Design and installation instructions for kompaflex expansion joints

Design

- The expansion joints are designed to comply with the operating parameters which you stipulated.
- These operating parameters are shown on the technical data sheet. Should these data be exceeded, we assume no responsibility.
  At temperature changes, the expansion joint components have to be heated up and cooled down regularly where possible. If not defined by kompaflex otherwise, a threshold value of max. 80°C/h applies.
- The test pressure and installation length are indicated at 20°C, save where otherwise specified.
- Torsion strains of any kind are not acceptable for expansion joints. Please take this into account when deciding the design or state the maximum moments of torsion. Torsion strains may be caused, e.g. by flange holes that do not match perfectly on the connection flanges for expansion joints with fixed flanges or incorrect design.
- Where the flow rates are high, an internal protection pipe may be needed.
- Pressure surges should be avoided with expansion joints.
- Do not weld the on bellows.
- In case of failure of the expansion joint as a result of vibration, the customer has to provide protection.
- In case of versions with an intermediate pipe, no strains may be placed on that pipe.
- The bellow may have a control hole. This hole has no effect on the function.
- Do not use corrosive insulation materials or cleaning agents. No pickling allowed.
- Customer is responsible for flange dimensions.
- In order to guarantee an optimal operation according to the datasheet, a professional piping calculation is required to check the reaction forces and moments, as well as the applicable codes of construction and standards. This is the only way to prevent any risks in damages to equipment and personal injuries.
- To determine the column stability, a rigid guide (fixed / fixed) of the expansion joint ends is assumed.

Packaging / Handling / Storage

- Our expansion joint shafts are protected against minor impacts and strains during transport by a thick cardboard strip. This transport protection is not suitable for the following loadings:
  - dropping the entire expansion joint
  - heavy impacts
  - direct suspension of the expansion joint by means of a strip placed around the shafts
- Transport damage has to be announced immediately in written form. Liability corresponds only to the general framework from CRM.
- The expansion joint has to be lifted only on the lifting lugs. Expansion joints without lifting lug can be lifted with fabric belts around the welding end, positioned near the hinging flanges; for flanged types near the flanges; for welding end types without flanges in a safety distance to the bellows. Pay attention that the belts never touch the bellows.
- The expansion joint has to be stored dry, protected against damage and permanently marked. In case of extreme atmosphere (salty or moistly) the expansion joint has to be conserved accordingly.
- All fixing elements which must be removed are marked in yellow.
- Our expansion joints are supplied on request with fixing elements. The sole purpose of these fixing elements is to limit the length of the expansion joint during handling and transport. The fixing elements (yellow) must be removed before bringing into service. The fixing elements cannot absorb the following strains:
  - reaction forces of the expansion joint to internal pressure
  - added pipe weights on either side of the expansion joint etc.

Installation / Pressure test

- The expansion joint has to be fixed before the pressure test will be carried out. The guides have to correspond to the fixed anchor points of the final installation.
- **The maximum pressure PT which refers to the given data sheet must not be exceeded.**
- The expansion joints are normally delivered to the specified construction length. On express request, the expansion joints may also be pre-tensioned in the factory to the specified installation length for w types.
- The expansion joints must be welded tension-free to the appropriate installation length. This is especially true for rectangular and large expansion joints. Please also consult our recommended welding sequence sheet. The expansion joint is not designed to compensate installation tolerances. The pipes must match perfectly on installation. This does not apply if the installation tolerances were taken into account in the design. Specify when making your inquiry.
- Please respect the direction of installation for types with internal protection pipes.
- The shafts must not be obstructed, neither internally nor externally, during the installation or operation as well as afterward.
- The expansion joint must be freely movable.
- Fit the fixed points before performing pressure tests.
- Remove fixing elements and shaft guard before startup.
- Stapling points of removed fixing or transport elements on the expansion joint must be checked for damage.
- The ball sockets on the expansion joint must not be adjusted (tightening or slackening).
- The expansion joints have to be installed tension-free.
- Welding splashes must not fall on the shafts. Ignition of the electrodes on the shafts is prohibited.
- In case of screw connections and sealing, it is important to choose and connect the screws according to the instructions of the sealing supplier.

Operation / Switching off / Maintenance

- **The specifications of the company, as stated in the data record sheet (design data sheet), must be strictly followed.**
- The expansion joints are maintenance free.
- For repeated examinations please follow the national guidelines.
- Expansion joints are part subject to wear and tear. Depending on the frequency of usage, they must be replaced periodically.
- Maintenance and replacement work that can affect the safety of the expansion joint is not allowed.
- In case of fire next to the expansion joint, its content must be safe from getting out of control.
- Welding is not allowed near containers in which gases, combustibles, mineral oils and any other products which may explode or burn are stored or worked on, even if they were emptied a long time before, because the remains may cause explosions or fire. There are special rules for this kind of work.
- Welding on expansion joints is only allowed if it is executed by professional welders after consulting kompaflex and the responsible authorities for the control of pressure parts of the corresponding country.
- After a fire, the expansion joint must be examined by a specialist from kompaflex before starting its operation again.
- Anchor points, articulated joints and pipe guides must not be obstructed; they must always move freely.
- Danger analysis for expansion joints refers to PED 2014/68/EU.
- The shafts must not be obstructed, neither internally nor externally, during the installation or operation as well as afterwards.
- The expansion joint must be freely movable.
- With gimbal expansion joints, the main movement direction should always be perpendicular to the level of tension.