2022.09.07

Instructions for Installation and Use of Electric Sauna Heater

USER HANDBOOK

MODEL
GB-45
GB-60
GB-80
GB-90

Welcome to select the above GB Heater.

Kead the user handbook before using the heater.

-Installation
-Operation

Electric Heater

Thank for choosing BG series 4.5~9kw sauna heater. The GB series sauna heater is equipment with CON6 wall-mounted digital control panel.

These instructions for installation and use are intended for the owner or the person in charge of the sauna, as well as for the electrician in charge of the electrical installation of the heater. After completing the installation, the person in charge of the installation should give these instructions to the owner of the sauna or to the person in charge of its operation. Please read the instructions for use carefully before using the heater.

The heater is designed for the heating of a sauna room to bathing temperature. It is not to be used for any other purpose.

Congratulations on your choice!

Guarantee

- The guarantee period for heaters and control equipment used in residential sauna is one (1) year.
- The guarantee does not cover any faults resulting from failure to comply with installation, use or maintenance instructions.
- The guarantee does not cover any faults resulting from the use of stones not recommended by the heater manufacturer.

Model, configuration and parameters

Table1 meaning of the model name

GB	60	Controller
GB series	6.0KW	CON6 wall-mount digital controller

BG-60: series with CON6 wall-mounted control 6kW sauna heater，diagram 1.

GB45 ～ GB90		

Table 2:

Model	Power KW	Heating Elements N*kW	Voltage/Current V / A	Power wire N*mm2	Breaker A	Sauna room height(mm) 1900 Room size m3	Stones kg	
GB45	4.5	3*1.5	220-240V/20.5	3*6	25	3～5	15	
			240V/18.8	2#10AWG+N+GR	25			
			380-415V/6.8	5*1.5	16			
GB60	6.0	3*2.0	220-240V/13.6	3*6	16	4～7		
			240V/12.5	2#12AWG+N+GR	16			
			380-415V/9.1	3*2.5	16			
GB80	8.0	3*2.7	220-240V/20.5	3*6	25	6～10		
			220V-240V/18.8	2#10AWG+N+GR	25			
			380-415V/6.8	5*1.5	16			
GB90	9.0	3*3.0	220-240V/27.3	3*10	32	7～12	18	
			240V/25	2#10AWG+N+GR	40			
			380-415V/9.1	5*1.5	16			

⚠ **Warning：** The sauna heater cannot be used for other purpose other than sauna room heating.

⚠ **ATTENTION:** This appliance is not intended for use by person (including children) with reduced physical, sensory or mental Capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

⚠ **ATTENTION:** Children should be supervised to ensure that they do not play with the appliance.

Table 3 Parameter table for control panel

Panel model	Temperature display range	Temperature setting range	Preset (waiting) time h	Working hours h	Dimension mm
CON6	6～115℃ (43～239℉)	70～105℃ (158～221℉)	0～12	0～6 or Non-stop	102*122*20

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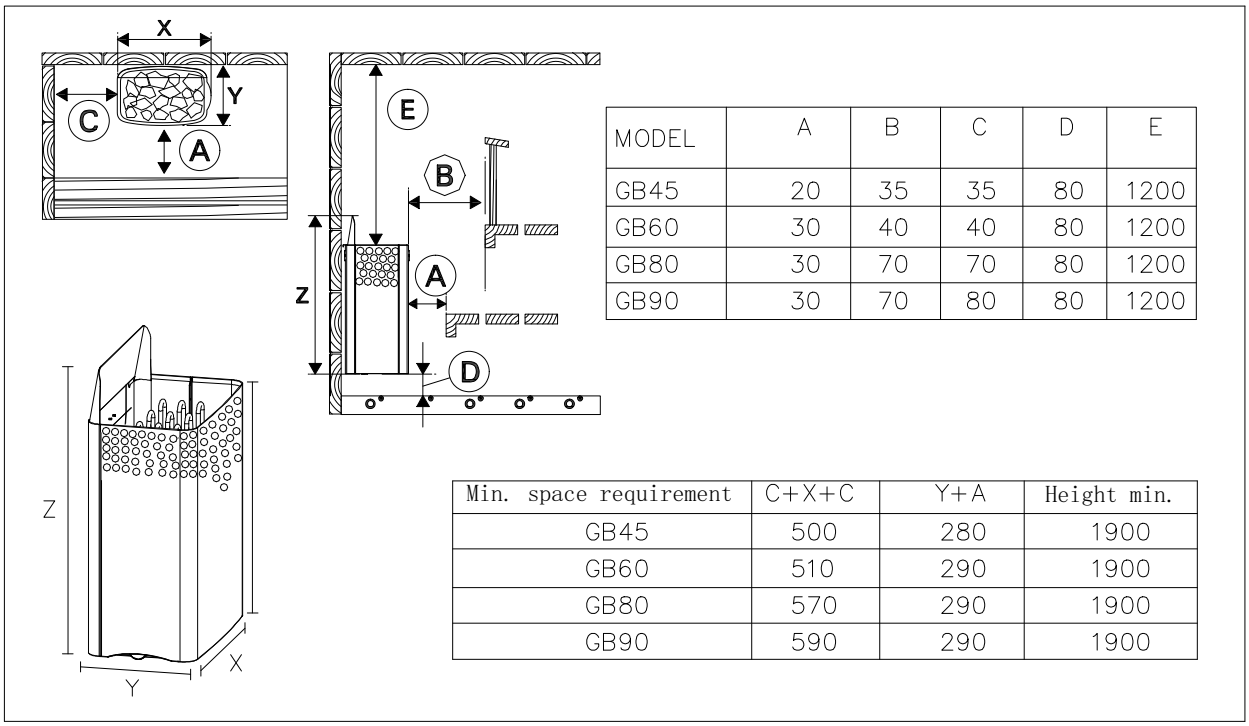
INSTALLATION INSTRUCTIONS

Before installation

Before installing the heater, study the instructions for installation. Check the following points:

- Is the output and type of the heater suitable for the sauna room? **The cubic volumes given in table 2 must be followed.**
- Is the supply voltage suitable for the heater?
- The location of the heater fulfil the minimum requirements concerning safety distances given in figure 2

Note! Only one electrical heater may be installed in the sauna room. The heater should be installed so that the warning texts can be read without difficulty after the installation.



MODEL	A	B	C	D	E
GB45	20	35	35	80	1200
GB60	30	40	40	80	1200
GB80	30	70	70	80	1200
GB90	30	70	80	80	1200

Min. space requirement	C+X+C	Y+A	Height min.
GB45	500	280	1900
GB60	510	290	1900
GB80	570	290	1900
GB90	590	290	1900

Figure 2. Minimum safety distances (all measurements in millimeters)

Minimum Safety Distances

The minimum safety distances are shown in figure2.

It is absolutely necessary to install the heater according to these values. Neglecting them causes a risk of fire.

Safety Railing

If a safety railing is built around the heater, the minimum distances given in figure2 or in the railing's instructions for installation must be observed.

Electrical connections

The heater may only be connected to the electrical network in accordance with the current regulations by an authorized,professional electrician.

Electrical connections in figure6.

- The connecting cable must be of rubber cable type HO7RN-F or its equivalent. **NOTE! Due to thermal embrittlement, the use of PVC-insulated wire as the connecting cable of the heater is forbidden.**
- If the connecting and installation cables are higher than 1 000 mm from the floor in the sauna or inside the sauna room walls, they must be able to endure a minimum temperature of 1 70 °C when loaded(for example, SSJ). Electrical equipment installed higher than 1000 mm from the sauna floor must be approved for use in a temperature of 125 °C(marking T125).

Electric Heater Insulation Resistance

When performing the final inspection of the electrical installations, a "leakage" may be detected when measuring the heater' s insulation resistance. The reason for this is that the insulating material of the heating elements has absorbed moisture from the air (storage, transport). After operating the heater for a few times, the moisture will be removed from the heating elements.

Do not connect the power feed for the heater through an RCD (residual current device)!

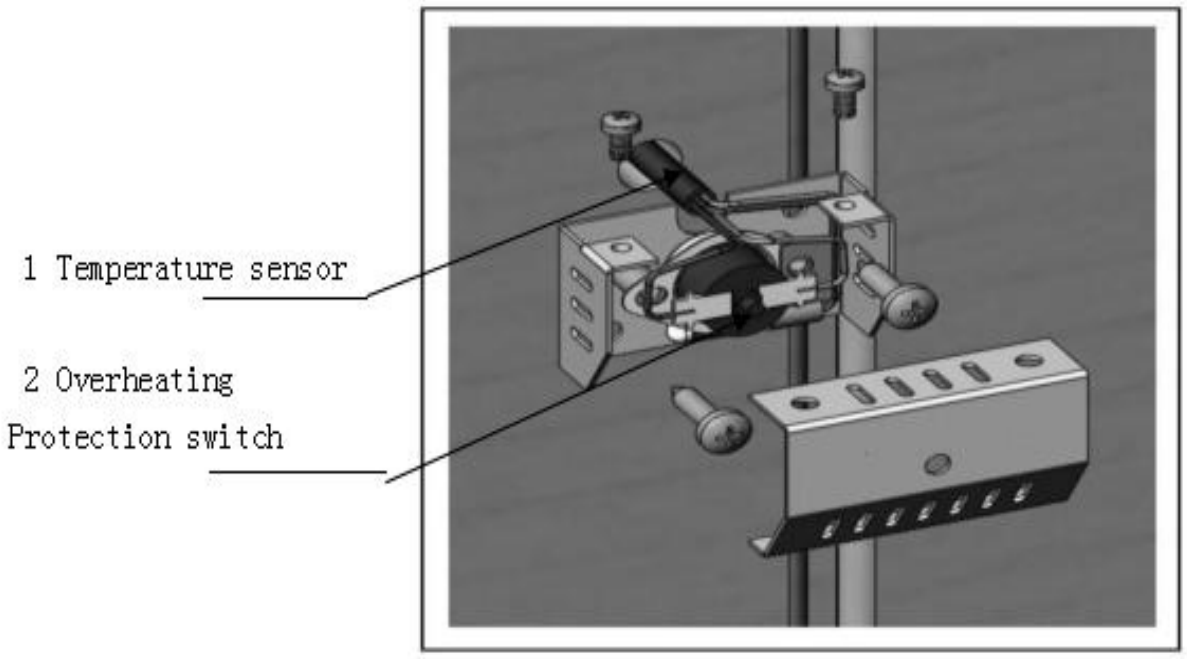
Installation of the Control Unit and Sensor

The control unit includes detailed instructions for fastening the unit on the wall. Install the sensor(con6) as shown in (figure 3;1). If the heater is installed further than 100 mm from wall, the sensor must be installed on the ceiling. .

Do not place the supply air vent so that the air flow cools the temperature sensor. (Figure3;2.)

Installing the Heater See figures 4, 5, and 6.

1. Connect the power cable (fig. 5) to the heater.
2. Install the wall mount horizontally to the wall using suitable fasteners. Make sure that the heater is supported not only by the wall panel (figure 4). Take note of the floor's slope. Using the wall mount ensures the 80 mm safety distance.
3. Lift the heater into the mount and make sure it is centered (figure 5-3).
4. Secure the heater to the wall mount by screwing two screws behind the heat reflector (figure 5-6)



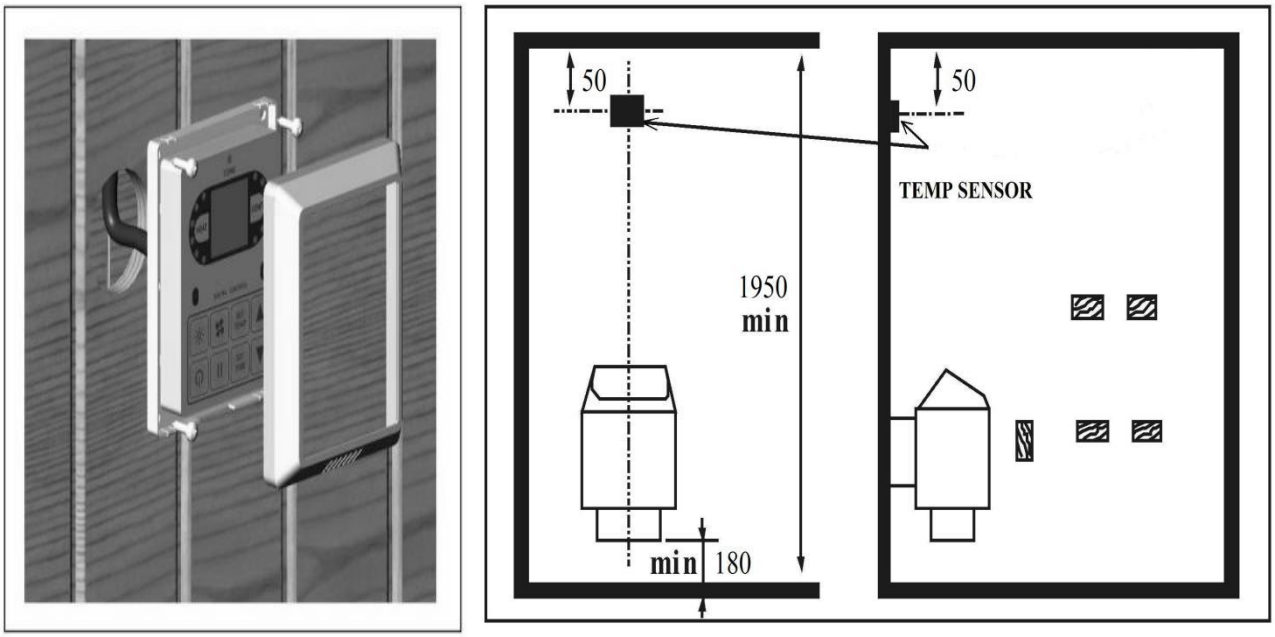


Figure 3. Installing the sensor all dimensions in millimeters

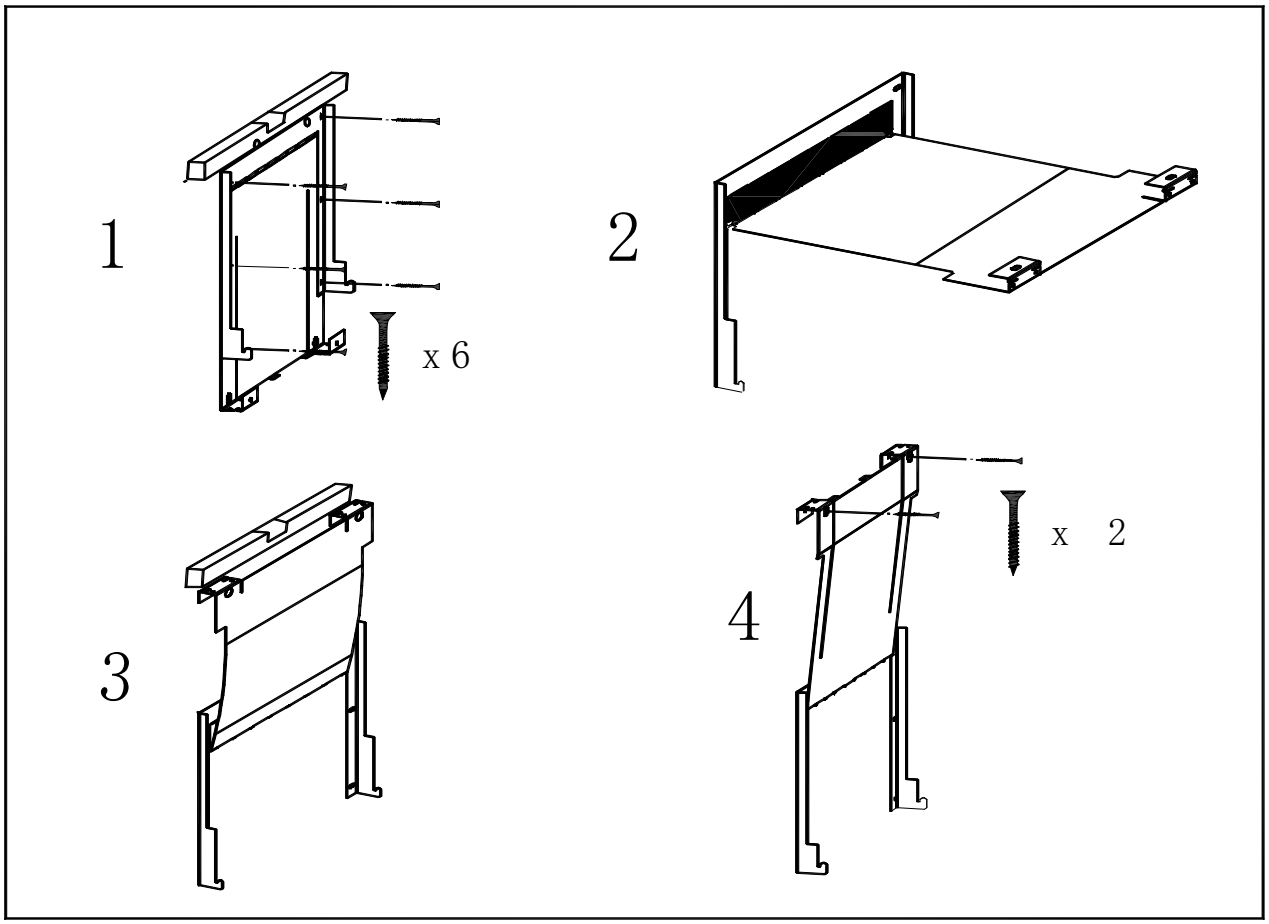


Figure4.Installing the wall mount

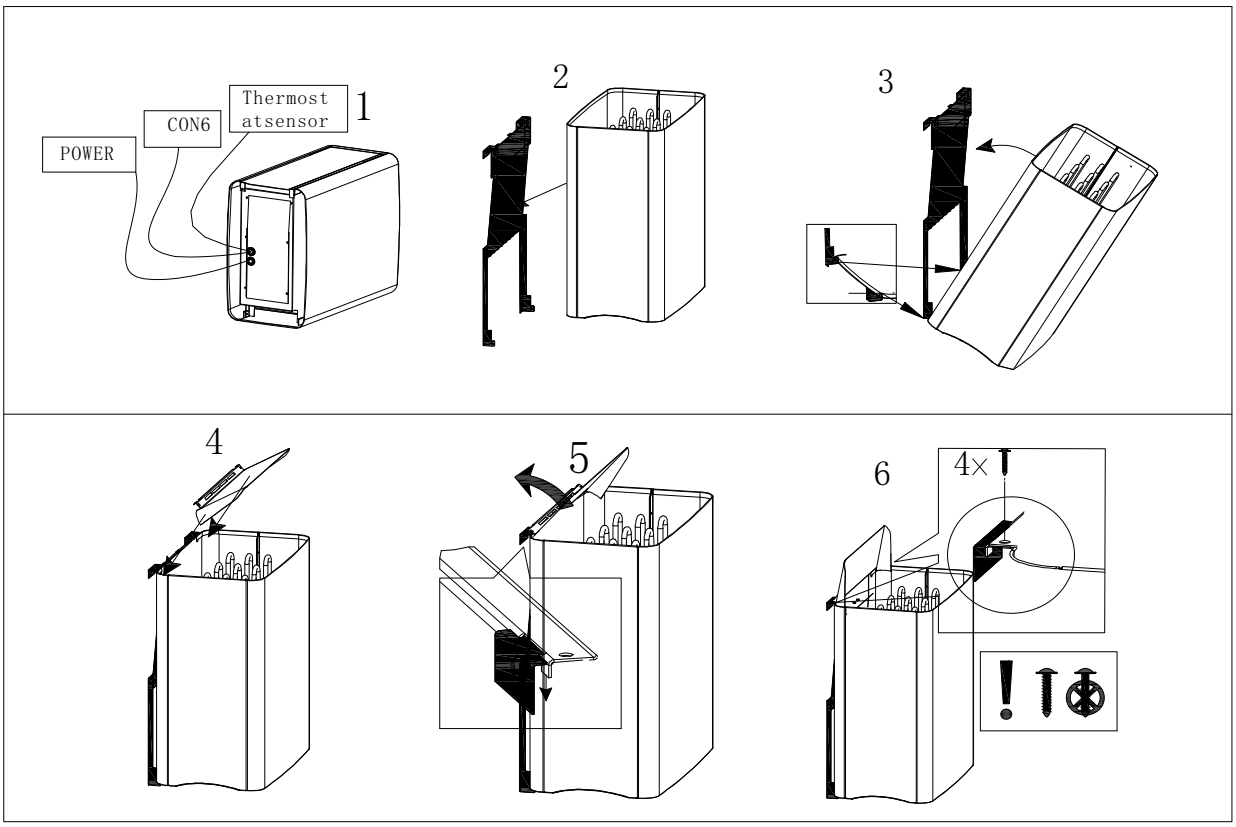


Figure 5. Securing the heater to the wall mount

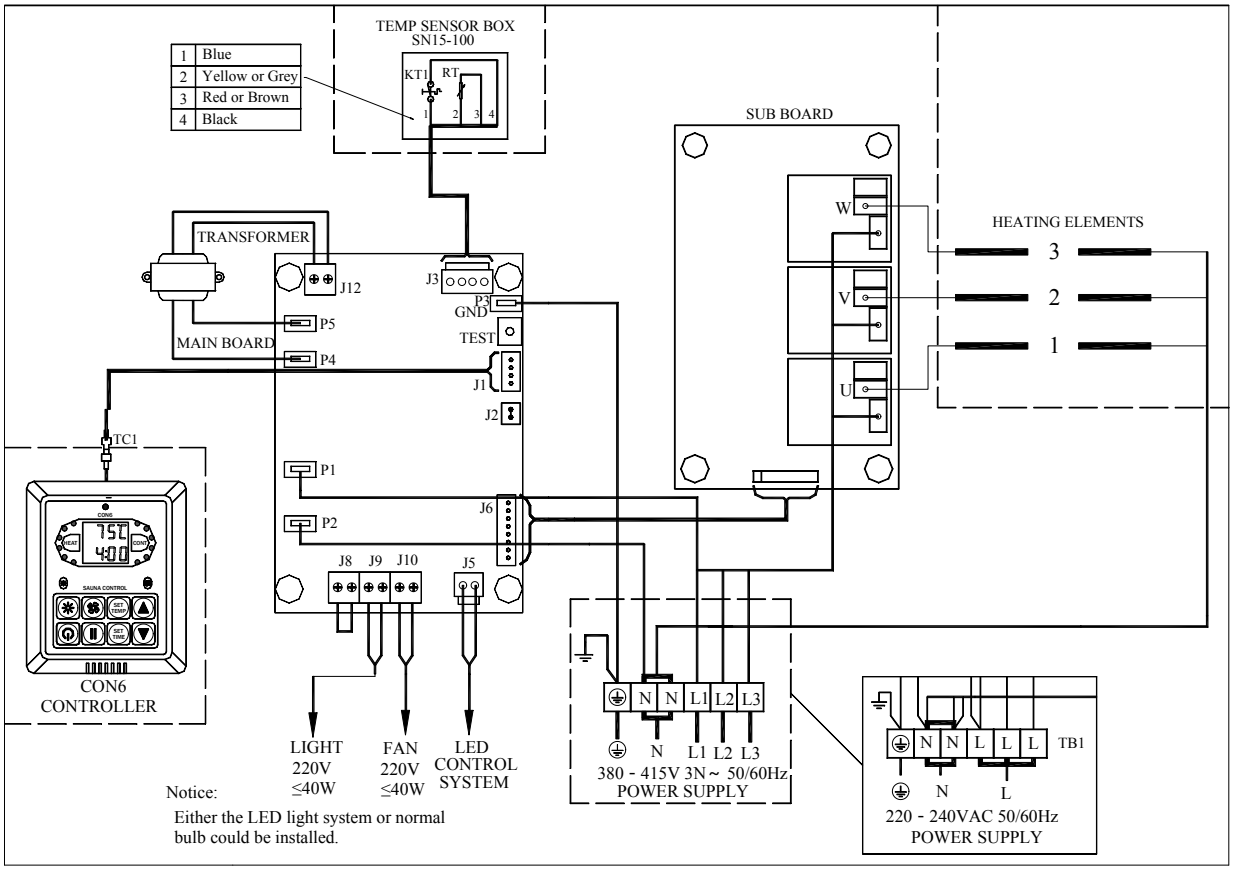


Figure 6. Electrical connections

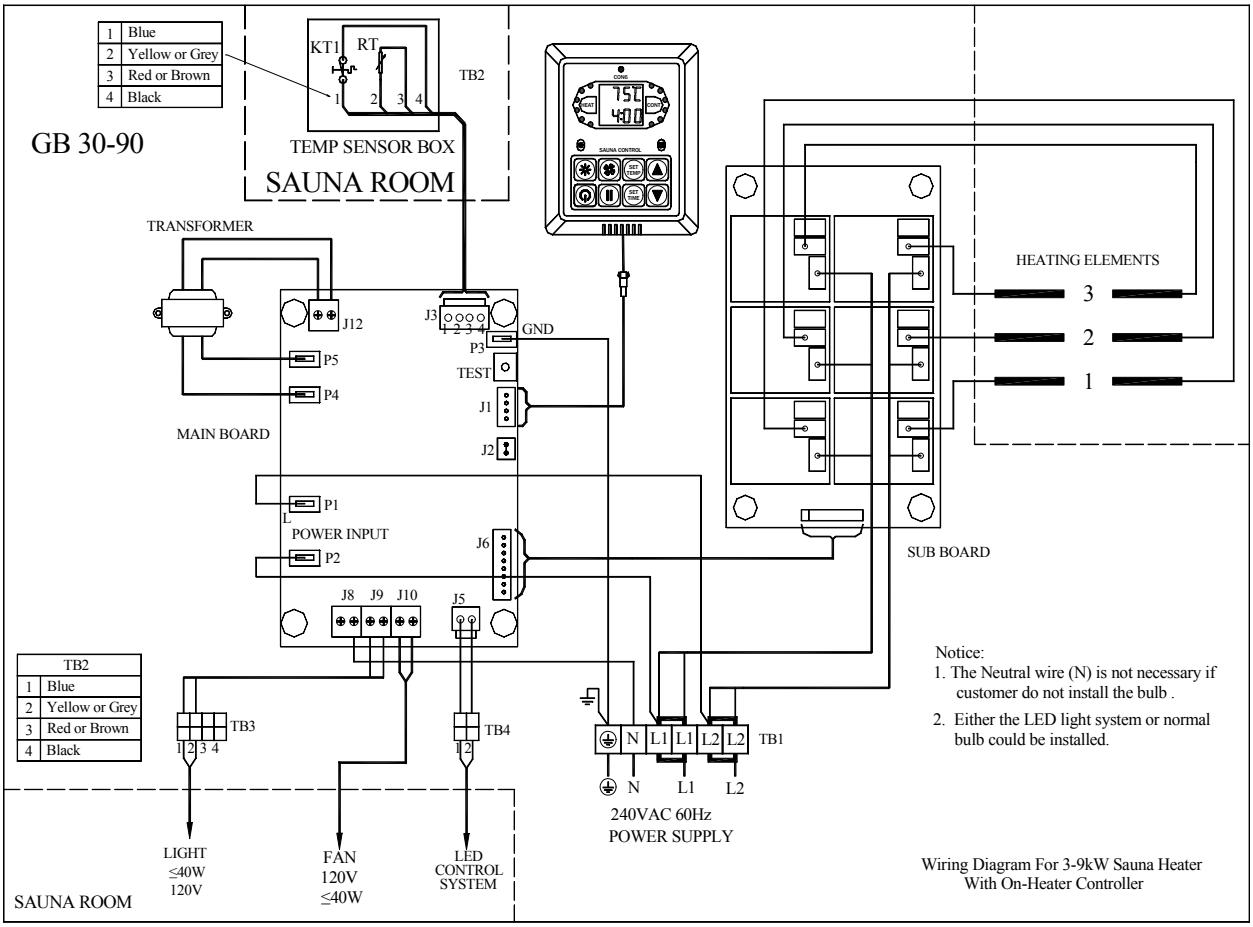
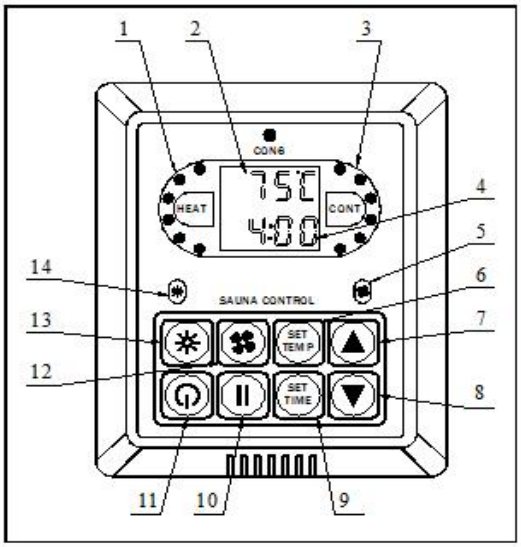


Figure 7. Electrical connections

INSTRUCTIONS FOR USE

SAUNA CONTROL CON6

FUNCTIONS AND OPERATION



1.Heating indicator 2.Temperature display 3.Output indicator 4.Time display 5.Fan indicator 6. Temperature setting 7.Up 8.Down 9.Time setting 10.Pause/Start 11.Sauna Start/Stop 12.Fan ON/OFF 13.Light ON/OFF 14.Light indicator

Diagram 1 Sauna control panel CON6

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1. Display

Temperature: Upper display window, display range**:** 6－115℃(43－239℉).

Setting temperature: Adjustable range 70－105℃(158－221℉). Ex-factory value is 75℃ (167℉).

Time: Maximum preset time is 12 hours (0:00-11:59). Heating time is 0-6 hours (0:01-5:59) or non-stop mode. Time is displayed on the lower display window. Ex-factory value: preset time is 0:00, heating time is 0:45. When set to non-stop mode, displays “CH”.

Heating: Indicated by left side LEDs.

Control heating: Indicated by right side LEDs.

External light： Indicated by “”.

Fan： Indicated by “”.

2. Automatic heating control function

Automatic heating control function compares room temperature with user-set value, and then automatically decides groups of element to turn on. When working time is over, heater stop to heating.

3. Button and function

START/STOP: Press this button to change status of heater. If button pressed in preset mode or preset time is over, heater enters heating mode; if button pressed in heating mode or heating time is over, heater stop to heating.

SET TEMP: Press this button to change temperature setting. The upper screen blinks and displays the current setting, press “△” or “▽” to adjust the setting, then press“SET TEMP” again to confirm; or the system automatically confirm the changes after 3 seconds, upper screen restore to display current room temperature.

SET TIME: Press this button to change preset time setting, the maximum preset time is 12 hours(0:00-11:59). Press “△” to adjust hour value in the range of 0~11 and circle as 0→1→2……11→0→1. Press “▽” to adjust the minute value. Press “SET TIME” again to confirm you setting and then enters the heating-time setting. Press “△” to adjust hour value in the range of 0～5 or non-stop mode (display “CH”). Press “▽” to adjust minute value. In non-stop mode “CH”, minute adjusting is unavailable. Press SET TIME to confirm your setting.

PAUSE: Press this button to pause the heater from heating temporarily, and the heating indicators turn off. The pause function will not affect the status of system counting down. Press this button again to restore to original status.

LIGHT CONTROL: This button is used as ON/OFF switch for normal external light (≤60W220VAC).

FAN CONTROL: Press this button to turn on/off fan for ventilation.

and △ TEMPERATURE UNIT SETTING: Hold SET TEMP and △ at the same time for over 3 seconds to switch temperature unit between ℃ and ℉. Release the buttons when the appropriate unit appears on the display. Then temperature will be displayed in the chosen form. Ex-factory value is ℃.

△ **ADJUSTING BUTTON**.

▽ **ADJUSTING BUTTON.**

Piling of the Sauna Stones

The piling of the sauna stones has a great effect on the functioning of the heater (figure 7).
Important information on sauna stones:

- The stones should be 5- 10 cm in diameter.
- Use solely angular split-face sauna stones that are intended for use in a heater.

Peridotite,olivine-dolerite and olivine are suitable stone types.

- **Neither light, porous ceramic "stones" nor soft soapstones should be used in the heater. They do not absorb enough heat when warmed up.This can result in damage in heating elements.**
- Wash off dust from the stones before piling them into the heater.
- Do not pile more than 20 kilograms of stones.

Please note when piling the stones:

- Heating elements must be completely covered.
- Place the stones sparsely to ensure that air can circulate between them.
- No such objects or devices should be placed inside the heater stone space or near the heater that could change the amount or direction of the air flowing through the heater.

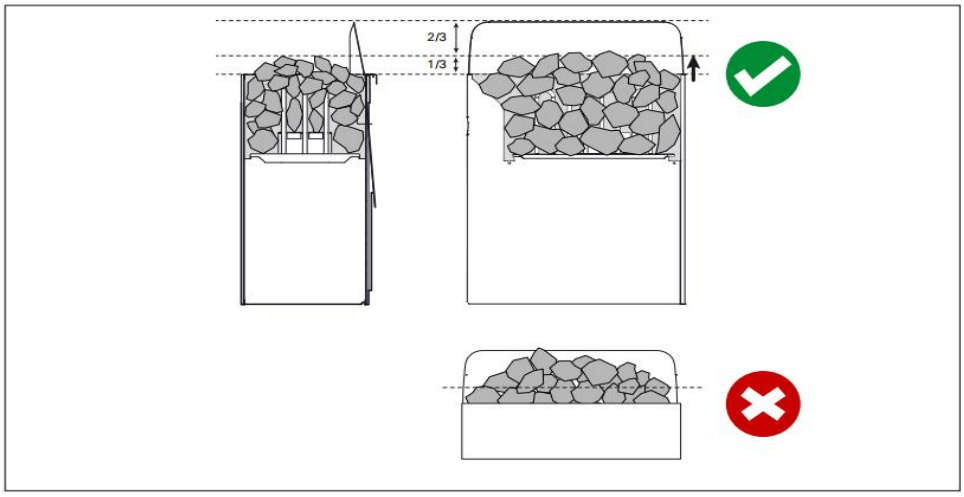

Figure 8. Piling of the heater stones

Maintenance

Due to large variation in temperature, the sauna stones disintegrate in use. Rearrange the stones at least once a year or even more often if the sauna is in frequent use. At the same time, remove any pieces of stones from the bottom of the heater and replace any disintegrated stones with new ones. By doing this, the heating capability of the heater stays optimal and the risk of overheating is avoided.

Heating of the Sauna

When operating the heater for the first time, both the heater and the stones emit smell. To remove the smell, the sauna room needs to be efficiently ventilated.If the heater output is suitable for the sauna room,it will take about an hour for a properly insulated sauna to reach the required bathing temperature. The sauna stones normally reach the bathing temperature at the same time as the sauna room.A suitable temperature for the sauna room is about65-80 °C.

Using the Heater

Before switching the heater on always check that no objects have been placed on top of the heater or inside the given safety distance.

Throwing Water on Heated Stones

The air in the sauna room becomes dry when warmed up. Therefore, it is necessary to throw water on the heated stones to reach a suitable level of humidity in the sauna. The effect of heat and steam on people varies - by experimenting, you can find the levels of temperature and humidity that suit you best.

Aim water only on the stones.

The maximum volume of the ladle is 0.2 litres. If an excessive amount of water is poured on the stones, only part of it will evaporate and the rest may splash as boiling hot water on the bathers. Never throw water on the stones when there are people near the heater, because hot steam may burn their skin. The water to be thrown on the heated stones should meet the requirements of clean household water (table 3). Only special aromas designed for sauna water may be used. Follow the instructions given on the package.

Water quality	Effects	Recommendation
Humus concentration	Colour, taste, precipitates	< 12 mg/I
Iron concentration	Vari, haju, maku, sa ostumat Farbe, Geruch, Geschmack, Ablagerungen	< 0.2 mg/I
Hardness: most important substances are manganese (Mn) and lime, i.e. calcium (Ca)	Precipitates	Mn: < 0,05 mg/l Ca: < 100 mg/l
Chlorinated water	Health hazard	Forbidden to use
Seawater	Rapid corrosion	Forbidden to use

Table3. Water quality requirements

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Instructions for Bathing

● Begin by washing yourself.
● Stay in the sauna for as long as you feel comfortable.
● Forget all your troubles and relax.
● According to established sauna conventions, you must not disturb other bathers by speaking in a loud voice.
● Do not force other bathers from the sauna by throwing excessive amounts of water on the stones.
● Cool your skin down as necessary. If you are in good health, you can have a swim if a swimming place or pool is available.
● Wash yourself after bathing.
● Rest for a while and let your pulse go back to normal. Have a drink of fresh water or a soft drink to bring your fluid balance back to normal

Warnings

● Staying in the hot sauna for long periods of time makes the body temperature rise, which may be dangerous.
● Keep away from the heater when it is hot. 1 The stones and outer surface of the heater may burn your skin.
● Keep children away from the heater.
● Do not let young, handicapped or ill people bathe in the sauna on their own.
● Consult your doctor about any health-related limitations to bathing.
● Consult your child welfare clinic about taking little babies to the sauna.
● Be very careful when moving in the sauna, as the platform and floors may be slippery.Never go to a hot sauna if you have taken alcohol, strong medicines or narcotics.
●Never sleep in a hot sauna.
●Sea air and a humid climate may corrode the metal surfaces of the heater.
Do not hang clothes to dry in the sauna, as this may cause a risk of fire. Excessive moisture content may also cause damage to the electrical equipment.

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SAUNA ROOM

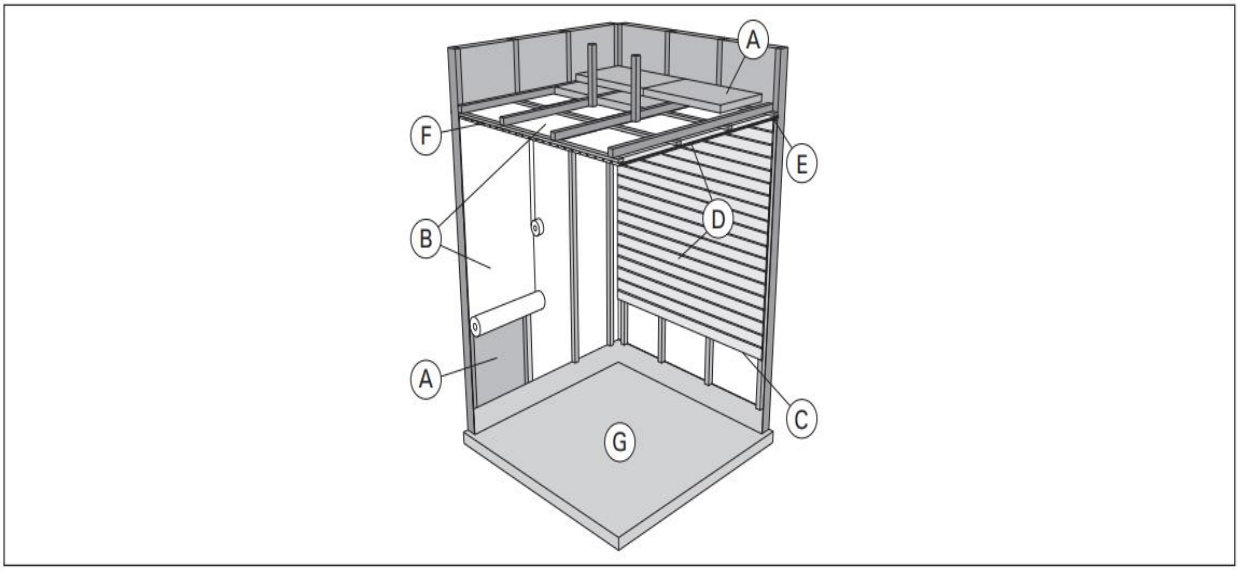


Figure 9

Sauna room structure

A. Insulation wool， thickness50-100 mm.The sauna room must be insulated carefully so that the heater output can be kept moderately low.

B. Moisture protection, e.g. aluminium paper. Place the glossy side of the paper towards the sauna.Tape the seams with aluminium tape.

C. Vent gap of about 10 mm between the moisture protection and panel (recommendation).

D. Low mass 12-1 6 mm thick panel board. Before starting the panelling, check the electric wiring and the reinforcements in the walls required by the heater and benches.

E. Vent gap of about 3 mm between the wall and ceiling panel.

F. The height of the sauna is usually 2100- 2300 mm.The minimum height depends on the heater (see table 2). The space between the upper bench and ceiling should not exceed 1 200 mm.

G. Use floor coverings made of ceramic materials and dark joint grouts. Particles disintegrating from the sauna stones and impurities in the sauna water may stain and/or damage sensitive floor coverings.

NOTE! Check from the fire authorities which parts of the firewall can be insulated. Flues which are in use must not be insulated.

NOTE! Light protective covers which are installed directly to the wall or ceiling may be a fire risk.

NOTE! Make sure that the water dripping onto the sauna floor enters the floor drain.

Blackening of the Sauna Walls

It is perfectly normal for the wooden surfaces of the sauna room to blacken in time. The blackening may be accelerated by:

- sunlight
- heat from the heater
- protective agents on the walls (protective agents have a poor heat resistance level)
- fine particles disintegrating from the sauna stones which rise with the air flow.

Sauna room ventilation

The air in the sauna room should change six times per hour. Figure 4 illustrates different sauna room ventilation options.

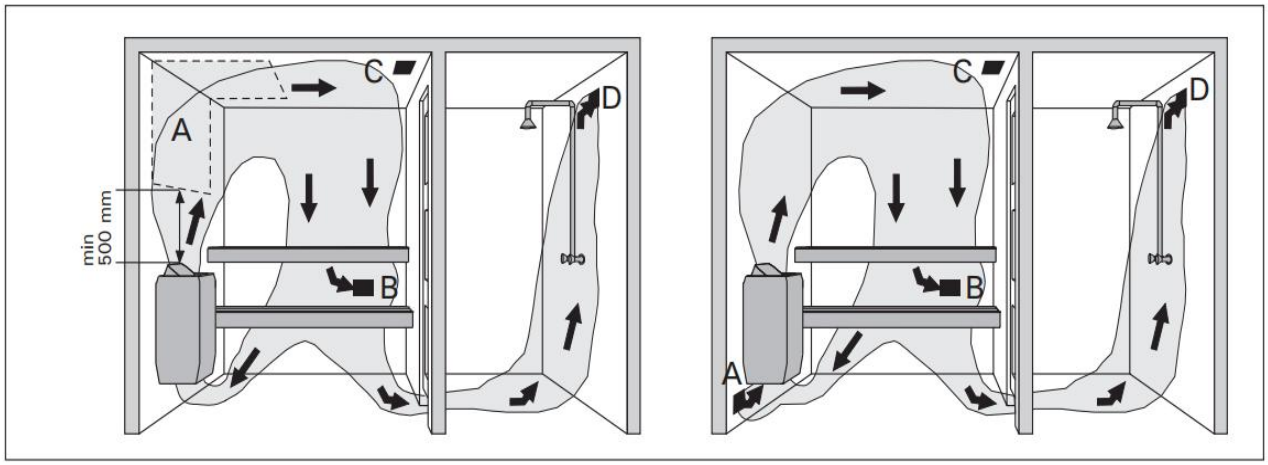


Figure 10. Mechanical ventilation Natural ventilation

A. Placement area for air supply vent. If mechanical ventilation is used, air supply vent should be placed above the heater. If natural ventilation is used, air supply vent should be placed under or next to the heater. The diameter of the supply air pipe must be 50-100 mm. **Do not place the supply air vent so that the air flow cools the temperature sensor (see the temperature sensor installation instructions in the control unit installation instructions)!**

B. Exhaust air vent. Place the exhaust air vent near the floor, as far away from the heater as possible.The diameter of the exhaust air pipe should be twice the diameter of the supply air pipe.

C. Optional vent for drying (closed during heating and bathing). The sauna can also be dried by leaving the door open after bathing.

D. If the exhaust air vent is in the washroom, the gap underneath the sauna door must be at least100 mm. Mechanical exhaust ventilation is mandatory.

Heater Output

When the walls and ceiling are covered with panels and insulation behind the panels is adequate, the heater output is defined according to the volume of the sauna. Non-insulated walls (brick, glass block,glass, concrete, tile, etc.) increase the need for heater output. Add 1,2 m3 to the volume of the sauna for each non-insulated wall square meter. For example,a 10 m3 sauna room with a glass door equals the output requirement of about a 12 m3 sauna room. If the sauna room has log walls, multiply the sauna' s volume by 1,5. Choose the correct heater output from Table 2.

Sauna Room Hygiene

Bench towels should be used during bathing to prevent sweat from getting onto the benches.The benches, walls and floor of the sauna should be washed thoroughly at least every six months. Use a scrubbing brush and sauna detergent.Wipe dust and dirt from the heater with a damp cloth. Remove lime stains from the heater using a10% citric acid solution and rinse.

Troubleshooting

 All service operations must be done by professional maintenance personnel

The heater does not heat up.

● Check that the fuses of the heater are in good condition.
● Check that the connection cable is connected.
● Check that the overheat protector has not gone off

The sauna room heats slowly. Water thrown on the sauna stones cools down the stones quickly

● Check that the fuses to the heater are in good condition.
● Check that all heating elements glow when the heater is on. .
● Turn the temperature to a higher setting; See the instructions for use of the control unit)
● Check that the heater output is sufficient.
● Check that the sauna room ventilation has been arranged correctly .

The sauna room heats quickly, but the temperature of the stones remain insufficient.Water thrown on the stones runs through.

● Turn the temperature to a lower setting. Check that the heater output is not too high).
● Check that the sauna room ventilation has been arranged correctly .

Panel or other material near the heater blackens quickly.

● Check that the requirements for safety distances are fulfilled .
● Check that no heating elements can be seen behind the stones. If heating elements can be seen, rearrange the stones so that the heating elements are covered completely

The heater emits smell.

● When operating the heater for the first time, both the heater and the stones emit smell. To remove the smell, the sauna room needs to be efficiently ventilated
● A hot heater may emphasize odour mixed in the air that are not, however, caused by the sauna or the heater. Examples: paint, glue, oil,seasoning.

The heater makes noise.

● Occasional bangs are most likely caused by stones cracking due to heat.
● The thermal expansion of heater parts can cause noise when the heater warms up.

Replacing the Heating Elements See figure 3.

1. Disconnect all electrical connection, remove the stones and lift the heater off the wall mount.
2. Bend open two tabs securing the element support.
3. Pull out the element support.
4. Open the service hatch.
5. Remove the element cable and screw.
6. Replace the faulty element. Re- assemble the heater in opposite order.

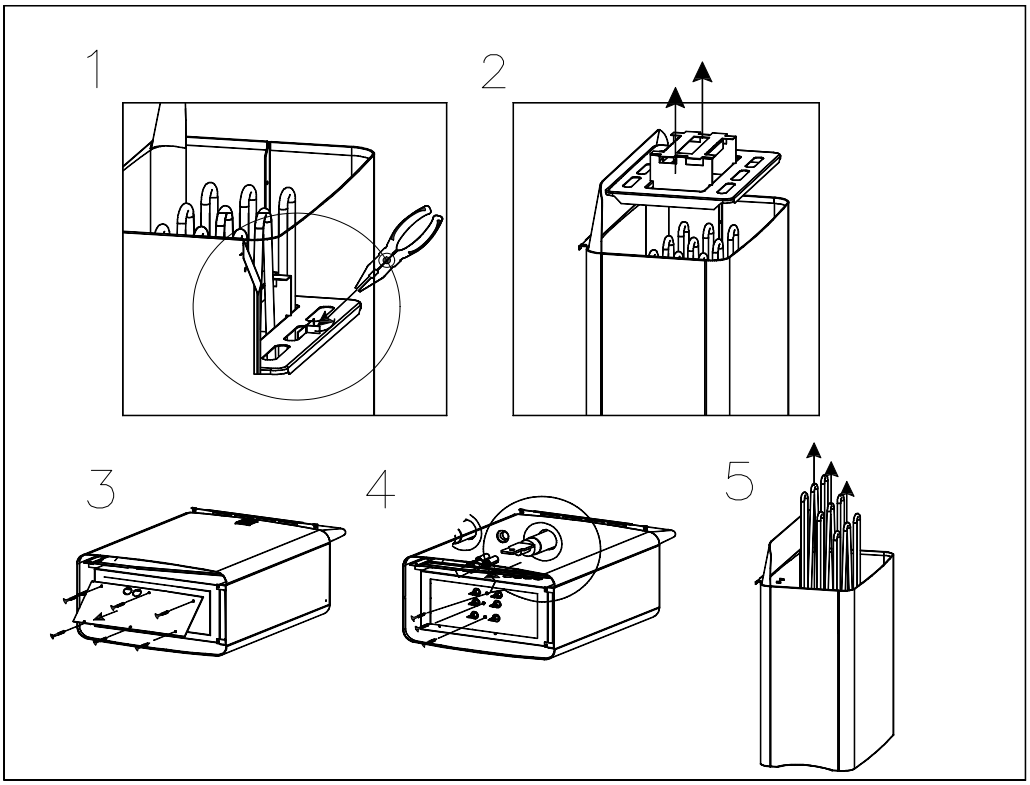
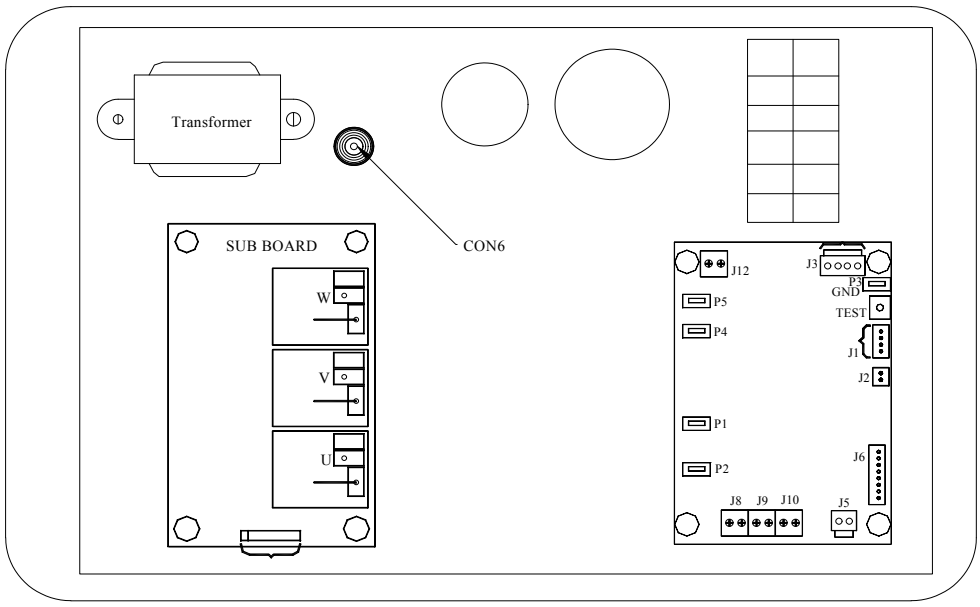


Figure 11. Replacing the Heating element



SPARE PARTS

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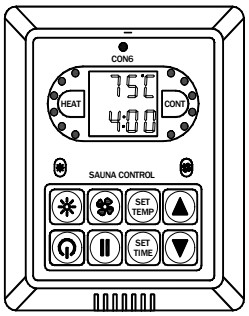
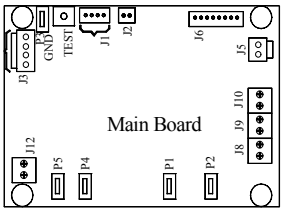
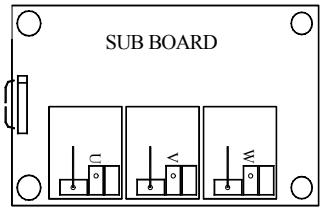
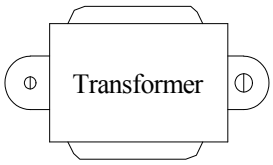
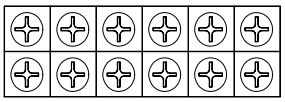
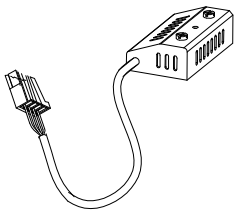
② 

③ 

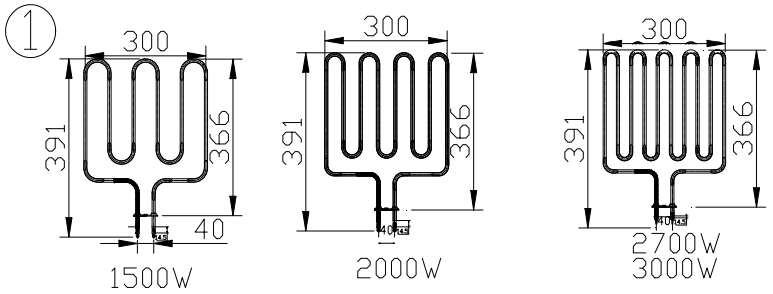
④ 

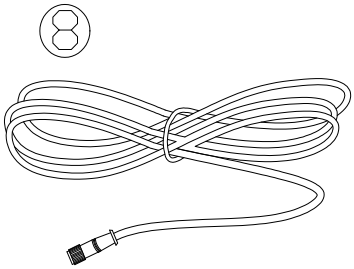
⑤ 

⑥ 

⑦ 

#	Part number	Name	Pcs
BG45 BG60 BG80 BG90	E1710801 E1710802 E1710803 E1710804	Heater Element 1500W Heater Element 2000W Heater Element 2700W Heater Element 3000W	3
2	E0610971	Sauna Controller	1
3	E0640910	Main Board	1
4	E1531290	SUB -BOARD	1
5	D1610510	Transformer	1
6	C0331066	TB2506	1
7	F0420963	Temp sensor box	1
8	E0830998	Control cabie	1
9	Waterproof connecting wire		1

① 

⑧ 

⑨