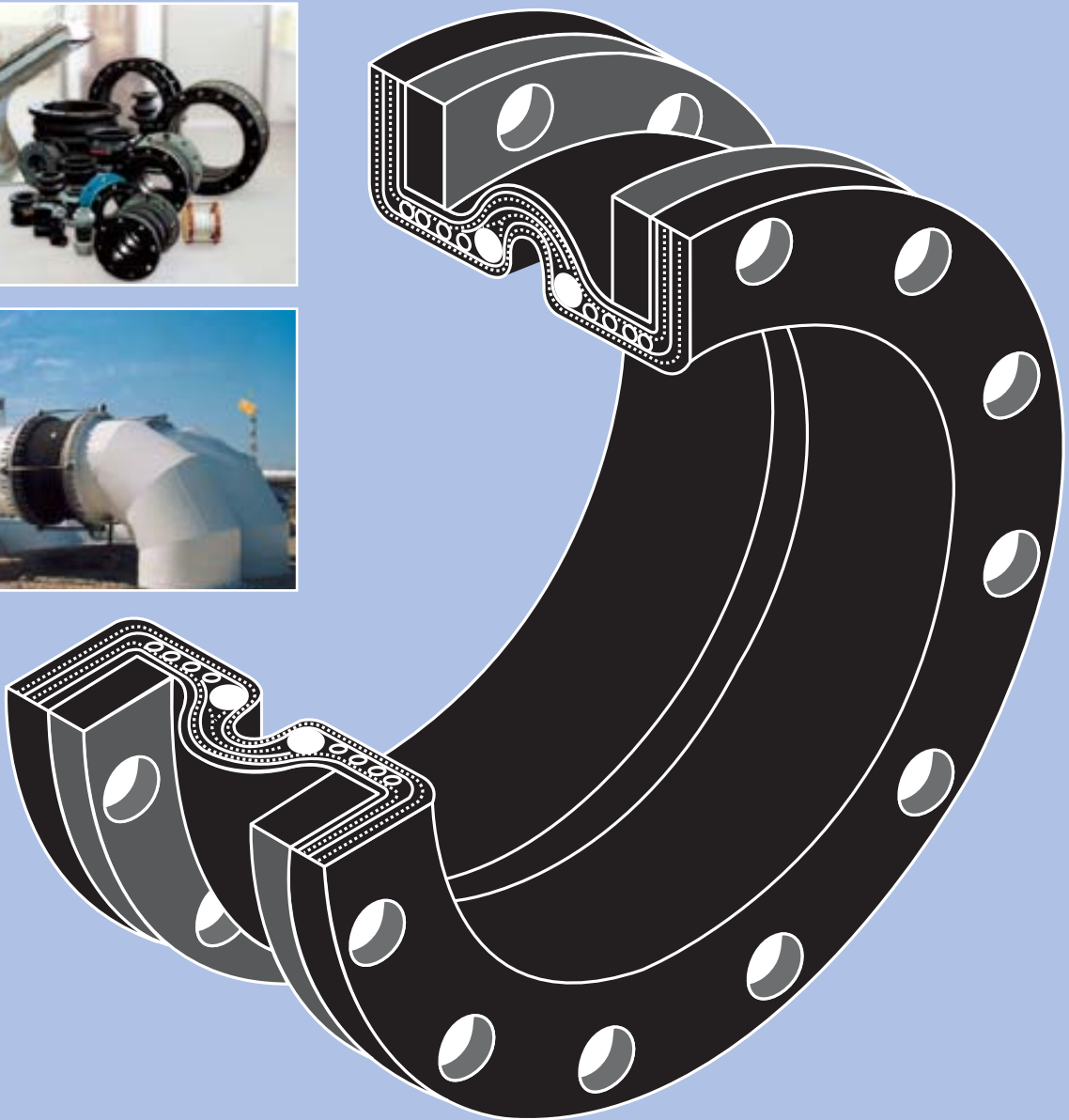




ΧΡΥΣΑΦΙΔΗΣ Α.Ε.

NON-METALLIC EXPANSION JOINTS
AND FLEXIBLE PIPE / CONNECTORS

Rubber Expansion Joints



megaflexon

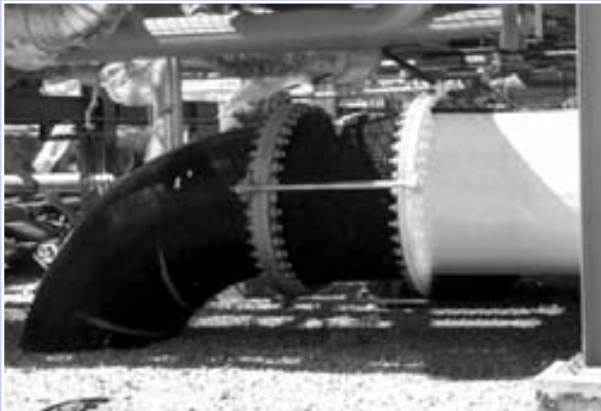
Custom designed and built for durability and performance



The view of transportation to petrochemical cooling tower on 2400 ι 3000L



The view of installed LNG receiving terminal utility station



Cooling sea water pipe line operating view (DN 44inch ι 1000L)



The view of F.C.C plant(DN 48inch rubber E/J)



DN 2500 rubber expansion joint



Installed for fluorine acid pipe line (DN 10inch Viton rubber)

ANSION JOINT

INNOVATIVE DESIGNS



ΧΡΥΣΑΦΙΔΗΣ Α.Ε.

Wide selection of inventory and quick delivery



Installed bunker C oil cracking project
cooling water pipe line



DN 2400 universal type rubber expansion joint



“Tube and fitting 1996” exhibition show



Wrapped rubber expansion joint loading to
vulcanize tank



DN 24 inch rubber expansion joint
Installed flue gas sox control treatment project



DN 36 inch vibration dampener



ZERTIFIKAT ♦ CERTIFICATE ♦ 認証証書 ♦ СВИДЕТЕЛЬСТВО ♦ CERTIFICADO ♦ CERTIFICAT

CERTIFICATE



The Certification Body
of TÜV Management Service GmbH
certifies that

MEGAFLEXON CO. LTD.
#262-2, ChoWonJee-Ri, DaeGot-Myeun, KimPo City,
KyungGi-Do, Korea

has established
and applies a Quality System for

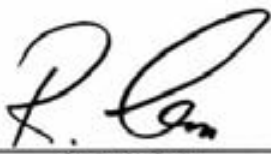
**Design, Development, Production, and Servicing
of Metal & Rubber Expansion Joints**

An Audit was performed, Report No. **24026618**
Proof has been furnished that the requirements according to
DIN EN ISO 9001 :1994 / KS A 9001
are fulfilled. The certificate is valid until **December 2001**

Certificate Registration No. **12 100 10626 TMS**

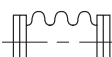
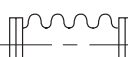
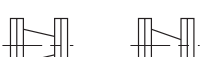
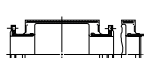
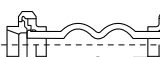
Munich, 1999-10-28




Certification Body
of TÜV Management Service GmbH
Unternehmensgruppe TÜV Süddeutschland



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INTRODUCTION

MEGAFLEXON Rubber expansion joints have been specified and used for many years by consulting engineers, mechanical contractors, pressure vessel designers, plant engineers and turn-key construction firms. They are installed to accommodate movement in piping runs, protect piping from expansion and contraction and insure efficient and economical on-stream operations.

Rubber expansion joints is a specifically engineered and designed section of pipe that is flanged and is able to be inserted within a rigid piping system with the goal to be the achievement of one or more of the following.

- To absorb movement.
- To relieve system strain due to thermal change, load stress, pumping surges, wear or settling.
- To reduce mechanical noise.
- To compensate for misalignment.
- To eliminate electrolysis between dissimilar metals.

Rubber expansion joints, designed by engineers and fabricated by skilled craftsmen, are used in all systems conveying fluids under pressure and or vacuum at various temperatures:

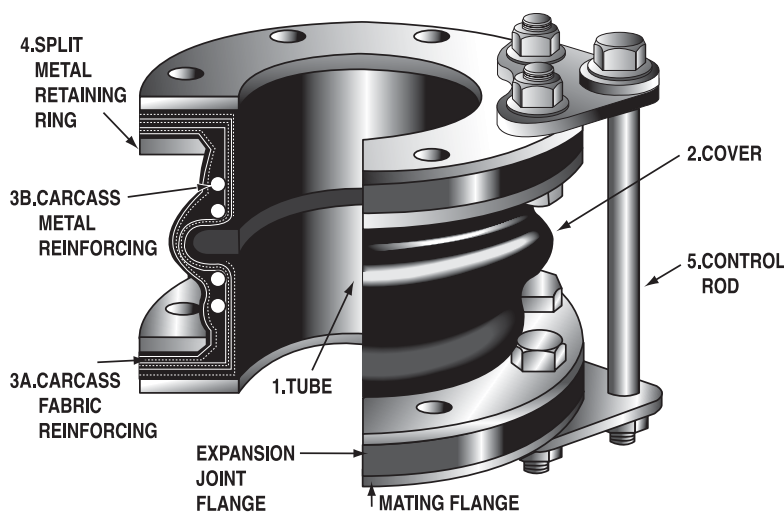
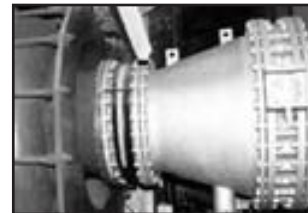


Figure 1 : Cross Sectional View of Standard Spool
"Arch" Type Expansion Joint



PRODUCT DESCRIPTION

A. DEFINITION :

A rubber expansion joint is a flexible connector fabricated of natural or synthetic elastomers and fabrics and, if necessary, metallic reinforcements to provide stress relief in piping systems due to thermal and mechanical vibration and/or movements.

Noteworthy performance features include flexibility and concurrent movements in either single or multiple arch type construction, isolation of vibration and noise resistance to abrasion and chemical erosion.

B. FUNCTIONS:

Engineers can solve anticipated problems of vibration, noise, shock, corrosion, abrasion, stresses and space by incorporating rubber expansion joints into designed piping system.

B.1. Reduce Vibration. Rubber expansion joints isolate or reduce vibration caused by equipment. Some equipment requires more vibration control than others. Reciprocating pumps and compressors, for example, generate greater unbalanced forces than centrifugal equipment. However, rubber pipe and expansion joints dampen undesirable disturbances including harmonic overtones and vibrations caused by centrifugal pump and fan blade frequency.

This is based on actual tests conducted by a nationally recognized independent testing laboratory. Rubber expansion joints reduce transmission of vibration and protect equipment from the adverse effects of vibration.

B.2. Dampen Sound Transmission. Subsequent to going on stream, normal wear, corrosion, abrasion and erosion eventually bring about imbalance in motive equipment, generating undesirable noises transmitted to occupied areas. Rubber expansion joints tend to dampen transmission of sound because of the steel-rubber interface of joints and mating flanges. Thick-wall rubber expansion joints, compared with their metallic counterparts, reduce considerably the transmission of sound.

B.3. Compensate Lateral, Torsional and Angular Movements.

Pumps, compressors, fans, piping and related equipment move out of alignment due to wear, load stresses, relaxation and settling of supporting foundations. Rubber expansion joints compensate for lateral, torsional and angular movements-preventing damage and undue downtime of plant operation.

B.4. Compensate Axial Movements. Expansion and contraction movements due to thermal changes or hydraulic surge effects are compensated for with strategically located rubber expansion joints.

They act as helix springs, compensating for axial movements.

C. ADVANTAGES :

The industry has allied itself with designers, architects, contractors and erectors in designing and fabricating rubber expansion joints under rigid standards to meet present-day operating conditions. The industry has kept abreast of the technological advances in rubber compounding and synthetic fabrics to provide rubber expansion joints having advantages not available in other materials.

C.1. Minimal Face-to-Face Dimensions. Minimal face-to-face dimensions in rubber expansion joints offer untold economies compared with costly expansion bends or loops.

The relative cost of the pipe itself may be less or no more than a rubber expansion joints; however, total costs are higher when considering plant space, installation labor, supports and pressure drops.

C.2. Lightweight. Rubber expansion joints are relatively light in weight, requiring no special handling equipment to position, contributing to lower installation labor costs.

C.3. Low Movement Forces Required. The inherent flexibility of rubber expansion joints permits almost unlimited flexing to recover from imposed movements, requiring relatively less force to move, thus preventing damage to motive equipment.

C.4. Reduced Fatigue Factor. The inherent characteristics of natural and synthetic elastomers are not subject to fatigue breakdown or embrittlement and prevent any electrolytic action because of the steel-rubber interface of joints and mating flanges. **See Table II.**

C.5. Reduced Heat Loss. Rubber expansion joints reduce heat loss, giving long maintenance-free service. The added piping required for loops contribute to higher operating costs after going on stream due to increase in heat losses.

C.6. Corrosion, Erosion Resistant. A wide variety of natural, synthetic and special purpose elastomers and fabrics are available to the industry. Materials are treated and combined to meet a wide range of practical pressure-temperature operating conditions, corrosive attack, abrasion and erosion. Standard and special sizes of rubber expansion joints are available with TFE/FEP liners, fabricated to the configurations of the joint body, as added insurance against corrosive attack. Teflon possesses unusual and unique characteristics of thermal stability, non-sticking surface, extremely low co-efficient of friction and resistance to practically all corrosive fluids and forms of chemical attack. **See Table II.**

C.7. No Gaskets. Elastomeric expansion joints are supplied with flanges of vulcanized rubber and fabric integrated with the tube, making the use of gaskets unnecessary. The sealing surfaces of the expansion joint equalize uneven surfaces of the pipe flange to provide a fluid and gas-tight seal. A ring gasket may be required for raised face flanges. Consult manufacturer about specific applications.

TABLE I : Temperature Class of Materials Used In Expansion Joints

Type of Elastomer	Class	Type of Fabric	Class
Gum Rubber	Std. I	Cotton	Std. I
Natural Rubber	Std. I	Rayon	Std. I
SBR/GRS/Buna-S	Std. I	Nylon	Std. II
Neoprene	Std. II	Polyester	Std. III
Buna-N/Nitrile	Std. II	Fiberglass	Std. III
Hypalon	Std. II	Kevlar	Std. III
Butyl	Std. II	Nomex	Std. III
Chlorobutyl	Std. III		
EPDM	Std. III		
Viton/Fluorel	Std. III		
Silicone	Std. III		
Teflon/TFE/FEP	Std. III		

Standard Class I - Recommended up to 180° F

Standard Class II - Recommended up to 230° F

Standard Class III - Recommended up to 230° F

NOTE: Material combinations are available for temperatures to 400° F.

C.8. Acoustical Impedance. Elastomeric expansion joints significantly reduce noise transmission in piping systems because the elastomeric composition of the joint acts as a dampener that absorbs the greatest percentage of noise and vibration.

C.9. Greater Shock Resistance. The elastomeric type expansion joints provide good resistance against shock stress from excessive hydraulic surge, water hammer or pump cavitation.

D. CONSTRUCTION DETAILS :

D.1. Tube. A protective, leakproof lining made of synthetic or natural rubber as the service 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. **See Tables I and II, and Figure 1.**

D.2. 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. **See Tables I and II, and Figure 1.**

D.3. Carcass. The carcass or body of the expansion joint consists of fabric and, when necessary, metal reinforcement.

D.3.A. 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. Natural fabrics can also be used at some pressures and temperatures. All fabric plies are impregnated with rubber or synthetic compounds to permit flexibility between the fabric plies. **See Figure 1-3A. and Table I.**

D.3.B. Metal Reinforcement. Wire or solid steel rings embedded in the carcass are frequently used as strengthening members of the joint. The use of metal sometimes raises the rated working pressure and can supply rigidity to the joint for vacuum service. **See Figure 1-3B.**

TABLE II : List of Elastomers Used in Expansion Joints and Rubber Pipes.

Note : This listing is only a general guide. Specific elastomer compounds produced by member manufacturers may have different properties. For additional information, see "Technical Handbook Properties of Chemical Compatibilities and Elastomers for Seals." Published by Fluid Sealing Association, 2017 Walnut Street Philadelphia, PA 19103

MATERIAL DESIGNATION:		MATERIAL DESIGNATION:	ELASTOMER PHYSICAL AND CHEMICAL PROPERTIES COMPARISON														
ANSI/ASTM D1418-77	ASTM D-2000 SAE J-200	7-Outstanding 6-Excellent 5-Very Good 4-Good x-Contact Mfg.	3-Fair to Good 2-Fair 1.Poor to Fair 0-Poor	WATER	ALKALI, CONC. ANIMAL & VEG. OIL CHEMICAL	ALKALI, DILUTE OIL & GASOLINE	LAQUERS OIL & GASOLINE	OXYGENATED HYDRO. ALIPHATIC HYDRO. AROMATIC HYDRO.	ACID DILUTE ACID, CONC.	RADIATION WATER ABSORP SWELLING IN OIL	ELE. INSULATION DIELECTRIC STR.	REBOUND-COLD COMP. SET	REBOUND-HOT DYNAMIC	ABRASION IMPERMEABILITY	COLD FLAME TEAR	HEAT COLD FLAME OXIDATION	OZONE WEATHER SUNLIGHT OXIDATION
		COMMON NAME CHEMICAL GROUP NAME															
CR	BC BE	NEOPRENE CHLOROPRENE		4340		4401		2346		4543		5424		5245		4444	5565
NR	AA	GUM RUBBER POLYISOPRENE, SYNTHETIC		53 × ×		× 004		0033		0655		6646		6627		5052	4020
IR	AA	NATURAL RUBBER POLYISOPRENE, SYNTHETIC		53 × ×		× 004		0033		0655		6646		6226		5052	4020
IIR	AA	BUTYL ISOBUTENE-ISOPRENE		5654		4034		0046		0455		5430		5264		4045	6556
CIIR	AA BA	CHLOROBUTYL CHLORO-ISOBUTENE-ISOPRENE		5654		4034		0046		0455		5430		5264		4045	6556
NBR	BE, BK, CH	BUNA-N/NITRILE NITRIL-BUTADIENE		4350		4520		4644		5541		0554		4544		3034	4022
SBR	AA	SBR/GRS/BUNA-S STYRENE-BUTADIENE		53 × 2		4004		0033		0655		4544		4425		3053	2020
CSM	CE	HYPALON* CHLORO-SULFONYL- POLYETHYLENE		5644		4431		2346		4543		5222		4244		3444	6767
FKM	HK	VITON*/FLUOREL** FLUOROCARBON ELASTOMER		5660		4610		6665		6553		5562		4555		2627	7777
EPR	BA, CA, DA	EPDM ETHYLENE-PROPYLENE- DIENE-TERPOLYMER		5656		6036		0046		0766		7546		6545		4056	6767
AFMU		TEFLON*/TFE/FEP FLUORO-ETHYLENE-POLYMERS		7777		7777		7777		737 ×		× × × ×		× × × 4		× × × 7	7777
SI	GE	SILICONE		5550		2 × 02		0026		2566		4036		6020		2267	6666

*Registered trademark of E. I. DuPont de Nemours & Co., Inc.

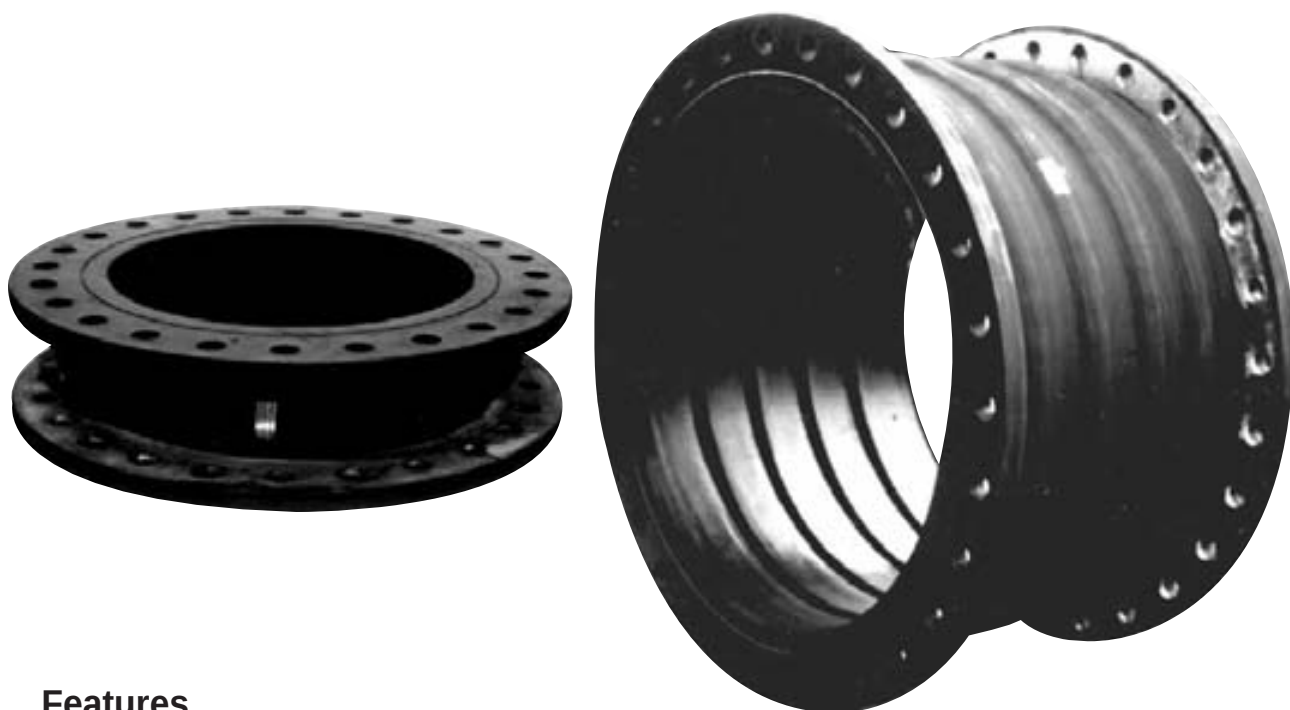
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megaflexon *with Confidence*

SPOOL TYPE

RUBBER EXPANSION JOINTS

HAND BUILT



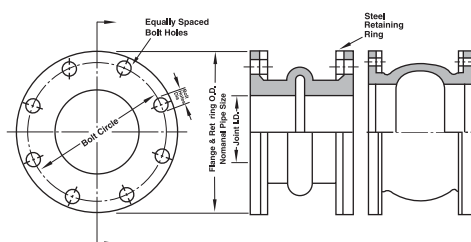
Features

- Single to multi as required
- Retaining split rings material / Galvanized
Carbon steel or stainless steel ANSI, DIN, PN and BS available.
- ANSI 150 lb drilling is standard.
- Other flange code drilling as required.
- Reinforcement / Spiral steel wire or steel bar.
- Pipe diameter size 2inch to 144inch.
- Internal liner cover use special materials for resistance to acid.
- High temperature resistant fabric for up to 400° F
- Minimum pressure safety factor : 4 to 1
- Pressures, vacuum ratings and temperature tolerance as detailed inside.

BASIC SPOOL TYPE EXPANSION JOINTS

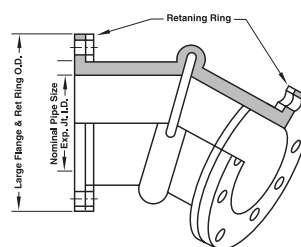
Single Arch Type

- Fabric and rubber construction.
- Reinforced with metal/wire rings.
- Full face flanges integral with joint body.
- Flanges drilled to companion bolt pattern.
- Gaskets not required.



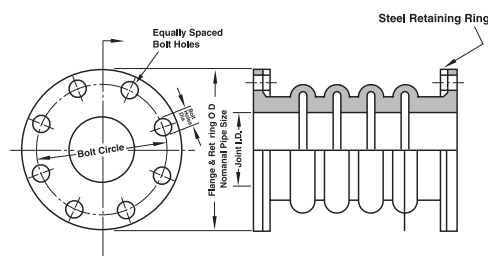
Offset type

- Custom built to specifications.
- Will compensate for initial misalignment and non-parallelism of piping axis.
- Complete drawings and specifications recommended with inquiries/orders.



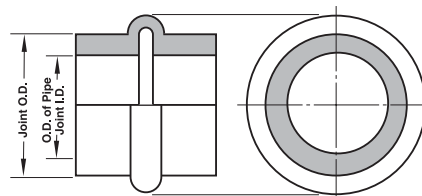
Multiple Arch Type

- Accommodates greater movement than single arch joint.
- Minimum joint length is dependent on the number of arches.
- Maximum of four(4) arches recommended to maintain lateral stability.



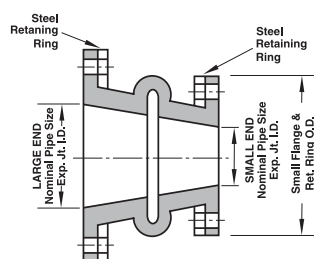
Sleeve Type

- Same design as single arch type except that the sleeve ends have an I.D. equal to the pipe O.D.
- Will slip over straight ends of open pipe.
- Ends secured by suitable clamps.
- Recommended for low pressure service only.

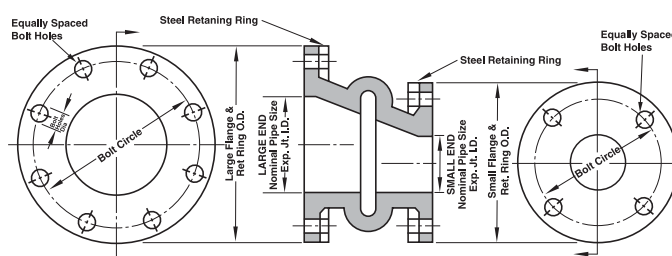


Taper & Reducer Type

- Will connect piping of different diameters.
- May be manufactured as concentric tapered joints: with the axis of each end concentric with the other.
- May also be manufactured eccentric: each axis offset from the other end.
- Tapers of 15° or less are recommended.
- Pressure ratings are based on larger I.D.
- Available with/without arches.



Concentric Reducer Type Expansion Joint

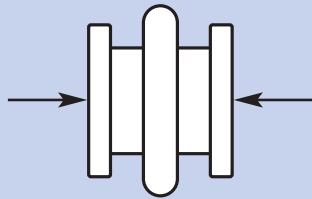


Eccentric Reducer Type Expansion Joint

MOVEMENTS IN INDUSTRIAL PIPING

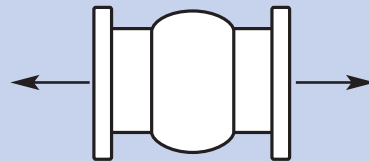
Axial Compression

- Longitudinal movement shortens face-to-face dimension along axis of expansion joint/flexible coupling.
- Pipe flanges remain perpendicular to axis.



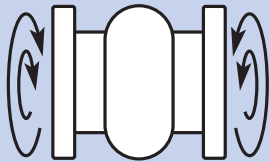
Axial Extension

- Longitudinal movement lengthens face-to-face dimension along axis of expansion joint/flexible coupling.
- Pipe flanges remain perpendicular to axis.



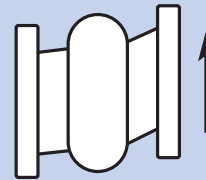
Torsional Movement

- Rotation of one flange with stationary counterpart.
- Simultaneous rotation of both flanges in opposing motion.



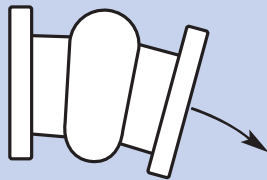
Lateral/Transverse Movement

- Offset movement of one/both pipe flanges.
- Both flanges remain parallel to each other while forming angle to axis of joint.



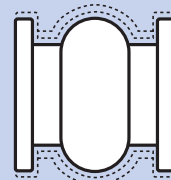
Angular Movement

- Deflection/rotation of one or both flanges.
- Angle with axis of expansion joint/flexible coupling is formed.



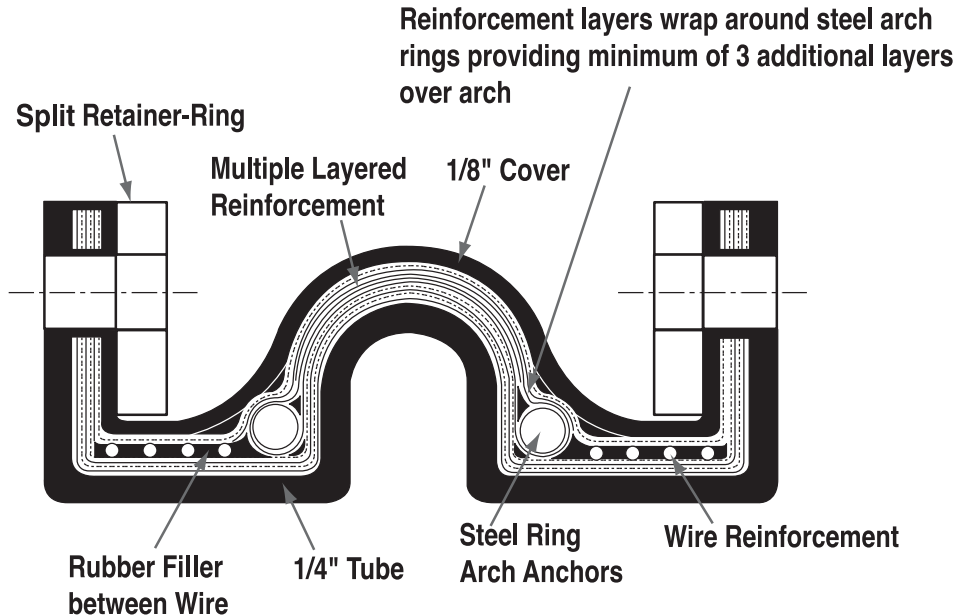
Vibration

- By definition oscillating movement around axis of expansion joint/flexible coupling.
- Pipe flanges remain parallel with each other.
- Flanges remain perpendicular to axis.
- Mechanical vibration in steel piping system reduced with installation of pipe connectors/expansion joints.



Exp. Joint Size -inches		2to6			8			10			12			14			16			18			20			22to24			26to40			42to96		
To Handle	inches-Axial Compression	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	12	12 1/2	13	13 1/2	14	14 1/2	15	15 1/2			
	inches-Axial Extension	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	12	12 1/2	13	13 1/2	14	14 1/2	15	15 1/2			
	in-Lateral Deflection	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	11	11 1/2	12	12 1/2	13	13 1/2	14	14 1/2	15	15 1/2			
Use	Face-to-Face -inches	6	10	12	6	10	14	8	12	14	8	12	14	8	12	16	8	12	16	8	12	16	8	12	16	10	14	18	10	14	18			
	Number Arches	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			

CONSTRUCTION



*OPTIONAL / FILLED ARCH AVAILABLE

OPERATING TEMPERATURES

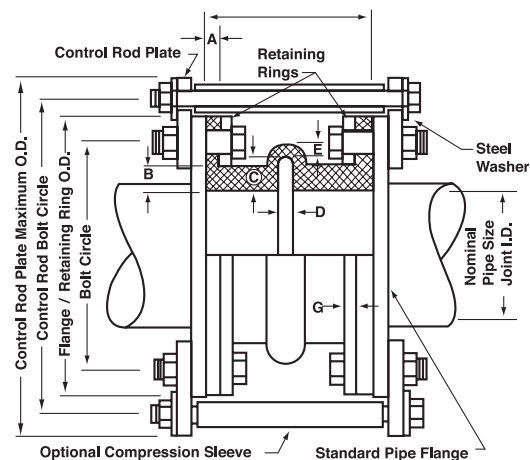
STANDARD MATERIALS (RUBBER)		OPERATING TEMPERATURES (MAX)	
INTERNAL TUBE	EXTENAL COVER		
Butyl	Butyl	B	250° F
EPDM	EPDM	E	350° F
Hypalon	Hypalon	H	225° F
Hypalon	Neoprene	HN	225° F
Nitrile	Neoprene	NiN	210° F
Neoprene	Natural	NR	180° F
Viton	Viton	VV	400° F

INSTALLATION INSTRUCTIONS OF CONTROL UNIT COMPONENTS

Control units may be required to limit both extension and compression movements.

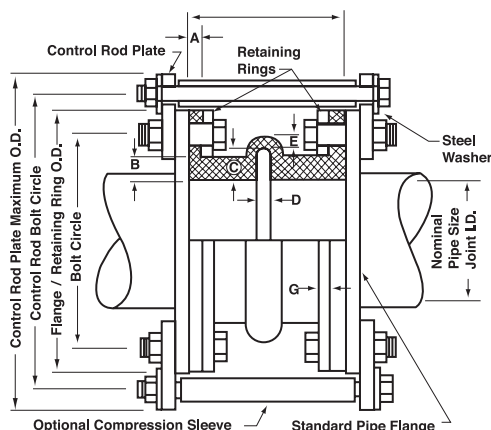
Extension. Control units must be used when it is not feasible in a given structure to provide adequate anchors in the proper location. In such cases, the static pressure thrust of the system will cause the expansion joint to extend to the limit set by the control rods which will then preclude the possibility of further motion that would over-elongate the joint. Despite the limiting action that control rods have on the joint, they must be used when proper anchoring cannot be provided. It cannot be emphasized too strongly that rubber expansion joints, by virtue of their function, are not designed to take end thrusts and, in all cases where such are likely to occur, proper anchoring is essential. If this fact is ignored, premature failure of the expansion joint is a foregone conclusion.

Compression. Pipe sleeves can be installed over the control rods. The purpose of the sleeve is to prevent excessive compression in the expansion joint. The length of this pipe sleeve should be such that the expansion joint cannot be compressed beyond the maximum allowable compression figure stated by the manufacturer.



SPOOL TYPE

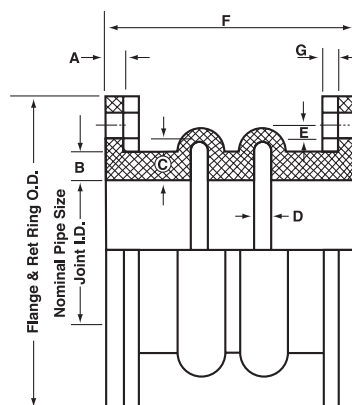
SINGLE OPEN ARCH EXPANSION JOINTS



Pipe Size (in)	Flange OD (in)	Face to Face (in)	Overall Flange Thickness (in)		Dia Bolt Circle (in)	No. of Bolts	Dia of Bolts (in)	Axial Compression (in)	Axial Extension (in)	Lateral Deflection (in)	Angular (degrees)	Torsional (degrees)	Rated Working Pressure (psi)	Minimum Burst Pressure (psi)	Vacuum (inHg)
2	6	6	7/8	1	4 3/4	4	5/8	3/4	1/2	1/2	14.5	3	165	660	30
2 1/2	7	6	7/8	1	5 1/2	4	5/8	3/4	1/2	1/2	11.5	3	165	660	30
3	7 1/2	6	7/8	1	6	4	5/8	3/4	1/2	1/2	10.0	3	165	660	30
4	9	6	7/8	1	7 1/2	8	5/8	3/4	1/2	1/2	7.5	3	165	660	30
5	10	6	7/8	1	8 1/2	8	3/4	3/4	1/2	1/2	6.0	3	140	560	30
6	11	6	7/8	1	9 1/2	8	3/4	3/4	1/2	1/2	5.5	3	140	560	30
8	13 1/2	6	7/8	1	11 3/4	8	3/4	3/4	1/2	1/2	5.0	3	140	560	30
10	16	8	7/8	1	14 1/4	12	7/8	1	5/8	5/8	4.5	3	140	560	30
12	19	8	7/8	1	17	12	7/8	1	5/8	5/8	3.8	3	140	560	30
14	21	8	1	1 1/8	18 3/4	12	1	1	5/8	5/8	3.3	2	90	360	30
16	23 1/2	8	1	1 1/8	21 1/4	16	1	1	5/8	5/8	2.8	2	70	280	30
18	25	8	1	1 1/8	22 3/4	16	1 1/8	1	5/8	5/8	2.5	1	70	280	30
20	27 1/2	8	1	1 1/8	25	20	1 1/8	1	5/8	5/8	2.5	1	70	280	30
22	29 1/2	10	1	1 1/8	27 1/4	20	1 1/4	1 1/4	3/4	5/8	2.3	1	70	280	30
24	32	10	1	1 1/8	29 1/2	20	1 1/4	1 1/4	3/4	5/8	2.0	1	70	280	30
26	34 1/4	10	1	1 1/8	31 3/4	24	1 1/4	1 1/4	3/4	5/8	2.0	1	70	280	30
28	36 1/2	10	1	1 1/8	34	28	1 1/4	1 1/4	3/4	5/8	2.0	1	60	240	30
30	38 3/4	10	1	1 1/8	36	28	1 1/4	1 1/4	3/4	5/8	2.0	1	60	240	30
34	43 3/4	10	1	1 1/8	40 1/2	32	1 1/2	1 1/4	3/4	5/8	1.8	1	60	240	30
36	46	10	1 1/8	1 1/4	42 3/4	32	1 1/2	1 1/4	3/4	5/8	1.5	1	60	240	30
40	50 3/4	10	1 1/8	1 1/4	47 1/4	36	1 1/2	1 1/2	3/4	5/8	1.5	1	60	240	30
42	53	12	1 1/8	1 1/4	49 1/2	36	1 1/2	1 1/2	7/8	3/4	1.5	1	60	240	30
44	55 1/4	12	1 1/8	1 1/4	51 3/4	40	1 1/2	1 1/2	7/8	3/4	1.5	1	60	240	30
48	59 1/2	12	1 1/8	1 1/4	56	44	1 1/2	1 1/2	7/8	3/4	1.5	1	60	240	30
50	61 3/4	12	1 1/8	1 1/4	58 1/4	44	1 3/4	1 1/2	7/8	3/4	1.3	1	60	240	30
54	66 1/4	12	1 1/8	1 1/4	62 3/4	44	1 3/4	1 1/2	7/8	3/4	1.3	1	60	240	30
56	68 3/4	12	1 1/8	1 1/4	65	48	1 3/4	1 1/2	7/8	3/4	1.3	1	60	240	30
60	73	12	1 1/8	1 1/4	69 1/4	52	1 3/4	1 1/2	7/8	3/4	1.0	1	60	240	30
62	75 3/4	12	1 1/8	1 1/4	71 3/4	52	1 3/4	1 1/2	7/8	3/4	1.0	1	50	200	30
66	80	12	1 1/8	1 1/4	76	52	1 3/4	1 1/2	7/8	3/4	1.0	1	50	200	30
72	86 1/2	12	1 1/8	1 1/4	82 1/2	60	1 3/4	1 1/2	7/8	3/4	0.9	1	50	200	30
78	93	12	1 1/8	1 1/4	89 3/4	64	2	1 1/2	7/8	3/4	0.9	1	50	200	30
84	99 3/4	12	1 1/8	1 1/4	95 1/2	64	2	1 1/2	7/8	3/4	0.8	1	50	200	30
90	106 1/2	12	1 1/8	1 1/4	102 1/4	68	2	1 1/2	7/8	3/4	0.8	1	50	200	30
96	113 1/4	12	1 1/8	1 1/4	108 1/2	68	2 1/4	1 1/2	7/8	3/4	0.4	1	50	200	30
98	115 1/2	12	1 1/4	1 3/8	110 3/4	68	2 1/4	2 1/4	1	1 1/8	0.6	1	30	120	30
100	117 3/4	12	1 1/4	1 3/8	113	68	2 1/4	2 1/4	1	1 1/8	0.6	1	30	120	30
102	120	12	1 1/4	1 3/8	114 1/2	72	2 1/4	2 1/4	1	1 1/8	0.6	1	30	120	30
108	126 3/4	12	1 1/4	1 3/8	120 3/4	72	2 1/4	2 1/4	1	1 1/8	0.4	1	25	100	30
120	140 1/4	12	1 1/4	1 3/8	132 3/4	76	2 1/4	2 1/4	1	1 1/8	0.4	1	25	100	30
132	153 3/4	12	1 1/4	1 3/8	145 3/4	80	2 1/4	2 1/4	1	1 1/8	0.3	1	25	100	30
144	167 1/4	12	1 1/4	1 3/8	158 1/4	84	2 1/4	2 1/4	1	1 1/8	0.1	1	25	100	30

SPOOL TYPE

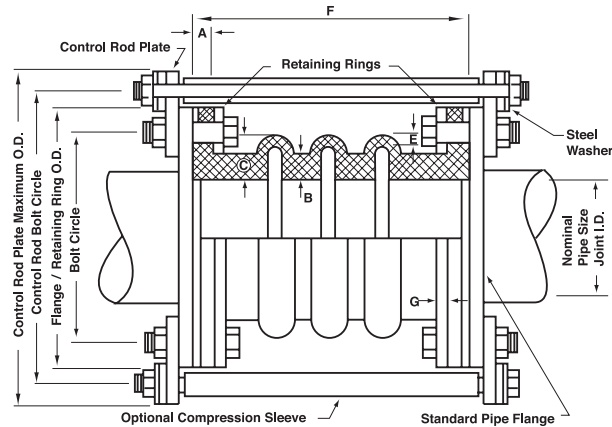
DOUBLE OPEN ARCH EXPANSION JOINTS



Pipe Size (in)	Flange OD (in)	Face to Face (in)	Overall Flange Thickness (in)		Dia Bolt Circle (in)	No. of Bolts	Dia of Bolts (in)	Axial Compression (in)	Axial Extension (in)	Lateral Deflection (in)	Angular (degrees)	Torsional (degrees)	Rated Working Pressure (psi)	Minimum Burst Pressure (psi)	Vacuum (inHg)
2	6	10	7/8	1	4 3/4	4	5/8	1 1/2	1	1	19.5	5	165	660	30
2 1/2	7	10	7/8	1	5 1/2	4	5/8	1 1/2	1	1	16.5	5	165	660	30
3	7 1/2	10	7/8	1	6	4	5/8	1 1/2	1	1	15.5	5	165	660	30
4	9	10	7/8	1	7 1/2	8	5/8	1 1/2	1	1	12.5	5	165	660	30
5	10	10	7/8	1	8 1/2	8	3/4	1 1/2	1	1	11.0	5	140	560	30
6	11	10	7/8	1	9 1/2	8	3/4	1 1/2	1	1	10.5	5	140	560	30
8	13 1/2	10	7/8	1	11 3/4	8	3/4	1 1/2	1	1	10.0	5	140	560	30
10	16	12	7/8	1	14 1/4	12	7/8	2	1 1/4	1 1/4	9.5	5	140	560	30
12	19	12	7/8	1	17	12	7/8	2	1 1/4	1 1/4	8.8	5	140	560	30
14	21	12	1 1/8	1	18 3/4	12	1	2	1 1/4	1 1/4	8.3	4	90	360	30
16	23 1/2	12	1 1/8	1	21 1/4	16	1	2	1 1/4	1 1/4	7.8	4	70	280	30
18	25	12	1 1/8	1	22 3/4	16	1 1/8	2	1 1/4	1 1/4	7.5	3	70	280	30
20	27 1/2	12	1 1/8	1	25	20	1 1/8	2	1 1/4	1 1/4	7.5	3	70	280	30
22	29 1/2	14	1 1/8	1	27 1/4	20	1 1/4	2 1/2	1 1/2	1 1/4	7.3	3	70	280	30
24	32	14	1 1/8	1	29 1/2	20	1 1/4	2 1/2	1 1/2	1 1/4	7.0	3	70	280	30
26	34 1/4	14	1 1/8	1	31 3/4	24	1 1/4	2 1/2	1 1/2	1 1/4	7.0	3	70	280	30
28	36 1/2	14	1 1/8	1	34	28	1 1/4	2 1/2	1 1/2	1 1/4	7.0	3	60	240	20
30	38 3/4	14	1 1/8	1	36	28	1 1/4	2 1/2	1 1/2	1 1/4	7.0	3	60	240	20
34	43 3/4	14	1 1/8	1	40 1/2	32	1 1/2	2 1/2	1 1/2	1 1/4	6.8	3	60	240	20
36	46	14	1/8	1 1/4	42 3/4	32	1 1/2	2 1/2	1 1/2	1 1/4	6.5	3	60	240	20
40	50 3/4	14	1 1/8	1 1/4	47 1/4	36	1 1/2	2 1/2	1 1/2	1 1/4	6.5	3	60	240	20
42	53	16	1 1/8	1 1/4	49 1/2	36	1 1/2	3	1 3/4	1 1/2	6.5	2	60	240	15
44	55 1/4	16	1 1/8	1 1/4	51 3/4	40	1 1/2	3	1 3/4	1 1/2	6.5	2	60	240	15
48	59 1/2	16	1 1/8	1 1/4	56	44	1 1/2	3	1 3/4	1 1/2	6.5	2	60	240	15
50	61 3/4	16	1 1/8	1 1/4	58 1/4	44	1 3/4	3	1 3/4	1 1/2	6.3	2	60	240	15
54	66 1/4	16	1 1/8	1 1/4	62 3/4	44	1 3/4	3	1 3/4	1 1/2	6.3	2	60	240	15
56	68 3/4	16	1 1/8	1 1/4	65	48	1 3/4	3	1 3/4	1 1/2	6.3	2	60	240	15
60	73	16	1 1/8	1 1/4	69 1/4	52	1 3/4	3	1 3/4	1 1/2	6.0	2	60	240	15
62	75 3/4	16	1 1/8	1 1/4	71 3/4	52	1 3/4	3	1 3/4	1 1/2	6.0	2	50	200	15
66	80	16	1 1/8	1 1/4	76	52	1 3/4	3	1 3/4	1 1/2	6.0	2	50	200	15
72	86 1/2	16	1 1/8	1 1/4	82 1/2	60	1 3/4	3	1 3/4	1 1/2	5.9	2	50	200	15
78	93	16	1 1/8	1 1/4	89 3/4	64	2	3	1 3/4	1 1/2	5.9	2	50	200	15
84	99 3/4	16	1 1/8	1 1/4	95 1/2	64	2	3	1 3/4	1 1/2	5.8	2	50	200	15
90	106 1/2	16	1 1/8	1 1/4	102 1/4	68	2	3	1 3/4	1 1/2	5.8	2	50	200	15
96	113 1/4	16	1 1/8	1 1/4	108 1/2	68	2 1/4	3	1 3/4	1 1/2	5.7	2	50	200	15
98	115 1/2	16	1 1/4	1 3/8	110 3/4	68	2 1/4	4 1/2	2	2 1/4	5.6	2	30	120	15
100	117 3/4	16	1 1/4	1 3/8	113	68	2 1/4	4 1/2	2	2 1/4	5.6	2	30	120	15
102	120	16	1 1/4	1 3/8	114 1/2	72	2 1/4	4 1/2	2	2 1/4	5.6	2	30	120	15
108	126 3/4	16	1 1/4	1 3/8	120 3/4	72	2 1/4	4 1/2	2	2 1/4	5.4	2	25	100	15
120	140 1/4	16	1 1/4	1 3/8	132 3/4	76	2 1/4	4 1/2	2	2 1/4	5.4	2	25	100	15
132	153 3/4	16	1 1/4	1 3/8	145 3/4	80	2 1/4	4 1/2	2	2 1/4	5.3	2	25	100	15
144	167 1/4	16	1 1/4	1 3/8	158 1/4	84	2 1/4	4 1/2	2	2 1/4	5.1	2	25	100	10

SPOOL TYPE

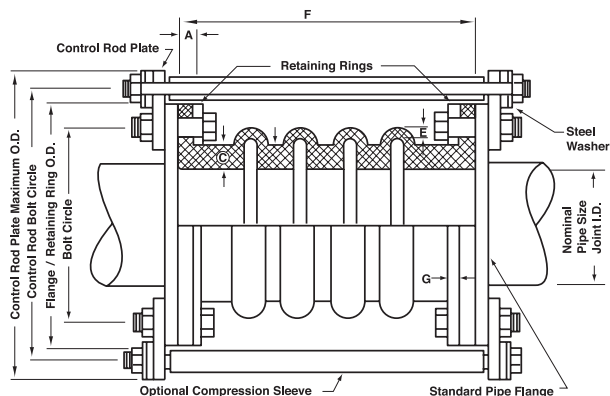
TRIPLE OPEN ARCH EXPANSION JOINTS



Pipe Size (in)	Flange OD (in)	Face to Face (in)	Overall Flange Thickness (in)		Dia Bolt Circle (in)	No. of Bolts	Dia of Bolts (in)	Axial Compression (in)	Axial Extension (in)	Lateral Deflection (in)	Angular (degrees)	Torsional (degrees)	Rated Working Pressure (psi)	Minimum Burst Pressure (psi)	Vacuum (inHg)
2	6	14	7/8	1	4 3/4	4	5/8	2 1/4	1 1/2	1 1/2	24.5	7	165	660	15
2 1/2	7	14	7/8	1	5 1/2	4	5/8	2 1/4	1 1/2	1 1/2	21.5	7	165	660	15
3	7 1/2	14	7/8	1	6	4	5/8	2 1/4	1 1/2	1 1/2	19.5	7	165	660	15
4	9	14	7/8	1	7 1/2	8	5/8	2 1/4	1 1/2	1 1/2	17.5	7	165	660	15
5	10	14	7/8	1	8 1/2	8	3/4	2 1/4	1 1/2	1 1/2	16.0	7	140	560	15
6	11	14	7/8	1	9 1/2	8	3/4	2 1/4	1 1/2	1 1/2	15.5	7	140	560	15
8	13 1/2	14	7/8	1	11 3/4	8	3/4	2 1/4	1 1/2	1 1/2	15.0	7	140	560	15
10	16	16	7/8	1	14 1/4	12	7/8	3	1 7/8	1 7/8	14.9	7	140	560	15
12	19	16	7/8	1	17	12	7/8	3	1 7/8	1 7/8	12.8	7	140	560	15
14	21	16	1	1	18 3/4	12	1	3	1 7/8	1 7/8	12.8	6	90	360	15
16	23 1/2	16	1	1 1/8	21 1/4	16	1	3	1 7/8	1 7/8	12.8	6	70	280	15
18	25	16	1	1 1/8	22 3/4	16	1 1/8	3	1 7/8	1 7/8	12.5	5	70	280	15
20	27 1/2	16	1	1 1/8	25	20	1 1/8	3	1 7/8	1 7/8	12.5	5	70	280	15
22	29 1/2	18	1	1 1/8	27 1/4	20	1 1/4	3 3/4	1 7/8	1 7/8	12.3	5	70	280	15
24	32	18	1	1 1/8	29 1/2	20	1 1/4	3 3/4	2 1/4	1 7/8	12.0	5	70	280	15
26	34 1/4	18	1	1 1/8	31 3/4	24	1 1/4	3 3/4	2 1/4	1 7/8	12.0	5	70	280	15
28	36 1/2	18	1	1 1/8	34	28	1 1/4	3 3/4	2 1/4	1 7/8	12.0	5	60	240	10
30	38 3/4	18	1	1 1/8	36	28	1 1/4	3 3/4	2 1/4	1 7/8	12.0	5	60	240	10
34	43 3/4	18	1	1 1/8	40 1/2	32	1 1/2	3 3/4	2 1/4	1 7/8	11.8	5	60	240	10
36	46	18	1 1/8	1 1/8	42 3/4	32	1 1/2	3 3/4	2 1/4	1 7/8	11.5	5	60	240	10
40	50 3/4	18	1 1/8	1 1/4	47 1/4	36	1 1/2	3 3/4	2 1/4	1 7/8	11.5	5	60	240	10
42	53	20	1 1/8	1 1/4	49 1/2	36	1 1/2	4 1/2	2 5/8	2 1/4	11.5	4	60	240	10
44	55 1/4	20	1 1/8	1 1/4	51 3/4	40	1 1/2	4 1/2	2 5/8	2 1/4	11.5	4	60	240	10
48	59 1/2	20	1 1/8	1 1/4	56	44	1 1/2	4 1/2	2 5/8	2 1/4	11.5	4	60	240	10
50	61 3/4	20	1 1/8	1 1/4	58 1/4	44	1 3/4	4 1/2	2 5/8	2 1/4	11.3	4	60	240	10
54	66 1/4	20	1 1/8	1 1/4	62 3/4	44	1 3/4	4 1/2	2 5/8	2 1/4	11.3	4	60	240	10
56	68 3/4	20	1 1/8	1 1/4	65	48	1 3/4	4 1/2	2 5/8	2 1/4	11.3	4	60	240	10
60	73	20	1 1/8	1 1/4	69 1/4	52	1 3/4	4 1/2	2 5/8	2 1/4	11.0	4	60	240	10
62	75 3/4	20	1 1/8	1 1/4	71 3/4	52	1 3/4	4 1/2	2 5/8	2 1/4	11.0	4	50	200	10
66	80	20	1 1/8	1 1/4	76	52	1 3/4	4 1/2	2 5/8	2 1/4	11.0	4	50	200	10
72	86 1/2	20	1 1/8	1 1/4	82 1/2	60	1 3/4	4 1/2	2 5/8	2 1/4	10.9	4	50	200	10
78	93	20	1 1/8	1 1/4	89 3/4	64	2	4 1/2	2 5/8	2 1/4	10.9	4	50	200	10
84	99 3/4	20	1 1/8	1 1/4	95 1/2	64	2	4 1/2	2 5/8	2 1/4	10.8	4	50	200	10
90	106 1/2	20	1 1/8	1 1/4	102 1/4	68	2	4 1/2	2 5/8	2 1/4	10.8	4	50	200	10
96	113 1/4	20	1 1/8	1 1/4	108 1/2	68	2 1/4	4 1/2	2 5/8	2 1/4	10.7	4	50	200	10
98	115 1/2	20	1 1/4	1 1/4	110 3/4	68	2 1/4	6 3/4	3	3 3/8	10.6	3	30	120	10
100	117 3/4	20	1 1/4	1 3/8	113	68	2 1/4	6 3/4	3	3 3/8	10.6	3	30	120	10
102	120	20	1 1/4	1 3/8	114 1/2	72	2 1/4	6 3/4	3	3 3/8	10.6	3	30	120	10
108	126 3/4	20	1 1/4	1 3/8	120 3/4	72	2 1/4	6 3/4	3	3 3/8	10.4	3	25	100	10
120	140 1/4	20	1 1/4	1 3/8	132 3/4	76	2 1/4	6 3/4	3	3 3/8	10.4	3	25	100	10
132	153 3/4	20	1 1/4	1 3/8	145 3/4	80	2 1/4	6 3/4	3	3 3/8	10.3	3	25	100	10
144	167 3/4	20	1 1/4	1 3/8	158 1/4	84	2 1/4	6 3/4	3	3 3/8	10.1	3	25	100	8

SPOOL TYPE

MULTIPLE ARCH TYPE EXPANSION JOINTS



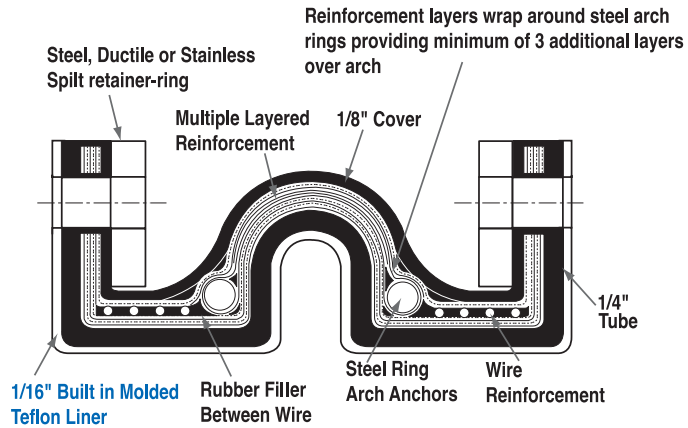
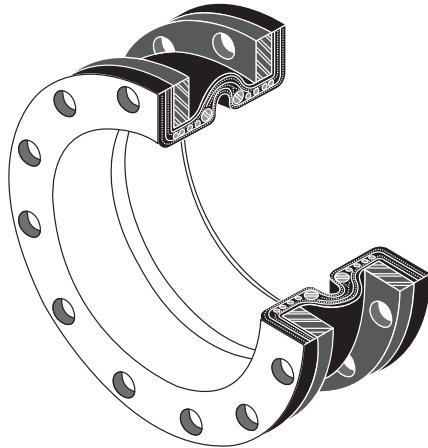
Pipe Size (in)	Flange OD (in)	Face to Face (in)	Overall Flange Thickness (in)		Dia Bolt Circle (in)	No. of Bolts	Dia of Bolts (in)	Axial Compression (in)	Axial Extension (in)	Lateral Deflection (in)	Angular (degrees)	Torsional (degrees)	Rated Working Pressure (psi)	Minimum Burst Pressure (psi)	Vacuum (inHg)
2	6	18	7/8	1	4 3/4	4	5/8	3	2	2	29.5	8	165	660	15
	7	18	7/8	1	5 1/2	4	5/8	3	2	2	26.5	8	165	660	15
	7 1/2	18	7/8	1	6	4	5/8	3	2	2	24.5	8	165	660	15
	9	18	7/8	1	7 1/2	8	5/8	3	2	2	22.5	8	165	660	15
5	10	18	7/8	1	8 1/2	8	3/4	3	2	2	21.0	8	140	560	15
6	11	18	7/8	1	9 1/2	8	3/4	3	2	2	20.5	8	140	560	15
8	13 1/2	18	7/8	1	11 3/4	8	3/4	3	2	2	20.0	8	140	560	15
10	16	20	7/8	1	14 1/4	12	7/8	4	2 1/2	2 1/2	19.9	8	140	560	15
12	19	20	7/8	1	17	12	7/8	4	2 1/2	2 1/2	17.8	8	140	560	15
14	21	20	1	1 1/8	18 3/4	12	1	4	3	2 1/2	17.8	7	90	360	15
16	23 1/2	20	1	1 1/8	21 1/4	16	1	4	3	2 1/2	17.8	7	70	280	15
18	25	20	1	1 1/8	22 3/4	16	1 1/8	4	3	2 1/2	17.5	6	70	280	15
20	27 1/2	22	1	1 1/8	25	20	1 1/8	4	3	2 1/2	17.5	6	70	280	15
22	29 1/2	22	1	1 1/8	27 1/4	20	1 1/4	5	3	2 1/2	17.3	6	70	280	15
24	32	22	1	1 1/8	29 1/2	20	1 1/4	5	3	2 1/2	17.0	6	70	280	15
26	34 1/4	22	1	1 1/8	31 3/4	24	1 1/4	5	3	2 1/2	17.0	6	70	280	15
28	36 1/2	22	1	1 1/8	34	28	1 1/4	5	3	2 1/2	17.0	6	60	240	10
30	38 3/4	22	1	1 1/8	36	28	1 1/4	5	3 1/2	3	17.0	6	60	240	10
34	43 3/4	22	1	1 1/8	40 1/2	32	1 1/2	5	3 1/2	3	16.8	6	60	240	10
36	46	22	1/8	1 1/4	42 3/4	32	1 1/2	5	3 1/2	3	16.5	6	60	240	10
40	50 3/4	22	1 1/8	1 1/4	47 1/4	36	1 1/2	5	3 1/2	3	16.5	6	60	240	10
42	53	24	1 1/8	1 1/4	49 1/2	36	1 1/2	6	3 1/2	3	16.5	5	60	240	10
44	55 1/4	24	1 1/8	1 1/4	51 3/4	40	1 1/2	6	3 1/2	3	16.5	5	60	240	10
48	59 1/2	24	1 1/8	1 1/4	56	44	1 1/2	6	3 1/2	3	16.5	5	60	240	10
50	61 3/4	24	1 1/8	1 1/4	58 1/4	44	1 3/4	6	3 1/2	3	16.3	5	60	240	10
54	66 1/4	24	1 1/8	1 1/4	62 3/4	44	1 3/4	6	3 1/2	3	16.3	5	60	240	10
56	68 3/4	24	1 1/8	1 1/4	65	48	1 3/4	6	3 1/2	3	16.3	5	60	240	10
60	73	24	1 1/8	1 1/4	69 1/4	52	1 3/4	6	3 1/2	3	16.0	5	60	240	10
62	75 3/4	24	1 1/8	1 1/4	71 3/4	52	1 3/4	6	3 1/2	3	16.0	5	50	200	10
66	80	24	1 1/8	1 1/4	76	52	1 3/4	6	3 1/2	3	16.0	5	50	200	10
72	86 1/2	24	1 1/8	1 1/4	82 1/2	60	1 3/4	6	3 1/2	3	15.9	5	50	200	10
78	93	24	1 1/8	1 1/4	89 3/4	64	2	6	3 1/2	3	15.9	5	50	200	10
84	99 3/4	24	1 1/8	1 1/4	95 1/2	64	2	6	3 1/2	3	15.8	5	50	200	10
90	106 1/2	24	1 1/8	1 1/4	102 1/4	68	2	6	3 1/2	3	15.8	5	50	200	10
96	113 1/4	24	1 1/8	1 1/4	108 1/2	68	2 1/4	6	3 1/2	3	15.7	5	50	200	10
98	115 1/2	24	1 1/4	1 3/8	110 3/4	68	2 1/4	9	4	4 1/2	15.6	4	30	120	10
100	117 3/4	24	1 1/4	1 3/8	113	68	2 1/4	9	4	4 1/2	15.6	4	30	120	10
102	120	24	1 1/4	1 3/8	114 1/2	72	2 1/4	9	4	4 1/2	15.6	4	30	120	10
108	126 3/4	24	1 1/4	1 3/8	120 3/4	72	2 1/4	9	4	4 1/2	15.4	4	25	100	10
120	140 1/4	24	1 1/4	1 3/8	132 3/4	76	2 1/4	9	4	4 1/2	15.4	4	25	100	10
132	153 3/4	24	1 1/4	1 3/8	145 3/4	80	2 1/4	9	4	4 1/2	15.3	4	25	100	10
144	167 1/4	24	1 1/4	1 3/8	158 1/4	84	2 1/4	9	4	4 1/2	15.1	4	25	100	8

SPOOL TYPE

TEFLON LINED EXPANSION JOINTS <SINGLE ARCH>

STF

SERIES

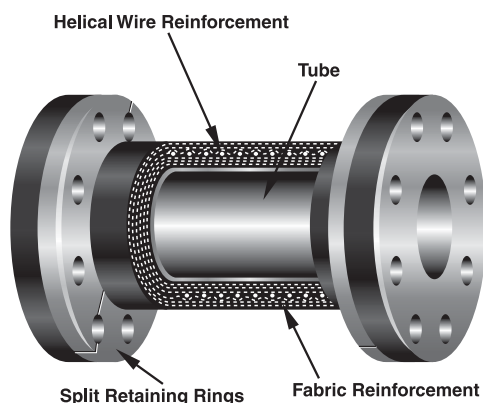


Pipe Size (in)	Flange OD (in)	Face to Face (in)	Overall Flange Thickness (in)		Dia Bolt Circle (in)	No. of Bolts	Dia of Bolts (in)	Axial Compression (in)	Axial Extension (in)	Lateral Deflection (in)	Angular (degrees)	Torsional (degrees)	Rated Working Pressure (psi)	Minimum Burst Pressure (psi)	Vacuum (inHg)
2 1/2	7	6	7/8	1	5 1/2	4	5/8	1 1/16	3/8	1/2	11.5	3	165	660	30
3	7 1/2	6	7/8	1	6	4	5/8	1 1/16	3/8	1/2	10.0	3	165	660	30
4	9	6	7/8	1	7 1/2	8	5/8	1 1/16	3/8	1/2	7.5	3	165	660	30
5	10	6	7/8	1	8 1/2	8	3/4	1 1/16	3/8	1/2	6.0	3	150	600	30
6	11	6	7/8	1	9 1/2	8	3/4	1 1/16	3/8	1/2	5.5	3	150	600	30
8	13 1/2	6	7/8	1	11 3/4	8	3/4	1 1/16	3/8	1/2	5.0	3	150	600	30
10	16	8	7/8	1	14 1/4	12	7/8	1 1/16	3/8	1/2	4.5	3	150	600	30
12	19	8	7/8	1	17	12	7/8	1 1/16	3/8	1/2	3.8	3	150	600	30
14	21	8	1	1 1/8	18 3/4	12	1	1 1/16	3/8	1/2	3.3	3	90	360	30
16	23 1/2	8	1	1 1/8	21 1/4	16	1	1 1/16	3/8	1/2	2.8	3	70	280	30
18	25	8	1	1 1/8	22 3/4	16	1 1/8	1 3/16	7/16	1/2	2.5	2	70	280	30
20	27 1/2	8	1	1 1/8	25	20	1 1/8	1 3/16	7/16	1/2	2.5	2	70	280	30
22	29 1/2	10	1	1 1/8	27 1/4	20	1 1/4	1 5/16	1/2	1/2	2.3	1	70	280	30
24	32	10	1	1 1/8	29 1/2	20	1 1/4	1 5/16	1/2	1/2	2.0	1	70	280	30
26	34 1/4	10	1	1 1/8	31 3/4	24	1 1/4	1 5/16	1/2	1/2	2.0	1	60	240	30
28	36 1/2	10	1	1 1/8	34	28	1 1/4	1 5/16	1/2	1/2	2.0	1	60	240	30
30	38 3/4	10	1	1 1/8	36	28	1 1/4	1 5/16	1/2	1/2	2.0	1	60	240	30
34	43 3/4	10	1	1 1/8	40 1/2	32	1 1/2	1 5/16	1/2	1/2	1.8	1	60	240	30
36	46	10	1 1/8	1 1/4	42 3/4	32	1 1/2	1 5/16	1/2	1/2	1.5	1	60	240	30
40	50 3/4	10	1 1/8	1 1/4	47 1/4	36	1 1/2	1 5/16	1/2	1/2	1.5	1	60	240	30
42	53	12	1 1/8	1 1/4	49 1/2	36	1 1/2	1 1/16	9/16	1/2	1.5	1	60	240	30
44	55 1/4	12	1 1/8	1 1/4	51 3/4	40	1 1/2	1 1/16	9/16	1/2	1.5	1	60	240	30
48	59 1/2	12	1 1/8	1 1/4	56	44	1 1/2	1 1/16	9/16	1/2	1.3	1	60	240	30
50	61 3/4	12	1 1/8	1 1/4	58 1/4	44	1 3/4	1 1/16	9/16	1/2	1.5	1	60	240	30
54	66 1/4	12	1 1/8	1 1/4	62 3/4	44	1 3/4	1 1/16	9/16	1/2	1.3	1	60	240	30
56	68 3/4	12	1 1/8	1 1/4	65	48	1 3/4	1 1/16	9/16	1/2	1.3	1	60	240	30
60	73	12	1 1/8	1 1/4	69 1/4	52	1 3/4	1 1/16	9/16	1/2	1.0	1	60	240	30
66	80	12	1 1/8	1 1/4	76	52	1 3/4	1 1/16	9/16	1/2	1.0	1	60	240	30
72	86 1/2	12	1 1/8	1 1/4	82 1/2	60	1 3/4	1 1/16	9/16	1/2	0.9	1	50	200	30
78	93	12	1 1/8	1 1/4	89 3/4	64	2	1 1/16	9/16	1/2	0.9	1	50	200	30
84	99 3/4	12	1 1/8	1 1/4	95 1/2	64	2	1 1/16	9/16	1/2	0.8	1	50	200	30
90	106 1/2	12	1 1/8	1 1/4	102 1/4	68	2	1 1/16	9/16	1/2	0.8	1	50	200	30
96	113 1/4	12	1 1/8	1 1/4	108 1/2	68	2 1/4	1 1/16	9/16	1/2	0.7	1	50	200	30

SPOOL TYPE

VIBRATION DAMPENERS

SVD SERIES



▲ Cross Sectional View of Flanged Type Flexible Rubber Pipe

Rubber vibration dampeners is possible to manufacture no-arch type expansion joints. It is more common however, to specify flanges pipe connectors having a substantially longer length than an expansion joint of the same pipe size, and this chapter will consider the construction, usage and dimensions of these pipe connectors.

The most common type of rubber pipe incorporates a full face flange integral with the body of the pipe. The flange is drilled to conform to the bolt pattern of the companion metal flanges of the pipeline.

The type of a rubber faced flange, backed with a retaining ring, is of sufficient thickness to form a tight seal against the companion flange without the use of a gasket.

MAXIMUM PERMISSABLE MOVEMENT

Pipe Size	Face to Face	Compression	Extension	Lateral	Pipe Size	Face to Face	Compression	Extension	Lateral 3/8
2" & 2 1/2"	18"	1/4	3/8	3/8	5" & 6"	24"	5/8	1/2	3/8
3"	18"	3/8	3/8	3/8	8" & 10"	24"	3/4	1/2	1/2
4"	24"	1/2	1/2	1/2	12"	24"	3/4	5/8	

LENGTHS · DIMENSIONS

L - TYPE (150 PSIG)						H - TYPE (300 PSIG)				
NOMINAL PIPE SIZE I.D. OF DAMPENER	F/F	FLANGE O.D.	BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES	FLANGE O.D.	FLANGE THICKNESS	BOLT CIRCLE	NO. OF HOLES	SIZE OF HOLES
1-1/2	12"	5"	3-7/8	4	5/8	6-1/8"	5/8"	4-1/2	4	7/8
2	12"	6"	4-3/4	4	3/4	6-1/2"	5/8"	5	8	3/4
3	12"	7-1/2"	6	4	3/4	8-1/4"	5/8"	6-5/8	8	7/8
4	12"	9"	7-1/2	8	3/4	10"	5/8"	7-7/8	8	7/8
5	12"	10"	8-1/2	8	7/8	11"	5/8"	9-1/4	8	7/8
6	18"	11"	9-1/2	8	7/8	12-1/2"	3/4"	10-5/8	12	7/8
8	24"	13-1/2"	11-3/4	8	7/8	15"	7/8"	13	12	1
10	24"	16"	14-1/4	12	1	17-1/2"	7/8"	15-1/4	16	1-1/8
12	24"	19"	17	12	1	20-1/2"	7/8"	17-3/4	16	1-1/4

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

Center Freq.	8" I.D. x 6" F-F Expansion Joint			8" I.D. x 24" F-F Vibration Joint		
	10psig	50psig	80psig	10psig	50psig	80psig
40	37%	55%	72%	87%	91%	93%
68	60%	68%	78%	95%	96%	99%
125	44%	50%	60%	98%	99%	99%
250	44%	50%	50%	96%	97%	99%
500	65%	89%	90%	91%	93%	94%
1000	90%	96%	98%	82%	91%	96%
2000	94%	95%	96%	99%	99%	99%
4000	90%	93%	97%	99%	99%	99%
8000	89%	89%	94%	97%	97%	98%

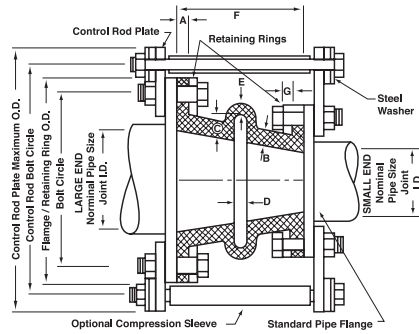
EXAMPLE - If a steel piping system had a major vibration frequency of 1000 Hz at 50 PSIG and an 8" rubber expansion joint was installed in the pipeline, the percentage of reduction of vibration would be 96%.

SPOOL TYPE

REDUCER EXPANSION JOINTS

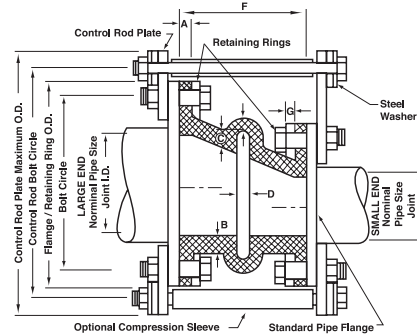
CONCENTRIC REDUCERS

To Connect Pipe of Unequal Diameters



ECCENTRIC REDUCERS

For Equipment With Different Size Flanges

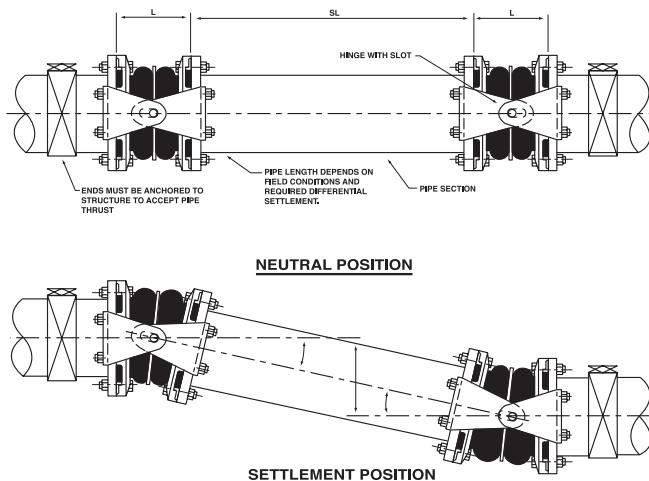


Reducer Joint Size : I.D. x I.D. x Length	Open Arch Movement Capability : From Neutral Position								Filled Arch Movement Capability : From Neutral Position								Weights/Pounds		Pressure	
	Maximum Total Travel When Installed	In. Of Axial Compression	In. Of Axial Extension	± In. Of Lateral Deflection	± Angular Deflection	Degrees of Torsional	Thrust Factor	Maximum Total Travel When Installed	In. Of Axial Compression	In. Of Axial Extension	± In. Of Lateral Deflection	± Angular Deflection	Degrees of Torsional	Thrust Factor	Open Arch Joint/Rings	Filled Arch Joint/Rings	Control Rod Assembly	Positive P.S.I.G.	Negative In. Of In.Hg	
																				Compressed- Extended
2×1×6	5.5-6.25	.5	.25	.5	18.4°	3°	12.69	5.75-6.125	.25	.125	.3	9.5°	1.8°	3.14	5.1	5.6	6.0	200	26	
2×1.5×6	5.5-6.25	.5	.25	.5	15.9°	3°	14.32	5.75-6.125	.25	.125	.3	8.1°	1.8°	3.14	5.5	6.0	6.3	200	26	
2.5×1.5×6	5.5-6.25	.5	.25	.5	14.1°	3°	16.04	5.75-6.125	.25	.125	.3	7.2°	1.8°	4.97	7.1	7.6	7.1	200	26	
2.5×2×6	5.5-6.25	.5	.25	.5	12.5°	3°	17.87	5.75-6.125	.25	.125	.3	6.4°	1.8°	4.97	8.1	8.7	7.4	200	26	
3×1.5×6	5.5-6.25	.5	.25	.5	12.5°	3°	17.87	5.75-6.125	.25	.125	.3	6.4°	1.8°	7.06	8.2	8.8	7.1	200	26	
3×2×6	5.5-6.25	.5	.25	.5	11.3°	3°	19.79	5.75-6.125	.25	.125	.3	5.7°	1.8°	7.06	8.3	8.9	7.0	200	26	
3×2.5×6	5.5-6.25	.5	.25	.5	10.3°	3°	21.60	5.75-6.125	.25	.125	.3	5.2°	1.8°	7.06	9.5	10.1	7.1	200	26	
4×2×6	5.5-6.25	.5	.25	.5	9.5°	3°	23.92	5.75-6.125	.25	.125	.3	4.8°	1.8°	12.57	10.8	11.4	7.1	200	26	
4×2×7	6.5-7.25	.5	.25	.5	9.5°	3°	23.92	6.75-7.125	.25	.125	.3	4.8°	1.8°	12.57	10.9	11.5	7.1	200	26	
4×2.5×6	5.5-6.25	.5	.25	.5	8.8°	3°	26.15	5.75-6.125	.25	.125	.3	4.4°	1.8°	12.57	10.9	11.6	7.6	200	26	
4×2.5×7	6.5-7.25	.5	.25	.5	8.8°	3°	26.15	6.75-7.125	.25	.125	.3	4.4°	1.8°	12.57	11.8	12.4	7.6	200	26	
4×3×6	5.5-6.25	.5	.25	.5	8.2°	3°	28.46	5.75-6.125	.25	.125	.3	4.1°	1.8°	12.57	12.0	12.8	7.5	200	26	
4×3×7	6.5-7.25	.5	.25	.5	8.2°	3°	28.46	6.75-7.125	.25	.125	.3	4.1°	1.8°	12.57	12.9	13.7	7.5	200	26	
5×3×6	5.5-6.25	.5	.25	.5	7.1°	3°	33.38	5.75-6.125	.25	.125	.3	3.6°	1.8°	19.63	13.4	14.2	11.5	190	26	
5×4×6	5.5-6.25	.5	.25	.5	6.4°	3°	38.70	5.75-6.125	.25	.125	.3	3.2°	1.8°	19.63	14.4	15.2	10.1	190	26	
5×4×8	7.5-8.25	.5	.25	.5	6.4°	3°	38.70	7.75-8.125	.25	.125	.3	3.2°	1.8°	19.63	16.9	17.8	10.1	190	26	
6×2×8	7.5-8.25	.5	.25	.5	7.1°	3°	33.38	7.75-8.125	.25	.125	.3	3.6°	1.8°	28.27	13.6	14.4	11.6	190	26	
6×2.5×6	5.5-6.25	.5	.25	.5	6.7°	3°	35.99	5.75-6.125	.25	.125	.3	3.4°	1.8°	28.27	13.8	14.6	11.9	190	26	
6×3×6	5.5-6.25	.5	.25	.5	6.4°	3°	38.70	5.75-6.125	.25	.125	.3	3.2°	1.8°	28.27	15.6	16.0	12.3	190	26	
6×3×9	8.5-9.25	.5	.25	.5	6.4°	3°	38.70	8.75-9.125	.25	.125	.3	3.2°	1.8°	28.27	16.6	17.4	12.5	190	26	
6×4×6	5.5-6.25	.5	.25	.5	5.7°	3°	44.41	5.75-6.125	.25	.125	.3	2.9°	1.8°	28.27	15.9	16.4	10.6	190	26	
6×4×8	7.5-8.25	.5	.25	.5	5.7°	3°	44.41	7.75-8.125	.25	.125	.3	2.9°	1.8°	28.27	17.8	18.6	11.0	190	26	
6×4×9	8.5-9.25	.5	.25	.5	5.7°	3°	44.41	8.75-9.125	.25	.125	.3	2.9°	1.8°	28.27	19.3	20.1	11.0	190	26	
6×5×6	5.5-6.25	.5	.25	.5	5.2°	3°	50.51	5.75-6.125	.25	.125	.3	2.6°	1.8°	28.27	17.1	18.6	10.5	190	26	
6×5×9	8.5-9.25	.5	.25	.5	5.2°	3°	50.51	8.75-9.125	.25	.125	.3	2.6°	1.8°	28.27	18.6	19.4	11.9	190	26	
8×3×6	5.25-6.375	.75	.375	.5	7.8°	3°	56.64	5.625-6.188	.375	.188	.3	3.9°	1.8°	50.27	20.5	21.3	20.4	190	26	
8×4×6	5.25-6.375	.75	.375	.5	7.1°	3°	63.49	5.625-6.188	.375	.188	.3	3.6°	1.8°	50.27	22.9	23.7	18.6	190	26	
8×4×8	7.25-8.375	.75	.375	.5	7.1°	3°	63.49	7.625-8.188	.375	.188	.3	3.6°	1.8°	50.27	23.2	24.0	19.5	190	26	
8×4×11	10.25-11.375	.75	.375	.5	7.1°	3°	63.49	10.625-11.188	.375	.188	.3	3.6°	1.8°	50.27	23.8	24.6	21.0	190	26	
8×5×6	5.25-6.375	.75	.375	.5	6.6°	3°	70.76	5.625-6.188	.375	.188	.3	3.3°	1.8°	50.27	21.4	22.2	18.4	190	26	
8×5x11	10.25-11.375	.75	.375	.5	6.6°	3°	70.76	10.625-11.188	.375	.188	.3	3.3°	1.8°	50.27	26.1	26.9	20.6	190	26	
8×6×6	5.25-6.375	.75	.375	.5	6.1°	3°	78.42	5.625-6.188	.375	.188	.3	3.1°	1.8°	50.27	23.0	23.8	17.5	190	26	
8×6x8	7.25-8.375	.75	.375	.5	6.1°	3°	78.42	7.625-8.188	.375	.188	.3	3.1°	1.8°	50.27	25.6	26.6	18.1	190	26	
8×6×11	10.25-11.375	.75	.375	.5	6.1°	3°	78.42	10.625-11.188	.375	.188	.3	3.1°	1.8°	50.27	28.1	28.9	19.6	190	26	
10×5x8	7.25-8.375	.75	.375	.5	5.7°	3°	86.46	7.625-8.188	.375	.188	.3	2.9°	1.8°	78.54	29.4	30.2	27.0	190	26	
10×6x8	7.25-8.375	.75	.375	.5	5.3°	3°	94.90	7.625-8.188	.375	.188	.3	2.8°	1.8°	78.54	29.0	29.8	26.0	190	26	
10×6x12	11.25-12.375	.75	.375	.5	5.3°	3°	94.90	11.625-12.188	.375	.188	.3	2.8°	1.8°	78.54	33.4	34.2	27.5	190	26	
10×8x6	5.25-6.375	.75	.375	.5	4.8°	3°	112.95	5.625-6.188	.375	.188	.3	2.4°	1.8°	78.54	29.9	30.7	24.5	190	26	
10×8x8	7.25-8.375	.75	.375	.5	4.8°	3°	112.95	7.625-8.188	.375	.188	.3	2.4°	1.8°	78.54	34.6	35.8	25.3	190	26	
10×8x12	11.25-12.375	.75	.375	.5	4.8°	3°	112.95	11.625-12.188	.375	.188	.3	2.4°	1.8°	78.54	40.1	40.9	27.8	190	26	
12×6x8	7.25-8.375	.75	.375	.5	4.8°	3°	113.10	7.625-8.188	.375	.188	.3	2.4°	1.8°	113.10	38.8	39.7	29.0	190	26	
12×6x14	13.25-14.375	.75	.375	.5	4.8°	3°	113.10	13.625-14.188	.375	.188	.3	2.4°	1.8°	113.10	45.0	46.0	30.5	190	26	
12×8x6	5.25-6.375	.75	.375	.5	4.3°	3°	132.57	5.625-6.188	.375	.188	.3	2.2°	1.8°	113.10	37.6	38.6	28.0	190	26	
12×8x8	7.25-8.375	.75	.375	.5	4.3°	3°	132.57	7.625-8.188	.375	.188	.3	2.2°	1.8	113.10	42.0	44.5	28.8	190	26	
12×8x14	13.25-14.375	.75	.375	.5	4.3°	3°	132.57	13.625-14.188	.375	.188	.3	2.2°	1.8°	113.10	48.6	49.6	30.1	190	26	
12×10x8	7.25-8.375	.75	.375	.5	3.9°	3°	153.76	7.625-8.188	.375	.188	.3	1.9°	1.8°	113.10	47.8	48.0	24.3	190	26	
12×10x14	13.25-14.375	.75	.375	.5	3.9°	3°	153.76	13.625-14.188	.375	.188	.3	1.9°	1.8°	113.10	60.0	61.0	26.1	190	26	
14×8x8	7.25-8.375	.75	.375	.5	3.9°	2°	177.09	7.625-8.188	.375	.188	.3	1.9°	1.2°	153.94	45.8	46.8	29.0	190	26	
14×10x8	7.25-8.375	.75	.375	.5	3.6°	2°	201.46	7.625-8.188	.375	.188	.3	1.8°	1.2°	153.94	53.5	54.6	29.4	130	26	
14×12x8	7.25-8.375	.75	.375	.5	3.3°	2°	277.40	7.625-8.188	.375	.188	.3	1.7°	1.2°	153.94	63.6	64.6	26.6	130	26	
16×10x8	7.25-8.375	.75	.375	.5	3.3°	2°	227.40	7.625-8.188	.375	.188	.3	1.7°	1.2°	201.06	55.8	56.8	35.8	110	26	
16×12x8	7.25-8.375	.75	.375	.5	3.1°	2°	254.91	7.625-8.188	.375	.188	.3	1.5°	1.2°	201.06	61.8	62.8	36.0	110	26	
16×14x8	7.25-8.375	.75	.375	.5	2.9°	2°	283.99	7.625-8.188	.375	.188	.3	1.4°	1.2°	201.06	69.6	70.6	36.5	110	26	
18×12x8	7.25-8.375	.75	.375	.5	2.9°	1°	283.99	7.625-8.188	.375	.188	.3	1.4°	6°	254.47	65.5	66.5	37.0	110	26	
18×14x8	7.25-8.375	.75	.375	.5	2.7°	1°	314.65	7.625-8.188	.375	.188	.3	1.3°	6°	254.47	67.4	68.4	37.0	110	26	
18×16x8	7.25-8.375	.75	.375	.5	2.6°	1°	346.88	7.625-8.188	.375	.188	.3	1.2°	6°	254.47	78.7	79.7	33.8	110	26	



SPOOL TYPE

HINGED EXPANSION JOINTS



SHE SERIES

Pipe Size(in)	Allowable Angular Displacement	Tan θ	Length(L) (inch)
1-1/2	30°	.58	7
2	30°	.58	7
2-1/2	30°	.58	7
3	30°	.58	7
4	29°	.55	7
5	24°	.45	7
6	20°	.36	7
8	15°	.27	8
10	13°	.23	8
12	11°	.19	8
14	10°	.18	10

SPOOL TYPE

BURIED TYPE EXPANSION JOINTS

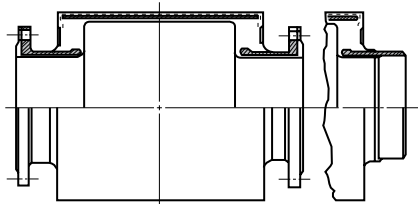
SBE SERIES



(MAX. BORE SIZE : ID 3400mm)

DESIGN CONDITIONS

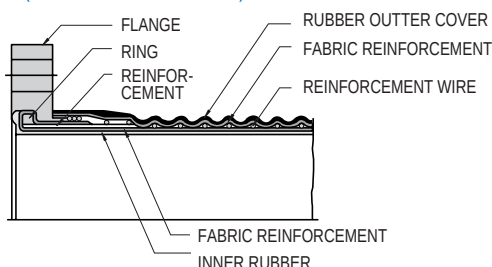
- Working Pressure : High : 10kgf/cm²
Medium : 5kgf/cm²
Low : 3kgf/cm²
- Buried Method : 3 M. Depth underground
- Temperature : Ambient Temperature
- Fluid : Fresh water, Waste water



(MAX. BORE SIZE : ID 2500mm)

DESIGN CONDITIONS

- Working Pressure : 5kgf/cm²
- Working Temperature : Ambient
- Fluid : Fresh water, Waste water



Allowable Movement (mm)

SIZE	Length(mm)	Extension Compression(X±)	Lateral(Y)	Angular(DEG)
100	1,000	±60	±120	25
150	1,000			22
200	1,000			
250	1,000			
300	1,100			
350	1,100			20
400	1,100			
450	1,100			
500	1,200			
600	1,200			18
700	1,200			
800	1,200			
900	1,200			
1,000	1,200			16
1,100	1,200			
1,200	1,200			
1,350	1,200			14
1,500	1,400			

- * Ends / Pipe weld end Type
- * Flange / KS 5kgf/cm², 10kgf/cm², 20kgf/cm², ANSI150. 300, DIN
- * Rubber Material / Neoprene, EPDM, Butyl, Hypalon
- * Manufact-D According to KS D 3565

(Allowable Movement)

Extension(X+) (mm)	Compression(X-) (mm)	Lateral (mm)
40	30	100

- * Flange / KS 5kgf/cm², 10kgf/cm², 20kgf/cm², ANSI150. 300, DIN
- * Rubber Material / Neoprene, EPDM, Butyl, Hypalone
- * Manufact-D According to KS D 3565



megaflexon with Confidence

MOLDED TYPE

RUBBER EXPANSION JOINTS



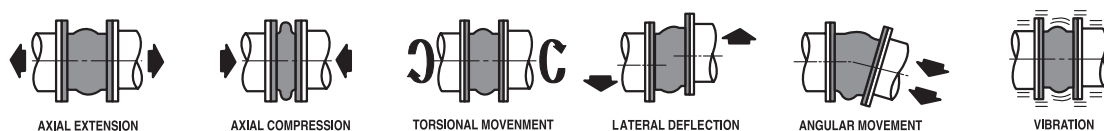
MOLDED TYPE

EXPANSION JOINTS

APPLICATIONS

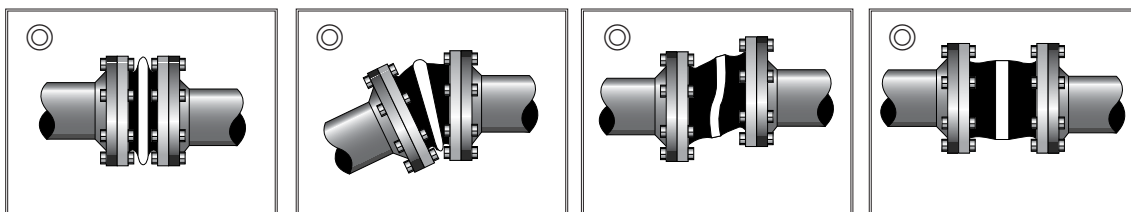
1. Water treatment, swage treatment and air purification systems.
2. Chemical and industrial process pipe line, vibration stress line, protect pumps and valves.
3. Heating, ventilation and air conditioning - isolate the mechanical noise and vibration.
4. Power plants - absorb thermal expansion lines, condenser lines, steam turbine exhaust lines, suction lines, nuclear and fossil fuel plant.
5. Shipboard installations involve system heating, circulation water suction and discharge.

ABSORB MOVEMENTS

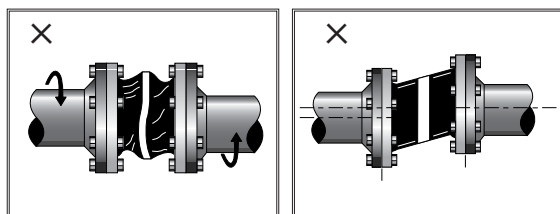


INSTALLATION GUIDE

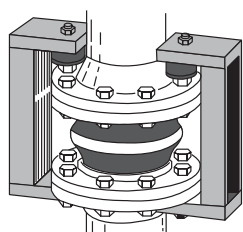
CORRECT ☉



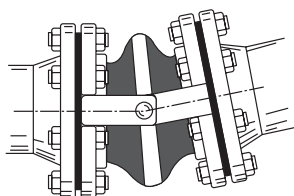
INCORRECT ✕



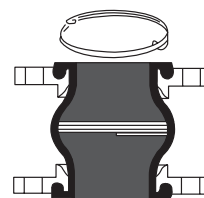
CUSTOM-BUILT DESIGN



Rubber-metal limiters
for subsequent installation



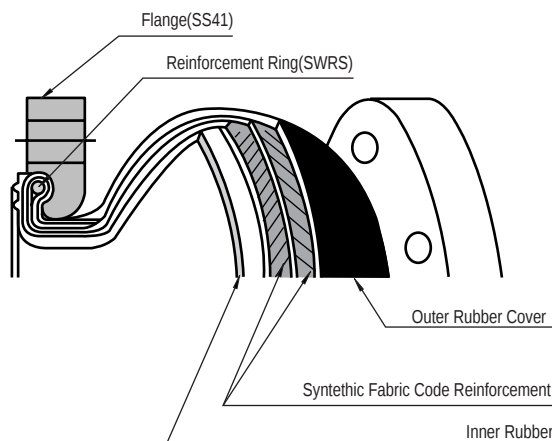
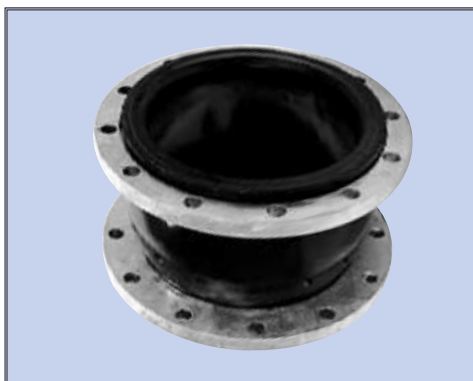
Link limiters for angular
movement



Vacuum support ring

MOLDED TYPE

SINGLE SPHERE EXPANSION JOINTS



STRUCTURE

No.	Description	Materials
1	Internal Rubber	EPDM or other elastomer
2	Reinforcement Layer	Nylon Tire Code
3	External Rubber	EPDM or other elastomer
4	Wire	Hard Steel Wire
5	Flange	Mild Steel, Stainless Steel

ALLOWABLE MOVEMENT

Diam. D mm(in)	L (mm)	Allowable Movement(mm)				Operating Condition			
		Axial Compression	Axial Extension	Lateral	Angular	Max. Pressure kg/cm ² (PSIG)	Max. Temperature °C(° F)	Vacuum Rating mm Hg(in.)	Weight(kg)
32(1 1/4)	95	8	4	8	15°	10(150)	104(220)	400(16)	2.03
40(1 1/2)	95	8	4	8	15°	10(150)	104(220)	400(16)	2.61
50(2)	105	8	5	8	15°	10(150)	104(220)	400(16)	3.27
65(2 1/2)	115	12	6	10	15°	10(150)	104(220)	400(16)	4.73
80(3)	130	12	6	10	15°	10(150)	104(220)	400(16)	6.05
100(4)	135	18	10	12	15°	10(150)	104(220)	400(16)	7.44
125(5)	170	18	10	12	15°	10(150)	104(220)	400(16)	9.60
150(6)	180	18	10	12	15°	10(150)	104(220)	400(16)	12.25
200(8)	205	25	14	22	15°	10(150)	104(220)	400(16)	18.16
250(10)	240	25	14	22	15°	10(150)	104(220)	400(16)	25.26
300(12)	260	25	14	22	15°	10(150)	104(220)	400(16)	37.80
350(14)	265	25	16	22	15°	10(105)	104(220)	400(16)	47.80
400(16)	265	25	16	22	15°	10(105)	104(220)	400(16)	59.20
450(18)	265	25	16	22	15°	10(105)	104(220)	400(16)	61.90
500(20)	265	25	16	22	15°	10(105)	104(220)	400(16)	72.30
600(24)	265	25	16	22	15°	10(105)	104(220)	400(16)	90.20
700(28)	265	25	16	22	10°	10(105)	104(220)	400(16)	125.00
800(32)	265	25	16	22	10°	10(105)	104(220)	400(16)	140.00

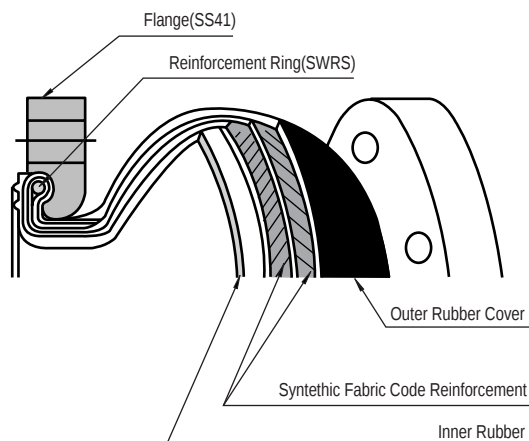
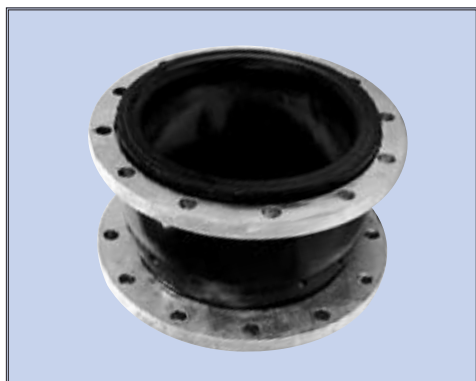
Note

1. Applicable fluids : water, warm water, seawater, weak acids, alkalies, etc.
2. Available flange drilling : JIS, DIN, ANSI, BS and other standard drilling.
3. Available material : Neoprene, Butyl, Nitrile, EPDM, Hypalon, Natural Rubber, etc.
4. Burst pressure : 60kg/cm²(11/4" to 8") : 40kg/cm²(10" to 12")
(Amb. Temperature)

Expansion Joint MSE-15 SERIES

MOLDED TYPE

SINGLE SPHERE EXPANSION JOINTS



STRUCTURE

No.	Description	Materials
1	Internal Rubber	EPDM or other elastomer
2	Reinforcement Layer	Nylon Tire Code
3	External Rubber	EPDM or other elastomer
4	Wire	Hard Steel Wire
5	Flange	Mild Steel, Stainless Steel

ALLOWABLE MOVEMENT

Diam. D Ø mm(in.)	L (mm)	Allowable Movement(mm)				Operating Condition		
		Axial Compression	Axial Extension	Lateral	Angular	Max. Pressure kg/cm ² (PSIG)	Max. Temperature °C(°F)	Vacuum Rating mm Hg(in.)
32(1 1/4)	130	30	20	20	35°	10(150)	104(220)	400(16)
40(1 1/2)	130	30	20	20	35°	10(150)	104(220)	400(16)
50(2)	130	30	20	20	35°	10(150)	104(220)	400(16)
65(2 1/2)	130	30	20	20	30°	10(150)	104(220)	400(16)
80(3)	130	30	20	20	30°	10(150)	104(220)	400(16)
100(4)	130	30	20	20	25°	10(150)	104(220)	400(16)
125(5)	130	30	20	20	25°	10(150)	104(220)	400(16)
150(6)	130	30	20	20	15°	10(150)	104(220)	400(16)
200(8)	130	30	20	20	15°	10(150)	104(220)	400(16)
250(10)	130	30	20	20	10°	10(150)	104(220)	400(16)
300(12)	130	30	20	20	10°	10(150)	104(220)	400(16)

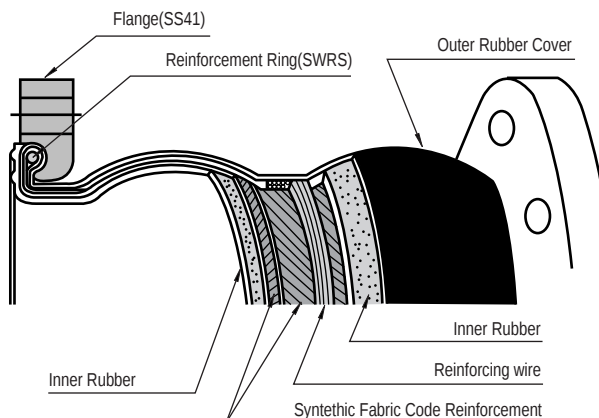
Note

1. Applicable fluids : water, warm water, seawater, weak acids, alkalies, etc.
2. Available flange drilling : JIS, DIN, ANSI, BS and other standard drilling.
3. Available material : Neoprene, Butyl, Nitrile, EPDM, Hypalon, Natural Rubber, etc.
4. BURST PRESSURE : 60kg/cm²(11 1/4" to 8") : 40kg/cm²(10" to 12")
(Amb. Temperature)



MOLDED TYPE

DOUBLE SPHERE EXPANSION JOINTS



STRUCTURE

No.	Description	Materials
1	Internal Rubber	EPDM or other elastomer
2	Reinforcement Layer	Nylon Tire Code
3	External Rubber	EPDM or other elastomer
4	Wire	Hard Steel Wire
5	Flange	Mild Steel, Stainless Steel

ALLOWABLE MOVEMENT

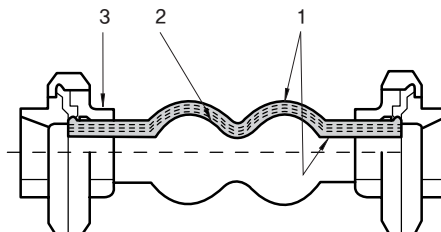
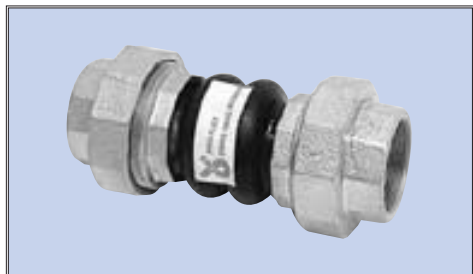
Diam. D mm(in)	L (mm)	Allowable Movement(mm)				Operating Condition			
		Axial Compression	Axial Extension	Lateral	Angular	Max. Pressure kg/cm ² (PSIG)	Max. Temperature °C(°F)	Vacuum Rating mm Hg(in.)	Weight(kg)
32(1 1/4)	175	50	30	35	40°	10(150)	104(220)	400(16)	2.40
40(1 1/2)	175	50	30	35	40°	10(150)	104(220)	400(16)	2.98
50(2)	175	50	30	35	40°	10(150)	104(220)	400(16)	3.78
65(2 1/2)	175	50	30	35	40°	10(150)	104(220)	400(16)	5.45
80(3)	175	50	30	35	40°	10(150)	104(220)	400(16)	6.83
100(4)	225	57	35	40	35°	10(150)	104(220)	400(16)	8.83
125(5)	225	57	35	40	35°	10(150)	104(220)	400(16)	11.37
150(6)	225	57	35	40	35°	10(150)	104(220)	400(16)	14.65
200(8)	325	63	35	45	30°	10(150)	104(220)	400(16)	23.16
250(10)	325	63	35	45	30°	10(150)	104(220)	400(16)	32.16
300(12)	325	63	35	45	30°	10(150)	104(220)	400(16)	45.65
350(14)	325	63	35	45	30°	10(150)	104(220)	400(16)	58.20

REMARKS

1.Applicable fluids, available flange drillings and materials please refer to 10 series

MOLDED TYPE

UNION THREADED RUBBER CONNECTOR



CONSTRUCTION

Temp.(°C)	Max Working Pressure Kg/Cm ²
50	10
70	8
90	5

Material / Neoprene, EPDM, Butyl, Hypalon, etc

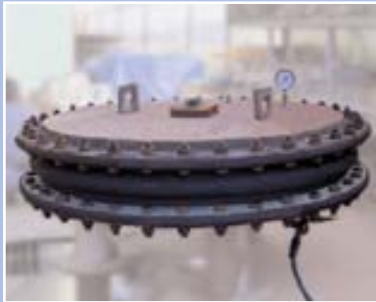
Item No	Part	Materials
1	Body	Neoprene
2	Reinforce	Nylon tire cord
3	Union	Cast iron(PT or NPT)

BS and ANSI threaded union available.

APPLICATION / Pumps, Blowers, Fans, Absorption Machines, Chillers, Cooling Tower Airconditioning Heating and Ventilating Systems, Chemical-Petrochemical and Industrial Process Piping Systems. Power Generating Plant, Steel Mills, Marine Service, Pulp, Paper, Water-Wastewater-Sewage and Pollution Control Systems.

Features / Isolates Vibration and Motion
Absorbs Pipe wall and Fluid Noise.
Reduces system stress and strain compensate for misalignment.

Diam. Dφ mm	L (mm)	Allowable Movement(mm)				Operating Condition		
		Compression (X-)	Extension (X+)	Lateral (Y)	Angular (°)	Max. Pressure kg/cm ² (PSIG)	Max. Temperature °C (°F)	Vacuum Rating mm Hg(in.)
20	200	22	6	22	45°	10(150)	115(240)	405 (16)
25	200	22	6	22	45°	10(150)	115(240)	405 (16)
32	200	22	6	22	45°	10(150)	115(240)	405 (16)
40	200	22	6	22	45°	10(150)	115(240)	405 (16)
50	200	22	6	22	45°	10(150)	115(240)	405 (16)
65	240	22	6	22	45°	10(150)	115(240)	405 (16)
80	240	22	6	22	45°	10(150)	115(240)	405 (16)



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ΧΡΥΣΑΦΙΔΗΣ Α.Ε.