

SAFETY RECOMMENDATIONS FOR PIPING SYSTEMS CONTAINING BELLOWS EXPANSION JOINTS

Stainless steel Expansion Joints are designed for the absorption of movements from previously specified parameters. To achieve the maximum service life, resistance towards pressure and reliability, caution during handling, storage and installation must be exercised. For best results please follow the instructions below:

INSTALLATION AND HANDLING

The following recommendations are included to avoid the most common errors that occur during installation. When in doubt about an installation procedure, contact Vilanova y Cruz for clarification before attempting to install the expansion joint.

DO'S...

Inspect for damage during shipment such as: dents, broken hardware, water marks on carton, etc.

Store in a clean, dry area where it will not be exposed to heavy traffic or damaging environment.

Use only designated lifting lugs when provided.

Make the piping system fit the expansion joint. By stretching, compressing, or offsetting the joint to fit the piping, the expansion joint may be overstressed when the system is in service.

Leave one flange loose on the adjacent piping when possible, until the expansion joint has been fitted into position. Make necessary adjustments of this loose flange before welding.

Install the joint with the arrow pointing in the direction of flow.

In case of telescoping liner, install the smallest ID. liner, pointing in the direction of flow.

Remove all shipping devices after the installation is complete and before any pressure test of the fully installed system.

Remove any foreign material that may have become lodged between the convolutions.

Refer the proper guides or stabilizers spacing and anchoring recommendations in the paragraph "EXAMPLES"

DONT'S...

Drop or strike the expansion joint.

Remove the shipping bars until the installation is complete.

Remove any moisture-absorbing desiccant bags or protective coatings until ready for installation.

Use hanger lugs or shipping bars as lifting lugs.

Use chains or any lifting device directly on the bellows or bellows cover.

Allow weld spatter to hit unprotected bellows

Use cleaning agents which contain chlorides.

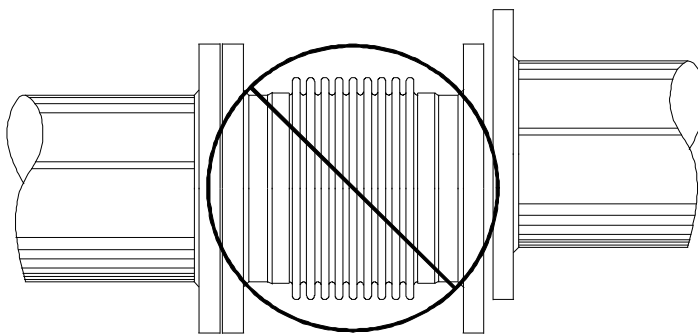
Force or rotate one end of an expansion joint for alignment of bolt holes. Bellows are not ordinarily capable of absorbing torsion.

Hydrostatic pressure test or evacuate the system before proper installation of all guides or stabilizers and anchors.

Use shipping bars to restrain the pressure thrust during testing.

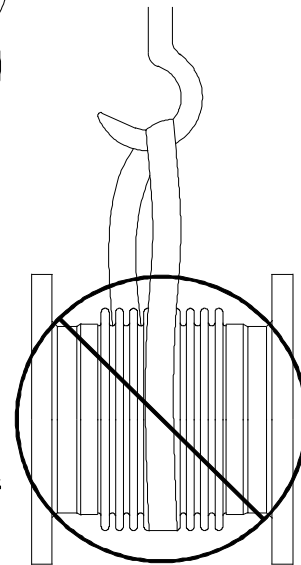
Exceed the rated test pressure of the expansion joint.

CAUTION: The Vilanova y Cruz warranty may be void if improper installation procedures have been used.



Never force an expansion joint to fit the space without prior notification of the manufacturer

Never use chains or other devices directly on the bellows



SAFETY RECOMMENDATIONS

INSPECTION PRIOR TO START-UP OR PRESSURE TEST

1. Are anchors, guides or stabilizers, installed in accordance with the system drawings?
2. Is the proper expansion joint in the proper location?
3. Are the expansion joint's flow direction and pre-positioning correct?
4. Have all of the expansion joint shipping devices been removed?
5. If the system has been designed for a gas, and is to be tested with water, has provision been made for proper support of the additional dead weight load on the piping and expansion joint? Some water may remain in the bellows convolutions after the test. If this is detrimental to the bellows or system operation, means should be provided to remove this water.
6. Are all guides or stabilizers, and the expansion joints free to permit pipe movement?
7. Has any expansion joint been damaged during handling and installation?

8. Is any expansion joint misaligned? This can be determined by measuring the joint overall length, inspection of the convolution geometry, and checking clearances at critical points on the expansion joint and at other points in the system.
9. Are the bellows and other movable portions of the expansion joint free of foreign material?

INSPECTION DURING AND IMMEDIATELY AFTER PRESSURE TEST

WARNING: Extreme care must be exercised while inspecting any pressurized system or component.

A visual inspection of the system should include the following:

1. Evidence of leakage or loss of pressure.
2. Distortion or yielding of anchors, expansion joint hardware, the bellows and other piping components.
3. Any unanticipated movement of the piping due to pressure.
4. Evidence of instability in the bellows.
5. The guide or stabilizers, expansion joints, and other movable parts of the system should be inspected for evidence of binding.
6. Any evidence of abnormality or damage should be reviewed and evaluated by competent design authority.

PERIODIC INSERVICE INSPECTION

WARNING: Extreme care must be exercised while inspecting any pressurized system or component.

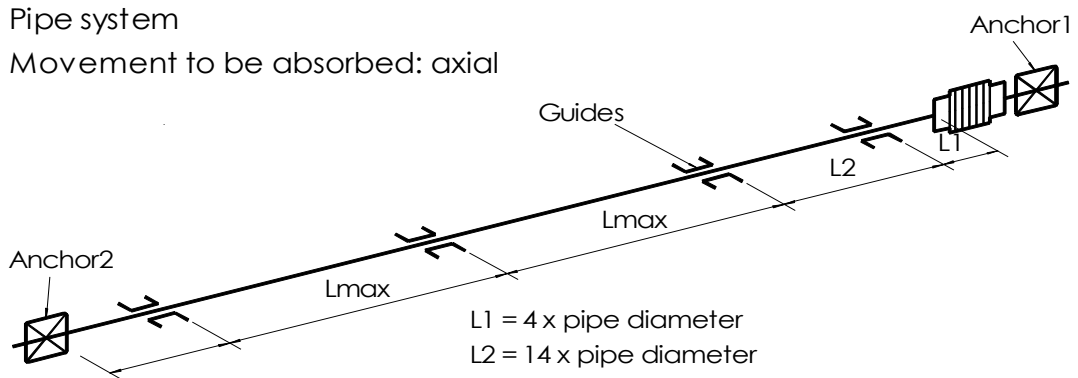
1. Immediately after placing the system in operation, a visual inspection should be conducted to insure that the thermal expansion is being absorbed by the expansion joints in the manner for which they were designed.
2. The bellows should be inspected for evidence of unanticipated vibration.
3. A program of periodic inspection should be planned and conducted throughout the operating life of the system. The frequency of these inspections should be determined by the service and environmental conditions involved. Such inspections can spot the more obvious potential problems such as external corrosion, loosening of threaded fasteners, and deterioration of anchors, guides or stabilizers and other hardware.

IT MUST BE UNDERSTOOD THAT THIS INSPECTION PROGRAM, WITHOUT ANY OTHER BACKUP INFORMATION, CANNOT GIVE EVIDENCE OF DAMAGE DUE TO FATIGUE, STRESS CORROSION OR GENERAL INTERNAL CORROSIÓN. THESE CAN BE THE CAUSE OF SUDDEN FAILURES AND GENERALLY OCCUR WITHOUT ANY VISIBLE OR AUDIBLE WARNING.

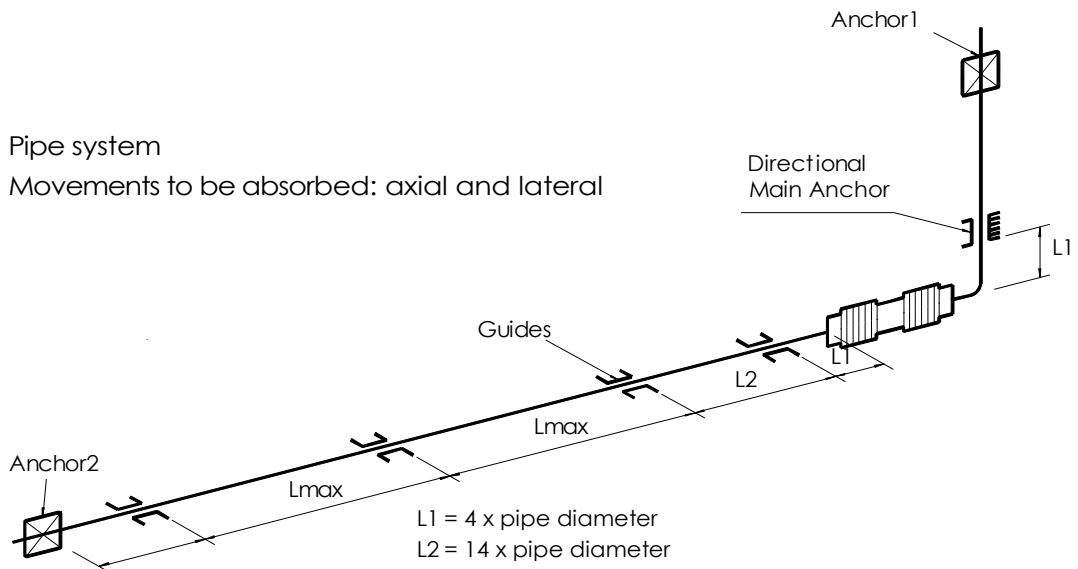
4. When any inspection reveals evidence of malfunction, damage, or deterioration, this should be reviewed by competent design authority for resolution. Additionally, any changes in the system operating conditions such as pressure, temperature, movement, flow, velocity, etc. that may adversely affect the expansion joint should be reported to and evaluated by a competent design authority.

EXAMPLES

Position of Axial Expansion Joints, Anchors and Guides.



Position of Universal Expansion Joints, Anchors and Guides.



**We furthermore refer to EJMA's installation instructions of steel Expansion Joints.
EJMA (Expansion Joints Manufacturers Association)**