



# Installation and servicing instructions for rubber expansion joints

## 1. Introduction

ROTH rubber expansion joints are used in heating systems, air-conditioning and ventilation systems, power plants, refineries, chemical plants, ship-building and many other industries.

The outstanding features are high absorption of movements and excellent noise reduction.

According to their applications, different rubber qualities are available. Fabrics made of nyloncord or aramidcord serve as pressurebearers. The connecting flanges are selfsealing.

## 2. Materials and applications

material	colour	applications	temp. [°C]
NEOPRENE	black	air, gas, low-conc. acids	max. 70
NEOPRENE	grey	water	max. 70
EPDM	red	warm water	max. 90
EPDM SP	red	hot water - heating	max. 110
NITRIL	yellow	oils, mineral fats	max. 80
NITRIL	white	potable water, foods	max. 80
HYPALON	green	acids, alkalines	max. 80
BUTYL	blue (red)	potable water, warm water	max. 90

### materials for steel parts:

Flanges: 1.0037, steel galvanized, aluminium, stainless steel

pipe couplings: malleable cast iron, steel galvanized, yellow brass

flange rings: steel

## 3. Storage

Rubber expansion joints are delivered safely and sufficiently packed. They must be stored dry and clean.

Please take care not to damage the rubber bellow with sharp-edged tools when unpacking.

Do not store rubber expansion joints vertically to avoid deformation (compression)



## 4. Assembly preparation

Please follow these rules before assembly:

- Control the correspondence of dimensions of duct flanges and expansion joint flanges.
- Check the existing duct flanges. The connecting surfaces must be free of pollution and free of burrs.
- The sealing surface of the expansion joint flanges must fit tightly to the duct flanges.

## 5. Installation

### 5.1. general installation instructions

- Do not expose rubber expansion joints to temperature changes greater than 20°C and to solar radiation
- Do not store rubber expansion joints vertically to avoid deformation (compression)
- Rubber expansion joints must be protected against oil, colour, weld beads, sparks, sharp objects or excessive heat
- Rubber expansion joints must not be insulated because of heat built-up !
- Expansion joints with tie-rods must be fixed to the requested installation length equally.

### 5.2. installation instructions for rubber expansion joints with flanges

The screws of the flange must be crosswise in stages firmly tightened to avoid the jamming of the sealing surfaces. The sealing bead thickness should be compressed evenly around from 3 to 1,5 mm.

<b>Fastening torque:</b>	<b>step 1</b>		<b>approx. 50 Nm</b>
	<b>step 2</b>	<b>up to DN080</b>	<b>approx. 80 Nm</b>
		<b>from DN100 to DN300</b>	<b>approx. 100 Nm</b>
		<b>from DN350 to DN500</b>	<b>approx. 130 Nm</b>

The contact pressure is sufficient for an operating pressure of 16 bar (approval pressure of 25 bar). Further tightening of the screws is not necessary, particularly since this could destroy the sealing surfaces.

The screw heads must face the bellows to avoid damaging the bellows body during the operating of the installation.

The sealing surfaces should fit without a burr at the whole width of the flanges.

If there are differences to the inner pipe or collar diameter, this must be equivalent to the nominal dimension with rubber sealing rings (min. 5 mm thick !).

### 5.3. installation instructions for rubber expansion joints with pipe couplings

The installation should be free of any tension.

Screws should always be tightened with two wrenches to avoid damaging torsions to the compensator.

installation procedure:

- attach the screw-joining parts to the pipes and check the installation gap !
- the installation gap must be equal to the compensator length (130 mm  $\pm$  5 mm).
- insert the compensator and tighten with two wrenches.

#### DN 20-25

- the front screw-in part is used as a steady and the union nut is tightened.

#### DN 32-50

the rear screw-in part is used as a steady and the union nut is tightened.

### 5.4. installation instructions for rubber-metal pipe joints (rubber buffer)

Reliable functioning requires guided pipelines and precisely designed fixed points.

The rubber-metal pipe connections should be installed free of restraint.

Installation gaps must be 70 mm wide.

No tension, torsion or bending loads.

If unrestrained installation is not possible, or if axial or radial movements are expected, then rubber expansion joints type A or B should be used.

Additional gaskets are not required, since the sealing surfaces are of rubber.

**Bolt torque: 3 kpm.**

## 6. Important notes

Before installation, make sure that the expansion joint is suitable to all stresses and strains it will be subjected to.

Watch for burrs or sharp-edged objects, which might damage the expansion joint.



Expansion joints are to be placed between sufficiently dimensioned fixed points.

The fixed points must bear the full reactional forces and the pipe guides must be strictly regarded to avoid lateral shifting ( pipe bend, overtension) of the expansion joints.

If installation according to these instructions is not guaranteed, joints equipped with tie-rod supports should be used. Such supports also help avoiding transmission of high-pressure forces to the pipe system.

The installation should be in an easily accessible location so that checks without any problems can be carried out.

Rubber expansion joints must be regularly examined for the first signs of ageing (leakage, embrittlement, blister).

Rubber expansion joints do not require any maintenance, but they must be regarded as wear-and-tear parts.

Rubber expansion joints are classified as pipeline accessories acc. PED!

## **7. Maintenance**

Contrary to rigid pipes, rubber expansion joints are wear and tear parts with limited service life. Their use does not require expensive maintenance.

The service life heavily depends on the observance of working parameters the expansion joints were designed for.

Depending on loads and working conditions, at least every 3 months, a visual control and screw check should be performed.

In this way, signs of fatigue, thermal or chemical stresses can be recognized and replacement units may be purchased timely.