

SECTION 23 05 16

EXPANSION FITTINGS AND LOOPS FOR HVAC AND PLUMBING PIPING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Flexible pipe connectors.
2. Expansion joints.
3. Expansion compensators.
4. Pipe alignment guides.
5. Swivel joints.
6. Pipe anchors.

B. Related Sections:

1. Division 23 - Hangers and Supports for HVAC and Plumbing Piping and Equipment: Product and installation requirements for piping hangers and supports.
2. Division 23 - Vibration and Seismic Controls for HVAC Piping and Equipment: Product and installation requirements for vibration isolators used in piping systems.
3. Division 23 - Hydronic Piping: Product and installation requirements for piping used in hydronic heating and cooling systems.
4. Division 23 - Steam and Condensate Heating Piping: Product and installation requirements for piping used in steam systems.
5. Division 23 - Refrigerant Piping: Product and installation requirements for piping used in refrigeration systems.
6. Division 23 - Internal-Combustion Engine Exhaust Piping: Product and installation requirements for piping used in engine exhaust systems.

1.02 REFERENCES

A. American Society of Mechanical Engineers:

1. ASME B31.1 - Power Piping.
2. ASME B31.5 - Refrigeration Piping.
3. ASME B31.9 - Building Services Piping.
4. ASME Section IX - Boiler and Pressure Vessel Code - Welding and Brazing Qualifications.

B. American Welding Society:

1. AWS D1.1 - Structural Welding Code - Steel.

1.03 DESIGN REQUIREMENTS

- ###### A.
- Provide structural work and equipment required for expansion and contraction of piping. Verify anchors, guides, and expansion joints provide and adequately protect system.

1.04 SUBMITTALS

- ###### A.
- Division 01 - Submittal Procedures: Requirements for submittals.
- ###### B.
- Shop Drawings: Indicate layout of piping systems, including flexible connectors.

- C. 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.
- D. Manufacturer's Installation Instructions: Submit special procedures.
- E. Acceptance or no exceptions taken by the engineer on any substitution proposed by the contractor shall not be construed as relieving the contractor from compliance with the project's specifications and performance requirements nor departure there from. The contractor remains responsible for details and accuracy for confirming and correlating quantities and dimensions and for the selection of fabrication processes, techniques and assembly, coordination of his work with that of all other trades and making any needed modifications consequent to the substitution at his own cost and for performing the work in a safe manner.

1.05 CLOSEOUT SUBMITTALS

- A. Division 01 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents: Record actual locations of flexible pipe connectors, expansion joints, anchors, and guides.
- C. Operation and Maintenance Data: Submit adjustment instructions.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with ASME B31.1, ASME B31.5 and ASME B31.9 code for installation of piping systems and ASME Section IX for welding materials and procedures.
- B. Maintain one copy of each document on site.

1.07 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Division 01 - Product Requirements: Product storage and handling requirements.
- B. Protect equipment from exposure by leaving factory coverings, pipe end protection, and packaging in place until installation.

1.09 WARRANTY

- A. Division 01 - Execution and Closeout Requirements: Product warranties and product bonds.

PART 2 PRODUCTS

2.01 FLEXIBLE PIPE CONNECTORS

- A. Acceptable Manufacturers:
 - 1. Flextronics Model 401M or approved equal.
 - 2. Substitutions: Division 01 – Product Requirements

- B. Steel Piping:
 - 1. Inner Hose: Carbon Steel, Stainless Steel or Bronze.
 - 2. Exterior Sleeve: Double braided, stainless steel or bronze.
 - 3. Pressure Rating: 125 psig WSP and 450 degrees F.
 - 4. Joint: As specified for pipe joints.
 - 5. Size: Use pipe-sized units.
 - 6. Maximum offset: 1 inch on each side of installed center line.

- C. Copper Piping:
 - 1. Inner Hose: Bronze.
 - 2. Exterior Sleeve: Braided bronze.
 - 3. Pressure Rating: 125 psig WSP and 450 degrees F.
 - 4. Joint: As specified for pipe joints.
 - 5. Size: Use pipe sized units.
 - 6. Maximum offset: 1 inch on each side of installed center line.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install Work in accordance with ASME B31.9.

- B. Install flexible pipe connectors on pipes connected to equipment supported by vibration isolation. Refer to Division 21. Provide line size flexible connectors.

- C. 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.

END OF SECTION