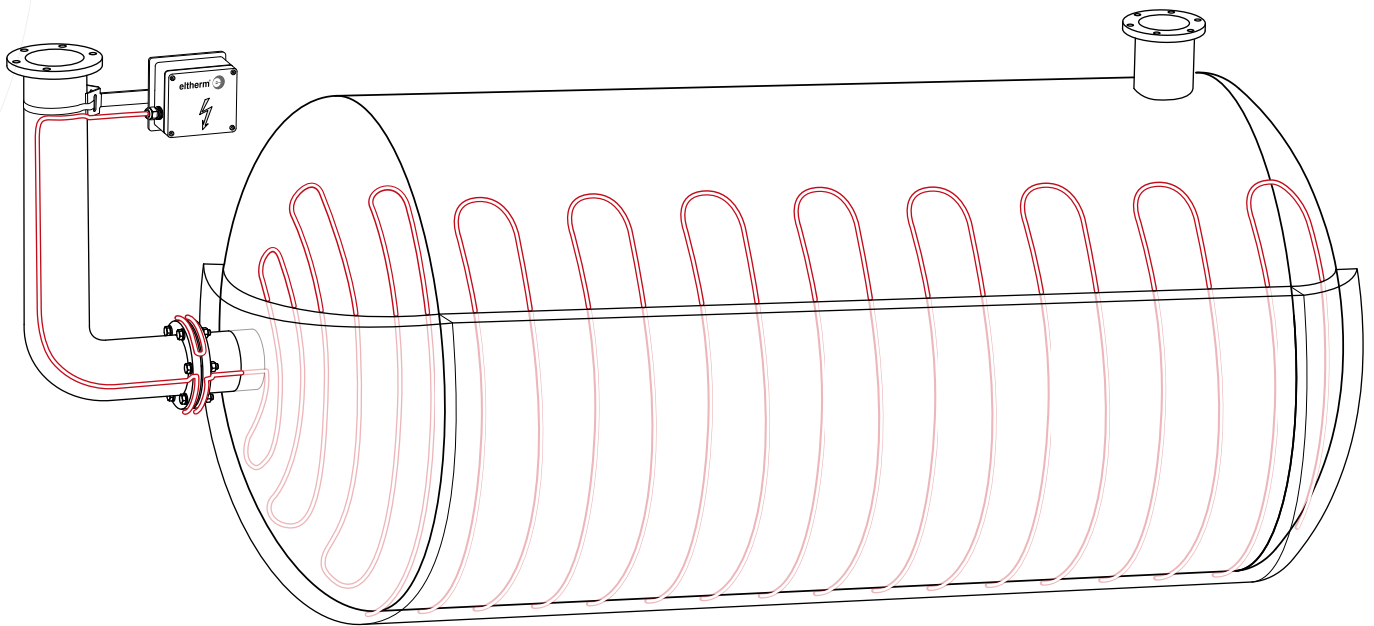


MOUNTING GUIDE

ELECTRICAL VESSEL TRACE HEATING



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ATTENTION

Refers to a potentially dangerous situation.
If it is not prevented, there is a risk of damage or malfunction.

DANGER

Refers to an extremely dangerous situation.
If it is not prevented there is risk of death or at least a high risk of serious injuries.

NOTE

Important information and instructions for safe, effective and environmentally compatible usage.

WARNING

Refers to a dangerous situation.
If it is not prevented there is risk of injury or at least a high risk of material damage.

Proviso

We reserve the right to make technical changes. Changes, errors or misprints shall not form the basis for any claim to compensation for damages. Comply with the applicable and currently valid standards and regulations for safety-related components and systems.

eltherm GmbH Ernst-Heinkel-Str. 6-10 57299 Burbach P.: +49 2736 4413-0 F.: +49 2736 4413-50 info@eltherm.com	Document: BU 132 (864301MONBEH)		Mounting Guide for Electrical Vessel Trace Heating	
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	Revision: 0			Date:

INTRODUCTION

GENERAL INFORMATION

This manual is intended for fitters of electrical trace heating systems and is valid for installations in both Ex and non-Ex areas. It is oriented to the applicable international standards for installation and maintenance (including EN 60079-14 and EN 60079-30-2). The manual describes the most common mounting methods for the following eltherm trace heating systems

- **ELSR** (self-regulating heating cables)
- **ELP** (parallel heating cables with constant power)
- **ELKM** (plastic-insulated serial heating cables)
- **ELK-MI** (mineral-insulated heating cables) on heat-insulated pipelines.

The validity of information for the use of heating cables is identified by the following symbols:

ELSR

ELP

ELKM

ELK-MI

If information does not apply, the corresponding symbol appears in grey.

Different installation methods are possible, but not all variants from the large number of methods can be taken into consideration in this manual. Please note that the manuals for specific products as well as product-related instructions and guidelines always take precedence over the instructions in this manual.

WARRANTY



ATTENTION

To fulfil the conditions for the warranty, the instructions from the respective product manuals must be followed.

This manual only provides information about general and standard installation methods and accordingly no claim to warranty can be derived from it.



DANGER

The parameters listed in the test certificate as well as any special conditions cited must be strictly observed.

SAFETY INSTRUCTIONS



ATTENTION

- Mounting, testing and maintenance of electrical trace heating systems may only be carried out by qualified employees who have been trained to deal with Ex equipment and also as general electrical fitters.
- Strict compliance with the applicable safety requirements in areas subject to explosion hazard is a precondition for the safety of persons, systems and devices.
- The persons tasked with planning, installation and maintenance have a special responsibility and must be familiar with the exact details of the applicable regulations.



DANGER

- Improper mounting or damage to the electrical trace heating can lead to a danger of short circuit and fire while the system is in operation.
- To ensure safe and error-free operation of eltherm electrical trace heating, only the original initial and medial connecting sets and termination sets specially developed and tested for this purpose may be used.

INCOMING GOODS

- Compare the delivered goods with the purchase order and the delivery slip.
- Inspect the heating cable and components for transport damage.
- Carry out all measurements required for the respective materials (insulation measurement on the heating cables, etc.).

STORAGE

- Store the delivered goods in a clean and dry place.
- Observe the storage temperature of the delivered goods.
- For specifications regarding storage temperature, refer to the delivery documents or the product data sheets.
- Make certain the goods are stored so they will be protected against mechanical damage.
- While the goods are in storage, avoid contact with chemicals (solvents, petrochemical products, etc.).
- If measured lengths of the heating cable have to be removed from storage, the end of the remaining heating cable must be protected effectively against penetration of moisture (for example by attaching an original end connection of the heating cable manufacturer).

MOUNTING

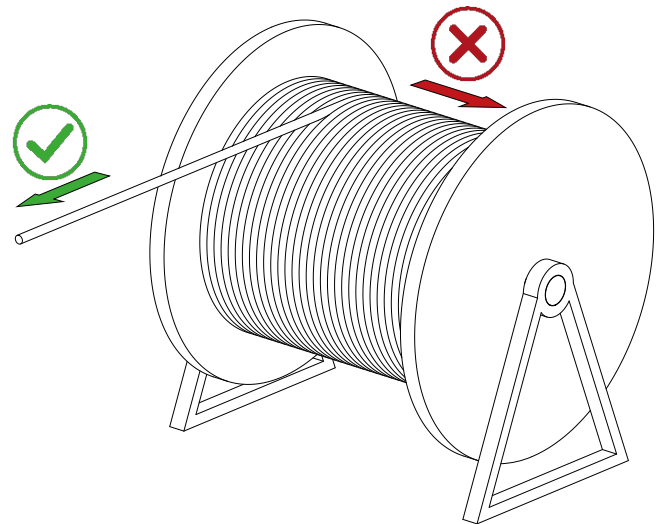
PREPARATION FOR MOUNTING

ATTENTION

- Make certain that all mounting work is complete on the pipe system that will be heated.
- All pressure and material tests as well as coating and painting work on the pipelines must be completed. The coat of paint on the pipes must feel dry to the touch.
- Check the nature of the pipe surface. It must not have any sharp edges or burrs that could cause damage during installation. If necessary remove any or cover them with suitable material.
- Compare the design of the pipeline (dimensions, structure, nature and number of inserts) with the design data.
- Check all materials required for heating to ensure they are complete and for any transport damage.
- Compare the material list of the delivered components with the design documents.
- Check whether there are any special mounting instructions and whether all the necessary material and tools are on hand.
- Measure the electrical and the insulation resistance of the heating cable and write them down in the mounting protocols provided for this purpose. Compare the value with the data in the design documents and technical specifications of the heating cables.

Unrolling the heating cable

1. **ELSR** **ELP** **ELKM** **ELK-MI**

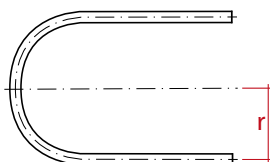


- Use a sturdy holder to unroll the heating cable.
- Make certain the flushing device runs smoothly to prevent damage to the heating cable due to excessive tensile stress.
- Unroll the heating cable straight over the edge of the drum, not off to the side.

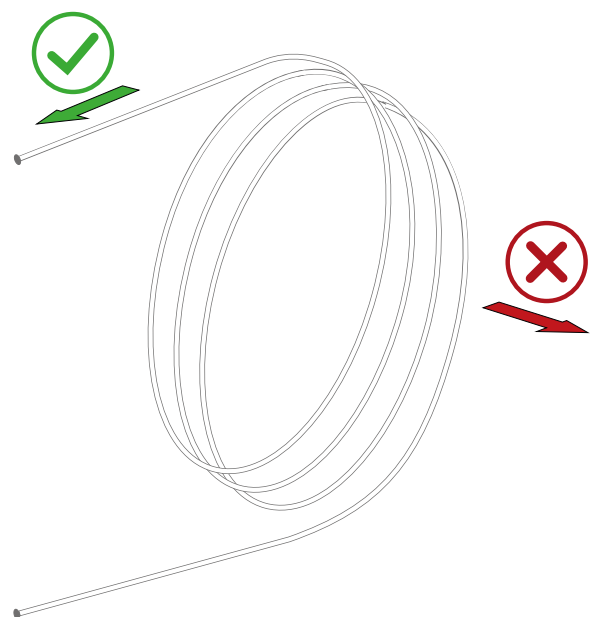
MOUNTING THE HEATING CABLE

WARNING

- The requirements from the heating cable operating instructions must be observed without exception.
- Do not crush the heating cable or pull it over sharp edges.
- Always avoid walking on or driving over the heating cable.
- Never use the heating cable as a loop to step on.
- Maintain the lengths designated in the project planning at the inserts.
- The specified minimum bending radii must always be observed.



2. **ELSR** **ELP** **ELKM** **ELK-MI**



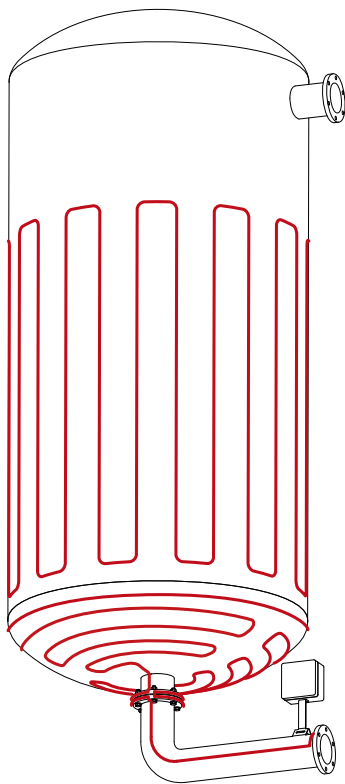
Laying the heating cable

3. **ELSR** **ELP** **ELKM** **ELK-MI**

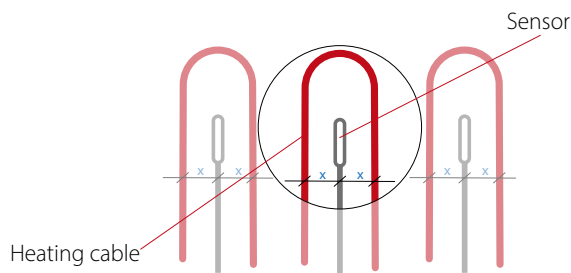
! DANGER

- Fixed resistance heating cables must not touch, overlap or cross each other. This would lead to local overheating and a danger of fire.
- When laying a heating cable, always observe the minimum distance between heating cables.

4. **ELSR** **ELP** **ELKM** **ELK-MI**



- Basically, the heating cables are laid in a meandering manner on vessels and on surfaces. Wrap the vessels with the heating cable only if the project planning explicitly prescribes it.



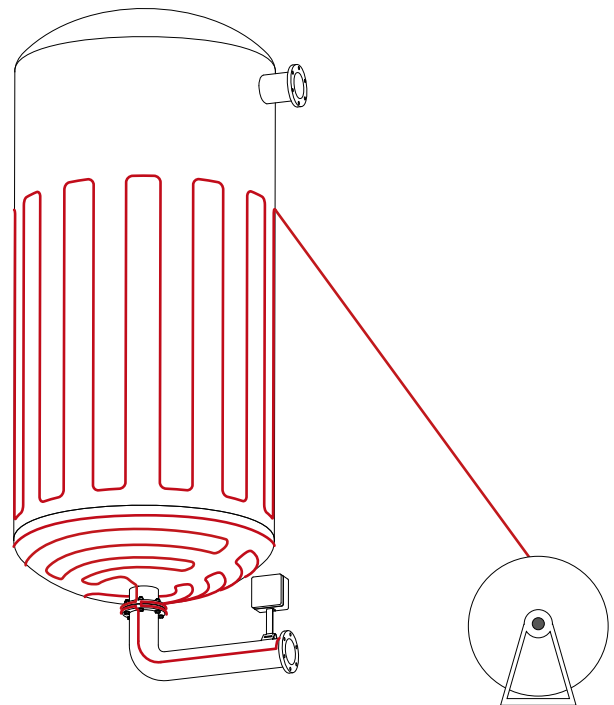
- The temperature sensor must be installed centrally between the heating cables. Care must be taken to ensure the best possible contact between the sensor and the surface.

Fastening the heating cable to the vessel

5. **ELSR** **ELP** **ELKM** **ELK-MI**

i NOTE

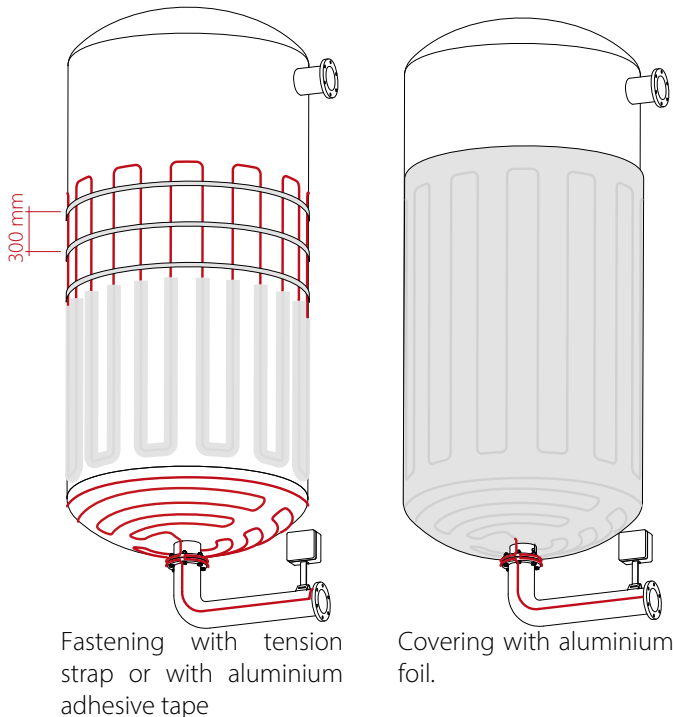
- Fasten the heating cable at a distance of 300 mm.
- Only use fastening materials (e.g. tensioning straps or adhesive tape) which have been defined by the manufacturer as suitable accessories and which have been selected in the design documents.
- Make sure that the selected materials meet the requirements (temperature, mechanical & chemical resistance).
- Check whether the design documents require the use of other elements (e.g. aluminum adhesive tape for better heat transfer).



- Lay the heating cable starting from the feed point and fix the heating cable at the specified distances using the preassembled tensioning straps. Please note the necessary material allowance for the floors (see project planning documents).
- Align the heating cable exactly according to the project planning and fasten the heating cable with the help of further tensioning straps (max. distance 300 mm).

! ATTENTION

Make sure that the tensioning straps are not too tight so as not to damage the heating cable. It should still be possible to move the heating cable easily under the tensioning strap.



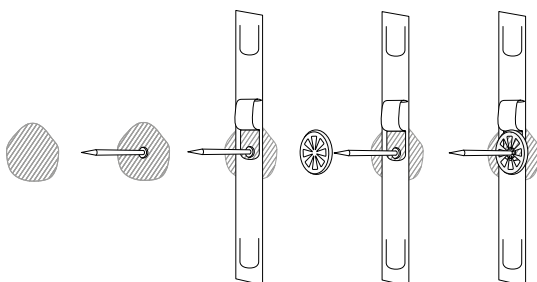
- If provided, install aluminium foil over the ready-fitted heating cable. This serves to improve the heat transfer and prevents the penetration of insulating material between the heating cable and the tank wall.
- Connect the heating cable to the junction box and carry out an commissioning tests and report.

6.

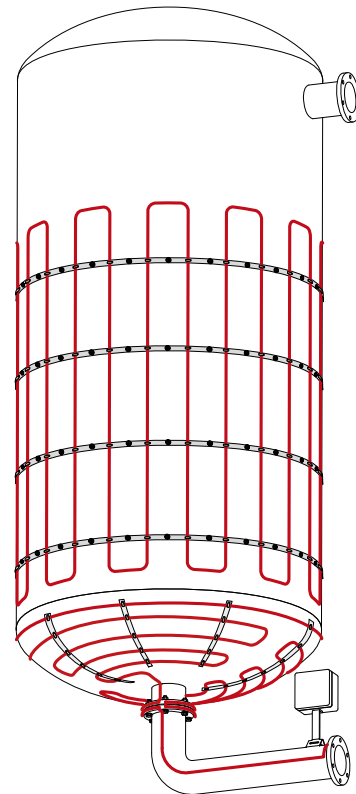
ELSR ELP ELKM **ELK-MI**

- Another installation method is fixing the heating cable with the help of fixing strips. This method is primarily used for the installation of mineral-insulated heating cables (ELK-MI), as these are usually used in the presence of high mechanical and thermal loads, which militates against the use of tensioning straps.
- In order to fix the strip to the surface of the vessel, the surface is cleaned at regular intervals (metallic bright) and weld-on pins are welded on.
- The fixing strip is installed on the weld-on pins and fastened with spring washers.
- Then the heating cable is mounted according to the project planning specifications.

Fastening the weld-on pins / the fixing strap

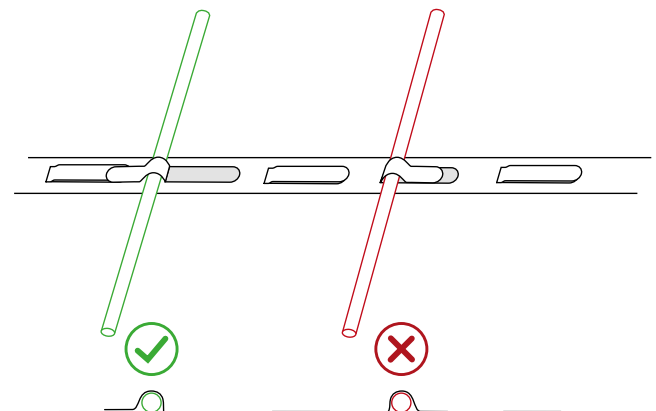


Fastening the heating cable



WARNING

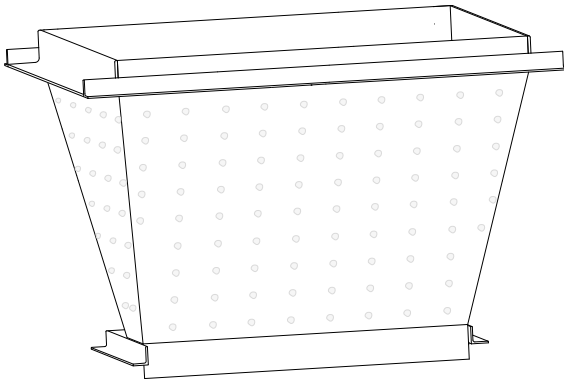
- Never use metal clips or binding wire for fastening as doing so could cause the heating cable to be damaged.
- Heating cables must be able to move slightly in the fastenings (for expansion and contraction).
- When using a pre-stamped stainless steel band, note that a burr is produced inside the tab due to punching. Follow the installation instructions in the drawing below. This is the only way to ensure that the burr cannot damage the heating cable.



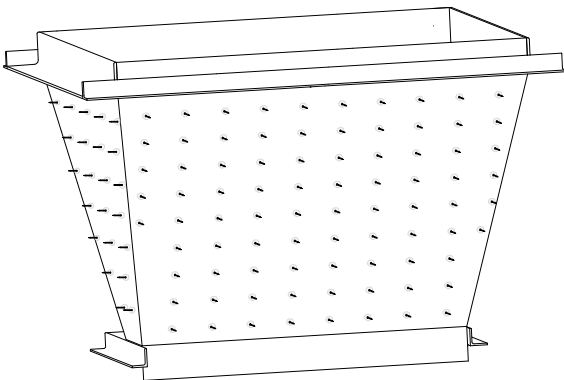
Fastening the heating cable onto metal braiding

7. ELSR ELP ELKM ELK-MI

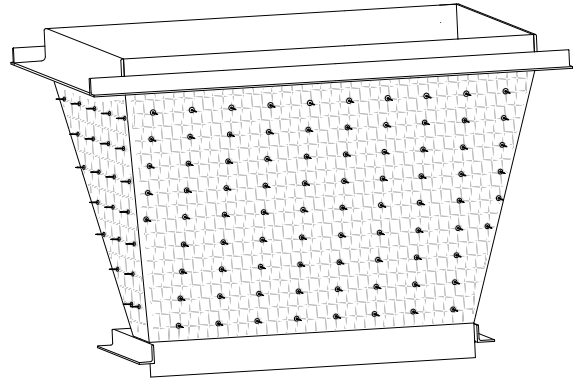
- Fastening the heating cable by means of metal braiding is usually used for straight surfaces (hoppers, containers). This method is also used when you want to heat complex geometric shapes and the installation of the heating cable is too complicated, or the bending radii cannot be maintained due to the shape. This method is mainly used for the installation of mineral insulated heating cables (ELK-MI), but it is also suitable for all other heating cables.
- To fix the metal braid to the surface of the hopper, the surface is cleaned at regular intervals (metallic bright) and weld-on pins are welded on.
- The metal braid is installed on the weld-on pins and fastened with spring washers.
- After that, the heating cable is mounted according to the project planning specifications.



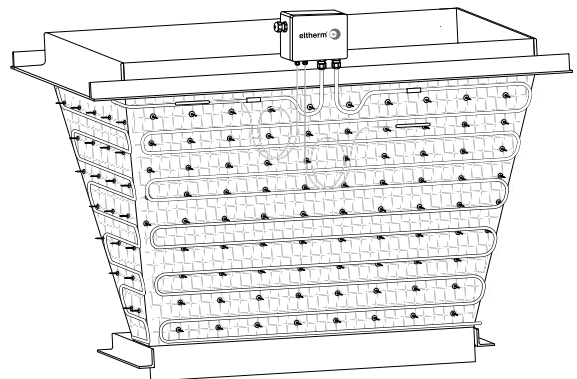
1 Cleaning the surface



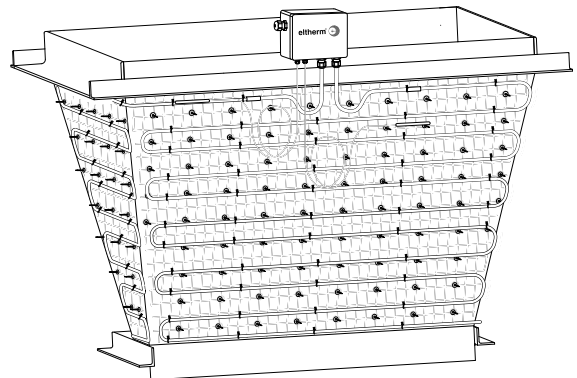
2 Fastening the weld-on pins



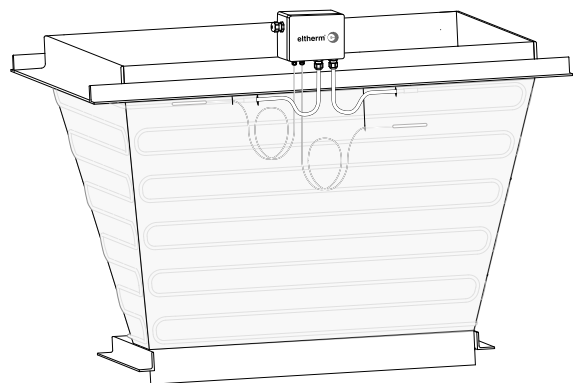
3 Fastening the metal braid with spring washers



4 Heating cable laid according to project planning specifications



5 Heating cable attached to the metal braid

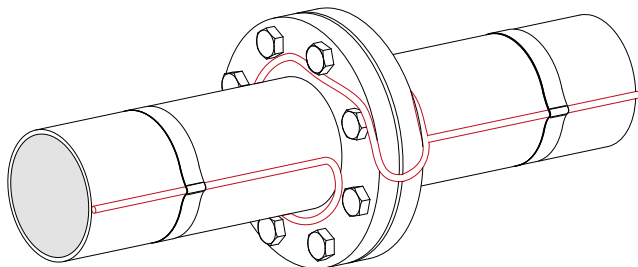


6 Aluminum foil mounted (if specified)

Length allowances on fixtures

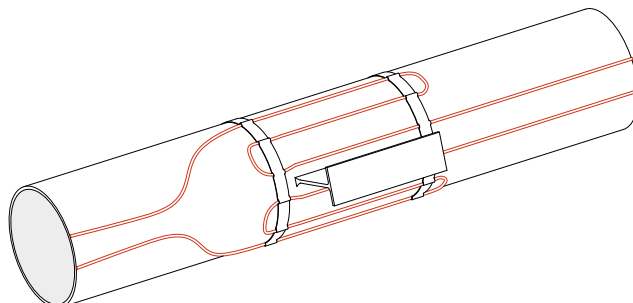
8. **ELSR** **ELP** **ELKM** **ELK-MI**

Length allowance on flanges



9. ELSR ELP ELKM ELK-MI

Length allowance on pipe supports / bearing surfaces



NOTES



You can find helpful downloads for this or other products
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<https://eltherm.com/downloads>

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