# HUUM STEEL

## ELECTRIC SAUNA HEATER

Installation and operation manual

**The set includes:**

- electric heater
- adjustable legs (4 pcs);
- installation and operation manual for the electric heater.
- HUUM STEEL Mini kit includes a wall mounting plate.

**NB! The electric heater of HUUM STEEL requires a control panel and stones. The product should be installed as a complete set.**

This installation and operation manual is intended for use by the sauna owner or maintenance person as well as the electrician responsible for the installation of the heater. Before using the heater, please read the instructions carefully.

**NB! The electrical work described in this manual may only be performed by a certified electrician.**

**This product has been designed to meet the requirements of standard EN 60335-2-53:2011.**

ENG

# BEFORE INSTALLATION

Before installing the heater, please read the installation instructions and pay attention to the following:

- Check before installing the electric heater that the maximum amperage of the main fuse matches the heater parameters.
- Does the heater output (kW) match the volume ($m^3$) of the sauna room? In case there are any uninsulated brick, tile, glass or log walls in the sauna room, an additional calculated volume of 1 $m^3$ should be added to the sauna room for each such square meter of the wall. The suitable output of the heater can be found in **Table 1.**
- Are minimal safety distances ensured at the installation site of the heater? Minimal safety distances between the sauna room's ceiling and walls in view of installing the electric heater have been provided in **Table 1** and **Figure 1.**

**NB! The manufacturer's warranty is not valid, if the output of the heater does not correspond to the calculated volume of the sauna room.**

# INSTALLATION

## Positioning of the heater

The heater should be positioned in such a way that there is a safe distance between flammable materials and external surfaces of the heater.

- Check **Table 1** for minimal safety distances between the heater, sauna room's ceiling and walls.
- Place the heater in such a way that its location does not create dangerous situations during use and the possibility of accidental contact with the heater would be minimized.
- The input of the power cable is on the bottom cover of the heater.

| **Table 1.** | **Output** kW | **Room*** $m^3$ | **Weight** kg | **A** mm | **B** mm | **H** mm | **Width/depth** mm | **Fuse** A | **Power cable** N x $mm^2$ |
|---|---|---|---|---|---|---|---|---|---|
| STEEL Mini 4 | 3,5 | 3-5 | 14,5 | 50 | 420 | 975 | 320/150 | 16 | 3 x 2,5 |
| STEEL 6 | 6 | 5-9 | 15 | 50 | 420 | 975 | 320/320 | 10 | 5 x 2,5 |
| STEEL 9 | 9 | 8-13 | 15 | 100 | 520 | 975 | 320/320 | 16 | 5 x 2,5 |
| STEEL 11 | 10,5 | 10-16 | 16 | 100 | 520 | 975 | 320/320 | 16 | 5 x 2,5 |

* In case there are any uninsulated brick, tile, glass or log walls in the sauna room, an additional volume of 1 $m^3$ should be added to the sauna room for each such square meter of the wall.

- Screw down the **legs** (4 pcs) included in the package. Adjust the legs of the heater so that all four are equally supported and the heater is level.
- **HUUM STEEL 6, 9 and 11 models** are attached to the floor using the included brackets. Install the bracket to the heater leg as shown in **Figure 1** and fix it with a screw corresponding to the construction of your floor (recommended min. 6 x 40mm).
- Attach **HUUM STEEL Mini 4** to the wall of the sauna room using the wall mounting plate included in the package. See **Figure 1.**

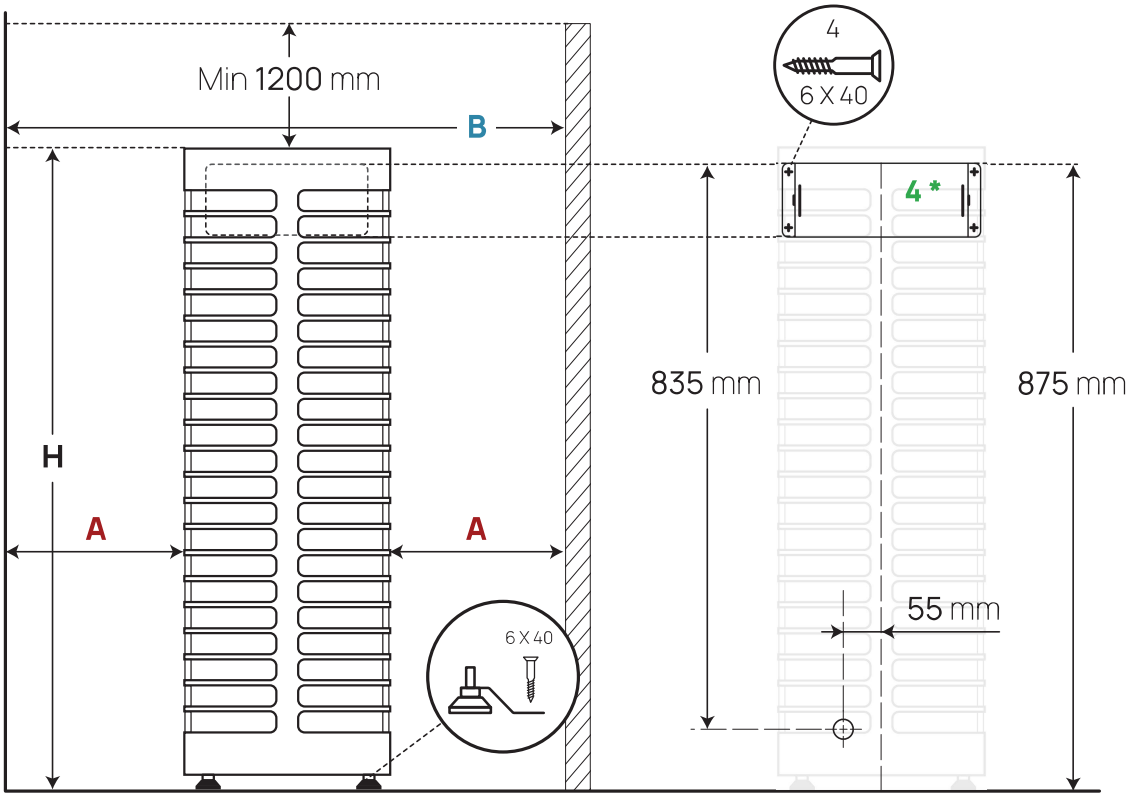



**Figure 1** Positioning of the heater

## Installing an electric heater inside the sauna bench

**HUUM STEEL** electric heater can also be partially mounted inside the sauna bench or sauna floor.

- **At least 550 mm** of the submerged heater should protrude from the sauna bench surface;
- To cover the edges of the immersion hole, use the embedding flange of HUUM STEEL electric heater.

**The embedding flange of HUUM STEEL electric heater** is an accessory that you can request from your HUUM product distributor. A user manual for the embedding flange is provided with the product.

The maximum permissible immersion of the heater has been provided in **Figure 2.**

ENG

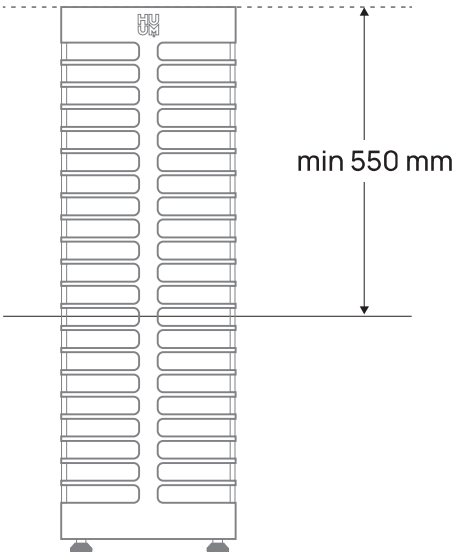



**Figure 2.** Installing HUUM STEEL electric heater inside the sauna bench

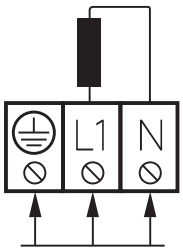
## Connecting the heater to the power supply

**NB! Only a certified electrician is allowed to connect the heater to the power supply.**

- A rubber insulated SIHF-JB cable or an equivalent cable should be used as the connection cable.
- The maximum current amperage in the cross-sectional area of the cable and circuit breaker has been provided in **Table 1.**
- It is recommended to connect the unit to the mains without an earth-leakage circuit breaker (RCD).

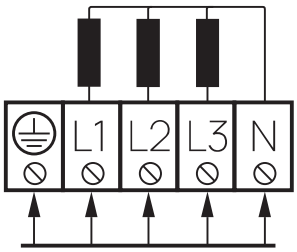
**ATTENTION! It is forbidden to use a non-heat-resistant cable with PVC isolation as the power cable. When using the junction box in the sauna room, it should be waterproof and located at a maximum height of 50 cm from the floor.**

STEEL
Mini 4




1/N~230V

STEEL 6
STEEL 9
STEEL 11




3/N~400V
1/N~230V

- Open the cover of the heater's electrical box.
- Take the cable into the electrical box through the rubber bushing.
- Attach the power cable on the terminal block according to the circuit diagram.
- Close the cover.

## Insulation resistance of the electric heater

During the first use of the heater the insulation resistance of the heating element might prove to be temporarily lower than the standard. The reason for that is the moisture seeped into the insulating layer during storage in the warehouse and transportation. The moisture evaporates in 1–2 hours of heating the electric heater.

## Laying of the heater stones

Quantity of stones:

- **HUUM STEEL electric heater** (models 6, 9 and 11) needs **150 kg of heater stones**
- **HUUM STEEL Mini electric heater** needs **60 kg of heater stones**

- The stones with a **diameter of 3–5 cm** are suitable for **HUUM STEEL heater**.
- We recommend the use of round stones which complement the design of the heater and allow the steam water in the heater to move freely to the lower layers of stones.
- Natural stones (e.g. olivine diabase, olivine), which are sold specifically for use in sauna heaters, are suitable as heater stones.
- We recommend avoiding decorative stones as they do not accumulate enough heat and break easily. Broken pieces of stone inside the heater can block air holes and damage heating elements.

  **NB! The defects due to the use of unsuitable stones are not covered by warranty.**
- Before laying, we recommend washing the stones clean of dust under running water.

## Requirements for laying stones

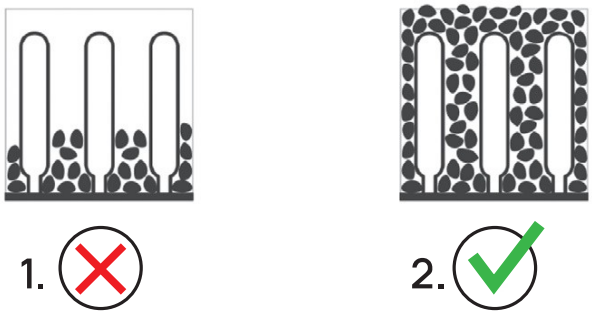
- Use gloves to protect your hands when laying stones.
- Lay the stones one by one and don't pour or throw them into the heater.
- Start with bigger stones, placing them to the bottom and to the sides. Use smaller stones to fix the larger stones in place and to fill in the narrower gaps.
- Try to lay the stones as tightly as possible, but leave some room for air to circulate in the heater.

  **NB! The air tunnel must not be filled with stones!**

  **NB! Make sure that the air tunnel and the upper ends of the heaters are not visible between the stones. Otherwise, the safety distances given in Table 1 do not apply, as additional heat radiation occurs on flammable surfaces.**
- Check the condition of the stones once a year to remove broken pieces and replace them, if necessary.

ENG

**ATTENTION! TOO SPARSELY FILLED STONE CONTAINER CAUSES FIRE HAZARD!**




1. Partially filled
2. Correctly laid stones

## Safety railings

To prevent accidental contact with the hot heater it is recommended to install a safety railing around the heater.

- You can build your own safety railing or use the special accessory **HUUM STEEL electric heater safety railing,** which can be obtained from your HUUM distributor.
- We recommend the use of materials with a low thermal capacity and poor thermal conductivity (e.g. wood) as the material for the safety railing.

**NB! When using flammable materials (e.g. wood) as safety railings, it is essential that the prescribed minimum safety distances between the heater and flammable structures are complied with.**

## Controlling the heater

- This product has been designed to work with the **HUUM UKU** control system for electric heaters or an equivalent control system designed to work with devices that meet the requirements of EN 60335-2-53:2011.
- The output of the heater should remain in the interval determined by the control panel's producer.
- When installing the control panel, follow the installation and operation manual provided by the manufacturer.

# SAUNA ROOM

## Wall materials and insulating of the sauna room

In a sauna with electric heating, all massive heat accumulating wall surfaces (glass and concrete walls, brick, plaster, etc.) should be insulated to use the electric heater with optimal output. This prevents heat loss in the sauna room and overheating of the heater.

**Sufficient insulation of the sauna room wall:**

1. An insulation layer of 50-100mm thickness is installed (foam insulation boards covered with a vapour barrier foil suit well).
2. Aluminium foil or other reflective material on top of the insulation material without a vapour barrier. The joints are covered with foil tape.
3. 10mm ventilation gap (recommended) is left between the moisture barrier and the lining board with spacers.
4. 12-16 mm wooden lining board is suitable for interior finishing. Before installing the lining boards, check the power cables and reinforcements in the walls that are necessary for e.g. installation of a heater and a sauna bench.
5. To prevent moisture from the floor, the distance between the board and the floor should be at least 100 mm.
6. There is a minimum ventilation gap of 5 mm between the wall and ceiling board.
7. Wooden sauna surfaces should be coated with sauna wax or oil to prevent dirt being absorbed into the wood.

**Ceiling of the sauna room**

To optimize the heater's output, the recommended height of the sauna room is 2100 - 2300 mm. In case of a higher sauna room, it is advisable to lower the ceiling, thus reducing the volume of the sauna room.

1. The minimum permissible height of the sauna room for HUUM STEEL electric heater is **2175 mm.**
2. The distance between the top step of the sauna bench and the ceiling should be between 1100 and 1300 mm.
3. The ceiling of the sauna room should be insulated in the same way as the walls of the room.

ATTENTION! **When covering the walls or ceiling with heat protection (e.g. with mineral tiles), a sufficient ventilation gap should be left between the materials. Installing tiles directly on a wall or ceiling surface can cause dangerous overheating of wall or ceiling materials.**

ENG

**ATTENTION! Check with the authorities responsible for fire safety which parts of the firewall can be insulated. It is forbidden to insulate flues in use.**

## Darkening of the sauna room walls

Over time, the wooden materials used in the sauna room may begin to darken due to the high temperature. This is a natural process that does not pose a risk and is usually caused by the darkening of the wood protection product used. The darkening process can also be caused by the fine stone dust, breaking away from the heater stones and lifted up by the airflow. By following the manufacturer's instructions when installing the heater, flammable materials in the sauna room will not become dangerously hot.

**ATTENTION! The highest allowed temperature for the wall and ceiling surfaces of the sauna room is 140 °C.**

## Floor of the sauna room

Due to large changes in temperature, the heater stones also crumble over time. Together with the steam water, particles released from the stones and fine stone dust are washed onto the sauna floor. Hot stone chips can damage plastic covered floors under and near the heater. The splashes of heating stones and steam water (especially for e.g. iron-rich water) can be absorbed into the light joint of the tile floor.

In order to avoid aesthetic damage, ceramic tiles and dark joint filler should be used under and around the heater.

## Ventilation of the sauna

In order to ensure sufficient oxygen supply and fresh air, the sauna's ventilation should be as efficient as possible (air should exchange **six times an hour**).

The ventilation system depends on whether the building has a natural air inlet and outlet or forced ventilation.

**Sauna ventilation consists of at least two, as a rule three parts:**

- **Supply air pipe.** The supply air pipe diameter should be ⌀ 50-100mm.
- **Exhaust air pipe.** The diameter of the exhaust air pipe should be 2x the diameter of the supply air pipe, ⌀ 100-200mm.
- **Drying pipe.** In the absence of a drying pipe opening, the door may be left open for ventilation after using the sauna.

**In case of a sauna room with mechanical ventilation, there should be:**

1. Supply air pipe in the middle of the heater or higher (≥400 mm).
2. Exhaust air pipe in the opposite side of the heater (≤600 mm from the floor).
3. Drying pipe opening in the opposite wall of the heater under the ceiling.

**In case of a gravity based ventilation sauna room, there should be:**

1. Supply air pipe in the middle of the heater or lower (≤400 mm).
2. Exhaust air pipe in the opposite wall at least 200 mm higher than the supply air pipe (≤600 mm from the floor).
3. Drying pipe opening in the opposite wall of the heater under the ceiling.

**The supply air pipe** should be fitted with an adjustable valve.

If **the exhaust air pipe** is located in the washroom, there should be a gap of at least 100mm under the door of the sauna room.

Use **the drying pipe opening** as a final ventilation after a sauna session or in between water ladling sessions if there have been a lot of people in the room at once and there is excessive humidity or lack of air. Keep the drying pipe opening closed while having sauna.

ENG

# USING INSTRUCTION

## Using the heater

ATTENTION! **Always check that there are no foreign objects on, above or near the heater before switching it on. This could cause a fire hazard.**

In order to use the heater, you will need to install a heater control system. The control system is not included in the set. Be sure to read the instruction manual of the control device of your choice before use.

## Heating up the sauna room

When the heater is first switched on odours will emit from both the heating elements and the stones. In order to remove these odours, the sauna room should be thoroughly ventilated. In a properly insulated sauna room and with a heater of the right capacity, it will take around **one hour** to reach the desired temperature. The stones are usually heated to the correct water ladling temperature simultaneously with the sauna room.

## Throwing water on heated stones

As the sauna room heats up, the air in the sauna becomes dry. You can raise the humidity in the sauna room by ladling water onto hot stones. By choosing the frequency and amount of water you ladle, you can adjust the humidity and the perceived heat of the sauna to your personal preference.

- Try to throw water only on the heater stones and not on metal surfaces.
- Start water ladling only when the stones are fully heated and the water evaporates completely.
- Use only clean and warm water for ladling.
- We recommend that you ladle about 80 ml of water on the stones at a time. If you want more steam, wait for a few minutes and then ladle the same amount again. This will allow the stones to dry out and heat up again in the meantime.

NB! **Never ladle water when someone is in the immediate vicinity of the heater as hot steam can cause burns.**

# WARNINGS AND NOTES

- **The heater is designed to heat the sauna room to the temperature at which the sauna is enjoyed. It may not be used for any other purpose.**
- **All maintenance work requiring special skills should be carried out by a trained professional.**
- **Always disconnect the heater from the power source before carrying out any maintenance!**
- Before turning on the electric heater, always check the sauna room and heater.
- The heater may be used only when it has been correctly filled with stones.
- Do not cover the heater—this causes fire hazard.
- Do not touch a working heater, it causes burns.
- Ventilating the sauna room incorrectly may dry the wood too much and cause a fire hazard in the sauna. If necessary, seek professional advice when planning ventilation.
- Never make steam by using a water hose.
- Use sauna fragrances and oils only in the steam water. If poured directly onto the stones in undiluted form they can catch fire.
- A layer of fireproof thermal insulation of at least 50 mm is recommended under the board of the sauna room.
- Sauna doors should always open outward.
- Do not use the sauna for any other purpose than it is meant to be used.
- Do not leave small children in the sauna unattended.
- Sudden cooling after staying in the sauna room is not recommended for people with poor health. If necessary, consult a doctor.
- Do not stay in the sauna for too long. Enjoy the steam as long as it is comfortable for you.
- Keep this information in a secure place.

ENG

# WARRANTY

General terms and conditions can be found on our webpage huum.eu/warranty

Find the most up-to-date material on the manufacturer's website: huum.eu