

SECTION 15125 - PIPE EXPANSION JOINTS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE:

- A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of expansion compensation products of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Codes and Standards:
 - 1. EJMA Compliance: Construct expansion compensation products in accordance with standards of the Expansion Joint Manufacturer's Association (EJMA).

1.2 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical product data, including installation instructions for each type of expansion compensation product. Submit expansion compensation schedule showing Manufacturer's figure number, size, location, and features for each required expansion compensation product.
- B. Shop Drawings: Submit manufacturer's assembly-type shop drawings for each type of expansion compensation product, indicating dimensions, weights, required clearances, and methods of assembly of components.
- C. Shop Drawings: Submit shop drawings for fabricated expansion loops indicating location, dimensions, pipe sizes, and location and method of attachment of anchors.
- D. Maintenance Data: Submit maintenance data and spare parts lists for each type of expansion compensation product. Include this data, product data, and shop drawings in Maintenance Manual; in accordance with requirements of Division 15.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - 1. Packless Expansion Joints Compensators:
 - a. Flexonics Div.; UOP, Inc.
 - b. Hyspan Precision Products, Inc.
 - c. Keflex, Inc.
 - d. Metraflex Co.
 - e. American BOA, Inc.
 - 2. Packless Rubber Expansion Joints:
 - a. Garlock; Mechanical Packing Div.
 - b. Mason Industries, Inc.
 - c. Metraflex Co.

3. Pipe Alignment Guides:
 - a. Hyspan Precision Products, Inc.
 - b. Metraflex Co.
 - c. Keflex, Inc.
 4. Slip Joints
 - a. Advanced Thermal Systems, Inc.
 - b. Hyspan Precision Products, Inc.
 5. Flexible Ball Pipe Joints
 - a. Advanced Thermal Systems, Inc.
 - b. Barco Div., Marison Industries
 - c. Gustin-Bacon Div.; Aeroquip Corp.
 6. Grooved Piping Couplings and Nipples Expansion Joints:
 - a. Gustin-Bacon Div.; Aeroquip Corp.
 - b. ITT Grinnell
 - c. Victaulic Co. of America
- 2.2 PIPE EXPANSION JOINTS, GENERAL:
- A. Pipe expansion joints shall provide 200 percent absorption capacity of calculated piping expansion between anchors.
- 2.3 PACKLESS EXPANSION JOINTS:
- A. General: Provide bellows expansion joints where indicated for piping systems, with materials and pressure/temperature ratings selected by manufacturer to suit intended service. Select expansion joints to provide 200 percent absorption capacity with 30 percent safety factor.
 - B. Bellows-Type Expansion Joints:
 1. Externally pressurized, bellows-type:
 - a. ASTM A240 T304 Stainless Steel laminated bellows.
 - b. Flanged Connections, conforming to ANSI B16.5.
 - c. Lifting lug.
 - d. Drain port.
 - e. 150 psig design pressure.
 - f. Minimal warranted cycle life of 10,000 full-stroke cycles.
 - g. Internally guided.
 2. Bellows-type expansion joint:
 - a. ASTM A240 T304 Stainless Steel laminated bellows.
 - b. Flanged connections, conforming to ANSI B16.5.
 - c. 150 psig design pressure.
 - d. Internal stainless steel liner.
 - e. Shouldered support of bellows to minimize stress at pipe-bellows weld.
 - f. External shroud
 - g. Minimum warranted life of 10,000 full-stroke cycles.

- C. Expansion Compensators: Pressure rated for 125 psi for low-pressure systems and for 175 psi for high-pressure systems with a cycle life of 10,000 full-stroke cycles. Units shall have 2-ply phosphor bronze bellows, brass shrouds, and end fittings for copper piping systems and 2-ply stainless steel bellows, carbon steel shrouds, and end fittings for steel piping systems. Expansion compensators shall have internal guides and anti-torque device and removable end clip for proper positioning.
 - 1. Provide Keflex series 7Q; or equal.
 - D. Rubber Expansion Joints: Fabric-reinforced butyl rubber with full- faced integral flanges, external control rods and shall be internally reinforced with steel retaining rings over entire surface of flanges, drilled to match flange bolt holes.
- 2.4 SLIP JOINTS:
- A. Slip Joints: Carbon steel slip type, designed for repacking under pressure. Slip joints shall have drip connections for steam piping systems and flanged or weld ends to mate with piping system. Packing shall be an asbestos-free compound.
- 2.5 FLEXIBLE BALL PIPE JOINTS:
- A. Joints shall be designed for 360 degree rotation and with minimum of 30 degree angular deflection for sizes 6 inches and smaller; 15 degree for sizes 8 inches and larger.
 - B. Joints shall be carbon steel and shall comply with Section II of ASME Boiler and Pressure Vessel Code and ASME B31.9 "Building Service Piping" for materials and design of pressure containing parts and bolting. Packing shall be asbestos-free composition.
 - 1. Each assembly shall be factory tested with steam at working pressure of piping system for zero leaks before shipment.
- 2.6 EXPANSION JOINTS FOR GROOVED PIPING:
- A. Combination Couplings and Nipples: Cut grooved short ASTM A 53 steel pipe nipples and ductile iron or malleable iron couplings, with removable ties to hold joint compressed or expanded during piping fabrication. Select suitable gasket materials for piping system.
 - B. Slip-Type Expansion Joints: Ductile iron or malleable iron housing, ASTM A 53 steel pipe body, and polytetrafluoroethylene (PTFE) modified polyphenylene coated steel pipe slide. Select suitable gasket material for piping system.
- 2.7 PIPE ALIGNMENT GUIDES:
- A. General: Provide pipe alignment guides at locations and spacing indicated. Construct with 4-finger spider traveling inside guiding sleeve, with provision for anchoring to concrete substrate.
 - 1. Grinnell Fig. 256
 - 2. Guides shall be equipped with factory insulation insert, thickness to match adjoining insulation. Insulation shall be Hydrous Calcium Silicate, 1200 F. maximum temperature, with 0.31 K-factor and vapor barrier.

PART 3 EXECUTION

3.1 INSPECTION:

- A. Examine areas and conditions under which expansion compensation products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer. Coordinate anchor locations & loads with Structural Engineer.

3.2 EXPANSION JOINTS:

- A. Install expansion joints where indicated, for adequate expansion of installed piping system. Install in accordance with manufacturer's instructions. Provide pipe anchors and pipe alignment guides as indicated, and in accordance with manufacturer's recommendations. Align units properly to avoid end loading and torsional stress.

3.3 EXPANSION LOOPS:

- A. Fabricate expansion loops to dimensions indicated, in locations indicated, for adequate expansion compensation of installed piping system. Provide pipe anchors and pipe alignment guides as indicated, to properly anchor and align piping in relationship to expansion loops.

3.4 EXPANSION COMPENSATION FOR RISERS AND TERMINALS:

Detail on Drawings

- A. Install connection between piping mains and risers with at least 5 pipe fittings including tee in main. Install connections between piping risers and terminal units with at least 4 pipe fittings including tee in riser.

3.5 INSTALLATION OF PIPE ALIGNMENT GUIDES:

- A. Install pipe alignment guides on piping that adjoins expansion joints and elsewhere as indicated.
- B. Anchor to building substrate.

END OF SECTION 15125