



# METAL EXPANSION JOINTS STORAGE, TRANSPORT & INSTALLATION

do's, dont's and useful tips



# METAL EXPANSION JOINTS

In order to achieve the maximum service life, pressure resistance and reliability of the expansion joint, caution should be taken during handling, storage and installation.

Expansion joints can be damaged easily and failure to comply with the installation instructions could reduce the service life and pressure capacity of the expansion joint. This can in turn lead to damage or at worst, breakdown of the expansion joint or the pipe system.

The following do's and don'ts are suggested to reduce the likelihood of damage during storage, transport and installation.



# STORAGE AND TRANSPORT

## Do's

- ✓ Carry out a visual inspection immediately on receipt of the expansion joint to ensure that it has not been damaged during shipment
- ✓ Store the expansion joint on an even, solid surface in a clean and dry environment under a roof or waterproof cover
- ✓ If the weight of the end fittings tends to cause the bellows to bend, brace the ends using wooden supports
- ✓ Take care to avoid mechanical damage as well as damage by water, moisture, sand, soil, building materials and chemicals

## Don'ts

- ✗ Do not use transport fittings, tie rods, hinges or gimbals to sling and lift the expansion joint
- ✗ Do not lift expansion joint by slings or chains around the bellows or lift in a manner which causes the bellows to be subjected to mechanical loads
- ✗ Do not subject expansion joint must to torsion during handling and installation
- ✗ Do not stack expansion joints on top of each other or knock against each other



**TIP: Transport and pre-tensioning fittings** must NOT be removed until the expansion joint is fully installed. If these devices are removed prematurely, the expansion joint may move to an incorrect condition and could possibly endanger people working in the vicinity.

Furthermore, premature removal could cause the expansion joint not to function as intended, which could result in reduced service life or at worst breakdown of the expansion joint.

# PRIOR TO INSTALLATION

## Do's

- ✓ Check that expansion joint is not damaged and has no dents, damaged fittings or water marks on the steel (incipient rust), etc
- ✓ Check that expansion joint is free from foreign objects such as insulation materials, dirt or debris
- ✓ Ensure the sealing surfaces on flanges are even and clean
- ✓ Check that the gap in the pipeline where the expansion joint is to be installed matches the specified installation length of the expansion joint with design tolerances taken into account. Expansion joint must be fitted at the length stated in the specifications
- ✓ Ensure that connecting ends of the pipeline are clean and correctly prepared for welding
- ✓ Ensure the installation location of the expansion joint in the pipeline complies with that determined by the system designer
- ✓ Check that the expansion of the pipeline is in accordance with the design data of the expansion joint
- ✓ Ensure adjacent pipework is correctly installed with anchors, guides and supports in place
- ✓ Ensure anchors are adequate to accept reaction forces from the expansion joint and all other pipework loads
- ✓ Ensure only one expansion joint is fitted between two main anchors
- ✓ Ensure tie rods on lateral expansion joints are correctly fitted and are secure

# PRIOR TO INSTALLATION

## Don'ts

- ✘ Unless clearly stated in the design data of the expansion joint, expansion joint is not designed to compensate for installation inaccuracies in the piping and must not be used to correct them.



**TIP: Anchors and guides** on the pipeline must be placed as per the guidelines in EJMA so that:

- » Expansion joint is not subjected to dead-weight loads from the pipeline
- » Pipeline does not sag, “hog” or “snake” between anchors or guides
- » Drop rods or hanger rods should be avoided, guides should be slide or roller type
- » When using expansion joints, distance from first guide to expansion joint must not exceed 4 x nominal diameter of the pipeline
- » Distance between the first and the second guide must not exceed 14 x nominal diameter of the pipeline

# DURING INSTALLATION

## Do's

- ✓ Installation to be carried out by properly trained and competent staff working in compliance with relevant legislation and regulations for occupational safety
- ✓ Protect expansion joint against weld spatter and debris when welding or grinding near the expansion joint. We recommend using a chloride-free welding blanket
- ✓ Take care to avoid accidental arcing on the thin-walled bellows in the expansion joint
- ✓ Protect expansion joint from damage caused by adjacent construction work, splashes from mortar or plaster
- ✓ If the expansion joint is equipped with an inner sleeve, make sure the flow arrow on the expansion joint points in the direction of the system flow
- ✓ When installing angular expansion joints, ensure that the hinge pins are in the correct orientation
- ✓ When expansion joints are supplied without external covers and insulation is to be added, a lagging cover should be fitted to prevent insulation material becoming trapped between the bellows convolutions (which can lead to malfunctioning bellows)
- ✓ Take care when using installation tools to avoid damage to the bellows with spanners or wrenches when tightening bolts

# DURING INSTALLATION

## Dont's

- ✗ Do not apply torsion to the expansion joint to align the bolts on flanged units
- ✗ Do not remove components such as tie rods, hinge links and gimbals. They form part of the integrity and functionality of the expansion joint
- ✗ On flanged units, do not allow over-long studs or bolts to come into contact and damage the bellows



**TIP:** Before the completed system is tested and commissioned, it should be subjected to a visual inspection.

Many years of experience has shown that careful checking of the installation before pressure testing and final commissioning will help to ensure successful installation and performance.

Before pressure testing and as part of the inspection regime, ensure that all temporary shipping and pre-tensioning devices (marked by yellow and black striped tape) are removed from the expansion joint.

## VIEW MORE RESOURCES

Download the **Post Installation Checklist**; final checklist after installation

Get the cheat sheet –**Pressure Testing Expansion Joints**; best practice checklist



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