammer or hydraulic shock in any system.

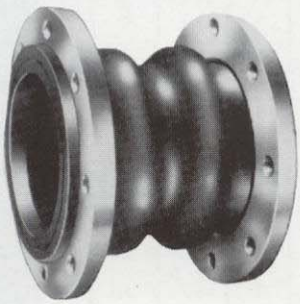


Strength AND Efficiency

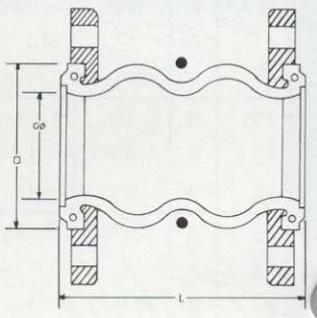
The Unasphere design is inherently stronger than other configurations because of its spherical shape. Pressure exerts itself evenly in all directions and so distributes the forces evenly over a large area. The streamlined, flowing arch reduces turbulence and allows smooth, quiet flow. Sediment cannot build up; therefore, there is no need to fill the arch and thus restrict its movements.

Size	Approx. Face to Face	Flange Thickness	No. Holes	Size	Lateral Deflect.	Elong..	Comp.	Angular Deflect.	Wt. (lbs.) Per Unit
2"	6"	5/8	4	3/4	+-1/2	3/8	1/2	15	7.50
2-1/2"	6"	11/16	4	3/4	+-1/2	3/8	1/2	15	10.50
3"	6"	11/16	4	3/4	+-1/2	3/8	1/2	15	13.50
4"	6"	11/16	8	3/4	+-1/2	3/8	5/8	15	19.50
5"	6"	13/16	8	7/8	+-1/2	3/8	5/8	15	21.50
6"	6"	7/8	8	7/8	+-1/2	3/8	5/8	15	23.50
8"	6"	7/8	8	7/8	+-1/2	3/8	5/8	15	38.50
10"	8"	15/16	12	1	+-3/4	1/2	3/4	15	55.00
12"	8"	15/16	12	1	+-3/4	1/2	3/4	15	98.00

Sizes up to 24" Available. Pressure: -9.7 to 215 PSIG @ 250°F



"UNASPHERE" STYLE 802



Size	Approx. Face to Face	Lateral Comp.	Transverse Elong.	Transverse Deflect.	Angular Deflect
2"	7"	.9	.28	.79	30
2-1/2"	7"	.9	.28	.79	30
3"	7"	.9	.28	.79	30
4"	9"	1.32	.45	.98	30
5"	9"	1.32	.45	.98	30
6"	9"	1.32	.45	.98	30
8"	13"	1.78	.58	1.18	30
10"	13"	1.78	.58	1.18	30
12"	13"	1.78	.58	1.18	30

Sizes up to 24" Available. Pressure: -9.7 to 215 PSIG @ 250°F

DESCRIPTION

The Twin-sphere is precision molded of neoprene and nylon tire cord. The double arch design allows for greater movement four different ways and provides a non-turbulent flow.

Angular movement up to 30 degrees is obtainable with its highly flexible design.

The Twin-sphere comes with steel 150lb. ASA drilled flanges, which float to provide easy installation.

"UNASPHERE" STYLE 803

Operating Pressure: 150 PSI. Vacuum Rating: 500 MM HG
Diameters are available in 3/4", 1", 1-1/4", 1-1/2", and 2".

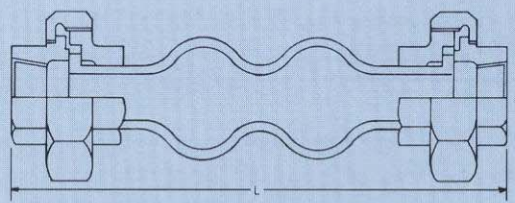
"Twin-Sphere" STYLE 803 for smaller I.D.s

This highly capable, low cost expansion joint is available for smaller diameter piping systems found in power plants, chemical plants, waterworks, sewerage residences, etc.

The Twin-Sphere provides excellent vibration absorption and stress relief in light, compact construction.

Style 803

Size- All
Length-8"
Compression-3/4"
Extension-1/4"
Lateral-3/4"
Angular-45°



Temperature: 250°F

This photograph shows the full face Teflon™ liner which protects all wetted surfaces. For dimensions and working conditions refer to the chart on page 8.

"DURA-PERM"

STYLES 150 AND 200

UNAFLEX "DURA-PERM" Styles 150 and 200 Expansion Joints combine the best features of Teflon™-chemical resistance, anti-stick properties, thermal stability, and resistance to age cracking - with the best features of elastomeric expansion joints - good noise and vibration dampening, high flexibility, high-pressure ratings.

Temperature ratings to 400F are available.
Joints are available in 1" to 48" I.D. in standard face-to-face dimensions, or special lengths. Also available in multiple arch configurations, or as straight pipe (see page 18).

They are recommended for use in the chemical and pulp paper industries because of their capabilities to resist corrosive attack and high temperatures and pressure.

"MULTI-PURPOSE" TFE

STYLE 112-A

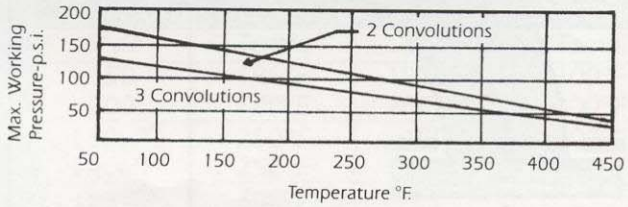
STYLE 113-A

DESCRIPTION

UNAFLEX "MULTI-PURPOSE" TFE Expansion Joints Styles 112-A and 113-A are solid-molded of Teflon™* and specially designed to withstand the higher pressures and temperatures in today's piping systems. Their design allows a shorter face-to-face dimension, making them ideal for installations where space limitations are a factor. They are lightweight in design and corrosion resistant. Available in sizes 1" to 12" I.D. and for temperatures ranging from -300°F to 400°F. Also available with 4, 5 and 6 arches.

*E.I. duPont Trademark.

PERFORMANCE CURVES OF WORKING PRESSURES VS OPERATING TEMPERATURES (ALL SIZES)



EXPANSION JOINT DATA

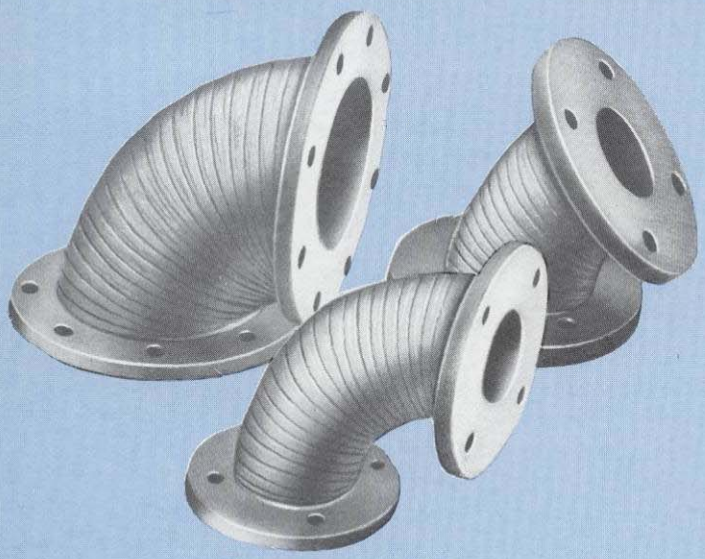
STYLE 112-A							STYLE 113-A						
Nominal Size (in.)	Movement (in.) Neutral Length	Movement (in.) Max. Travel*	Van Stone O.D. (in.)	Max. Mis-Alignment (In.)	Shipping Weight (lbs.)	Liner Length (in.)	Nominal Size (in.)	Movement (in.) Neutral Length	Movement (in.) Max. Travel*	Van Stone O.D. (in.)	Max. Mis-Alignment (in.)	Shipping Weight (lbs.)	Liner Length (in.)
1	1 5/16	3/16	2	1/8	3 1/2	1 3/4	1	1 13/16	7/16	2	1/4	3 1/2	2 1/2
1 1/2	1 1/2	1/4	2 7/8	1/8	5	2	1 1/2	2	1/2	2 7/8	1/4	5 1/2	2 3/4
2	1 7/8	1/4	3 5/8	1/8	9	2 3/8	2	2 3/4	3/4	3 5/8	3/8	9 1/2	3 3/4
2 1/2	1 15/16	5/16	4 1/8	1/8	11 1/2	2 1/2	2 1/2	3	1	4 1/8	3/8	12	4 1/4
3	2 7/16	5/16	5	3/16	16	3	3	3 5/8	1	5	1/2	16 1/2	4 7/8
4	2 5/8	1/2	6 3/16	1/4	19 1/2	3 3/8	4	3 3/4	1 1/8	6 13/16	1/2	21 1/2	5 1/8
5	3 1/16	1 1/16	7 5/16	1/4	27 1/2	4	5	4	1	7 5/16	1/2	29 1/2	5 1/4
6	2 13/16	7/16	8 1/2	1/4	32 1/2	3 1/2	6	4	1 1/8	8 1/2	9/16	34 1/2	5 3/8
8	3 11/16	13/16	10 5/8	1/4	49 1/2	4 3/4	8	5 7/16	1 11/16	10 5/8	9/16	52 1/2	7 1/2
10	4	1	12 3/4	1/4	69 1/2	5 1/4	10	5	1 3/8	12 3/4	5/16	71 1/2	6 5/8
12	4 1/8	1	15	1/4	105	5 3/8	12	5 1/4	1 3/8	15	5/16	110	6 7/8

TWO CONVOLUTIONS 1" to 6" – 375°F; 8" to 10" – 250°F

VACUUM SERVICE
MAXIMUM TEMPERATURE FOR FULL VACUUM (29.9"HG.)

THREE CONVOLUTIONS 1" to 4" – 375°F; 5" to 6" – 300°F; 8" to 10" – 125°F

"RADI-FLEX" ELBOW EXPANSION JOINTS



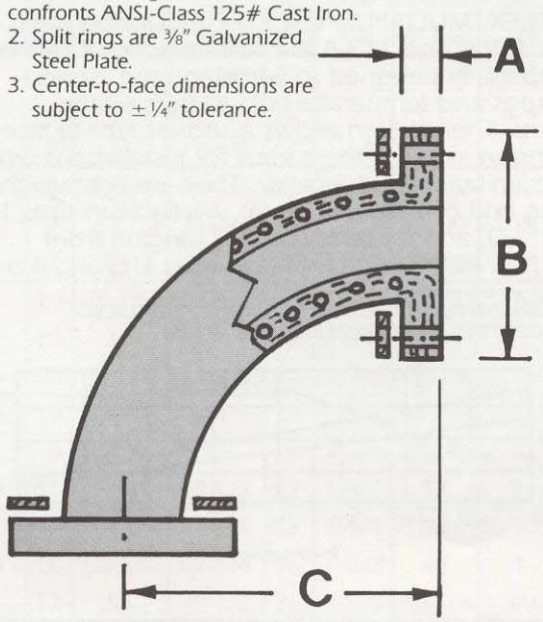
UNAFLEX "Radi-Flex" Elbow Expansion Joints are designed to reduce noise and vibration. Their flexibility also prevents damage to equipment from pipe line expansion and contraction. Spiralled steel wires are embedded in the walls from flange-to-flange for extra strength. They are excellent for corrosive or abrasive applications when steel pipe will not hold up.

Standard construction is of natural rubber tube with polyester reinforcement and a synthetic cover. Temperature ranges up to 180°F can be handled. High temperature construction is a butyl tube with polyester reinforcement and a butyl cover for maximum operating temperatures of from 180 to 250°F. They are also available in Neoprene, Buna N, Hypalon and EPDM (Nordel). It is necessary to specify whether the elbow is to be used for pressure, vacuum, or pressure and vacuum as the construction differs.

The maximum operating pressures for standard models is: 1½" to 3" 90 psi; 4" to 6" 80 psi; 8" to 10" 70 psi; and 12" to 14" 60 psi.

Note: In order to eliminate elongation, it is imperative that the piping at both ends of the elbow be properly anchored.

NOTES: 1. Flange size dimensions confronts ANSI-Class 125# Cast Iron.
2. Split rings are ⅜" Galvanized Steel Plate.
3. Center-to-face dimensions are subject to ± ¼" tolerance.



Size	A	B Flange O.D.	C C to F 90° STD.	C C to F 90° L.R.	C C to F 45°	MOVEMENT LIMITATIONS Compression	Deflection	Extension
2"	1"	6"	4½"	6½"	2½"	½"	½"	½"
2½"	1"	7"	5"	7"	3"	½"	½"	½"
3"	1⅛"	7½"	5½"	7¾"	3"	½"	½"	½"
4"	1⅛"	9"	6½"	9"	4"	½"	½"	½"
5"	1⅛"	10"	7½"	10¼"	4½"	¾"	¾"	¾"
6"	1⅛"	11"	8"	11½"	5"	¾"	¾"	¾"
8"	1⅛"	13¼"	9"	14"	5½"	¾"	¾"	¾"
10"	1¼"	16"	11"	16½"	6½"	¾"	¾"	¾"
12"	1¼"	19"	12"	19"	7½"	¾"	¾"	¾"
14"	1¼"	21"	14"	22½"	7½"	¾"	¾"	¾"

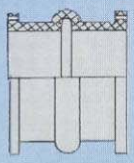
"CROSSES, TEES" AND SPECIAL PRODUCTS

UNAFLEX "RADI-FLEX" CROSSES AND TEES are custom manufactured to your specifications with all the features of our Elbow joints. Call for further information regarding available constructions and delivery schedules.

SPECIAL PRODUCTS INCLUDE:

Pipe Clamp Sleeves ▪ Wellpoint Sleeves
Endless Belts for use on equipment
Rubber Tubing ▪ Vacuum Sleeve Connectors
Exhaust Connectors
Suction Box Hose for Papermills
Dredge Sleeves ▪ Slurry Connectors
Food Handling Connectors ▪ Acid Hose Connectors
Pre-Formed Hose ▪ Pinch Valve Bodies

"SUPREME" LIGHTWEIGHT STYLE 189



"UNAFLEX "SUPREME" STYLE 189 Lightweight Rubber Expansion joints are available in round, or rectangular with arch, configurations. They are reccomended for pressure and limited vacuum applications such as air, gas and water service where pressures are slight and duty not severe.

They feature a lighter wall and flange thickness to provide extreme flexibility. Their duck plies are reinforced with steel rings.

Style 189 Joints are also available for temperatures up to 500°F and can be made with sleeve ends.

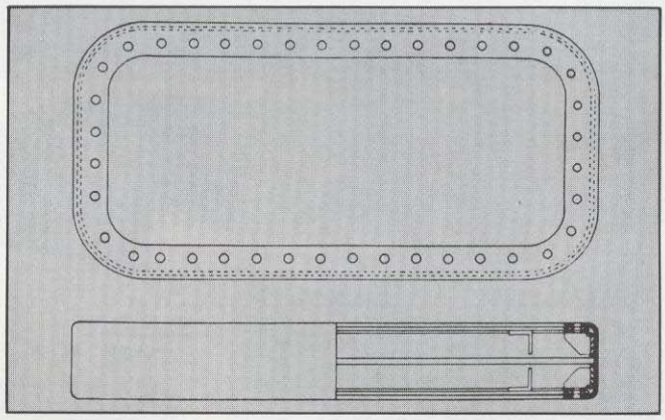
Max operating pressure for all sizes is 25 psig internal pressure and 15 inches of mercury vacuum.

Arch	Joint Size I.D. (inches)	Face to Face (inches)	Compression (inches)	Extension (inches)	Lateral (inches)
Single	2 to 8	6	7/16	5/16	5/8
	10 to 13	8	11/16	9/16	5/8
	14 to 24	8	13/16	11/16	5/8
	25 to 30	8	15/16	13/16	5/8
Double	2 to 5	12	7/8	5/8	1-1/4
	6 to 13	12	1-3/8	1-1/8	1-1/4
	14 to 24	13	1-5/8	1-3/8	1-1/4
	25 to 30	13	1-7/8	1-5/8	1-1/4
Triple	2 to 5	16	1-5/16	15/16	2-1/2
	6 to 13	16	2-1/16	1-11/16	2-1/2
	14 to 24	18	2-7/16	2-1/16	2-1/2
	25 to 30	18	2-13/16	2-7/16	2-1/2

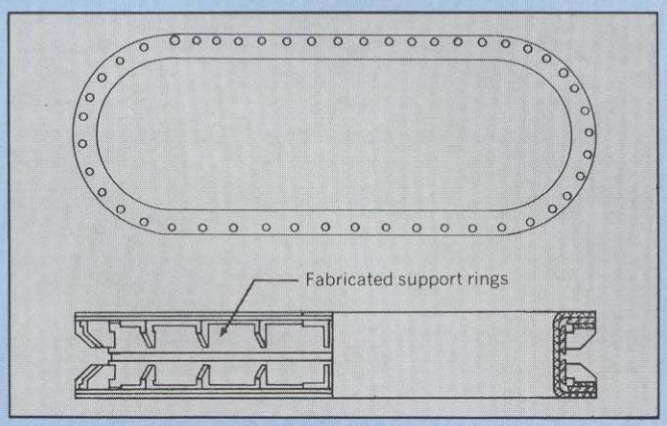
UNAFLEX STYLES 145, 155, 156, 157, 185 U-TYPE EXPANSION JOINTS

DESCRIPTION

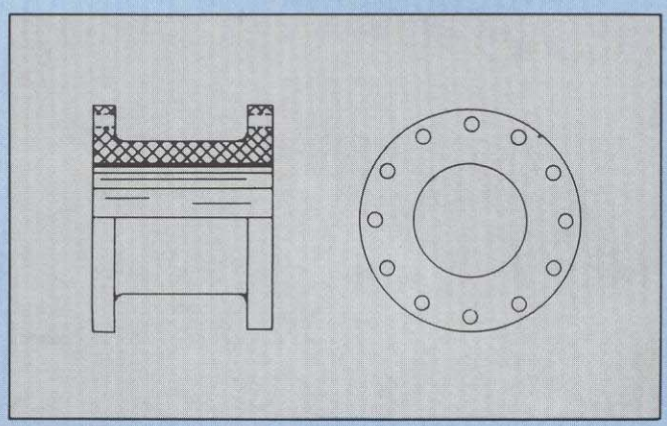
UNAFLEX "SUPREME" U-Type Expansion Joints form a flexible connection between equipment outlet and inlet flanges. They are normally constructed of a natural rubber tube, several heavy plies of rubber or neoprene – impregnated fabric, and a neoprene cover to protect the carcass. Maximum operating temperature is 180°F, and the carcass will withstand full vacuum to 25 psi. They are available in the following configurations:



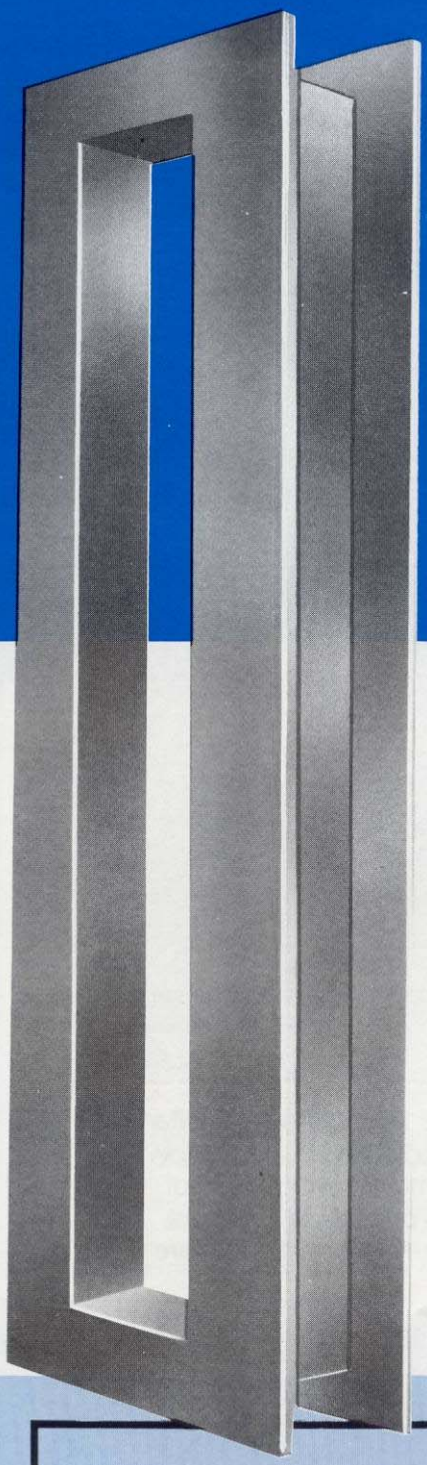
RECTANGULAR (STYLE 145) with internal flange (no arch) for vacuum and pressure. They allow ample axial and lateral movement capable of withstanding 30 inches of vacuum, or 25 psi gauge internal pressure. Retaining flanges are provided for support.



OVAL (STYLE 155 AND 157) with external flange available in Style 155 for vacuum only and Style 157 for pressure and vacuum. Used in installations where external bolting is desired. Style 155 withstands 30 inches of vacuum with standard flat steel retaining rings. Style 157 is designed for both 30 inches of vacuum and 25 psi gauge internal pressure and is designed with special steel fabricated support rings.



ROUND (STYLE 156 AND 185) lightweight rubber expansion joints available in Style 156, "U" type, no arch, for vacuum only; Style 185, round "U" type, no arch, steel reinforced for vacuum and pressure. Style 156 body is of duck and rubber without metal reinforcing. Style 185 is constructed with steel reinforcement. These units can also be supplied with offset features.



STYLE 600 FLUE DUCT EXPANSION

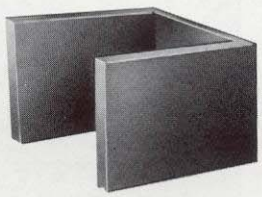
DESCRIPTION

UNAFLEX "MIGHTY-SPAN" Style 600 Rubber Flue Duct Expansion Joints are designed to handle hot air or gases in industrial duct work, as well as those generated by power plant and pollution control equipment. They are custom constructed of rubber and fabric to absorb thermal movements and vibration in duct work and to aid in the elimination of noises caused by scrubber equipment and mechanical dust collectors.

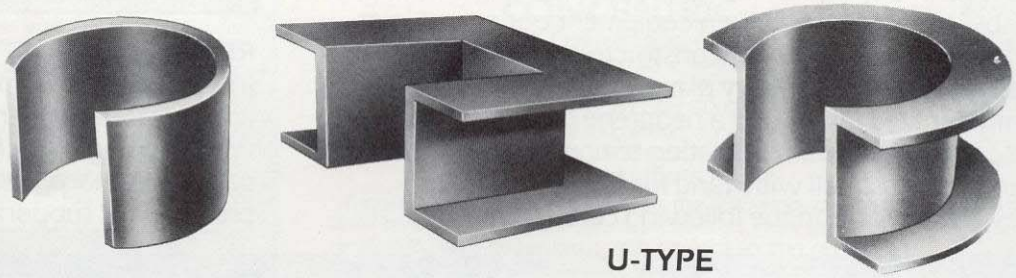
Mighty-Span is capable of handling any combination of large movements which might occur in a ducting system due to thermal expansion (see definition of movements on page 4).

CONFIGURATIONS

Square, rectangular or round shapes can be produced in almost any size. Standard construction is "U" shape with a 9 inch face-to-face dimension, with a 3 inch flange (other face-to-face dimensions available). Arch shapes also available. Body thickness of this one-piece molded joint is a nominal 5/16 inch. Extra liners are usually not required, but may be ordered if necessary.



SLEEVE TYPE



U-TYPE

ORDERING INFORMATION

PLEASE SPECIFY THE FOLLOWING REQUIREMENTS:

1. ROUND, RECTANGULAR, OVAL, OFFSET
2. DIAMETERS (S)
3. INSTALLED FACE TO FACE
4. TYPE OF MEDIUM
5. OPERATING & DESIGN TEMPERATURE
6. OPERATING & DESIGN PRESSURE
7. AXIAL COMPRESSION
8. AXIAL ELONGATION
9. LATERAL DEFLECTION
10. FLANGE DETAIL (BOLT CIRCLE, # HOLES, DIA.)
11. STANDARD WALL THICKNESS STYLE 600 = 1/4"
    STANDARD WALL THICKNESS STYLE FAN CONNECTORS 3/16 - 5/16"
12. TYPE AND THICKNESS OF RETAINING RINGS

AVAILABLE IN A WIDE CHOICE OF MATERIALS

UNAFLEX style 600 Joints may be constructed of *Nomex® (to 400°F), fiberglass or polyester cloth impregnated with one of the following:

NEOPRENE – Resistant to heat, adverse weather conditions, ozone and flue gases. Impervious to fats, oils, greases and other petroleum products. Recommended for use up to 250°F.

CHLOROBUTYL – An elastomer with all of the above advantages of neoprene with the exception of its inability to withstand oil. Designed for 300°F environments.

***VITON®** – In addition to providing all of the properties of neoprene Viton is highly resistant to mineral acids and useable in 400°F applications.

SILICONE – A high quality elastomer, recommended for all environments except those with sulfur gas (SO_2 or SO_3). Useable in – 70 to 500°F applications

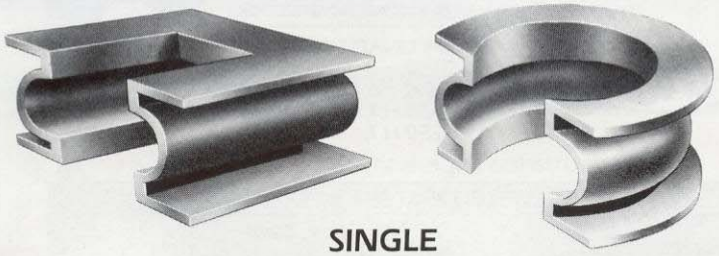
*E.I. duPont Trademark

JOINTS AND FAN CONNECTORS

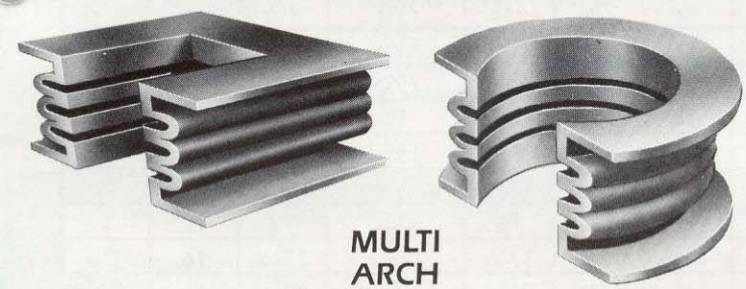
UNAFLEX®
"Excellence In Manufacturing"

Mighty-Span creates almost no load on damper and fan interfacing flanges thus providing much needed protection in these critical areas.

A wide range of elastomers and fabric substrates is available to provide maximum resistance to corrosion and high temperature capabilities. Let UNAFLEX assist you in selecting the "MIGHTY-SPAN" product for your application.



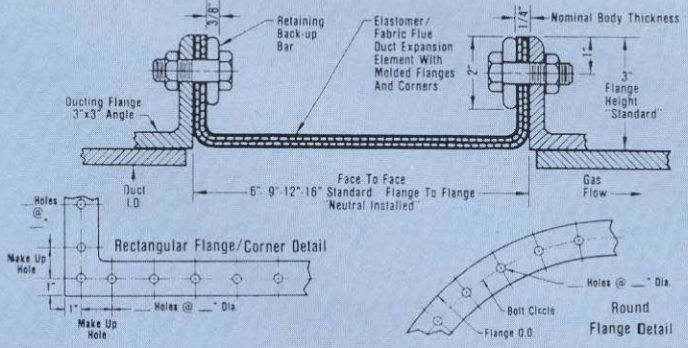
SINGLE ARCH



MULTI ARCH

Steel retaining rings are available.
with each joint (¼" or ⅜" flat rolled steel) at customer's request.
Send your drawing or call UNAFLEX for a quotation for your application.

TYPICAL INSTALLATION ARRANGEMENT



ENVIRONMENTAL CONDITIONS			
		Recommended For Use In	
Elastomer	Usable To ____ °F	Oils, Grease	Ozone & Flue Gases
Neoprene	250	good	good
Chlorobutyl	300	—	good
*Viton®	400	good	good
Silicone	500	good	—

*E.I. duPont Trademark Note: Tube stocks in conformance with FDA requirements available.

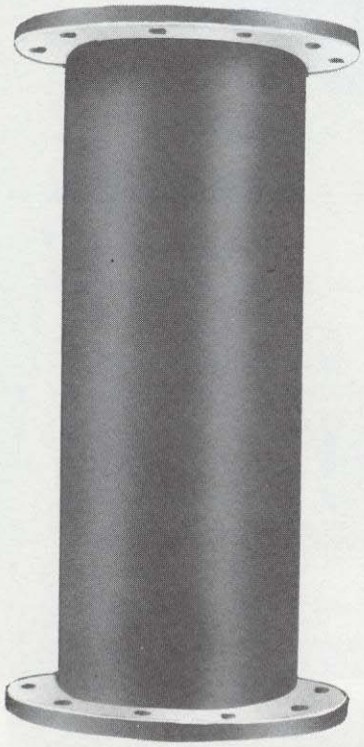
RECOMMENDED SERVICE

Pressure	to 3.0 psig, max.
Vacuum	6.12" Hg, 83" Ho
Compression*	2"
Extension*	½"
Transverse	1½"

*U-Type compression and elongation formulas.

1. Lateral Elongation = 2 lbs. per foot of perimeter per 1/16" of movement. For example: 2' x 2 ' I.D. = 8' perimeter deflection = 1" = 16/16. 2 lbs. x 8" x 16" = 256 lbs.
2. Axial Compression = 2.2 lbs. per foot of perimeter per 1/16" of movement. For example: 2' x 2 ' I.D. = 8' perimeter deflection = 1" = 16/16. 2.2 lbs. x 8" x 16" = 282 lbs.

RUBBER VIBRATION/SOUND ABSORBERS



"SUPER-QUIET" STYLES 3150 and 3250

UNAFLEX "SUPER-QUIET" Styles 3150 and 3250 Vibration and Sound Absorbers are designed with molded rubber flanged ends with bolt holes that accommodate standard steel flanges. They are furnished with or without helical wire reinforcement. Special tubes can be compounded to meet unique service conditions in either suction or discharge applications.

PERCENTAGE OF REDUCTION OF VIBRATION INPUT WITH FREQUENCY AND PRESSURE AS COMPARED TO STEEL PIPE

Center Freq. Hz	8" I.D. x 24" F-F Vibration Joint		
	10 psig	50 psig	80 psig
440	87%	91%	93%
68	95%	96%	99%
125	98%	99%	99%
250	96%	97%	99%
500	91%	93%	94%
1000	82%	91%	96%
2000	99%	99%	99%
4000	99%	99%	99%
8000	97%	97%	98%

EXAMPLE: If a steel piping system had a major vibration frequency of 1,000 Hz at 50 PSIG and an 8" rubber expansion joint was installed in the pipeline, the percentage of reduction of vibration would be 96%.

Note: Above data taken from Fluid Sealing Association Handbook.

SPECIFY UNAFLEX FLEXIBLE CONNECTORS

STYLE 3150	150#W.P.	180°F.
STYLE 3250	250#W.P.	180°F.
STYLE 3150 H.T.	150#W.P.	250°F.
STYLE 3250 H.T.	250#W.P.	250°F.

DIMENSIONS

Joint Size I.D. (in.)	Face to Face		STYLE 3150 (150 psi U.S.A. Drilling)						STYLE 3250 (250 psi U.S.A. Drilling)					
			Ring	Flange		Bolt circle	Bolt Holes		Ring	Flange		Bolt circle	Bolt Holes	
	Min. (in.)	Max. (in.)	I.D. (in.)	Diam. (in.)	Thickness (in.)	diam. (in.)	No.	Diam. (in.)	I.D. (in.)	Diam. (in.)	Thickness (in.)	diam. (in.)	No.	Diam. (in.)
1½	12	24	2⅞	5	11/16	3⅞	4	⅝	2⅞	6⅛	23/32	4½	4	⅞
2	12	24	3⅝	6	11/16	4¾	4	¾	3⅝	6½	23/32	5	8	¾
3	12	36	4⅝	7½	27/32	6	4	¾	4⅝	8¼	27/32	6⅝	8	⅞
4	12	36	5⅞	9	27/32	7½	8	¾	5⅞	10	⅞	7⅞	8	⅞
5	12	36	6⅞	10	15/16	8½	8	⅞	6⅞	11	15/16	9¼	8	⅞
6	18	36	7⅞	11	31/32	9½	8	⅞	7⅞	12½	15/16	10⅝	12	⅞
8	24	48	9⅞	13½	31/32	11¾	8	⅞	9⅞	15	1 1/16	13	12	1
10	24	48	12⅛	16	1 3/16	14¼	12	1	12⅛	17½	1 11/32	15¼	16	1⅛
12	24	48	14½	19	1 7/32	17	12	1	14½	20½	1 11/32	17¾	16	1¼

IMPORTANT – UNAFLEX Vibration and Sound Absorbers are not designed to accommodate the movement in a piping system caused by temperature change or other conditions. See Spool-Type Expansion Joints for such applications.

STYLES 2150 and 2250

UNAFLEX "SUPER-QUIET" Styles 2150 and 2250 Vibration and Sound Absorbers are specially designed lengths of rubber pipe with factory attached ferrules for pipes and other connections involving standard IPT. They eliminate vibration between pump and pipe line either for suction or discharge.

FOR WORKING PRESSURES TO 150 PSI		
	For Water Service to 180°F	For Water Service from 180 to 250°F Max.
Ferruled Coupling	2150	2150 H.T.
Flanged End	3150	3150 H.T.

FOR WORKING PRESSURES TO 250 PSI		
	For Water Service to 180°F	For Water Service from 180 to 250°F Max.
Ferruled Coupling	2250	2250 H.T.
Flanged End	3250	3250 H.T.

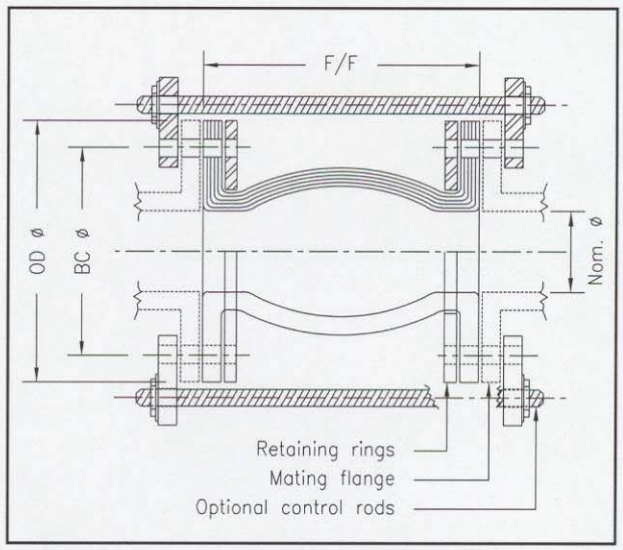
Pipe Size I.D. (in.)	Standard Overall Length (in.)
¾	12
1	18
1¼	18
1½	18

Pipe Size I.D. (in.)	Standard Overall Length
2	24
2½	24
3	36
4	36

"UNA-FLO" 2000

THE EXPANSION JOINT FOR THE NEW MILLENNIUM

EXPANSION JOINT SIZE	MOVEMENT CAPABILITY: FROM NEUTRAL POSITION				DESIGN PRESSURE	
I.D. X LENGTH (F/F)	AXIAL COMPRESSION	AXIAL EXTENSION	LATERAL DEFLECTION	ANGULAR DEFLECTION	POSITIVE PRESSURE PSIG	NEGATIVE VACUUM HG"
2 x 6	.75	.50	.50	14	160	26
2-1/2 x 6	.75	.50	.50	11	160	26
3 x 6	.75	.50	.50	9	160	26
4 x 6	.75	.50	.50	8	155	26
5 x 6	.75	.50	.50	7	150	26
6 x 6	.75	.50	.50	5	150	26
8 x 6	1.00	.75	.75	5	150	26
10 x 8	1.25	.75	.75	4	125	20
12 x 8	1.25	.75	.75	3	125	20
14 x 8	1.50	1.00	1.00	3	85	15
16 x 8	1.50	1.00	1.00	2	75	15
18 x 8	1.50	1.00	1.00	2	75	15
20 x 8	1.50	1.00	1.00	2	70	12
22 x 10	1.50	1.00	1.00	2	70	12
24 x 10	1.50	1.00	1.00	2	70	12
26 x 10	1.50	1.00	1.00	2	65	10
28 x 10	1.50	1.00	1.00	2	65	10
30 x 10	1.50	1.00	1.00	1	65	10
32 x 10	1.50	1.00	1.00	1	60	10
34 x 10	1.50	1.00	1.00	1	60	10
36 x 10	1.50	1.00	1.00	1	60	10
38 x 10	1.50	1.00	1.00	1	60	10
40 x 10	1.50	1.00	1.00	1	60	10
42 x 12	1.50	1.00	1.00	1	50	10
44 x 12	1.50	1.00	1.00	1	50	10
46 x 12	1.50	1.00	1.00	1	50	10
48 x 12	1.50	1.00	1.00	1	50	10



See chart on page 11 for Flange dimensions and Retaining Ring I.D. Also page 9 for optimal Flange drillings.

UNA-FLO 2000 is the EXPANSION JOINT FOR THE NEW MILLENNIUM. The wide, low profile, self cleaning arch provides maximum movement, while eliminating the need of a filled arch for slurry service and requirements where reduced turbulence is desired. Light weight for ease of installation save on labor costs as well as reduced freight costs. Full face duck and rubber flanges provide maximum sealing surfaces. Manufactured with "STATE OF THE ART" tire cords and elastomers in accordance with ISO 9000 requirements, UNA-FLO 2000 really is the expansion Joint for the New Millennium! best of all you get AMERICAN BUILT QUALITY at unconventionally low costs.

Available in a Full Range of Elastomers, such as:

CHLOROBUTYL	SBR
NEOPRENE	EPDM
SILICONE	GUM
NITRILE	HYPALON

VITON® / FLUOREL®

THE WIDE OR "SPHERICAL" ARCH DESIGN HAS LESS THRUST FORCE WHEN COMPARED TO THE "HIGH ARCH" DESIGN