# 40 EA
# Water Heater

INSTALLATION, OPERATION, AND SERVICE INSTRUCTIONS

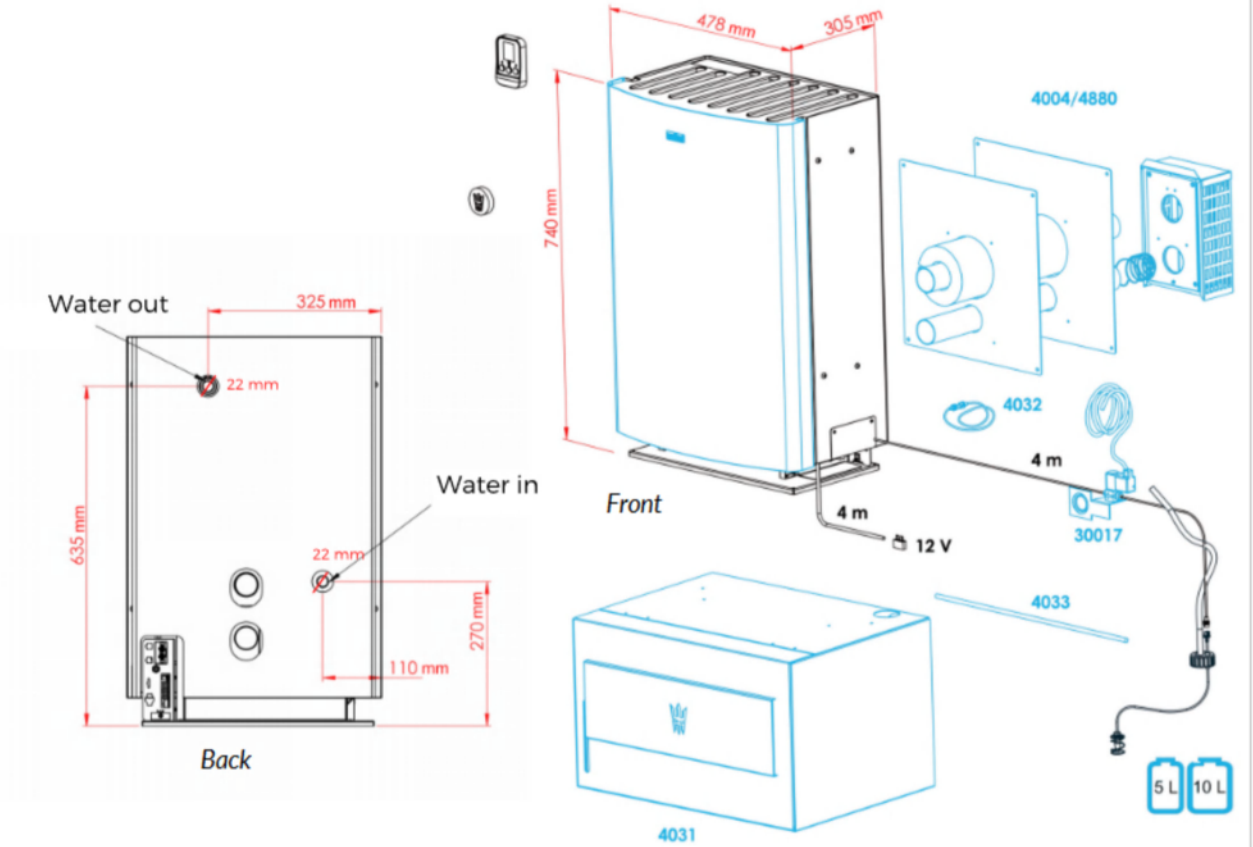
2+1 year warranty at: www.wallas.fi/takuu

# Safety Instructions

**Important Safety Instructions**

| |
|---|
| This manual has information on product safety and instructions to reduce risk of accidents and injuries. |
| This heater (hereinafter also referred as "unit") is designed and intended for recreational use. |
| We recommend having a Wallas-Marin professional install our products to avoid improper installation that can cause injury or property damage. |
| Installation instructions in this manual and country-specific requirements must be followed. |
| It is the responsibility of the owner and the installer to determine which requirements and standards apply to specific installations. |
| Wallas-Marin offers a 2+1 year/2000 hour warranty. The warranty is not valid if the unit has not been installed according to the manual or the country-specific regulations have not been followed. |
| Do not repair, replace or remove any part of the unit unless specifically recommended in the manual. All other servicing should be done by an authorized Wallas-Marin Distributor or Service Center. |
| This unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities (that could affect a safe handling of the product), or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for the safety. |
| Wallas-Marin reserves the right to change or improve its products, and to modify appearances and specifications without notice. |

# Supplies and accessories




| Package contents | |
|---|---|
| 1 pcs | Heater 40EA without front panel |
| 1 pcs | Fuel hose (4m) with fuel tank connector |
| 1 pcs | Power cable with connector (4m) |
| 1 pcs | Advanced control panel 3008 with wireless thermostat sensor |
| 1 pcs | Installation, operation instructions |

| Front panel 40GF | |
|---|---|
| 1 pcs | Front panel, grey |
| 4 pcs | Fastening screw M4x16 |

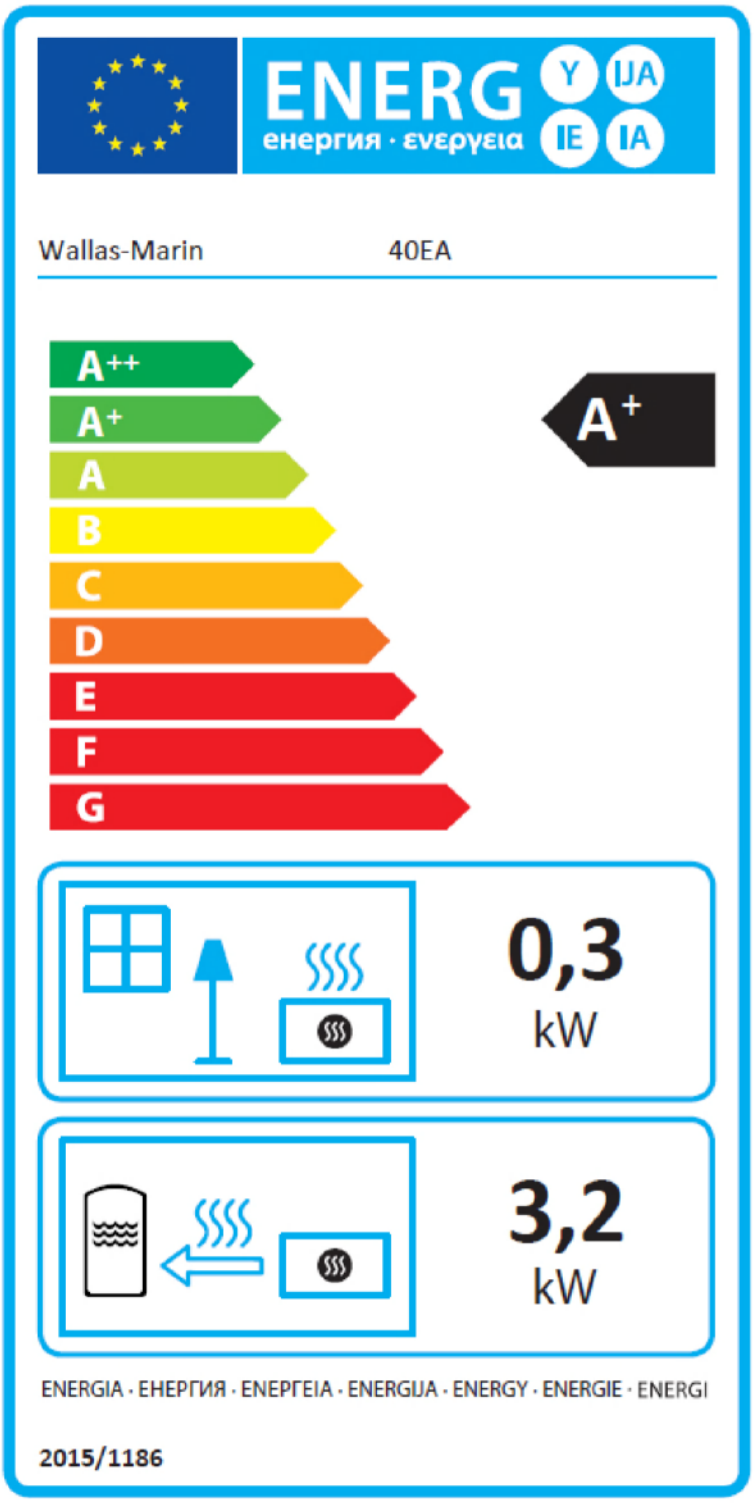
| List of supplies and accessories | |
|---|---|
| **30017** Solenoid valve<br>**4004** Exhaust head<br>**4031** Fuel tank socket case<br>**4033** Protection pipe for fuel line<br>**4880** Exhaust mounting set | To make heating system more comprehensive it is recommended to buy<br>**3721** installation kit 40EA |

# Technical information

| | |
|---|---|
| Fuel | HVO-, B7-, B10-, XTL-oils<br>HVO EN 15940, B10 EN 16734, D20/30 EN 16709, Road Diesel, Light Furnace oil |
| Operating voltage | 12V DC |
| Consumption | 0,16...0,4 l/h |
| Heating power | 1600...4000 W |
| Power adjustment | Room thermostat or automatic |
| Start-up | Manually with a switch or remote controller (Wallas Remote APP) |
| Power consumption | 0,2...0,4 A (when ignited ca. 4,5 min. 8 A). 0 A with accessory TEG-Element |
| Measurements | 730x440x240 mm |
| Weight | ca. 25,0 kg |
| Max. permissible length of the flue gas pipe | 3 m (6 m insulated) |
| Max. permissible length of the fuel hose | 6 m |
| Heating area | ca. 60...90 m² |
| Suitable flue gas lead-throughs | 4004 |
| Accessories | 4031 Base housing, 4885 TEG-Element, Gray and White Front Plate, 30017 Solenoid Valve |

# Energy Efficiency Index for Space Heater

Wallas 40EA conforms with 2010/30/EU directive and have following Energy Efficiency Index.



# Operation description

**Wallas heater 40 EA is designed especially for water circulation heating systems outside of the electricity network.**

The heater is fed with fuel from a separate tank, which is positioned below the heater. The heater is powered by a 12-volt battery, which can be recharged, for example, by a solar cell, wind generator or a mains power adapter.

The combustion air is fed in from outside the device and its circulation is completely enclosed, and balanced with the flue-gas exhaust head, which eliminates the effect of wind pressure on the combustion.

The heater's evaporation burner is activated automatically when the device is started. The glow plug in the burner ignites the fuel that has been pumped into the burner. The glow time is fixed: it starts and ends automatically.

The heat sensor, in the heater, detects the flame's heat and lights start icon in Contol panel that the device has started.

All functions are controlled electronically. The fuel pump and combustion air blower are fully stabilised against voltage fluctuations, which ensures clean combustion, regardless of changes in the battery voltage.

The heater is equipped with built-in overheat protection, which cuts the fuel feed if the device overheats.

When the heater is switched off, it cools down automatically. The cooling function ventilates the burner, and discharges the flue-gases generated during the switch-off, to the outside of the cottage.

**Principle for heating coolant and energy saving start/stop in heater and coolant pumps.**

The heater has a burner inside with what it heats the coolant in the heatexchanger. The coolant's target temperature is 70°C. The burner will run with maximum power as long as it reaches 70°C target. If the temperature goes over 70°C the burner will gradually drop its power towards minimum power to maintain the 70°C.

If the coolant temperature is going over 82°C the heater will pause, and stop the burner.

It will automatically start when the coolant temperature is 55°C. After the start it will continue to hunt the target of 70°C

Heating system can be build with one circulation pump system or two circulation pump system. Here are working principles for each systems.

**Circulation pump #1 working principles**

The circulation pump circulates the coolant through the radiators / matrix heaters. The pump is controlled by the room temperature. The higher the room target temperature is set the more the pump will circulate before it reaches the target. Once when the room temperature target is reached, the circulation pump will work seldom. The pump is controlled by following pulses:

10 seconds ON

Minimum OFF time 5 seconds

Maximum OFF time 90 seconds

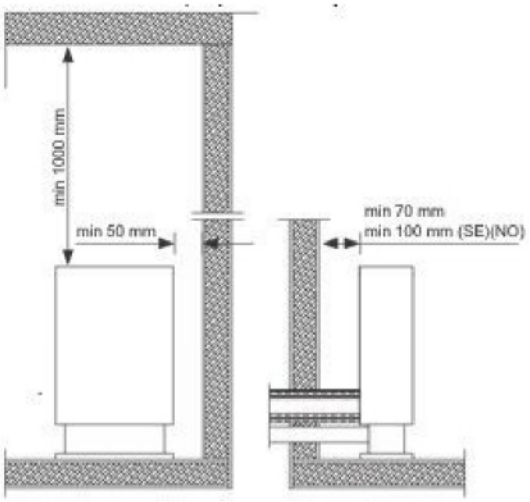
When the measured room temperature target is less than 1°C away from the target, the pump will circulate with Minimum OFF time. When the measured room temperature is over the target by more than 1°C the pump will circulate with Maximum OFF time.

When the room measured temperature less than 1°C away from the target, the pump will automatically adjust the OFF time between the set values of Max and Min OFF times.

**Circulation pump #2 working principles:**

Will work as circulation pump #1. It is meant to be used in floor heating. And in floor heating the water temperature of the coolant needs to be dropped by the shunt valve, consult your local plumber how to do it.

# Safety distances

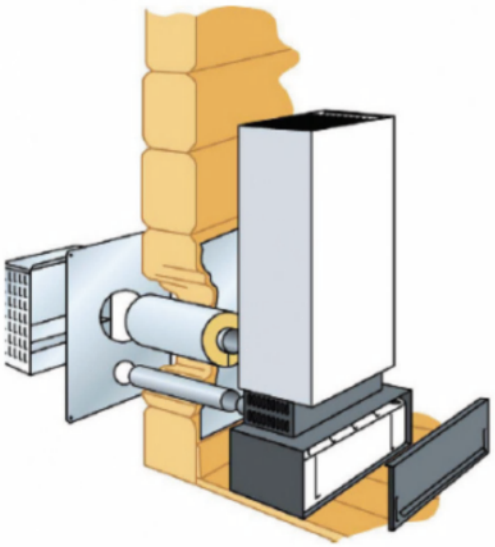



Safety distance from surrounding walls. Observe country-specific requirements.

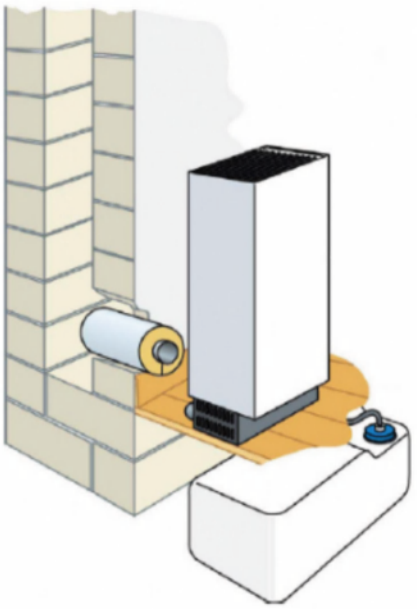
There must be enough clearance between the wall and the device so that the space can be kept clean and free of dust, litter and other unwanted objects. The openings for the air intake, in the lower section of the devices casing, must be unobstructed.

There must be no surfaces, structures or objects that are flammable or can obstruct the heat, within 1 m above the devices upper surface.

# Things to note for installation



*Wall lead-through*



*Flue installation*

**Two different basic installation methods**

The most common installation method is a wall lead-through. Installation kit 4880 and a flue-gas exhaust head 4004 have been used in the installation. In addition, the fuel tank 4030 (33 l) has been installed in the base housing 4031.

Flue installation. This installation method requires the building`s chimney to have one flue available. The flue must not

be connected to other fireplaces or equipment. Installation kit 4880 is required for the installation. In the example in the picture, the fuel is fed from the fuel tank 4130 (130 l) under the floor.

**Things to note when selecting the installation location**

When selecting the installation location and method, note the following:

- If you choose the wall lead-though method, install the device on a wall where the wind pressure does not directly impinge the flue-gas exhaust head. When the device is running on low power, wind pressure can snuff out the burner flame. The burner will also generate more scale due to changes in wind pressure.

- The length of the control panel wire is 5,4 m.

Note: The length of the control panels cable may pose some limitations.

Avoid installing the control panel in the immediate vicinity of a water outlet.

If possible, install the control panel on a vertical surface.

- Control panel installation kit includes wireless thermostat sensor. Try different locations for optimal temperature control.

- Flue installation will slightly increase the generation of burner scale.

- Avoid making the fuel and electrical lines that lead to the device excessively long.

- The device must be positioned so that it is protected from water drips, spills or splashes.

- Location of heater can be outside of everyday living area. For example it can be in utility room.

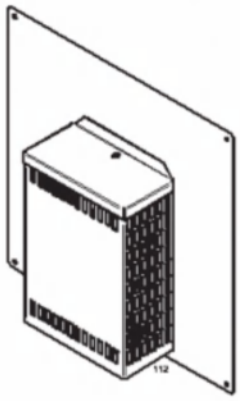
- Power cables, fuel- and water hoses must be protected in locations where they are exposed to mechanical damage due to sharp edges or heat.

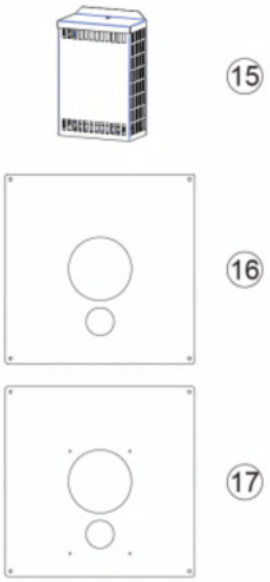
When installing the device, bear in mind that may be necessary to detach the device for maintenance. Therefore, it is advisable to make the connections easy to open and disconnect. The device does not need to be detached to clean the burner.

The heater should be installed on the level. The inclination must not exceed 5°. While the device should not breakdown, it can reduce service interval significantly.

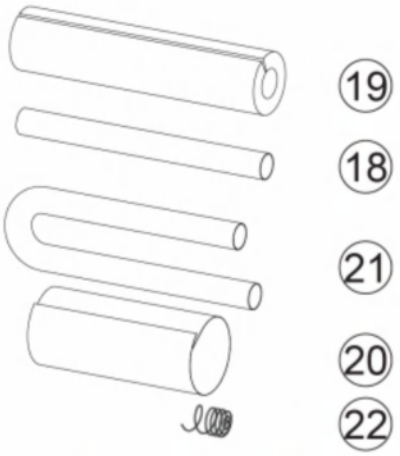
We recommend that the device be installed by an authorised Wallas service shop.

# Flue gas accessories for installation






*Exhaust head **4004***



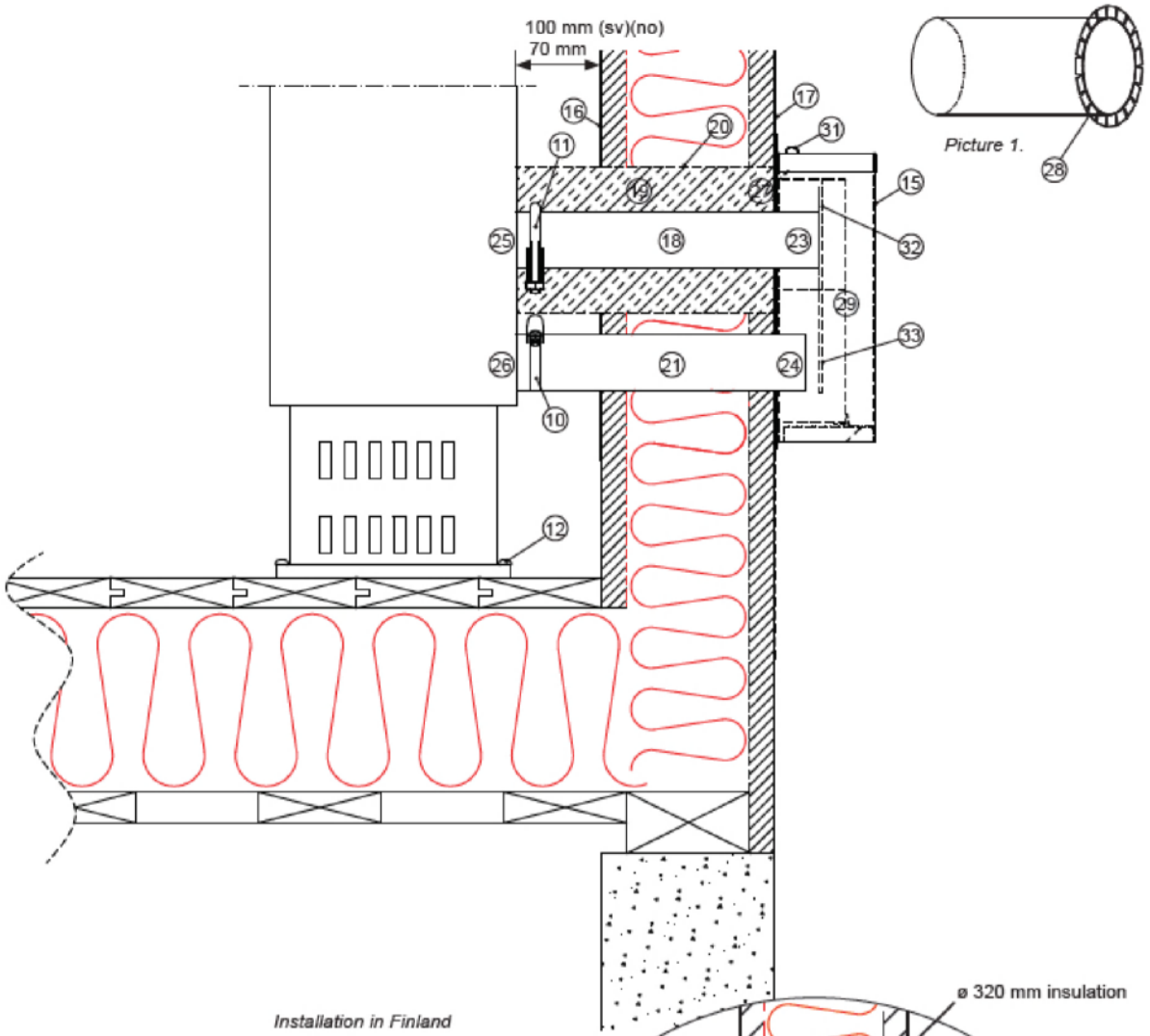

*Mounting kit **4880***

**Accessory package contents**

| Exhaust head 4004 | |
|---|---|
| 1 pcs | Exhaust head 4004 |
| 2 pcs | Covering plate 360x360 |
| 8 pcs | Fastening screw 4,5x15 |
| 4 pcs | Fastening screw 4,5x25 |

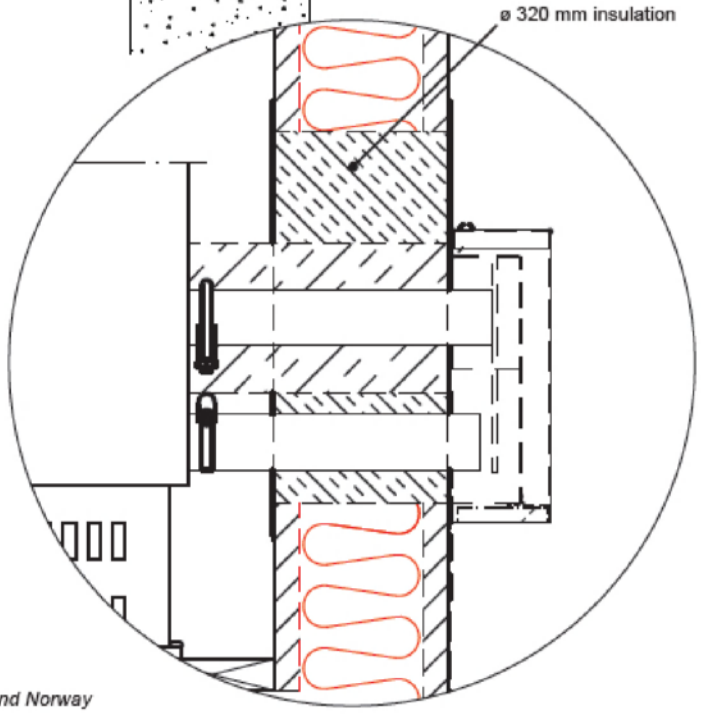
| Mounting kit 4880 | |
|---|---|
| 0,5 m | Exhaust pipe 4845 |
| 0,5 m | Insulating channel 4012 |
| 2 pcs | Insulation mantel plate, 0,3 m 4015 |
| 1 m | Combustion air pipe 4045 |
| 1 pcs | Comb. air intake shield 4051 |

# Wall lead-through section view



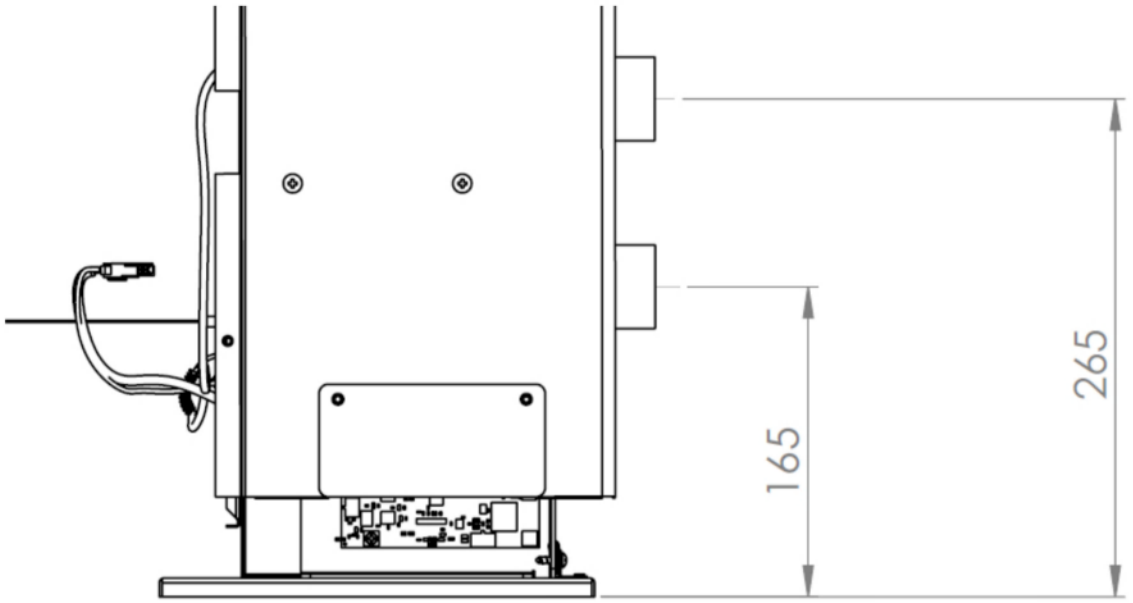

Picture 1.

Installation in Finland




Installation in Sweden and Norway

# Instructions for wall lead-through installation




Accessories 4004 and 4880 are required for the installation.

Note that different measurements for insulation are given for Finland, as opposed to Sweden and Norway, due to different national regulations.

1. Drill or cut an opening in the wall for the exhaust pipe and its insulation (ø 120 mm, Finland/ ø 320 mm, Sweden and Norway). And the combustion air intake pipe (ø 50 mm). The cover plate (16) can be used as a stencil.

2. Cut both pipes (18 and 21), so that the pipes extend from the wall ca. 40 - 45 mm (23 and 24) when the pipes have been pushed all the way in the heater connection pipes (25 and 26) and the heater is positioned at least 70 mm (Finland) / 100 mm (Sweden and Norway) from the wall.

3. Install the cover plates (16 ja 17) on the lead-through openings and seal the connection between the wall and the plate with silicone paste.

4. Push the pipes (18 and 21) all the way into the connection pipes (25 and 26) and seal the exhaust pipe's connection (25) with a pipe clamp (11) and the combustion air pipe's connection (26) with a hose binder (10). (Both ties can be found in the heater accessory bag.) The exhaust pipe cannot be tightened sufficiently by any other fastening than a pipe clamp (11), which must be tightened sufficiently to lock the pipe in place.

5. Place mineral wool (19) on the exhaust pipe (18) so that the insulating material extends from the back surface of the heater to ca. 10 mm outside the wall (27). Place the insulation mantel plate (20) on the insulation.

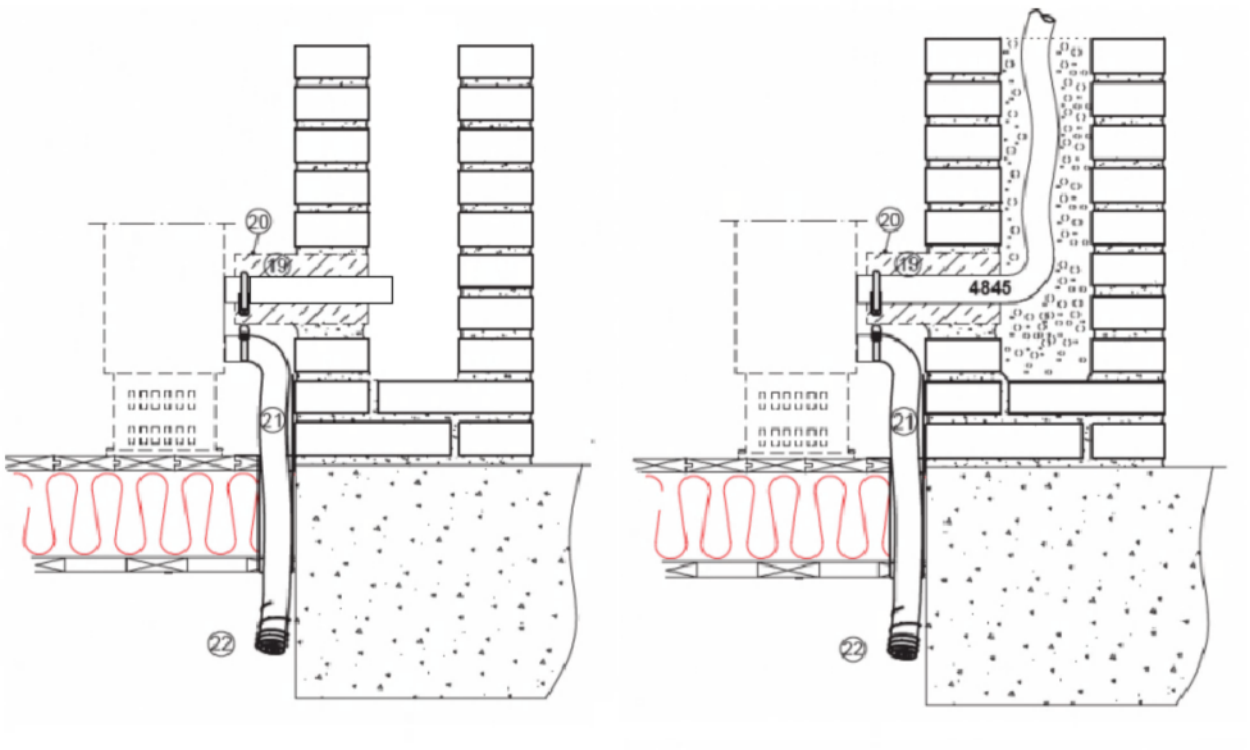
6. Then, push the heater to a distance of 70 / 100 mm from the wall, while guiding the hoses and the insulation through the lead-through openings.

7. Adjust the length of the insulation mantel plate (20), by cutting it so that its end protrudes from the wall ca. 10 mm, and cut the edge of the sheet metal into 10-20 mm strips (28), as shown in picture 1. Fold the strips carefully on to the surface of the sheet metal cover.

8. Seal the clearance between the sheet metal cover (17) and the flue-gas exhaust head (15) with silicone paste and push the head into place in the wall. Attach the head to the wall with screws (30, 4 items 4,5x25). The lid of the flue-gas exhaust head (15) must be opened before installation - screw (31). Ensure that the ends of the hoses (23 and 24) extend to the limiters (32 and 33).

9. Finally, fasten the heater to the floor or the base housing (12).

# Instructions for attachment to the flue




Accessory 4880 is required for the installation.

1. Cut the flue-gas pipe, the insulation channel and the cover sheet metal to a length at which they extend to the inner surface of the flue.

2. Fasten the hoses to the heater with clamps. The flue-gas pipe must be tightened firmly with a pipe clamp.

3. Put the heater in place, and fasten it to the floor or the base housing.

4. Insulate the joint between the flue-gas hose and flue with acrylic compound.

5. The device is ready for use after you connect the power cord and the fuel hose.

Note!

If you choose to lead in the combustion air from under the floor, ensure there is sufficient ventilation in the foundations beneath the floor. Install the protective spiral on the end of the hose.

In a tall (over 5 m) flue, with a large cross-sectional surface (over 15x15 cm), the temperature of the flue-gases decrease so much that the moisture in them condenses, resulting in funnel corrosion and a weakened air flow. Due to this, a brick flue should be cased with a stainless steel pipe (diameter: 50-70 mm) and the gap between the pipe and the flue filled, for example, with LECA.

| | |
|---|---|
| ! | **Combustion air must not be taken from the flue or from the indoor.** |

# Heater fuel connections

**Things to note about the fuel connections**

The standard length of the fuel hose is 4 m. It can be extended with a 2 m extension hose, which gives a total length of 6 m. Connect the hoses with bayonet couplings, which are twisted together. Cut the fuel hose to a length suitable for installation.

The lift height of the pump should be less than 2 m; preferably 0,5-1 m.

Fuel system adjustments are device specific. We recommend that the adjustment be carried out by an authorised service shop.

The fuel pipe must always have a filter.

**Country-specific requirements**

The standard fuel hose is plastic. Please observe the country-specific requirements with regard to the material for the fuel hose / pipe, the fuel filter and the hose clamps. The inner diameter of a new replacement hose must be equal to the inner diameter of the plastic hose.

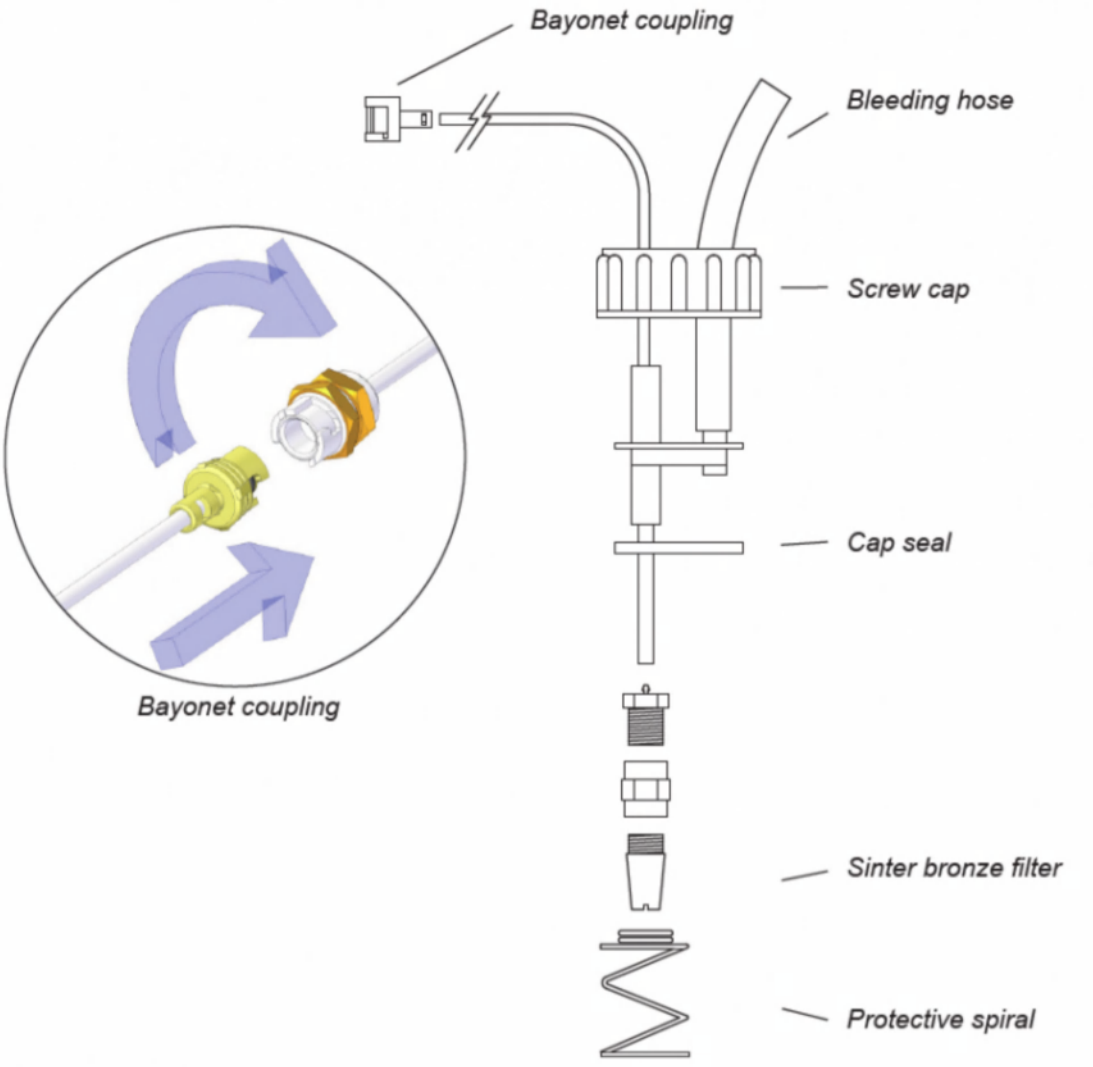
**Tank placement**

1. The fuel tank should always be placed below the base of the device. (The fuel surface level must be below the device.) When the fuel level is above the base, the solenoid valve 30017 must be installed on the tank-side end of the hose.

2. The fuel tank can be placed in the base housing 4031, or outside it, for example, in the foundations of the house or a suitable protective box. Protect the tank and the fuel hose from direct sunlight.

3. The fuel hose lead-through must be shielded by a metal cover pipe.

# Connection to a separate tank




*Cap run-throughs*

Cap run-throughs and sinter filters are used on plastic tanks.

| Volume | Length x Height x Width | Order code | |
|---|---|---|---|
| 5 l | 200 x 300 x 130 mm | 2024 | Accessory |
| 10 l | 380 x 195 x 210 mm | 2027 | Accessory |
| 33 l | 500 x 230 x 350 mm | 4030 | Accessory |
| 130 l | 800 x 400 x 600 mm | 4130 | Accessory |

The fuel connections must be tightened firmly so as to not allow air to leak into the hose. Always check the cleanliness of the connection surfaces before tightening. Air will cause the device to malfunction.

# Electrical connections

Safety instructions for wiring the heater:

- Make sure that electrical cables are not damaged. Avoid: chafing, kinking, jamming or exposure to heat.
- Electrical connections and ground connections must be free of corrosion and firmly connected.

**Things to note about the connections**

All connections must be arranged in the craft so that they can function perfectly under normal operating conditions. Insulate unused cable ends.
The device uses 12 V (nominal) direct current voltage. To minimize current losses, make the power cable as short as possible and avoid joining. The cross-sectional area of the cable is dependent on the length of the power cords. The cross-sectional area of the cable should be consistent all the way from the device to the battery. The maximum length of the power cord is 10 m, based on 6 AWG cable.

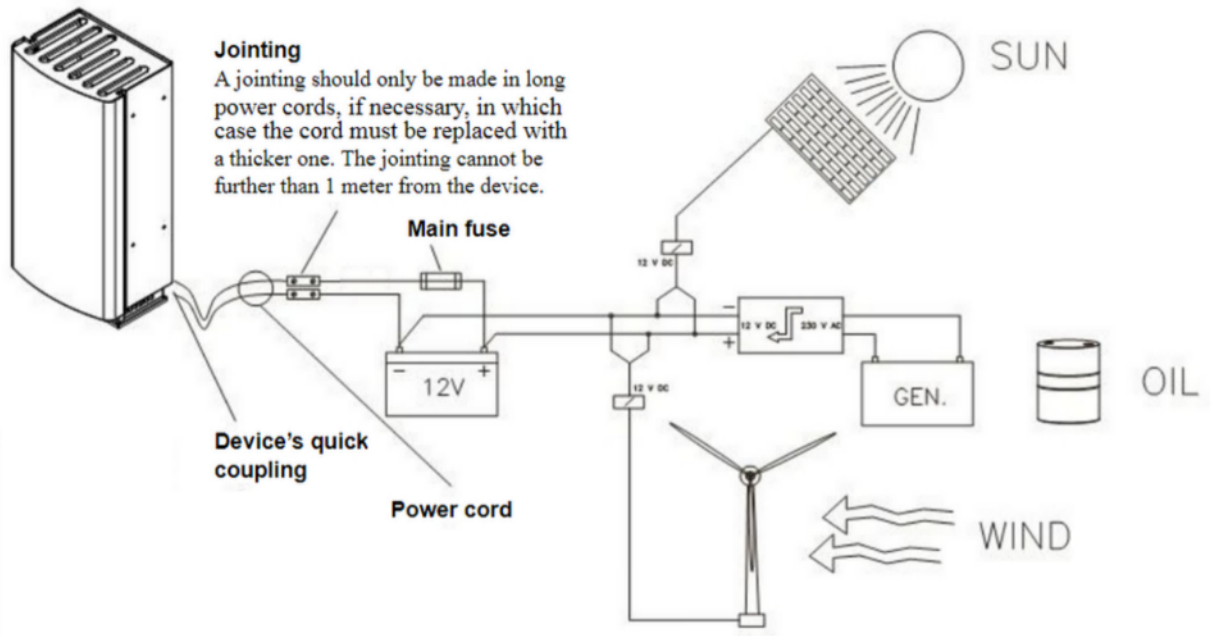
**The cross-sectional area of the cable**

| **Total length of the power cord (m)** | **Minimum cross-sectional area of the cable in square mm (US Gauge)** |
|---|---|
| 0-4 | 2,5 (13 or 12 AWG) |
| 4-6 | 6 (9 or 8 AWG) |
| 6-10 | 10 (7 or 6 AWG) |

If a thicker cable is required, make a separate joint in the power cord. See picture "Electrical connections of the device".

# Electrical connections of the device

**Princible diagram of the electrics**




**12 V direct current system**

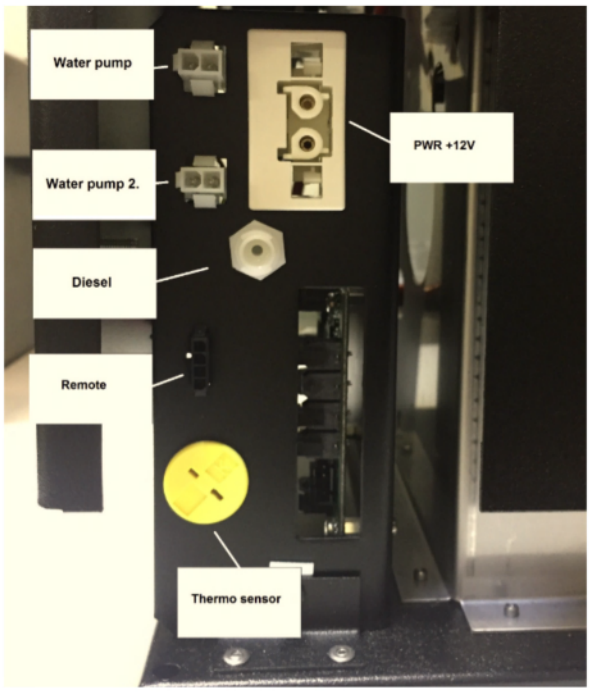
Connect the red wire of the power cord to the plus terminal of the battery and the black or blue wire to the minus terminal. A 15 A main fuse must be installed near the battery on the red plus wire of the power cord. See picture.

**24 V direct current system**

If the device is to receive power from a 24 V system, always connect a charging voltage reducer and a 12 V battery before connecting the device. Without the battery the voltage reducer will not be enough on its own as it cannot generate the large amount of current the glow plug  requires. After the 12 V battery, the connection is the same as in a 12 V system.

**Connections of the device**

Unit has connection (see picture below) locations for fuel line, control panel, power cable, wired thermostat sensor and separately sold water circulation pumps (2pcs). To run unit you need to connect all of them except second water pump and remote.




Primary water pump connection is **Water pump**

Power cable connection location is **PWR+12V**

Secondary water pump connection is **Water pump 2**.

Fuel line connection location is **Diesel**

**Remote** connection point is only for special applications

Wired thermostat sensor connection is **Thermo sensor**


Control panel connection is looking like this:

**Checking the connection**

The device consumes most power when it is started up (glowing). At this point voltage losses are also at their highest. During the glowing phase, the voltage must be at least 9,5 V measured at the quick coupling. If the voltage is lower than this, the device may not start.

**Things to note about the connections**

In installation, to make the mounting and demounting for service easier, it is recommended to leave some extra length of loose cables and fuel line by creating a coil. If the installation location is cramped, it is recommend to connect the cabels and the fuel line to the device before mounting the unit to bracket. This will help the installation of device. And remember to mount all wires and cables with smooth bending and equip with strain relief.

# Water connections

All water heating components must be installed in safe locations, where they do not cause any scalding or damage to people, animals, or surrounding materials due to excessive heat. Especially metal joints can get as hot as the coolant (max +85 °C) and can cause damage if they are positioned too close to less heat-resistant materials.

Before doing any installation or service work for the heater or water system, shut down the heater and let the system cool down to prevent possible injury or burns.

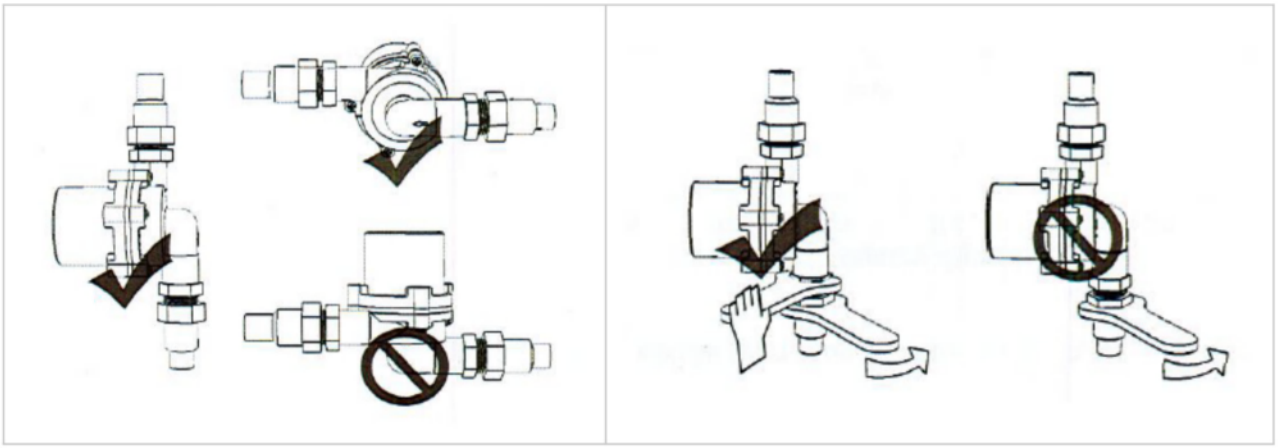
**Note!**
**When choosing the installation location, it should be noted that in the event of a possible leak, the leaking water will not enter the building structures.**
**There must be an overflow basin or an outlet pipe in the installation space of the device.**
Make sure that the flow direction is correct in your installation.
Route all the water hoses so that they are rising from the lowest point to higher. This will prevent air locks from the system.
Follow the hose manufacturer's bending radius recommendations to prevent clogging or kinking.
Make sure that the water hoses are far enough from the hot places such as engine/stoves/heaters/fireplaces.
Water ducting and fuel hoses must be protected in locations where they are susceptible to mechanical damage due to sharp edges, chafing or heat.
Double check all the hose clamps and joints to prevent any leakages.
Make sure that the temperature difference between the inlet and outlet of the water is never over 10 Celsius. This ensures that the water flow through the whole system is sufficient.

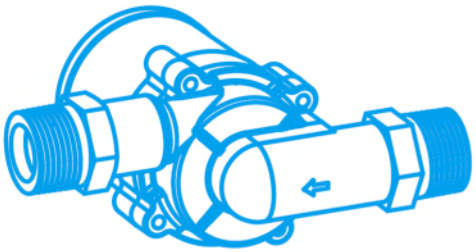
The heater is designed to be used with the open header tank. The system should not be pressurized. The maximum pressure of the system 0,5 bar.
To prevent corrosion and freezing, the hot water system has to contain enough antifreeze/coolant liquid following the coolant manufacturer's recommendations.
Before first start up, or after liquid change, it is important to bleed the coolant system of air. If the system is not free of air, the system will not work as designed.
When choosing the size of a header tank make sure that volume of the tank is large enough. In coolant systems using 19 mm hose, for every 10 m of hose, a 64 °C temperature change will change coolant volume by 4 cl. In coolant systems using 21 mm hose, for every 10 m of hose, a 64 °C temperature change will change coolant volume by 5 cl.

Maximum height difference for Wallas(366001) 5w circulation pumps is 1,4m and it will pump max 8.5l/min.

**Water pump installation**

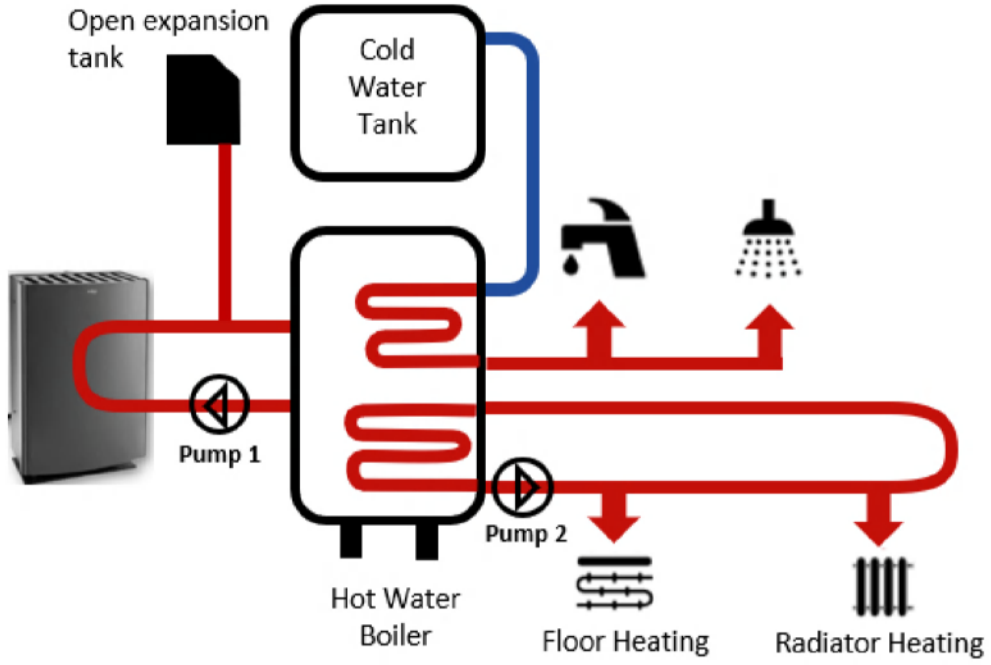
The water pump must be installed horizontally.





Arrow printed to the side of the pump indicates the flow direction.

## Installation example



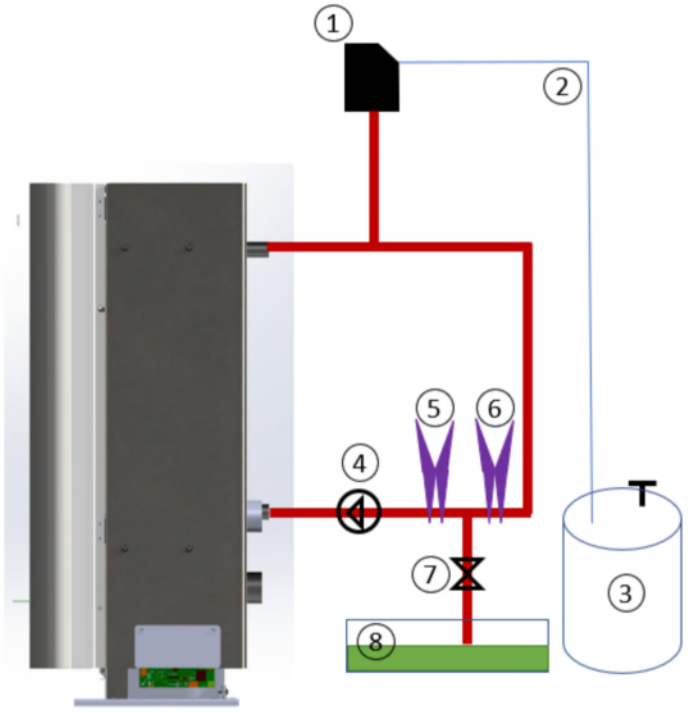
# Bleeding and filling system with coolant

It is easiest to fill ducting starting from the lowest point of installation. **If you start filling from the header tank there will be airlocks.** Filling from the lowest point takes most of the air out from the system, so this makes bleeding much easier. If there is air in the ducting heater does not work correctly.

Premix enough coolant according to manufacturers instructions ( Standard recommendation is 30% antifreeze, 70% water in Finland)

Install T-branch to the lowest point of coolant ducting

**Hose installation instructions**

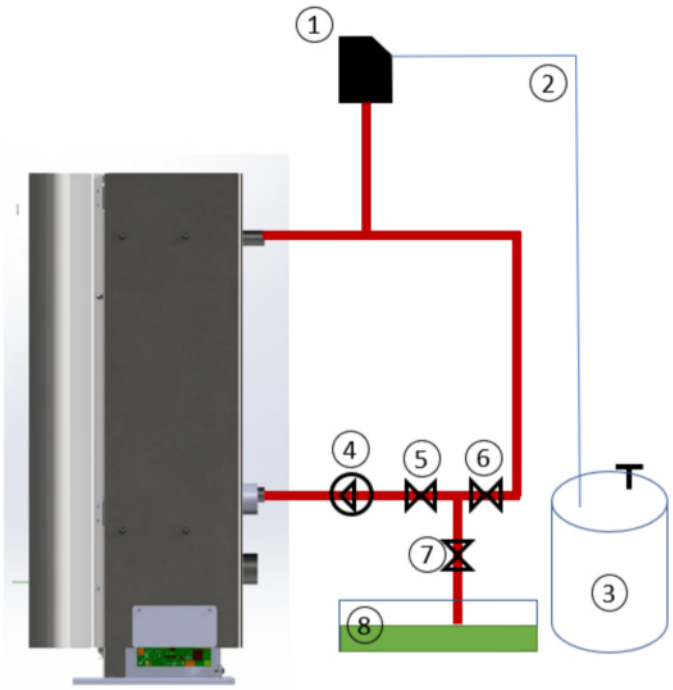



1. Open Expansion Tank
2. Over Bleeding Hose
3. Vacuum Pump
4. Pump
5. Pliers A
6. Pliers B
7. Valve
8. Coolant Feeding Tank

Have hose closing pliers ready for feeding the coolant.

1. Connect the vacuum pump to the expansion tank's over bleeding hose.
2. Check that Valve 7 is open.
3. Squeeze the hose with the pliers B to prevent the coolant from flowing from this direction.
4. Gently pump the vacuum pump a couple of times. Listen when the coolant begins to flow to the heater.
5. Continue to pump the vacuum pump a couple of pumpings at the time as long as you see the coolant in the expansion tank. **Note! Too high under pressure / vacuum (too many pumpings at the time) may cause deforming of the heat exchanger.**
6. When you see that the coolant is in the expansion tank, close the pliers A. Then open pliers B.
7. Keep on pumping the vacuum pump until you can see that no bubbles are coming from the line to the expansion tank.
8. Close the valve (7) in the feeding tank.
9. Open the pliers A.
10. Remove the vacuum pump and make sure the coolant surface does not drop too low in the expansion tank.

**Pipe installation instructions**




1. Open Expansion Tank
2. Over Bleeding Hose
3. Vacuum Pump
4. Pump
5. Valve A
6. Valve B
7. Valve
8. Coolant Feeding Tank

Have two extra valves ready for feeding the coolant.

1. Connect the vacuum pump to the expansion tank's over bleeding hose.
2. Check that Valve 7 is open.
3. Close the valve B (6) to prevent the coolant from flowing from this direction.
4. Gently pump the vacuum pump a couple of times. Listen when the coolant begins to flow to the heater.
5. Continue to pump the vacuum pump a couple of pumpings at the time as long as you see the coolant in the expansion tank. **Note! Too high under pressure / vacuum (too many pumpings at the time) may cause deforming of the heat exchanger.**
6. When you see that the coolant is in the expansion tank, close the valve A (5). Then open valve B (6).
7. Keep on pumping the vacuum pump until you can see that no bubbles are coming from the line to the expansion tank.
8. Close the valve (7) in the feeding tank.
9. Open the valve A (5).
10. Remove the vacuum pump and make sure the coolant surface does not drop too low in the expansion tank.

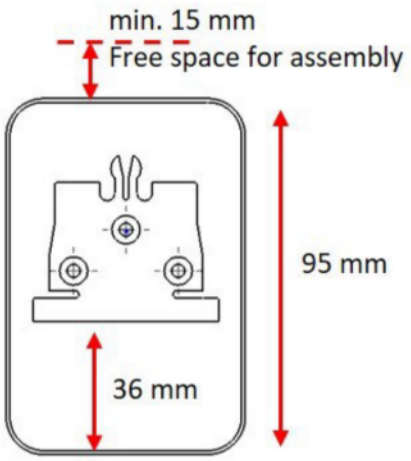
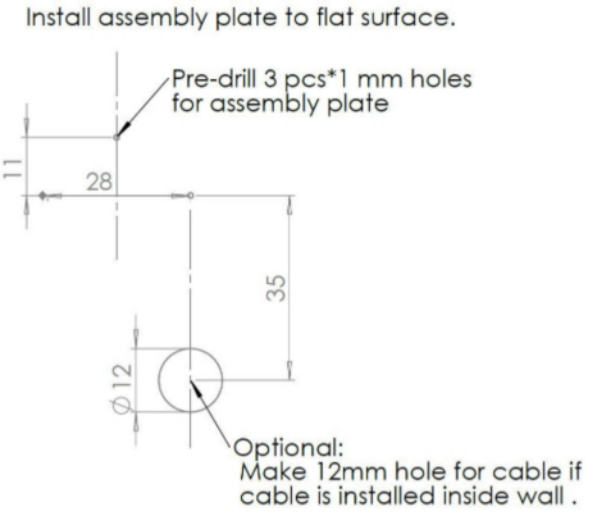
Coolant expands 5% when the temperature changes 60 °C.
**If you have more than 50 liter coolant in the system, you will need higher volume expansion tank** (standard expansion tank volume is 3 liters).

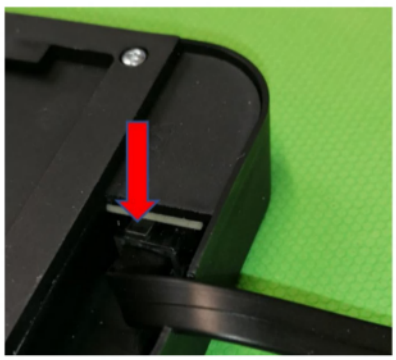
Example table for coolant expansion

| Coolant volume (20 °C) | Coolant volume (80 °C) | Standard expansion tank utilization |
|---|---|---|
| 10 l | 10,5 l | 16,7 % ( 0,5 l / 3 l ) |
| 50 l | 52,5 l | 83,3 % ( 2,5 l / 3 l ) |

# Control Panel Installation

3008 Control Panel cable can be assembled as a surface mount or behind wall.

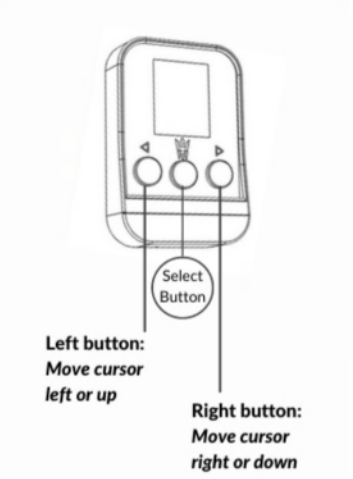
| Surface mount, cable visible | Cable hidden behind the wall |
|---|---|
|  |  |
| 1) Install the mounting plate and mark places for the screws. Pre-drill 3*1 mm holes for screws.<br>2) Cut the cable opening in bottom of the panel.<br>3) Install the mounting plate.<br>4) Slide the panel in place from the top down.<br>5) Remove the display protection tape. | 1) Install the mounting plate and mark places for the screws. Pre-drill 3*1 mm holes for screws.<br>2) Drill 12 mm hole for the cable. Draw and check hole location before drilling, it should not be visible when panel is mounted.<br>3) Install the mounting plate.<br>4) Slide the panel in place top-down.<br>5) Remove the display protection tape. |

| | |
|---|---|
|  | **Cable connection** |
| | Please note that cable connector release pin is positioned as in the picture, when connecting cable into panel. (Soft "click" sound can be heard when cable is connected.) |
|  | **Cable release** |
| | Press connector release clip (shown in the picture) before pulling the cable out. |

# 3008 Control Panel basic features 40EA

**Advanced Control Panel**

Before using the Control Panel ensure it is assembled correctly with the assembly plate (see assembly instructions from sales package) and connected to the Wallas unit. This manual refers to Control panel SW 1.2.75. and heater SW 1.6.64

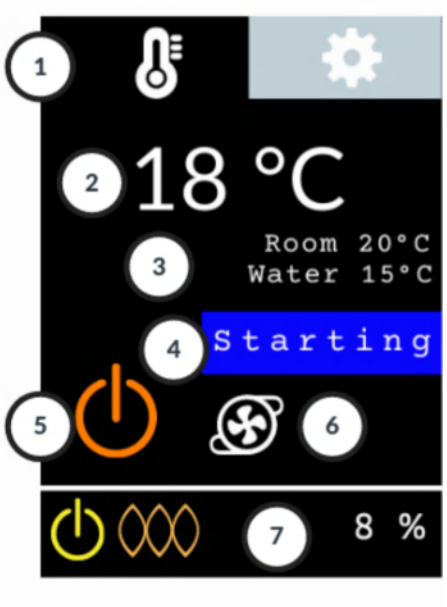



**Starting the heater for the first time after power is connected or reconnected**

Panel will display a black & white intro menu.

Prior to starting the heater, choose mode by using the Arrow buttons (left or right) to move the orange selection square to the Main Menu Bar.

**Digital Panel Legend:**




1 Main Menu Bar

2 Target Room Temperature

3 Room / Water Temperature (°C or °F available)

4 Heater Status

5 Start/Stop Icon (white Icon Off, orange Icon On)

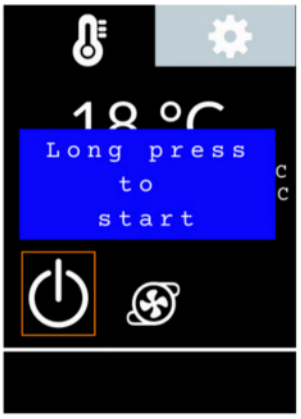
6 Second Water Pump Icon

7 Info Bar: Power On/Off, Combustion, Info, Lock, Heater power %

**Operation modes (Main Menu Bar)**

| | |
|---|---|
|  |  |
| Choose mode by using the **Arrow buttons** (left or right) to move the orange selection square to the **Main Menu Bar.** Press **Select Button** to activate the **Main Menu Bar.** Use **Arrow Buttons** to choose the **Room Heating Mode** and press the **Select Butoon** to select. | Room heating mode<br>- set a target room temperature (°C/°F) |

**Ignition**

| | | | |
|---|---|---|---|
|  |  |  |  |
| To start, use the **Arrow Buttons** (left or right) to move the orange selection square to the white **Start/Stop Icon.** | Confirm the selection by holding the **Select Button** down for 3 seconds (safety feature). White icon turns orange. | Starting will appear on the screen. | The light orange combustion light will light up when the burner flame has been ignited and the combustion has stabilized (in about 5 min). Heater will be fully operational about 10 minutes later. |

**Water pump #1 control**

| | |
|---|---|
|  |  |
| Move the selection square to the **Target Room Temperature** and press the **Select Button**. | Press **Arrow Buttons** (left or right) to set the desired room temperature. |

**Water pump #2 control**

Water pump #2 is intended for floor heating and therefore operates with more powerful flow, sufficient to provide heat transfer fluid circulation in the heating pipes underneath the flooring.

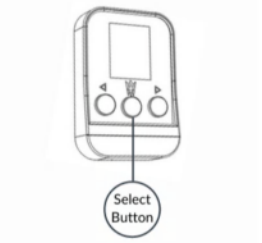
| | | | |
|---|---|---|---|
|  |  |  |  |
| Move the selection square to the **Pump #2 Icon** and press the **Select Button**. | Pump #2 is now activated and the icon turns orange. | Move the selection square to the **Target Room Temperature** and press the **Select Button**. | Use the **Arrow Buttons** (left or right) to set the desired temperature. |

**Pause Mode**

Pause Mode automatically turns the burner off if the water temperature rises above 82 °C (180 °F). The unit will start heating again when the water temperature drops to 55 °C (130 °F). It will attempt to maintain a stedy 70 °C (158 °F).


If the heater is in Pause Mode, *Paused* will appear on the screen. Heater will re-start heating again automatically.

**Shut down**




**Option 1** Quick shut down: Press and hold the **Select Button** down for more than 4 seconds. *Stopping* will appear and the Power Icon light will change to white indicating the unit is off.

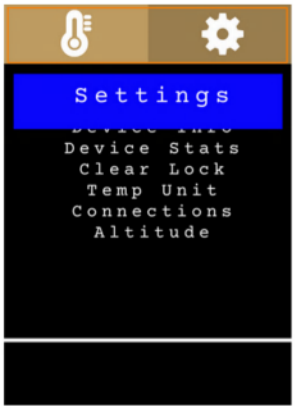

**Option 2** Alternatively use the **Arrow Buttons** to move the selection square to the **Start/Stop Icon** and press the **Select Button**.


Press and hold the **Select Button** down for more than 3 seconds and release.

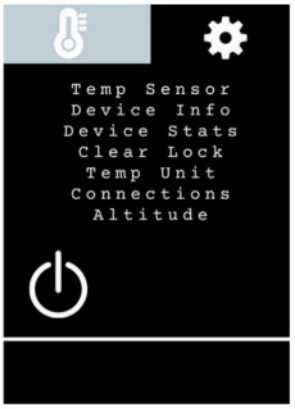

Stopping will appear and the Power Icon light will change to white indicating the unit is off.

**Note:** The system mode that was used last upon shutdown will be the same mode when the heater is turned on again.

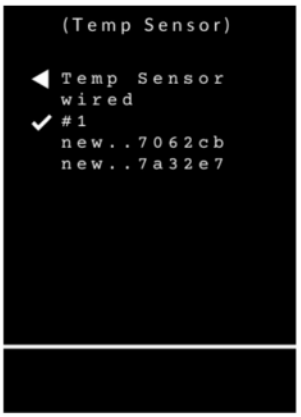
**Settings:**



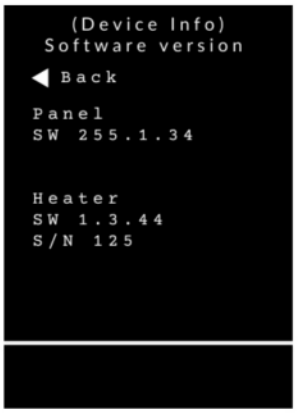

Move the selection square to the **Main Menu Bar** and press the **Select Button**. Use the **Arrow Buttons** to choose **Settings**. Press the **Select Button**.



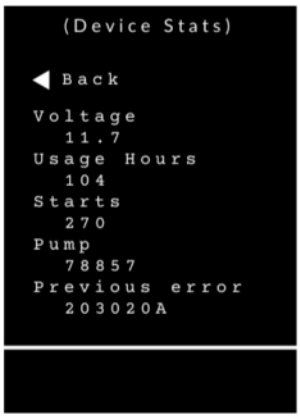

Use the **Arrow Buttons** to move the selection square down and press the **Select Button** to choose.




**Temp Sensor**
- Choose the desired sensor to measure the indoor temperature with.
- Wired is the hardwired sensor in the heater unit
- Wireless sensors are listed by sensor numbers
- When a wireless sensor is selected, it gets a running number ID



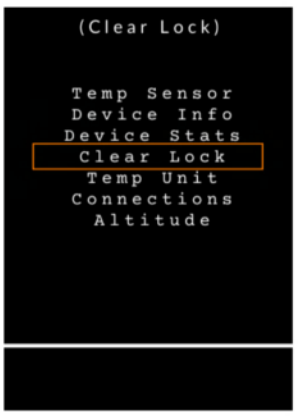

**Device Info**
- Control panel and heater software versions (needed for customer service/tech help)
- Heater unit serial number (needed for customer service/tech help)



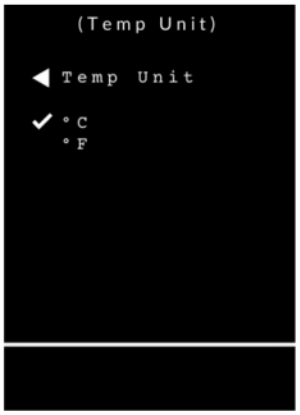
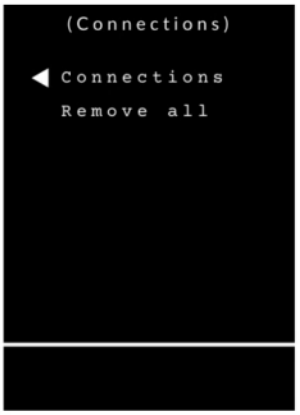
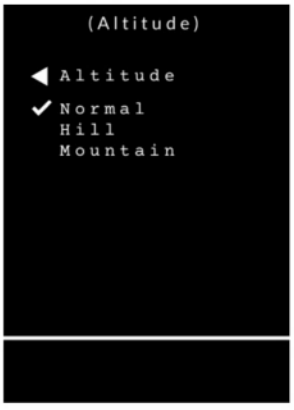

**Device Stats**
- Check there is enough voltage to start the unit (must have at least 10 V)
- Check usage hours (units must be serviced every 2000 hours/3 years)
- System starts
- Pump cycles since new
- Previous error code


If a **Lock Icon** is displayed, the heater has locked itself for safety. The heater will also lock after 3 unsuccessful starts. Move the selection square to the **Exclamation Point Icon** and press the **Select Button**. An error Page will appear.


If the heater has locked itself, there may have been a failure that should be investigated and resolved prior to futher use. The error page will display a check list and a website for further information.
If you need help, reach out to a professional.




To remove the lock, move the selection square to the **Main Menu Bar** and press the **Select Button**, choose **Settings**, and press the **Select Button**. Choose **Clear Lock** from the Settings Menu and press the **Select Button**.

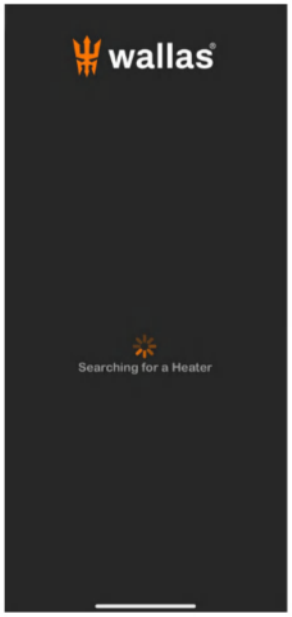
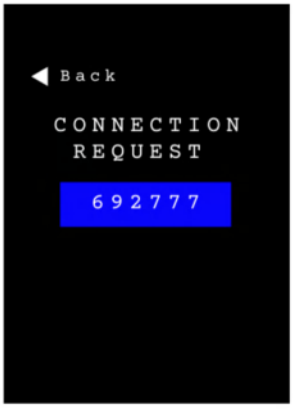
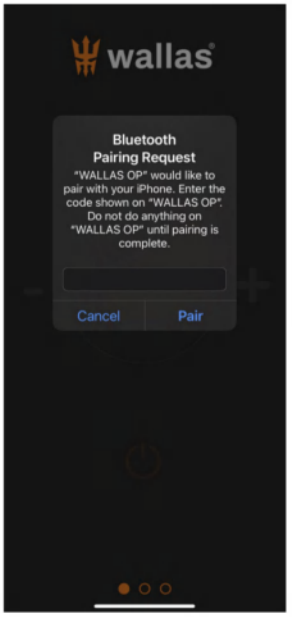
| | | | |
|---|---|---|---|
|  |  |  | Note! Altitude setting must be made before starting the heater. |
| Temp Unit<br>- select temperature unit Celsius / Fahrenheit. | Connections<br>- clear all paired mobile phone devices. | Adjust combustion in high altitudes. Heater operation can be optimized to different altitudes. | |

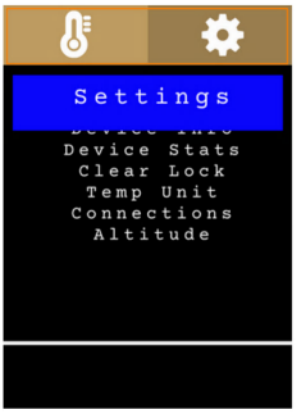
# Wallas Remote application and Control Panel connection 40EA

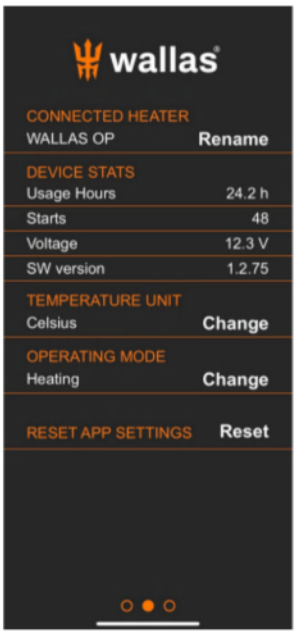
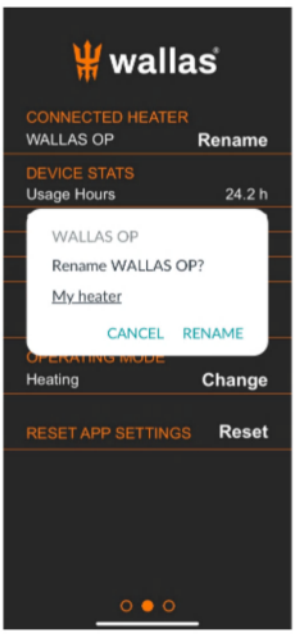
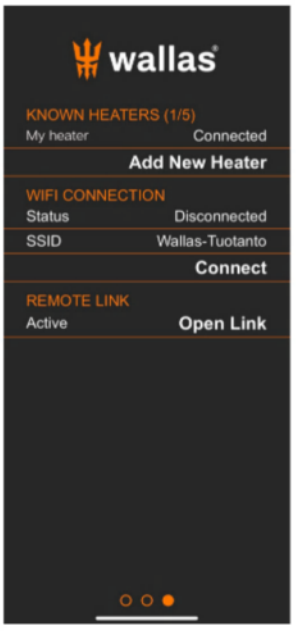
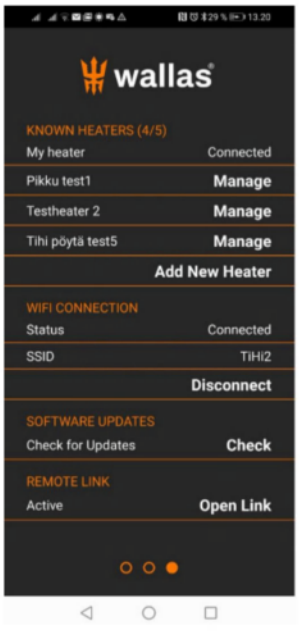
### Local Connection

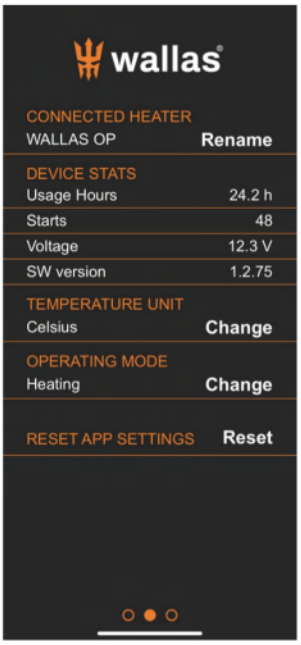
Advanced Control Panel can be connected into the mobile application with local connection. You can then operate your heater with the "**Wallas Remote**" application. First, download the "Wallas Remote" application to your mobile device from your application store.

### Pairing the app with the heater

| Mobile Device | Advanced Control Panel | Mobile Device | Advanced Control Panel |
|---|---|---|---|
|  |  |  |  |
| Turn the short range wireless connection on your mobile device for pairing the app with the control panel. When you open the app for the first time, it will search for a Wallas heater nearby. | When a heater is found , a pin code will appear on the screen of the Advanced Control Panel. | Type the pin code in the app and press **Pair** to continue. **Note!** In some phone models Pairing request will open in background info window. | Once the pairing has been successful, it is confirmed on the Control Panel with *Device Added*. |

| Advanced Control Panel | Advanced Control Panel | Advanced Control Panel | Advanced Control Panel |
|---|---|---|---|
|  |  |  |  |
| If the connection was not successful, *Connection Denied* will appear on the Control Panel. | Use Arrow Buttons to go to the **Main Menu Bar** and press the **Select Button**. Go to the **Settings** and press the **Select Button**. | Choose **Connections** and press the **Select Button**. Select **Remove All** and press the **Select Button**. | Turn the app off, open it again and repeat the pairing process. |

| Mobile Device | Mobile Device | Mobile Device | Mobile Device |
|---|---|---|---|
|  |  |  |  |
| When the heater is connected for the first time it will be named by Wallas OP. | Each heater/connection can be renamed (max 20 characters). | User can add new heater and repeat the pairing process with the new heater. | Application supports up to 5 different heater connections. It is also possible to pair same heaters with another mobile device but only one active user (active connection) is possible at a time. |

| Operating Mode | Ignition | Temperature |
|---|---|---|
|  |  |  |
| Heater can be started from application in **Heating/Thermo Control-mode:** Set a target room temperature °C/°F<br><br>Due to safety, heater cannot be sarted remotely in Manual Mode.<br>To switch between the modes, turn the heater off and start in the desired mode. | Press and hold the **Start/Stop Icon** down for 2 seconds to start the heater.<br><br>*Starting* will appear on the screen. Orange combustion light will light up when the burner flame has been ignated and the combustion has stabilized (approx. in 5 min). Heater will be fully operational about 10 min later.<br>Heater starts in Thermo Control Mode. | In Heating/Thermo Control Mode the thermostat can be set to a target room temperature.<br><br>Press the **Minus** or **Plus Icons** to adjust the temperature to the desired level. |

| Pause | Shutdown |
| --- | --- |
|  |  |
| Pause Mode automatically turns the heater off if the temperature remains +2 °C (3 °F) above the set level for 1/2 hour due to local ambient conditions. If the heater is in Pause Mode, *Paused* will appear on the screen.<br>Pause Mode can be turned off temporarily by slightly increasing the target temperature. Heater will re-start heating again automatically, if the cabin temperature falls 2 °C (3 °F) below the set target temperature. | Press and hold the **Start/Stop Icon** down for 2 seconds.<br><br>*Stopping* will appear and the Start/Stop icon will turn white indicating the unit is off.<br><br>Note: The heating mode that was used last upon shutdown will be the same mode when the heater is turned on again. |

**WiFi Connection**

The 3008 Control panel can be connected to the internet with a WiFi connection.

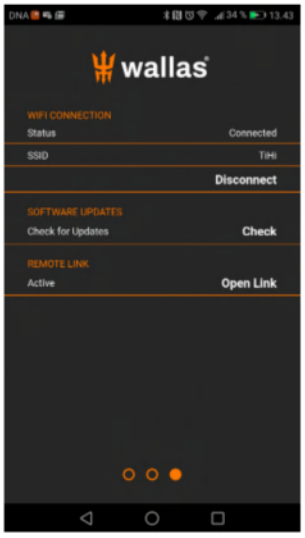
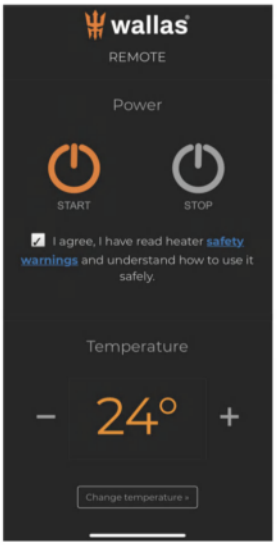
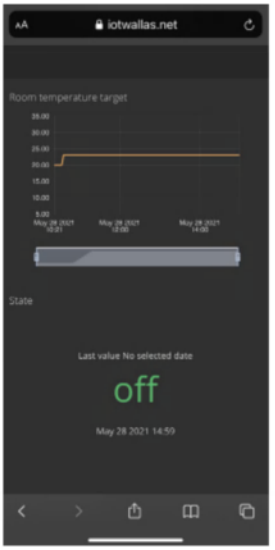
You can then operate your heater with the " **Wallas Remote**" application through the Internet.

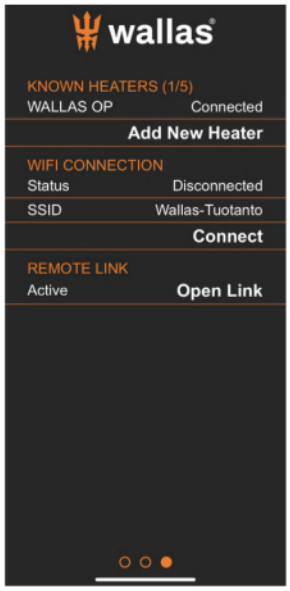
Wifi connection is created through the Wallas Remote application. ( Local connection between application and Control Panel must be available before setup)

The first time selecting Connect, the application will ask for SSID and Password.  Application will share this information with Control Panel.

**NOTE! "Open" WiFi or "no-password" networks will not work with the Wallas system.**

NOTE!  If you sell your heater or give it away, you need to clear WiFi settings. ( SSID="empty", password="empty") and you should remove the Wallas application from your device.

| | | | |
|---|---|---|---|
|  |  |  |  |
| Feed your internet connection details. | When internet connection is finalized status will be "connected".<br>After few minutes "REMOTE LINK" will appear. | "REMOTE LINK " display will connect to internet panel. You can :<br>- set room temperature target<br>- start /stop your heater<br>Note: heater start and stop takes several minutes. | You can see when heater was last connected into internet, and what the heater state is.<br>You can see some statistics of your heater. Available graphs will vary depending of your heater model. |




When you start application and heater is not in range you can operate heater by opening the "Remote Link".


Note! Before you can operate heater,
you need to read safety warnings and agree.

Wallas-Marin reserves the right to develop usability and features of the application.

**Connections tips:**

1. Read from your mobile device user guide how connections and WiFi connections are managed in your device.

2. Make sure that local connections and WiFi are allowed in you mobile device (airplane mode is OFF).

3. Your mobile device is not in power save mode and location permission is given to Wallas application.

4. Check that heater is connected to power and Control panel is connected via cable to the heater.

5. Distance between Mobile device and Control Panel is not too long.

6. Control Panel is not in use by another person. Only one local connection is possible at a time.

7. If your mobile device already has connection to the heater it can not create new connection before the old connection is removed from your device. In some phone models this has to be made manually. Remove "WALLAS OP" from your phones paired short range wireless connection devices list (note there might be several OP pairings in mobile device list, remove all) and restart short range wireless connection before new pairing is possible. This may be the case if control panel pairing code only blinks fast and your mobile device is repeating the connection requests.

8. Change connection to other Wallas heater.

- Close Wallas remote application.
- Remove old connections from your mobile device short range wireless connection paired devices list. Restart your devices short range wireless connection.
- If there is no other users for new Wallas heater you can select Control panel menu Settings/Connections/Remove all.
- Restart application.
- When/if "Change Device " link appears (30-60 sec) press the link.
- Wait connection procedure to finalize.

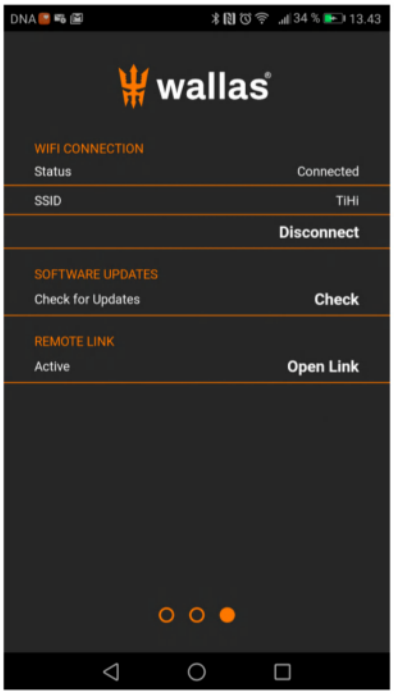
9. In some phone models Pairing request will open in background info window. ( See your mobile devices user guide.)

# Software update

It is recommended to check software updates and perform software updating regularly to ensure optimal performance of the device.

| Preparations for software update |
|---|
| 1. check that the device and the cell phone have sufficient level of power in battery<br>2. check that the WiFi signal is strong and the internet connection is reliable<br>3. be prepared to disconnect control panel cable, or power of the device to make master reset to the system if necessary |

| | |
|---|---|
| ! | **Software update is a complex process, and errors may happen if there is a power or network failure during the update, including complete system failure.**<br>**Therefore it is forbidden to start software update for control panel if the Wallas heater is the only heat source and being unable to start heater would create a danger.** |




For software update make sure that
• WiFi signal is strong and the internet connection is reliable
• WiFi HotSpot name (SSID) is visible in application page and the status is "Connected"
• the heater is "OFF" before starting the update
Updating may take up to 6 minutes, depending on network and connection.

If new software version is available *Update link* will appear on the screen.
Select update.
Do not close application or power from the heater/stove while update is ongoing.
Control panel display will close and start a few times during the update.
After the update is done, control panel will start and application will reconnect to panel.
**Note: In some phone models you may have to do the pairing again after software update.**

| Possible problem/error | Solution |
|---|---|
| *File error* message appears | Start update again after few minutes |
| Software update stops during download | 1. Close the application<br>2. Restart the short-range wireless connection from your mobile device<br>3. Start update again |
| | Tip! Find different location, where WiFi signal is better or WiFi hotspot has a better connection |
| Control panel is jammed | Disconnect panel cable and try again after few minutes |

# Error Codes

Possible error codes are listed on the table below.

| Combined Code | Error message | Problem | Troubleshooting |
|---|---|---|---|
| 10A06 | Ignition failed | Ignition failed, maximum allowed number of pump pulses | Check the fuel, check the fuel filter, tighten all joints. |
| 1020B | Low voltage | Supply voltage is below minimum | Renew/charge the battery. |
| 10001 | System error | | Contact service |
| 10003 | System error | | Contact service |
| 10201 | System error | Unexpected flame-out | Check the fuel level, check the fuel filter. |
| 10206 | Ignition failed | Preheating failed, residual fuel burning for too long | Try to start again, if same fault, contact service. |
| 20005 | System error | | Contact service |
| 20A0207 | System error | Water thermostat is missing water temperature data | Contact service |
| 20B0205 | System error | Analog control (potentiometer) is missing | Connect the controller, check control panel wiring. |
| 203020A | Ignition failed | No fuel was detected, maximum allowed number of pump pulses | Check the fuel, check the fuel filter, tighten all joints. |
| 2010204 | Combustion fan | Burner fan is not working (no tachometer signal) | Contact service |
| 2020204 | System error | Ventilation fan is not working (no tachometer signal) | Contact service |
| 2030204 | System error | Fuel pump output short-circuit | Fuel pump wires are in shortcut, check the wiring. |
| 2030205 | System error | Fuel pump not connected (no current detected on output) | Fuel pump is missing, connect fuel pump connector. |
| 2040205 | Water pump | Water pump is missing (no load on output) | Connect the water pump connector. |
| 2050204 | System error | Burner or ventilation fan power short-circuit | Contact service |
| 2060204 | Glow plug | Glow plug short-circuit | Renew the glow plug. |
| 2060205 | Glow plug | Glow plug missing (no current detected on output) | Renew the glow plug, check that the glow plug connector is connected to the ECU. |

| | | | |
|---|---|---|---|
| 2070005 | System error | | Contact service |
| 2080001 | System error | | Contact service |
| 2080006 | System error | | Contact service |
| 2080008 | System error | | Contact service |
| 2080208 | System error | | Contact service |
| 3000007 | Burner temp sensor | Burner temperature is missing/invalid | Contact service |
| 3010007 | Air temp sensor | Air temperature is missing/invalid | Connect air temperature sensor. |
| 3010202 | Air overheat | Air temperature is too high | Check air vent´s and warm air hoses for blockages. |
| 3020007 | Water temp sensor | Water temperature is missing/invalid | Contact service |
| 3020202 | Water overheat | Water temperature is too high | Water is not circulate, bleed the air out of the system, check the water pump. |
| 50001 | System error | CAN bus other errors | Contact service |
| 50006 | System error | CAN bus timeout error | Contact service |
| 50008 | System error | CAN bus busy error | Contact service |
| 7020B | Low voltage | Cannot start, low voltage | Renew/charge the battery |
| 7020C | System error | Cannot start, device locked | Open locking mode from the control panel, check control panel user manual. |
| 7020D | System error | Cannot start, enable input not asserted | Enable wire is missing, connect the enable wire or set the main power ON |
| 7020E | System error | Cannot start, burner temperature missing or too high | Powercut during the operation, Wait that unit cools down and try to start again. |

# Installation check list

Installation check list before test-run

**Installation**

- Read manual and use only official Wallas parts.
- Ensure that the boat/cottage/location is sufficiently ventilated.
- Ensure sufficient air ventilation for heater, minimum aperture of 100 cm² (16 sq.in.) into installation area.
- In boat heaters the exhaust pipe outlet must be at least 400mm(16") away from the opening for filling fuel or tank breather.
- We recommend installing the control panel on a vertical surface where liquids are not able to leak into the switch and it is out of reach of children.

**Fuel system**

- Fuel for the device comes through a separate tank fitting, not via a manifold or connection shared by the engine or other device.
- Install the filter to the fuel hose before you install the device, in an accessible location for filter changes.
- Fasten the fuel hose couplings tightly. Always use a sleeve joint on the hose (olive ring).
- Make sure that the surfaces of the couplings are clean before fastening them.
- The hoses must be kept clean during installation.
- If the surface of the fuel tank is above the device, a magnetic valve must be installed into the fuel hose close to the tank.
- Cut the fuel hoses to the appropriate length when installing them.

**Electrical installation**

- The nominal voltage of the device is 12 VDC.
- Current for the device is taken directly from the battery terminals using cables that are as short as possible.
- Put the main fuse of c. 15 A on the + cable close to the battery.

**Exhaust fumes**

- When choosing the outlet location, note that exhaust fumes are hot.
- In boat heaters use a goose-neck in exhaust pipe to prevent splash water entering.
- If your installation location is a boat with metal hull, the device and outlet must be insulated from the hull to prevent electrochemical corrosion.
- The exhaust pipe must not come into contact with combustible materials. Insulate the exhaust hose, if necessary.

**Warm air outlet (Spartan and Viking models only)**

- If your heater has air hosing, do not reduce air hosing too much. Recommendation of ø 75 mm outlet is to divide it to two ø 60 mm outlets.
- It is recommend to insulate the warm air hoses to save energy.
- Note! All warm air vents are not allowed to be closed at the same time.

**Warm coolant hosing**

- Flow direction is correct
- All hoses are rising from the lowest point to higher
- There are no leakages in the system
- Header tank is large enough
- System contains enough coolant to prevent freezing
- System is bleed correctly
- Hoses are coolant resistant material
- **Note that in the event of a possible leak, the leaking water will not enter the building structures, there must be a draining pipe or overflow basin assembled**

**Initial start-up**

- The device usually does not start the first time after it has been installed. It may take several starts (c. 4-6) for the fuel hoses to fill up enough for the fuel to reach the burner.
- Watch the hoses as they fill up as you start the device.
- After two unsuccessful start-ups, the device will lock.
- Follow the instruction for unlocking the device and try again.
- When the device starts, look for possible leaks in the exhaust and fuel connections.
- Run the device for c. ½ hour to allow possible installation and manufacturing greases to burn off. Make sure there is enough ventilation.
- **NOTE! Remember to carefully read the instructions for installing, operating and servicing each device before installation.**

## Test-run performed

| | |
|---|---|
| **Serial number** | |
| **Company** | |
| **Installer** | |
| **Installation date** | |
| **Signed** | |

# Maintenance recommendations

| | |
|---|---|
| ! | Service recommendation for the stove is 2000 operating hours or every 3 years, whichever comes first. |
| ! | Maintenance should be carried out by authorized Wallas service shop. |

| **Special recommendations** |
|---|
| Occasional (monthly) use of the device will increase reliability by purging old fuel.<br>Observe fuel provider recommendation with regard to the fuel type, fuel life lenght, additives and moisture removal.<br>If the device has a separate tank:<br>When selecting the fuel type, take note of the temperature limits of each particular fuel. |
| **Removal of the water from the tank** |
| Isopropanol based anti ice detergent meant for gasoline cars (no ethylene or methyl based) will be added to the fuel during the season. It is useful to make the addition after each couple of tanks and in the beginning and end of the heating season. The anti ice detergent binds the condensed water and prevents the sediment and contamination during the summer. For the dosage, observe the recommendations given by the manufacturer of the agent. |
| **Winter storage** |
| If the device uses the same tank as the engine:<br>• Change the fuel filter.<br>• Perform measures recommended by the boat/engine manufacturer to be performed before winter storage.<br>If the device has a separate tank:<br>• Drain the fuel tank in the autumn.<br>• Clean the tank and change the fuel filter.<br>• Fill the fuel tank with fresh and clean fuel in the spring.<br>For the device itself, you do not need to do anything. |
| **Spare parts** |
| Spare parts list, www.wallas.com |

| | |
|---|---|
| ! | **An anti-freezing agent for diesel vehicles may increase the forming of scale at the bottom of the burner and therefore shorten the maintenance interval.** |

# Warranty terms

**Wallas-Marin Oy** (the “Manufacturer”) warrants their heaters, stoves, and ovens (hereinafter referred to as the “Product”), against defects in material and workmanship for two (2) years or 2,000 operating hours in normal use (whichever comes first) effective at the time of sale to the Original End-User under the conditions provided herein.

Wallas-Marin heating systems are designed and intended for recreational use. Use for commercial, live-aboard or unattended use will result in elevated operating hours requiringmaintenance and repair not covered by product warranty.

1) This warranty is made only to the first purchaser/customer (“Original End-User”), who acquires the Wallas-Marin Product for their own use.

2) This warranty will be in effect for two (2) years or 2,000 operating hours (whichever comes first) from the date of purchase by the Original End-User. A copy of the dated receipt of the sale should be retained as evidence of the date of purchase. The warranty period may be extended by an additional 12 months by registering the Product within three (3) months of the Product being sold to the Original End-User. Registration must be done online at www.wallas.fi/takuu. Despite the extended warranty period, coverage is limited to 2,000operating hours for all Products. Repairs carried out during the warranty period do not renew or alter the original warranty period.

3) The intent of this warranty is to protect the Original End-User of the Product from defects and provide repair and replacement of defective parts. Warranty repair service must be administered by an authorized Wallas-Marin distributor or an authorized Wallas-Marin Service Center in accordance with the Wallas-Marin warranty policy.

4) Notification of the defect must be given in writing immediately to the authorized Wallas-Marin distributor, that sold the product (the “Seller”) by the Original End-User, if possible, but no later than two (2) months after the defect occurred. If the warranty period has expired and no notice was given in writing while the warranty was still valid, the defect will not be covered. The notification must include:
• Description about the issue
• Description about the installation, when, where, and by whom it was done (photographs may be included)
• Product name, serial number, place and date of purchase

5) For repairs under warranty, the Original End-User must take or package and ship the product to an authorized Wallas-Marin Distributor or to an authorized Wallas-Marin Service Center. The best location for repairs is determined by the importer after the Original End- User has notified the Seller about the issue. Once the Wallas-Marin Distributor/Service Center has examined the returned Product and if it is found that it was defective in material and/or workmanship, the Distributor/Service Center shall repair the product. If the distributor/Service Center determines that repairs must be made, only authorized Wallas-Marin parts will be used.

6) This is a Return to Base Warranty, which does not cover costs accumulated from the removal and re-installation of the Product, or transportation costs if the Product has been shipped for repairs, or any damage occurred in transit.

7) This warranty does not cover indirect damages arising from a defective Product, property damage, loss of revenue, injury or loss of life as a result of system failure, or conditions unrelated to the material and workmanship of the Wallas-Marin Product. Such unrelated conditions include, but are not limited to:
a) The Product has not been installed according to the Wallas-Marin Product User Manual or the country-specific regulations have not been followed.
b) Damage or failure caused by installation of accessories or components not manufactured or approved by Wallas-Marin and/or modification of the Product structure
without the consent of the Manufacturer.
c) Failure to follow the operation or maintenance instructions in the Product User Manual.
d) Damage caused by inappropriate storage or transport.
e) Fault resulted by an accident or damage of which Wallas-Marin had no control over (force majeure).

f) Damage or failure caused by improper handling, use of unsuitable fuel, low voltage, excess voltage, dirt, water penetrating the Product, or electro chemical corrosion.
g) The Product has been dismantled or opened without the explicit permission of the Manufacturer/Importer.
h) Non-Wallas components or spare parts have been used in the repair of the Product.
i) Repair was done by an unauthorised service provider.
j) Installation error when possible leaking water can enter the building structures.

8) This warranty does not cover consumable or wear parts, which include glow coil/plug, bottom mat or wick, fuel filter, seals.

9) This warranty does not limit the rights specified in the consumer protection legislation.

10) Wallas-Marin reserves the right to change the design of any Wallas-Marin Product without notice and with no obligation to make corresponding changes in Wallas-Marin products previously manufactured.

**When making a warranty claim, the Original End-User must provide proof that the maintenance and safety instructions have been thoroughly followed. This warranty does not apply to defects which have risen due to carelessness in following installation, operation, and maintenance instructions.**

## Disclaimers

The manufacturer is not liable for damage caused by improper use or incorrect operation or installation. Failure to comply with the installation, operation and service instructions makes the quarantee null and void and this leads to the exclusion of any liability of Wallas-Marin Oy.