

FIGURE 40
FLEXIBLE CONNECTORS



150# FLANGED END SINGLE SPHERE CONNECTOR

INTRODUCTION

This instruction sheet includes installation, operation and maintenance procedures for flexible connectors.

APPLICATION

Flexible connectors are used to absorb thermal and seismic movement, absorb hydraulic shock, provide vibration and noise dampening, make installation easier and correct minor misalignment of piping and components.

STORAGE

Store the joint flat in a dry location, avoiding humidity and extreme temperatures. Place flanges face down and do not stack any heavy items on top of the expansion joints.

INSTALLATION

1. Specifications

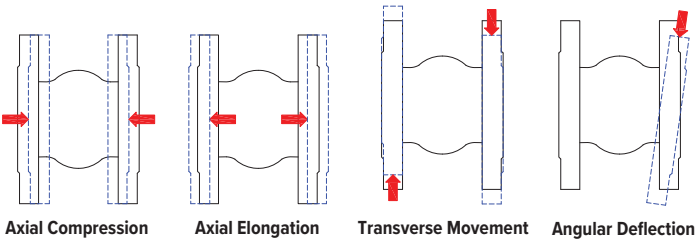
Make sure that the expansion joint you are using meets the system's required ratings for pressure, temperature, vacuum, elastic materials and movements.

2. Alignment

Expansion joints are not intended to correct pipe misalignment, which should be no more than 1/8" in any direction. Using an expansion joint to make up for piping misalignment errors will reduce the rated movements and cause premature failure. If the pipe is misaligned, adjust fixation points, keeping in mind axial compression or elongation, as well as transverse movement and angular deflection when trying to make up for misalignments. Please see diagram and chart below.



BRAID LIMITS



Size	Maximum Axial Compression	Maximum Axial Elongation	Maximum Transverse Movement	Maximum Angular Deflection
2-1/2	0.500"	0.375"	0.50"	15°
3	0.500"	0.375"	0.50"	15°
4	0.625"	0.375"	0.50"	15°
5	0.625"	0.375"	0.50"	15°
6	0.625"	0.375"	0.50"	15°
8	0.625"	0.375"	0.50"	15°
10	0.625"	0.500"	0.75"	15°

FIGURE 40

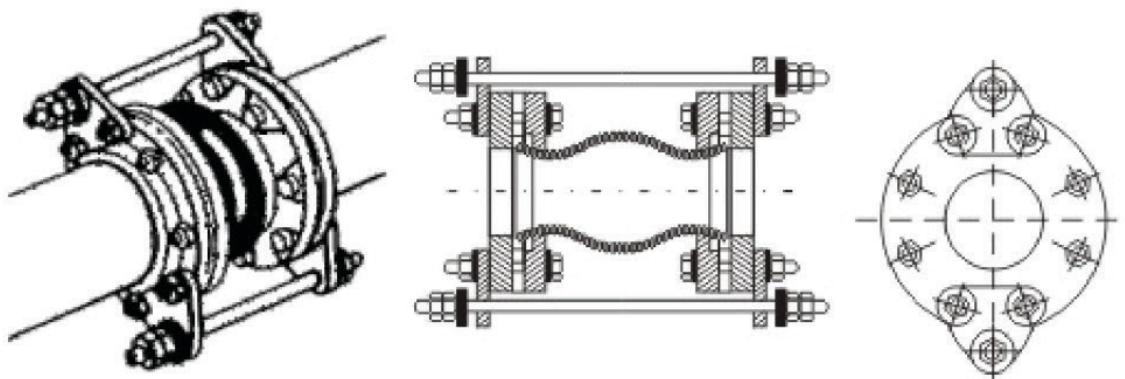
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3. Anchoring

The alignment of the piping system should be adjusted and secured with fixation points as close as possible on each side of the rubber joints at a distance less than three times the pipe's nominal diameter. These fixation points must be installed when mounting a rubber joint with control rods or in the case of an elbow pipe. If there is considerable distance between two fixation points, guiding points can be installed to support and guide the pipe. Expansion joints should be installed on straight runs between anchors. Control rods should be used on all expansion joints to prevent excessive movements due to pressure thrusts or other circumstances.



4. Pipe Support

Do not carry any pipe weight on the expansion joint. The piping must be supported.

- When installing, take care that the rubber joint does not support compression or extension due to the weight of the upstream or downstream pipe.
- See note above for alignment that the joint isn't compressed or extended in service.

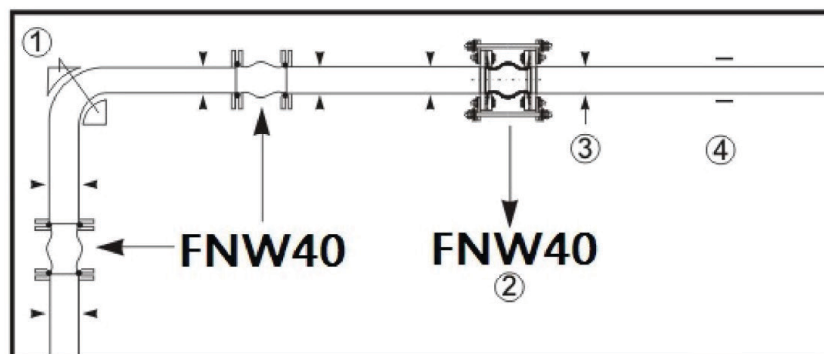
Mounting order:

- 1-Upstream pipe; anchor.
- 2-Downstream pipe; anchor.
- 3-Rubber joint.

When installing the rubber joint, take care that it is not twisted in any way.

Verify that the upstream and downstream pipe alignment do not deviate more than 1/8" (3mm) and that the rubber joint does not support heavy weight.

CONTROL RODS—CONTROL OF EXTENSION



Installment Scheme

- 1) Anchor
- 2) With control rods
- 3) Fixation points
- 4) Guiding points

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5. Mating Flanges

Verify that the surfaces meeting the joint are perfectly clean, flat-faced type, and without cutting edges (pipe), thus avoiding damage to the joint surface. Insert the bolts on the arch side of the joint, thus avoiding direct contact with the rubber. The breach opening must match the flange-to-flange dimension of the expansion joint. Composite gaskets are required when attaching beaded end flange expansion joints to raised face flanges. Expansion joints are never to be installed next to butterfly or check valves.

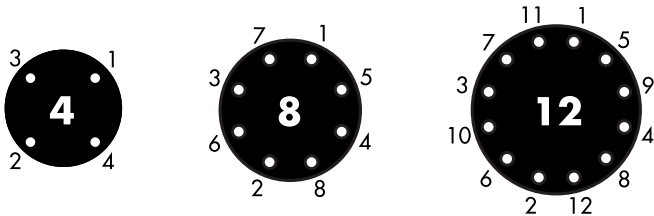
6. Bolting Torque

Recommended torque values are in Table 8 for the flexible connector. Properly tighten the bolts per the sequence chart while following the torque values in Table 8. Do not overtighten as this can cause metal-to-metal contact. Due to installation offsets, environmental conditions, flange surfaces and operating pressures, the torque values are approximate.

Nominal Pipe Size Expansion Joint I.D. Inch/(mm)	Step 1 FT-LBS (Nm)	Rest	Step 2 FT-LBS (Nm)	Rest	Step 3 FT-LBS (Nm)
2.5 (65)	18 (25)	30 min.	35 (50)	60 min.	50-60 (70-80)
3 (80)	25 (35)	30 min.	45 (60)	60 min.	60-75 (80-100)
3.5 (90)	25 (35)	30 min.	45 (60)	60 min.	60-75 (80-100)
4 (100)	25 (35)	30 min.	45 (60)	60 min.	60-75 (80-100)
5 (125)	25 (35)	30 min.	45 (60)	60 min.	60-75 (80-100)
6 (150)	30 (40)	30 min.	50 (70)	60 min.	60-75 (80-100)
8 (200)	30 (40)	30 min.	50 (70)	60 min.	60-75 (80-100)
10 (250)	30 (40)	30 min.	50 (70)	60 min.	75-85 (100-115)

SEQUENCE CHART

Tighten opposing nuts/bolts gradually according to the following sequence:



Do not paint or cover the joint with insulation. Covering the expansion joint prevents the detection of flange leaks and can also cause premature failure to the elastomer. If insulation is necessary, bring it up to the pipe flanges and leave the expansion joint exposed.

When performing heat-producing work, such as welding or burning, that is carried out within close range, cover or dismount the rubber joint. The heat can cause damage to the elastomer, resulting in premature failure.

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MAINTENANCE

Bolt tightness should be checked daily within the first month after services and checked periodically thereafter. Retighten if necessary.

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