

SECTION 22 0516

EXPANSION FITTINGS AND LOOPS FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flexible pipe connectors.
- B. Expansion joints and compensators.
- C. Pipe loops, offsets, and swing joints.

1.02 RELATED REQUIREMENTS

- A. Section 22 1005 - Plumbing Piping.
- B. Section 23 2113 - Hydronic Piping.
- C. Section 23 2213 - Steam and Condensate Heating Piping.
- D. Section 23 2300 - Refrigerant Piping.

1.03 REFERENCE STANDARDS

- A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015.
- B. EJMA (STDS) - EJMA Standards; Tenth Edition.
- C. ITS (DIR) - Directory of Listed Products; current edition.
- D. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Flexible Pipe Connectors: Indicate maximum temperature and pressure rating, face-to-face length, live length, hose wall thickness, hose convolutions per foot and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid.
 - 2. Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation.
- C. Design Data: Indicate selection calculations.
- D. Manufacturer's Instructions: Indicate manufacturer's installation instructions, special procedures, and external controls.
- E. Maintenance Data: Include adjustment instructions.
- F. Project Record Documents: Record installed locations of flexible pipe connectors, expansion joints, anchors, and guides.

1.05 REGULATORY REQUIREMENTS

- A. Conform to UL (DIR) requirements.

PART 2 PRODUCTS

2.01 FLEXIBLE PIPE CONNECTORS - STEEL PIPING

- A. Manufacturers:
 - 1. Mercer Rubber Company; _____: www.mercer-rubber.com.
 - 2. Metraflex Company; _____: www.metraflex.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Inner Hose: Carbon steel.
- C. Exterior Sleeve: Single braided, stainless steel.
- D. Pressure Rating: 125 psi and 450 degrees F.
- E. Joint: As specified for pipe joints.

- F. Size: Use pipe sized units.
- G. Maximum offset: 3/4 inch on each side of installed center line.

2.02 FLEXIBLE PIPE CONNECTORS - COPPER PIPING

- A. Manufacturers:
 - 1. Mercer Rubber Company; _____: www.mercer-rubber.com.
 - 2. Metraflex Company; _____: www.metraflex.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Inner Hose: Bronze.
- C. Exterior Sleeve: Braided bronze.
- D. Pressure Rating: 125 psi and 450 degrees F.
- E. Joint: As specified for pipe joints.
- F. Size: Use pipe sized units.
- G. Maximum offset: 3/4 inch on each side of installed center line.
- H. Application: Copper piping.

2.03 EXPANSION JOINTS - STAINLESS STEEL BELLOWS TYPE

- A. Manufacturers:
 - 1. Mercer Rubber Company; _____: www.mercer-rubber.com.
 - 2. Metraflex Company; _____: www.metraflex.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Pressure Rating: 125 psi and 400 degrees F.
- C. Maximum Compression: 1-3/4 inches.
- D. Maximum Extension: 1/4 inch.
- E. Joint: As specified for pipe joints.
- F. Size: Use pipe sized units.
- G. Application: Steel piping 3 inches and under.

2.04 EXPANSION JOINTS - EXTERNAL RING CONTROLLED STAINLESS STEEL BELLOWS TYPE

- A. Manufacturers:
 - 1. Mercer Rubber Company; _____: www.mercer-rubber.com.
 - 2. Metraflex Company; _____: www.metraflex.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Pressure Rating: 125 psi and 400 degrees F.
- C. Maximum Compression: 15/16 inch.
- D. Maximum Extension: 5/16 inch.
- E. Maximum Offset: 1/8 inch.
- F. Joint: Flanged.
- G. Size: Use pipe sized units.
- H. Accessories: Internal flow liner.
- I. Application: Steel piping over 2 inches.

2.05 EXPANSION JOINTS - TWO-PLY BRONZE BELLOWS TYPE

- A. Manufacturers:
 - 1. Mercer Rubber Company; _____: www.mercer-rubber.com.
 - 2. Metraflex Company; _____: www.metraflex.com.
 - 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Construction: Bronze with anti-torque device, limit stops, internal guides.

- C. Pressure Rating: 125 psi and 400 degrees F.
- D. Maximum Compression: 1-3/4 inches.
- E. Maximum Extension: 1/4 inch.
- F. Joint: Soldered.
- G. Size: Use pipe sized units.
- H. Application: Copper piping.

2.06 EXPANSION JOINTS - LOW PRESSURE COMPENSATOR WITH TWO-PLY BRONZE BELLOWS

- A. Manufacturers:
 1. Mercer Rubber Company; _____: www.mercer-rubber.com.
 2. Metraflex Company; _____: www.metraflex.com.
 3. Substitutions: See Section 01 6000 - Product Requirements.
- B. Working Pressure: 75 psi.
- C. Maximum Temperatures: 250 degrees F.
- D. Maximum Compression: 1/2 inch.
- E. Maximum Extension: 5/32 inch.
- F. Joint: Soldered.
- G. Size: Use pipe sized units.
- H. Application: Copper or steel piping 3 inches and under.

2.07 ACCESSORIES

- A. Stainless Steel Pipe: ASTM A269/A269M, seamless type, Grade TP304.
- B. Pipe Alignment Guides:
 1. Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1 inch thick insulation, minimum 3 inches travel.
- C. Swivel Joints:
 1. Fabricated steel body, double ball bearing race, field lubricated, with rubber (Buna-N) o-ring seals.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install in accordance with EJMA (Expansion Joint Manufacturers Association) Standards.
- C. Install flexible pipe connectors on pipes connected to vibration isolated equipment. Provide line size flexible connectors.
- D. Install flexible connectors at right angles to displacement. Install one end immediately adjacent to isolated equipment and anchor other end. Install in horizontal plane unless indicated otherwise.
- E. Anchor pipe to building structure where indicated. Provide pipe guides so movement is directed along axis of pipe only. Erect piping such that strain and weight is not on cast connections or apparatus.
- F. Provide support and equipment required to control expansion and contraction of piping. Provide loops, pipe offsets, and swing joints, or expansion joints where required.

END OF SECTION 22 0516

