



INSTALLATION AND OPERATION MANUAL

Flexible Joint

Mechanical Services & HVAC Products

F83SJ16 | F83SJ25 | F83DJ16 | F83DJ25 | F85DJ16 | F85DJ25
F83SJ-I | F83DJ-I | F85DJ-I

This manual is also available online.



SAFETY PRECAUTIONS



Caution



Read and understand carefully this document prior attempting to install Fivalco® products. Failure to follow these instructions could cause severe injury, product and/or property damage.



Installation, maintenance and replacement of Fivalco® products must be implemented by an experienced, well trained installer. Wear safety glasses, helmet, hand and foot protection during installation.



The owner is responsible for maintaining the system in proper operation condition.



Fivalco shall not be held responsible for any incidents arising from improper installation, operation and maintenance work. The responsibility for this must rest with the installer and user.



Disclaimer

This manual serves as a general guideline and reference to the installers and users. Every effort has been made to ensure the information contained in this manual is accurate at the time of publication. Fivalco Limited assumes no responsibility or liability for any errors and/or misinterpretation of the information. Contact your local vendor, distributor or Fivalco Limited for detail technical data and specification of each model, and if any additional information is required. We reserve the right to alter this manual without notice.

“THE QUALITY GOES IN BEFORE OUR NAME GOES ON”



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FLEXIBLE JOINT

1 GENERAL

Flexible joints are used to compensate for stress generated by thermal movement, providing flexibility to the system as allowable connection and installation error. It would also reduce the transmission of noise and vibration. With proper selection, flexible joints are excellent resistance against pressure and get hold of multiple movements.

Flexible joints shall not be used to align the pipe line.

2 UNLOADING & TRANSPORTATION

A vital consideration in handling flexible joint should be avoid damaging the rubber body.

Flexible joints should be unloaded carefully. Each rubber joint should be carefully lowered from the truck to the ground; it should not be dropped. In the case of larger flexible joint, forklifts or slings around the body of the joint or under the skids should be used for unloading. Only hoists and slings with adequate load capacity to handle the weight of the rubber joint should be used. Failure to carefully follow these recommendations is likely to result in damage to the rubber joint.

3 STORAGE

In order to prevent the entry of foreign material that could cause damage to the surface, or joint interior, do not remove the protection wrapper or unbox the rubber joint until installation. Whenever practical, rubber joint should be stored indoors under dry, cool conditions, away from direct sunlight and corrosive or otherwise chemically active atmosphere. Storage temperature should not exceed -10° C and 50° C. They should be stored flat on the flange face with no excessive weight on top of them.

4 INSPECTION PRIOR TO INSTALLATION

Flexible joints should be inspected at the time of receipt for damage in shipment. The initial inspection should be to verify compliance with specifications (type, size, material, pressure and temperature ratings), and type of end connections. Inspection personnel should look for any crack line, impurity or damage rubber body and/or flanges, and any other evidence of mishandling during shipment. Contact your vendor or local representative immediately if any disorder is found.

Check the rubber joint you are installing is compatible with the medium it might handle. The special medium is prohibited to be used as it can cause chemical reaction on the joint. Check that the rubber joint's rated temperature, pressure and allowable movement will not be exceeded. If the operating temperature is above 60°C, apply the recommended pressure rating.

5 INSTALLATION

At the jobsite prior to installation, each flexible joint should be visually inspected and any foreign material in the interior of the flexible joint should be removed.

Ensure that the system is supported so that the joint does not carry the weight of the piping. Rubber joints should be located as close to anchors as possible. If unanchored, check if control rods are required.

Installer should strictly follow the allowable 'Pre-Gap' allowance for each flexible joint, as printed in the catalogues. Failure to comply to this will void the warranty. Flexible joints shall not be used to compensate for mis-aligned piping connection.

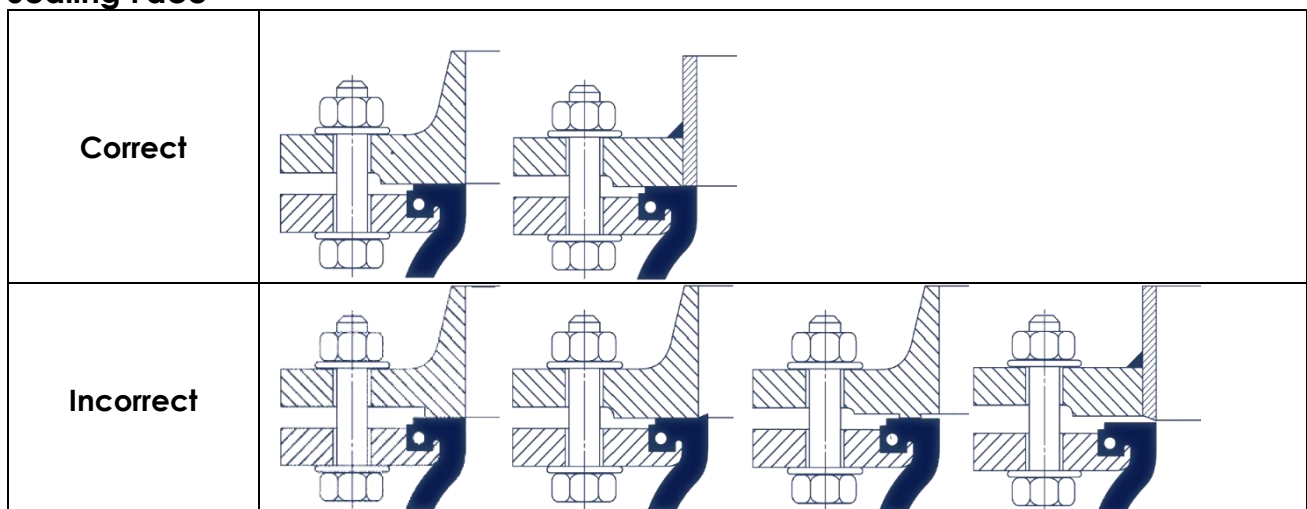
Before being installed, the flexible joints need to be cleaned so as to eliminate the dust caused during the transportation and storage. Confirm the type of connection and standard before starting the installation work.

Make sure to provide sufficient space for flexible joints for easy installation, maintenance, inspection and replacement.

During installation, it is essential to ensure an accurate centering between flanges and in a well aligned position to minimize the stress that would be acting on the flexible joints. Flexible joints shall be mounted on the flanges only after the mating or counter flanges have been welded to the pipe line and cooled down to atmospheric temperature. Welding heat may damage the rubber body. Never weld the flanges with flexible joint installed. Cover the installed flexible joints with protective material such as cloth or board against welding sparks in the event that welding work is carried out at the surrounding area.

Make sure that the sealing faces of the joint bear against mating flanges that are flat and clean over the whole width of the joint. Raise face flange should not be used. No gaskets are required for connection. Insert flange bolts with the bolt heads facing the rubber body and nuts on the pipe side. All bolts or couplings should be checked for proper tightness and protected by the installer to prevent corrosion, either with a suitable paint or by polyethylene wrapping.

Sealing Face



Bolts must be tightening in a crosswise pattern (see figure 1). Installer should ensure that the flanges are well aligned and an even pressure on the surface is applied.

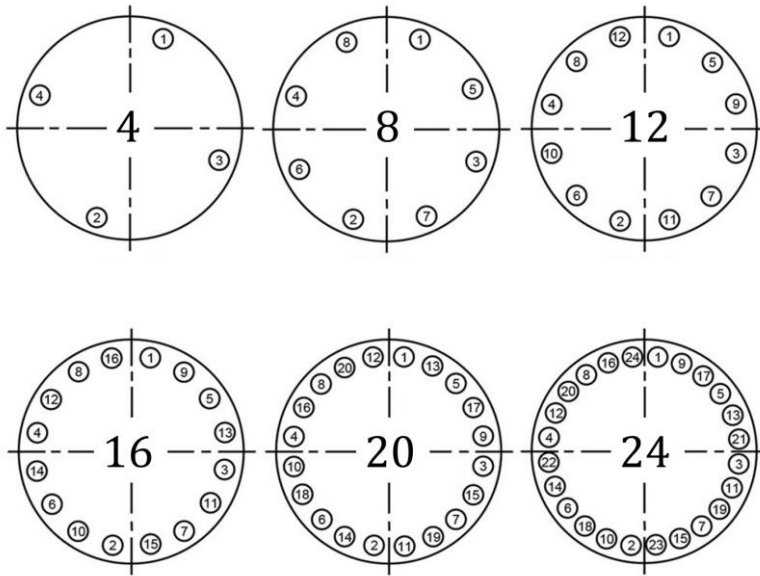


Figure 1: Crosswise pattern for tightening or loosening bolts.

On completion of the installation, flexible joint location, size, make, type, date of installation, number of turns to open, direction of opening, and other information deemed pertinent should be entered on permanent records.

Do not paint over the rubber body. Cover the flexible joints with protective material against direct sunlight and UV if installed at outdoor.

Use of control units with rubber flexible joints

A control unit assembly is an accessory of two or more control rod units (limit rods, tie rods or compression sleeves) placed between the flanges across a flexible joint to minimize possible destruction caused by excessive motion of a pipeline. When used in this manner, control units are an additional safety factor which can minimize possible damage to the adjacent equipment.

A control unit is strongly recommended to use when:

- In case that proper anchoring cannot be provided
- In case that it is hard to withstand the line thrusts generated by internal pressure or wide temperature fluctuations
- In case that the anticipated elongation, compression and lateral movement are more than the design, pre-gap and/or installation tolerance
- In case that the anticipated angle of deflection is more than the design and/or installation tolerance.

Recommended quantity for control rods (per set)

Size (mm)	Size (inch)	ANSI150/PN16	ANSI300/PN25
DN32	1 ¼"	2	2
DN40	1 ½"	2	2
DN50	2"	2	2
DN65	2 ½"	2	2
DN80	3"	2	2
DN100	4"	2	2
DN125	5"	2	2
DN150	6"	2	2
DN200	8"	2	3
DN250	10"	3	4
DN300	12"	3	4
DN350	14"	4	
DN400	16"	4	
DN450	18"	4	
DN500	20"	4	
DN600	24"	4	

Each piece of control unit consisting

- 1 No. Rod
- 2 Nos. Gussets
- 2 Nos. Rubber washer
- 4 Nos. Nuts
- 2 Nos. Steel Washer

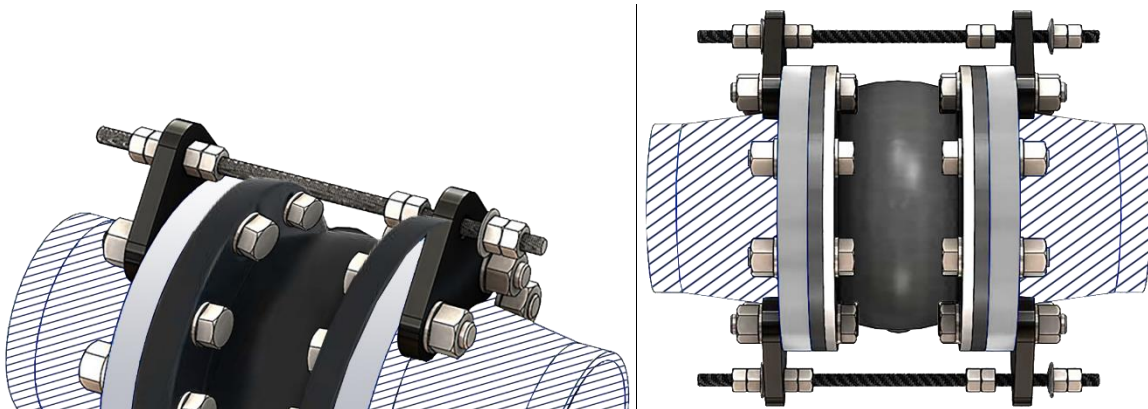


Figure 2: Flexible Joint installed with control unit.

Control rods to be installed if the working pressure is higher than

Size (mm)	Working Pressure (PN)
DN50-DN100	14
DN125-DN250	10
DN300-DN350	7
DN400-DN600	3.5

Installation guide for screwed end union type flexible joint

(F85DJ16 | F85DJ25 | F85DJ-I)

Firstly, unscrew the installation bolts, remove the union flange and socket from the rubber joint. Then, insert union flange into the counter pipe. Make sure the direction of the union flange is correct.

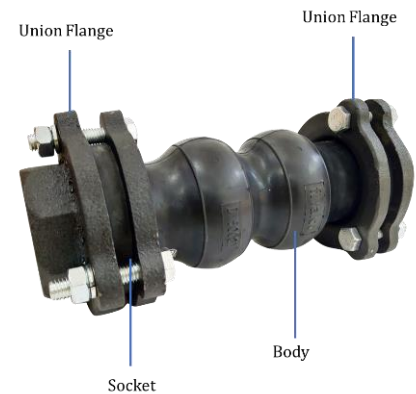
Inspect and make sure there is no damage on the union flange and the threaded part of the rubber joint.

Sealing compounds may be used but excessive use of hemp type materials should be avoided as this increase thread interference and may cause overstressing of the body ends.

Ensure the threads are properly engaged and proceed to tighten the joint onto the pipe. The wrench must be used to tighten the socket at the counter pipe side to avoid distortion of the joint.

Insert the installation bolts from the joint side and tighten up the nuts from the counter pipe side.

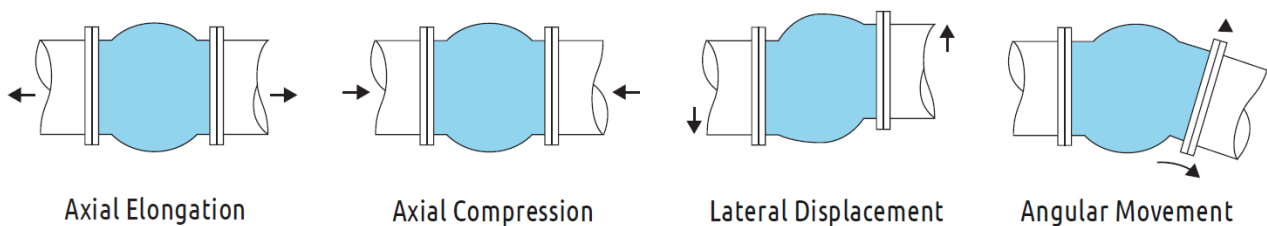
For the other end of the flexible joint, use the same methods as the above. When the equipment is operated after the installation, the bolts are possible to be loosened due to the vibration. Remember to check and tighten up the loosen bolts.



6 OPERATIONS OF FLEXIBLE JOINTS

Flexible joints are used to absorb and compensate the movement, minor allowable connection displacement and to reduce the vibration from rotating equipment, so that the piping system, valves and other fittings are to be protected. It shall not be used primarily to align the pipe line.

Installers and users should ensure that the flexible joints are used and operated within its allowable tolerance at all time. Casual check on elongation, compression, lateral displacement and angular movement should be carried out frequently to ensure its efficiency and functionality. Please refer to our catalogues for the dimensions and allowable movements.



7 MAINTENANCE

Rubber relaxes over a period of time, so it is correct practice to re-check periodically. The first inspection should take place a week after the start-up and subsequent ones in cycles set by the user but not less frequently than once a year.

Under the average service conditions, the rubber joints will last for many years. However, joints should be inspected for external damage on the rubber surface, such as blisters, cracks and leaks, and its deformation periodically, but never longer than once year.

8 WARNINGS

The working pressure, temperature, suitable media of flexible joint must be accord with the regulation of the illumination, or that maybe dangerous.

Prior to any maintenance work that requires disassembly make sure that the pressurized line involved is isolated, depressurized and drained before starting any dissembled. Failure to do so may result in sudden pressure release and subsequent severe injury or death. If the pressure exceed regulation, the flexible joint maybe leak and the body maybe explode of craze.

If the temperature is too high, the material maybe invalidation, the flexible joint may be burst. If the media does not accord with the regulation of the illumination, it may rot the body, the body maybe thinned and crazed, then the media will be leaked.



WARRANTY STATEMENT

Fivalco's products are designed, engineered and manufactured within its specification of intended use, under the highest quality control possible. Commitment on quality and performance is always at the top of our agenda.

Fivalco warrants that for a period of thirty-six (36) months following delivery, the Fivalco products will perform in accordance with published specifications, and will be free from defects in material or workmanship provided that the products are stored and installed in accordance with recommendations in our catalogues.

Fivalco's obligation shall be to replace any product found to be defective in design, material or workmanship during the warranty period. Fivalco shall not be obligated to refund the purchase price and other liabilities on monetary compensation, nor shall it be obligated to pay for any labor or costs associated with the removal of the defective products or the reinstallation of those products. No warranty coverage will be provided for products that have been altered and / or used for a purpose other than that for which they were designed or installed contrary to Fivalco's guidelines.

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