



INSTALLATION AND OPERATING INSTRUCTIONS

Teno 2.0 M, E2, and O heaters

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1. General safety instructions



To ensure safe sauna use, read these warnings first!

Electrical connections may only be made by a licensed electrician in accordance with applicable regulations.

The Mondex electric heater is suitable for use in residential saunas, one (1) heater per sauna room. Keep the installation and operating instructions for future reference.

Always check the required clearances to combustible materials.

Failure to observe the connection instructions may cause a fire hazard.

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.

Use caution when near a hot heater. The sauna stones and metal parts become very hot and can cause burns.

The steam from the heater is extremely hot and may cause severe burns.

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

Children may not play with the heater.

A child must not do any cleaning or maintenance without supervision.

Use caution when moving in the sauna. Benches and floors may be slippery.

Do not use the sauna while under the influence of alcohol or drugs (alcohol, drugs, etc.).

A stone compartment that is inadequately filled presents a fire hazard.

Do not place any objects on the sauna heater due to the risk of fire.

Flammable or undiluted sauna fragrances, or any other additives, must not be poured directly onto the heater or sauna stones.

The hot surfaces of the heater and the sauna stones can cause severe burns.

The sauna and heater must only be used for their intended purpose.

This device may be used by children 8 years of age or older, as well as by persons with reduced physical, sensory, or mental capabilities, or who lack experience and knowledge, provided they are supervised or have been instructed in the safe use of the device and understand the hazards involved.

This appliance complies with the following requirements:



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

2. Teno 2.0 heaters, M and E2 models



M model

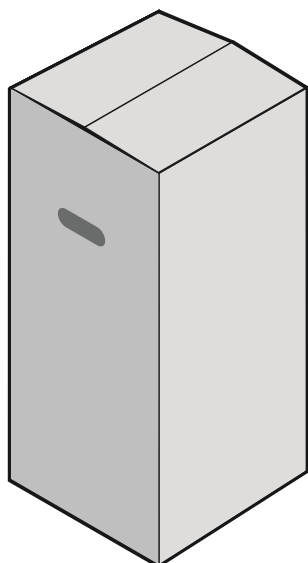


E2 models



3. Heater assembly and installation

Heater assembly



- 1) Keep the heater in its original packaging in an upright position in a warm, dry location until it is installed.
- 2) The package includes the heater and the required sauna stones. For E2 models, it also includes the thermostat sensor, electronic controller and required cables. Visually inspect the heater components. If you notice any discrepancies, please contact the retailer where you purchased the heater. Avoid exposing the heater components to impacts when removing from the package. The sauna floor should also be properly protected before you begin the installation.
- 3) An electrician should connect the wires before the heater is installed. If the heater is to be embedded in the bench structure, it must be lowered through the benches before making the electrical connections. Observe the safety distances between the heater and any combustible materials in accordance with **Table 4.4** on page 9.

Note! Remove all plastic film before operating the heater!

Fixing and locking the wall-mounting bracket

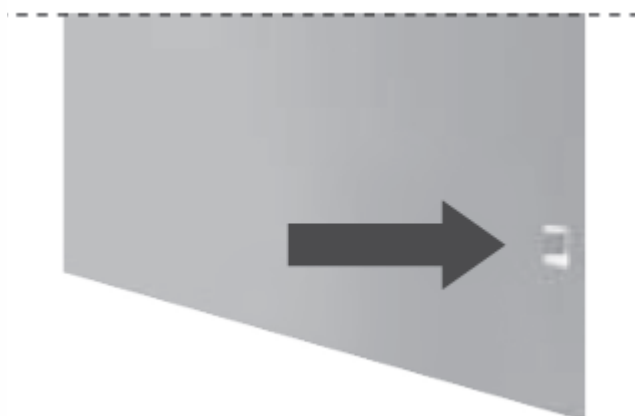
When the wall-mounting bracket has been screwed to the wall from its attachment points and the heater has been lifted in place, the locking tags of the heater's back sheet are bent out to prevent the heater being inadvertently lifted off from the bracket.



Attachment points



Locking tags



Locking tags bent

Stacking the stones

Note: Use regular heater stones with rough cutting surfaces and a diameter of 5–10 cm for the Teno 2.0 heater. Suitable stone materials include peridotite, olivine diabase, and olivine. The use of ceramic “stones” and soft soapstone objects is forbidden as they may damage the heating elements.

Rinse any dust off the stones before stacking them in the heater using protective gloves. Stack the sauna stones so that the heating elements remain aligned. The heating elements must not be bent in a way that causes them to come into contact with the metal structures of the heater. **Stack the stones along the heater’s outer frame as tightly as possible and leave more space between the inner stones.**

Stacking the stones tightly prevents thermal radiation from overheating the materials around the heater.

The more loosely stacked inner stones let air flow through the heater, heating the stones and, subsequently, the sauna room effectively.

How to stack the stones

Place the stones into the stone compartment carefully. Do not drop them or wedge the stones tightly between the heating elements.

Do not place any objects or devices in or near the heater’s stone compartment that would alter the air flow through the heater.

An exposed, hot heating elements may cause materials even outside the heater’s safety distances to become dangerously hot.

Note: Ensure that the heating elements do not touch the heater’s frame anywhere. There must always be a stone between a heating element and the frame.

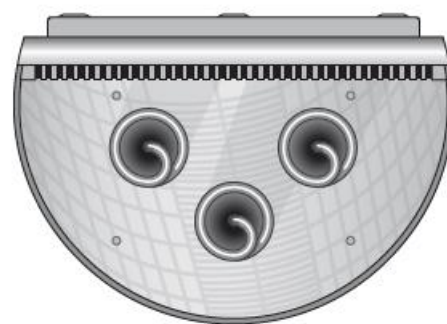
Heater stones must not be placed inside the spiral-shaped heating elements!

Do not stack stones on top of the ventilation grill shown in the picture as they will block the ventilation.

Do not stack the stones into a heap on top of the heater.

Do not use the heater without the stones!

Damage caused by the user or third parties is not covered by Mondex’s warranty or other product liability. When stacking the stones, be careful not to damage the heater’s metal or painted surfaces. For more information on the warranty and stone replacement, see page 22-23.



4. Technical specifications

Heater power and voltage

Heater	Teno 2.0, 6.6	Teno 2.0, 9.0
Power kW	6.6	9.0
Voltage	400 V 3N	400 V 3N
Connection cable	5 x 1.5 mm ²	5 x 2.5 mm ²
Fuse	3 x 10 A	3 x 16 A
Sauna size	6 - 9 m ³	8 - 13 m ³

Table 4.1

Heater dimensions (mm)

Model	Width	Depth	Height
Teno 2.0, 6.6	420	300	630
Teno 2.0, 9.0	420	300	630

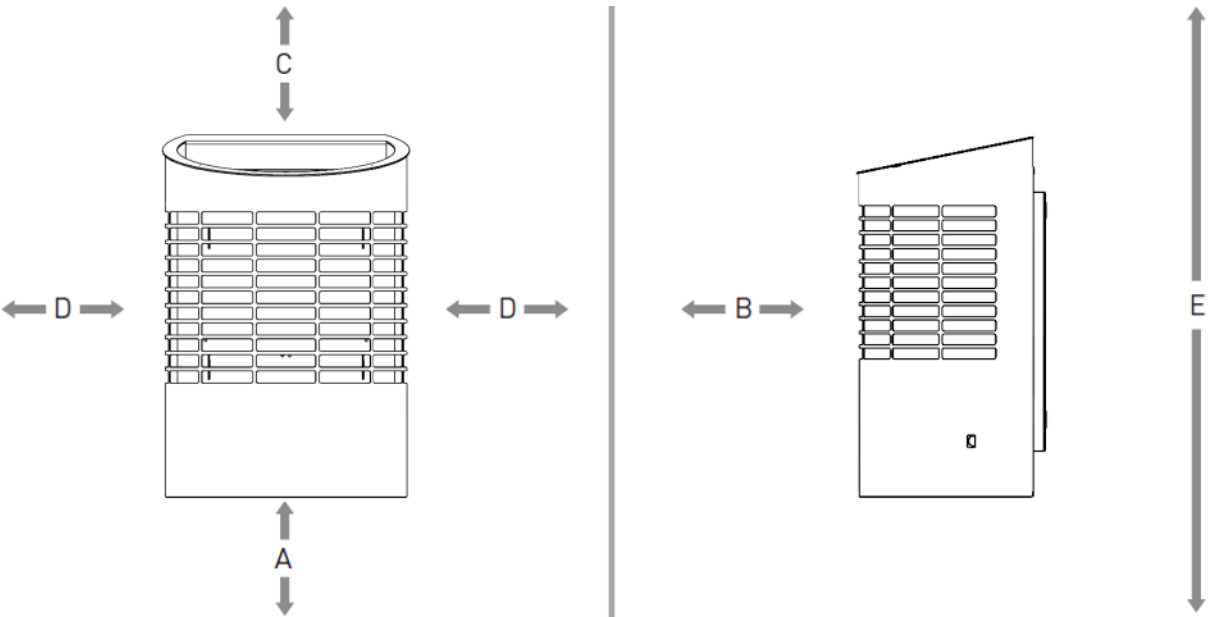
Table 4.2

Stone capacities

Model	Stone quantity (kg)	Stone size (cm)
Teno 2.0 6.6	40	5-10
Teno 2.0 9.0	40	5-10

Table 4.3

Minimum distances to combustible materials (mm)



Model	A	B	C	D	E	Sauna size
Teno 2.0, 6.6	200	100	850	100	1900	6 - 9 m ³
Teno 2.0, 9.0	200	120	1070	100	1900	8 - 13 m ³

Table 4.4

5. General instructions

Important!

Electrical connections may only be made by a licensed electrician in accordance with applicable regulations. The Teno 2.0 electric heater is suitable for use in a family sauna, one (1) heater per sauna room. Keep the installation and operating instructions for future reference.

Installation cable

Use a H07RN-F rubber cable as the connection cable.

Additional connection options

Electric heating control when used with the heater: The electric heating control cable is routed directly to the heater's junction box P/N. From there, it is connected to the heater's terminal block using a rubber cable of the same cross-sectional area as the connection cable.

NOTE! Failure to observe the connection instructions may cause a fire hazard!

NOTE! Remove all plastic film before using the heater!

6. Things to note when using the heater

Initial heating

During the initial heating, the heating elements may emit fumes, so ensure adequate ventilation and air circulation.

Sauna room

Always check the sauna room before turning the heater on.

Always make sure the timer has switched the power off after the set time has elapsed.

Temperature control

The temperature is adjusted either with a mechanical thermostat (see **page 13-14** for M model) or on the control panel (see **page 18-20** for E2 models). The actual heating time depends on the size, construction, 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 overheat protection will switch off the heater. The cause of overheating must always be investigated. The power can be switched on again by pressing the overheat protection reset button (see **page 13** for M model and **page 18** for E2 models).

Heating time

Excessive heating time consumes energy and does not improve the properties of the steam. The best steam is achieved by keeping the sauna's heating time relatively short, at about 30–60 minutes, relative 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 for steam

We recommend using lukewarm water. The water should be fresh household water. Throwing the water onto the heater sides or 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. **Do not use sea water or chlorinated water.**

Sauna room structure

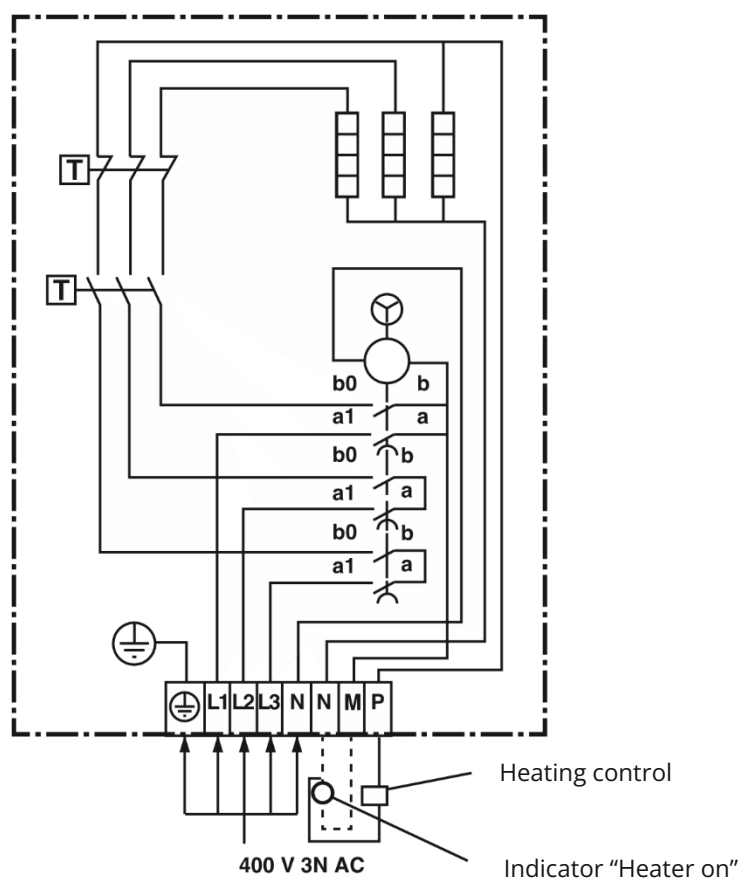
The sauna and especially the ceiling should have good thermal insulation, as heat usually escapes through the ceiling. Due to the moisture, we recommend that you use aluminum paper. The size of the heater should be selected according to the size of the sauna (in cubic meters). In addition to calculating 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 square meter of uninsulated surface, the required heater power increases by an amount equivalent to adding 1.2 m³ to the room volume, and 1.5 m³ in the case of timber surfaces. The factor for glass surfaces (glass walls, doors and uninsulated stone surfaces) is also 1.2 m³ per square meter. In borderline cases, you should choose a heater with higher power.

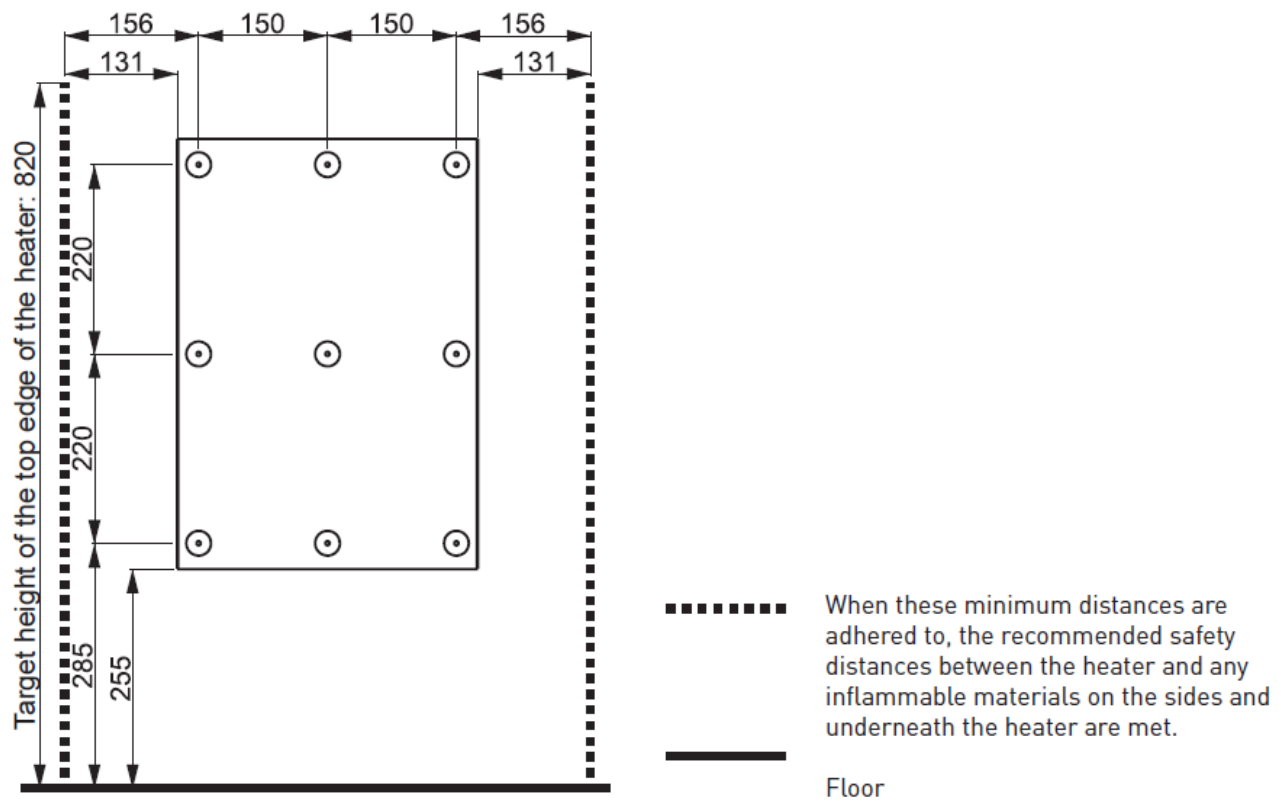
The sauna must have efficient ventilation to ensure adequate oxygen levels. The air in the sauna needs to change at least 6 times per hour. For a sauna with an electric heater, mechanical ventilation is the most convenient ventilation method. The supply air should be provided through an inlet located at a minimum of 500 mm above the heater, either on the wall or in the ceiling. **NOTE:** the distance of an undirected inlet air valve from the temperature sensor must be at least 1,000 mm, while the distance of an inlet air valve directed away from the sensor must be at least 500 mm. The exhaust valve should be placed on the opposite wall as far away from the heater and as close to floor level as possible. It is highly recommended to install an exhaust air valve in the ceiling for an easier removal of moisture after sauna sessions.

For more information, see construction instructions and building regulations.

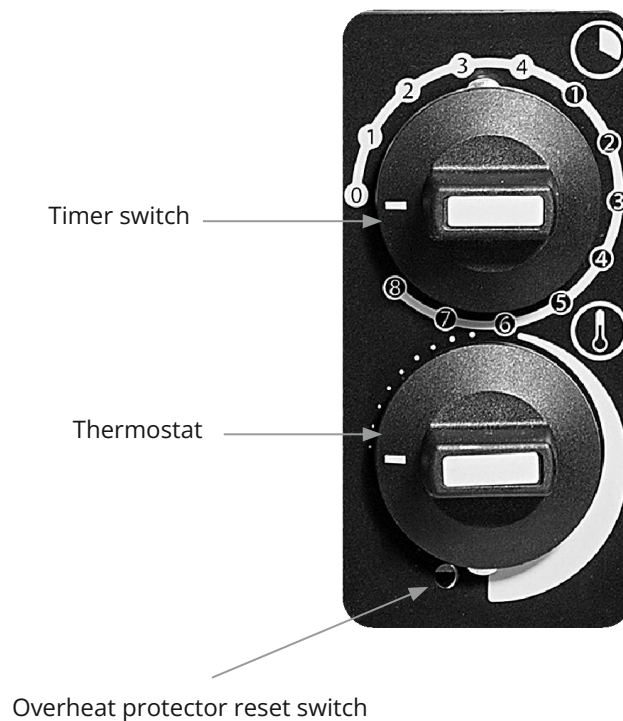
7. Wiring diagram, M model



8. Wall-mount installation



9. Timer switch and thermostat operation, M model



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 timer switch between 1 and 4. The heater switches on immediately and begins to heat up. Set the desired temperature by turning the thermostat.

If you want to go to the sauna in, for example, three hours, turn the timer switch to the 1–8 scale and set it to position 2. The timer starts and the power will be switched on, and the heater will start heating 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 switch off automatically. You can switch the power off yourself by turning the timer switch to zero (0).

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

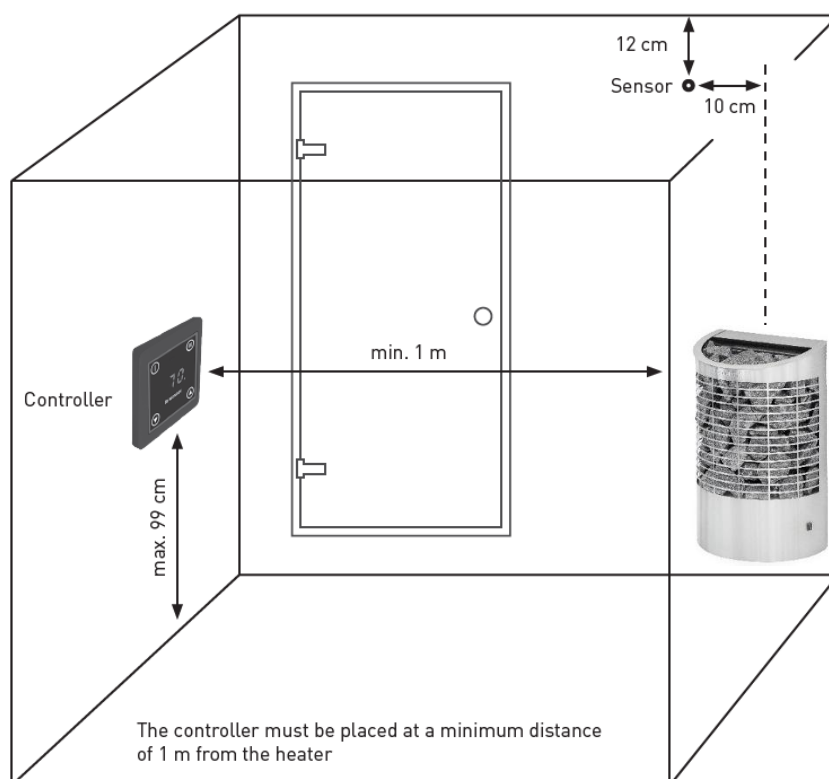
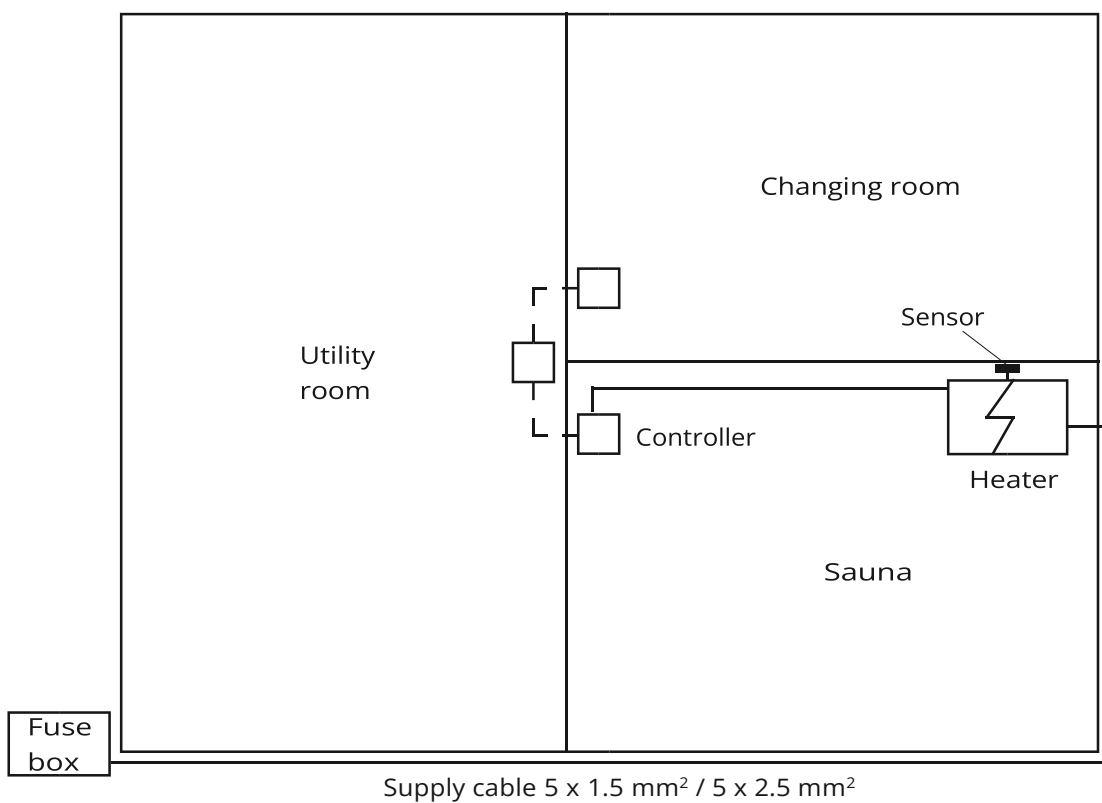
Additional connection options**Connecting a signal light outside the sauna room**

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, E2 models



Controller and sensor installation

E2 models' package includes:



Controller

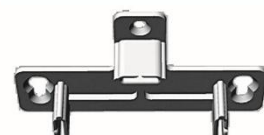


Temperature sensor

Reinforcement plate



Plastic bracket



Cover plate



Control panel



Place the reinforcement plate between the wall/box and the plastic bracket.

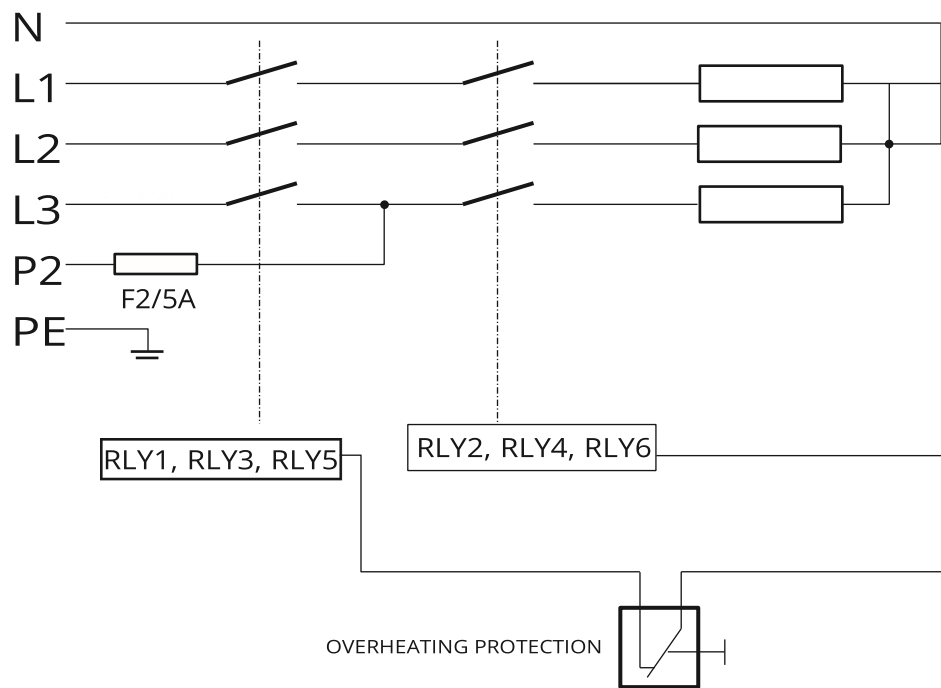
The wall-mounted sensor is placed above the heater.

The temperature sensor must be installed so that it cannot be affected by inlet air.

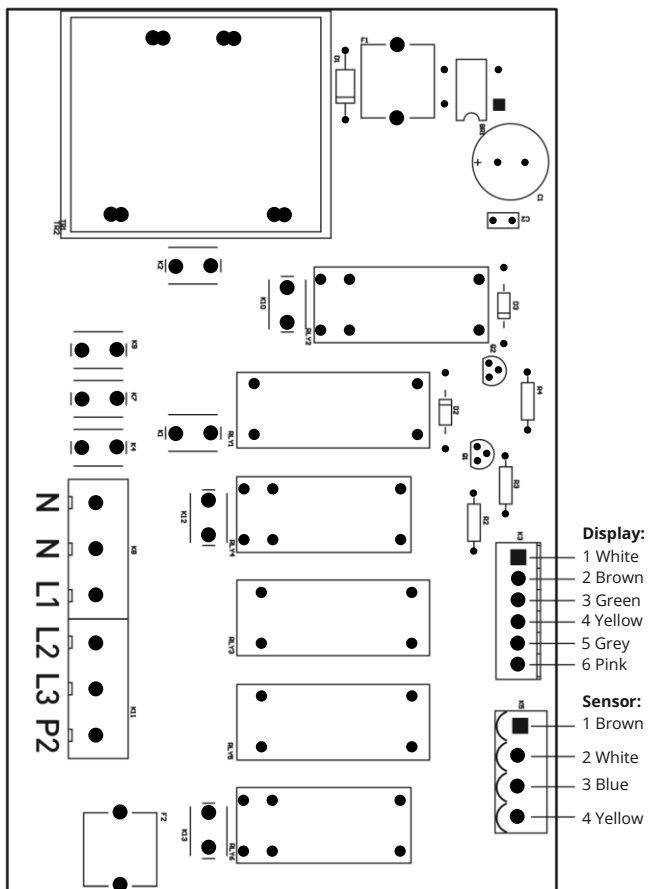
Place the sensor the following way: 12 cm in a vertical distance from the ceiling, and 10 cm in a horizontal distance from the center line of the heater (compare sketch on page 16).

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 10 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.

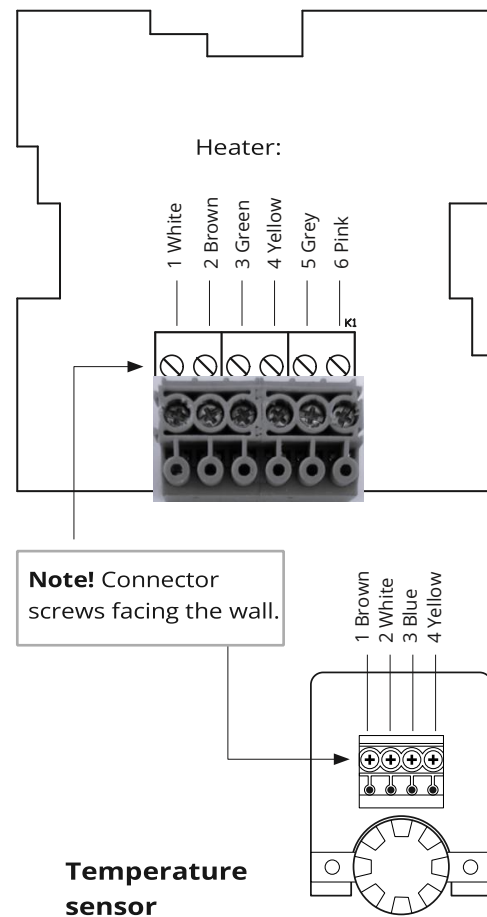
11. Wiring diagram, E2 models



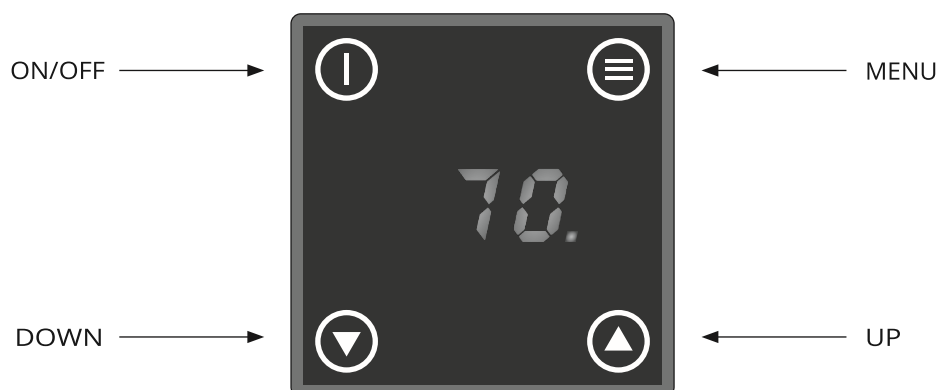
Connecting the control card to the heater



Connecting the control card to the controller



12. Heater operation, E2 models



Turning on the heater

Turn on the heater by pressing the ON/OFF button.

If three lines appear on the display, the buttons are locked.

The buttons can be unlocked by pressing the ON/OFF and MENU buttons simultaneously until all LED segments on the display are lit (as shown in the picture of the controller).

Turn on the heater by pressing the ON/OFF button again.

Setting the heating time and temperature

When the heater is turned on, the duration of heating last used is displayed (the default value is 2 hours).

The temperature can be adjusted using the UP and DOWN buttons, either with short presses or by holding the button down for a longer time.

The time will change in 30-minute increments.

The target temperature last used can be displayed by pressing the MENU button.

The temperature can be changed by using the UP and DOWN buttons, either with short presses or by holding the button down for a longer time.

Timer

The timing setting is displayed by pressing the MENU button again.

The right-hand decimal point on the display is lit as an indication that the timing setting is displayed.

The setting can be changed by using the UP and DOWN buttons, either with short presses or by holding the button down for a longer time. The time will first change in 30-minute increments, and after ten hours, in one-hour increments.

If the timing has been set and the ON/OFF button is pressed, the timing will start first and then the actual heating process.

During the timing, the right-hand decimal point on the display is blinking as an indication of the timing being in progress.

The timing setting can be changed during the timing process by using the UP and DOWN buttons, either with short presses or by holding the button down for a longer time.

If the timing setting is changed to zero or the ON/OFF button is pressed during the timing process, the timing process ends and the heating process starts immediately.

Starting the heating process

The duration of heating is displayed again by pressing the MENU button one more time. You can now start the heating by pressing the ON/OFF button. The current temperature will be displayed, and the right-hand decimal point on the display is lit as an indication of the heating process being in progress.

The target temperature can be adjusted by using the UP and DOWN buttons. When the target temperature has been adjusted, the current temperature will again be displayed after a while. The remaining heating time is displayed by pressing the MENU button during the heating process.

The duration of heating can now be changed by using the UP and DOWN buttons, and the current temperature will be displayed when the change has been made. If the duration of heating is changed to zero, the heating stops immediately.

Stopping the heater or timer

The heater can be turned off during heating, timing, or any mode by pressing and holding the ON/OFF button.

Quick start

The heating process can be started quickly by pressing the MENU button. This sets the duration of heating to two hours and the target temperature to the last value used (the default value is 70 °C).

If three lines appear on the display, the buttons are locked. The buttons can be unlocked by pressing the ON/OFF and MENU buttons simultaneously until all LED segments on the display are lit (as shown in the picture of the controller).

The heating process can be started by pressing the MENU button again.

Parental control

The heater has a menu for individually adjustable parameters.

You can access the menu by holding down the MENU and ON/OFF buttons simultaneously. The abbreviation of the first parameter will be displayed.

The current value of the parameter can be displayed by pressing the MENU button.

You can change the parameter value by using the UP and DOWN buttons.

The chosen parameter value can be saved by pressing the MENU button so that the abbreviation of the parameter is displayed again.

You can exit the menu by pressing the ON/OFF button. This will also switch the heater off.

Parameter	Abbreviation	Value range	Default value
Button locking	---	on/off	on

Error codes

If a known fault condition occurs, an error code will be displayed on the controller. This indicates one of the following:

Error code	Meaning
E01	The overheating protector has tripped
E02	The thermal sensor is out of order
E03	The thermal sensor is not connected

13. Heater operation, O model (without controls)

Using the heater

O model heaters are operated from a separate control unit. Read the operating instructions delivered with the control unit.

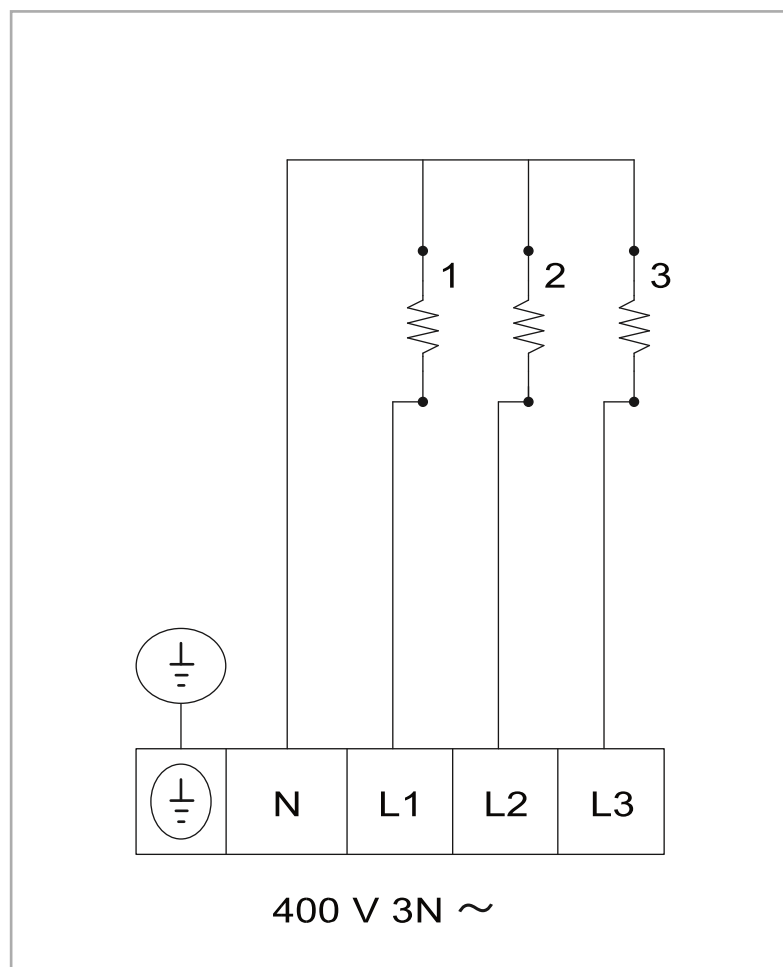
Sauna room

Do not place the air inlet vent where the airflow could cool the temperature sensor (see the temperature sensor installation instructions in the control unit manual).

Overheating protector

Installation and resetting of the overheating protector: See the installation instructions for the control unit.

Wiring diagram



14. Troubleshooting

Heater is not heating up

Check the heater fuses at the fuse box.

Check that the heater's power is on.

Check that all three heating elements are glowing. This means the heater is on.

Overheating protector has tripped

→ M model: Reset the overheating protector by pressing the reset switch powerfully with a sharp object until you hear a click.

→ E2 models: Reset the overheating protector by pressing the button in the sensor box until you hear a click. 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 the risk of fire, do not use the sauna to dry clothes or laundry.
- Use caution when near a hot heater. The sauna stones and metal parts become very hot and can cause burns.
- The steam from the heater is extremely hot and can cause burns.
- Children, disabled, and ill persons should be supervised when using the sauna.
- Use caution when moving in the sauna. Benches and floors may be slippery.
- Do not use the sauna while under the influence of alcohol or drugs (alcohol, drugs, 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 centers, 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 lighting, or damage caused by overvoltage. Please also see the section "Changing the sauna stones" below. **Removing or re-stacking of heater stones are not covered by the warranty in a potential warranty maintenance.** The manufacturer will not compensate the buyer for expenses incurred by a product defect or malfunction, loss caused by disruption of business operations, or any other direct or indirect damage. For more detailed warranty terms and conditions, please see www.mondex.fi/en/product-support/.

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. 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.

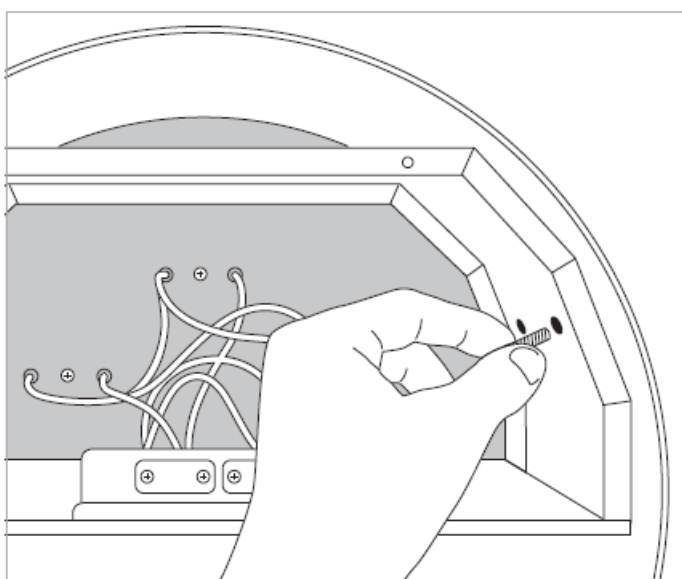
Natural stone as a material

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 manufacture, the manufacturer is not responsible for any damage.

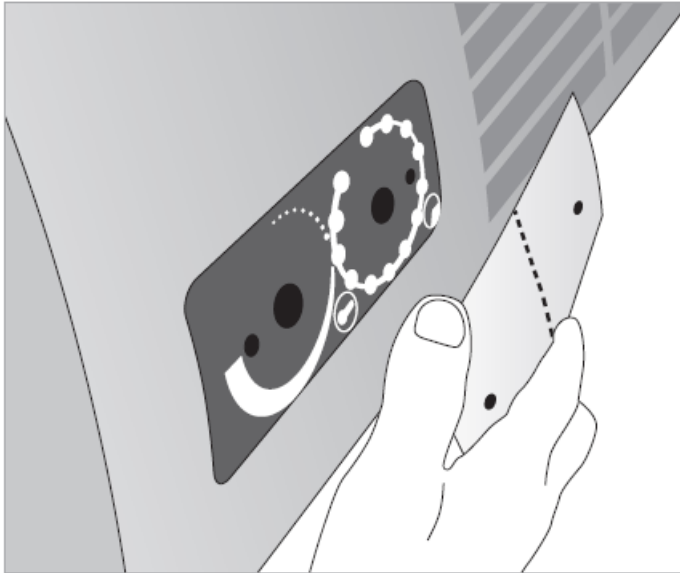
Changing the sauna stones

Re-stack the heater stones and replace any eroded stones annually, more often if used intensively (every three months in commercial or professional use). The good condition and proper, spacious stacking of the stones around the heating elements inside the heater ensures sufficient air flow between the heating elements. **If this is not done annually, proper air flow may be obstructed and the heating elements may fail prematurely. This is not covered by the warranty.**

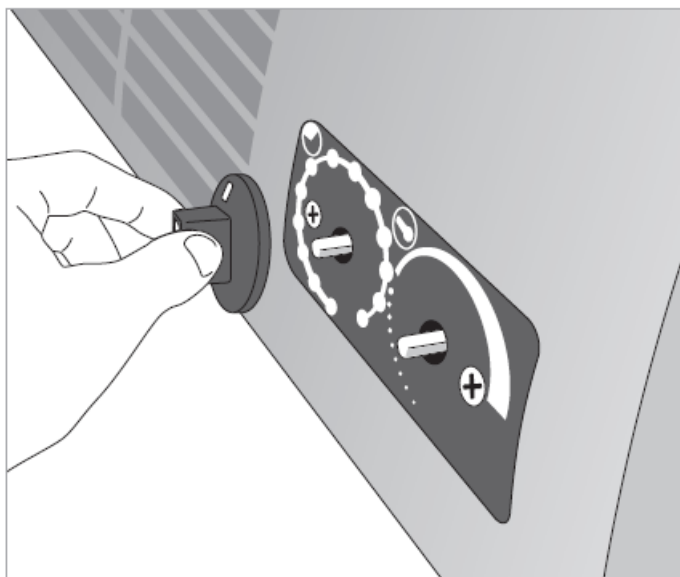
15. Switching control orientation (left/right), M model



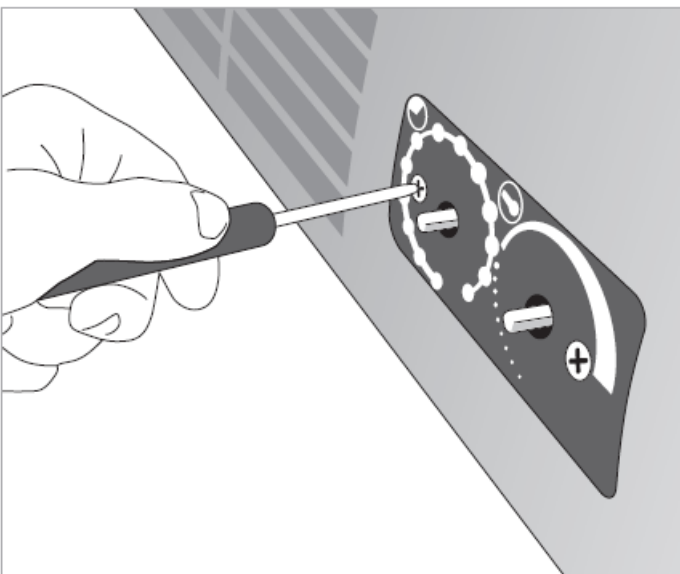
Detach the bottom plate of the heater.
Detach the fastening nuts of the cover plate.



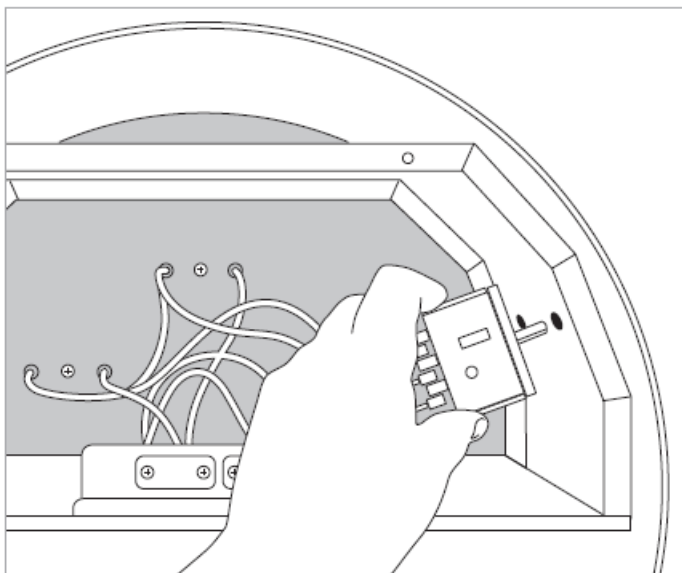
Remove the cover plate.



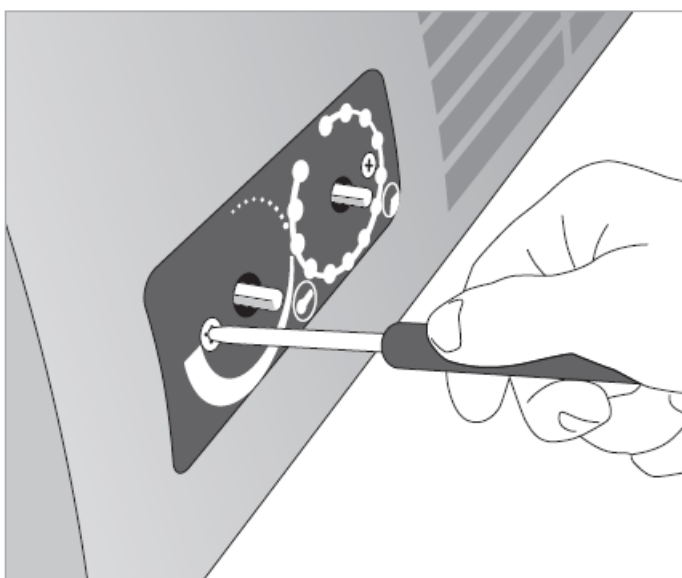
Pull hard to remove the controller knobs.



Open the two fastening screws of the controllers.

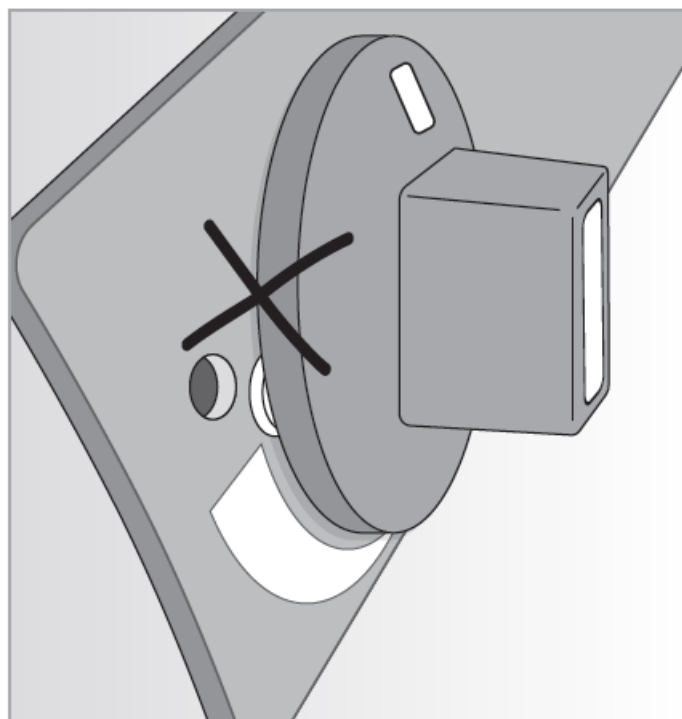


Move the controller to the opposite side.



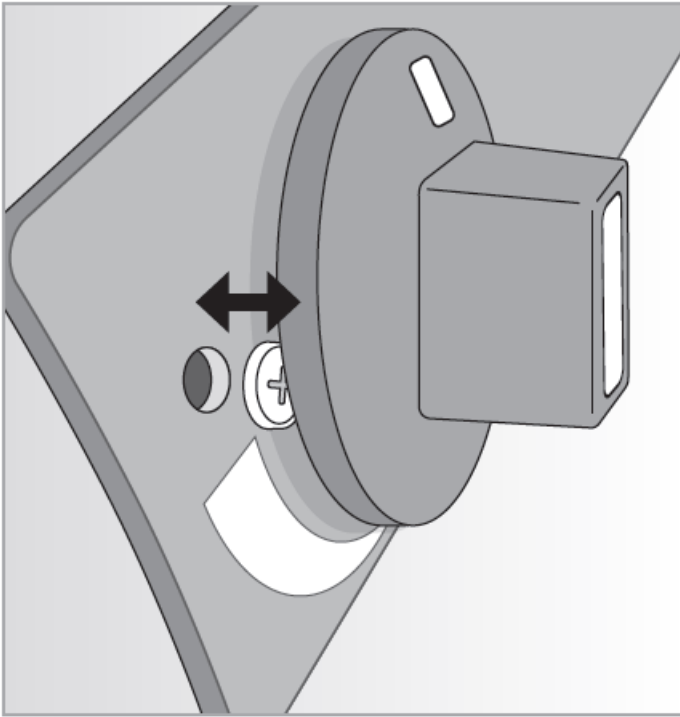
Attach the controller screws.

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

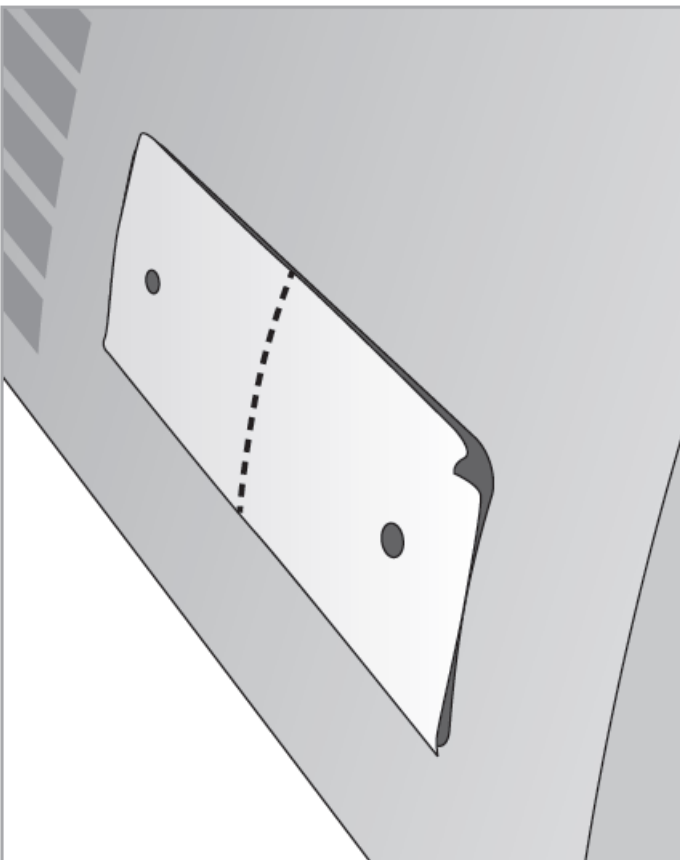


Replace the knobs.

Note! Ensure that the knobs are not inserted too deeply but can be turned freely!



If needed, retract the knob slightly.



Attach the cover plate on the opposite side.

16. Maintenance history

We recommend replacing the heater stones every year. More often, if used intensively.

Date	Action



MONDEX

Mondex Oy
Kettukallionkatu 4, 84100 Ylivieska, Finland
info@mondex.fi
www.mondex.fi/en