Typical Causes of Metal Expansion Joints Failure

The following list shows some typical causes of Metallic Expansion Joint failure:

1. Shipping and handling damage like denting or gouging of bellows from being struck by hard objects (tools, chain falls, forklifts, adjacent structures, etc.); improper stacking for shipping or storage; insufficient protection from weather or other adverse environmental conditions.

2. Improper installation and insufficient protection.

3. Expansion Joints with internal liners installed in the reverse direction with respect to flow.

4. Installing an expansion joint in a location other than as prescribed by the installation drawings.

5. Premature removal of shipping devices.

6. Springing of bellows to make up for piping misalignment.

7. Insufficient protection from mechanical damage due to work in the surrounding area.

8. Insufficient protection of bellows during nearby welding operations.

9. Failure to remove shipping devices before placing system in operation.

10. Improper anchoring, guiding and supporting of the system.

11. Anchor failure in service.

12. Bellows corrosion, both internal and external.

13. System over-pressure (in-service or hydrotest).

14. Bellows vibration (mechanical or flow induced resulting in high cycle fatigue).

15. Excessive bellows deflection (axial, lateral, angular deflections greater than design values).

16. Torsion.

17. Bellows erosion.

18. Packing of particulate matter in the bellows convolutions which inhibit proper movement of the bellows.

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