



# INSTALLATION AND OPERATING INSTRUCTIONS

**Teno M and E Types**

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# 1. General safety information



To ensure safe use of the sauna, please read these safety instructions first!

Electrical connections may only be carried out by an electrician with valid installation authorization according to the current regulations.

The Mondex electric heater is suitable for use in a family sauna, one (1) heater per sauna room. Retain the installation and operating instructions for further reference.

Always check the adequacy of the fire protection distances!

Failure to observe the connection instructions may result in a risk of fire!

Always check the sauna room before switching the heater on!

Always check that the controller has switched the heater off after the set time period!

Due to the risk of fire, do not use the sauna to dry clothes or laundry.

Exercise caution with a hot heater, since the heater stones and metal parts become very hot and can cause burns.

Steam from the heater is burning hot and may cause severe burns.

Children, disabled and ill persons who are using the sauna should be supervised.

Benches and floors may be slippery, therefore move in the sauna with caution.

Do not go to a hot sauna under the influence of narcotic substances (alcohol, drugs, narcotics, etc.).

A stone compartment without stones or filled improperly will present a risk of fire!

Covering the heater will present a risk of fire.

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This device is not intended for use by children or persons whose physical, sensory or mental abilities or lack of experience and knowledge prevent them from using the device safely, without the supervision of a person responsible for their safety or before they have been instructed on how to use the device.

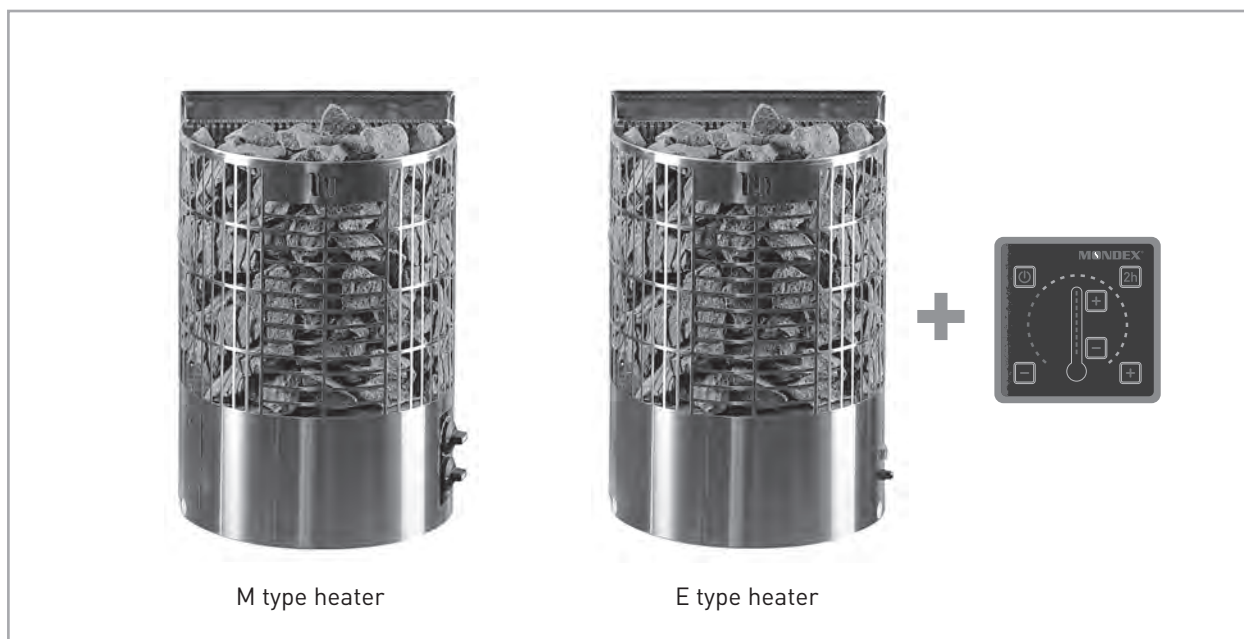
Children should be supervised to ensure that they do not play with the device.

This device complies with the requirements of:

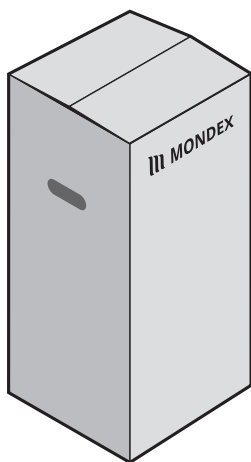


Mondex pursues an active policy of product development and continuous improvement. For this reason, Mondex reserves the right to make changes relating to the design and technical specifications of their products without prior notice.

## 2. Teno heater models



## 3. Heater assembly and installation



- 1) Store the heater in its original package in an upright position and in a warm and dry location until it is installed.
- 2) Inspect the heater visually. If you notice any discrepancies, please contact the store where you purchased the heater or e-mail [info@mondex.fi](mailto:info@mondex.fi).
- 3) The heater is installed on the wall using the mount provided (see the dimensions on page 9).



## Stacking the stones

When stacking the stones inside the Teno heater, ensure that the resistors remain upright and straight. The resistors may not be bent so that they are in contact with the metal structures of the heater.



The resistors should be surrounded by stones on all sides. Stack the stones in layers starting from the bottom.

**Note! Ensure that the resistors do not touch the heater's net frame anywhere. There must always be a stone between a resistor and the frame.**

Do not stack stones on top of the ventilation grille shown in the image – they will block the heater ventilation!

Dents caused by the user are not covered by Mondex's warranty or other product liability. When stacking the stones, be careful not to dent the heater's metal surfaces to avoid damaging them.



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## 4. Technical specifications

Heater	Teno 6.6	Teno 9.0
Power kW	6.6	9.0
Voltage	400 V 3N	400 V 3N
Connecting cable	5 x 1.5 mm <sup>2</sup>	5 x 2.5 mm <sup>2</sup>
Fuse	3 x 10 A	3 x 16 A

Table 4.1

### Heater dimensions (mm)

Type	Width	Depth	Height
Teno 6.6	420	290	630
Teno 9.0	420	290	630

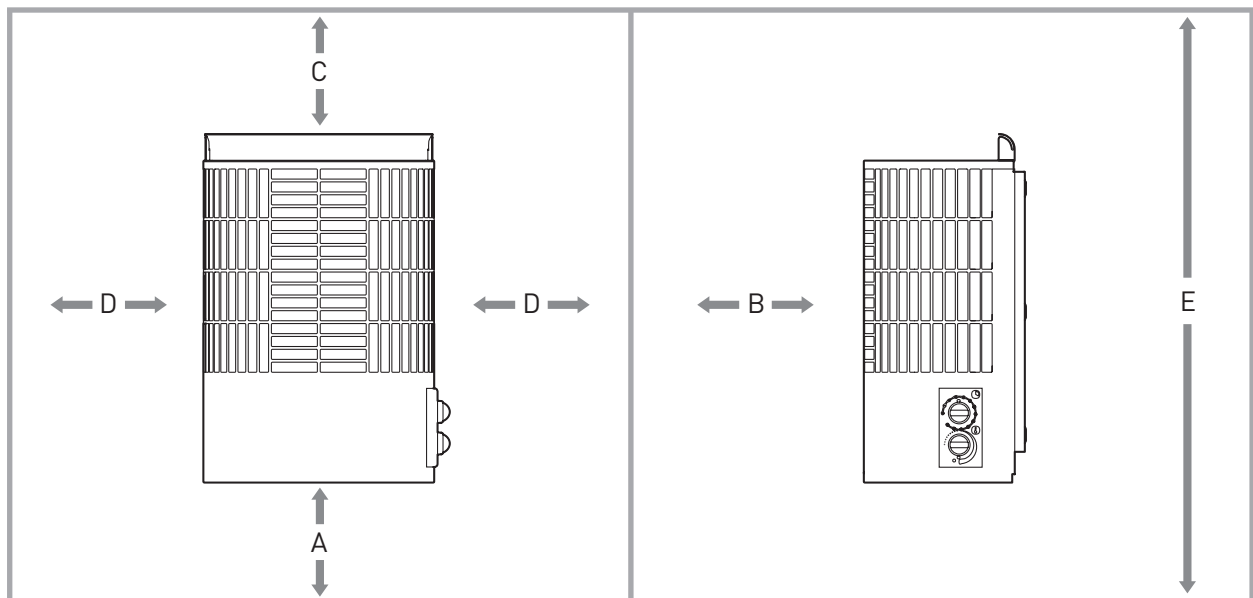
Table 4.2

### Amount of stones

Type	Stone amount (kg)
Teno 6.6	40
Teno 9.0	40

Table 4.3

### Minimum distances to inflammable material (mm)



Type	A	B	C	D	E	Volume
Teno 6.6	200	100	850	100	1900	6–9 m <sup>3</sup>
Teno 9.0	200	120	870	100	1900	8–13 m <sup>3</sup>

Table 4.4 Minimum distances to inflammable material (mm)

## 5. General instructions for users of Teno heaters

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### Note

Electrical connections may only be carried out by an electrician with valid installation authorization according to the current regulations. The Teno electric heater is suitable for use in a family sauna, one (1) heater per sauna room. Retain the installation and operating instructions for further reference.

### Installation cable

Use rubber cable H07RN-F as a connection cable.

### Additional connection options

Control of electric heating with the heater: The electric heating control cable is brought directly to the heater's junction box and further to the heater's terminal block with a rubber cable that is dimensionally identical to the incoming cable.

**NOTE! Failure to observe the connection instructions may result in a risk of fire!**

**NOTE! Remove all plastic film before using the heater!**

## 6. Things to keep in mind when using the heater

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### First heating

During the first heating, the resistors may emit fumes. Therefore, ensure that the room is properly ventilated. NOTE! Also see the first time use of E type on p. 14!

### Sauna room

Always check the sauna room before switching the heater on! Always make sure that the timer has switched the power off after the set time period!

### Temperature control

The temperature is adjusted by means of either a mechanical thermostat (see page 10: M types) or the control panel (see page 14: E types). The actual heating time depends on the dimensions, structure and thermal insulation of the sauna. The temperature in the sauna room can be maintained at the desired level with the thermostat. If the temperature of the sauna room becomes dangerously high for any reason, the overheating protector will switch the heater's power off. The cause of overheating must always be investigated. The power can be switched on again by pressing the overheating protector reset button (see page 10: M types and page 14: E types).

### Heating time

An excessive heating time consumes energy and does not improve the steaming properties. The best steam is achieved by keeping the sauna's heating time relatively short, at about 30–60 min., according to the size of the sauna and the heater's power. The size of the sauna, the glass door, windows, or materials used may require a longer heating time.

### Water thrown onto the heater

We recommend using hand warm water. The water should be fresh household water. Throwing the water onto the heater sides / lower stones generates softer steam. If you want steam that feels hotter and more intense, pour plenty of warm water on top of the heater all at once.

## Sauna room structure

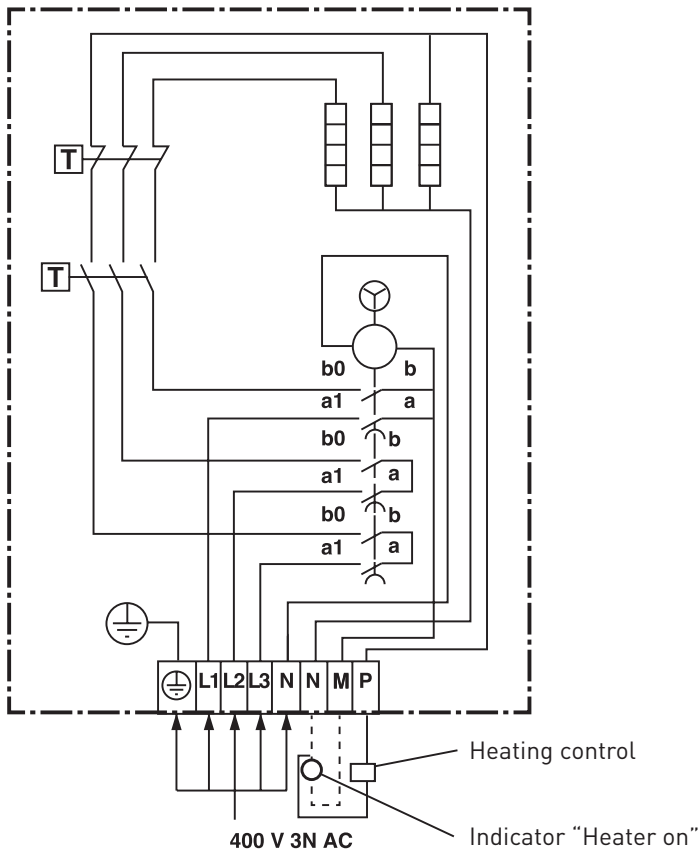
The sauna and its ceiling, in particular, should have good thermal insulation, as heat tends to escape through the ceiling. Due to the moisture, we recommend that you use aluminium paper. The size of the heater should be selected according to the size of the sauna (in cubic metres). In addition to calculating the power need for the regular sauna structure (glass wool–foil–wood), the following should be taken into consideration. If the sauna has any uninsulated wood, tile or concrete surfaces or the walls are made of logs, the heater power needs to be increased. For every uninsulated square metre, the heater power need increases by the same amount as if increasing the space volume by 1.2 m<sup>3</sup> and on timber surfaces by 1.5 m<sup>3</sup>. The factor for glass surfaces (glass walls, doors and uninsulated stone surfaces) is also 1.2 m<sup>3</sup> per square metre. In borderline cases, you should choose a heater with higher power.

The sauna needs efficient ventilation for a good oxygen level and a sufficient amount of fresh air. The air in the sauna needs to change at least 6 times per hour. For a sauna with an electric heater, mechanical ventilation is the most convenient ventilation method. The supply air should be provided through an inlet located 500 mm, at a minimum, above the heater, either on the wall or in the ceiling. The exhaust valve should be placed on the opposite wall, as far away from the heater and as close to the floor level as possible. It is highly recommendable to install an exhaust air valve in the ceiling as well for an easier removal of moisture after sauna sessions.

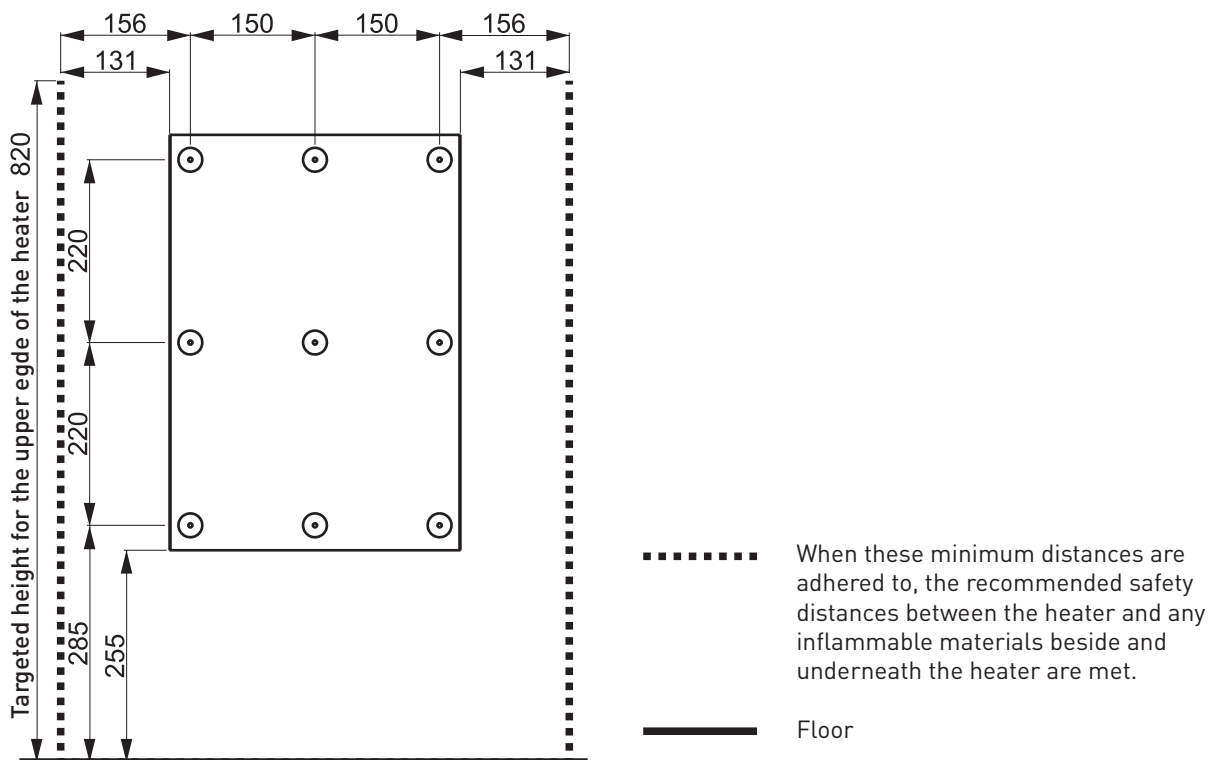
For more information, refer to the construction instructions and building regulations.



## 7. Wiring diagram M type

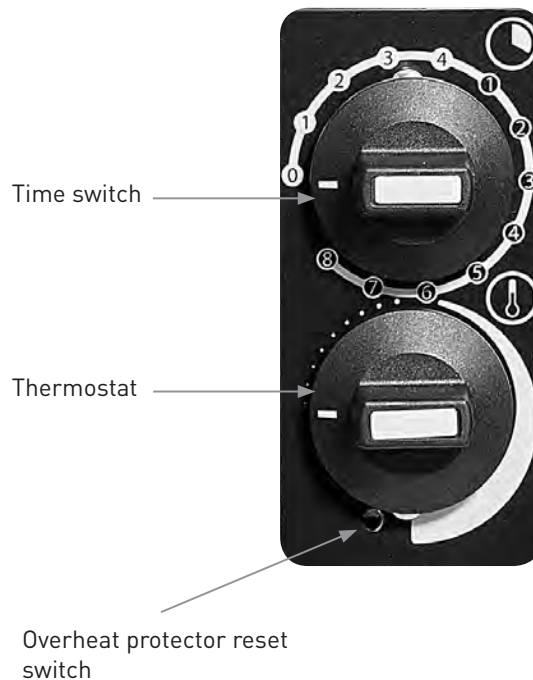


## 8. Wall mount installation



## 9. Time switch and thermostat operation M type

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The time switch (4+8 h) is also the heater's main switch. After a set time, the time switch automatically switches the heater off. With the timer function, the heater can be set to switch on in 1–8 hours. The maximum warm-up time is 4 hours.

### For example:

If you want the sauna to be ready as soon as possible, set the time switch between 1 and 4. The heater switches on immediately and begins to warm up. Set the desired temperature by turning the thermostat.

If you want the sauna to be ready in three hours, turn the timer to 2 on the time switch scale of 1–8. The timer starts and the power will be switched on and the heater will start warming up after two hours. When the power has been switched on, the heater will remain on for a maximum of 4 hours. After that, the power will be switched off automatically. You can switch the power off sooner by turning the time switch to zero (0).

**Always make sure that the time switch has switched the power off after the set time period!**

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### Additional connection options

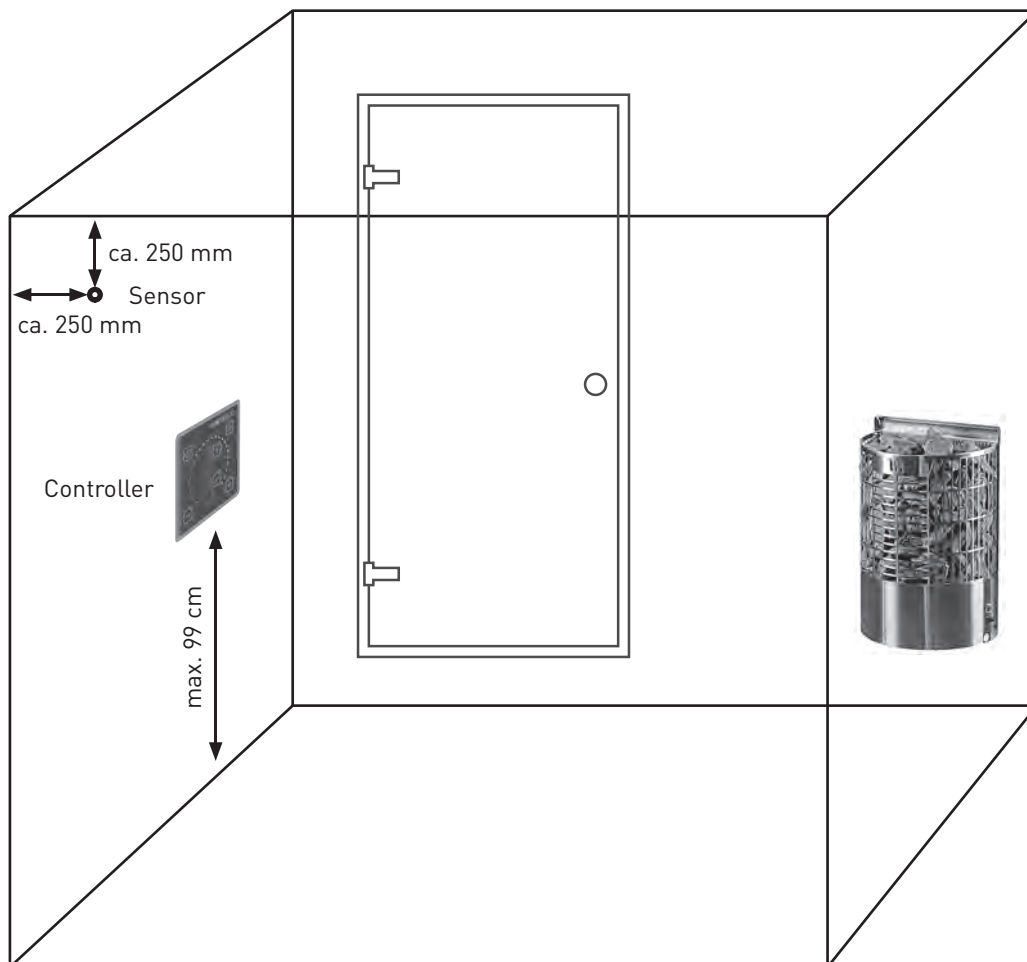
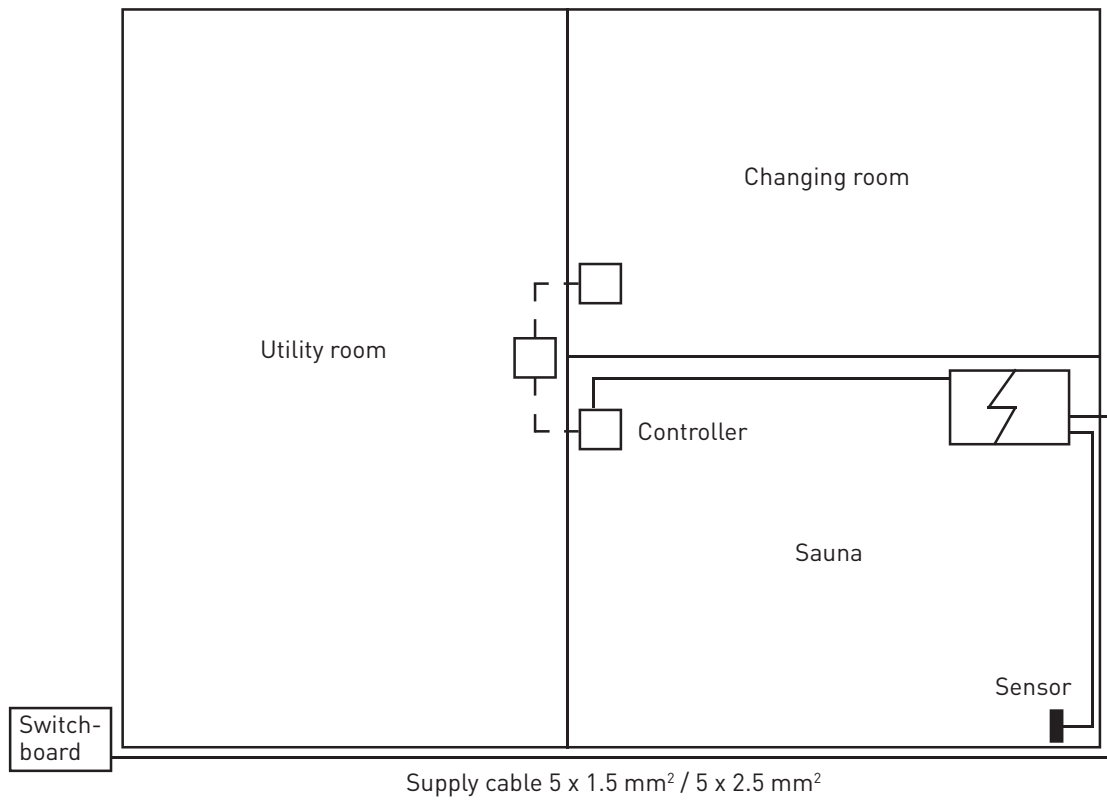
#### Connecting a signal light outside the sauna room

The connection cable used should be, for example, the H07RN-F cable with a cross-sectional area the same as that of the connection cable.

#### Control of electric heating with the heater

The electric heating control cable is brought directly to the heater's junction box and further to the heater's terminal block with a rubber cable that is dimensionally identical to the incoming cable.

## 10. Installation instructions E type



## Installation of external control and sensor

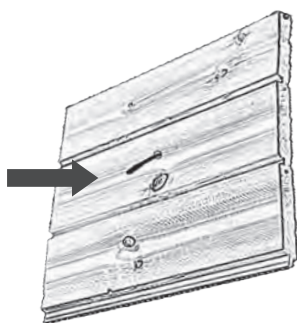
The type E heater package includes:



Controller



Sensor



The most suitable location for installing the wall sensor is on the wall where the benches are mounted. Its distance to the ventilation duct should be at least 50 mm.

Drill a 3.5 mm hole in the wall panel and route the wire under the panel to the heater. Ensure that approximately 10 mm of the sensor remains visible. If needed, the sensor can be attached to the hole with a small drop of silicone adhesive. The length of the sensor cable is 6 m. Cut the excess wire and connect the other end to the heater. **Ensure that a minimum of 7 mm of the end of the wire is stripped to ensure a proper contact.**



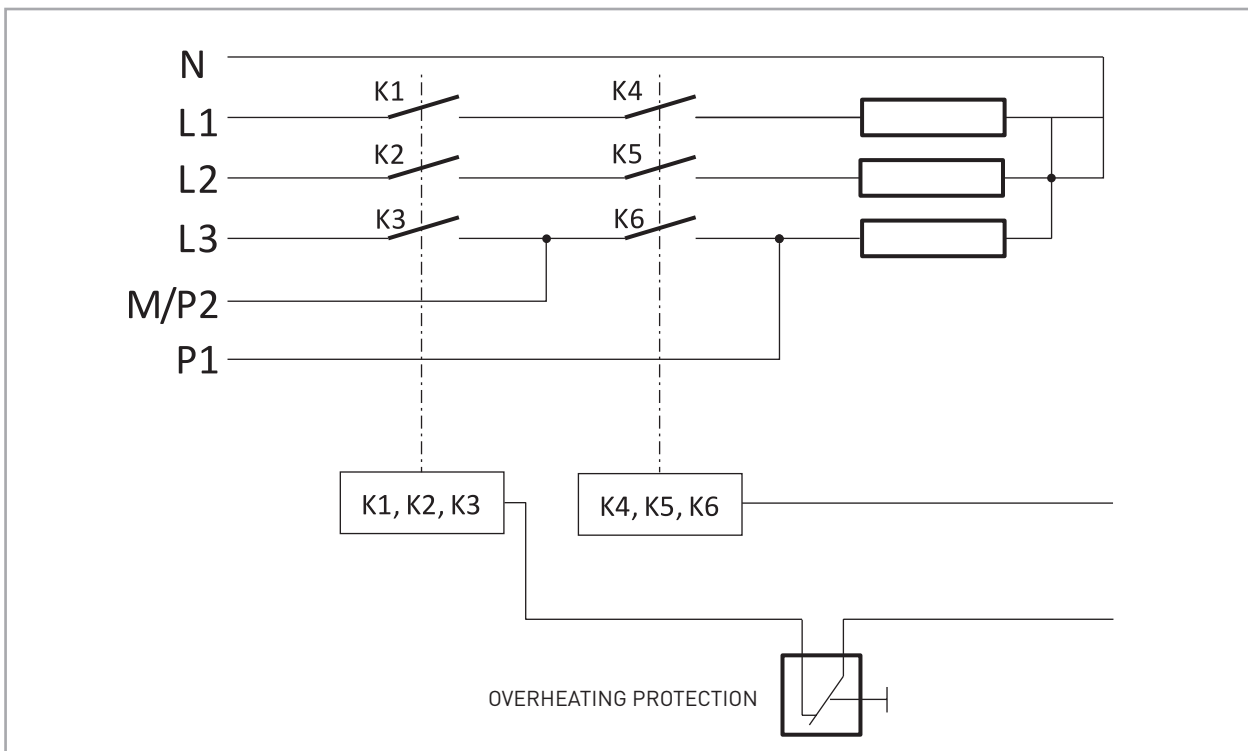
The wall mounting plate is either mounted to the wall using three screws or affixed to the bottom of the mounting box. The mounting plate is covered first with a cover plate and finally with the control panel. The length of the sensor cable is 8 m. Cut the excess wire and connect the other end to the heater. When installing the control panel, make sure that the cables do not become detached or bend.



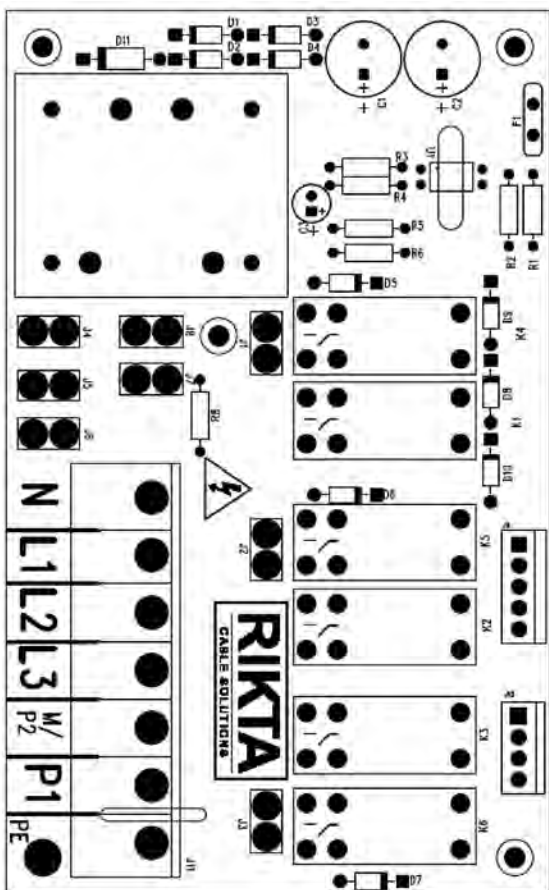
### NOTE!

Remove the plastic protection film of the control panel before using the heater.

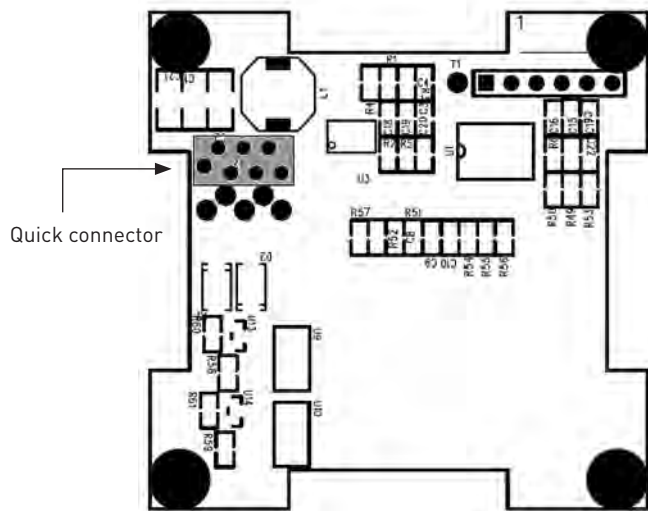
# 11. Wiring diagram E type



Controller card wiring, heater



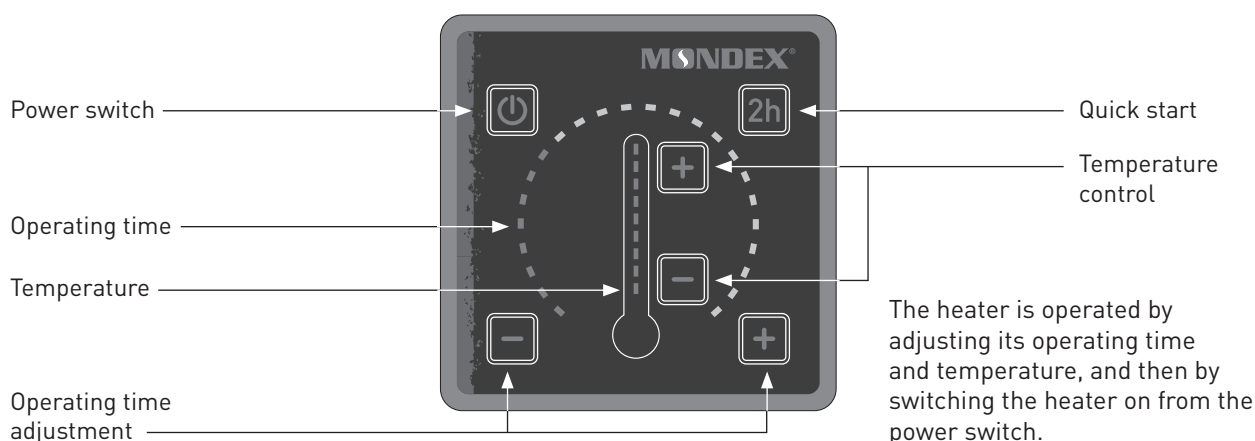
Controller card wiring, controller



White  
Grey  
Green  
Blue  
Red  
To the controller

White To the overheating protector  
White To the temperature sensor  
Black  
Black

## 12. Heater control and operation E type



**Normal start:** Select the operating time with the control buttons.



The operating time is displayed in light bars. One bar equals 30 min. The maximum operating time is 4h.

**Quick start:** Press the quick start button. The heater will remain on for two hours.



**Temperature control:** Set the desired temperature with the control buttons.



One light bar affects the temperature by approximately 5°C.

**Heater start-up:** When the operating time and temperature have been set, switch on the heater from the power switch. NOTE! If the power switch is not pressed, the controller lights will keep blinking. NOTE! The heater will remember the previous temperature setting.



**Timer function:** You can set the heater to switch on in 30 min. – 8 hours. After that, the heater will remain on for 4 hours.

- Keep the operating time controller depressed until the red lights turn off.
- After this, the light bars will turn blue and each bar represents a period of 30 min.
- Select the desired temperature for the sauna with the temperature control buttons.
- You can switch off the heater at any time by pressing the power switch.



### First time use of the heater (heater calibration)

Ensure that the main switch on the side of the heater is in the "I" position. Set the temperature to two LED lights from the bottom. Press the quick start button (2h). Switch the heater on by pressing the power switch in the upper left-hand corner. When 2 hours have elapsed or the blue LED light at the lower right-

hand corner has turned off, the heater calibration is complete. Do not open the sauna door during the calibration. During the calibration, the heater "teaches itself" to heat up optimally according to the size of the sauna. The heater can be used normally after the calibration. NOTE! The heater must be filled with heater stones before the first use (calibration).

### Resetting the heater

Switch off the heater from the main switch located on the lower right-hand side of the heater. Keep the temperature control + and – buttons depressed. Switch the main switch of the heater on again while keeping the + and – buttons depressed. The heater is now ready for calibration. For calibration instructions, see "First-time use of the heater (heater calibration)".

### Error codes

If the heater encounters an error, the electronics will turn off the resistors and indicate the controller faults with blue lights as follows:

4th light from bottom:

**Relay fault**

3rd light from bottom:

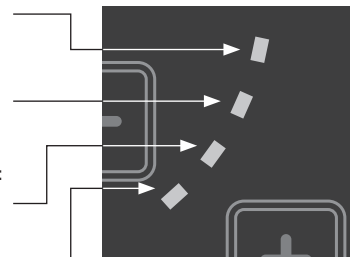
**Short circuit of the thermal sensor**

2nd light from bottom:

**Contact failure of the thermal sensor**

1st light from bottom:

**Calibration status**



### Overheating protector

The overheating protector reset button is located above the heater's main power switch under a protective cap. Twist the cap to open. The red reset button located under the cap is 3.5 mm thick.

## 13. Troubleshooting

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### Heater does not warm up

#### Is the power on?

#### Has the overheating protector tripped?

→ **M type:** This is reset by pressing the overheating protector reset switch powerfully with a sharp object until a click is heard.

→ **E type:** Reset is performed by opening the black twistable protective cap next to the main switch on the left side of the heater and pressing the button under the cap.

The cause of overheating must always be determined before the heater is switched on again! If necessary, contact the dealer or manufacturer.

#### Warnings

- Due to a risk of fire, do not use the sauna to dry clothes or laundry.
- Exercise caution with a hot heater, since the heater stones and metal parts become very hot and can cause burns.
- The water steam rising from the heater is hot and can cause burns.
- Children, disabled and ill persons who are using the sauna should be supervised.
- Benches and floors may be slippery, therefore move in the sauna with caution.
- Do not go to a hot sauna under the influence of narcotic substances (alcohol, drugs, narcotics, etc.)

#### Warranty

For heaters and control units in private use, the warranty is two (2) years. In commercial/professional use, the warranty is three (3) months. Commercial use refers to facilities in which the heater is in use on a continuous basis, such as fitness centres, swimming pools, housing companies etc. It is not recommended that the heater is on for longer than six (6) hours at a time. Retain the sales receipt or warranty card. The warranty does not cover external or internal mechanical damage caused by, for example, the impacts of stones or the heater falling over. The warranty also does not cover defects caused by acts of nature, such as lightning or damage caused by overvoltage. Please also see chapter "Changing the heater stones". **Removing or re-stacking of heater stones are not covered by the warranty in a potential warranty maintenance.**

#### Maintenance and spare parts

In case of a fault that cannot be solved, please contact the store where you purchased the heater or email [info@mondex.fi](mailto:info@mondex.fi). Spare parts can be purchased from Mondex distributors and the manufacturer. When purchasing spare parts, please refer to the name, power, serial number and manufacturing date of the heater to ensure you receive the correct parts.

#### Natural stone as material

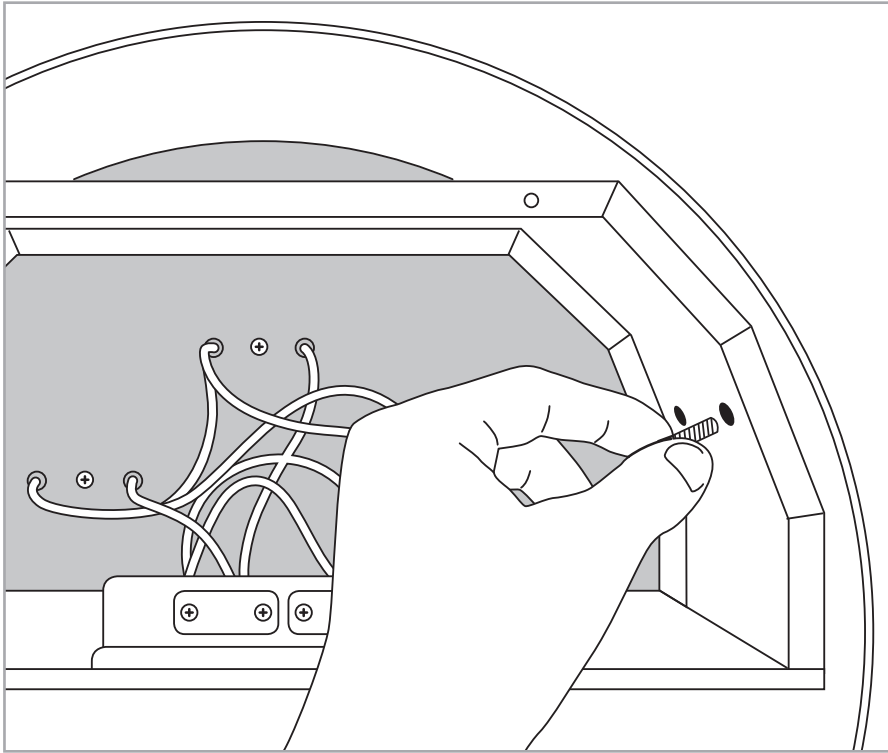
Small pebbles or pieces may come off the natural stone used in the heater. As this is not a failure of the organic material but a natural feature that cannot be predicted at the time of manufacturing the product, the manufacturer is not responsible for any damage resulting from this.

#### Changing the heater stones

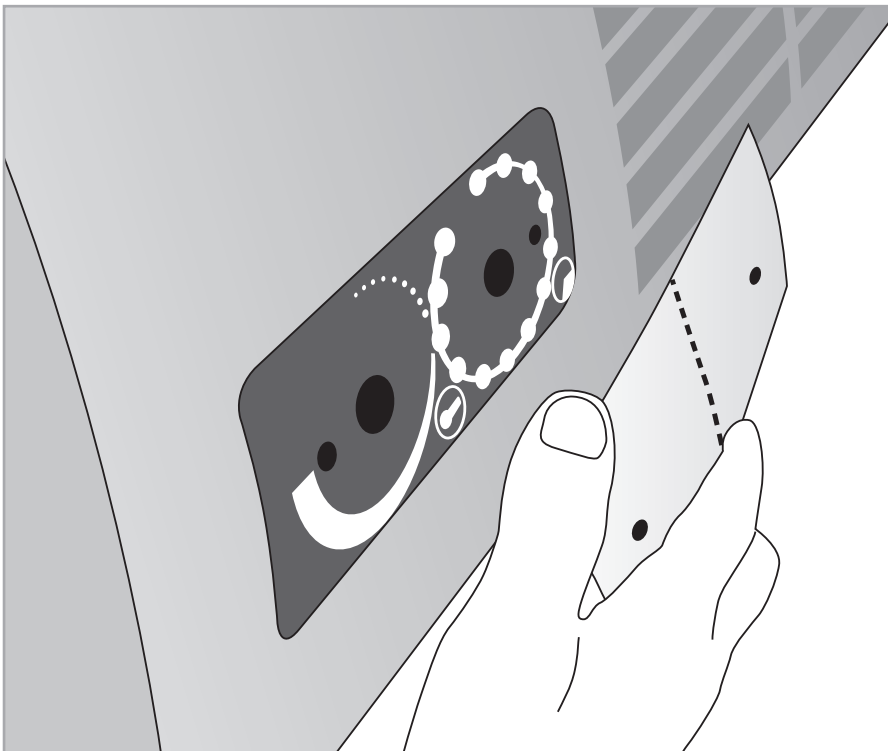
Re-stack the heater stones and replace any eroded stones annually (every three months in commercial/professional use). The good condition and proper, spacious stacking of the stones around the resistors inside the heater ensure a sufficient air flow between the resistors. If this is not carried out annually, a proper air flow may be obstructed and the resistors may break prematurely, which is not covered by the warranty.

## 14. Changing the side of the controller M type

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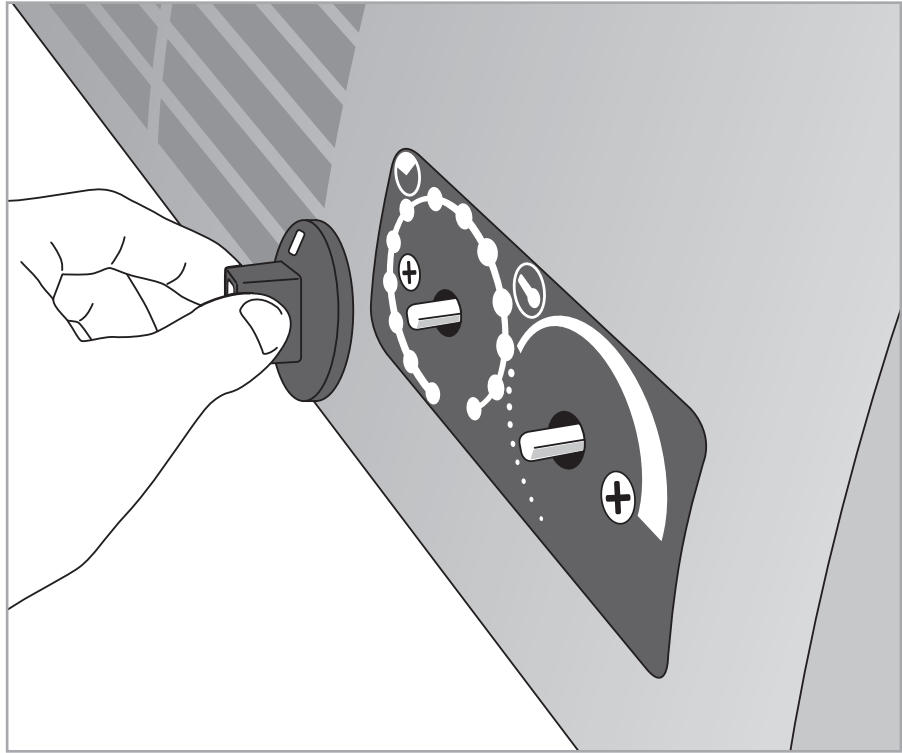
Detach the bottom plate of the heater. Detach the fastening nuts of the cover plate.



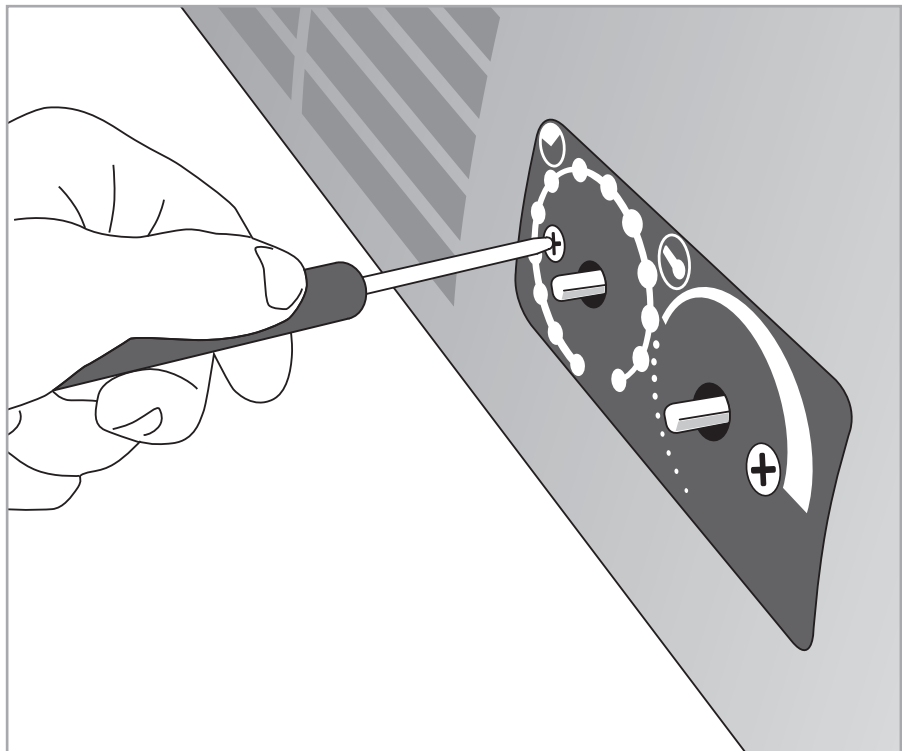
Remove the cover plate.

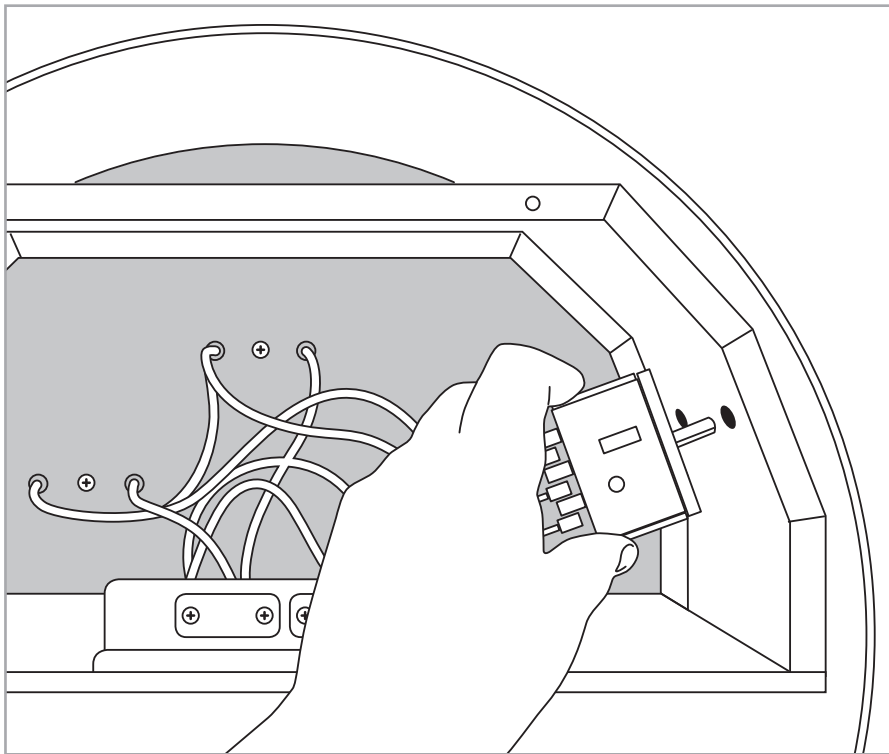


Remove the controller knobs by pulling powerfully.

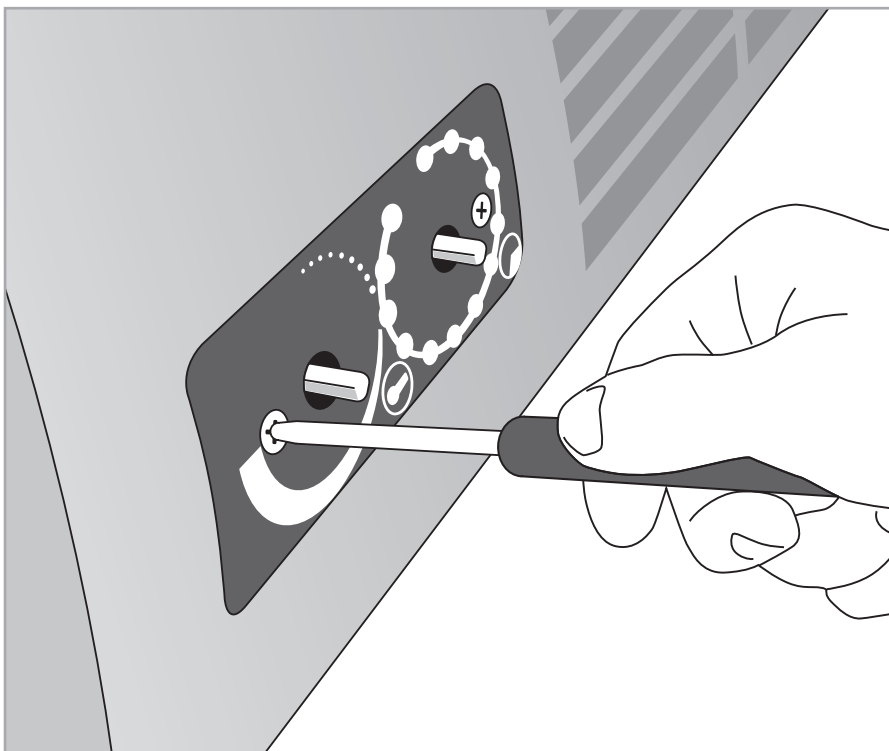


Open the two fastening screws of the controllers.



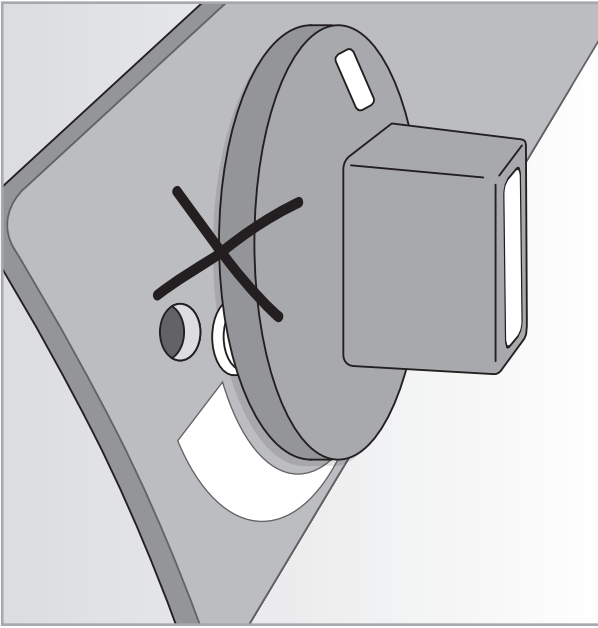


Move the controller to the opposite side.

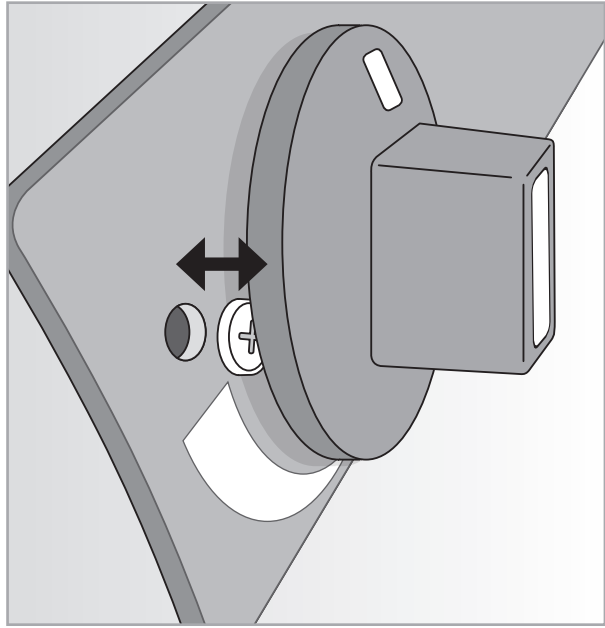


Attach the controller screws.

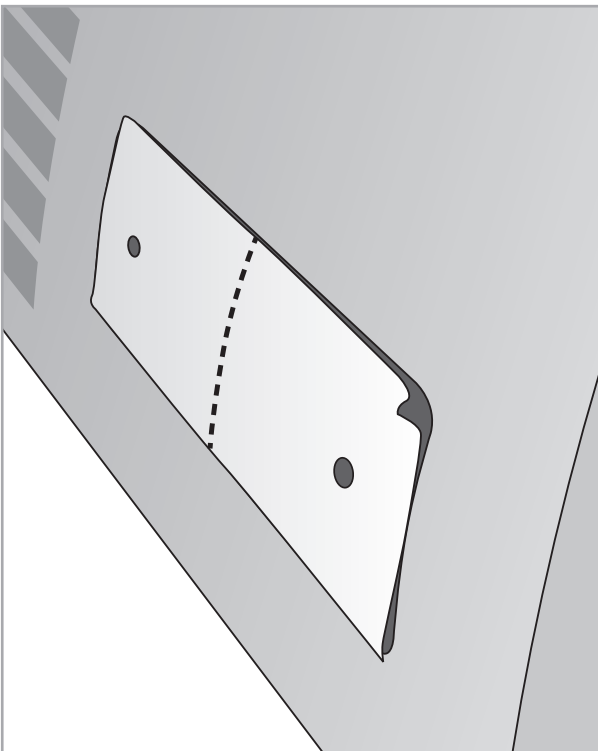
**Note!** Do not bend the capillary tubes of the thermostat sharply. Ensure that the capillary tubes are not in contact with electrical connectors.



Replace the knobs  
**Note! Ensure that the knobs are not inserted too deep but can be turned freely!**



If needed, retract the knob slightly.



Attach the cover plate on the opposite side.

