



03



# EXPANSION JOINTS

## The Range

### METALLIC EXPANSION JOINTS

Size : 2" to 60" (Larger sizes upon Request)

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Size : 4" to 80" (Larger sizes upon Request)

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## Metallic Expansion Joints Design

### Introduction

Expansion joints are employed in piping systems to absorb different thermal expansion while containing the system pressure. They are successfully utilised in refineries, chemical plants, fossil and nuclear systems, heating and cooling systems, and cryogenic plants.

Any pipe connecting two points is subject to numerous types of action which result in stresses on the pipe.

Some of the causes of these stresses are:

- Internal or external pressure at working temperature
- Weight of the pipe itself and the parts supported
- Movement imposed on the pipe sections by external restraints
- Thermal expansion

The stress on the wall of piping is related to the force or movement exerted on it by external resistance and the flexibility of the pipe itself.

When either the value of the stresses or the value of the external forces or movements exceeds the maximum allowable value(s), the flexibility of the pipe must be increased artificially. This can be done either by altering the layout of the pipe or by inserting high flexibility sections.

This is precisely the function of expansion joints.

Depending on the type of movement to be absorbed, expansion joints can be classified as follows:

- Axial
- Universal
- Angular (hinged)
- Spherical angular (gimbal)
- Lateral
- Spherical lateral
- Pressure balance axial
- Pressure balance universal



### Design and Manufacture

Pacific Hoseflex has a variety of different size expansion joints available from 50 mm to 5000 mm in diameter, with working pressures up to 10,000 kPa. Consideration must be taken into account when elevated temperatures are involved. They reduce both rated movement for a given life cycle and pressure capabilities of the expansion joint.

Bellows operate best at normal pressure ratings temperatures between 70° C to 80° C. The austenitic range of stainless steel is susceptible to high stresses in the presence of corrosive agents, such as chlorides, caustic alkalis, hydrogen sulfide and nitrates.

## Definition of Movement

### Axial Movement



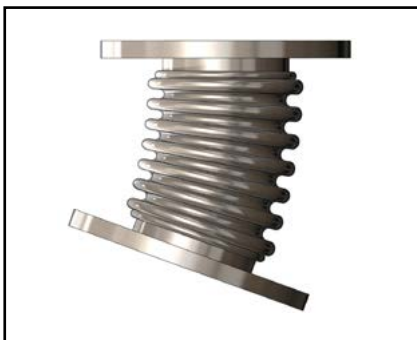
Axial Compression is the dimensional shortening of an Expansion Joint along its longitudinal axis while axial extension is the dimensional lengthening of the expansion joint.

### Lateral Movement



Lateral Deflection is the relative displacement of the two ends of an Expansion Joint perpendicular to its longitudinal axis.

### Angular Movement



Angular Rotation is the displacement of the longitudinal axis of the Expansion Joint from its initial straight line position into a circular arc.

## Cycle Life & Quality Management

### Cycle Life

This is the anticipated number of complete expansions and contractions that a bellow can accommodate in its working life. This is an important consideration with bellow design. This consideration is to ensure the correct balance between the pressure containing characteristics and the movement.

The cycle life expectancy of an expansion joint is affected by the following various factors:

- operating pressure
- operating temperature
- the material from which the bellows is made
- the movement per convolution
- the thickness of the bellow
- the convolution pitch
- depth and shape of convolution



After installation, any change to any of these factors will impact upon the cycle life.

### Asset (Hose) Management System

Pacific Hoseflex has developed and implemented a Asset (Hose) Management System to offer clients complete traceability. Our system is flexible and can be customized to accommodate the specific needs of individual clients

With accredited Quality Assurance:

- ISO 9001 Quality
- ISO 14001 Environmental
- ISO 45001 Safety

Pacific Hoseflex quality control measures, inspection and testing procedures include; inwards goods inspection, in-process inspection, final product release inspection and leak detection inspection. There are several different methods for leak detection: dye penetrate examination, X-ray examinations, magnetic particle inspection, hydrostatic test and pneumatic test.



## Bellow Forming & Material

### Bellows forming

The basic method(s) of bellows manufacture is not complicated. There are two ways that a bellows can be manufactured:

1. Mechanical forming can be done by either rolling the convolutions between external and internal wheels.
2. Hydraulic forming, using internal pressure has a much greater life than bellows formed by the other method(s). Bellows shall be hydraulically formed from a tube having only longitudinal seams. When the ratio of corrugation diameter to shell diameter is large, as in small diameter bellows, the units shall be annealed to remove stresses created by the forming operation.

The number of convolutions depends upon the amount of movement the bellows must accommodate or the force that must be used to accomplish the deflection. Since bellows are unique, there are many design considerations which must be evaluated. The convoluted element must be strong enough circumferentially to withstand the line pressure of the system, yet responsive enough longitudinally to flex. The longitudinal load (pressure thrust) must then be absorbed by some other type of device. These are usually anchors, tie rods, hinges or gimbal structures.

Under pressure a bellows will crave to squirm. This can occur when a bellow is subjected to a pressure greater than 1.5 times the design pressure. Squirm can be considered the same as column buckling in a beam under compressive loading. The convolutions deform and even though there is no leaking, both cycle life and pressure capacity is greatly reduced.

### Bellows Material

#### Stainless Steel 304

Is a lower grade material than 321 SS with less resistance to corrosion. Applications include diesel engine exhaust manifolds and steam.

#### Stainless Steel 321

The most common material used for bellow manufacture. It combines excellent mechanical properties with adequate corrosion resistance. Applications include diesel engine exhaust manifolds and steam.

#### Stainless Steel 316

Has a better corrosion resistance than 321 SS and can be used as an alternative to Incoloy 825. Applications include engine exhaust manifolds, steam and marine services.

#### Incoloy 825, 800

A high nickel alloy specifically designed for use in aggressive environment. It is very resistant to pitting and crevice corrosion and virtually immune to stress corrosion cracking. It can be used up to a maximum temperature of 425° C. Applications include diesel engine exhaust manifolds, steam, crude oil lines and flue gases.

#### Inconel 625, 600 and 800

Is a high nickel alloy with good corrosion resistant and temperature capability higher than 425° C.

#### Nickel 200, 253 MA

This alloy has good mechanical properties and excellent corrosion resistance to alkalis, i.e. sodium hydroxide. It also has good electrical, thermal and magneto-strictive properties. Applications include food and synthetic fibre processing, heat exchangers, chemical and electrical industries.

#### Hastelloy

It has a high-strength, nickel based, corrosion resistant alloy. Other components include molybdenum and chromium. It is well suited for most chemical applications. It has excellent resistance to pitting, stress-corrosion and cracking

#### 254 SMO

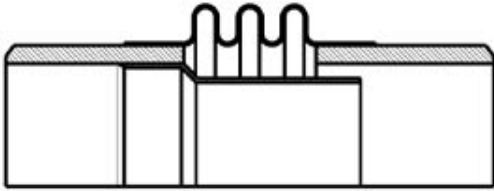
This is a very high end austenitic stainless steel that combines impact toughness resistance to chloride stress corrosion cracking, pitting and crevice corrosion with strength nearly twice that of 300 series stainless steels. In some applications it has been found to be a more cost effective substitute for high nickel and titanium alloys.



## Liners

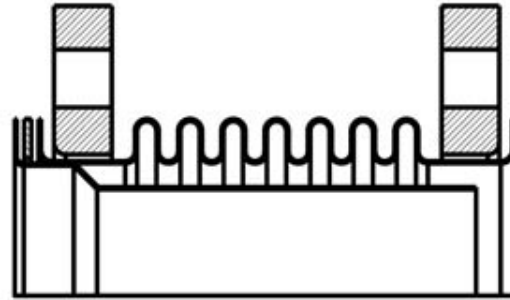
### Single Liners

Liners are used to prevent flow induced vibration or erosion caused by abrasive materials. When lateral movement is required in the expansion joint, the flow liner diameter must be reduced to provide clearance.



#### Single Welded Liner

Most common type of internal liner.  
Maximum durability.

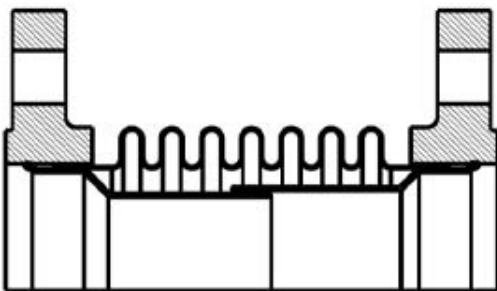


#### Single Drop-In Liner

Can be removed and cleaned.

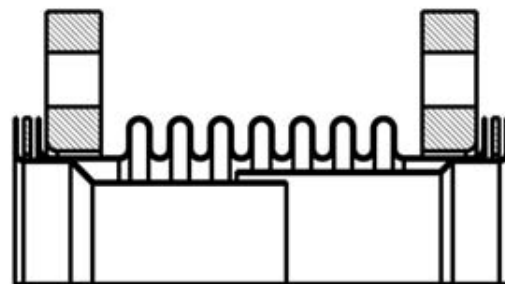
### Telescopic Liners

Telescoping liners are used on short expansion joints with large axial movements. When fit close together, they can also be used in systems where the flow can be in either direction.



#### Telescoping Welded Liner

For large axial movements.



#### Telescoping Drop-In Liner

For large axial movements. Can be removed and cleaned.

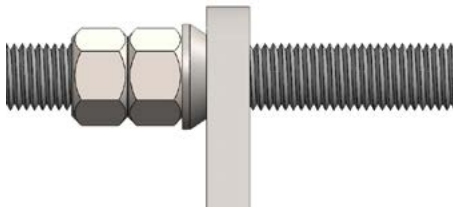
## Rods Restraints

### Restraints

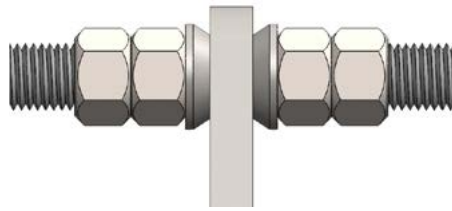
Restraints are used for lateral and angular compensators. The restraints absorb axial reaction force produced by inner pressure. Even so, the connected pipe must be equipped with light fixed points to absorb moving force and moments. Precise rating details and operating parameters of the corresponding machinery or equipment must be known to correctly calculate the degree of restraints.

### Rubber Expansion Joint Rod Restraints

There are two types of tie rods restraints for lateral rubber compensators:



Outer restraints are used to absorb reaction force from internal pressure

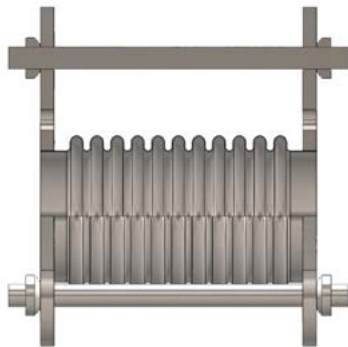


Outer and inner restraints are used to absorb reaction force from internal pressure and vacuum



### Metallic Expansion Joint Rod Restraints

Lateral compensators are equipped with adapters for tie rods restraints. The design differs between flanges with welded ears or oval flanges depending on compensator type and size. Tie rods restraints run conical seats.





## Pipe Supports & Hangers

### Insulated Pipe Clamps

Made from thicker material and can withstand greater loads and movement/strong vibrations making it a safe and reliable solution for supporting emergency high pressure fire sprinkler system pipework. The weld nut on all sizes is designed for M12 threaded rod. Zinc Plated to AS1789:2003 to meet grade Fe/Zn12 as a standard material finish.



### Clevis Hanger

Recommended for the suspension of stationary non-insulated pipe lines. Also commonly used for the suspension of insulated pipe lines, Flared edges help prevent sharp surfaces from coming into contact with the pipe. Clevis bottom pivots to allow pipe to be fed from either direction.



### U Bolt Support

Heavy duty insulated U bolt that is supplied with a 10mm thick cork and neoprene base. It is designed to provide support for large heavy weight pipes made out of stainless steel, duplex/super duplex or other materials.



### Clamped Pipe Support

Clamped Pipe Shoe supports pipe nominal bores from 25NB through to 1150NB are manufactured from material to meet AS/NZS1594:2002 and either Hot Dip Galvanised to AS4680:2006 or available in Stainless Steel.



### Saddle Pipe Support

Saddle Clamps to suit Steel Pipe for general plumbing are manufactured from material to meet AS/NZS1594:2002, and Hot Dip Galvanised to meet AS/NZS4680:2006 or available in Stainless Steel.



### Chain

Strong and durable, use this heat-treated chain when using fittings with chain. You must match the chain size and meet or exceed the chain's grade.



### Channel and Struts

Can be supplied in lengths of 41mm wide channel/strut with a choice of thicknesses, heights and materials. Channel provides an ideal mechanical support frame for a range of applications, and is a great starting point for installing electrical cable or pipe management systems. It can be provided in plain style, slotted with evenly spaced slots along its length, or in a range of different welded combinations. Other variants allow for easy installation/securing of the product into concrete.



## Metallic Expansion Joints Installation Guide

### Storage:

1. Store expansion joints in a dry/cool location such as a warehouse.
2. Store flange face down on a pallet or wooden platform.
3. Do not store other heavy items on top of expansion joint (s).
4. Ten-year shelf life can be expected with ideal conditions.

### Handling:

Do not lift with ropes or bars through the bolt holes. If lifting through the bore, use padding or a saddle to distribute the weight. Do not let expansion joints sit vertically on the edges of the flanges for any period of time. Do not lift on the shipping restraints.

### Service Conditions:

Make sure the expansion joint rating for temperature, pressure, movements, and selection of materials match the system requirements. Contact the manufacturer if the system requirements exceed those of the expansion joint selected.

### Alignment:

Expansion joints are not designed to make up for piping misalignment errors. Check with the manufacturer if piping misalignment is present.

### Anchoring:

The main function of expansion joints is to compensate for axial pipe thermal expansion. Metal expansion joints must have the protection of adequate anchoring against the internal and thrust pressures of the media to prevent damage. Anchoring must be installed as close to the down stream end of the expansion joint as possible, with the originating equipment serving as the opposite anchor. Anchors must prevent pipe movement in any direction. Hangers or pipe pedestals cannot be considered to be anchors as they offer no restriction against side or end motion.

When designing an anchor for a metal expansion joint, consult the internal thrust force table from the appropriate expansion joint catalogue. The weight of piping, valves, and media, as well as the resistance of the piping to deflection, must be included as part of the design weight and strength of an anchor.

Anchors are required whenever a piping system changes direction. Expansion joints should be located as close as possible to anchor points. For additional expansion joint protection, it is recommended that control rods be installed on the expansion joint to prevent excessive movements from occurring due to pressure thrust of the line.

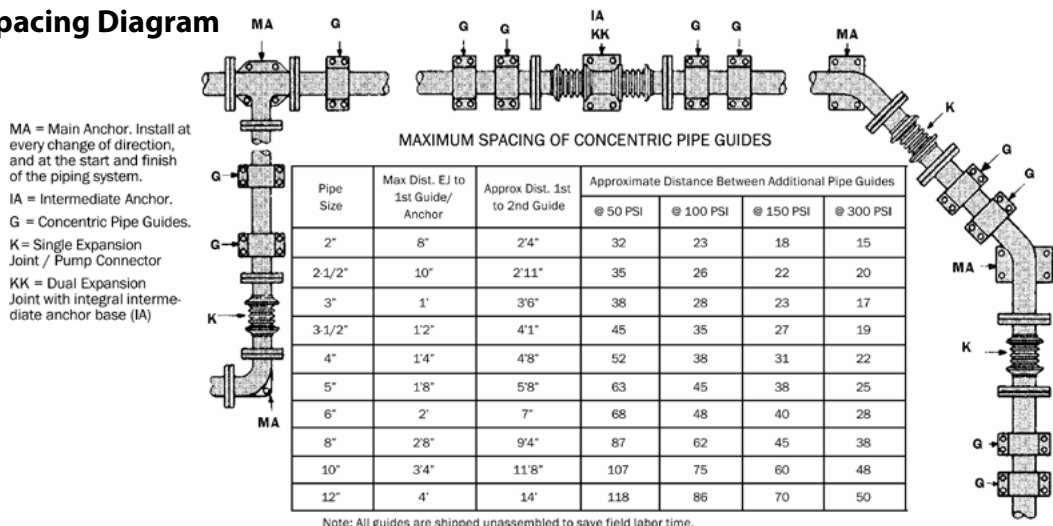
### Guides:

Expansion joints must be properly guided and anchored in accordance with EJMA standards. (Refer to Pipe Guides Spacing Diagram below)

### Pipe Support:

Piping must be supported so expansion joints do not carry any pipe weight.

### Pipe Guides - Spacing Diagram





## Metallic Expansion Joints Installation Guide

### Mating Flanges:

Install the expansion joint flange against the mating pipe flanges and install bolts so that the bolt head is against the expansion joint flange. Bolts should be installed from the bellows side (so that the bolt heads are adjacent to the bellows) to insure that the bolts do not interfere with the bellows during periods of compression. Flange-to-flange dimensions of the expansion joint must match the required opening.

Make sure mating flanges are clean and are matched to the type supplied with the expansion joint. Gaskets of appropriate material, size and temperature ratings must be used in all flange-to-flange type installations.

### Bolt Torque:

Tighten bolts in stages by alternating around the flange. Never tighten an expansion joint to the point that there is metal-to-metal contact between the expansion joint flange and the mating flange.

### Shipping Restraints:

The expansion and compression movements are preset at the factory. The shipping restraints protect the expansion joint in its neutral position prior to installation. Remove the shipping restraints after installation and before hydro-testing the system.

### Additional Tips:

1. Insulation or thermal blankets over a metal expansion joint should be supplied by the expansion joint manufacturer to preclude the use of corrosive chloride bearing insulation materials. Insulation should be installed to permit easy access to the flange area, to check bolting.
2. Do not weld in the near vicinity of a non-shrouded expansion joint without protecting the expansion joint from damaging weld splatter.
3. If an expansion joint is to be installed underground, or will be submerged in water, contact the manufacturer for specific guidelines.
4. Consider ordering a spare expansion joint. The cost of downtime of a critical expansion joint far exceeds the cost of a spare unit placed and protected in reserve on-site.
5. Whenever possible, install the expansion joint next to an anchor as indicated below not exceeding maximum distance to the 1st guide with at least two concentric pipe guides on the opposite side of the joint. Added guides are required to prevent bowing or bending of the pipe.
6. When an expansion joint is placed elsewhere in the line, at least two concentric guides must be used on each side of the joint with added joints installed as recommended in pipe guide spacing diagram.
7. The inside of all piping must be clean before installing and testing the expansion joints. Expansion joints should not be subjected to hydrostatic pressure tests beyond their rated working pressure.
8. Secure all anchors and guides before testing. Remove shipping bars prior to testing.
9. Expansion joints must be removed from the lines while the system is being tested hydrostatically at pressure exceeding allowable working pressure.
10. Expansion Joints fabricated with flow liners must be installed with the flow arrow pointing in the same direction of the media flow.
11. Single externally pressurized expansion joints must be installed with the moving end adjacent to the moving end of the pipe responding to the thermal expansion induced during system heat-up.
12. Failure to install according to instructions will void warranty.

## Single Expansion Joint (SEJ)

### Expansion Joint - SEJ

**Part No.:** SEJ

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

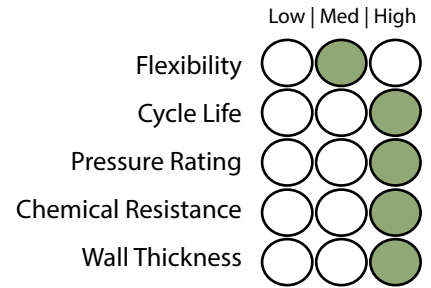
**Profile:** Medium Flexibility / High Pressure

**Liner:** Optional

**Size Available:** 2" - 40"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

**Use:**

Used for absorbing axial, angular and small amounts of lateral movement. Pressure thrust will be transmitted onto the pipeline.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements			Spring Rate N/MM	Pressure Thrust KN
	Bore	Flanged	Weld Ends		Axial	Lateral	Angular		
	(mm)	(mm)	(mm)		(mm)	(mm)	(Deg)		
50 SEJ-240	50	145	218	240	32	12	18	21	1
50 SEJ-700	50	145	218	700	21	8	18	21	3
50 SEJ-1400	50	145	218	1400	18	7	18	70	6
65 SEJ-240	65	180	234	240	36	12	18	19	2
65 SEJ-700	65	180	234	700	28	11	18	57	4
65 SEJ-1400	65	180	234	1400	22	7	18	102	9
80 SEJ-240	80	180	278	240	34	13	18	12	2
80 SEJ-700	80	180	278	700	34	13	18	36	6
80 SEJ-1400	80	180	278	1400	25	8	17	130	12
100 SEJ-240	100	190	278	240	36	13	18	47	3
100 SEJ-700	100	190	278	700	32	10	18	84	9
100 SEJ-1400	100	190	278	1400	27	7	14	169	19
125 SEJ-240	125	215	313	240	50	13	18	50	4
125 SEJ-700	125	215	313	700	37	10	18	87	14
125 SEJ-1400	125	215	313	1400	27	7	14	169	27
150 SEJ-240	150	215	338	240	50	15	18	50	6
150 SEJ-700	150	215	338	700	39	9	18	72	19
150 SEJ-1400	150	215	338	1400	26	6	14	330	39
200 SEJ-240	200	225	330	240	57	16	18	28	11
200 SEJ-700	200	225	330	700	47	9	17	105	33
200 SEJ-1400	200	225	330	1400	30	6	13	541	66
250 SEJ-240	250	245	341	240	64	17	18	27	17
250 SEJ-700	250	245	341	700	62	10	18	120	51

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range



# EXPANSION JOINTS

## Double Axial Expansion Joint (DAEJ)

### Expansion Joint - DAEJ

**Part No.:** DAEJ

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

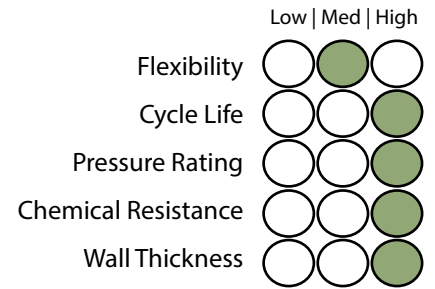
**Profile:** Medium Flexibility / High Pressure

**Liner:** Standard Flow Liner

**Size Available:** 2" - 24"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

#### Use:

Used for absorbing large amounts of axial movement. Pressure thrust will be transmitted onto the pipeline. Correct anchoring and guiding must be used. Internal flow liner for eliminating velocity and flow problems is fitted as standard.



### Specifications

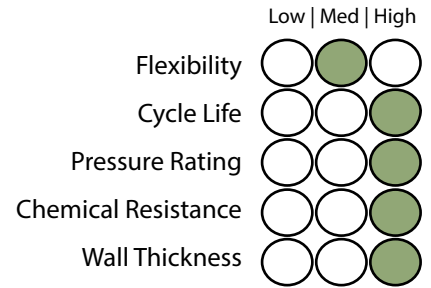
Part Number	Nom	Length		Max. Working Pressure kPa	Axial Movement (mm)	Spring Rate N/MM	Pressure Thrust KN
	Bore	Flanged	Weld Ends				
	(mm)	(mm)	(mm)				
50 DAEJ-240	50	380	440	240	64	11	1
50 DAEJ-700	50	380	440	700	42	35	3
50 DAEJ-1400	50	380	440	1400	36	35	6
65 DAEJ-240	65	450	440	240	72	10	2
65 DAEJ-700	65	450	440	700	56	29	4
65 DAEJ-1400	65	450	440	1400	44	51	9
80 DAEJ-240	80	450	440	240	68	6	2
80 DAEJ-700	80	450	440	700	68	18	6
80 DAEJ-1400	80	450	440	1400	50	65	12
100 DAEJ-240	100	450	580	240	72	24	3
100 DAEJ-700	100	450	580	700	64	42	9
100 DAEJ-1400	100	450	580	1400	46	85	19
125 DAEJ-240	125	450	580	240	100	25	4
125 DAEJ-700	125	450	580	700	72	44	14
125 DAEJ-1400	125	450	580	1400	52	85	27
150 DAEJ-240	150	450	580	240	102	21	6
150 DAEJ-700	150	450	580	700	78	36	19
150 DAEJ-1400	150	450	580	1400	52	165	39
200 DAEJ-240	200	450	580	240	114	14	11
200 DAEJ-700	200	450	580	700	94	53	33
200 DAEJ-1400	200	450	580	1400	60	271	66
250 DAEJ-240	250	470	582	240	128	14	17
250 DAEJ-700	250	470	582	700	124	60	51

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

## Universal Expansion Joint (UEJ)

### Expansion Joint - UEJ

**Part No.:** UEJ  
**Construction:** Convoluted  
**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy  
**Profile:** Medium Flexibility / High Pressure  
**Liner:** Optional  
**Size Available:** 2" - 60"  
(Larger sizes upon Request)  
**Temperature:** -196°C +900°C



### Construction

**Use:**  
 Used for absorbing large amounts of axial, angular and lateral movement in low pressure pipelines. Pressure thrust will be transmitted onto the pipeline.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements			Spring Rate N/MM	Pressure Thrust KN
	Bore	Flanged	Weld Ends		Axial	Lateral	Angular		
	(mm)	(mm)	(mm)		(mm)	(mm)	(Deg)		
50 UEJ-200	50	380	460	200	64	76	18	11	0.8
65 UEJ-200	65	380	460	200	64	76	18	10	1.4
80 UEJ-200	80	380	460	200	70	76	18	6	1.8
100 UEJ-200	100	430	526	200	72	76	18	24	2.8
125 UEJ-200	125	430	526	200	106	130	18	25	4.0
150 UEJ-200	150	430	576	200	106	120	18	21	5.6
200 UEJ-200	200	450	560	200	114	98	18	14	9.4
250 UEJ-200	250	485	582	200	112	98	18	14	14.8
300 UEJ-200	300	555	700	200	152	114	18	14	20
350 UEJ-200	350	540	736	200	178	114	18	30	24
400 UEJ-200	400	540	736	200	178	114	18	43	30
450 UEJ-200	450	540	772	200	182	102	18	49	38
500 UEJ-200	500	540	772	200	182	102	16	37	46
600 UEJ-200	600	540	772	200	148	86	16	45	66
650 UEJ-200	650	690	790	200	108	72	15	72	76
700 UEJ-100	700	690	790	100	111	72	15	82	43
750 UEJ-100	750	690	790	100	119	70	15	71	50
800 UEJ-100	800	690	790	100	122	64	15	74	58
850 UEJ-100	850	690	790	100	112	60	15	79	64
900 UEJ-100	900	690	790	100	112	59	15	87	71
950 UEJ-100	950	690	790	100	120	57	15	93	79
1000 UEJ-100	1000	1190	1290	100	120	54	14	121	85
1050 UEJ-100	1050	1190	1290	100	78	68	14	127	96

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

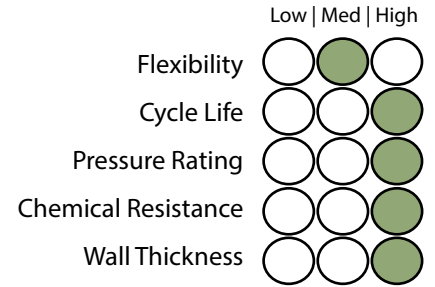


# EXPANSION JOINTS

## Diesel Multi-ply Expansion Joint (DMEJ)

### Expansion Joint - DMEJ

**Part No.:** DMEJ  
**Construction:** Convuluted  
**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy  
**Profile:** Medium Flexibility / High Pressure  
**Liner:** Standard Flow Liner  
**Size Available:** 2" - 60"  
(Larger sizes upon Request)  
**Temperature:** -196°C +900°C



#### Construction

**Use:**  
 Used for vibration and absorbing thermal expansion in exhaust, gas ducting and low pressure systems. Relieves stresses caused by vibration. Specially designed multi ply element. Internal flow liners for eliminating velocity and flow problems fitted as standard.



#### Specifications

Part Number	Nom	Length		Max. Working Pressure	Movements			Spring Rate	Pressure Thrust
	Bore	Flanged	Weld Ends		Axial	Lateral	Angular		
	(mm)	(mm)	(mm)	kPa	(mm)	(mm)	(Deg)	N/MM	KN
50 DMEJ-100	50	145	218	100	16	4	12	59	0.4
65 DMEJ-100	65	180	234	100	29	5	14	36	0.7
80 DMEJ-100	80	180	240	100	26	6	14	26	0.9
100 DMEJ-100	100	190	278	100	28	6	14	63	1.4
125 DMEJ-100	125	215	313	100	28	7	14	69	2.0
150 DMEJ-100	150	215	338	100	26	8	14	78	2.8
200 DMEJ-100	200	225	330	100	39	8	13	106	4.7
250 DMEJ-100	250	330	400	100	84	10	14	38	7.4
300 DMEJ-100	300	330	400	100	86	11	14	44	10
350 DMEJ-100	350	330	400	100	88	11	14	46	12
400 DMEJ-100	400	330	400	100	76	10	13	64	15
450 DMEJ-100	450	330	400	100	78	11	13	68	19
500 DMEJ-100	500	330	400	100	81	12	13	75	23
600 DMEJ-100	600	330	400	100	84	10	12	88	33
650 DMEJ-100	650	400	460	100	84	10	14	132	38
700 DMEJ-100	700	400	460	100	84	10	14	136	43
750 DMEJ-100	750	400	490	100	96	12	14	123	50
800 DMEJ-100	800	400	490	100	96	12	14	129	58
850 DMEJ-100	850	400	490	100	98	11	13	139	64
900 DMEJ-100	900	400	490	100	98	10	13	146	71
950 DMEJ-100	950	400	490	100	90	10	13	153	79
1000 DMEJ-100	1000	400	490	100	90	9	10	166	85
1050 DMEJ-100	1050	400	490	100	90	8	10	164	96

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range



# EXPANSION JOINTS

## Diesel Expansion Joint (DEJ)

### Expansion Joint - DEJ

**Part No.:** DEJ

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

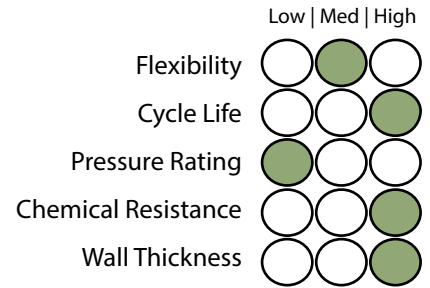
**Profile:** Medium Flexibility / Low Pressure

**Liner:** Standard Flow Liner

**Size Available:** 2" - 60"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

#### Use:

Used for absorbing thermal expansion in exhaust, gas ducting and low pressure systems. Pressure thrust will be transmitted onto pipeline. Internal flow liners for eliminating velocity and flow problems fitted as standard.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements			Spring Rate N/MM	Pressure Thrust KN
	Bore	Flanged	Weld Ends		Axial	Lateral	Angular		
	(mm)	(mm)	(mm)		(mm)	(mm)	(Deg)		
50 DEJ-100	50	145	218	100	36	12	18	21	0.4
65 DEJ-100	65	180	234	100	39	12	18	19	0.7
80 DEJ-100	80	180	240	100	44	13	18	12	0.9
100 DEJ-100	100	190	278	100	44	13	18	47	1.4
125 DEJ-100	125	215	313	100	50	13	18	50	2.0
150 DEJ-100	150	215	338	100	54	15	18	42	2.8
200 DEJ-100	200	225	330	100	59	16	18	28	4.7
250 DEJ-100	250	245	341	100	70	17	18	27	7.4
300 DEJ-100	300	280	400	100	82	18	18	28	10
350 DEJ-100	350	270	418	100	89	15	18	59	12
400 DEJ-100	400	270	418	100	96	10	17	86	15
450 DEJ-100	450	270	436	100	96	8	15	97	19
500 DEJ-100	500	270	436	100	98	9	14	74	23
600 DEJ-100	600	270	436	100	96	7	12	90	33
650 DEJ-100	650	385	460	100	107	12	15	76	38
700 DEJ-100	700	385	460	100	107	12	15	81	43
750 DEJ-100	750	385	460	100	107	12	15	65	50
800 DEJ-100	800	385	460	100	104	11	15	71	58
850 DEJ-100	850	385	460	100	104	11	14	73	64
900 DEJ-100	900	385	460	100	100	10	14	81	71
950 DEJ-100	950	385	460	100	100	9	12	84	79
1000 DEJ-100	1000	330	415	100	96	6	10	108	85
1100 DEJ-100	1100	330	415	100	96	5	9	113	116

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range





# EXPANSION JOINTS

## Double Diesel Expansion Joint (DDEJ)

### Expansion Joint - DDEJ

**Part No.:** DDEJ

**Construction:** Convoluted

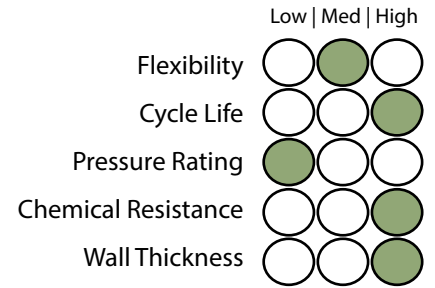
**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

**Profile:** Medium Flexibility / Low Pressure

**Liner:** Standard Flow Liner

**Size Available:** 2" - 60"  
(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

#### Use:

Used for absorbing large amounts of axial angular and lateral movements in low pressure pipelines. Pressure thrust will be transmitted onto pipeline. Internal flow liners for eliminating velocity & flow problems fitted as standard.



### Specifications

Part Number	Nom	Length		Max. Working Pressure	Movements			Spring Rate	Pressure Thrust
	Bore	Flanged	Weld Ends		Axial	Lateral	Angular		
	(mm)	(mm)	(mm)		(mm)	(mm)	(Deg)		
50 DDEJ-100	50	380	460	100	64	76	18	11	0.4
65 DDEJ-100	65	380	460	100	64	76	18	16	0.7
80 DDEJ-100	80	380	460	100	70	76	18	6	0.9
100 DDEJ-100	100	430	526	100	76	76	18	24	1.4
125 DDEJ-100	125	430	526	100	106	130	18	25	2.0
150 DDEJ-100	150	430	576	100	106	120	18	21	2.8
200 DDEJ-100	200	450	560	100	114	98	18	14	4.7
250 DDEJ-100	250	485	582	100	112	98	18	14	7.4
300 DDEJ-100	300	555	700	100	152	114	18	14	10
350 DDEJ-100	350	540	736	100	178	114	18	30	12
400 DDEJ-100	400	540	736	100	178	114	18	43	15
450 DDEJ-100	450	540	772	100	182	102	18	49	19
500 DDEJ-100	500	540	772	100	182	102	16	37	23
600 DDEJ-100	600	540	854	100	148	86	16	45	33
650 DDEJ-100	650	690	790	100	108	72	15	72	38
700 DDEJ-100	700	690	790	100	111	72	15	82	43
750 DDEJ-100	750	690	790	100	119	70	15	71	50
800 DDEJ-100	800	690	790	100	122	64	15	74	58
850 DDEJ-100	850	690	790	100	112	60	15	79	64
900 DDEJ-100	900	690	790	100	112	59	15	87	71
950 DDEJ-100	950	690	790	100	120	57	15	93	79
1000 DDEJ-100	1000	1190	1290	100	120	54	14	121	85
1050 DDEJ-100	1050	1190	1290	100	78	68	14	127	96

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range



# EXPANSION JOINTS

## Single Hinge Expansion Joint (HEJ)

### Expansion Joint - HEJ

**Part No.:** HEJ

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

**Profile:** Medium Flexibility / High Pressure

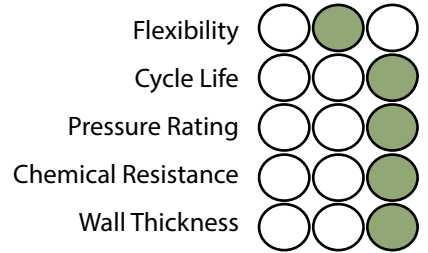
**Liner:** Optional

**Size Available:** 2" - 24"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C

Low | Med | High



### Construction

#### Use:

Used for absorbing angular movement in one plane only, movement of bellows is more controlled. Pressure thrust is restrained by the hinges.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements		Spring Rate NM/Deg
	Bore	Flanged	Weld Ends		± Degrees	Total Degrees	
	(mm)	(mm)	(mm)		(mm)	(mm)	
50-HEJ-240	50	145	218	240	18	36	0.2
50-HEJ-700	50	145	218	700	18	36	0.6
50-HEJ-1400	50	145	218	1400	18	36	0.6
65-HEJ-240	65	180	234	240	18	36	0.2
65-HEJ-700	65	180	234	700	18	36	0.7
65-HEJ-1400	65	180	234	1400	18	36	1.3
80-HEJ-240	80	180	240	240	18	36	0.2
80-HEJ-700	80	180	240	700	18	36	0.6
80-HEJ-1400	80	180	240	1400	17	34	2.2
100-HEJ-240	100	190	278	240	18	36	0.3
100-HEJ-700	100	190	278	700	18	36	2.2
100-HEJ-1400	100	190	278	1400	17	34	4.6
125-HEJ-240	125	215	313	240	18	36	1.9
125-HEJ-700	125	215	313	700	18	36	3.4
125-HEJ-1400	125	215	313	1400	14	28	6.6
150-HEJ-240	150	215	338	240	18	36	2.3
150-HEJ-700	150	215	338	700	18	36	3.9
150-HEJ-1400	150	215	338	1400	14	28	18.2
200-HEJ-240	200	225	330	240	18	36	2.6
200-HEJ-700	200	255	330	700	17	34	9.8
200-HEJ-1400	200	255	330	1400	13	26	50
250-HEJ-240	250	245	341	240	18	36	4
250-HEJ-700	250	245	341	700	18	36	17

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range



# EXPANSION JOINTS

## Double Hinge Expansion Joint (DHEJ)

### Expansion Joint - DHEJ

**Part No.:** DHEJ

**Construction:** Convolute

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

**Profile:** Medium Flexibility / High Pressure

**Liner:** Optional

**Size Available:** 2" - 24"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C

Low | Med | High

Flexibility

Cycle Life

Pressure Rating

Chemical Resistance

Wall Thickness



### Construction

#### Use:

Used for absorbing large amounts of lateral movement in one plane, Movement of bellows is more controlled. Anchors only required to absorb.

### Specifications

Part Number	Nom	Length		Max. Working Pressure	Movements		Spring Rate
	Bore	Flanged	Weld Ends		± Lateral	Total Lateral	
	(mm)	(mm)	(mm)		(mm)	(mm)	
50 DHEJ-240	50	600	632	240	94	188	0.1
50 DHEJ-700	50	600	632	700	94	188	0.4
50 DHEJ-1400	50	600	632	1400	94	188	0.4
65 DHEJ-240	65	600	632	240	81	162	0.3
65 DHEJ-700	65	600	632	700	81	162	0.8
65 DHEJ-1400	65	600	632	1400	81	162	1.3
80 DHEJ-240	80	600	632	240	76	152	0.3
80 DHEJ-700	80	600	632	700	76	152	1.2
80 DHEJ-1400	80	600	632	1400	76	152	4.2
100 DHEJ-240	100	600	632	240	64	128	1.4
100 DHEJ-700	100	600	632	700	64	128	2.5
100 DHEJ-1400	100	600	632	1400	64	128	5.1
125 DHEJ-240	125	600	761	240	88	176	1.6
125 DHEJ-700	125	600	761	700	88	176	2.7
125 DHEJ-1400	125	600	761	1400	88	176	5.2
150 DHEJ-240	150	619	813	240	88	176	2.2
150 DHEJ-700	150	619	813	700	88	176	3.7
150 DHEJ-1400	150	619	813	1400	88	176	16.9
200 DHEJ-240	200	698	892	240	106	212	1.8
200 DHEJ-700	200	698	892	700	106	212	6.8
200 DHEJ-1400	200	698	892	1400	106	212	35
250 DHEJ-240	250	800	994	240	112	224	3
250 DHEJ-700	250	800	994	700	112	224	17

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range



# EXPANSION JOINTS

## Single Gimbal Expansion Joint (GEJ)

### Expansion Joint - GEJ

**Part No.:** GEJ

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

**Profile:** Medium Flexibility / High Pressure

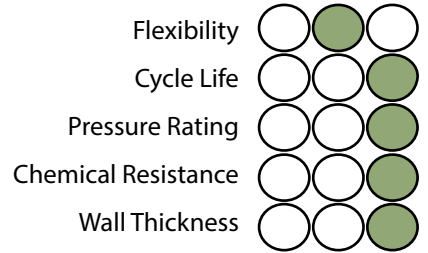
**Liner:** Optional

**Size Available:** 2" - 24"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C

Low | Med | High



### Construction

#### Use:

Used for absorbing angular movement in any plane, movement of bellows is more controlled. Anchors only required to absorb spring forces, must be in pairs with another gimbal. Pressure thrust is restrained by the hardware.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements		Spring Rate N/MM
	Bore	Flanged	Weld Ends		± Lateral	Total Lateral	
	(mm)	(mm)	(mm)		(mm)	(mm)	
50 GEJ-240	50	145	218	240	18	36	0.2
50 GEJ-700	50	145	218	700	18	36	0.6
50 GEJ-1400	50	145	218	1400	18	36	0.6
65 GEJ-240	65	180	234	240	18	36	0.2
65 GEJ-700	65	180	234	700	18	36	0.7
65 GEJ-1400	65	180	234	1400	18	36	1.3
80 GEJ-240	80	180	240	240	18	36	0.2
80 GEJ-700	80	180	240	700	18	36	0.6
80 GEJ-1400	80	180	240	1400	17	34	2.2
100 GEJ-240	100	190	278	240	18	36	1.3
100 GEJ-700	100	190	278	700	18	36	2.2
100 GEJ-1400	100	190	278	1400	17	34	4.6
125 GEJ-240	125	215	313	240	18	36	1.9
125 GEJ-700	125	215	313	700	18	36	3.4
125 GEJ-1400	125	215	313	1400	14	28	6.6
150 GEJ-240	150	215	338	240	18	36	2.3
150 GEJ-700	150	215	338	700	18	36	3.9
150 GEJ-1400	150	215	338	1400	14	28	18.2
200 GEJ-240	200	225	330	240	18	36	2.6
200 GEJ-700	200	225	330	700	17	34	9.8
200 GEJ-1400	200	225	330	1400	13	26	50
250 GEJ-240	250	245	341	240	18	36	4
250 GEJ-700	250	245	341	700	18	36	17

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

## Double Gimbal Expansion Joint (DGEJ)

### Expansion Joint - DGEJ

**Part No.:** DGEJ

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

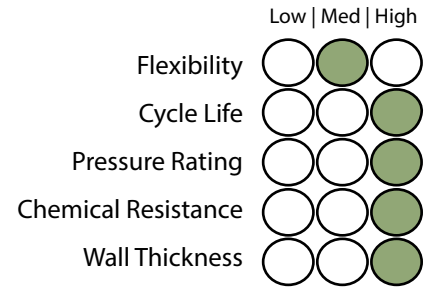
**Profile:** Medium Flexibility / High Pressure

**Liner:** Optional

**Size Available:** 2" - 24"

(Larger sizes upon Request)

**Temperature :** -196°C +900°C



### Construction

**Use:**

Used for absorbing large amounts of lateral movement in one plane. Movement of bellows is more controlled. Anchors only required to absorb.



### Specifications

Part Number	Nom	Length		Max. Working Pressure	Movements		Spring Rate
	Bore	Flanged	Weld Ends		± Lateral	Total Lateral	
	(mm)	(mm)	(mm)		(mm)	(mm)	
50 DGEJ-240	50	600	632	240	94	188	0.1
50 DGEJ-700	50	600	632	700	94	188	0.4
50 DGEJ-1400	50	600	632	1400	94	188	0.4
65 DGEJ-240	65	600	632	240	81	162	0.3
65 DGEJ-700	65	600	632	700	81	162	0.8
65 DGEJ-1400	65	600	632	1400	81	162	1.3
80 DGEJ-240	80	600	632	240	76	152	0.3
80 DGEJ-700	80	600	632	700	76	152	1.2
80 DGEJ-1400	80	600	632	1400	76	152	4.2
100 DGEJ-240	100	600	632	240	64	128	1.4
100 DGEJ-700	100	600	632	700	64	128	2.5
100 DGEJ-1400	100	600	632	1400	64	128	5.1
125 DGEJ-240	125	600	761	240	88	176	1.6
125 DGEJ-700	125	600	761	700	88	176	2.7
125 DGEJ-1400	125	600	761	1400	88	176	5.2
150 DGEJ-240	150	619	813	240	88	176	2.2
150 DGEJ-700	150	619	813	700	88	176	3.7
150 DGEJ-1400	150	619	813	1400	88	176	16.9
200 DGEJ-240	200	760	970	240	109	218	1.8
200 DGEJ-700	200	760	970	700	109	218	6.8
200 DGEJ-1400	200	760	970	1400	109	218	35
250 DGEJ-240	250	850	1060	240	114	228	3
250 DGEJ-700	250	850	1060	700	114	228	17

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

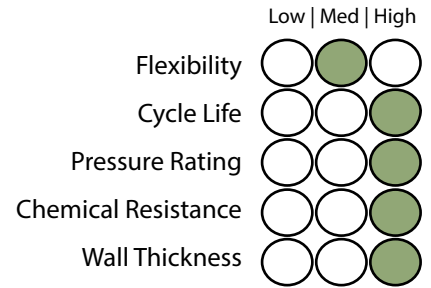


# EXPANSION JOINTS

## Single Tied Expansion Joint (TEJ)

### Expansion Joint - TEJ

**Part No.:** TEJ  
**Construction:** Convoluted  
**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy  
**Profile:** Medium Flexibility / High Pressure  
**Liner:** Optional  
**Size Available:** 2" - 24"  
(Larger sizes upon Request)  
**Temperature:** -196°C +900°C



### Construction

**Use:**  
 Used for absorbing pump vibration, lateral movement and minor pipeline misalignment. Anchors required to absorb spring rate forces only. Pressure thrust is restrained by the tie rods.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements		Spring Rate N/MM
	Bore	Flanged	Weld Ends		± Lateral	Total Lateral	
	(mm)	(mm)	(mm)		(mm)	(mm)	
50 TEJ-240	50	145	218	240	12	24	12
50 TEJ-700	50	145	218	700	8	15	88
50 TEJ-1400	50	145	218	1400	7	13	88
65 TEJ-240	65	180	234	240	12	24	23
65 TEJ-700	65	180	234	700	11	21	70
65 TEJ-1400	65	180	234	1400	7	14	126
80 TEJ-240	80	180	240	240	13	25	18
80 TEJ-700	80	180	240	700	13	25	54
80 TEJ-1400	80	180	240	1400	8	16	198
100 TEJ-240	100	190	278	240	12	25	86
100 TEJ-700	100	190	278	700	10	20	152
100 TEJ-1400	100	190	278	1400	7	14	309
125 TEJ-240	125	215	313	240	13	26	111
125 TEJ-700	125	215	313	700	10	20	195
125 TEJ-1400	125	215	313	1400	7	14	381
150 TEJ-240	150	215	338	240	15	30	131
150 TEJ-700	150	215	338	700	9	18	228
150 TEJ-1400	150	215	338	1400	6	11	1048
200 TEJ-240	200	225	330	240	16	32	150
200 TEJ-700	200	225	330	700	9	18	562
200 TEJ-1400	200	225	330	1400	6	12	2897
250 TEJ-240	250	245	341	240	17	34	196
250 TEJ-700	250	245	341	700	10	19	855

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

EXPANSION JOINTS 1 2 3 4 5 6 7 8 9



# EXPANSION JOINTS

## Double Tied Expansion Joint (DTEJ)

### Expansion Joint - DTEJ

**Part No.:** DTEJ

**Construction:** Convolute

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

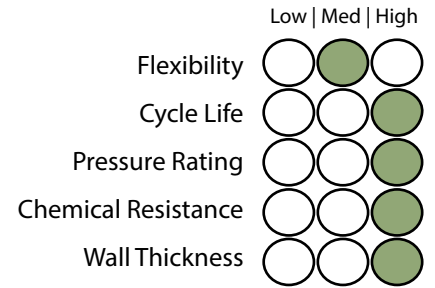
**Profile:** Medium Flexibility / High Pressure

**Liner:** Standard Flow Liner

**Size Available:** 2" - 24"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

**Use:**

Used for absorbing large amounts of lateral movement. Internal flow liners for eliminating velocity and flow problems may be fitted. Anchors required to absorb spring rate forces only. Pressure thrust is restrained by the tie rods.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements		Spring Rate N/MM
	Bore	Flanged	Weld Ends		± Lateral	Total Lateral	
	(mm)	(mm)	(mm)		(mm)	(mm)	
50 DTEJ-240	50	600	632	240	94	188	0.1
50 DTEJ-700	50	600	632	700	94	188	0.4
50 DTEJ-1400	50	600	632	1400	94	188	0.4
65 DTEJ-240	65	600	632	240	81	162	0.3
65 DTEJ-700	65	600	632	700	81	162	0.8
65 DTEJ-1400	65	600	632	1400	81	162	1.3
80 DTEJ-240	80	600	632	240	76	152	0.4
80 DTEJ-700	80	600	632	700	76	152	1.2
80 DTEJ-1400	80	600	632	1400	76	152	4.2
100 DTEJ-240	100	600	632	240	64	128	1.4
100 DTEJ-700	100	600	632	700	64	128	2.5
100 DTEJ-1400	100	600	632	1400	64	128	5.1
125 DTEJ-240	125	600	761	240	88	176	1.6
125 DTEJ-700	125	600	761	700	88	176	2.7
125 DTEJ-1400	125	600	761	1400	88	176	5.2
150 DTEJ-240	150	619	813	240	88	176	2.2
150 DTEJ-700	150	619	813	700	88	176	3.7
150 DTEJ-1400	150	619	813	1400	88	176	16.9
200 DTEJ-240	200	698	892	240	106	212	1.8
200 DTEJ-700	200	698	892	700	106	212	6.8
200 DTEJ-1400	200	698	892	1400	106	212	35
250 DTEJ-240	250	800	994	240	112	224	3
250 DTEJ-700	250	800	994	700	112	224	17

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

9  
8  
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1

EXPANSION JOINTS

## Double Tied Expansion Joint (DTEJ)

### Double Tied Expansion Joint (DTEJ)

The double tied expansion joint is well suited to allow lateral deflection in the low to medium pressure range. Used in this manner the tie rods will absorb the pressure thrust. The design may also be used to absorb axial movement but this would result in the pressure thrust being taken from the tie rods and transmitted to the anchors or adjacent equipment.

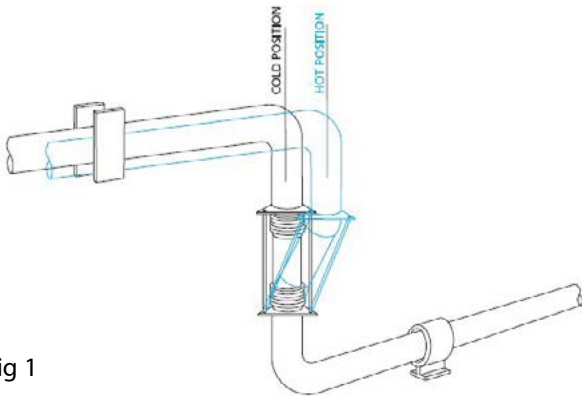


Fig 1

Fig 1 shows a double tied expansion joint used to absorb lateral deflection in a single plane. Wherever feasible the expansion joint should be designed to fill the entire leg so that the expansion of this leg is absorbed within the tie rods as axial movement.

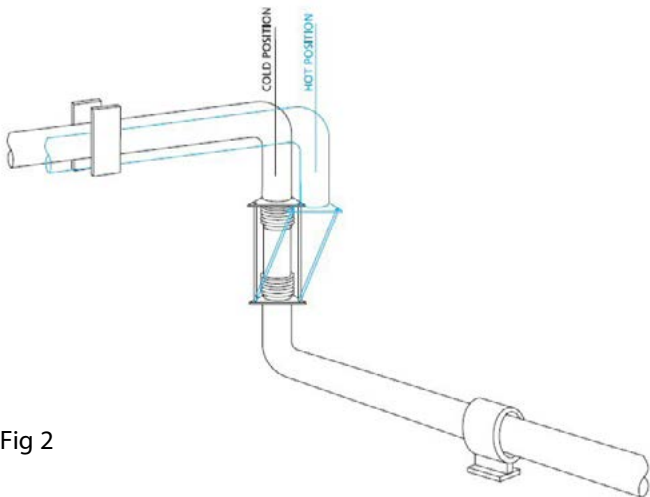


Fig 2

Fig 2 shows a double tied expansion joint used to absorb lateral deflection in a three-plane configuration. As the expansion joint will absorb lateral deflection in any direction, the two horizontal piping legs may lay at any angle in the horizontal plane.

To ensure that this style of joint is correctly installed without any thrust being transmitted to adjacent equipment, it may be necessary to utilize either double hinged or double gimbal expansion joints.



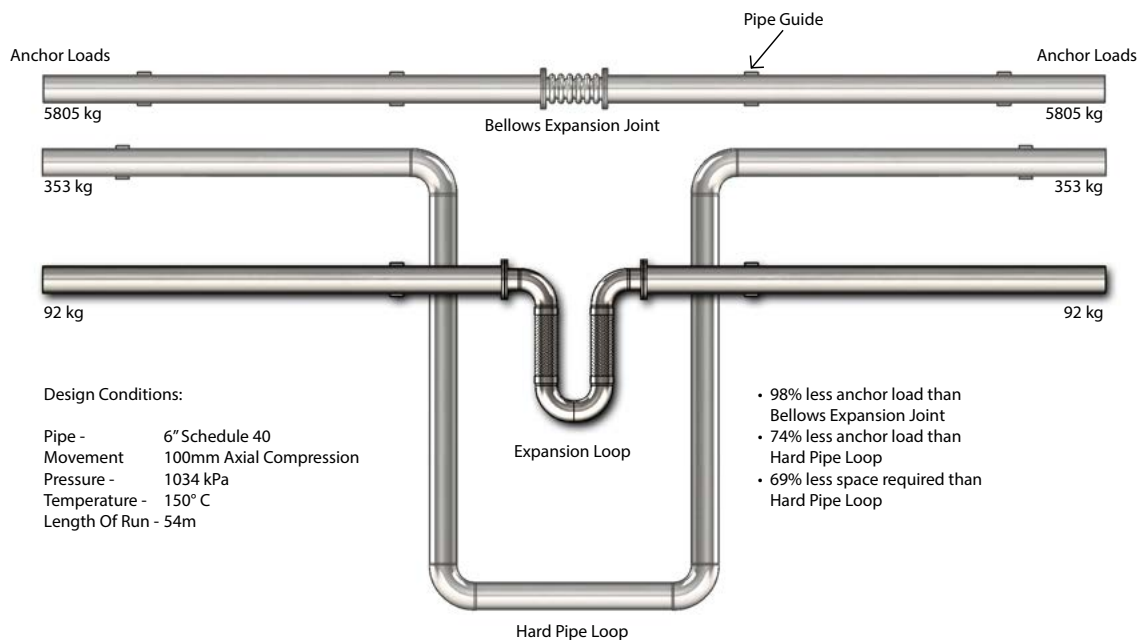
## Seismic Joints and Expansion Loops

### VITALFLEX® - Seismic Joints and Expansion Loops

Model name: VITALFLEX-V and VITALFLEX-U

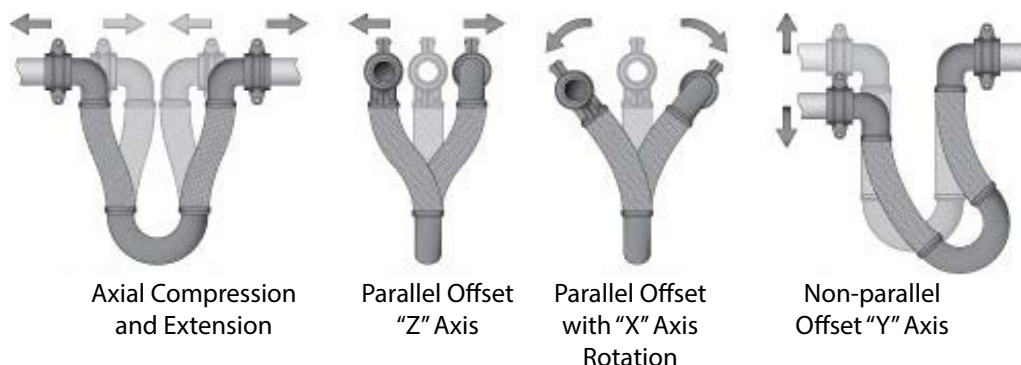
VITALFLEX® seismic joints and expansion loops are engineered to account for the cumulative movement(s) in piping systems. The VITALFLEX® joints have been designed to counter thermal expansion/contraction, offset and rotation.

Piping used in locations subject to seismic conditions have their own set of unexpected random movements. The random motion common to earthquakes, requires that seismic expansion joints be capable of movement in any direction and are able to withstand the acceleration forces.



### Significant cost and safety benefits found in VITALFLEX® seismic expansion joints

- It is an inexpensive alternative to dual-tied bellows expansion joints and especially ball joints
- During an earthquake, it protects equipment by allowing boilers, chillers, fan-coil units and other systems to move independently from buildings such as hospitals, high rises and stadiums
- Installation at the connection point, prevents nozzles from cracking or shearing off
- A break in the gas pipe work could start a fire and cause vast damage to the entire building. This Australian Gas Approval (AGA) certified seismic expansion joint will compensate for the movement that occurs during any seismic activity such as an earthquake
- Designed for potable water applications the VITALFLEX® joint can be Watermark certified in accordance with WMTS 520:2016



## Seismic Expansion Joints

### Installation Guide:

Reduce misalignment of the connecting pipes as any offset will change the design movements of the joint. When installing in any configuration other than with the product in a horizontal down position, the weight of the joint must be supported at the elbow connecting the two braided hoses. The recommended supports are wire cable or metal chain. These can be secured to the elbow used a pipe support clamp/bracket or on request to the hanging lugs which can be welded to the elbow in the manufacturing process.

### Typical Installation:

HORIZONTAL  
SIDE



HORIZONTAL  
DOWN



HORIZONTAL  
UP



NESTED



VERTICAL



UNDER-OVER



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EXPANSION JOINTS

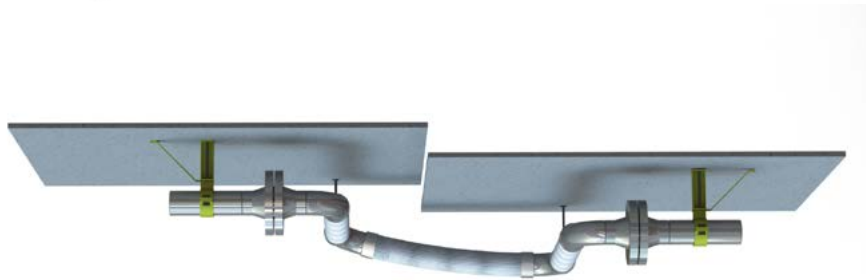
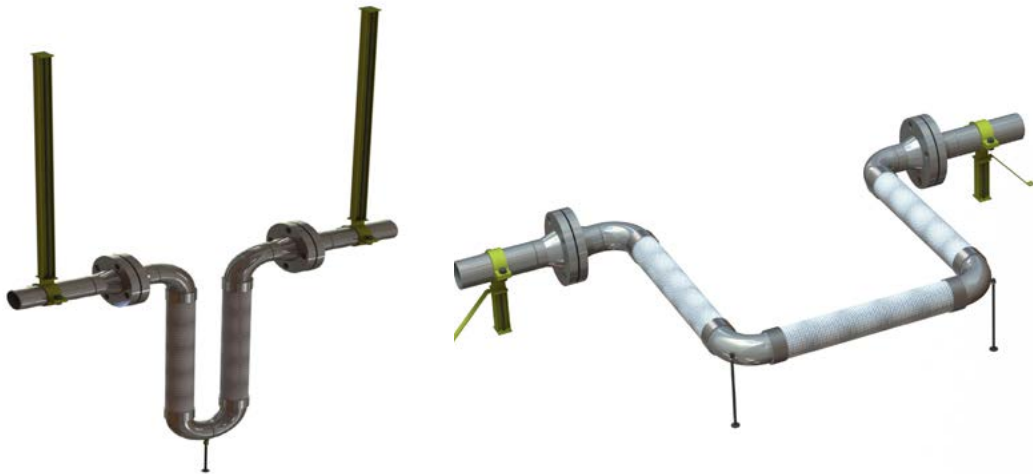
## Seismic Expansion Joints

### Maintenance Guide:

In the event of seismic activity or if excessive movements may have been applied, the product should be inspected to ensure that it has not incurred damage.

If there is an indication of evidence that the joint may have performed movements outside the design parameters this information should be communicated to Pacific Hoseflex to assess if the joints need to be repaired or replaced.

When the joints are visible a 12 monthly inspection should occur to enforce preventative maintenance.



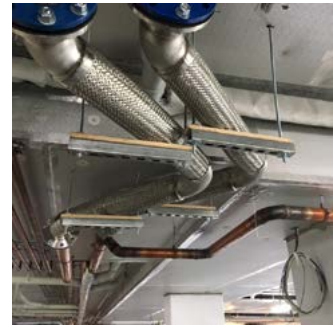
## Seismic Expansion Joints

### VITALFLEX® - V Shape

**Construction:** Annular / Close Pitch  
**Profile:** High Flexibility / High Pressure  
**Material Available:** 304 / 316 Stainless Steel  
**Braid Available:** 304 / 316 Stainless Steel  
**Size Available:** 1/4" (06mm) - 16" (500mm)  
(Larger sizes upon Request)  
**Max Temp:** 700°C

	Low	Med	High
Flexibility	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Cycle Life	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Pressure Rating	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Chemical Resistance	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Wall Thickness	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

### Installations:



### Couplings:

**VITALFLEX® - Swivel Flange**  
**Model Name: VITALFLEX-V-AF4**



**VITALFLEX® - Rolled groove coupling**  
**Model Name: VITALFLEX-V-RG**



**VITALFLEX® - Male coupling**  
**Model Name: VITALFLEX-V-AF1**



**VITALFLEX® - Female Union coupling**  
**Model Name: VITALFLEX-V-AF12**



## Seismic Expansion Joints (V Shape)

### Specifications

**Movement range:** Up to +/- 500mm  
 (Standard catalogue range: 50mm, 75mm, 100mm, 150mm and 200mm)  
 (Customised movement available upon request from 0 to > 500 mm)

**Pressure range:**

**WaterMark:** Full Vacuum up to 2500 kPa  
 (Compressed hose may be considered for negative pressure/vacuum applications)  
 (Temperature correction factors may apply)  
 (Pressure restrictions may apply related to pressure rating of end fittings used)

**Standards:**

- Corrugated Metal Hoses: ISO 10380
- AGA Approved: AS 4631 (upon request)
- Watermark Approved: WMTS 520 (upon request)
- Welding Compliant: AS 4041- Class 1 (upon request)
- Seismic Rated: AS 1170 (upon request)
- Fire Protection Systems (upon request)

**AGA (Australian Gas Association):**

Full Vacuum up to 1500 kPa  
 (Compressed hose may be considered for negative pressure/vacuum applications)  
 (Temperature correction factors may apply)  
 (Pressure restrictions may apply related to pressure rating of end fittings used)

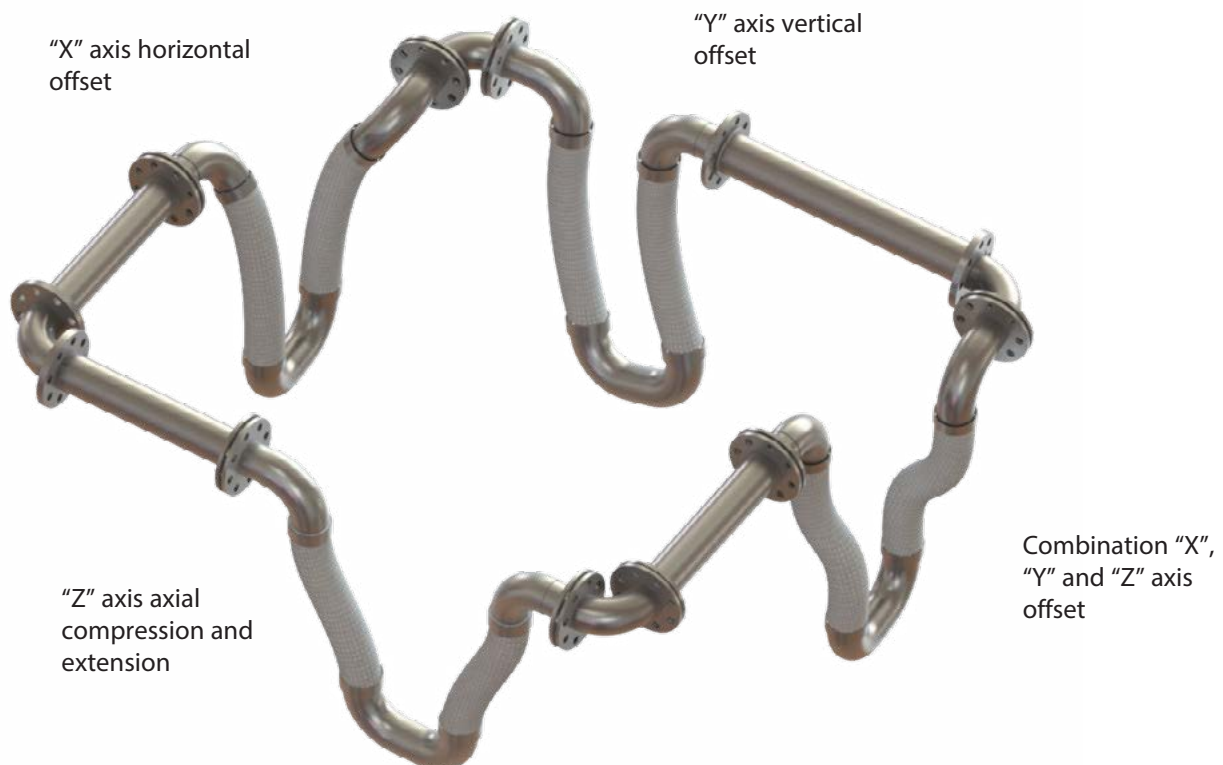
**Temperature range:** -276 °C to 700 °C

(Restrictions from applicable standards for assemblies and end fittings may apply)  
 (Calculated values available for single braided hose MAOP, double braided hose MAOP, 100 kPa, 500 kPa, 800 kPa, 1000 kPa, 1200 kPa,, 1500 kPa, 2000 kPa 2500 kPa)

**Pressure thrust range:** 0.01 kN to 147.39 kN

(Calculated values available for single braided hose MAOP, double braided hose MAOP, 100 kPa, 500 kPa, 800 kPa, 1000 kPa, 1200 kPa,, 1500 kPa, 2000 kPa 2500 kPa)

**Unit weight range:** Refer to technical catalogue for unfilled and filled water values  
 (Available on request)

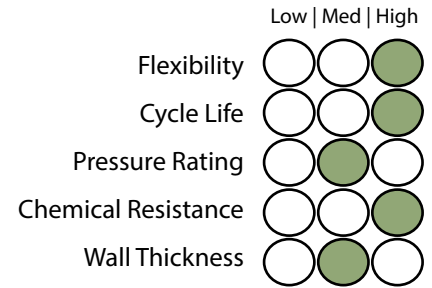




## Seismic Expansion Joints

### VITALFLEX® - V Shape

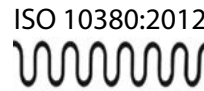
**Construction:** Annular / Close Pitch  
**Profile:** High Flexibility / High Pressure  
**Material Available:** 304 / 316 Stainless Steel  
**Braid Available:** 304 / 316 Stainless Steel  
**Size Available:** 1/4" (06mm) - 16" (500mm)  
(Larger sizes upon Request)  
**Max Temp:** 700°C



#### Construction

**Use:**  
 Used in a variety of applications and locations where subject to seismic conditions or large amounts of pipework movement. The random motion common to earthquakes requires that seismic expansion joints to be capable of movement in any direction.

**Standards:**  
 Corrugated Metal Hoses: ISO 10380  
 AGA Approved: AS 4631 (upon request)  
 Watermark Approved: WMTS 520 (upon request)  
 Welding Compliant: AS 4041- Class 1 (upon request)  
 Seismic Rated: AS 1170 (upon request)  
 Seismic rated: NZS 4219 – 2009 (upon request)  
 Fire Protection Systems (upon request)



#### Specifications

Hose Size (mm)	Hose Size (inch)	Model	MOVEMENT (mm)	Dimension A	Dimension B	Pressure (kPa) @ 23 deg c	Hydrostatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Pneumatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Hose Spring Rate (Kg/Cm)	Hose Pipe load (kgs)
12	1/2"	VITALFLEX-V-12	50	331	150	8445	0.129	0.078	0.31	1.550
20	3/4"	VITALFLEX-V-20	50	351	160	7128	0.311	0.173	0.88	4.400
25	1"	VITALFLEX-V-25	50	367	167	5487	0.432	0.221	1.13	5.650
32	1 1/4"	VITALFLEX-V-32	50	436	198	4136	0.819	0.402	1.49	7.450
38	1 1/2"	VITALFLEX-V-38	50	483	218	3840	1.205	0.560	2.00	10.000
50	2"	VITALFLEX-V-50	50	548	242	3930	1.905	0.869	2.67	13.350
65	2 1/2"	VITALFLEX-V-65	50	684	302	2826	3.825	1.417	2.52	12.600
75	3"	VITALFLEX-V-75	50	760	333	2310	5.453	1.854	7.94	39.700
100	4"	VITALFLEX-V-100	50	915	394	1654	9.456	2.772	8.53	42.650
125	5"	VITALFLEX-V-125	50	1057	450	1316	15.457	4.392	8.59	42.950
150	6"	VITALFLEX-V-150	50	1205	508	1137	21.866	5.410	9.44	47.200
200	8"	VITALFLEX-V-200	50	1450	599	1643	39.335	9.276	24.47	122.350
250	10"	VITALFLEX-V-250	50	1734	709	1585	72.582	20.674	39.76	198.800
300	12"	VITALFLEX-V-300	50	2228	893	1110	134.914	35.626	27.76	138.800

EXPANSION JOINTS 1 2 3 4 5 6 7 8 9

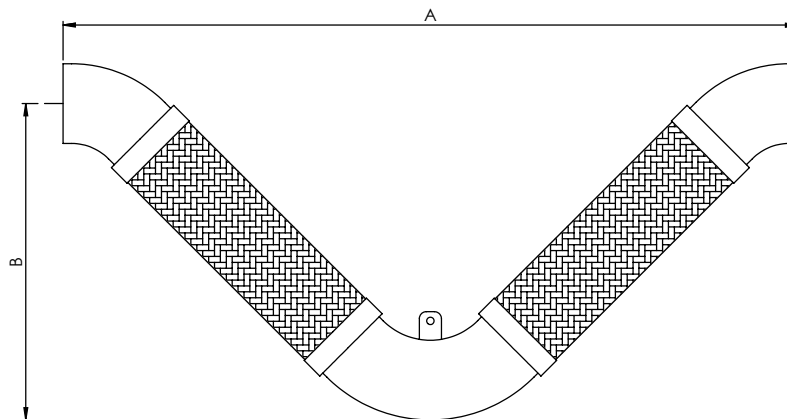
## Seismic Expansion Joints

### VITALFLEX® - V Shape

Hose Size (mm)	Hose Size (inch)	Model	MOVEMENT (mm)	Dimension A	Dimension B	Pressure (kPa) @ 23 deg c	Hydrostatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Pneumatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Hose Spring Rate (Kg/Cm)	Hose Pipe load (kgs)
12	1/2"	VITALFLEX-V-12	100	432	200	8445	0.187	0.113	0.1	1
20	3/4"	VITALFLEX-V-20	100	460	214	7128	0.459	0.255	0.12	1.2
25	1"	VITALFLEX-V-25	100	481	225	5487	0.648	0.331	0.3	3
32	1 1/4"	VITALFLEX-V-32	100	567	264	4136	1.218	0.597	0.46	4.6
38	1 1/2"	VITALFLEX-V-38	100	623	288	3840	1.781	0.827	0.63	6.3
50	2"	VITALFLEX-V-50	100	691	314	3930	2.791	1.274	0.85	8.5
65	2 1/2"	VITALFLEX-V-65	100	860	391	2826	5.583	2.069	0.78	7.8
75	3"	VITALFLEX-V-75	100	946	426	2310	7.925	2.694	2.73	27.3
100	4"	VITALFLEX-V-100	100	1119	496	1654	13.595	3.985	2.844	28.44
125	5"	VITALFLEX-V-125	100	1275	559	1316	22.144	6.293	2.92	29.2
150	6"	VITALFLEX-V-150	100	1439	625	1137	31.238	7.729	3.2	32
200	8"	VITALFLEX-V-200	100	1697	722	1643	56.151	13.241	8.29	82.9
250	10"	VITALFLEX-V-250	100	2010	847	1585	103.327	29.431	13.69	136.9
300	12"	VITALFLEX-V-300	100	2528	1043	1110	180.028	47.539	11.45	114.5

**Note :**

Dimension 'A' and 'B' are approx dimensions without Fitting only and are subject to change without notice.



### Applications



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EXPANSION JOINTS

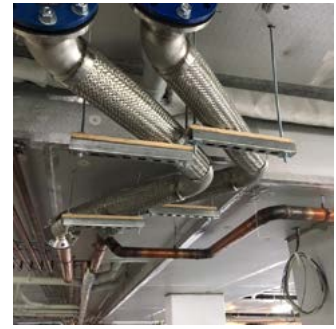
## Seismic Expansion Joints

### Expansion Joint - U Shape

**Construction:** Annular / Close Pitch  
**Profile:** High Flexibility / High Pressure  
**Material Available:** 304 / 316 Stainless Steel  
**Braid Available:** 304 / 316 Stainless Steel  
**Size Available:** 1/4" (06mm) - 16" (500mm)  
(Larger sizes upon Request)  
**Max Temp:** 700°C

	Low	Med	High
Flexibility	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Cycle Life	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Pressure Rating	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Chemical Resistance	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Wall Thickness	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

#### Installation:



#### Couplings:

**VITALFLEX® - Swivel Flange**  
**Model Name: VITALFLEX-U-AF4**

**VITALFLEX® - Rolled groove coupling**  
**Model Name: VITALFLEX-U-RG**



**VITALFLEX® - Male coupling**  
**Model Name: VITALFLEX-U-AF1**

**VITALFLEX® - Female Union coupling**  
**Model Name: VITALFLEX-U-AF12**





## Seismic Expansion Joints (U Shape)

### Specifications

**Movement range:** Up to +/- 500mm

(Standard catalogue range: 50mm, 75mm, 100mm, 150mm and 200mm)

(Customised movement available upon request from 0 to > 500 mm)

**Pressure range:**

**WaterMark:** Full Vacuum up to 2500 kPa

(Compressed hose may be considered for negative pressure/vacuum applications)

(Temperature correction factors may apply)

(Pressure restrictions may apply related to pressure rating of end fittings used)

**Standards:**

Corrugated Metal Hoses: ISO 10380

AGA Approved: AS 4631 (upon request)

Watermark Approved: WMTS 520 (upon request)

Welding Compliant: AS 4041- Class 1 (upon request)

Seismic Rated: AS 1170 (upon request)

Fire Protection Systems (upon request)

**AGA (Australian Gas Association):** Full

**Vacuum up to 1500 kPa**

(Compressed hose may be considered for negative pressure/vacuum applications)

(Temperature correction factors may apply)

(Pressure restrictions may apply related to pressure rating of end fittings used)

**Temperature range:** -276 °C to 700 °C

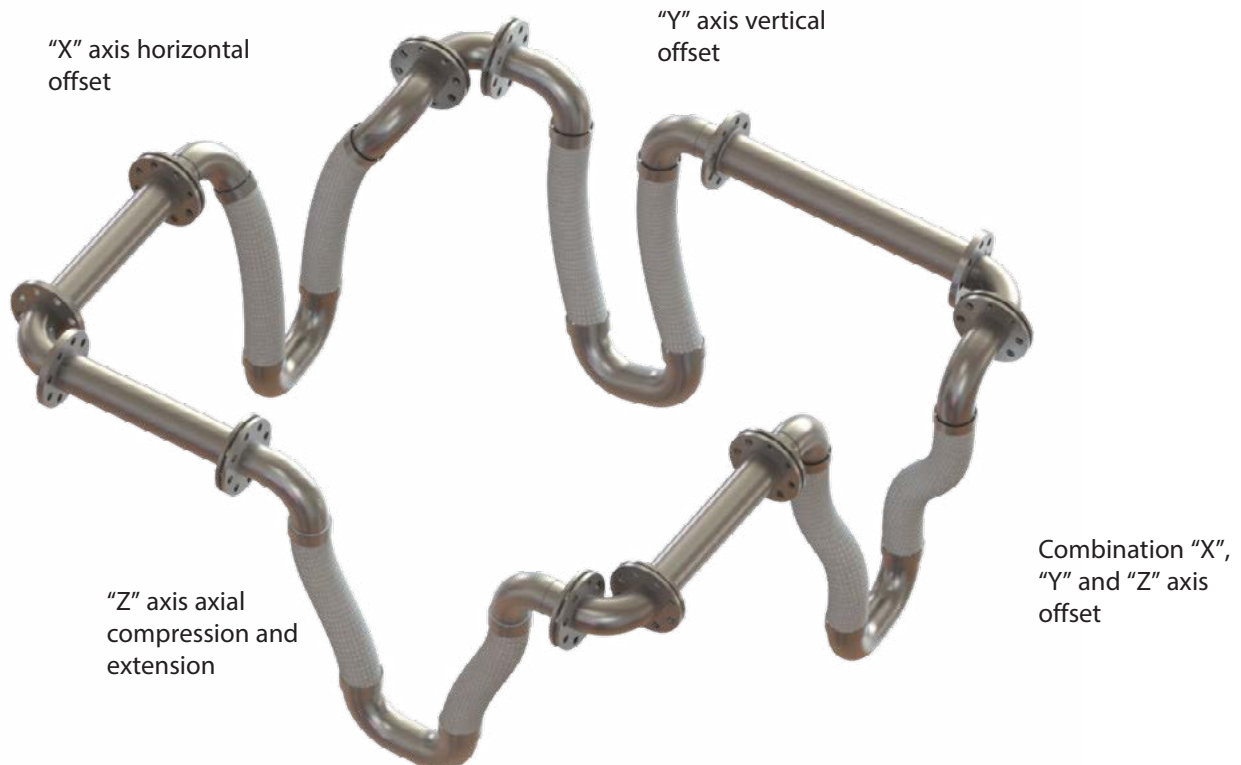
(Restrictions from applicable standards for assemblies and end fittings may apply)

(Calculated values available for single braided hose MAOP, double braided hose MAOP, 100 kPa, 500 kPa, 800 kPa, 1000 kPa, 1200 kPa,, 1500 kPa, 2000 kPa 2500 kPa)

**Pressure thrust range:** 0.01 kN to 147.39 kN

(Calculated values available for single braided hose MAOP, double braided hose MAOP, 100 kPa, 500 kPa, 800 kPa, 1000 kPa, 1200 kPa,, 1500 kPa, 2000 kPa 2500 kPa)

**Unit weight range:** Refer to technical catalogue for unfilled and filled water values (Available on request)

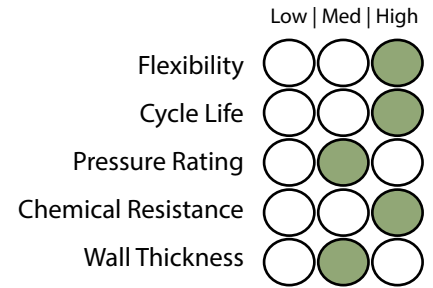




## Seismic Expansion Joints

### Expansion Joint - U Shape

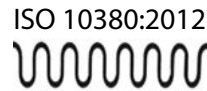
**Construction:** Annular / Close Pitch  
**Profile:** High Flexibility / High Pressure  
**Material Available:** 304 / 316 Stainless Steel  
**Braid Available:** 304 / 316 Stainless Steel  
**Size Available:** 1/4" (06mm) - 16" (500mm)  
(Larger sizes upon Request)  
**Max Temp:** 700°C



#### Construction

**Use:**  
 Used in a variety of applications and locations where subject to seismic conditions or large amounts of pipework movement. The random motion common to earthquakes requires that seismic expansion joints to be capable of movement in any direction.

**Standards:**  
 Corrugated Metal Hoses: ISO 10380  
 AGA Approved: AS 4631 (upon request)  
 Watermark Approved: WMTS 520 (upon request)  
 Welding Compliant: AS 4041- Class 1 (upon request)  
 Seismic Rated: AS 1170 (upon request)  
 Seismic Rated: NZS 4219 - 2009 (upon request)  
 Fire Protection Systems (upon request)



#### Specifications

Hose Size (mm)	Hose Size (inch)	Model	MOVEMENT (mm)	Dimension A	Dimension B	Pressure (kPa) @ 23 deg c	Hydrostatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Pneumatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Hose Spring Rate (Kg/Cm)	Hose Pipe load (kgs)
12	1/2"	VITALFLEX-U-12	50	202	245	8445	0.131	0.079	0.31	1.55
20	3/4"	VITALFLEX-U-20	50	202	262	7128	0.336	0.187	0.73	3.65
25	1"	VITALFLEX-U-25	50	202	276	5487	0.488	0.249	0.75	3.75
32	1 1/4"	VITALFLEX-U-32	50	240	329	4136	0.909	0.446	0.96	4.8
38	1 1/2"	VITALFLEX-U-38	50	279	366	3840	1.327	0.616	1.26	6.3
50	2"	VITALFLEX-U-50	50	355	417	3930	2.063	0.941	1.68	8.4
65	2 1/2"	VITALFLEX-U-65	50	381	522	2826	4.149	1.537	1.64	8.2
75	3"	VITALFLEX-U-75	50	457	582	2310	5.830	1.982	5.27	26.35
100	4"	VITALFLEX-U-100	50	610	704	1654	9.830	2.881	5.46	27.3
125	5"	VITALFLEX-U-125	50	762	817	1316	15.848	4.503	5.55	27.75
150	6"	VITALFLEX-U-150	50	914	934	1137	22.321	5.523	5.58	27.9
200	8"	VITALFLEX-U-200	50	1219	1134	1643	40.108	9.458	12.21	61.05
250	10"	VITALFLEX-U-250	50	1524	1410	1585	81.140	23.111	16.29	81.45
300	12"	VITALFLEX-U-300	50	1829	1582	1110	107.676	28.433	26.73	133.65

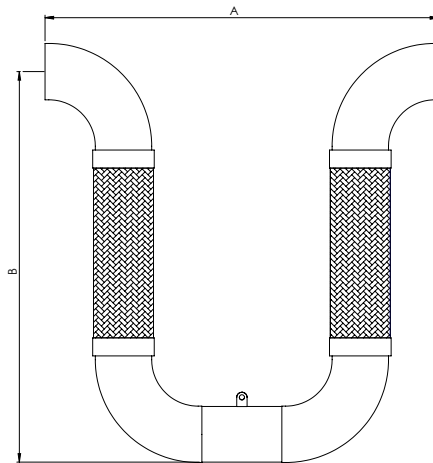
EXPANSION JOINTS

## Seismic Expansion Joints

### Expansion Joint - U Shape

Hose Size (mm)	Hose Size (inch)	Model	MOVEMENT (mm)	Dimension A	Dimension B	Pressure (kPa) @ 23 deg c	Hydrostatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Pneumatically Filled Hose weight (kg) (+/- 5%) Excluding all pipe bends and end fittings	Hose Spring Rate (Kg/Cm)	Hose Pipe load (kgs)
12	1/2"	VITALFLEX-U-12	100	252	322	8445	0.190	0.115	0.11	1.1
20	3/4"	VITALFLEX-U-20	100	252	342	7128	0.480	0.267	0.25	2.5
25	1"	VITALFLEX-U-25	100	252	357	5487	0.704	0.359	0.28	2.8
32	1 1/4"	VITALFLEX-U-32	100	290	422	4136	1.308	0.641	0.35	3.5
38	1 1/2"	VITALFLEX-U-38	100	329	465	3840	1.903	0.884	0.47	4.7
50	2"	VITALFLEX-U-50	100	405	519	3930	2.958	1.350	0.69	6.9
65	2 1/2"	VITALFLEX-U-65	100	481	646	2826	5.893	2.183	0.61	6.1
75	3"	VITALFLEX-U-75	100	557	714	2310	8.321	2.829	1.99	19.9
100	4"	VITALFLEX-U-100	100	610	849	1654	13.998	4.103	2.07	20.7
125	5"	VITALFLEX-U-125	100	762	972	1316	22.578	6.416	2.15	21.5
150	6"	VITALFLEX-U-150	100	914	1100	1137	31.749	7.855	2.27	22.7
200	8"	VITALFLEX-U-200	100	1219	1308	1643	56.924	13.424	5.47	54.7
250	10"	VITALFLEX-U-250	100	1524	1555	1585	104.119	29.657	8.83	88.3
300	12"	VITALFLEX-U-300	100	1829	1795	1110	153.002	40.403	11.62	116.2

**Note :**  
- Dimension 'A' and 'B' are approx dimensions without Fitting only and are subject to change without notice.



#### Applications



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EXPANSION JOINTS

## External Pressurised Expansion Joints

### External Pressurised Expansion Joints

The XT Externally Pressurized Expansion Joint is designed so that the pressure is external to the bellows whilst the inside is at atmospheric pressure. With this design, when a pipeline expands, the expansion joint compresses, but in doing so it stretches the bellows. The result of this is that many convolutions act together to allow a large amount of axial movement because under external pressure the bellows is completely stable.

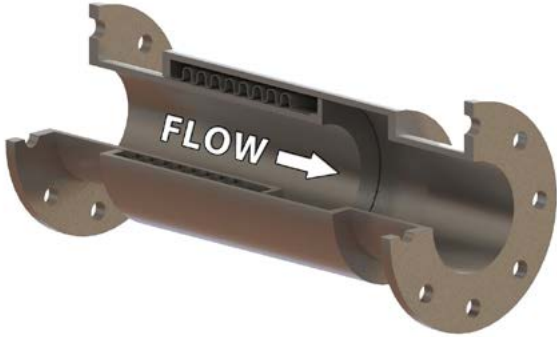
The XT style of the joint is relatively inexpensive and is designed primarily to fit the following applications:

- a) In tunnels or locations where articulated joints can not be used but where large amounts of axial expansion have to be absorbed. It would normally be less expensive to install one XT joint than to divide the pipeline up into several sets of expansion joint(s), anchors and guides. It is impractical to use more than two normal bellows together because of the tendency of the bellows to squirm once a certain length diameter ratio is exceeded.
- b) At extremely high pressure even short bellows can become unstable under internal pressure. This can be overcome by the use of an XT type joint, which has the bellows under tension and therefore stabilised.
- c) Where it is undesirable to have solids accumulate in the convolutions of an expansion joint, the XT can be fitted with drains or manholes to facilitate the regular cleaning out of these areas.



## Definition of Movement

### Axial Compression



Pressure is external to the bellows for maximum stability.



When the pipe expands, it compresses the expansion joint but extends the bellows. The bellows element remains stable due to the external pressure acting upon it.



# EXPANSION JOINTS

## External Pressurised Expansion Joints (XT)

### Expansion Joint - XT

**Part No.:** XT

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

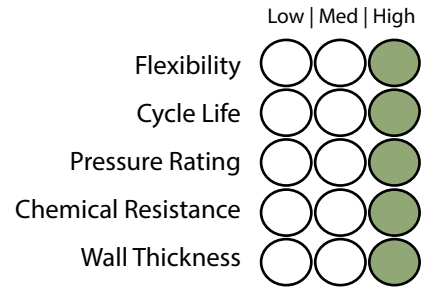
**Profile:** High Flexibility / High Pressure

**Liner:** Standard Flow Liner

**Size Available:** 1" - 10"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

#### Use:

Used for absorbing thermal expansion in exhaust, gas ducting and low pressure systems. Pressure thrust will be transmitted onto pipeline. Internal flow liners for eliminating velocity and flow problems fitted as standard.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements	Pressure Thrust KN
	Bore	Flanged	Weld Ends		Axial	
	(mm)	(mm)	(mm)		(mm)	
25 XT-1000-100	25	660	660	1000	100	5.4
25 XT-1000-150	25	914	914	1000	150	5.4
25 XT-1000-200	25	1168	1168	1000	200	5.4
25 XT-2000-100	25	660	660	2000	100	11.5
25 XT-2000-150	25	914	914	2000	150	11.5
25 XT-2000-200	25	1168	1168	2000	200	11.5
40 XT-1000-100	40	660	660	1000	100	7.9
40 XT-1000-150	40	914	914	1000	150	7.9
40 XT-1000-200	40	1168	1168	1000	200	7.9
40 XT-2000-100	40	660	660	2000	100	16.6
40 XT-2000-150	40	914	914	2000	150	16.6
40 XT-2000-200	40	1168	1168	2000	200	16.6
50 XT-1000-100	50	660	660	1000	100	9.5
50 XT-1000-150	50	914	914	1000	150	9.5
50 XT-1000-200	50	1168	1168	1000	200	9.5
50 XT-2000-100	50	660	660	2000	100	19.9
50 XT-2000-150	50	914	914	2000	150	19.9
50 XT-2000-200	50	1168	1168	2000	200	19.9
65 XT-1000-100	65	660	660	1000	100	12.2
65 XT-1000-150	65	914	914	1000	150	12.2
65 XT-1000-200	65	1168	1168	1000	200	12.2
65 XT-2000-100	65	660	660	2000	100	24.6
65 XT-2000-150	65	914	914	2000	150	24.6

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

1 2 3 4 5 6 7 8 9

EXPANSION JOINTS



# EXPANSION JOINTS

## Double External Pressurised Expansion Joints (DXT)

### Expansion Joint - DXT

**Part No.:** DXT

**Construction:** Convoluted

**Material:** 304, 321, 316, Incoloy, Inconel, Nickel, Hastelloy

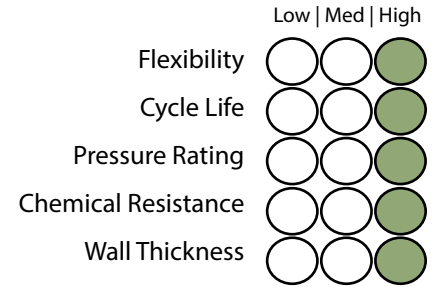
**Profile:** High Flexibility / High Pressure

**Liner:** Standard Flow Liner

**Size Available:** 1" - 10"

(Larger sizes upon Request)

**Temperature:** -196°C +900°C



### Construction

#### Use:

Used for absorbing thermal expansion in exhaust, gas ducting and low pressure systems. Pressure thrust will be transmitted onto pipeline. Internal flow liners for eliminating velocity and flow problems fitted as standard.



### Specifications

Part Number	Nom	Length		Max. Working Pressure kPa	Movements	Pressure Thrust KN
	Bore	Flanged	Weld Ends		Axial	
	(mm)	(mm)	(mm)		(mm)	
25 DXT-1000-200	25	1220	1220	1000	200	5.4
25 DXT-1000-300	25	1727	1727	1000	300	5.4
25 DXT-2000-200	25	1220	1220	2000	200	11.5
25 DXT-2000-300	25	1727	1727	2000	300	11.5
40 DXT-1000-200	40	1220	1220	1000	200	7.9
40 DXT-1000-300	40	1727	1727	1000	300	7.9
40 DXT-2000-200	40	1220	1220	2000	200	16.6
40 DXT-2000-300	40	1727	1727	2000	300	16.6
50 DXT-1000-200	50	1220	1220	1000	200	9.5
50 DXT-1000-300	50	1727	1727	1000	300	9.5
50 DXT-1000-400	50	2235	2235	1000	400	9.5
50 DXT-2000-200	50	1220	1220	2000	200	19.9
50 DXT-2000-300	50	1727	1727	2000	300	19.9
50 DXT-2000-400	50	2235	2235	2000	400	19.9
65 DXT-1000-200	65	1220	1220	1000	200	12.2
65 DXT-1000-300	65	1727	1727	1000	300	12.2
65 DXT-1000-400	65	2235	2235	1000	400	12.2
65 DXT-2000-200	65	1220	1220	2000	200	24.6
65 DXT-2000-300	65	1727	1727	2000	300	24.6
65 DXT-2000-400	65	2235	2235	2000	400	24.6
80 DXT-1000-200	80	1220	1220	1000	200	16.7
80 DXT-1000-300	80	1727	1727	1000	300	16.7
80 DXT-1000-400	80	2235	2235	1000	400	16.7

Additional sizes available. Visit [www.hoseflex.com](http://www.hoseflex.com) for our complete range

## PTFE Expansion Joint Design

### Introduction

Pacific Hoseflex expansion joints are made of contour moulded PTFE (white or black), providing exceptional corrosion resistance and flex-life. The flexible liner is moulded over the metallic sealing face which eliminates troublesome separate gaskets and reduces the chances of bacteria build up. Different numbers of convolutions accommodate varying degrees of misalignment, axial travel and angular deflection between components.

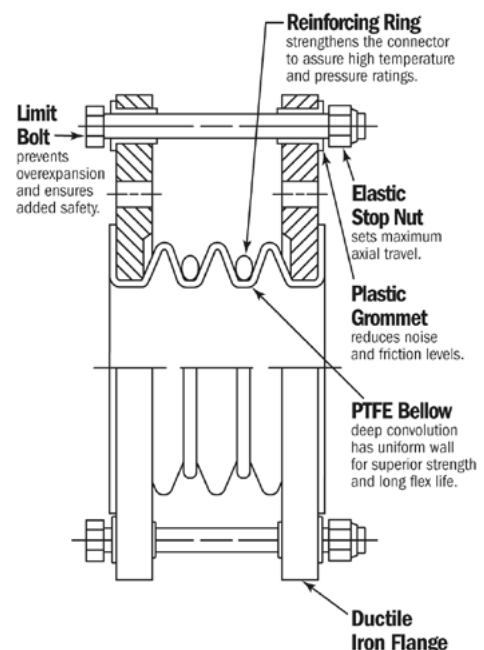
These expansion joints have found widespread acceptance in the chemical processing industry and commercial heating and air-conditioning systems as pump connectors and at strategic points throughout systems. Because of their established record of long service life, they are the most economical vibration and sound absorbers available.

They are manufactured with integral steel limit bolts and reinforcing rings enabling the bellows to absorb vibration and allow for thermal movement and misalignment in piping. They also provide resistance to rotational forces which can lead to joint failure, offering long life in coastal, marine, and chlorine rich environments.

They are available in 2, 3 and 5 Convolution models, with varying amounts of allowed movement.

PTFE expansion joints are capable of handling all of the following movements:

- Angular misalignment - called angular deflection and angular rotation, is the displacement of one flange in relation to the other causing them to lie in non-parallel planes.
- Vibration - Absorbing movement caused by generators or pumps that may result in pipe work cracking.
- Longitudinal - also called travel or axial compression and extension.
- Parallel misalignment - called offset or lateral deflection, is the displacement of one flange in relation to the other while they lie in parallel planes.
- Maximum travel is based on installation with no misalignment or angular deflection.
- Maximum Misalignment is based on installation with no Travel or Angular Deflection.
- Combined travel and misalignment are proportionately lower for each type of deflection according to the percentage of the "maximum" that is required for the other.





## Definition of Movement

### ANGULAR DEFLECTION



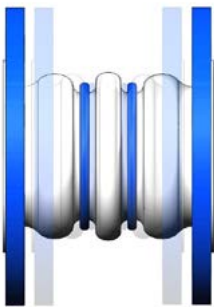
“Maximum Angular Deflection” may be called angular rotation. It is based on installation with no axial travel or lateral offset.

### VIBRATION



In addition to noise, vibration transmitted through piping can cause leaks, premature equipment wear and cracked welds. Expansion joints drastically reduce vibration transmission, thereby solving many of these issues.

### AXIAL TRAVEL



“Maximum Axial Travel” may be called longitudinal movement or axial compression and extension. It is based on installation with no misalignment or angular deflection.

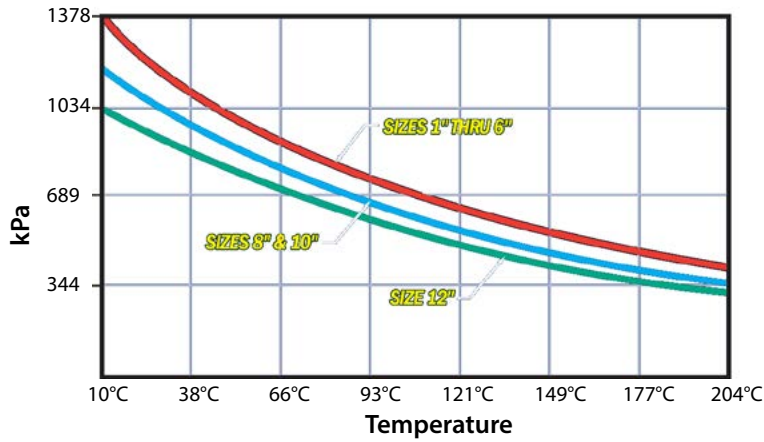
### MISALIGNMENT



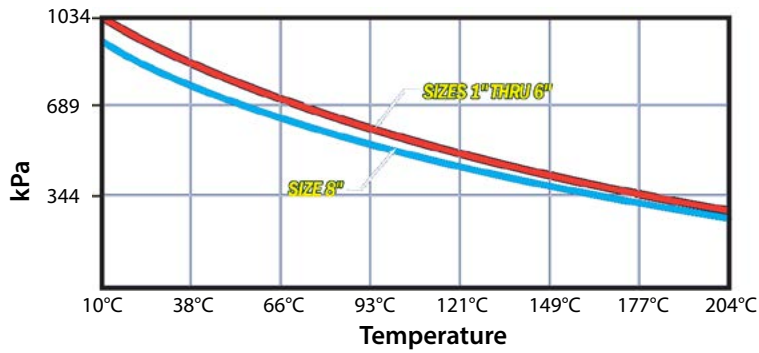
“Maximum Misalignment” may also be referred to as lateral offset or deflection. It is based on installation with no axial travel or angular deflection.

## Operating Pressure vs. Temperature

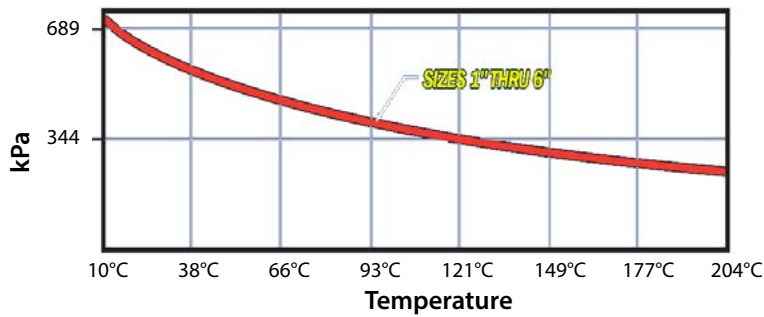
(PEJ2) 2-Convolute PTFE Expansion Joint



(PEJ3) Convolute PTFE Expansion Joints



(PEJ5) Convolute PTFE Expansion Joints



## PTFE Expansion Joint 2 - Convoluted (PEJ2)

### PTFE Expansion Joint - PEJ2

**Part No.:** PEJ2

**Construction:** Convoluted

**Profile:** High Flexibility / Medium Pressure

**Liner:** Optional

**Size Available:** 1" - 12"  
(Larger sizes upon Request)

**Temperature:** 10°C +204°C

Low | Med | High

Flexibility

Cycle Life

Pressure Rating

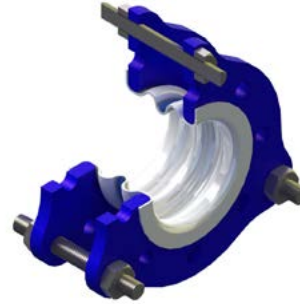
Chemical Resistance

Wall Thickness

### Construction

**Use:**

PTFE bellows are specifically designed to compensate for pipe expansion, vibration and misalignment in process piping and vessels. PTFE bellows are constructed from uniform-walled isostatically molded PTFE and demonstrate a high level of design consistency throughout the product line.



### Specifications

Part Number	Nom Bore (mm)	Length (mm)	Flare Diameter (mm)	Max. Working Pressure (10°C) kPa	Movements		Weight kg
					± Maximum Travel (mm)	Maximum Misalignment (mm)	
PEJ-25-2	25	34	50	1378	6	3	1.17
PEJ-38-2	38	38	73	1378	6	3	1.63
PEJ-50-2	50	48	92	1378	6	3	3.53
PEJ-65-2	65	50	104	1378	8	3	4.89
PEJ-80-2	80	67	127	1378	10	4	5.94
PEJ-100-2	100	67	157	1378	12	6	8.25
PEJ-125-2	125	72	185	1378	17	6	10.16
PEJ-150-2	150	72	216	1378	12	6	12.56
PEJ-200-2	200	94	269	1170	20	6	18.59
PEJ-250-2	250	102	323	1170	25	6	27.26
PEJ-300-2	300	105	381	1034	25	6	40.68

\*See Operating Pressure vs. Temperature graph for correction factors. Page 91

### Applications



## PTFE Expansion Joint 3 - Convoluted (PEJ3)

### PTFE Expansion Joint - PEJ3

**Part No.:** PEJ3

**Construction:** Convoluted

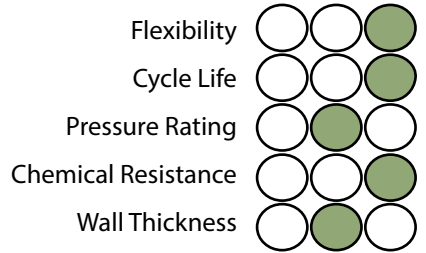
**Profile:** High Flexibility / Medium Pressure

**Liner:** Optional

**Size Available:** 1" - 8"  
(Larger sizes upon Request)

**Temperature:** 10°C +204°C

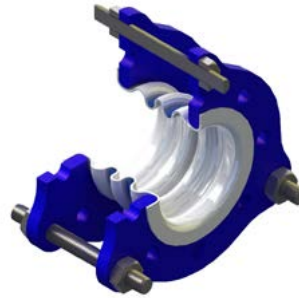
Low | Med | High



### Construction

**Use:**

PTFE bellows are specifically designed to compensate for pipe expansion, vibration and misalignment in process piping and vessels. PTFE bellows are constructed from uniform-walled isostatically molded PTFE and demonstrate a high level of design consistency throughout the product line.



### Specifications

Part Number	Nom Bore (mm)	Length (mm)	Flare Diameter (mm)	Max. Working Pressure (10°C) kPa	Movements		Weight kg
					± Maximum Travel (mm)	Maximum Misalignment (mm)	
PEJ-25-3	25	46	50	1034	12	6	1.22
PEJ-38-3	38	51	73	1034	12	6	1.85
PEJ-50-3	50	70	92	1034	20	10	3.67
PEJ-65-3	65	76	104	1034	25	10	5.08
PEJ-80-3	80	93	127	1034	25	12	6.16
PEJ-100-3	102	95	157	1034	28	12	8.57
PEJ-125-3	125	100	185	1034	28	12	10.61
PEJ-150-3	150	102	216	1034	28	4	13.19
PEJ-200-3	200	138	269	965	42	4	19.50

\*See Operating Pressure vs. Temperature graph for correction factors. Page 91

### Applications



## PTFE Expansion Joint 5 - Convoluted (PEJ5)

### PTFE Expansion Joint - PEJ5

**Part No.:** PEJ5

**Construction:** Convoluted

**Profile:** High Flexibility / Medium Pressure

**Liner:** Optional

**Size Available:** 1" - 6"  
(Larger sizes upon Request)

**Temperature:** 10°C +204°C

Low | Med | High

Flexibility

Cycle Life

Pressure Rating

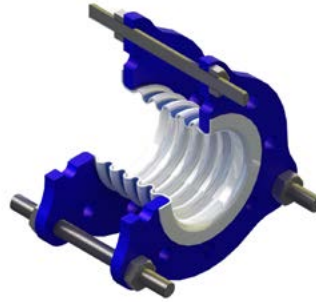
Chemical Resistance

Wall Thickness

### Construction

**Use:**

PTFE bellows are specifically designed to compensate for pipe expansion, vibration and misalignment in process piping and vessels. PTFE bellows are constructed from uniform-walled isostatically molded PTFE and demonstrate a high level of design consistency throughout the product line.



### Specifications

Part Number	Nom Bore (mm)	Length (mm)	Flare Diameter (mm)	Max. Working Pressure (10°C) kPa	Movements		Weight kg
					± Maximum Travel (mm)	Maximum Misalignment (mm)	
PEJ-25-5	25	68	50	703	21	12	1.31
PEJ-38-5	38	81	73	703	27	12	1.95
PEJ-50-5	50	100	92	703	27	12	3.94
PEJ-80-5	80	125	127	703	27	12	6.71
PEJ-100-5	100	132	157	703	33	15	9.25
PEJ-150-5	150	144	216	703	39	15	14.42

\*See Operating Pressure vs. Temperature graph for correction factors. Page 91

### Applications



## REJ: Rubber Expansion Joints Design

### Introduction

Rubber expansion bellows can be used for both suction and delivery (discharge) due to its excellent stability and pressure capacity. Rubber Expansion Joints are generally used as connectors between vessels operating at widely different temperatures ranging up to 115°C. The sizes range from 32 mm to 500 mm including a wide variety of different flanges and materials. Most common available materials are; EPDM, Neoprene, Buna/Nitrile, PTFE Lined, Hypalon, Butyl and natural rubber.

Rubber expansion joints are generally used in heating and air conditioning systems, marine environments, sewage plants, industrial systems and for mild chemicals and oils. Rubber expansion joints permit the necessary motion and flexibility in a 'working' ship's piping system. The compactness, resilience and low stress features make them ideally suited for shipboard piping systems. Sewage treatment plants, water treatment plants and air scrubber systems all employ the use of general rubber expansion joints. Sludge pumps, raw and secondary sewage lines, centrifugal air blowers and scrub stacks use expansion joints due to their resistance to abrasion and corrosion, as well as their flexibility, making them well suited for these applications.

Nuclear and fossil fuel plants use rubber expansion joints to connect condense lines, steam turbine exhaust lines, condensate lines, cooling water lines and aeration systems.

They have been also successfully installed in demanding industrial ducting systems where flutter, heavy vibration, wet or dry corrosive materials are encountered. Rubber expansion joints reduce noise and vibration caused by forces in pumps or centrifuges by acting as a shock absorber in systems.

Thermal movement is also an important consideration in a piping system. Depending on the temperature change and length of pipe, thermal movement can easily be great enough to exceed the allowable pipe stress.

Rubber expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and

vibration, in a relatively short space. Standard stock items are the single arch and the twin-sphere joints. The spherical shape arch of the connector and excellent original structural design contribute to the great success of the joint.

Combined with its internally laid tough flexible fibres and its moulding technique, rubber expansion joints have great ability to withstand the force of a creating vacuum. Internal reinforced rings can be inserted to increase the suction capabilities of the bellows.



Temperature Correction Factor					
80 °C	85 °C	90 °C	95 °C	100 °C	105 °C
x 1.0	x 0.92	x 0.83	x 0.75	x 0.67	x 0.60



## REJ: Rubber Expansion Joints Installation Guide

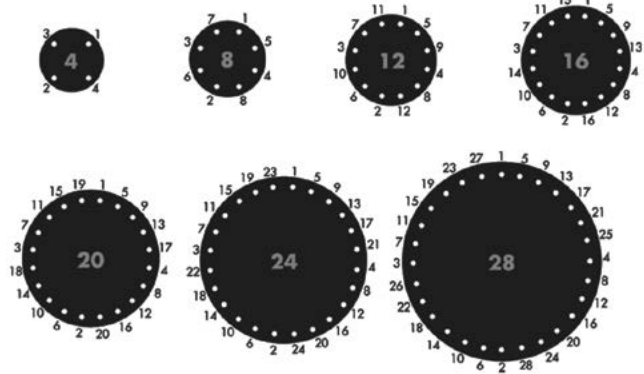
### BOLT TORQUE:

Below are the minimum recommended torque values for non-metallic expansion joints with beaded end type flanges to achieve an adequate seal:

SIZES	RECOMMENDED TORQUE
1" - 6"	10 ft./lbs.
8" - 12"	20 ft./lbs.
16" - 24"	30 ft./lbs.

### NOTE:

Over torquing bolts can cause deformation of the rubber expansion joint flanges, thus resulting in possible premature failure.

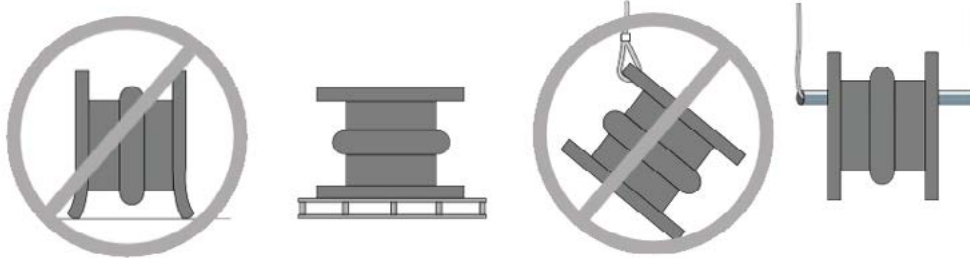


Tighten bolts in stages by alternating around the flange. Use recommended torque values above to achieve a good seal. Never tighten an expansion joint to the point that there is metal-to-metal contact between the expansion joint flange and the mating flange.

### STORAGE / HANDLING:

Store expansion joints in a dry/cool location such as a warehouse. Store flange face down on a pallet or wooden platform. Do not store other heavy items on top of expansion joint(s). Ten-year shelf life can be expected with ideal conditions.

Do not lift with ropes or bars through the bolt holes. If lifting through the bore, use padding or a saddle to distribute the weight. Do not let expansion joints sit vertically on the edges of the flanges for any period of time.



### ADDITIONAL TIPS:

Insulation over a non-metallic rubber expansion joint is not recommended; however, if the insulation is required, it should be made removable to permit easy access to the flange area to check bolting.

It is acceptable (but not necessary) to lubricate the expansion joint flanges with a thin film of graphite dispersed in glycerin or water for ease of disassembly at a later time.

Do not weld in near vicinity of a non-metallic expansion joint.

If an expansion joint is to be installed underground, or will be submerged in water, contact the manufacturer for specific guidelines.

If the expansion joint will be installed outdoors, make sure the cover material will withstand ozone, sunlight, etc. Materials such as Neoprene and Chlorobutyl are recommended. Materials painted with weather resistant paint will provide additional ozone and sunlight protection.

Check the tightness of retaining rings two or three weeks after installation and retighten as necessary.

## REJ: Rubber Expansion Joints Installation Guide

### WARNING:

Expansion joints may operate in pipelines or equipment carrying fluids and/or gases at elevated temperatures and pressures and may transport hazardous materials. Precautions should be taken to protect personnel in the event of leakage or splash. Rubber expansion joints should not be installed in inaccessible areas where inspection is impossible

### RESTRAINTS:

Restraints are used for lateral and angular compensators. The restraints absorb axial reaction force produced by inner pressure. Even so, the connected pipe must be equipped with light fixed points to absorb moving force and moments.

Precise rating details and operating parameters of the corresponding machinery or equipment must be known to correctly calculate the degree of restraints:

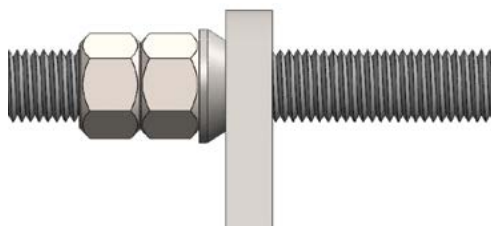
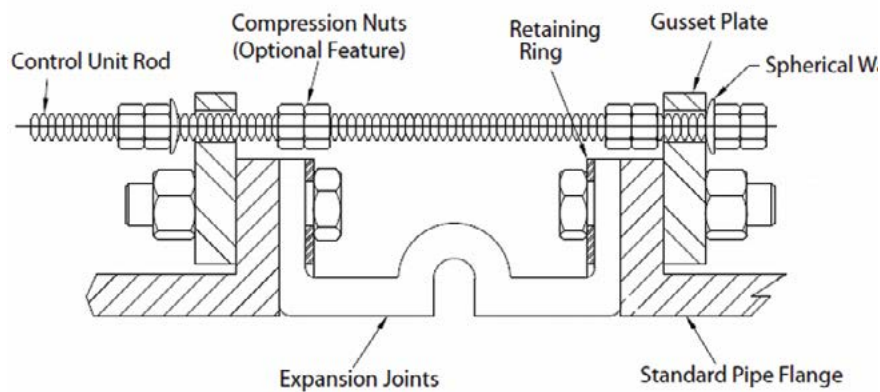
- Recommended on most applications to prevent damage due to excessive pipe movements
- Consists of two or more tie rods connected between pipe flanges
- Triangular end plates (gussets) have two holes for bolting securely to flange, and one hole to accommodate the connecting tie rod
- Spherical washers are incorporated to accommodate moderate piping alignments, but also assists with angular, torsional and lateral movements
- Each rod incorporates double nuts on each end to keep the expansion joint from over-elongating
- When excessive axial compression is a concern, compression nuts can be incorporated to restrict movements as needed and to protect the expansion joint from damage
- NOT designed to replace pipeline anchoring



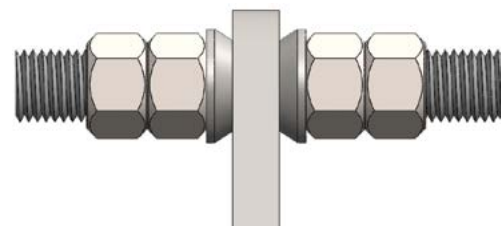
DN 1200 Rubber Expansion Joint

### RUBBER EXPANSION JOINT ROD RESTRAINTS

There are two types of tie rods restraints for lateral rubber compensators:



Outer restraints are used to absorb reaction force from internal pressure



Outer and inner restraints are used to absorb reaction force from internal pressure and vacuum



## REJ: Definition of Movement

### Axial Compression



The dimensional reduction or shortening of the face-to-face parallel length of the joint measured along the longitudinal axis.

### Axial Elongation



The dimensional increase or lengthening of the face-to-face parallel length of the joint measured along the longitudinal axis.

### Lateral Deflection



Lateral deflection is movement perpendicular to the axial plane of the expansion joint. It is a shear motion on the bellows.

### Vibration



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

### Torsional Movement



The twisting of one end of the expansion joint with respect to the other end about its longitudinal axis.

## Concurrent Movements

Concurrent movements are developed when two or more movements in a pipe system occur at the same time. If multiple movements exceed single arch design there may be a need for additional arches. To perform calculation for concurrent movement when a pipe system design has more than one movement, please use the following formula:

$$\frac{\text{Actual Axial Compression} + \text{Actual Axial Extension} + \text{Actual Lateral (X)} + \text{Actual Lateral (Y)}}{\text{Rated Axial Compression} + \text{Rated Axial Extension} + \text{Rated Lateral (X)} + \text{Rated Lateral (Y)}} = / < 1$$

Calculation must be equal to or less than 1 for expansion joint to operate within concurrent movement capability.

## Calculation of Thrust (Thrust Factor)

When Rubber Expansion Joints (REJs) are installed in the pipeline, the static portion of the thrust is calculated as a product of the area of the inside diameter of the arch of the REJ multiplied by the maximum pressure (design, test or surge) that will occur in the line. The result is a force expressed in pounds. Take design, surge or test pressure multiplied by the thrust factor to calculate the end thrust.

$$T = \frac{\pi}{4} (D)^2, (P)$$

T = Thrust

P = PSI (design, test or surge)

D = Arch Inside Diameter

**High Suction:** Rubber bellow available in Filled Spool Arch and Unfilled Spool Arch

**Filled Spool Arch:** Enclosed Arch style use in high suction and abrasive applications (sand and slurry)

**Unfilled Spool Arch:** Open arch style use in high suction and movement applications

**Sphere arch (REJ):** Open arch style use in standard application – Specifications on pages 99-100





# EXPANSION JOINTS

## Single Sphere Rubber Expansion Joint (REJ)

### Rubber Expansion Joint - REJ

**Part No.:** REJ

**Material:** E (EPDM), BN (BUNA NITRILE), V (VITON), N (NEOPRENE), H HYPERLON

**Food Grade:** White Nitrile (NBR) (Upon Request)

**Liner:** PTFE, Metallic (Upon Request)

**Construction:** Smoothbore Sphere

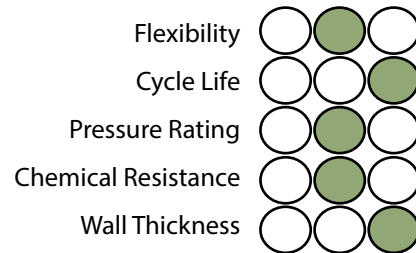
**Profile:** Medium Flexibility / Medium Pressure

**Vacuum Ring:** Available on Request **Vacuum Conversion:** 1 Torr / mmHg = 0.13 kPa or 29.88 inHg

**Size Available:** 1 1/4" - 24" (Larger sizes upon Request)

**Temperature:** -30°C +105°C

Low | Med | High



### Construction

**Use:** Rubber expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space.



Temperature Correction Factor

80 °C	85 °C	90 °C	95 °C	100 °C	105 °C
x 1.0	x 0.92	x 0.83	x 0.75	x 0.67	x 0.60

### Specifications

Part Number (See key below)	NB (mm)	Length (mm)	Max. Working Pressure (kPa)	Movements				Spring Rates				Torsional Degrees	Vacuum (without Vacuum Ring) mmHg / Torr	Vacuum (with Vacuum Ring) mmHg / Torr
				Axial Compression	Axial Elongation	Lateral Deflection	Angular Deflection	Axial Compression	Axial Extension	Lateral Deflection	Angular Movement			
				(mm)	(mm)	(mm)	(Deg)	N/mm	N/mm	N/mm	Nm/Deg			
REJA-32-CDE	32	95	1550	8	5	8	17°	38	50	57	0.10	3	600	600
REJA-40-CDE	40	95	1550	10	5	8	14°	46	60	69	0.15	3	600	600
REJA-50-CDE	50	105	1550	10	5	8	11°	55	72	92	0.30	3	600	600
REJA-65-CDE	65	115	1550	13	7	9	11°	69	90	100	0.51	3	600	600
REJA-80-CDE	80	130	1550	13	9	12	14°	83	109	108	0.81	3	600	600
REJA-100-CDE	100	135	1550	19	12	13	14°	111	145	125	1.93	3	600	600
REJA-125-CDE	125	170	1550	19	12	13	11°	139	181	143	4	3	225	600
REJA-150-CDE	150	180	1550	19	12	13	9°	167	217	162	7	3	225	600
REJA-200-CDE	200	205	1550	25	14	22	8°	185	241	198	13	3	225	600
REJA-250-CDE	250	240	1550	25	16	22	7°	232	302	212	24	3	150	250
REJA-300-CDE	300	260	1550	25	16	22	6°	278	362	249	43	3	150	250
REJA-350-CDE	350	265	1034	25	20	22	5°	243	317	293	19	2	150	250
REJA-400-CDE	400	265	860	25	20	22	4°	278	362	338	77	2	100	150
REJA-450-CDE	450	265	860	25	20	22	4°	313	407	373	108	1	100	150
REJA-500-CDE	500	265	860	25	20	22	3°	348	452	417	155	1	100	150
REJA-600-CDE	600	265	860	25	20	22	3°	417	542	448	278	1	100	150

### Part Number Key

A = RUBBER TYPE:	E (EPDM), BN (BUNA NITRILE), V (VITON), N (NEOPRENE)
B = NB SIZE:	E.G. 25 (25mm/1"), 100 (100mm/4")
C = FLANGE 1:	D (TABLE D), E (TABLE E), A1 (ANSI 150), D16 (DIN 16)
D = FLANGE 2:	D (TABLE D), E (TABLE E), A1 (ANSI 150), D16 (DIN 16)
E = FLANGE MATERIAL:	HG (GALVANISED), 6S (316 STAINLESS STEEL)

### Applications



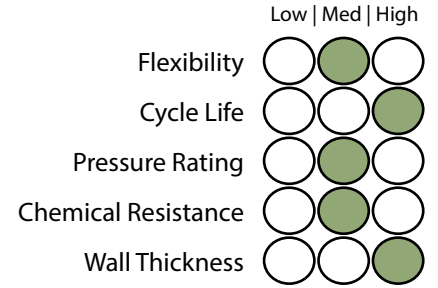
EXPANSION JOINTS



# EXPANSION JOINTS

## Twin Sphere Rubber Expansion Joints (TREJ) Rubber Expansion Joint - TREJ

**Part No.:** TREJ  
**Material:** E (EPDM), BN (BUNA NITRILE), V (VITON), N (NEOPRENE), H (HYPERLON)  
**Food Grade:** White Nitrile (NBR) (Upon Request)  
**Liner:** PTFE, Metallic (Upon Request)  
**Construction:** Smoothbore Sphere  
**Profile:** Medium Flexibility / Medium Pressure  
**Vacuum Ring:** Available on Request **Vacuum Conversion:** 1 Torr / mmHg = 0.13 kPa or 29.88 inHg  
**Size Available:** 1 1/4" - 24" (Larger sizes upon Request)  
**Temperature:** -30°C +105°C



### Construction

**Use:** Rubber expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space.



Temperature Correction Factor

80 °C	85 °C	90 °C	95 °C	100 °C	105 °C
x 1.0	x 0.92	x 0.83	x 0.75	x 0.67	x 0.60

### Specifications

Part Number (See key below)	NB	Length	Max. Working Pressure	Movements				Spring Rates				Torsional Degrees	Vacuum (without vacuum ring)	Vacuum (with vacuum ring)
				Axial Compression	Axial Elongation	Lateral Deflection	Angular Deflection	Axial Compression	Axial Extension	Lateral Deflection	Angular Movement			
				(mm)	(mm)	(mm)	(Deg)	N/mm	N/mm	N/mm	Nm/Deg			
TREJA-32-CDE	32	175	1550	50	30	38	38	57	75	85	0.15	3	600	600
TREJA-40-CDE	40	175	1550	50	30	38	38	69	90	103	0.22	3	600	600
TREJA-50-CDE	50	175	1550	50	30	38	38	82	108	138	0.45	3	600	600
TREJA-65-CDE	65	175	1550	50	30	38	36	103	135	150	0.76	3	600	600
TREJA-80-CDE	80	175	1550	50	30	38	36	124	163	162	1.21	3	600	600
TREJA-100-CDE	100	225	1550	50	35	32	30	166	217	187	2.89	3	600	600
TREJA-125-CDE	125	225	1550	50	35	32	25	208	271	214	6	3	225	600
TREJA-150-CDE	150	225	1550	50	35	32	21	250	325	243	10	3	225	600
TREJA-200-CDE	200	325	1550	50	35	28	17	227	361	297	19	3	225	600
TREJA-250-CDE	250	325	1550	50	35	28	13	348	453	318	36	3	150	250
TREJA-300-CDE	300	325	1550	50	35	28	9	417	543	373	64	3	150	250
TREJA-350-CDE	350	350	1550	45	30	25	8	364	475	439	28	2	150	250
TREJA-400-CDE	400	350	1550	45	30	25	7	417	543	507	115	2	100	150
TREJA-450-CDE	450	350	1550	45	30	25	6	469	610	559	162	1	100	150
TREJA-500-CDE	500	350	1550	45	30	25	6	522	678	625	232	1	100	150
TREJA-600-CDE	600	350	1550	45	30	25	5	625	813	572	417	1	100	150

### Part Number Key:

A = RUBBER TYPE: E (EPDM), BN (BUNA NITRILE), V (VITON), N (NEOPRENE)  
 B = NB SIZE: E.G. 25 (25mm/1"), 100 (100mm/4")  
 C = FLANGE 1: D (TABLE D), E (TABLE E), A1 (ANSI 150), D16 (DIN 16)  
 D = FLANGE 2: D (TABLE D), E (TABLE E), A1 (ANSI 150), D16 (DIN 16)  
 E = FLANGE MATERIAL: HG (GALVANISED), 6S (316 STAINLESS STEEL)

### Applications



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EXPANSION JOINTS

## Twin Sphere Union Rubber Expansion Joints (T12REJ)

### Rubber Expansion Joint - T12REJ

**Part No.:** T12REJ

**Material:** EPDM, Neoprene, Viton, Buna/Nitrile, Hyperlon, Natural Rubber

**Construction:** Smoothbore Sphere

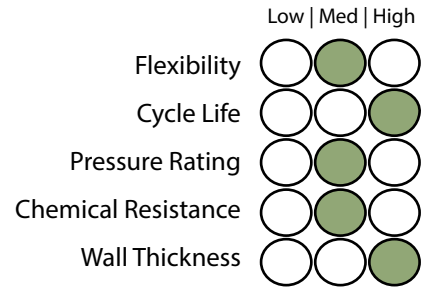
**Profile:** Medium Flexibility / Medium Pressure

**Vacuum Ring:** Available on Request

**Size Available:** 5/8" - 3"

(Larger sizes upon Request)

**Temperature:** -30°C +105°C



#### Construction

**Use:**

Rubber expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space.



**Temperature Correction Factor**

80 °C	85 °C	90 °C	95 °C	100 °C	105 °C
x 1.0	x 0.92	x 0.83	x 0.75	x 0.67	x 0.60

#### Specifications

Part Number	Nom Bore (mm)	Length (mm)	Max. Working Pressure kPa	Movements				Vacuum mmHg
				Axial Compression (mm)	Axial Elogation (mm)	Lateral Deflection (mm)	Angular Deflection (Deg)	
				T12REJN-15-BPHG	15	203	1034	
T12REJN-20-BPHG	20	203	1034	22	6	22	32	660
T12REJN-25-BPHG	25	203	1034	22	6	22	25	660
T12REJN-32-BPHG	32	203	1034	22	6	22	25	660
T12REJN-40-BPHG	38	203	1034	22	6	22	20	660
T12REJN-50-BPHG	50	203	1034	22	6	22	15	660
T12REJN-65-BPHG	65	240	1034	22	6	22	12	660
T12REJN-80-BPHG	80	240	1034	22	6	22	10	660

\* Union Is Available With BSP or NPT Thread

#### Applications



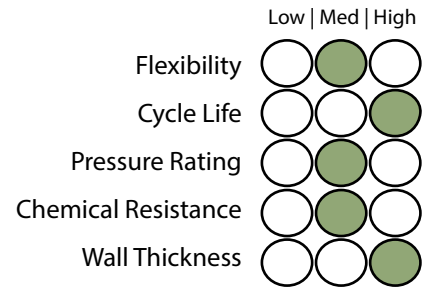


# EXPANSION JOINTS

## PTFE Lined Single Sphere Rubber Expansion Joint (REJPTFE)

### PTFE Lined Rubber Expansion Joint - REJPTFE

**Part No.:** REJPTFE  
**Material:** EPDM, Neoprene (CR), Viton, Buna/Nitrile, Hyperlon, Natural Rubber  
**Food Grade:** White Nitrile (NBR) (Upon Request)  
**Liner:** PTFE  
**Construction:** Smoothbore Sphere  
**Profile:** Medium Flexibility / Medium Pressure  
**Vacuum Ring:** Available on Request  
**Size Available:** 1 1/4" - 24" (Larger sizes upon Request)  
**Temperature:** -15°C +115°C



#### Construction

**Use:**  
 PTFE LINED Rubber expansion joints are designed to alleviate piping stress, absorb pipe misalignment, compression and extension, noise and vibration, in a relatively short space.



Temperature Correction Factor						
80 °C	85 °C	90 °C	95 °C	100 °C	105 °C	115 °C
x 1.0	x 0.92	x 0.83	x 0.75	x 0.67	x 0.60	x 0.45

#### Specifications

Part Number	Nom Bore (mm)	Length (mm)	Max. Working Pressure (kPa)	Movements				Vacuum (mmHg)
				Axial Compression (mm)	Axial Extension (mm)	Horizontal Displacement (mm)	Angular Deflection (Deg)	
				REJPTFE-32	32	95	1000	
REJPTFE-40	40	95	1000	10	6	9	15	600
REJPTFE-50	50	105	1000	10	7	10	15	600
REJPTFE-65	65	115	1000	13	7	11	15	600
REJPTFE-80	80	135	1000	15	8	12	15	600
REJPTFE-100	100	150	1000	19	10	13	15	600
REJPTFE-125	125	165	1000	19	12	13	15	225
REJPTFE-150	150	180	1000	20	12	14	15	225
REJPTFE-200	200	210	1000	25	16	22	15	150
REJPTFE-250	250	230	1000	25	16	22	15	150
REJPTFE-300	300	245	1000	25	16	22	15	150
REJPTFE-350	350	255	1000	25	16	22	15	150
REJPTFE-400	400	255	1000	25	16	22	15	100
REJPTFE-450	450	255	1000	25	16	22	15	100
REJPTFE-500	500	255	1000	25	16	22	15	100
REJPTFE-600	600	260	1000	25	16	22	15	100

Additional sizes and working pressures available, contact us for more information

#### Applications



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EXPANSION JOINTS

## Fabric Expansion Joints (FEJ)

### Fabric Expansion Joint - FEJ

**Part No.:** FEJ

**Construction:** Smoothbore

**Material:** PVC, Neoprene, Hypalon, Butyl, Silicone, Viton, PTFE, Polyester

**Cuff Styles:** Rectangular, Circular

**Size Available:** 4" to 80"

(Larger sizes upon Request)

**Temperature:** -45°C +1200°C

Low | Med | High

Flexibility

Cycle Life

Pressure Rating

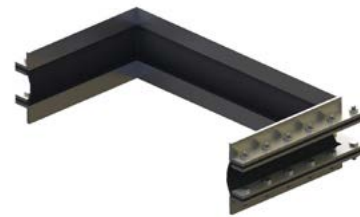
Chemical Resistance

Wall Thickness

### Construction

#### Use:

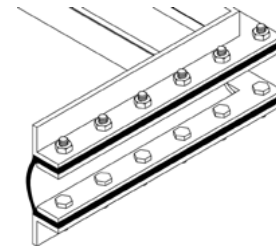
Non-metallic expansion joints are flexible connectors designed to provide stress relief in ducting systems by absorbing movement caused by thermal changes. They also act as vibration isolators, shock absorbers and in some instances to make up for minor misalignment of adjoining ducting or equipment. Non-metallic expansion joints solve problems caused by the thermal and mechanical stresses generated in these complex systems.



### Specifications

Fabric expansion joints are widely used for a large number of industrial applications including:

- Power Plants
- Boiler Systems
- Flue Gas
- Nitrogen Oxide Reduction
- Gas Turbines
- Nuclear Power Plants
- Incinerator Plants
- Cement Industry
- Filter Systems
- Ventilators
- Ventilation Systems
- Dust Extraction Systems
- Offshore Installations
- Chemical Industry



The implementation of fabric expansion joints provides a number of advantages, which are technically and economically important:

- Extremely flexible absorbing large movements
- Absorbing different movements simultaneously
- Only requiring a limited building length
- Lightweight
- Easy to handle, store, install, repair and replace
- Does not transmit noise or vibrations.
- Reducing the necessary strength of fix-points and supports
- Non corroding
- Dimensionally stable
- Cost effective

### Applications

