




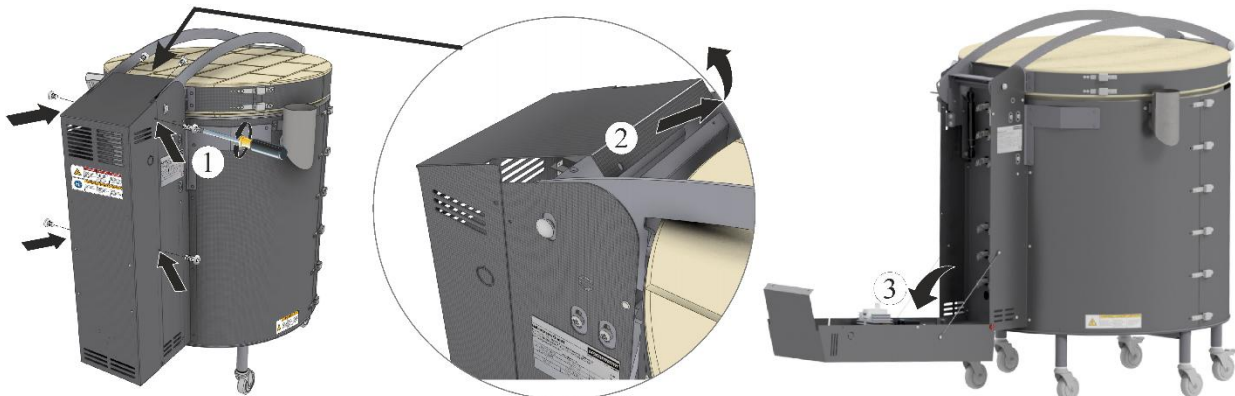


7.1 Replacing the Heating Elements

Models Top and F

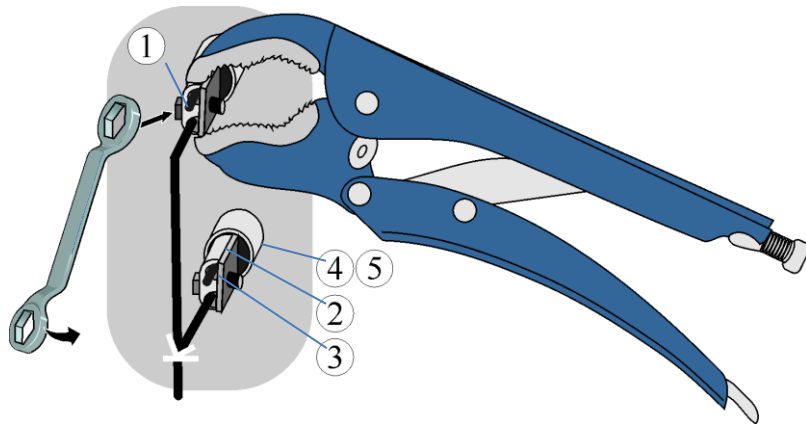
	<div data-bbox="762 353 919 387">⚠ DANGER</div> <p>Work on the electrical equipment may be carried out only by a licensed electrician. Danger of electric shock. Pull out the plug or disconnect the kiln from the power supply via the circuit breaker (depends on the model)</p>	
	<div data-bbox="858 600 1026 633">⚠ CAUTION</div> <p>The pointed ends of the wires are a potential injury hazard. Cuts. Wear appropriate protective gloves.</p>	
<div data-bbox="687 808 991 842">SAFETY INFORMATION</div> <p>Make sure that no cables are protruding or trapped. Pay attention to sharp surfaces. Tighten all screws on the connection terminals after one week of operation and then once each year. Avoid all stress or twisting of the heating wire. If this advice is not followed, the heating wire may be damaged.</p>		
	<div data-bbox="564 1019 1007 1052">Caution – Damage to components!</div> <p>Heating elements are extremely fragile. Avoid all stress or twisting of the heating elements. If you do not follow this advice, you may damage the sensitive heating elements.</p>	
	<div data-bbox="564 1202 647 1236">Notice</div> <p>The pictures contained in the instruction manual may differ in terms of function, design and kiln model.</p>	

1. Undo the screws (1) of the cover with a suitable tool and keep them in a safe place for future use.
2. Carefully fold back the switchgear cover (2 and 3).



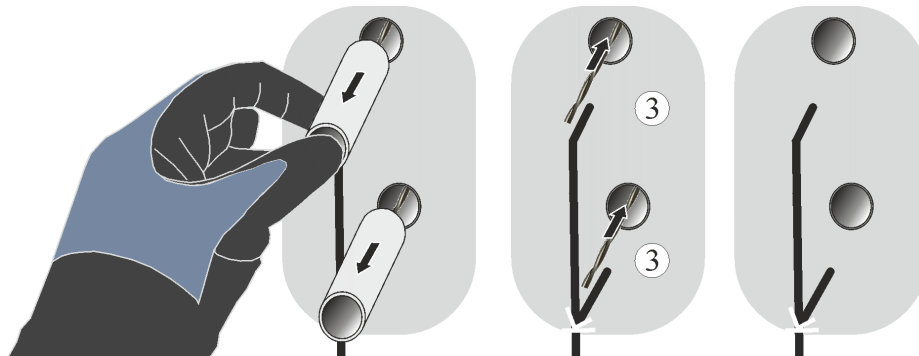
3. To replace the heating elements, open the lid of the kiln completely.

4. Undo the screws of the connection terminals. Place the screws and the connection terminal in a safe place so that they can be reused. So as not to damage the connection terminal or the ceramic feedthrough tube, we recommend the use of a suitable pipe wrench as a brace when unscrewing the screws of the connection terminal.

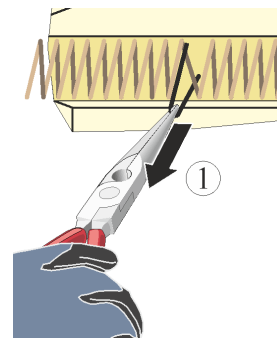
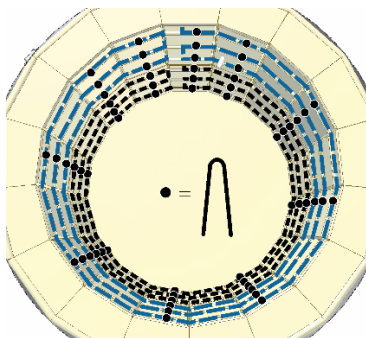


1 Hexagonal screw / **2** Terminal / **3** Heating element end / **4** Ceramic feedthrough tube / **5** Fiber wadding

5. Carefully remove the ceramic feedthrough tubes and put them in a safe place so that they can be reused. If they are cracked or have deposits on the inside, they must be replaced.
6. Carefully pull out the heating element ends (3) of the heating wire from inside the kiln.

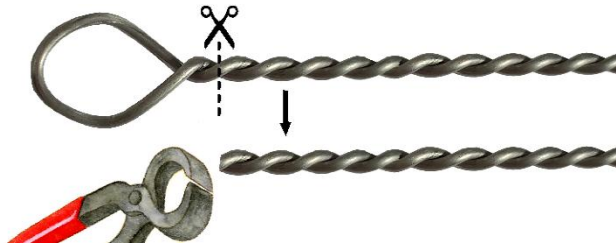


7. Before you pull the heating wire out from inside and/or carefully and slowly unwind it, remove all fasteners (1) with long-nose pliers. When removing the heating wire, make sure that the grooves in the insulation brick are not damaged.



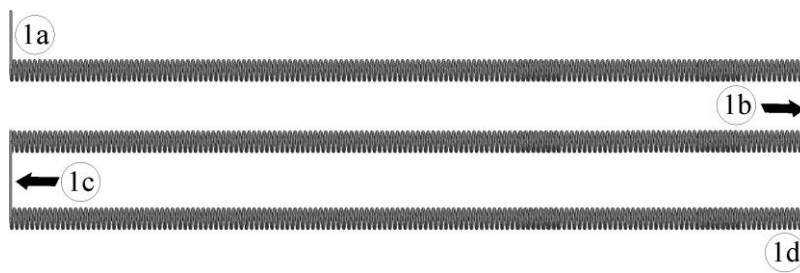
Installing the new heating elements

The (twisted) ends of the heating elements have a loop as protection. This has to be removed with a suitable tool before installation.



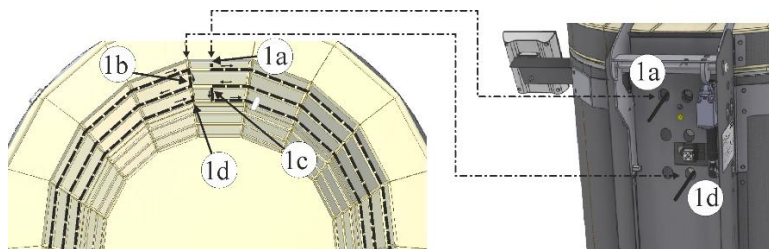
Check the supplied heating wires for damage before installation.

Shorten the heating wires as illustrated. The length and geometry depend on the kiln model and installation location.

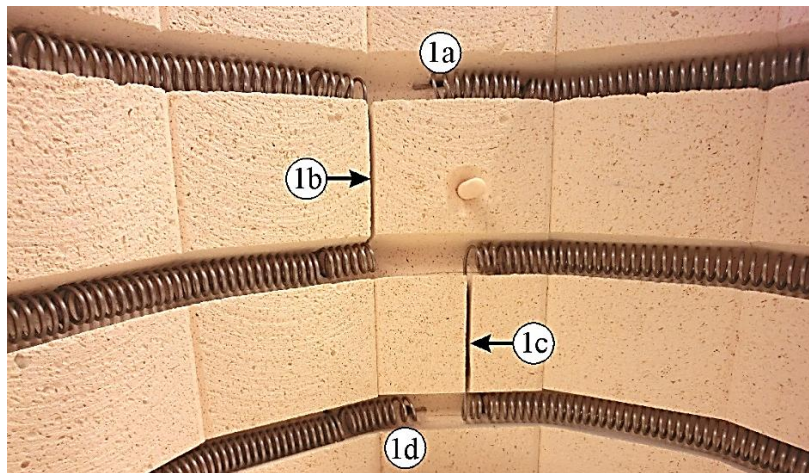


Procedure:

1. First, insert the end of the heating element (1a) into the intended opening from inside (this is the opening that you pulled the previous heating element end out of).
2. Now place the heating wire carefully into the grooves. Carefully press the heating wire connections (1b and 1c) into the intended slits.
3. Insert the end of the heating element (1d) into the opening again from inside to outside.



Place the heating wires in the groove(s)



Place the heating wires in the groove(s) (similar to picture)

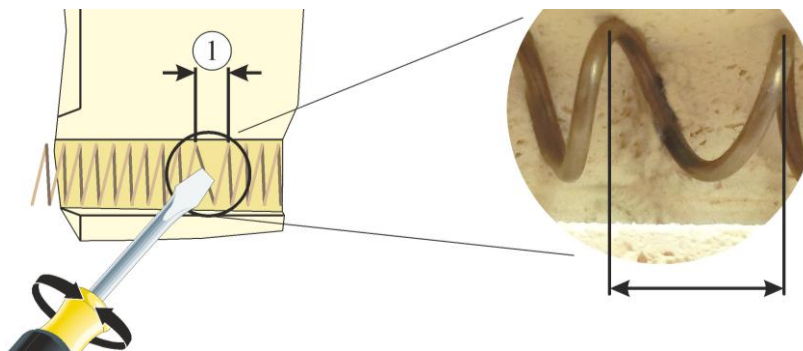
4. Insert the supplied fasteners into the wall brickwork. They are used to fix the heating elements in the grooves. Do not insert the fasteners into the holes of the previous fasteners. We recommend moving the new clamps approx. 25 mm.



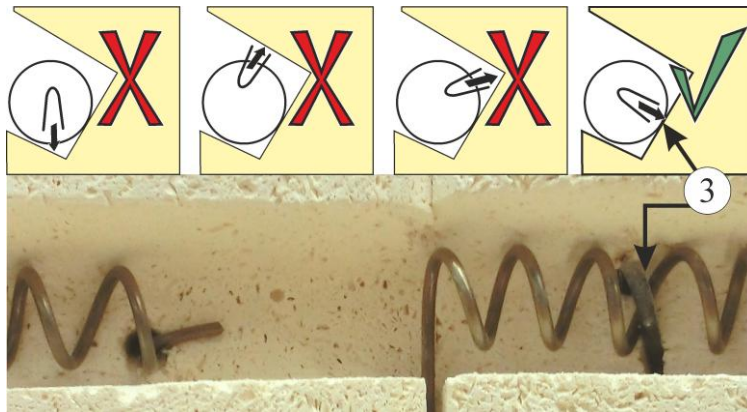
Notice

Distance X of the supplied fasteners must not be changed. X ~ 14 mm

5. Expand the heating element a little with a suitable slot screwdriver at the position where a fastener will be inserted (1).



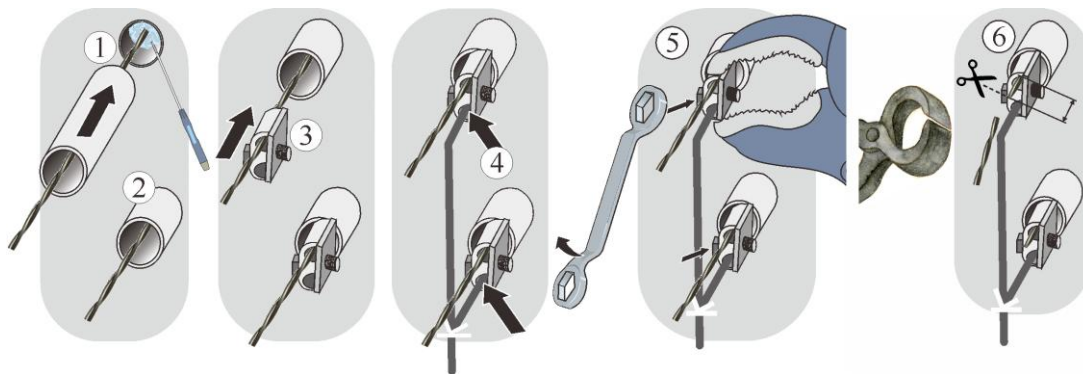
6. Position the fasteners in the straight wall (3) of the groove to ensure that the heating wire sits properly and functions as intended.
7. After installation, check that the heating wire and fasteners are positioned correctly.



8. As illustrated, use a suitable tool to tap the supplied fasteners carefully into the insulating brick until the heating wire sits completely on the brickwork. Make sure that the insulation brick is not damaged.



9. Seal the gaps in the ceramic feedthrough tubes from outside with a small amount of fiber wadding (included with delivery). To do this, distribute the fiber wadding around the end of the heating element with a small screwdriver (1) and push this from outside to the back of the small feedthrough hole. Do not use too much fiber wadding so that the ceramic feedthrough tubes (2) can still be inserted until they engage.
10. Slide the ceramic feedthrough tube (2) onto the ends of the heating elements until they engage.
11. Slide the connection terminals (3) up to the ceramic feedthrough tube.
12. Use the terminals to create technically correct electrical connections (4).
13. Tighten the screws (5) of the connection terminals (the correct tightening torque can be seen in the table below). So as not to damage the connection terminal or the ceramic feedthrough tube, we recommend the use of a suitable pipe wrench, for example, as a brace when tightening the screws of the connection terminal.
14. Shorten the projecting twisted heating element ends with suitable pincers (6). We recommend that you leave approx. 0.5 cm between the edge and the connection terminal.

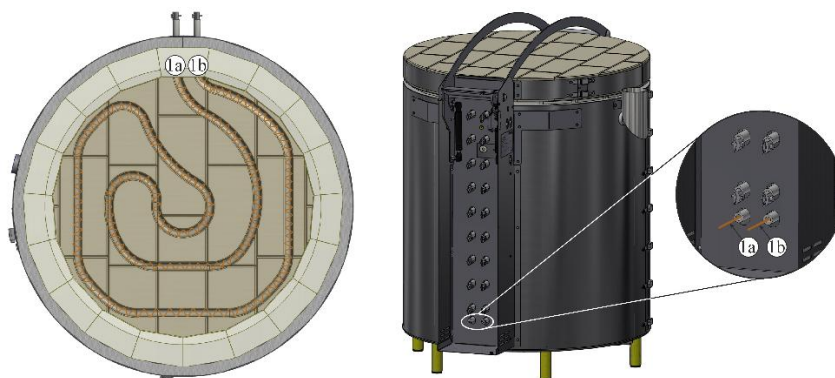


15. Clean the kiln chamber thoroughly with a vacuum cleaner, for example. Pay attention to the heating elements and the thermocouple.

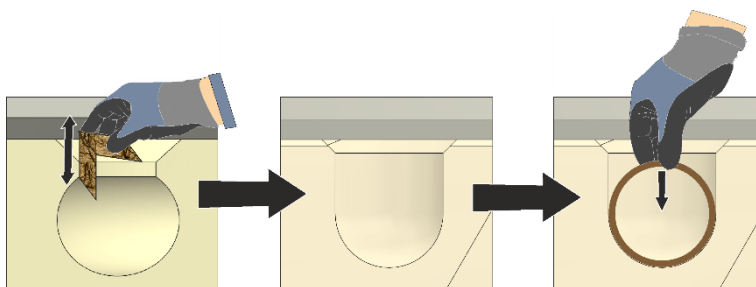
16. The switchgear cover is assembled in the reverse order.

Floor heating elements (model-related)

The floor heating elements are removed and installed in the same way as the wall elements; however, the connections of the heating elements are in these positions.



For easier removal and installation, grinding the groove opening with a grinding stone can be helpful:



The switchgear cover is assembled in the reverse order.

SAFETY INFORMATION

If installed improperly, the functioning and safety of the system can no longer be guaranteed. The connection must be properly installed and put into operation by qualified personnel.

Check all screw-in and plug-in connections.

Make sure that no cables are protruding or trapped. Pay attention to sharp surfaces.

Commissioning

Insert the mains power connector (see chapter "Connection to the Mains Electricity"), then switch on the power switch and check the function of the furnace (see chapter "Operation").

Model HO

Use an appropriate tool to remove the screws all around the cover and keep them in a secure place for later use. The cover must be lowered onto a soft material (such as foam rubber). The number and position of the screws may differ from one furnace model to the next. The furnace may look different than the picture depending on the furnace model and additional equipment.

If present, pay attention to the protective ground cable of the back wall to the clamp. If necessary, disconnect the cable from the clamp.

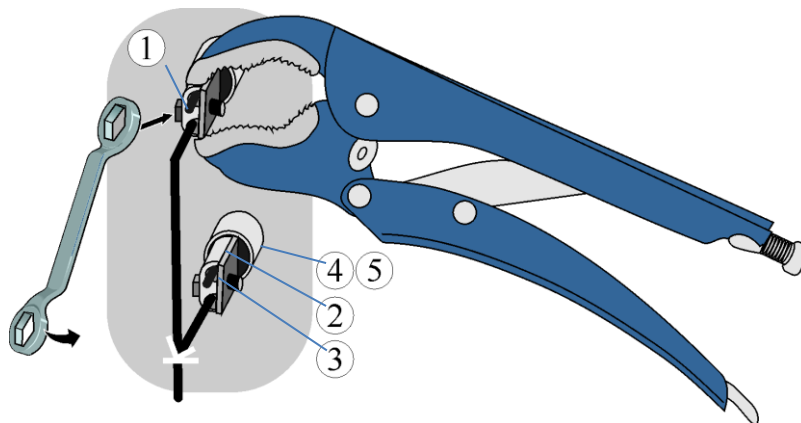


To replace the heating elements, completely open the lid of the furnace (see "Opening and Closing the Lid").

Removing the heating elements

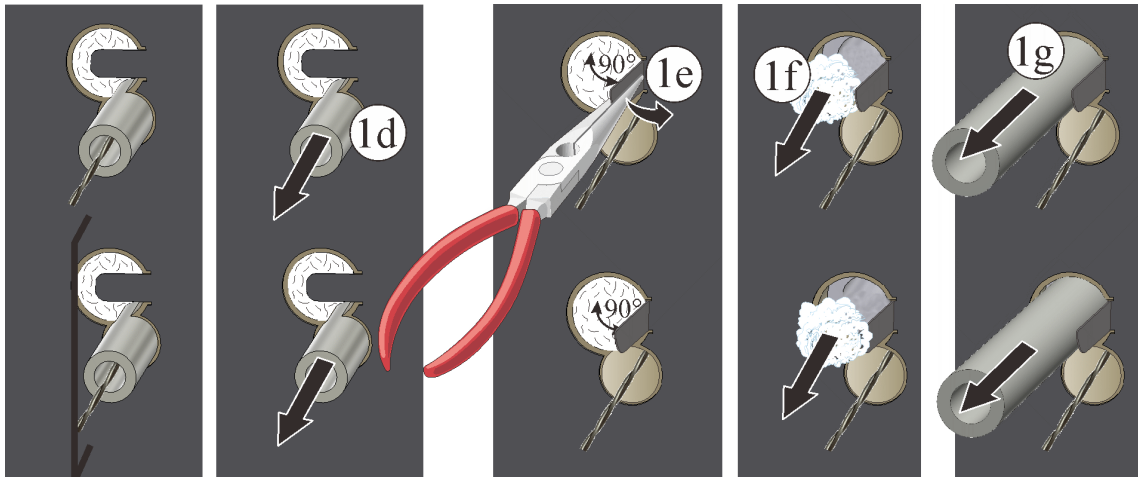
We recommend that two people replace heating elements.

Unscrew the screws (1) of the connection terminals (2). Place the screws and the connection terminal in a safe place so that they can be reused. So as not to damage the connection terminal or the ceramic feedthrough tube we recommend the use of a suitable pipe wrench (example) as a brace when unscrewing the screws of the connection terminal (5).

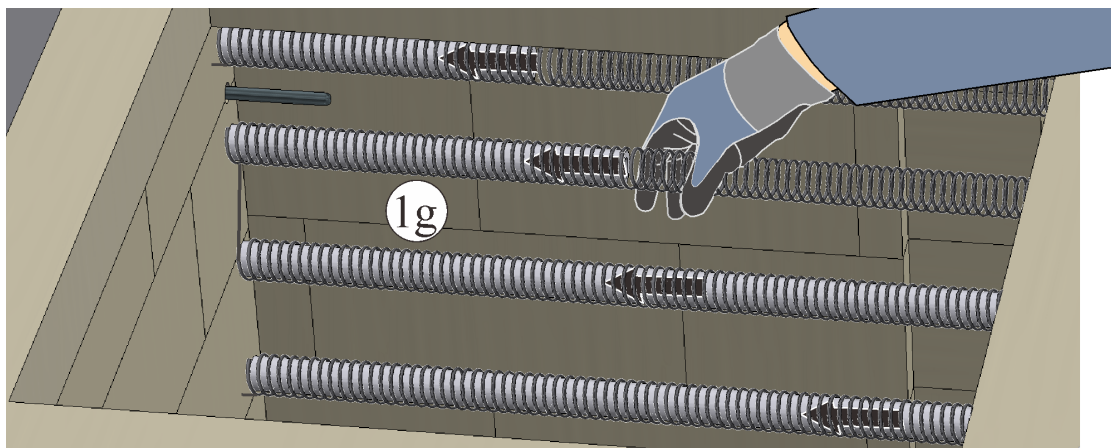


- 1 Hexagonal screw / 2 Terminal / 3 Heating element end / 4 Ceramic feedthrough tube /
5 Fiber wadding

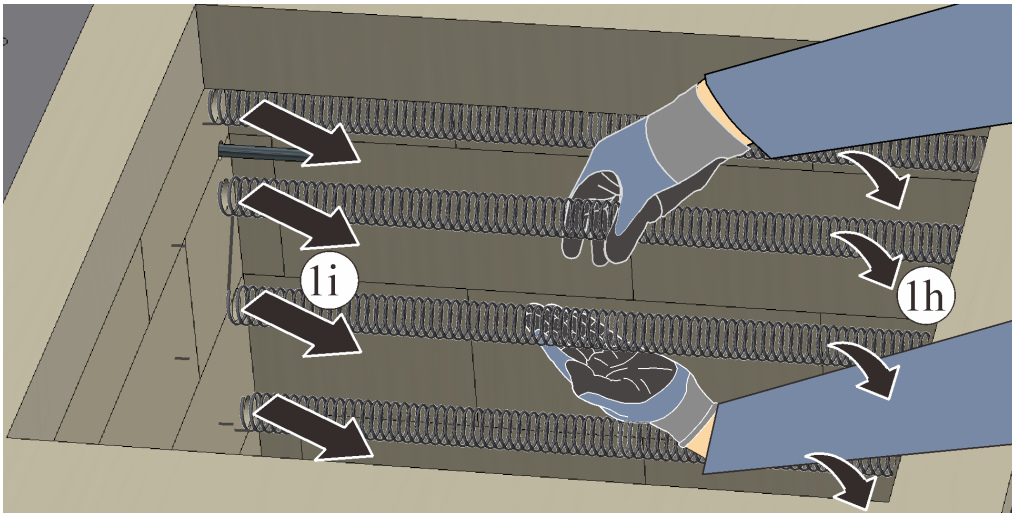
Pull the ceramic duct out and keep it in a safe place so that it can be used again (clean or replace where necessary, if included in the spare parts delivery).



1. To remove the support tubes of the heating elements, the protective metal sheets (1e) must first be bent upward by around 90° with suitable tools.
2. Remove the fiber wadding (1f) in front and keep it for reuse.
3. Slowly and carefully remove the support tubes from the back wall, as shown below (if necessary, clean or replace if included with the spare parts delivery).

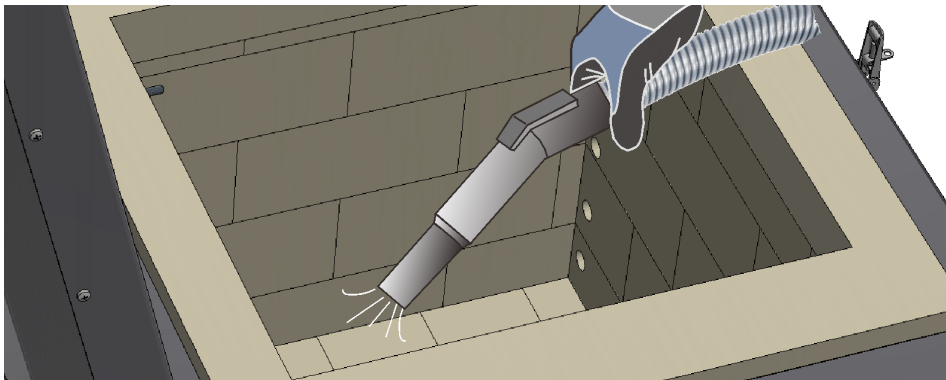


4. Lift the heating elements carefully and remove them from the kiln. When removing them, make sure that the very brittle surrounding insulation is not damaged.



Installing the Heating Elements

Before installing heating elements, we recommend that you clean the furnace chamber thoroughly, with a vacuum cleaner, for example.



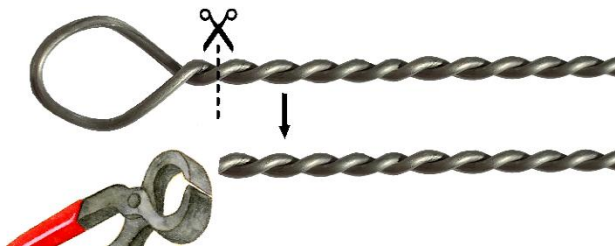
Check the supplied heating elements for damage before installation.

Compare the delivered items with the delivery note and the purchase order documents. **Immediately** notify the carrier and Nabertherm GmbH of any missing or damaged parts, as complaints received at a later date cannot be acknowledged.

Clean the heating chamber, support tubes, clamps and ceramic ducts to remove firing residues.

Note: We recommend that you use new support tubes and ceramic ducts (dirty support tubes/ceramic ducts cause new heating elements to break down prematurely).

The (twisted) ends of the heating elements have a loop as protection. This has to be removed with a suitable tool before installation.

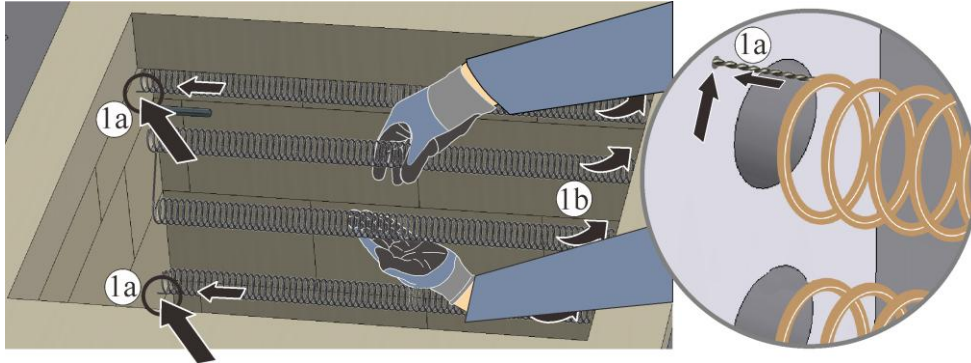


Check the supplied heating wires for damage before installation.

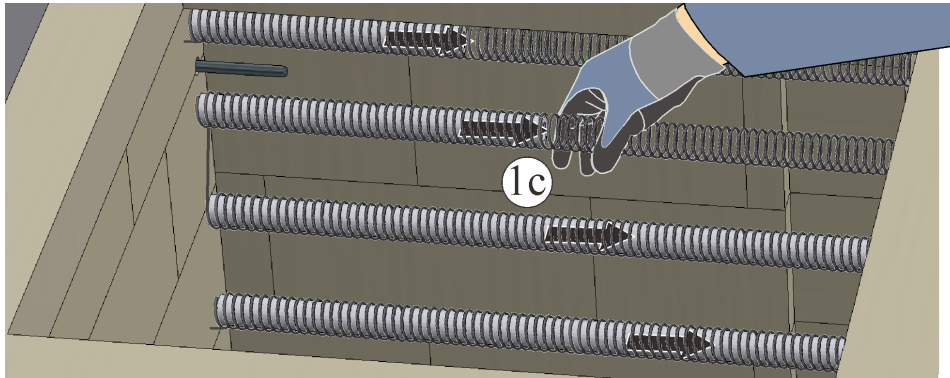
Shorten the heating wires as illustrated. The length and geometry depend on the kiln model and installation location.

Procedure:

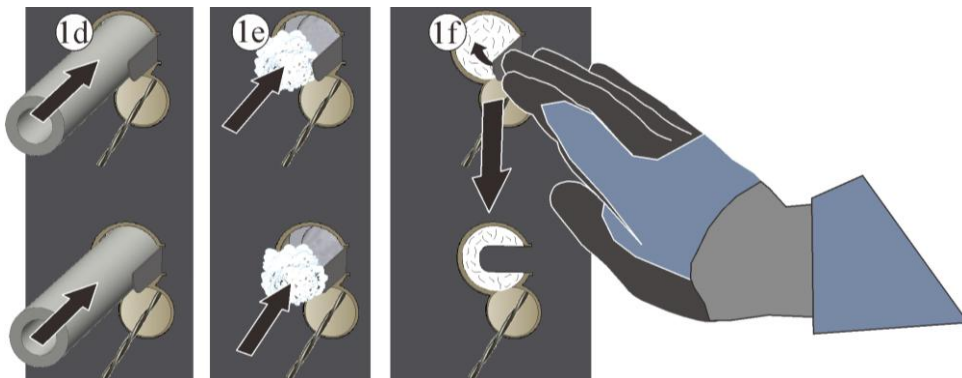
1. Carefully insert the ends of the heating elements through the holes from inside. Then carefully place the heating elements inside the kiln.



2. Carefully insert the support tubes into the existing openings and through the individual heating elements.



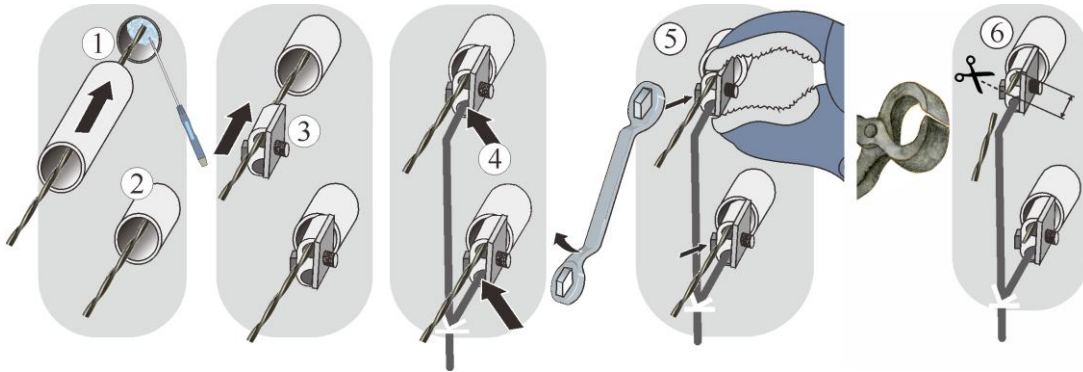
3. Fill the holes on the support tubes with sufficient fiber wadding (not the support tube itself).
4. Carefully bend the protective metal sheet back in place by hand (wear suitable protective gloves) or with a suitable tool.



5. Seal the gaps in the ceramic feedthrough tubes from outside with a small amount of fiber wadding (included with delivery). To do this, distribute the fiber wadding around the end of the heating element with a small screwdriver (1)

and push this from outside to the back of the small feedthrough hole. Do not use too much fiber wadding so that the ceramic feedthrough tubes (2) can still be inserted until they engage.

6. Slide the ceramic feedthrough tube (2) onto the ends of the heating elements until they engage.
7. Slide the connection terminals (3) up to the ceramic feedthrough tube.
8. Use the terminals to create technically correct electrical connections (4).
9. Tighten the screws (5) of the connection terminals (the correct tightening torque can be seen in the table below). So as not to damage the connection terminal or the ceramic feedthrough tube, we recommend the use of a suitable pipe wrench, for example, as a brace when tightening the screws of the connection terminal.
10. Shorten the projecting twisted heating element ends with suitable pincers (6). We recommend that you leave approx. 0.5 cm between the edge and the connection terminal.



11. Clean the kiln chamber thoroughly with a vacuum cleaner, for example. Pay attention to the heating elements and the thermocouple.
12. The switchgear cover is assembled in the reverse order.

For the correct tightening torque, please refer to the table in these operating instructions in the “Tightening Torque for Screws on the Heating Elements” section.

Shorten the projecting twisted heating element ends with suitable pincers (6). We recommend that you leave approx. 0.5 cm between the edge and the connection terminal.

The switchgear cover is assembled in the reverse order.

Commissioning

Insert the mains power connector (see chapter "Connection to the Mains Electricity"), then switch on the power switch and check the function of the furnace (see chapter "Operation").

SAFETY INFORMATION

Make sure that no cables are protruding or trapped. Pay attention to sharp surfaces. Tighten all screws on the connection terminals after one week of operation and then once each year. Avoid all stress or twisting of the heating wire. If this advice is not followed, the heating wire may be damaged.