



METRASPHERE ELASTOMERIC JOINTS WITH SOLID STEEL FLOATING FLANGES

OPERATION, INSTALLATION AND MAINTENANCE INSTRUCTIONS

General: The Metrasphere family of joints are elastomeric expansion joints with solid steel flanges and a metallic retaining wire rope. They are designed to isolate vibration, absorb thermal expansion, and allow for minor pipe misalignment. MetraSphere expansion joints are available in a wide range of configurations and elastomers. Consult the specific product data sheet for MetraSphere performance data on the joint you will be using.

Application

1. Metraspheres are designed for use with standard IPS pipe flat or standard raised face steel flanges. Consult Metraflex if the joint is to be used with pipe and fittings made to other dimensions.
2. Do not bolt directly to another component with an elastomer face, such as butterfly valves and Grooved Flange Adapters: If you must bolt directly to a component with an elastomeric face you must use a MetraSphere Transition Flange from Metraflex or equal.
3. Plastic Pipe Flanges: MetraSpheres have a bead seal and may not be suitable for connection to plastic piping flanges such as PVC and fiberglass that require flat faced flange connection. Other Metraflex products are more suitable for this application, consult with Metraflex for details.
4. Check Valves: When connecting to any center guided style silent check valve, only install Metrasphere on the discharge side.

Joint Preparation

1. Before installation check the interior, exterior and flange faces of the expansion joint for cuts or gouges.
2. Connecting flange face must be clean and free of damage.
3. Care must be used when pushing the joint into the breach between the mating flanges so as not to roll the leading edge of the joint out of its flange groove.
4. It is acceptable (but not necessary) to lubricate the expansion joint flanges with a thin film of graphite dispersed in glycerin or water to ease installation and disassembly.

Installation

1. Install at face to face dimension shown on drawing/catalog. Installation at different lengths or between flanges that are not parallel can lead to failure. Under no circumstance are flange bolts to be used to stretch the sphere into contact with a mating flange. Installation tolerance for overall length and misalignment is 1/8"
2. DO NOT use gaskets between the sphere and the connecting flange surface.
3. If bolt threads are facing the joint, trim the length of the bolts so they do not extend past the nut more than 2 threads or 1/8" to avoid contact with the elastomeric part of the joint.
4. Using plated steel washers between the nut and the flange is recommended.
5. Bolt Torque. Use a torque wrench and the crisscross method to apply torque to the nuts. First, uniformly torque the nuts to approximately 60% of the minimum torque. Ensure that the gap between the flanges is even around the flange. Then complete the tightening process. The gap between the flanges must be uniform when finished. Recommended flange bolt torque for the following joint sizes is: 1" to 2" – 45 ft-lb, 2-1/2" to 8" - 60 ft-lb, 10" to 20" – 80 ft lb. Do not over tighten to the point where there is metal to metal contact between the joint flange and the mating flange. NOTE – Rubber tends to relax after initial tightening, so it is necessary to retighten the flange bolts 24 hours after initial installation to the recommended torque. We also recommend to recheck the bolt torque after 3 weeks.
6. Control Rods: The use of control rods on MetraSpheres is recommended for installations where the piping on both sides of the sphere is not properly restrained to prevent the extension that will result from the hydrostatic end load due to the internal pressure. Control rods are to be adjusted to allow movement that is less than or equal to the recommended extension of the rubber joint. If the sphere is subject to compression the control rods must have additional nuts or compression sleeve installed to prevent over-compression. See "Control Rod Installation Instructions" for additional information.





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7. If the rubber joint is used as an expansion joint the piping system must be properly anchored and guided in accordance with Expansion Joint Manufacturers Association. See below table for guide spacing recommendations.

Size	Max Distance to 1st Guide Anchor	Distance from 1st Guide to 2nd Guide	Additional Guide Distance in Feet				
			Pressure				
			50	100	150	200	300
2"	8"	2' - 4"	32	23	18	17	15
2-1/2"	10"	2' - 11"	35	28	22	21	20
3"	1' - 0"	3' - 6"	38	28	23	20	17
4"	1' - 4"	4' - 8"	52	38	31	25	22
5"	1' - 8"	5' - 8"	63	45	38	31	25
6"	2' - 0"	7' - 0"	68	48	40	33	28
8"	2' - 8"	9' - 4"	87	62	45	42	38
10"	3' - 4"	11' - 8"	107	75	60	52	48
12"	4' - 0"	118	118	85	70	60	50

Table based on expansion Joint Manufacturers Association recommendations

8. If the joint is the reducing sphere model, control rods and gusset plates specifically designed for the joint must be used.
9. Do not paint or insulate the joint, except when Hypalon is applied as a UV protectant.

Testing: Joint may be one-time hydrostatically pressure tested to 1.5 times the product's maximum operating pressure for a maximum of 4 hours. Do not exceed maximum pressure or temperature during operation. Consult with Metraflex before testing with air.

Storage: Ideal storage is a warehouse with a relatively dry, cool location. Store flange face down on a pallet or wooden platform. Do not store heavy items on top of an expansion joint. Ten year shelf-life can be expected with ideal conditions. If storage must be outdoors joint should be placed on wooden platforms and should not be in contact with the ground. Cover with a tarpaulin to prevent exposure to sunlight/UV rays.

Large Joint Handling: Do not lift with ropes or bars through the bolt holes. If lifting through the bore, use padding or a saddle to distribute the weight. Make sure cables or forklift tines do not contact rubber. Do not let joints sit vertically on the edges of the flanges for any period of time.

Maintenance:

1. Periodically inspect the joint for bolt torque, damage, cracking or hardening.
2. The Metrasphere has no serviceable parts.

Note: Some of this information has been taken from the Fluid Sealing Association Handbook on Non-Metallic Expansion Joints.

Contact Metraflex or your local Metraflex Representative with any questions.

