

Installation Instructions Expansion Joints – Pump Expansion Joints

General safety recommendations

Prior to installation and start-up, installation and start-up instructions must be read and observed. Installation, start-up and maintenance work shall only be performed by **qualified and authorised staff**.

Maintenance

Expansion joints are maintenance free. Prior to disassembly and maintenance, the system must be depressurised, cooled down, emptied. Otherwise there is a risk of an accident!

Transport, packaging and storage

- The consignment must be checked for completeness upon receipt.
- Any transport damage must be reported to the carrier and the manufacturer.
- At an intermediate storage we recommend to use the original packaging.

Admissible ambient conditions for storage and transport are ambient temperature - 4°C to +70 °C

Expansion joints must be protected against wetness, humidity, dirt, shocks and damage.

Warranty

A warranty claim requires professional installation and start-up in accordance with installation and start-up instructions. The necessary installation, start-up and maintenance work must be performed by qualified and authorised staff.

Operating pressure

- The permissible operating pressure results in the nominal pressure considering the reduction factors.
- At higher temperatures, the expansion capacity has to be reduced according to the reduction factors.

Start-up and check

Before starting-up check if

- The pipeline is installed with sufficient inclination to avoid water pockets
- There is sufficient drainage
- Pipe anchors and pipe supports/ guides are firmly installed prior to filling and pressure testing the system
- The expansion joint is not stressed by torsion, especially not expansion joints with socket attachment
- The flow direction has been observed for expansion joints with inner sleeves
- The steel bellows is free of dirt, welding, plaster or mortar splatters or any other soiling; clean if necessary
- The general due diligence requirements to avoid corrosion damage are observed, such as water treatment, or prevention of galvanic corrosion in copper and galvanized pipes.

Insulation

Expansion joints may be insulated exactly as the pipeline.

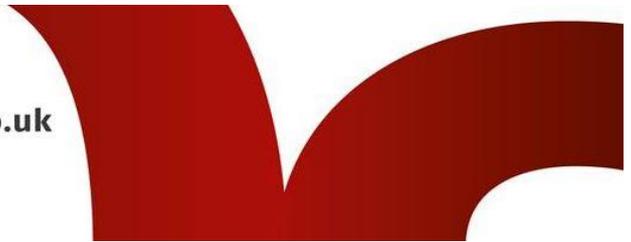
- If no coating is provided, protect the bellows to avoid insulation material dropping into the convolutions.
- If the expansion joint is to be placed under plaster, a protective cover is essential. This ensures the bellows function, protects against soiling and avoids contact with structure materials.

Improper operation

- The limits given in the technical data of the standard range must not be exceeded.
- Swinging suspensions adjacent to expansion joints are not permitted.
- Do not clean the newly installed pipeline by blowing it with steam to avoid water hammers and unacceptable vibration stimulating of the bellows.

System start-up

- During pressure testing and operation, the allowable test or operating pressure for the expansion joint mustn't be exceeded.
- Excessive pressure peaks as a consequence of valves closing too abruptly, water hammers etc. are not permitted.
- Avoid contact with aggressive media.
- The start-up of steam lines must be performed such that the condensate has time to drain off.



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Pump Expansion Joints

Pump expansion joints are intended to compensate for anti-vibration movements next to pumps:

- The expansion joint should be installed as close as possible to the vibrating unit to make use of its entire absorption capacity.
- The vibration absorber must be installed as close as possible to the vibration source so as to avoid resonance of the other parts.
- Primarily it must be ensured that the vibration amplitude acts laterally, i.e. perpendicular to the vibration absorber axis.
- Install an anchor directly behind the expansion joint. Installation is made without pre-restraint.

CAUTION

If unrestrained vibration absorbers are installed, the reaction force must be taken into account.

Prerequisite for the application of pump expansion bellows is the presence of appropriate anchor points. The technical data given on the rating plate are decisive for use.

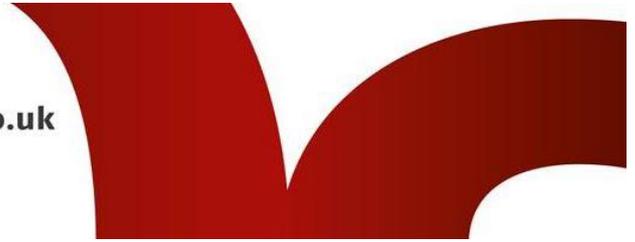
On site the general due diligence requirements to avoid corrosion damage must be observed, such as water treatment, or prevention of galvanic corrosion in copper and galvanized pipes.

Installation advice

Assembly

- Anchor points and pipe guides must be firmly installed before filling and pressure testing the system.
- Expansion joints must be installed without being subject to torsion.
- The steel bellows must be protected against damage and dirt (e.g. welding, plaster or mortar splatter).
- Steam pipelines should be installed in such a way that water hammers are avoided. This can be achieved by adequate drainage, insulation, by preventing water pockets and by sufficient inclination of the line.
- Observe the flow direction while installing expansion joints with inner sleeves.
- Avoid the installation of expansion joints in the immediate vicinity of pressure reducers, hot steam coolers and shut-down valves, if high frequency oscillations are expected due to turbulence. Otherwise special measures must be installed (e.g. thick-walled sleeves, perforated disks, calming sections etc.).
- If high frequency vibrations or turbulence or high flow speed are expected, we recommend the installation of expansion joints with inner sleeve.
- Inner sleeves are also recommended for expansion joints with $DN \geq 150$, if the flow speed of air, gas or steam media exceeds 8 m/s, or 3 m/s in case of liquid media.





Pipe guides, pipe supports

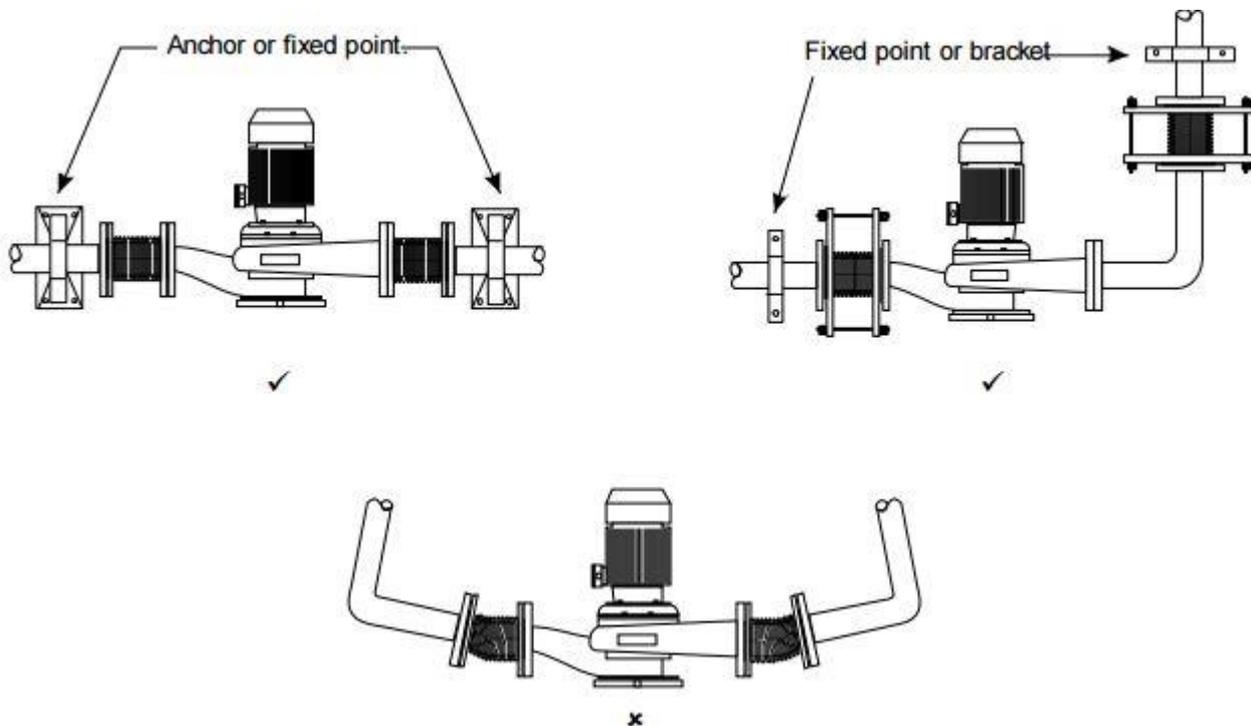
- Provide inclination for drainage
- Align the pipeline, distance between pipe guides

NOTE - Sliding or roller supports are the safest measures to avoid buckling and lifting of the pipeline.

CAUTION - Swing suspensions are not permitted adjacent to expansion joints!

Anchor points

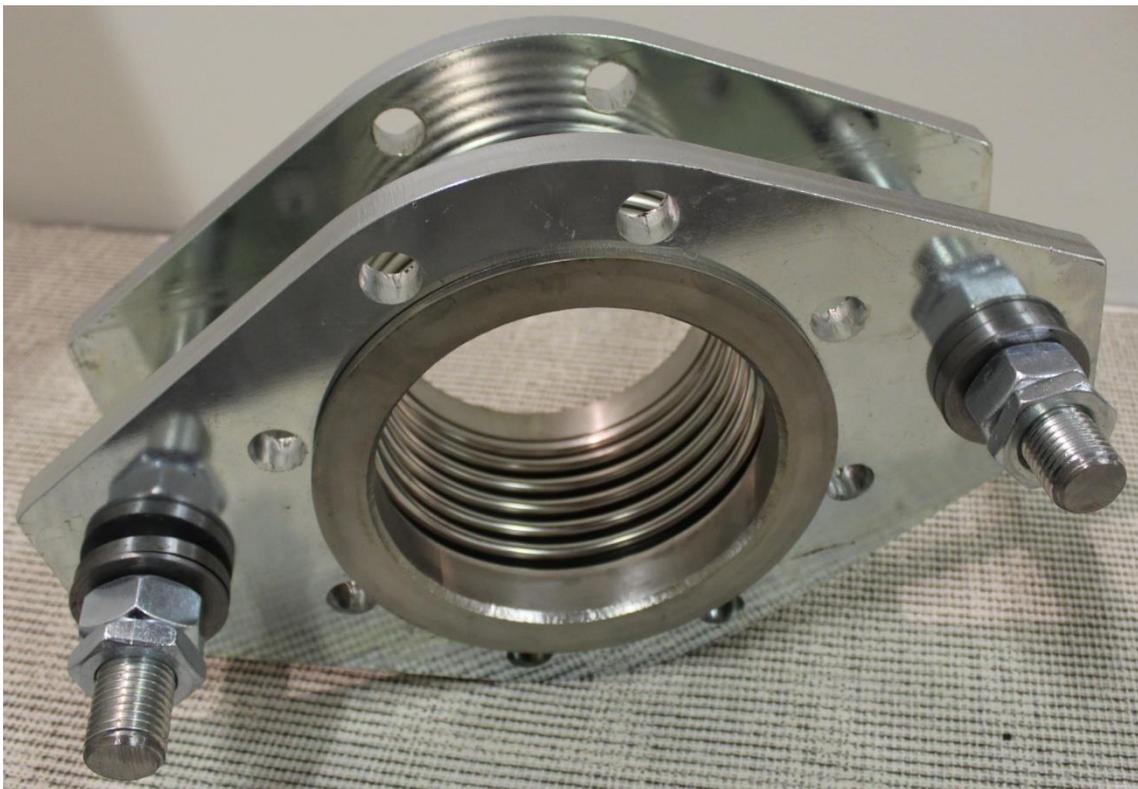
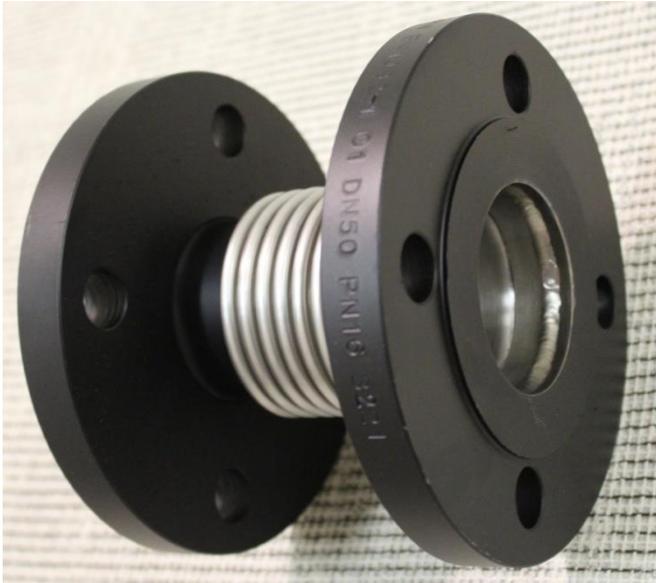
Stainless steel flanged pump connectors must be anchored to ensure their correct performance.



Stainless steel flanged pump connectors will exert a pressure thrust in service and must be anchored to protect adjacent pipework and equipment. Stainless steel flanged pump connectors will extend under pressure and must be anchored to prevent this happening.

Installation of an expansion joint with flanges

- Align pipe axes and flange bolt holes.
- Ensure flanges are parallel
- Ensure gaskets are centred
- Tighten bolts crosswise.
- Make sure the expansion joint is not exposed to torsion during installation.
- After installation, check if the bellows convolutions are free of dirt.



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