



KINFLEX FLEXIBLE CONNECTORS

GENERAL INSTALLATION INSTRUCTIONS

Preparation:

1. Check Service Range. Double-check the performance limits of the connector against the anticipated operating conditions. Flexible connectors should never be subjected to operating conditions beyond the temperature, pressure, and/or vacuum recommendations. If the total joint deflection due to initial installation and the movement of pipelines during system operation exceed the published maximum allowable movement, then the pipeline should be altered to reduce the initial installation deflections. Also, the line should be anchored in some approved manner to limit the pipe movements that the flexible connector must absorb.
2. Check Location. Generally, the proper location of rubber flexible connectors is close to a main anchoring point. Following the connector in the line, a pipe guide, or guides, should be installed to keep the pipe aligned and prevent undue displacement of this line. This is the simplest application of a joint, namely, to absorb the expansion and contraction of a pipeline between fixed anchor points.
3. Check Cover. Check the outside cover of the connector for damage before placing in service. The cover is designed to keep harmful material from penetrating the carcass of the connector.
4. Check Alignment. Piping should be lined up within a maximum of 1/8". If this maximum 1/8" misalignment is exceeded, the piping should be corrected.
5. Check Support. Piping must be supported by hangers or anchors so that its weight is not carried by the flexible connector.
6. Check Flanges. Be sure that the companion flanges to be mated with the flanges of the flexible connector are clean. Used parts should be carefully examined for reasonable smoothness, and any adhering particles of old gasketing or other foreign material should be scrapped off, taking care not to gouge or mutilate the flange surface.

Installation:

1. Apply Lubricant (*elastomeric connectors only*). Rubber flexible connector face flanges may be painted with a solution of graphite in water or glycerin to prevent adherence of connector to pipe flanges.
2. Insert Bolts (*elastomeric connectors only*). Bolts should be inserted from the arch side (so that bolt heads are adjacent to arch) to ensure that bolts do not interfere with the arch during periods of compression.
3. Tighten Bolts (*elastomeric connectors only*). Tighten all bolts gradually and equally by alternating around the flange. The bolts are not considered tight and “locked on” until the edges of the flexible connector flanges bulge slightly. Check bolt tightness at least one week after going on stream and periodically thereafter. As any rubber-like material takes a “set” after a period of compression, the bolts may loosen and result in a broken seal. It is particularly important to check bolts in a hot-and-cold water system before changing over from one medium to another.

GENERAL PRECAUTIONS

1. Breaking Seal (*elastomeric connectors only*). In the event that the seal is to be broken when a connector flange meets a pipe flange, small wooden wedges should be driven between the connector and the pipe. With proper care, the connection can be broken without damage to the flanges or to the connector itself.
2. Insulation. When insulation is used over a pipeline adjacent to a flexible connector, the insulation should be brought up to the pipe flange but not continued over and around the expansion joint. Covering a connector with insulation makes it very difficult to detect flange leaks which might otherwise be corrected by simply tightening flange bolts. Insulation also could cause restriction of flexible connector movements and/or overheating of the connector.
3. Storage (*elastomeric joints only*). Expansion joints should be stored in a cool, dry, dark place. They should be positioned so that they are not resting on their flange edges.
4. Welding Care. To prevent serious damage, the flexible connector should be carefully protected whenever welding operations are performed nearby.

SPECIAL PRECAUTIONS

1. Flangeless Valves. Never install spool-type rubber flexible connectors next to flangeless butterfly valves or flangeless check valves. Serious damage to the rubber connector can occur unless it is installed against full-face metal flanges.
2. Undue Stress. Do not install a flexible connector in a system in an attempt to “pull” misaligned piping into position.
3. Retaining Rings. Never install spool-type flexible connectors without using the back-up retaining rings behind both flanges.
4. Control Units. Install control units with a joint or spool-type rubber flexible connector if piping is not adequately anchored or if there is any question that movements may exceed the rated value of the joint.
5. A Spare. At the time of installation, consider ordering a spare connector. Although KINFLEX flexible connectors are engineered to give long, dependable service, the cost of equipment downtime in the event a connector wears out can far outweigh the cost of a spare.
6. Precompression (*FC/FTC connectors only*). During installation, the FC and FTC connectors must be precompressed approximately 1/8” to 3/16” in order to obtain a correctly installed face-to-face dimension.
7. Control Rod Installation Instructions
 - a. Assemble expansion joint between pipe flanges in its manufactured face-to-face length. Include the retaining rings furnished with the expansion joint.
 - b. Assemble control rod plates behind pipe flanges as shown. Flange bolts through the control rod plate must be longer to accommodate the plate. Control rod plates should be equally spaced around the flange. Depending upon the size and pressure rating of the system, 3, 4 or more control rods may be required. Refer to FSA Rubber Expansion Joint Division Manual, sixth edition, page 23 for control rod pressure ratings.
 - c. Insert control rods through top plate holes. Steel washers are to be positioned at outer plate surface. An optional rubber washer is positioned between the steel washer and the outer plate surface.

- d. If a single nut per unit is furnished, position this nut so that there is a gap between the nut and the steel washer. This gap is equal to the joint's maximum extension (commencing with the nominal face-to-face length). To lock this nut in position, either "stake" the thread in two places or tack weld the nut to the rod. If two nuts are supplied, the nuts will create a "jamming" effect to prevent loosening. *Note: Consult the manufacturer if there are any questions as to the rated compression and elongation. These two dimensions are critical in setting the nuts and sizing the compression pipe sleeve.*
- e. If there is a requirement for compression pipe sleeves, ordinary pipe may be used, sized in length to allow the joint to be compressed to its normal limit.
- f. If there is a requirement for spherical washers, these washers are to be positioned at outer plate surface and backed up by movable double nuts.
- g. For reducer installations, it is necessary that all control rod installations be parallel to the piping.

TROUBLE TIPS

Problem: Leaking at the flange

Solution:

- a. The flange bolts may need retightening. On rubber flexible connectors, they should be tight enough to make the edge of the rubber flange bulge slightly between the metal flange and the retaining rings.
- b. The surface of the mating flange may be in poor condition. Make sure there are no excessive grooves, scratches, or distorted areas.
- c. The connector may have been over-extended to such an extent that it has caused the rubber flange to pull away from the mating flange. If so, perhaps control units are needed.

Problem: Cracking at base of arch or flange

Solution:

Make sure the installed face-to-face dimension is correct so the connector is not over-extended or over-compressed. Check to see if pipes are properly aligned so there is no excessive lateral displacement. Pipes should not be out of alignment by more than 1/8".

Problem: Liquid weeping from bolt holes

Solution:

Look for a break in the tube portion of the connector. If there is a crack or a break, the joint should be replaced as soon as possible.

Problem: Excessive ballooning of arch

Solution:

Ballooning is usually an indication of deterioration of the connector's strengthening members or excessive pressure in the system. Service conditions should be double-checked and a new joint should be installed.