



HVAC

joining pots
low loss headers
air & dirt separators
metal expansion joints
rubber expansion joints



Elaflex

flanges
accessories
rubber expansion joints



Solutions

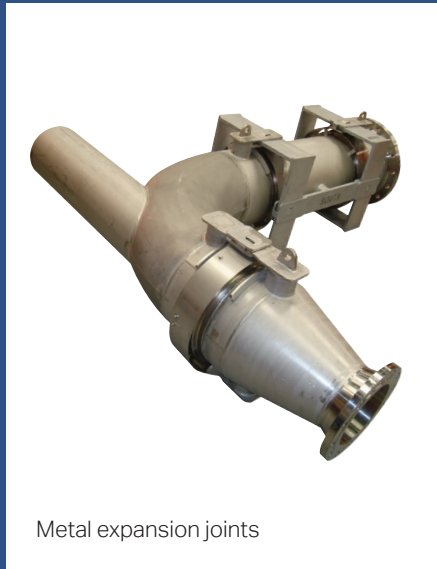
metal bellows
PTFE bellows
large rubber bellows
metal nose assemblies
manufacturing & design

Installation guide

HVAC
Elaflex
Solutions



Pressure vessels



Metal expansion joints



Rubber expansion joints

Other products designed and manufactured to order by FlexEJ

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Safety notes

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The following list of potential risks is not exhaustive; all those working with the equipment must take the necessary steps and advice to ensure safety:

- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

Resolve pipe misalignment and flange hole orientation before installation.

These expansion joints are untied and will exert a pressure force on the piping and equipment they are connected to.

Inspect the entire system to insure that anchors, guides and pipe supports are installed in strict accordance with piping system drawings.

Anchors must be designed for the test pressure thrust loads.

Expansion joints exert a force equal to the test pressure times the effective area of the bellows during hydro test. Hydrostatic test pressure should not exceed 1.5 times the rated working pressure unless the expansion joint was specifically designed for this test pressure.

Cleaning agents, soaps and solvents may contain chlorides, caustics, or sulfides and can cause stress corrosion which appears only after a bellows is put into service. Wire brushes, steel wool and other abrasives should not be used on the bellows element.

Some types of insulation leach chlorides when wet. Only chloride free insulation materials should be used for insulating an expansion joint.

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HVAC Metal Bellows

Installation: Copper Ended

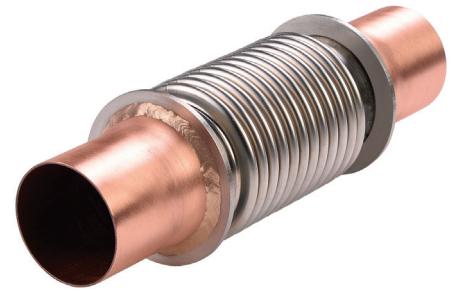
Take care when installing the bellow to ensure no torsion (end to end twist) is applied.

The unit is supplied at full length for axial compression only, no cold pull to be applied. The bellows can be installed in any flow direction.

These expansion joints require the pipe work to be suitably anchored and guided for correct operation.

Take care when soldering or brazing to ensure no soldering flux comes into contact with the bellow convolutions. Doing so could cause a corrosive chemical reaction and premature failure.

Do not use this bellows to correct for misalignment of piping.



Copper Ended

Installation: Union Ended

Take care when installing the bellow to ensure no torsion (end to end twist) is applied.

The unit is supplied at full length for axial compression only, no cold pull to be applied. The bellows can be installed in any flow direction.

These expansion joints require the pipe work to be suitably anchored and guided for correct operation.

Do not use this bellows to correct for misalignment of piping.



Union Ended

Installation: Flanged

Take care when installing the bellow to ensure no torsion (end to end twist) is applied. The bolt holes must be fully aligned with mating pipe work flanges at both ends so that torsion is not introduced.

The unit is supplied at nominal length for axial extension and compression, cold pull may be applied.

The flange bolts must not come into contact with the bellows convolutions when installed. Take care not to cause damage to the bellow convolutions when tightening the bolts.

The bellow is supplied with an internal flow liner so the expansion joint must be installed in the correct orientation for the direction of flow.

These expansion joints require the pipe work to be suitably anchored and guided for correct operation.

Do not use bellows to correct for misalignment of piping.



Flanged

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- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

General

Resolve pipe misalignment and flange hole orientation before installation.

Union end and untied expansion joints will exert a pressure force on the piping and equipment they are connected to.

Inspect the entire system to insure that anchors, guides and pipe supports are installed in strict accordance with piping system drawings.

Anchors must be designed for the test pressure thrust loads.

Expansion joints exert a force equal to the test pressure times the effective area of the bellows during hydro test. Hydrostatic test pressure should not exceed 1.5 times the rated working pressure unless the expansion joint was specifically designed for this test pressure.

Care in operation

Do not paint rubber bellows. The paint will attack the rubber. (This also applies to paint splatter).

Protect the rubber from weld spatter. When welding, always ensure that the bellows is bridged using a continuity strap.

Do not lag rubber bellows on heating systems. The increased temperature will reduce the life of the bellows.

Once the system is filled but not under pressure, check that the tie bars, if fitted, are still tight. Re-tighten the bars if slack. Note: tie bars should never be slackened off to reduce noise or vibration transmission, major damage to equipment may occur.

Most bellows use an EPDM inner liner. EPDM is a proven material in heating and chilled water systems. It is resistant to glycol and to most chemicals used in water treatment, when used in normal concentrations. As suppliers of water treatment chemicals are reluctant to give information about their formulations, we cannot approve any specific chemical or additive.

Always check with the chemical supplier that the additives are suitable for use with EPDM rubber or any other rubber quality supplied (Butyl, Perbunan). For other mediums check with FlexEJ for compatibility.

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Installation: Union End Bellows

Prior to installation, check that you have the right bellows for the particular duty. Rubber bellows have temperature and pressure limitations. Maximum allowable pressures need to be derated at temperatures above 50°C. See FlexEJ data sheets for allowable pressures and temperatures.

All rubber bellows will extend under pressure. These pressure thrust forces can be very substantial at pressures above 2 bar and 65mm N.B. size. Unless the pipe work can be sufficiently anchored a flanged tied bellows should be fitted.

Check the vacuum rating of the product when bellows are fitted to suction side of pumps and where vacuum conditions could occur.

Take care when installing the bellow to ensure no torsion (end to end twist) is applied.

These expansion joints require the pipe work to be suitably anchored and guided for correct operation.

These expansion joints are untied and will exert a pressure force on the piping and equipment they are connected to.

Installation: Flanged Bellows

Prior to installation, check that you have the right bellows for the particular duty. Rubber bellows have temperature and pressure limitations. Maximum allowable pressures need to be derated at temperatures above 50°C. See FlexEJ data sheets for allowable pressures and temperatures.

All rubber bellows will extend under pressure. These pressure thrust forces can be very substantial at pressures above 2 bar and 65mm N.B. size. Unless the pipe work can be sufficiently anchored a tied bellows should be fitted (see Fig.2). Vacuum support rings may be required when bellows are fitted to suction side of pumps and where vacuum conditions could occur.

We recommend that the rubber bellows are mated up against full-bore weld neck flanges (see Fig.3). If installed in this manner no additional gaskets are required. We advise against using slip on or screwed flanges as mating flanges as these can damage the rubber bellows. Once the sealing face has been damaged medium will penetrate the reinforcement layers and destroy the integrity of the bellows.

If it is unavoidable to use this type of mating flange, a gasket must be used (this should be a hard gasket such as Klingerite and be at least 3mm thick. The gasket should reach the internal bore of the rubber bellows see fig.4). Another option is to fill the gap of the slip on flange with weld and grind it flush (see Fig.5).

Check that the two mating flanges are parallel and that they are in line (maximum allowed offset is 5mm in any direction). The gap between flanges should be within +/- 5mm of the bellows neutral length (see Fig.6). Ensure that the pipework is adequately supported. The bellows must not support pipes or plant.

Note: 106mm long expansion joints have threaded bolt holes in the flange.

HVAC Rubber Bellows

Typical bolt torques

Nominal bore	Torque setting Nm
<=80	60 (max)
>80	80 (max)

Bolts should be inserted from the bellows side (see Fig.3). On some larger sizes this may not be possible. In that case a bolt of the exact length needs to be selected. An alternative is to use studding cut to length and fitted with a nut at both sides (see Fig.7).

This is important as the bellows will increase in diameter under pressure. Even if there is space between the bolt and the bellows in an unpressurised state, they may foul when pressurised. Bolts of the right diameter must be used to ensure correct alignment.

Take care when inserting the bellows into the gap between the two mating flanges. Sharp edges can damage the sealing face of the rubber bellows. Before tightening the bolts, ensure that the bellows sits evenly in its flange groove and does not get pinched between flanges. The sealing face of the bellows must be concentric with the sealing face of the mating flanges.

Great care has to be taken with the tightening of the flange bolts. Remember that you are tightening against a rubber face and as with gaskets, over tightening will cause the joints to leak and it will damage the bellows. Tighter is definitely not better!

Tighten opposite bolts to get an even pressure all round (check the gap between the flanges). Use a torque wrench to tighten the bolts, in increments, initially to around two thirds of the maximum values listed in the table. Torque the nuts and not the bolts.

The rubber will take on a set and the bolts will need to be checked and retightened after 24 hours. The values given in the table are for new bellows only. The maximum torque settings should not be exceeded, values are without pressure in the system.

Once the bellows is fitted, ensure that the tie bars are tight. If necessary, adjust nuts at either end. All tie bars should be at equal length. When three or more tie bars are fitted it may be necessary to remove one tie bar to install the bellows. Ensure that washers are re-assembled in the right order and orientation. A lock nut must be re-fitted.

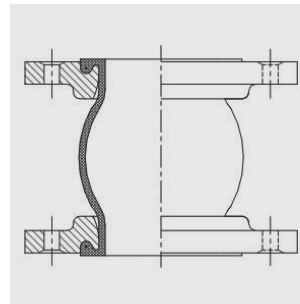


Fig 1: Untied Bellows

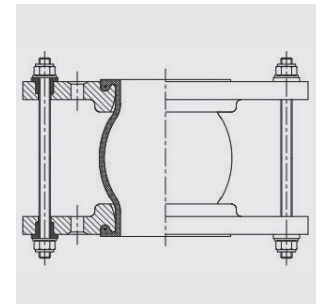


Fig 2: Tied Bellows

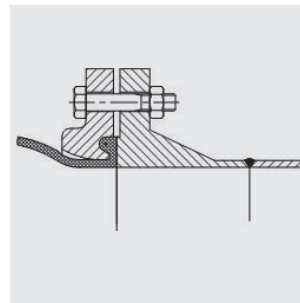


Fig 3: Full bore weld neck flanges

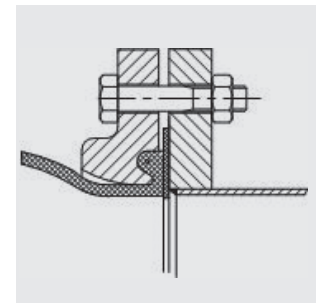


Fig 4: Slip on mating flanges

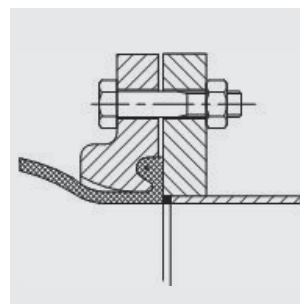


Fig 5: Gap filled with weld then ground flush

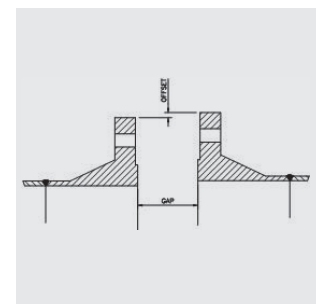


Fig 6: Offset

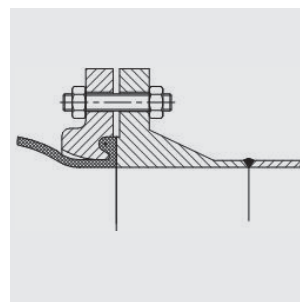


Fig 7: Use of studding

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HVAC Air / Dirt Separators

Safety notes

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- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

Pre-installation check

Check the system rating does not exceed the rating of the product to be fitted – 10 Barg and 110°C.

The product is flanged PN16.

These products are generally fitted in header piping typically (for heating system) Air Separator – boiler flow lines, Dirt Separator – boiler return lines.

The best location for the product must be determined by the installer given the local conditions and system arrangement.

Installation

Install with the body vertical and the brass automatic air vent valve at the top. Flow in either direction.

Mating flanges should always be parallel with the bolt holes aligned off centre. Check flange alignment before installation. Use a proprietary gasket between flanges.

Air Separators are essentially maintenance free but good access to the automatic vent valve is recommended.

Dirt Separators require maintenance access to the drain valve for the periodic removal of sludge. The installer must ensure the access and collection arrangements are adequate – piping away from the drain valve is also recommended as a safety precaution.

Operation

No special commissioning is required.

There is a plugged air vent on Dirt Separators which may be loosened during first fill to vent the unit.

The AAV on the Air Separators should cater for venting when first filled.



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HVAC Air & Dirt Separators

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- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

Pre-installation check

Check the system rating does not exceed the rating of the product to be fitted – 10 Barg and 110°C.

The product is flanged PN16.

These products are generally fitted in header piping typically (for heating system) Air & Dirt Separator – boiler flow lines.

The best location for the product must be determined by the installer given the local conditions and system arrangement.

Installation

Install with the body vertical and the brass automatic air vent valve at the top. Flow in either direction.

Mating flanges should always be parallel with the bolt holes aligned off centre. Check flange alignment before installation. Use a proprietary gasket between flanges.

Air and Dirt Air Separators require maintenance access to the drain valve for the periodic removal of sludge. The installer must ensure the access and collection arrangements are adequate – piping away from the drain valve is recommended as a safety precaution. Good access to the automatic vent valve is also recommended.

Operation

No special commissioning is required.

The AAV on the Air & Dirt Separators should cater for venting when first filled.



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HVAC Low Loss Headers / Hydraulic Separators – High Power

Safety notes

Safe installation, operation and maintenance procedures must be established for this equipment based on the procedures of the site and environment in which it operates. These procedures must be in place before installation, operation and maintenance occurs.

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- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

Pre-installation check

Check the system rating does not exceed the rating of the product to be fitted – 10 Barg and 110°C.

The product is flanged PN16.

These products are generally fitted in header piping between the boiler and system.

The best location for the product must be determined by the installer given the local conditions and system arrangement.

Installation

Install with the body vertical and the brass automatic air vent valve at the top. Typically connect primary/secondary flow to the top pair of flanges and primary/secondary return to the lower pair of flanges.

Mating flanges should always be parallel with the bolt holes aligned off centre. Check flange alignment before installation. Use a proprietary gasket between flanges.

Low Loss Headers are essentially maintenance free but good access to the automatic vent valve is recommended.

Access is required to the drain valve for the periodic removal of sludge. The installer must ensure the access and collection arrangements are adequate – piping away from the drain valve is also recommended as a safety precaution.

Operation

No special commissioning is required.

The AAV on the Low Loss Headers should cater for venting when first filled.



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HVAC Low Loss Headers / Hydraulic Separators – Low Power

Safety notes

Safe installation, operation and maintenance procedures must be established for this equipment based on the procedures of the site and environment in which it operates. These procedures must be in place before installation, operation and maintenance occurs.

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- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

Pre-installation check

Check the system rating does not exceed the rating of the product to be fitted – 6 Barg and 110°C.

The product system connections are

- DN32-DN50 BSPT male thread
- DN65 flanged PN06

These products are generally fitted in header piping between the boiler and system.

The best location for the product must be determined by the installer given the local conditions and system arrangement.

Installation

The installer may wish to add an AAV and drain valve to the Low Loss Header before installation. To do this remove the blanking plugs and fit a suitable valve.

A brass thermocouple pocket and clip is provided fitted in a ½" socket.

Install with the body vertical – vent plug or AAV at the top. Typically connect primary/secondary flow to the top pair of flanges and primary/secondary return to the lower pair of flanges.

Mating flanges should always be parallel with the bolt holes aligned off centre. Check flange alignment before installation. Use a proprietary gasket between flanges.

Low Loss Headers are essentially maintenance free but good access to the vent is recommended.

Access is required to the drain valve for the periodic removal of sludge. The installer must ensure the access and collection arrangements are adequate – piping away from the drain valve is also recommended as a safety precaution.

Operation

No special commissioning is required.

Loosen the vent plug to remove air upon first fill. If an AAV has been fitted on the Low Loss Header it should cater for venting when first filled.



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HVAC Dosing Pots

Safety notes

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Dosing pot components

- 1 Tundish
- 2 Filling valve
- 3 Non return valve
- 4 Return flow valve
- 5 Air release valve
- 6 Wall brackets
- 7 Steel pipe body
- 8 Flow valve
- 9 Drainage valve

Pre-installation check

Check the system rating does not exceed the rating of the product to be fitted – 10 Barg and 110°C.

The product is supplied with DN25 BSP PN 40 valves for connections.

These products are generally connected to main header piping.

The best location for the product must be determined by the installer given the local conditions and system arrangement.

Installation

Mount the chemical dosing pot securely in place using the brackets attached to the back of the steel body.

Pipe up to each connection. The installer must ensure the access and collection arrangements are adequate – piping away from the drain valve is recommended as a safety precaution.

After long term use the valves may wear. They should be inspected periodically and if necessary replaced. The Dosing Pot itself should also be checked periodically for corrosion and other wear. A 1mm corrosion allowance has been incorporated into the design. If corrosion is found to be greater than 1mm the pot should be removed and replaced.

PPE appropriate for the working temperature and chemicals being used must be worn. Hazard warnings should be fitted at the installation location and be visible to the operator in order to prevent the operator from causing harm to themselves or others.

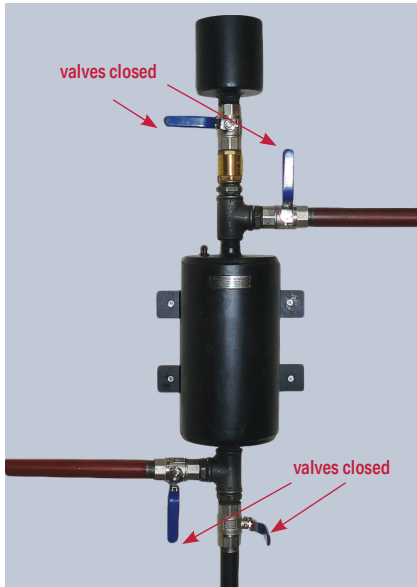


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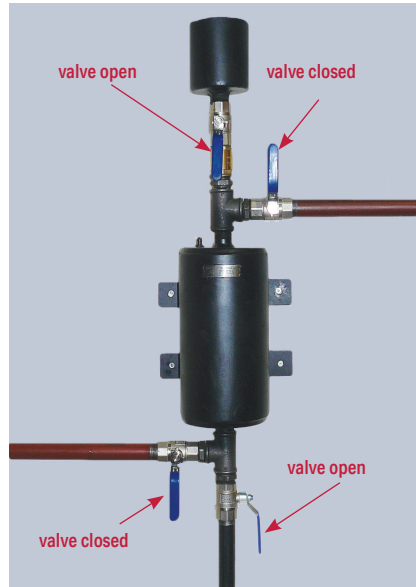
HVAC Dosing Pots

Operation



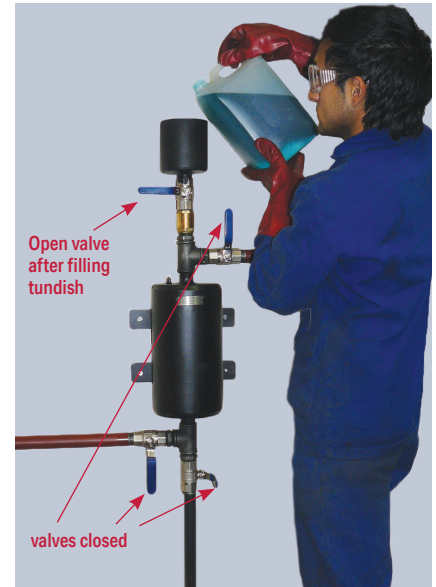
Step 1: Isolate pot

- Close all valves



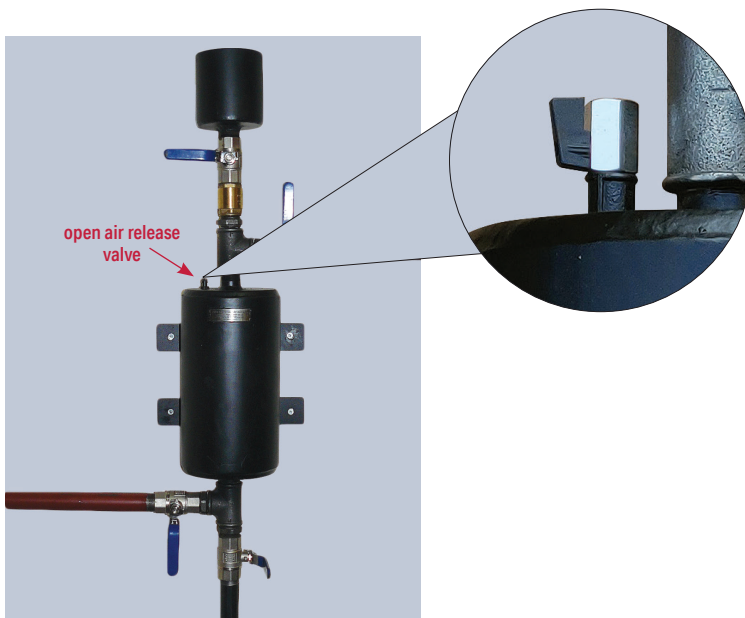
Step 2: Drain pot

- Ensure drain is piped away to safe disposal
- Open filling and drain valves



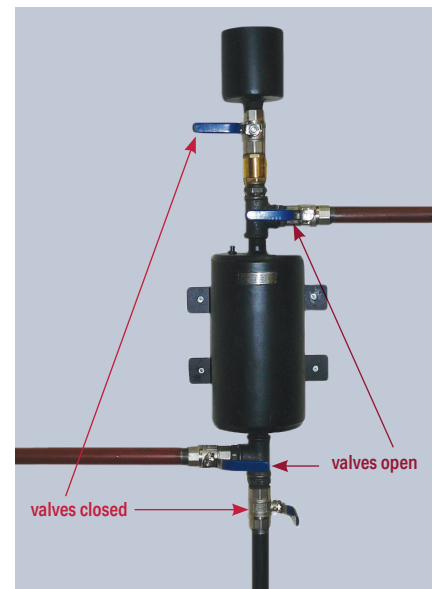
Step 3: Fill pot

- Close drain valve
- Pour chemical into tundish
- Open filling valve



Step 4: Release air

- Open air release valve until liquid appears



Step 5: Inject chemicals

- Close filling and drain valves
- Open flow and return valves

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Elaflex Rubber Bellows

Safety notes

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General

Elaflex rubber expansion joints are delivered ready for installation. The swivelling flanges can be fitted in any desired position. The use of the correct mating flanges is important as the rubber face of the bellows can be easily damaged. Gaskets are not required if the sealing surface of the mating flanges of the pipework are of the same size. Gaskets should be only used in order to prevent damage to the rubber sealing surface, for example if the mating flanges either have a larger internal diameter, sharp edges or irregularities eg. welding beads.

Check the rating of the bellows before installation, note the pressure rating decreases with increasing temperature, full details are given in our catalogue. For the allowable range of movement please see the type specific data sheets.

Restraint

Untied expansion joints will exert a pressure force on the piping and equipment they are connected to. Inspect the entire system to insure that anchors, guides and pipe supports are installed in strict accordance with piping system drawings. Anchors must be designed for the test pressure thrust loads. Expansion joints exert a force equal to the test pressure times the effective area of the bellows during hydro test. Hydrostatic test pressure should not exceed 1.5 times the rated working pressure unless the expansion joint was specifically designed for this test pressure.

Installation

- 1 Prior to the installation of the expansion joint ensure that the mating flanges have satisfactory sealing surfaces. Protruding pipe ends, grooves and tongues are not permitted as the sealing surface of the bellows might be destroyed.

Attention: When using slip-on flanges the outside diameter must be larger than the sealing surface of the expansion joint.

- 2 Pay attention to the correct installation length: The pulling of expansion joints into installation gaps which are too large will lengthen the rubber bellow and might lead to the collar being drawn out of the flange groove (see diagram). During the subsequent tightening of the screws the collar of the bellows would be crushed asymmetrically.

Please note: A considerable lengthening during installation decreases the allowable range of movement during operation. To shorten installation gaps, distance flanges are available.

- 3 If possible install the expansion joints in such way that the date of production is visible.
- 4 Bolts should be inserted from the expansion joint side. If this is not feasible, it must be assured that the bellows may not touch the bolts in all operating conditions.

- 5 We recommend using bolts of property class 8.8. The bolts have to be fastened crosswise in three uniform steps.

When using a torque wrench:

Step 1: Tighten bolts equally by hand (pay attention to parallel sealing surfaces!).

Step 2: Fasten crosswise with torque 50 Nm

Step 3: Fasten crosswise

Do not use any sharp-edged tools which might damage the rubber bellow in case the tool slips.

- 6 If no torque wrench can be used during installation, the bolts may only be tightened to an extent that a distance of at least 1mm remains between the metal flanges (see diagram).

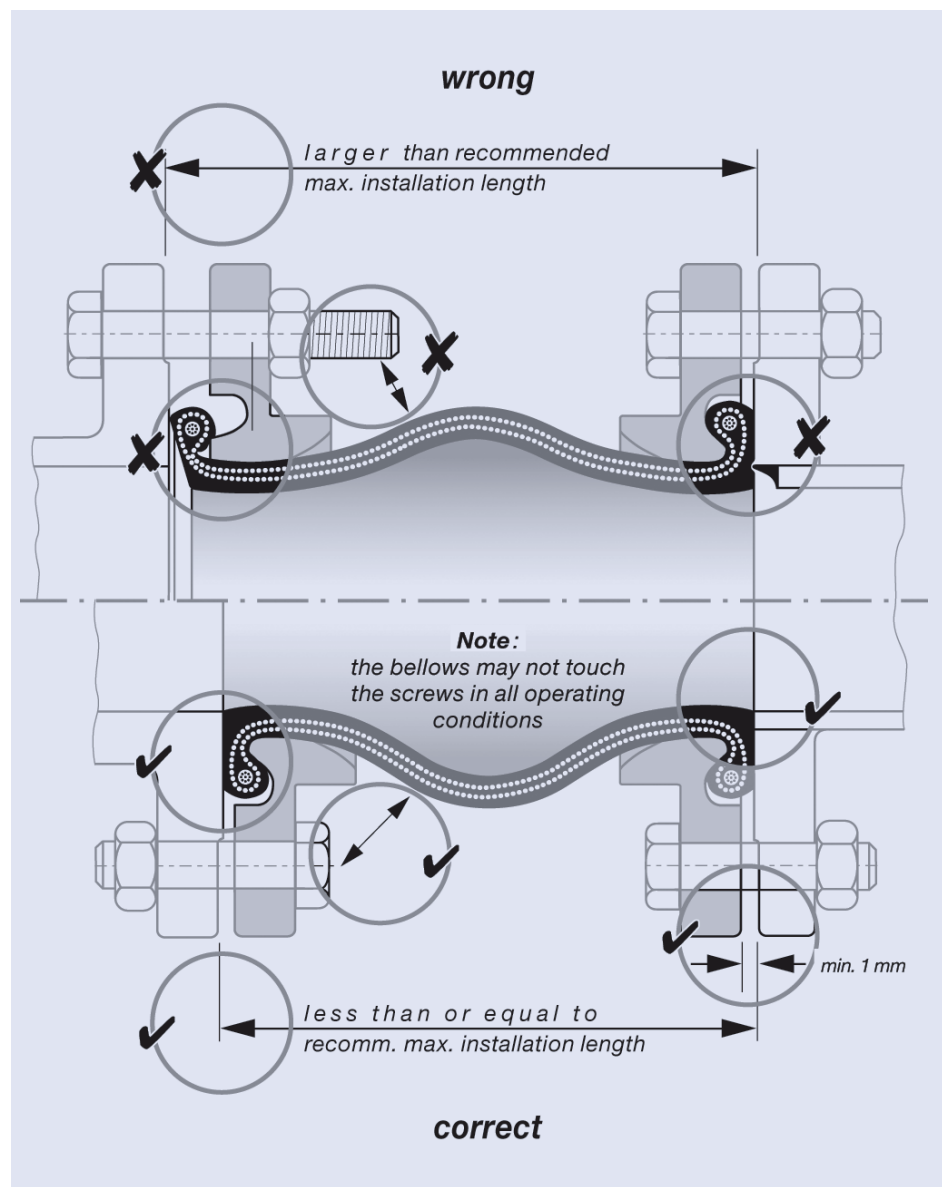
Diameter	approx torque
up to DN 80	max. 80 Nm
up to DN 300	max. 100 Nm
up to DN 500	max. 130 Nm
DN 700	250 Nm
DN 800	300 Nm
DN 900	310 Nm
DN 1000	340 Nm

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Elaflex Rubber Bellows

- 7 The test pressure of a bellow or flange is $1.5 \times PN$. This value depends on which component is weaker.
- 8 The rubber bellow of the expansion joint must not be painted! Solvents can damage the rubber cover, furthermore the colour coat impedes a proper visual inspection.
- 9 When welding and cutting, the rubber bellow must be protected against heat by all means. For electric welding it must be insured that the electric current does not pass through the bellows.
- 10 Permanent radiation heat above 90°C must be avoided. If necessary flame protection covers should be used.
- 11 Rubber expansion joints are subject to wear and must be included to routine inspection of the pipe system (visual inspection of the expansion joint regarding damages as well as inspection for hardening by pushing in with a thumb).



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Industrial Metal Expansion Joints

Safety notes

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Prior to starting any procedure check health and safety requirements with the person responsible for the area and ensure all required precautions, PPE and permissions are in place.

The following list of potential risks is not exhaustive; all those working with the equipment must take the necessary steps and advice to ensure safety:

- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

General precautions

Cleaning agents, soaps and solvents may contain chlorides, caustics, or sulfides and can cause stress corrosion which appears only after a bellows is put into service.

Wire brushes, steel wool and other abrasives should not be used on the bellows element.

Hydrostatic test pressure should not exceed 1.5 times the rated working pressure unless the expansion joint was specifically designed for this test pressure.

Some types of insulation leach chlorides when wet. Only chloride free insulation materials should be used for insulating an expansion joint.

Piping system

The piping system must be adequately assessed and the appropriate guides and anchors installed.

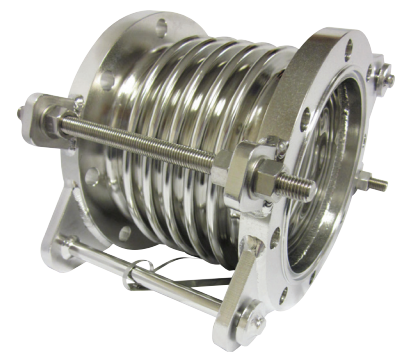
The expansion joint works as a part of the overall system and will only provide the expected performance if the system is correctly installed as a whole.

Unrestrained expansion joints will exert a pressure force on the piping and equipment they are connected to. This force can be very large and could cause extensive damage and pose serious safety risks if not considered in the design and installation.

Restrained expansion joints will be supplied with tie rods, hinges or gimbals – these items must be left in place on the expansion joint in operation.



Unrestrained Axial



Restrained – Tied



Restrained – Hinged

Product by FlexEJ Ltd

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Industrial Metal Expansion Joints

Pre-installation checks and precautions

FlexEJ Expansion Joints are fully inspected at the factory and are packaged to arrive at the job site in good condition. Please, immediately upon receipt at the job site, verify that there is no freight damage: ie. dents, broken hardware, loose shipping bars, etc.

Because the bellows expansion joint is required to absorb thermal and/or mechanical movements, the bellows element must be constructed of a relatively thin material. This requires special installation precautions. The following steps should be taken prior to installation of the expansion joint into the pipeline or duct.

The opening into which the expansion joint will be installed should be examined to verify that the opening for which the expansion joint was designed does not exceed the installation tolerances designated by the designer and/or purchaser. If the opening exceeds the tolerance, notify FlexEJ at once for a disposition.

The attachment edges of the pipe or duct should be smooth, clean, and parallel to each other.

The area around the expansion joint should be cleared of any sharp objects or protrusions. If not removable, they should be noted so they can be avoided.

Expansion joints provided with lifting lugs should be lifted only by the designated lifting lugs. **Shipping bars (painted yellow) are not designed to be lifting devices. Never use a chain or any other handling devices directly on the bellows element or bellows cover.** For expansion joints not provided with lifting lugs (typically less than 200 Kgs) the best lifting method should be evaluated at the time of installation.

The shipping bars are installed on an expansion joint to maintain shipping length and give the expansion joint stability during transit and installation. **Do not remove the shipping bars until the installation is complete.**

Do not use bellows to correct for misalignment of piping unless this has been considered in the design of the expansion joint.

Anchors must be designed for the test pressure thrust loads.

Check orientation

Hinged expansion joints must be installed in the correct axial rotation so that the expansion joint can move in the intended direction. Hinges will only allow movement in one plane.

Tied universal lateral expansion joints can be rotated to position the tie bars to best suit local installation clearances.

Installation

When installing an expansion joint the following precautions must be taken:

Remove any protective covering from the ends of expansion joint. Plywood covers may have been used to protect flanges or weld ends. Check inside expansion joint for desiccant bags or any other material.

When a flow liner is installed in the expansion joint, orientate the expansion joint with **flow arrow pointing in direction of flow.**

When using lifting lugs, lift the joint to desired location and position into pipeline or ducting.

Weld End Expansion Joints

Prior to welding cover the bellows element with a chloride free fire retardant cloth. This is to prevent arc strikes, weld splatter, etc. from damaging the bellows element.

Using the proper electrode, weld the expansion joint to adjacent piping.

Flanged End Expansion Joints

Orientate expansion joint flanges so that the bolt holes are aligned with the mating flanges. **Do not force the expansion joint to match the bolt holes of the mating flange.** This causes torsion on the bellows and will severely reduce the bellows capability during operation and may cause premature failure of the expansion joint. It is good practice to leave one pipe flange loose until the expansion joint is installed or to purchase an expansion joint with a flange that will rotate.

Install gaskets and bolt to the required torque recommended by the flange manufacturer.

After installation but prior to the hydro test

Inspect entire system to insure that anchors, guides and pipe supports are installed in strict accordance with piping system drawings.

Expansion joints exert a force equal to the test pressure times the effective area of the bellows during hydro test. Pressure thrust at design pressure may be found on the individual drawings. Refer to EJMA Safety Recommendations.

If the system media is gaseous, check to determine if the piping and/or the expansion joint may require additional temporary supports due to the weight of water during testing.

Remove shipping bars (painted yellow) prior to hydrotesting. Shipping bars are not designed for hydrostatic pressure thrust loads.

Hydrostatically test pipeline and expansion joint. **Only chloride free water should be used for hydrotest** (published reports indicate chloride attack as low as 3 PPM). Water should not be left standing in the bellows.

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Industrial Metal Hose Assemblies

Safety notes

Safe installation, operation and maintenance procedures must be established for this equipment based on the procedures of the site and environment in which it operates. These procedures must be in place before installation, operation and maintenance occurs.

Prior to starting any procedure check health and safety requirements with the person responsible for the area and ensure all required precautions, PPE and permissions are in place.

The following list of potential risks is not exhaustive; all those working with the equipment must take the necessary steps and advice to ensure safety:

- Pressurised equipment
- Hazardous fluids
- High temperatures
- Unrestrained piping and equipment
- Handling and lifting

Hose construction

Metal hoses assemblies are normally supplied with an outer braid. The braid is to restrain the pressure force and as such is an integral part of the pressure system.

The braid is not for mechanical protection of the hose.

Hose assemblies are designed to meet defined operating conditions. You must ensure these conditions are met in the specific installation.

Prior to placing a metallic flexible hose assembly in to service, as a minimum, consideration should be given to ensuring the flexible hose assembly will meet all aspects of the application, in respect of pressure, temperature, materials compatible with intended service, bend radius requirement, flow velocity, end fitting specification and end fitting attachment method.

Installation

Do not torque: Flexible metal hose assemblies must never be subjected to torque or twisting during installation and application.

- To avoid this condition during installation use as a minimum a swivel end fitting at one end of the flexible hose. The fixed end should always be connected first.
- For movement applications always install the flexible hose assembly so the movement occurs in one plane only, and in the plane of bending.

Axial movement: Flexible corrugated hose assemblies are not designed for in-line axial movement and should not be subjected to compression or extension during application service.

Abrasion/rubbing: Do not allow flexible corrugated hose assemblies to rub on other objects or equipment. This can be particularly damaging if the hose assembly is installed on a flexing application or being used for vibration movement. Premature and catastrophic failure can occur especially if the pressure restraining braid is damaged and weakened.

Corrosion: Correct selection of materials is important when considering flexible corrugated hose assemblies for transferring chemicals or if used in a chemical/marine environment.

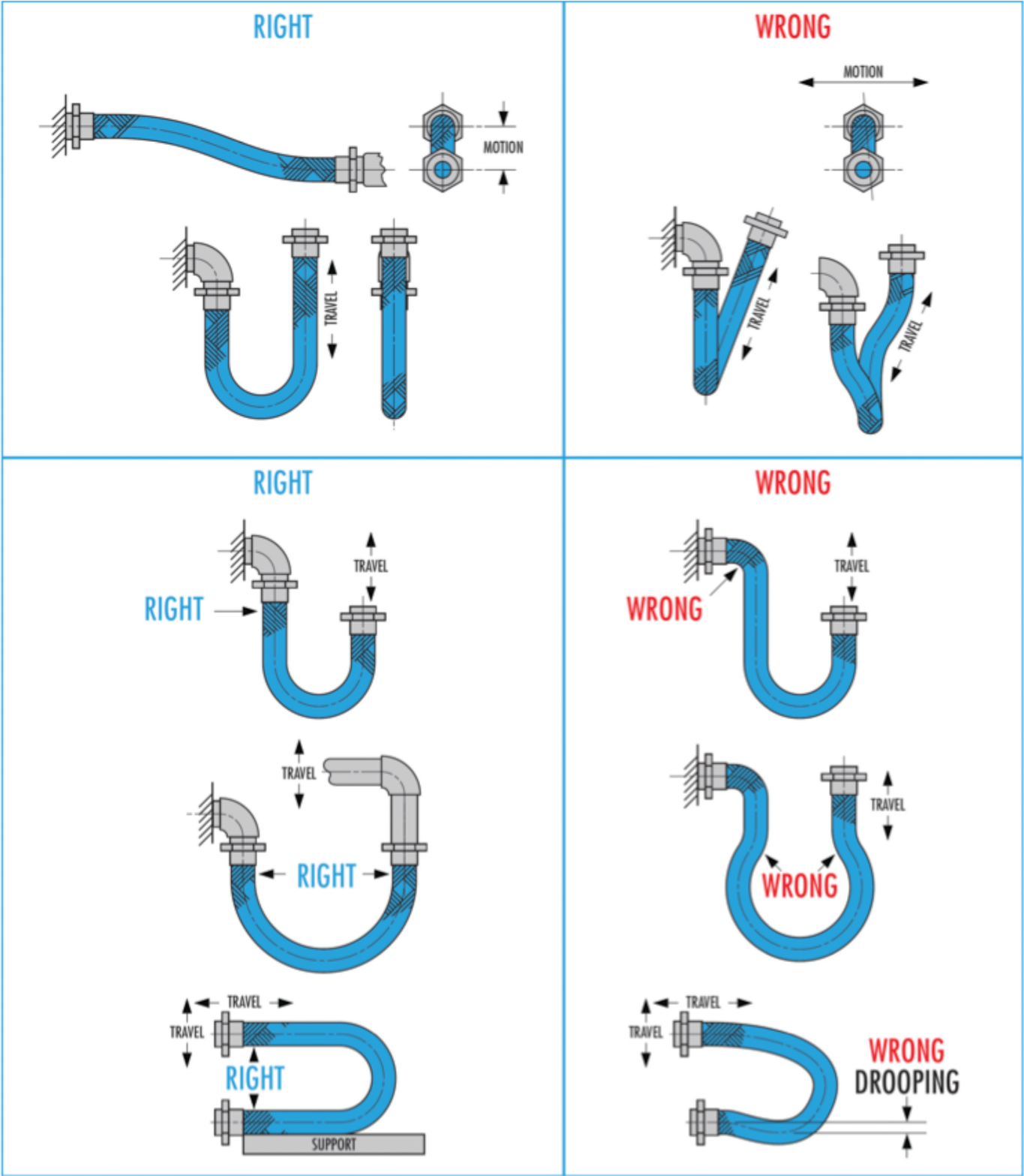
Failure to apply these rules will result in premature failure.



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Industrial Metal Hose Assemblies



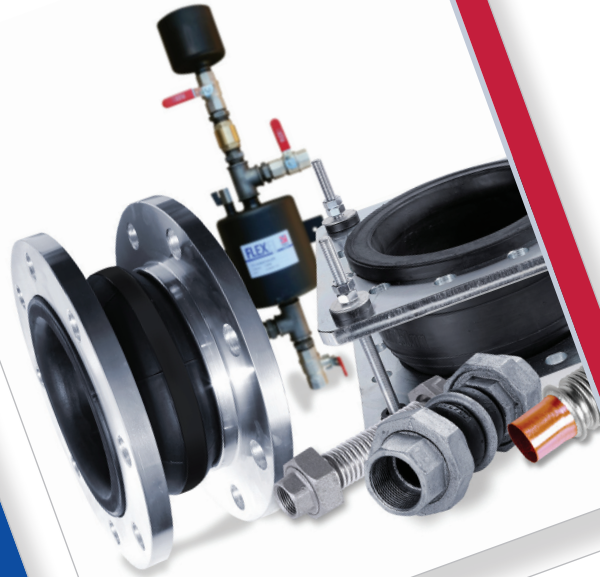
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