



## Bellows Expansion Joint Installation Manual

### 1. Purpose & Scope

This manual provides contractors and engineers with the essential steps for safe handling and proper installation of Flex Pipe USA metal bellows expansion joints. Follow these guidelines to prevent premature bellows fatigue, misalignment stress, and pressure-thrust failures.

### 2. Safety Notice

- Isolate system pressure and allow the piping to cool.
- Use proper lifting equipment — never lift by the bellows.
- Leave shipping bars installed until anchors and guides are in place.

### 3. Pre-Installation Checklist

- Inspect bellows for dents, cracks, or shipping damage.
- Verify pressure / temperature ratings match system design.
- Confirm anchors and pipe guides are installed per EJMA spacing.
- Ensure piping is correctly aligned — max  $\pm 1/8$ " axial,  $\leq 1^\circ$  angular.

### 4. Installation Procedure

1. Position the expansion joint with flow arrow (if any) in the correct direction.
2. Loosely fit flange bolts / tack weld ends, then verify alignment.
3. Cross-tighten flange bolts to the recommended torque. Avoid over-compression.
4. Remove shipping bars only after piping, anchors, and guides are secured.
5. For weld ends, use short, cool weld passes to protect the bellows from heat.

### 5. Startup & Maintenance

- Pressurize the system slowly while observing the bellows.
- Check anchors and guides for movement or distortion.
- Inspect joints each shutdown cycle for leaks or bellows deformation.
- Typical inspection interval: HVAC—12 months, High-Temp—6 months.

### 6. Anchor / Guide Quick Reference

- Guide 1 distance:  $4 \times$  pipe diameter.
- Guide 2 distance:  $14 \times$  pipe diameter.
- Additional guides: every  $14 \times$  pipe diameter.
- Pressure thrust:  $F = \text{Pressure} \times \text{Effective Area}$ .

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