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

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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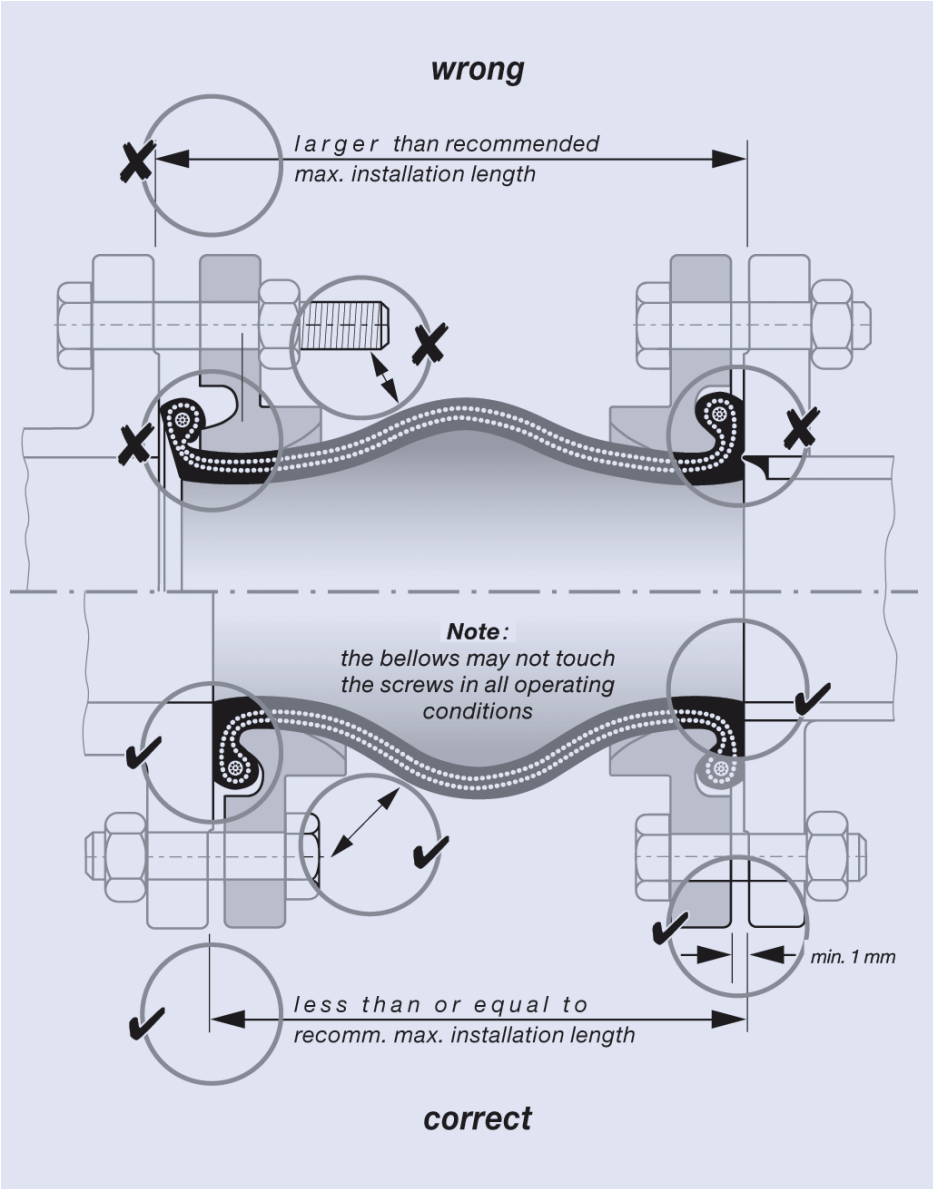
7 The test pressure of a bellow or flange is 1.5 x PN. This value depends on which component is weaker.

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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