

## BELVEN RUBBER EXPANSION JOINTS

### INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Before installation, these instructions must be fully read and understood

These instructions apply to Belven rubber expansion joints type BV18

Rubber expansion joints are used to compensate mechanical vibrations and compensate axial or lateral movements.

These expansion joints are designed to guarantee your safety during the installation, operation, and maintenance under the condition of respecting the limitations of use defined in the technical data sheets and applying the recommendations mentioned in these instructions. The expansion joints must be installed and operated in accordance with the local requirements and regulations. Any violation of these regulations may become dangerous for health, environment, or the installation. Belven shall not bear responsibility for wrong installation or operation of its expansion joints.

These instructions cover the general instructions. More detailed instructions of your purchased expansion joint are available upon request.

It is imperative that these instructions are available at the destination of the expansion joints. The control of the distribution of these instructions translated into the language where the end-user is located (for European countries) is under your responsibility.

## 1. Storage & Protection

The Belven expansion joints must be stored in their original packing and protected against dampness, humidity, direct sun light, shocks, and dirt. Store the joints indoors at a cool temperature between -4°C and 30°C in a dry place that is fire resistant, weather tight and well ventilated. No corrosive chemicals should be present.

Avoid storage under direct sun exposure to prevent rubber deterioration.

Do not stack unpacked expansion joints and do not place other heavy units on top.

## 2. Cautions

***for safety, follow these cautions before installing, removing, or disassembling the valve.***

- 1. The installation of expansion joints must be done by staff trained in all aspects of their operation.***
- 2. The installer must check that the working conditions (materials/pressure/temperature) are within the limitations of the expansion joint (consult technical datasheet and check the corrosion/fluid/concentration/temperature combination).***
- 3. Before any installation or intervention, the line must be depressurized, drained, and rinsed (and decontaminated in case of dangerous fluid).***
- 4. Use protective clothing and equipment to avoid injury.***
- 5. Never use expansion joints above their nominal pressure and take into account the decreased allowable pressure at temperatures above 70°C.***
- 6. Clean the pipe connections and pipe before installation.***
- 7. Never carry out piping work near a expansion joint that can affect the temperature (e.g. welding) or damage the joint (e.g. grinding).***
- 8. Respect the applicable labor and safety regulations and your company's accident prevention rules.***

### 3. Installation

Before installation into the piping system, visually inspect the expansion joint to determine if any damage has occurred during shipping or storage.

The expansion joint should be installed close to a main anchor, and should be followed by a pipe guide which prevents displacement of the line. Be sure all pipe lines are supported so expansion joints do not carry the pipe load. Make sure the mating ends of the pipeline are in line and in correct distance apart.

Piping system must be adequately anchored to limit the pipe movements the joint must absorb. Movement beyond recommended guidelines will result in premature failure. If the expansion joint must be installed with an initial misalignment, compression, or extension, then the maximum allowable movements are reduced by the amount of the initial deflection. Do not cover expansion joints with insulation, this could restrict movement of the joint. Welding should not be performed in the vicinity of a rubber joint. Do not mate to butterfly valves or inlet side of check valve.

#### **Respect following recommendations while installing the expansion joints:**

##### **Joints with threaded ends:**

A suitable thread sealant (ex. PTFE tape) should be applied to male tapered threads to assure a "leak-tight" seal. Always respect the installation length and the allowable range of movements that are indicated in the technical product sheet.

##### **Joints with flanged ends:**

For installation proper dimension and length of bolts have to be used. Carefully tighten the bolts around the flange using the prescribed torque. Bolts should be tightened gradually in a star or crisscross pattern. Always respect the installation length and the allowable range of movements that are indicated in the technical product sheet.

### 4. Operation

For Belven rubber expansion joints type BV18-24E-BSP and BV18-44E-PN16:

The fluid through the expansion joint has to be compatible with the materials of construction of the expansion joint. Pressure and temperature conditions must be less than the below mentioned maximum conditions.

This rubber expansion joint is normally used on warm water.

Temperature range: -10°C to +100°C.

The maximal allowable pressures and range of movement can be restricted by the fluid inside the expansion joint.

Maximal allowable pressure for clean warm water:

Threaded ¾" to 3": 70°C: 14 bar – 80°C: 12 bar – 90°C: 10 bar

Flanged DN32 to DN200: 70°C: 14 bar – 80°C: 12 bar – 90°C: 10 bar

Flanged DN250 to DN300: 70°C: 8 bar – 80°C: 7 bar – 90°C: 6 bar

Restrictions of the movements at temperatures above 70°C

At operating temperatures up to 90°C the allowable utilization factor equals 75%.

At operating temperatures up to 100°C the allowable utilization factor equals 50%.

At commissioning ensure that no dirt or foreign objects are left inside the joint or pipeline. In case of doubt flush the pipeline carefully with water.

Prevent waterhammer when starting up a pump.

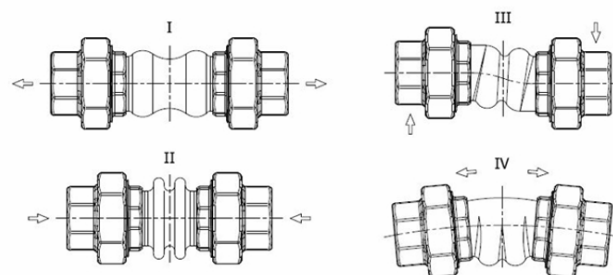
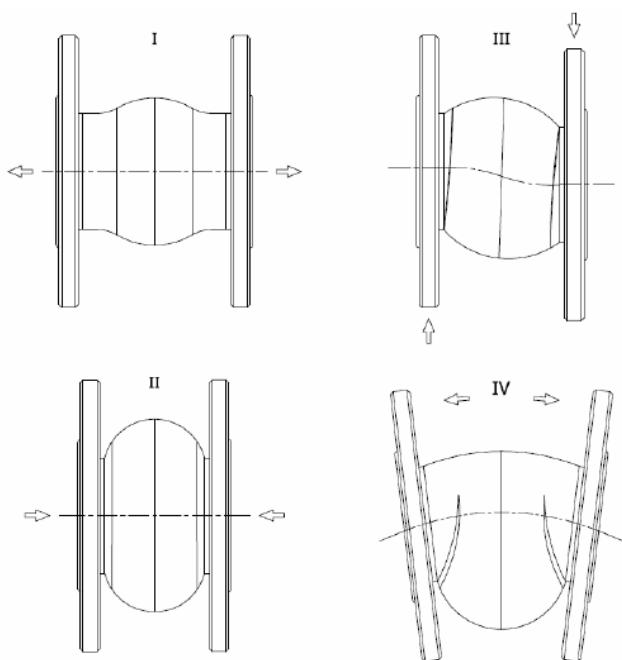
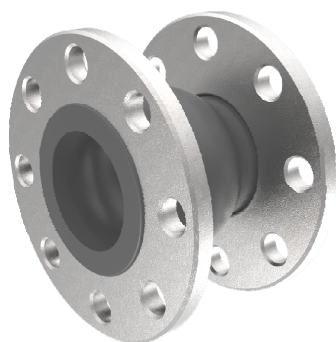
Any unsuitable installation or action can cause leaking or other problems.

## 5. Maintenance

**Before dismantling or maintenance the expansion joint, make sure the system is depressurized and cooled down.**

Periodically check the outside of the bellow for damage. Replace any joint with cracks or ruptures. During maintenance shutdowns, remove joints and inspect the interior for deterioration. Replace any joint which shows signs of wear. For critical lines, it is recommended that a spare expansion joint be kept on hand to be used in the event of failure. This will minimize equipment downtime while a replacement joint is ordered. Always protect yourself against cold injuries and burns. Always isolate the relevant part of the pipeline, release the pressure and remove the medium before dismantling the expansion joint. Be aware of the type of medium involved. Protect people and environment from any harmful or poisonous substances. Make sure no medium can enter the pipeline during valve maintenance.

In case of questions or doubts contact your Belven representative for assistance.



Belven Ref.	L	I	II	III	IV
BV18-24E-BSP - 3/4"	200	5	22	22	30°
BV18-24E-BSP - 1"	200	5	22	22	30°
BV18-24E-BSP - 1 1/4"	200	5	22	22	30°
BV18-24E-BSP - 1 1/2"	200	5	22	22	30°
BV18-24E-BSP - 2"	200	5	22	22	20°
BV18-24E-BSP - 2 1/2"	240	8	24	24	15°
BV18-24E-BSP - 3"	240	8	24	24	15°
BV18-44E-PN16-DN032	95	6	9	9	15°
BV18-44E-PN16-DN040	95	6	10	9	15°
BV18-44E-PN16-DN050	105	7	10	10	15°
BV18-44E-PN16-DN065	115	7	13	11	15°
BV18-44E-PN16-DN080	135	8	15	12	15°
BV18-44E-PN16-DN100	150	10	19	13	15°
BV18-44E-PN16-DN125	165	12	19	13	15°
BV18-44E-PN16-DN150	180	12	20	14	15°
BV18-44E-PN16-DN200	205	16	25	22	15°
BV18-44E-PN16-DN250	230	16	25	22	15°
BV18-44E-PN16-DN300	245	16	25	22	15°