

INSTALLATION INSTRUCTION FOR RUBBER JOINTS

READ THIS INSTALLATION INSTRUCTION BEFORE INSTALLING THE PRODUCT



If there is any doubt, don't hesitate to check our data sheets or consult us, www.amnitec.nl

AmniTec expansion joints are commonly supplied ready for installation. The standard flanges/fittings can be turned into any desired position. Additional sealings are not in our scope, but may be necessary. For fittings we recommend additional sealing for the threaded parts.

Remove the storage protection carefully if any, just before installation. Special care should be taken in order not to damage at least the soft parts.

Ensure that the joint interior and the piping system are free from damages, dirt, fat, grease, and rust, welding rest materials or any other foreign materials. In case of the use of any cleaning products/agent, convince yourself and make sure that they are compatible with the bellow and/or expansion joint materials, as well as the piping (system)

Start installation of the expansion joint only once all work on the adjacent piping (flanges welding, anchors setting, etc.) has been completed and cooled down. Rubber expansion joints can easily be damaged by welding sparks or heat, sharp objects, etc.

Avoid gradients, rotation or pipe misalignment that could exceed the permissible movements of the rubber expansion joint in use.

Ensure and check alignment of the mating pipe work! Expansion joints are normally not designed to compensate for piping misalignment. Misalignment reduces rated movements, will cause severe stress and reduces service/life time.

Ensure and check the proper length and motions against the application!

It is important that the expansion joint be installed at the length specified by AmniTec. They should never be extended or compressed in order to make up for deficiencies in length, nor should they be offset to accommodate misaligned pipe work.

Make sure the expansion joint rating for temperature, pressure, vacuum and movements match the system requirements. Also check to make sure the elastomer selected is (chemically) compatible with the process fluid or gas.

Check the risk of hammer blow. Ensure adequate drainage, insulation, preventing water pockets, inclination of the piping, etc.

Avoid the installation of expansion joints in the immediate vicinity of pressure reducers, hot steam coolers, shut-down valves and butterfly valves etc., and if high frequency oscillations are expected due to turbulence.

1)

Before starting installation of the expansion joint ensure the counter flange have satisfactory sealing surfaces. Extending pipe ends, grooved pipe ends, too large diameters, inner edge of counter flanges damage the rubber sealing face. (**fig. A,B,C,D,E,F,G**)

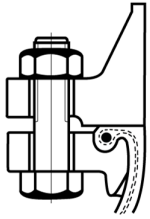


FIG. A
RIGHT:

Flanges with correct ID help prevent damage to rubber.

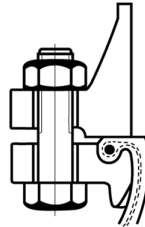


FIG. B
WRONG:

Flanges with too large female diameter can damage rubber.

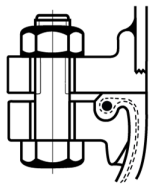


FIG. C
RIGHT:

Weld neck flanges with correct ID prevent damage to rubber.

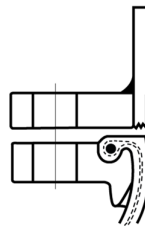


FIG. D
WRONG:

Uneven end of pipe can cause damage to rubber.

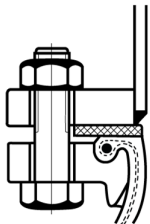


FIG. E
RIGHT:

In case of B, D or F an additional flat seal can be used to prevent damage to rubber.

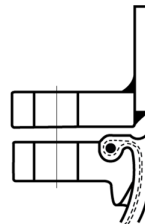


FIG. F
WRONG:

Inner edge of flanges damages rubber.

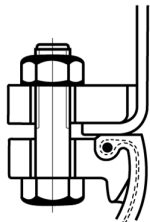


FIG. G
RIGHT:

Well rounded smooth edge prevents damage to rubber.

The rubber face must be centred exactly on/for the mating opening. Poor centring can cause rubber pull out, which will lead to leaking.

Seals are not required if the sealing surface of the counter flanges of the piping are exactly of the same size. Seals (as shown in **fig. E**) should be only used in order to prevent damage to the rubber sealing surface, for example if the counter flanges have a slightly larger internal diameter, sharp edges or welding beads.

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 neutral length. It must be avoided to pull out expansion joints to overlap installation gaps which are too large. This will cause overstressed rubber bellows. This might lead to the collar being drawn out of the flange groove, see fig. H) and serious damage/leakage of the bellow and worse. During the tightening of the screws, bolts and nuts, the collar of the bellow will not seal properly.

For the allowable range of movement please see type specific data sheets. If possible, the length of the installation gap is designed to be equal to the recommended installation length, or slightly shorter. The low inherent resistance of our rubber bellows allows a compression by hand and makes mounting into slight smaller gaps easy.

Attention: A shortening or lengthening of the joint of more than 3 mm during installation will absolutely decrease the allowable range of movement during service, operation and therefore decrease life-time, cycle life. Always use e.g. distance flanges or something equal.

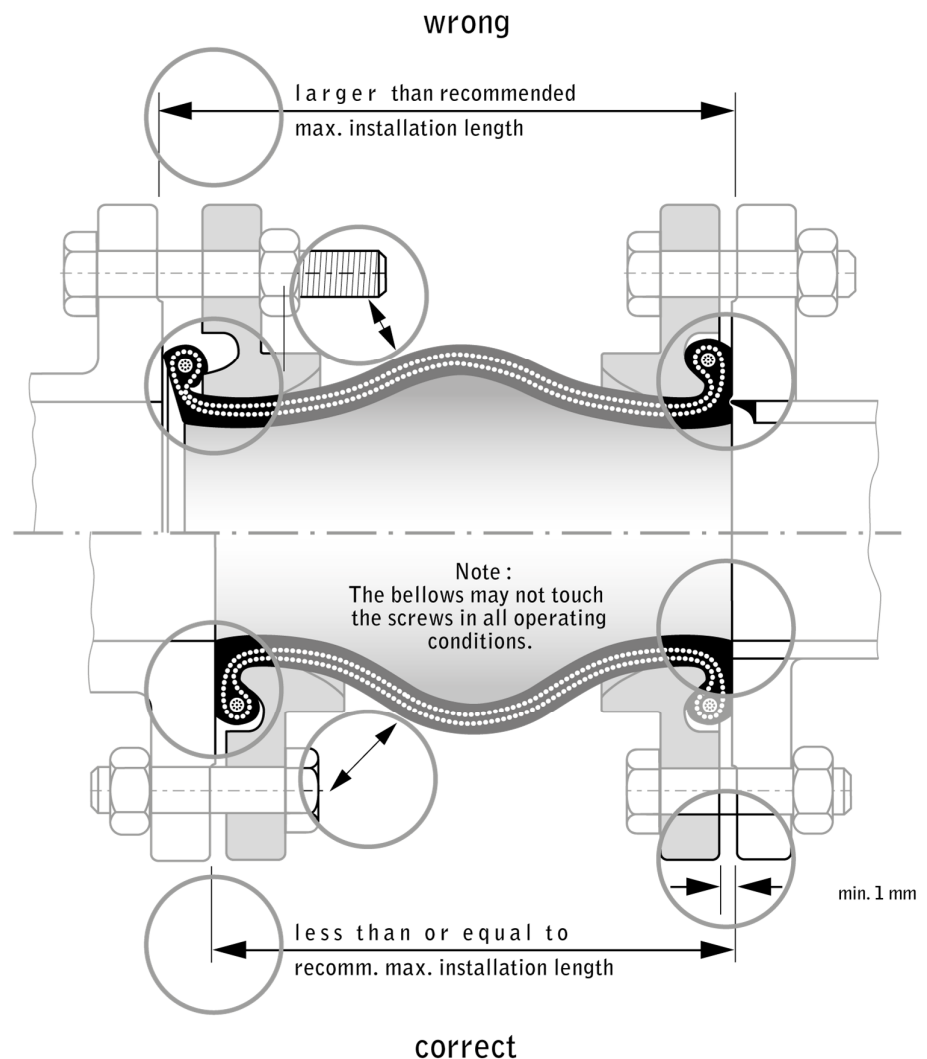
3)

We recommend installation of the rubber expansion joint in such a way to enable maintenance engineers etc. to check production date, brand etc.

4)

Bolts/screws should be mounted from the expansion joint side. If this is not possible, please check that the (sharp) ends of the bolts/screws may not reach the rubber bellow surface in ALL operating conditions. (as shown in **fig. H**)

FIG. H



5)

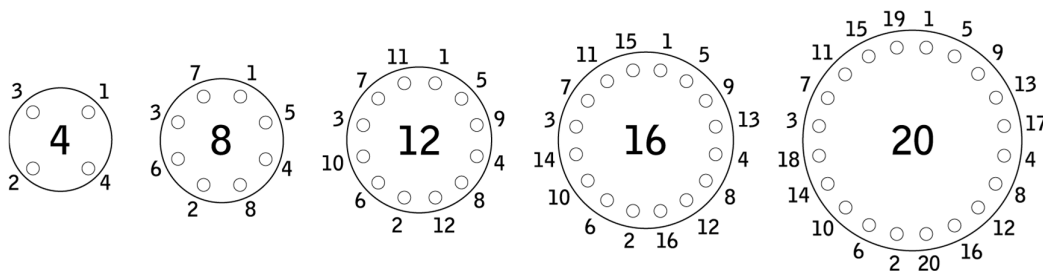
The screws/bolts have to be mounted and fastened/tightened in 3 uniform steps:

1st step: Tighten screws/bolts equally by hand, pay attention to parallel sealing surfaces.

2nd step: Fasten all screws/bolts crosswise with a 50 Nm. torque. (as shown in fig. J)

3rd step: Finish fastening crosswise. (as shown in fig. J)

FIG. J



For joints up to DN 80, torque is approx. 80 Nm

For joints from DN 100 up to and incl. DN 300, torque is approx. 100 Nm

Up to and incl. DN 500, 130 Nm

Up to and incl. DN 700, 250 Nm

Up to and incl. DN 800, 300 Nm

Up to and incl. DN 900, 310 Nm

Up to and incl. DN 1000, 340 Nm

Do not use any Sharp-edged tools which might damage the rubber bellow.

6)

Pay attention to the absolute minimum distance between the metal flanges of “y” of at least 1 mm remaining. (as shown in fig. H)

7)

The test pressure of a bellow or flange is $1.5 \times P_N$. This value depends on which component is weaker, see bellow and/or flange spec's.

8)

The rubber bellow of the expansion joint MAY NEVER be painted and/or lubricated! This will cause damage to the rubber bellow and may result in impossible visual inspection.

9)

The rubber bellow/expansion joint MAY NEVER be subject to TORSION. Always avoid TORSION!

10)

The rubber bellow must always be protected against heat by all means, e.g. welding, heating, flame, sparks, cutting etc. etc. During electric welding it must be avoided that the electric current does not pass through the bellows.

11)

Permanent radiation heat above 90 C must be avoided. If necessary flame protection covers should be used.

12)

Rubber expansion joints will always wear and must be included into routine inspection of the pipe system. (we recommend visual inspection with regard to damages as well as curing of the rubber bellow)

13)

Outdoor installation reduces rubber joints life span significant, reconsider alternatives. Rubber joints are affected by weather conditions (sunlight, ozone, heating, dryness, etc.)

14)

In double sphere joints, the use of root rings might be necessary with bigger sizes, hot water and/or higher working pressures. Don't hesitate to check our data sheets or consult us in www.amnitec.nl

15)

Allow enough space to ease maintenance operations.

16)

Consider the interaction between the system and the product. Proper selection and location of the joints, as well as proper guiding and anchoring of the piping are essential for the safe and proper use of the joint.

17)

ATEX: Warning! Elastomeric or similar surfaces should be cleaned if necessary with a wet cloth to avoid electrostatic charge. Also consider the risk of electrostatic charges created by the flow and/or system/piping.

18)

A rubber joint should work either as an anti-vibration device or as expansion joint, but not both functions at the same time; pipe anchoring and guiding requirements are different.

19)

AmniTec rubber joints commonly are bi-directional and can therefore be installed either in horizontal and/or vertical Pipelines, and flow direction is not applicable. Check always the proper anchoring and guiding to the piping (system) If in doubt, don't hesitate to check our data sheets or consult us in www.Amnitec.nl

20)

Ensure that the threading of the fittings is similar and/or proper/suited for use in combination with the mating pipe work.

21)

Use a proper sealant(s) according and/or suitable for the applicable duty, such as hemp core, Teflon tape etc.

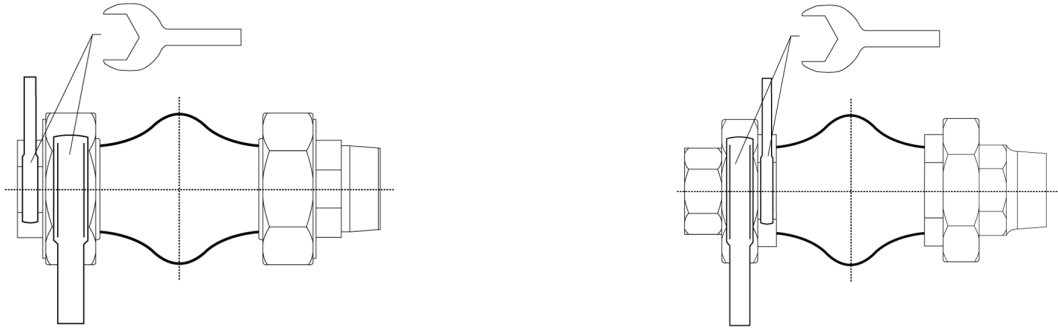
22)

Check and ensure that the mating thread ends do NOT EXCEED the fitting threads.

23)

Tighten always with a plain or adjustable wrench on the hexagon end of the rubber joint only (swivel), never use the other hexagon part(s) to tighten, this will damage the rubber bellow/expansion joint and shorten lifetime. The other hexagon parts are for fixing purposes only. (Shown in **fig. K**)

FIG.K



24)

All rubber materials tend to relax over a period of time. It is strongly recommended to check the tightness of the bolts about two weeks after installation. In extreme cases, particularly when a line is heated up and cooled down by repetition, it is strongly advisable to continue to check the tightness of the bolts on a monthly basis until such time as the last check shows no further tightening is required.

To maximize their operational efficiency bellows require VERY careful handling. Therefore, to ensure that the calculated lifetime and pressure capacity are maintained, proper care must be taken during installation. The procedures described in these pages are therefore strongly recommended.

If expansion joints are provided with outside/inside protection (whether temporary or permanent, it must not be removed until after installation.

Rubber joints should be stored in a relatively dry, dark and cool warehouse/location.

The following instructions, sometimes overlapping, must be observed during installation.

If there is any doubt, don't hesitate to check our data sheets or consult us, www.amnitec.nl

Do's and do not's

Do-inspect bellows and steel components for any physical damage. Ruptures, gaps etc. in and/or on the bellows may reduce both lifetime and pressure capacity.

Do-only use the lugs for lifting the expansion joint. Never ever use the bellow itself.

Do-check the length of the expansion joint always against the application via our drawing and/or specification/documentation.

Do-always check the need of tie-rods.

Do-correct or line up the piping system to accommodate the required length of the expansion joint. Stretching an expansion joint may reduce its lifetime and pressure capacity.

Do-check that there is no misalignment of the expansion joint other than that specified in the design phase.

Do-install the expansion joint with the flow indicator, if any, pointing in the direction of flow.

Do-ensure that, when internal sleeves/lining is fitted, they are fitted in the direction of the flow and not in the opposite direction.

Do-remove all shipping devices after installation and prior to the pressure test.

Do-if acceptance has already been given by AmniTec that the expansion joint may be insulated, always ensure that insulation is applied over a thin cover to protect the bellows. Bellows must never be covered directly with insulation. Furthermore, if the bellows is insulated, sufficient free space must be made available for the expansion joint to move freely.

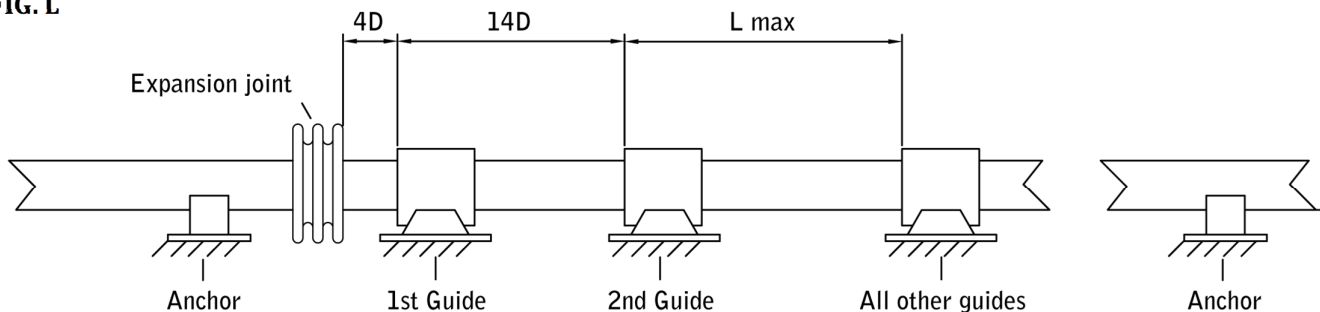
Do-check for and remove any material adhering to the inside or outside of the bellows.

Do-ensure that, if only the bellows is required, it is extended to the correct length before installation.

Do-ensure and check, before installing PROPER and CORRECT guiding, spacing and anchoring of the piping. (See **fig. L**)

Do-when installing the expansion joint, ensure that the pipe line is straight and in-line. Possible fixed points must be placed so as to allow correct expansion to the piping system in accordance with the type of expansion joint chosen. Between any two fixed points/guides, ONLY ONE axial expansion joint must be installed. (See **fig. L**)

FIG. L



D = Pipe DN

Do NOT- use an expansion joint to take up any misalignment other than that specified in the design phase.

Do NOT-remove any protection, shipping devices etc. prior to installation.

Do NOT-weld near the expansion joints or weld the flanges to the piping after the expansion joints are installed. This will either burn or seriously damage the expansion joints.

Do NOT-expose bellows to weld splatter or wheel swarf. If necessary, protect the bellows with “non chloride” wet protection blankets. Never use any plastic blankets or foils.

Do NOT-open or remove anything from the package before installation.

Do NOT-drop or bump the bellows.

Do NOT-use the tie-rods, hinges, etc. as lifting lugs.

Do NOT-attach chains or other lifting devices directly to the bellows.

Do NOT-use any detergent, always consult AmniTec, www.amnitec.nl.

Do NOT-use any mechanical and abrasive methods for cleaning the bellows.

Do NOT-insulate the expansion joint without prior consultation with AmniTec.

Do NOT-forcibly rotate one end of an expansion joint for bolt alignment etc. Bellows are UNABLE to take up any TORSIONAL movement.

Do NOT-pressure test to more than that pressure which is specified by the certificate requirements. If there is any doubt, consult AmniTec, www.amnitec.nl

Always ensure that adequate support is provided to take the extra weight of the testing media contained within the expansion joint during testing.

Do NOT-use shipping bars to retain pressure thrust in pressure test or in operation.

**IF THE INSTRUCTIONS ARE NOT STRICTLY FOLLOWED,
WE WILL DECLINE FROM ANY RESPONSIBILITY AND/OR GUARANTEE ETC.**