

Instruction for Storage, Unpacking, Handling and Assembly of MACOGA Metal Expansion Joints.

When in doubt about an installation procedure please contact MACOGA Technical Department before attempting to install the expansion joint. MACOGA's warranty may be void if improper installation procedures have been used.

This document gives general guidance for proper storage, unpacking, handling and assembly of MACOGA Metal Expansion Joints.

In case of doubt we recommend that you contact MACOGA directly and inquire about your specific question.

In order to ensure that the Expansion Joint work properly and in order to prolong its working life, it is necessary to respect a series of precautions that make the Expansion Joints almost maintenance free elements.

The most important precautions that must be observed are as follows:

Packing & Storage

- Expansion Joints are available to the customer securely packed according to the type of transport selected or contract requirements.
- Refer to MACOGA's Packing Procedures (air, sea & road) for a detailed description of the packing and protection of Expansion Joints.
- Attention shall be given to Phytosanitary Requirements (Heat Treatment of wood) for importing goods that are packed into wooden cases within ISPM territories.
- Expansion Joints cases shall be stored in a covered dry area. Indoor storage is required.
- Do not remove the Expansion Joints from its original packaging until you are ready to install.
- In case of aggressive atmospheres or long terms storage requirements contact MACOGA for specific packing procedures.

Handling of cases

- Lifting operations must at all times be carried out by qualified personnel using appropriate lifting equipment (forklifts, cranes, etc.).
- Use only designated lifting lugs when available. These are properly identified.
- For oversized and heavy cases, you may require specific handling instructions.
- When using cranes to lift the cases, make sure that the ropes shall not constrict the wooden cases when lifting. Do not use metal chains to lift the cases.

Unpacking & Handling the Expansion Joints

- Handling of expansion joints shall be carried out by experienced staff.
- Unpack the Expansion Joints carefully.
- Use only designated lifting lugs to lift the Expansion Joints. For expansion joints not provided with lifting lugs the best lifting method should be evaluated at the time of installation.
- Do not lift the expansion joint by the shipping bars. Shipping bars (painted yellow) are not designed to be lifting devices.
- Do not lift the expansion joint by the hinges, gimbals, tie rods or any other operative device.
- Do not fix any chains or ropes to the bellows section. The bellows portion of the expansion joint may be easily damaged and cannot usually be repaired.
- Inspect the units directly after unpacking has been completed. Report any damage immediately to your Engineering/Inspection Department for correct disposition.
- **DO NOT REMOVE ANY BLOCKING/TRANSPORT DEVICE (YELLOW MARKED AND CLEARLY IDENTIFIED) IF AVAILABLE UNTIL THE EXPANSION JOINT HAS BEEN INSTALLED.**

Installation

- Installation of expansion joints need particular care and shall be carried out by experienced staff.
- A check shall be carried out to ensure that the service data on the identification plate matches the operating data.
- A check shall be made to ensure that no foreign objects or media inside or outside of corrugations will affect the working of the bellows.
- Gaskets and seals if necessary shall be positioned correctly.
- Care should be taken to avoid any damage to the bellows such as dents, scores, arc strikes and weld splatters. Bellows elements must be protected appropriately.
- BEFORE ANY WELDING ACTIVITY, COVER THE BELLOWS ELEMENT WITH A CHLORIDE FREE FIRE RETARDANT BLANKET. This is to prevent arc strikes, weld splatter, etc., from damaging the bellows element.
- During welding operations no electrical current shall be conducted through the bellows.
- The expansion joint shall not be used for an earthing connection.
- Any field pre-positioning or pre-setting carried out when installing the Expansion Joints must be performed in accordance with the specific instructions supplied by MACOGA, including both the direction and magnitude of the movement.
- Expansion Joints must be fitted in the appropriate longitude as laid out in the instructions supplied by MACOGA. The Expansion Joints should not be stretched or compressed in order to absorb any defects along the length of the pipe. No movement of the Expansion Joint (compression, extension, lateral offset, rotation) due to piping misalignment shall be imposed which has not been anticipated and designed into the movement capability of the Expansion Joints. If such movements are imposed this can result in system malfunction, damage to the bellows, cycle life can be reduced, etc.
- Any field pre-positioning shall be performed in accordance with specific instructions which include both direction and magnitude of movement.
- Once the Expansion Joint has finally been installed and secured, all of the shipping devices, if any, must then be removed and not before.
- The Expansion Joint must be fitted according to the direction of flow in relation to the internal sleeve.
- Consideration shall be given to the inclination of the expansion joint in order to provide for drainage.

Post installation inspection prior to system pressure test

- Check that the Expansion Joint has been fitted in the correct place.
- Check that the Expansion Joint has been correctly installed with regards to the direction of flow.
- SHIPPING BARS (PAINTED YELLOW) MUST BE REMOVED PRIOR TO PRESSURE TEST.
- If hydro test, use only chloride free water to avoid chloride Stress Corrosion Cracking.
- Check that all of the supporting structures and anchorage have been correctly installed as planned.
- Check that there are no misalignments in the Expansion Joint.

Inspection during and immediately after system pressure test

- Check that there are no leaks and no loss of pressure.
- Check that the bellows are stable.
- Check that all of the anchors, guides, Expansion Joints and other components of the system are secure and resistant.

Periodic in-service inspection

- Check to see if the Expansion Joints in the manner for which they were designed are absorbing the movements.
- Check for any unexpected vibrations.
- Check for the existence of any signs of external corrosion, slack mechanical components (screws, tie rods, etc.) and also check that the anchorage points, guides, etc. are in perfect working order.
- Check that dust and other particles haven't built up between the convolutions of the Expansion Joint as this could limit or restrict its movement.

This document is "FOR INFORMATION ONLY" and MACOGA does not accept any liability of the information contained herein. The Purchaser shall be responsible for proper storage, unpacking, handling and installation of the Expansion Joints and operating within the design limits of the delivered unit(s). Handling, storage, unpacking and installation of the Expansion Joints shall constitute Purchaser's sole and exclusive responsibility. © 2016 MACOGA, S.A. Leira. s/n. 15680 Ordenes. La Coruña, Spain.