

# Instructions for the use of Hose Assemblies

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 Industrie Technik Kling GmbH  
 Siegmund-Schuckert-Straße 8  
 D-68199 Mannheim

 Telefon 06 21 / 8 44 97-0  
 Telefax 06 21 / 8 44 97-20  
 E-Mail: info@industrie-technik-kling.de

## Basic Information

**ATTENTION:** Hose assemblies may be both a work utensil and a part subject to monitoring under industrial health and safety regulations. Relevant test requirements laid down by industrial health and safety regulations must be taken into account by the operator.

## Installation

The laws, standards and directives applicable in the country in which the hose assembly is used must be taken into account.

To ensure the operability of hose assemblies and to prevent shortening their service life through additional stresses, the following should be taken into account:

- Hose assemblies must be installed in such a way that they are accessible at any time and not hindered in their natural position and motion.
- In operation hose assemblies must never be subjected to stresses by external influences in terms of traction, torsion and compression unless specifically designed for such loads.
- The minimum bend radius of the hose specified by the manufacturer must be observed.
- Hose assemblies must be protected from damage caused by mechanical, thermal or chemical influences from outside.
- Prior to start-up detachable connections must be checked for secure positioning.
- If external damage is visible, hose assemblies must not be put into operation.
- Prior to start-up the hose assembly should be cleaned as necessary in an appropriate manner.
- In the case of hose assemblies where potential equalization is required (avoidance of risks of ignition due to electrostatic charges), this must be checked and retrofitted as necessary.

## Proper use

- **Pressure and vacuum:** Maximum permissible excess / low operating pressure of the hose assembly must not be exceeded.
- **Temperature:** Maximum permissible operating temperature depending on the medium must not be exceeded. This should be checked using the available resistance lists of the hose assembly components.
- **Resistance:** Hose assembly materials must be resistant to the flow media under operating conditions. This should be checked using the available resistance lists.
- With possible **abrasion** wear of the hose assembly must be taken into account and controlled.
- Where the customer has no specific operating parameters which can be used by the manufacturer to evaluate conformity, the classification of the manufacturer shall apply.
- Measures protecting from external fire or flame were not taken into account during design.
- To ensure the safe operation of hose assemblies technical, organisational and personal protection measures should be undertaken. Here priority is always given to technical and organisational measures. If this does not allow all hazards to be avoided, effective personal protection equipment must be provided and utilised.

## Storage

The laws, standards and directives applicable in the country in which the hose assembly is used must be taken into account for the storage of elastomeric and thermoplastic hoses and hose assemblies, in particular

- Store in a cool dry location and with low dust levels; avoid direct exposure to sun or UV rays; shield in the vicinity of sources of heat; hoses and hose assemblies must not come into contact with substances which might cause damage.
- Hoses and hose assemblies should always be stored in a horizontal position free from stresses or kinking. When stored in rings, the minimum bend radius specified by the manufacturer must be observed.
- Close ends of hoses with caps to protect the inside of the hose from soiling, effect of ozone and corrosion (after emptying out any residues and / or cleaning).

## Maintenance, servicing, inspection

**Cleaning:** Hose assemblies should be cleaned and rinsed out after use and prior to every check. When cleaning with steam or chemical additives, the resistance of the hose assembly components must be taken into account. (Attention: the use of steam distributors is not permitted.)

**Testing intervals:** A constant surveillance of hose assemblies for visible wear, defects and / or damage shall be routine at all times of maintenance. The intervals of repeated inspection are to be specified by the operating company regarding their respective risk assessment and in accordance with the law, standards and directives applicable to the country in which the hose assembly is used. The operationally safe condition of hose assemblies subject to testing shall be inspected by a competent person according to industrial health and safety regulations:

- Prior to initial start-up (bought-in hose assemblies ready for use: quality control via spot checks)
- At regular intervals after initial start-up (every single hose assembly) (testing interval e.g. for thermoplastic and elastomeric hose assemblies at least once a year, steam hoses twice a year. High stresses require shorter testing intervals, with increased mechanical, dynamic, thermal or chemical loads).
- After repair (every single hose assembly).

**Testing pressures** (medium: cold water):

- Hose assemblies (except steam hose assemblies):  
Max. permissible pressure (PS) x 1,5
- Steam hose assemblies:  
Max. permissible pressure (PS) x 5

**Scope of testing:** Type and scope of testing (pressure testing, visual inspection, testing of electrical conductivity, etc.) shall be the responsibility of the "competent persons" according to industrial health and safety regulations. The result must be documented.

**Repairs:** Repairs to hose assemblies may only be carried out using genuine spare parts by the manufacturer and his specialist staff with subsequent testing by a "competent person" according to industrial health and safety regulations. The results of the test must be documented.

**Special provisions shall apply e.g. to the following hose assembly types:**

### Steam hoses

- Steam hoses should not be used for other materials; take the fast ageing of elastomeric hoses into account.
- Ensure complete drainage of condensate to prevent structural damage ("popcorning"), which is caused by the ingress of water into the inside layer and evaporation with the renewed application of steam.
- Avoid partial vacuum through cooling of hose assembly closed off on both sides.
- Take measures to protect against surface temperatures (risk of burns).

### Metal hose assemblies

- In the case of metal hose assemblies that are not equipped with a heat-insulating external jacket there is an increased risk of burns when using steam due to the high thermal conductivity.
- Metal hose assemblies offer sufficient conductivity without additional measures.
- Pay special attention to possible damage of wire braiding and deformation of the hose, e.g. kinking.
- During storage and operation assemblies must not be subjected to influences caused by chlorides, bromides or iodides, extraneous rust or rust film.

### Hoses with thermoplastic liners

- Protect liners from damage by kinking and deformation of the hose from outside.
- In the case of media with no or a relatively low conductivity ohm-conductive hoses should preferably be used.

To ensure the proper use of hose assemblies in other respects the relevant provisions of the employers' liability insurance associations and Health and Safety laws normally applicable in the country must be taken into account as far as possible. In the case of hose assemblies with a special design or for purposes that could not be covered here, the detailed provisions of the individual data sheets must be observed (e.g. sandblasting, liquid gas, heated hose assemblies).

In case of doubt, the German version of these instructions for the use of hose assemblies shall prevail.