Fluid Sealing Association

STANDARD

FSA-PSJ-702-19
RUBBER FLANGED NON-METALLIC EXPANSION JOINT INSTALLATION, MAINTENANCE, AND STORAGE

REVISED February 2019
(supersedes 2015 edition)

994 Old Eagle School Road, Suite 1019
Wayne, Pennsylvania 19087-1866
Phone: (610) 971-4850
Fax: (610) 971-4859
www.fluidsealing.com
Email: info@fluidsealing.com

FORWARD

Prior to application of this standard to installations that require conformity with the European ***Pressure Equipment Directive (PED 2014/68/EU)*** the reader must determine guidance as to the requirements of the ***PED***. Procedures shown in this document are not intended, nor do they necessarily, meet the requirements of the ***PED.***

For a complete list of FSA publications, please contact:

Fluid Sealing Association
994 Old Eagle School Road
Suite 1019
Wayne, PA 19087-1866
Phone: (610) 971-4850
Fax: (610) 971-4859
Email: info@fluidsealing.com
or visit our web site at: www.fluidsealing.com

FLUID SEALING ASSOCIATION STANDARD
FSA-PSJ-702-19

RUBBER FLANGED NON-METALLIC EXPANSION JOINT INSTALLATION, MAINTENANCE AND STORAGE

1. SCOPE:

1.1 Application:

This specification covers the installation, maintenance and storage of rubber flanged non-metallic expansion joints. The purpose of the standard is to ensure the proper handling of expansion joints. For definition of terms used in this specification, refer to the Technical Handbook, Non-Metallic Expansion Joints and Flexible Pipe Connectors.

1.2 Safety - Hazardous Materials:

While the materials, methods, applications and processes described or referenced in this standard may involve the use of hazardous materials, this standard does not address the hazards which may be involved in such use. It is the sole responsibility of the user/installer to ensure familiarity with the safe and proper use of any hazardous materials and to take the necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS:

2.1 Fluid Sealing Association:

Technical Handbook, Non-Metallic Expansion Joints and Flexible Pipe Connectors, Edition 8.0

Application for copies should be addressed to:

Fluid Sealing Association
Expansion Joint - Piping Division
994 Old Eagle School Road, Suite 1019
Wayne, PA 19087-1866

www.fluidsealing.com

2.2 ASTM International

ASTM F-1123 Standard Specification for Non-Metallic Expansion Joints

Application for copies should be addressed to:

3. GENERAL REQUIREMENTS:

3.1 INSTALLATION:

3.1.1 Inspection of Expansion Joint:

Remove expansion joint from protective/shipping packaging. Check the interior, exterior and flange faces of the expansion joint for cuts or gouges. Inspect the mating flanges or rough/damaged areas:

3.1.2 Application, Anchoring, Alignment:

3.1.2.1 Review the application to which the expansion joint is going to be applied. Special attention should be paid to the pressure/vacuum, temperature, and movements to ensure that the expansion joint meets the system requirements.

3.1.2.2 Review the system to ensure that the anchors, supports and alignment guides are properly designed. If the system is not properly anchored and/or guided, control rods with compression sleeves should be used to protect the expansion joint against excessive axial movements. In addition, the anchors and/or guides should be designed to withstand the thrust forces generated by the expansion joint.

Note: 1. Control rods do not protect the expansion joint and piping system against lateral offsets and are not a replacement for proper system anchors, guides and supports.

Note: 2. Control rods should not be used with non-metallic flanges such as PVC, FRP and other flanges which do not have sufficient strength.

3.1.2.3 Inspect the piping to ensure that the pipes are properly aligned axially and laterally within the tolerances as outlined in the Technical Handbook, Non-Metallic Expansion Joints and Flexible Pipe Connectors (see Paragraph 2.1). If the piping is not properly aligned, the pipes should be adjusted. When the piping cannot be properly aligned, an offset joint should be used.

3.1.3 Installation:

Refer to the manufacturers' installation manuals/instructions for any special installation requirements.

3.1.3.1 Flange Lubricant:

Apply a thin layer of non-petroleum based lubricant, such as soapy water to the rubber flange for ease of installation or removal at a later date.

3.1.3.2 Install the Expansion Joint:

Install the expansion joint between the mating flanges. Special care, such as the use of slings, should be taken to ensure the expansion joint is not damaged during this process. **Do not lift by bolt holes.** Continued support of the expansion joint is required until the expansion joint is bolted in place. Spacer gaskets may be required with raised face pipe flanges, consult manufacturer.

3.1.3.3 Install Flange Bolts:

Install the flange bolts through the retaining rings, expansion joint and mating flange from the arch side of the expansion joint in a cross pattern. Metal washers are required at all splits of the retaining rings and are recommended for all other bolts. Attach and tighten nuts alternately around the flange until hand tight. Torque each bolt to full torque with the cross-bolt pattern until the values given in the table below are reached. Alternatively, a traditional method of tightening full faced flanges until the outside edge of the expansion joint flange bulges slightly can be used.

NOMINAL BOLT TORQUE			
Full-Faced Elastomer Flanges			
Pipe Size		**Torque**	
in	**mm**	**ft-lbs**	**Nm**
1 - 2	**25 - 50**	**30 - 50**	**40 - 68**
2.5 - 5	**60 - 125**	**50 - 70**	**68 - 95**
6 - 8	**150 - 200**	**90 - 120**	**120 - 160**
10 - 12	**250 - 300**	**110 - 140**	**150 - 190**
14 - 16	**350 - 400**	**130 - 160**	**175 - 215**
18 - 24	**450 - 600**	**150 - 200**	**200 - 270**
26 - 40	**650 - 1000**	**200 - 300**	**270 - 410**
42 - 54	**1050 - 1400**	**300 - 400**	**410 - 540**
60 - 72	**1500 - 1800**	**400 - 500**	**540 - 680**
78 - 120	**1900 - 3000**	**500 - 700**	**680 - 950**

NOMINAL BOLT TORQUE			
Beaded-Ends (Spherical) or			
PTFE Bellows			
Pipe Size		Torque	
in	mm	Ft-lbs	Nm
1 - 1.25	25 - 32	30 - 45	40 - 60
1.5 - 2	40 - 50	30 -45	40 - 60
2.5	65	35 - 50	47 - 68
3 - 5	80 - 125	45 - 60	60 - 80
6 - 8	150 - 200	50 -65	68 - 88
10 - 12	250 - 300	55 - 75	75 - 100
14 - 16	350 - 400	60 - 80	80 - 110
18	450	70 - 90	95 - 120
20	500	75 - 95	95 - 120
24	600	80 - 100	110 - 135
30	750	95 -130	120 - 175

NOTE 1: **Recommended Torque values are for reference only and may require more or less torque due to flange facing, and other variables. Caution: Mating flange material or equipment may dictate lower torque values. Consult the Manufacturer for specific recommendations in all cases but particularly for sizes above 40 inches or 1 meter.**

NOTE 2: The Flange Bolts should be retightened after about one week of operation and checked periodically, thereafter.

3.1.3.4 Control Rods:

1. When Control Rods are required, install the gusset plates to the outboard side of the mating flange at the same time as the Flange Bolt installation. The number and distribution of the control rods must meet manufacturers approved or design specified minimums. FSA Technical Handbook (see paragraph 2.1) minimums shall apply if not specified otherwise. Install the control rod through the remaining hole in the gusset plate. If required, install a compression sleeve at the time of the control rod insertion in the control rod plate. Place the rubber and metal washers on the control rods and tighten the nuts until snug. Stake the threads of the control rods to prevent nut movement during operation.

3.2 MAINTENANCE:

3.2.1 Periodic Inspection:

The expansion joint should be inspected periodically to ensure proper operation and installation. Periodically re-torque bolts. Apply plant-approved maintenance procedures as required. In full sun or desert-like conditions periodic recoating of the UV protective paint is recommended.

3.2.2 Welding:

If welding is to occur in the vicinity of the expansion joint, a welding blanket or protective cover should be used to protect the expansion joint.

3.3 STORAGE:

3.3.1 Standard Storage:

Ideal storage is a warehouse with a relatively dry, dark, cool location. The warehouse temperature should not be over 80°F (27°C). Storage near ozone producing equipment should be avoided. Store flange face down (in an axis vertical position) on a pallet or wooden platform. Do not store other heavy items on top of an expansion joint. A minimum five year shelf-life may be expected with ideal conditions. If storage must be outdoors, the expansion joints should be placed on wooden platforms and should not be in contact with the ground. Cover with a tarpaulin.