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Product Specifications

**Note to users: items shown in red indicated edits / selections that need to be made to tailor the specification for the application.**

Retain and edit "Delegated-Design Submittal" Paragraph 1.E below if design services have been delegated to the contractor. The delegated design may be completed entirely by the contractor or may also involve the equipment manufacturer. Typically, the contractor would be responsible for the means and methods to attach anchors and guides to the structure, and field-fabrication of anchors. Expansion joint manufacturers may be involved in the piping analysis and selection of expansion joints and placement of anchors and guides.

# Quiet Carbon Steel Expansion Compensator:

1. General:
2. Provide expansion compensators as indicated on the contract drawings or as required to accommodate any axial thermal expansion or contraction of the piping system.
3. Expansion compensators to be of the packless, externally pressurized type where system line pressure is external to the bellows to minimize squirm.
4. Externally pressurized bellows expansion compensators shall not be utilized to compensate for lateral, angular, or rotational movements.

D All materials of construction, pressure ratings, and end fittings shall be appropriate for the application. Guiding and anchoring per EJMA recommendations and guidelines

E Delegated-Design Submittal: Provide analysis signed and sealed by a qualified professional engineer. Submittal shall include [edit as required for project]:

* 1. Design Calculations: Calculate requirements for thermal expansion of piping systems and criteria for selecting and designing expansion joints, hard-pipe loops, and swing connections.
  2. Schedule and drawings: Indicate type, manufacturer's number, size, material, pressure rating, end connections, and locations for each expansion joint, anchor and guide.
  3. Anchor Details: Detail fabrication of each anchor indicated. Show dimensions, methods of assembly, and attachment to building structure.
  4. Alignment Guide Details: Detail field assembly and attachment to building structure.

2. Products

1. Manufacturer: Expansion compensators shall be **“HPQ3”** as manufactured by The Metraflex Company®, Chicago, IL.
2. Compensator shall include nickel plated dual internal guides end plate for silent operation.
3. Expansion joints shall conform to MIL–E–17813H
4. Performance: Expansion joints shall be pressure rated for 175 psi @ 500⁰ F.
5. Test pressure shall be 250 psi @ 70⁰ F.
6. Movement capabilities to be 3” axial compression and .5” extension.
7. Construction: All welded construction with 304 stainless steel bellows, integral guide rings, and carbon steel shroud.
8. Bellows: Bellows shall be 2 ply, low corrugation style manufactured from T304 stainless steel. The number of corrugations and overall length of the expansion joints shall be determined by the thermal expansion requirements, system design engineer, and manufacturer’s recommendations based on EJMA (Expansion Joint Manufacturers Association) standards.
9. End connections shall be:
   1. 150 lb. pattern flanged,
   2. Sch 40 carbon steel Male Pipe Thread
   3. Sch 40 carbon steel weld end.
10. Compensator shall be equipped with anti-torque devise to protect the bellows.
11. Traveling end of compensator shall be equipped with a O-Ring debris shield to inhibit debris from entering compensator.

3. Execution

A. The HPQFF3 is often installed in risers. Risers develop additional loads compared to horizontal pipe runs. For riser applications refer to “Understanding The Dynamic Of Riser Design In Skyscrapers” found at [www.metraflex.com](http://www.metraflex.com).

B. Guiding: Pipe guides adjacent to the expansion joint shall be in accordance with EJMA guidelines based on design pressure and line size. Alternative guiding may be acceptable after design review by manufacturer, calculations with qualified design professional’s signature and seal shall be submitted.

C. When installed in vertical pipe runs expansion joint shall be installed with the traveling end on top to facilitate drainage of the expansion joint.

D. Installation shall be in accordance with manufacturers printed instructions.