



# Water Heater



**nano**

# Installation instructions

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### Legal regulations for the installation of the heater

**For installation, the provisions of Annex 7 of the ECE regulation must be observed first and foremost.**

#### Note:

The provisions are binding within the scope of the ECE regulations and should also be observed in countries where there are no special regulations!

Extract from ECE regulation R122 - Appendix 7:

- When installed, the heater must bear a manufacturer's plate with the name of the manufacturer, the model number and the type designation as well as the rated heating output in kilowatts. The operating voltage and electrical power must also be indicated.
- A clearly visible indicator light in the operator's field of vision must show whether the heater is switched on or off.

### Extract from ECE regulation R122 - Part I

#### 5.3.2 Arrangement of the heater.

**5.3.2.1** Parts of the bodywork and other components on the vehicle in the vicinity of the heater must be protected from excessive heating and possible contamination by fuel or oil.

**5.3.2.2** The heater must not present a fire hazard even when overheated. This regulation is deemed to have been complied with if an appropriate distance to all parts was maintained during installation and adequate ventilation was provided or fire-resistant materials or heat shields were used.

**5.3.2.3.** in the case of vehicles of categories M2 and M3, the heater shall not be located in the passenger compartment. However, installation in the passenger compartment is permitted if it is located in an effectively sealed housing which also complies with the requirements of paragraph 5.3.2.2.

**5.3.2.4** The plate referred to in paragraph 4 of Annex 7 or a duplicate shall be affixed in such a way that it is still easily legible when the heater is installed in the vehicle.

**5.3.2.5** The location of the heater shall be such as to minimize the risk of injury to persons and damage to property carried.

#### Disposal of old appliances

The disused appliance must be disposed of at the end of its service life in accordance with national regulations. We recommend that you contact a company specializing in waste disposal or contact the waste disposal department of your local authority.

#### WARNING!

To prevent misuse and the associated risks, make your old appliance unusable before disposing of it. To do this, disconnect the appliance from the mains supply and remove the mains connection cable from the appliance. When disposing of the appliance, observe the regulations applicable in your country and municipality.

#### WARNING!

The procedure for installing the heating system contained in this document is a manufacturer's recommendation that may not be suitable for the local conditions in each case. The installation must be carried out by qualified personnel and **the individual steps may need to be adapted to the local conditions.**

**Warning!****Danger from electric current!**

The heater may only be operated on properly installed individual sockets with earthing contact.

Do not pull the mains connection cable out of the socket by the cable, always hold it by the mains plug housing.

The burner elements and connections have 230 V voltage.

The heater must be secured on the vehicle with an earthing contact plug. The power supply must meet the requirements of the heater.

**Warning!**

Switching on the heating without heating water can destroy the heating system.

**DANGER:****Death or serious injury due to improper installation or repair!**

**Improper installation or improper repair of the heater can cause a fire or lead to the escape of lethal carbon monoxide. This can result in serious or fatal injuries.**

Only have installation or repairs carried out by personnel trained by the manufacturer.

Follow all installation and repair instructions.

Observe all warnings.

All necessary technical documentation, tools and equipment must be available in the vehicle.

**ATTENTION!**

Malfunctions or appliance damage possible due to frost!

If the fresh water in the heating circuit freezes, the appliance may be damaged.

If there is a risk of frost, the fresh water must be drained from a heating system with a plate heat exchanger. The heating system must never be operated without a glycol mixture!

**ATTENTION!**

Failure to observe the following installation conditions will result in the loss of warranty and liability claims.

The statutory regulations for installation must be complied with.

If the heater is to be operated in a separately installed mobile heating system, an installation plan must always be submitted to SCHEER for approval beforehand. **If this is not available, installation is not permitted.**

**ATTENTION!**

Pay attention to the installation conditions of the respective vehicle type.

The heater should be installed as low as possible to ensure automatic venting of the heater and circulation pump. This applies in particular to circulation pumps that are not self-priming.

The heater can also be installed in a storage compartment. The storage compartment must be sufficiently ventilated from the outside so that a maximum temperature of 85 °C is not exceeded in the installation box. During installation, the space required for maintenance accessibility (e.g. removal of the burner) should be taken into account.

## ATTENTION!

SCHEER accepts no liability for defects and damage caused by installation by untrained personnel.

## General information before installation

In preparation for the installation of the heating system, the most important instructions are described below to ensure the smooth installation and operation of the heating system.

It is recommended that you follow the steps below before installing the heater.

All SCHEER heaters for mobile applications can be operated with closed, pressurized or open, unpressurized heating circuit installations. The closed, pressurized installations are advantageous because they eliminate the need to constantly check the heating fluid at the expansion tank. The antifreeze cannot evaporate and venting the system is very simple.

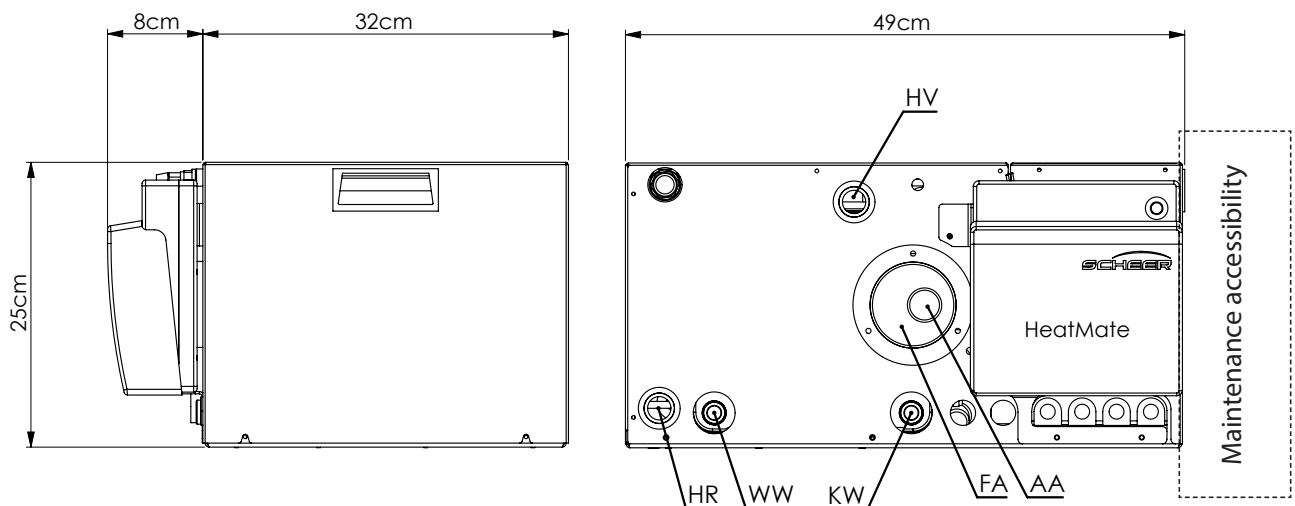
## Accessibility

**In general, ensure that the side connections and the maintenance cover of the burner (front side) are sufficiently accessible. At least 25 cm of free space is required in front of the appliance in order to be able to remove the burner of the heater for maintenance (see illustration).**

Good accessibility to the burner is achieved if the heater is positioned facing the storage compartment flap. This allows the burner to be removed to the front without hindrance.

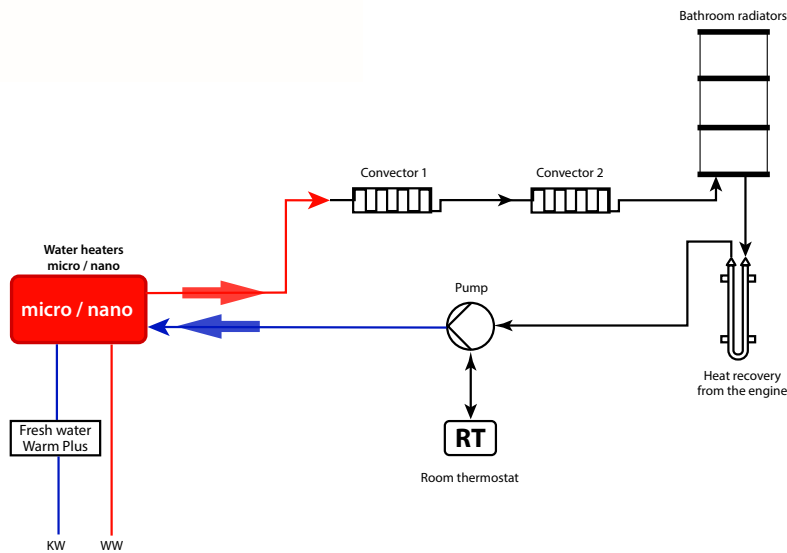
The flue gas and the fresh air intake run pipe-in-pipe and are connected at the side. The minimum bending radius is 12 cm.

## Dimensions

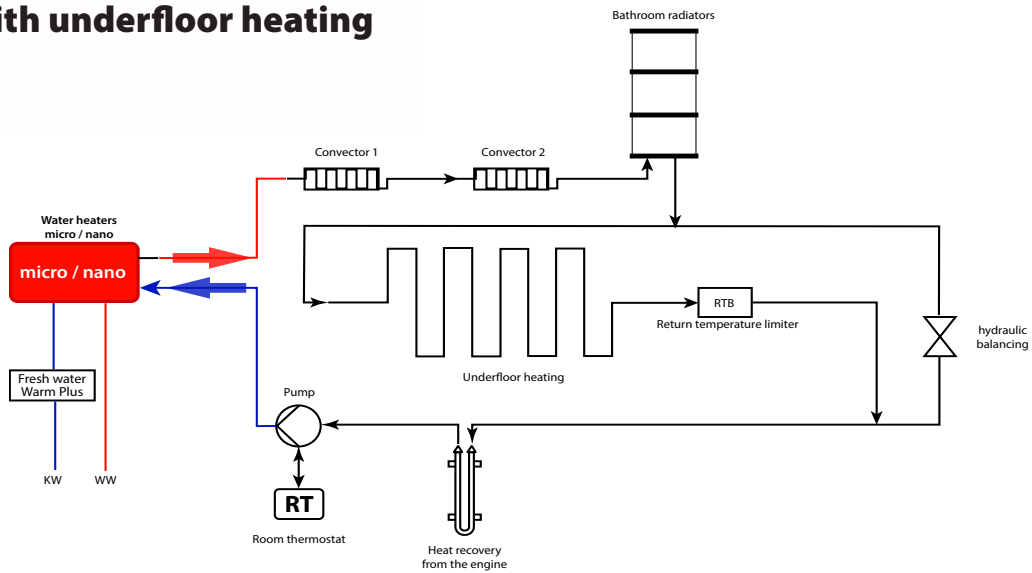


Abbreviation	Description	Connection
HV	Heating water – supply	G1/2" female thread
HR	Heating water – return	G1/2" female thread
KW	Fresh water – inlet	G1/2" female thread
WW	Fresh water – outlet	G1/2" female thread
AA	Exhaust connection	Ø35mm
FA	Combustion fresh-air inlet	Ø75mm

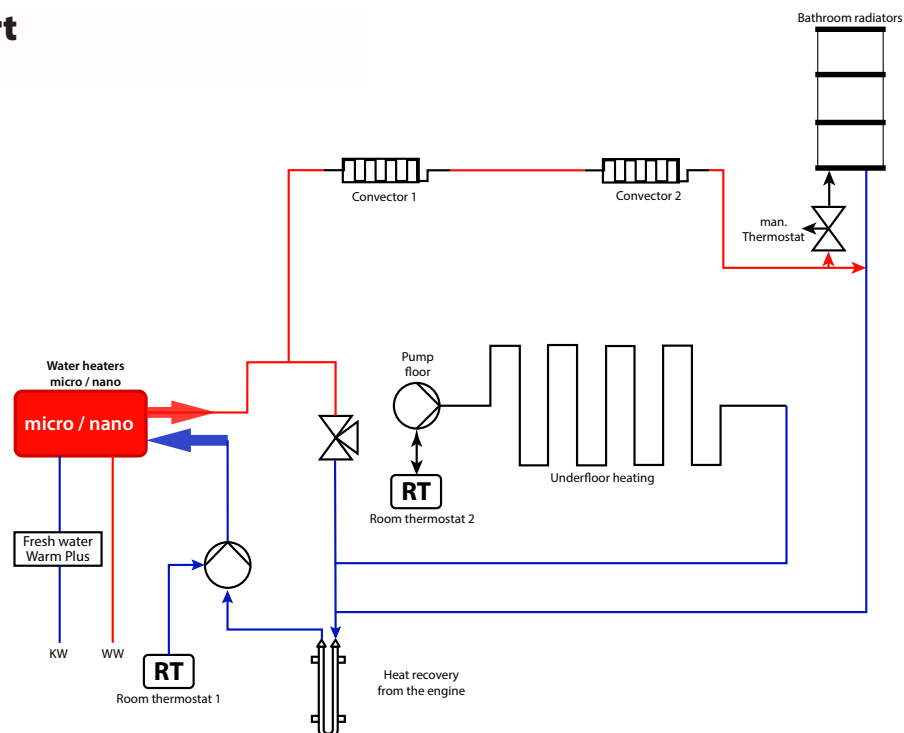
## Basic



## Base with underfloor heating



## Comfort





## Installation

A pipe system approved for heating systems can be used for the installation of the heating system, e.g. plastic composite pipes: Plastic composite pipes, aluminum composite pipes, copper or stainless steel pipes and EPDM hoses. Please observe the installation instructions of the respective pipe system manufacturer (e.g. bending radii, material compatibility with glycol, etc.).

### **Plastic hose nozzles tend to be brittle and should be avoided!**

For easy filling, a double-T connection with shut-off options should be provided in the heating circuit flow (directly on the heater). Good accessibility is a prerequisite for rapid filling of the heating system.



## Vibration damper

In order to dampen the vibrations to which the heater is exposed in the vehicle, installation on vibration-damping components is recommended, e.g. a damping mat (not included in the scope of delivery).

## Fuel supply

A diesel fuel line with an internal diameter of at least 4 mm must be laid from the tank to the heater. The diesel must never be withdrawn below the reserve level of the vehicle. If necessary, observe the installation of tank sensors etc. The fuel line intended for the heating system should be flexible and must be approved for diesel fuel. The maximum length of the diesel line must not exceed 10 m. No additional fuel pump is required.

## Positioning the flue gas system

The positioning of the exhaust system must be considered before installation. If the exhaust gas is to be installed underneath the vehicle, make sure there is sufficient space (see section "Accessibility").

## Power supply

- The components of the burner require 230 V alternating current. A suitable inverter (at least 300 W) is required for this. The "HeatMate®" heater control unit is supplied with 9 / 36 VDC.
- All SCHEER heaters for mobile applications are equipped with a 3kW heating cartridge (230V) and can be operated in hybrid mode (diesel and / or electric). The heating element must be fused with 16 A.
- Equipotential bonding to earth from the vehicle must be provided

## Installation steps

**The following installation instructions for the heater serve as general recommendations from the manufacturer. Installation may only be carried out by qualified specialists. In the event of deviating installation steps due to specific local conditions, careful adaptation to the respective framework conditions by qualified specialists is required.**

The exhaust gas installation described in step 7 is shown as an example for exhaust gas routing underneath the vehicle and with a silencer for external installation and exhaust pipe end piece.

## Step 1: Preparing the flue gas floor duct

A through hole (75 mm) must be drilled through the floor or the support. When positioning, ensure that the minimum bending radius of the flue gas or fresh air hose is observed in accordance with the manufacturer's specifications (12 cm). The installation must be carried out taking into account the exact installation location and the flue gas/fresh air connections on the appliance.

The flue pipe should be laid on a continuous slope to prevent condensate from flowing back.

## Step 2: Installing connections (before pipe installation) in the dismantled state



Remove the fitted blanking plugs from the heating and DHW connections and screw in and seal the installation connections on the heating system. (Connections depend on the selected pipe system)

The supplied connection and accessory set already includes two hose connections for 22 mm hoses (e.g. Alde hoses) for flow and return, as well as the air vent.



The automatic air vent must be connected to the air vent connection of the heater using a suitable angled cable (not included in the scope of delivery). Make sure that the air vent is installed in an upright position above the heater to ensure proper functioning. Air and slightly escaping liquid is discharged through the transparent hose.

If there is not enough space available, it is possible to insert a manual air vent into the air vent connection. Automatic and manual air vents are included in the scope of delivery.



A connection suitable for the fuel line used must be used on the fuel filter (3/8" female thread) (not included in the scope of delivery). A recommended internal diameter of 4 mm is specified for the fuel line.

The heater requires a separate, direct fuel withdrawal from the tank. Integration into the supply lines of other consumers is not permitted in order to ensure operational safety.

A 4 mm hose connection is included in the scope of delivery.

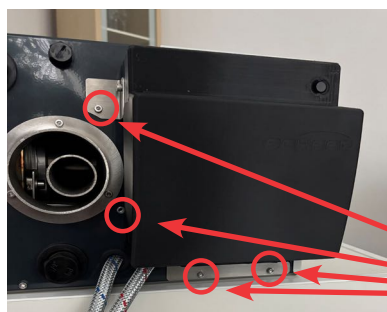
	Art.-No.
Fuel filter	0405200
Filter cartridge	040104



#### Step 4: Dismantling the HeatMate® control unit (if necessary)

The HeatMate® can be dismantled if this makes installation easier or if the HeatMate® needs to be housed separately.

To do this, the HeatMate® electrical connectors of the heater must be disconnected. The fixing screws that secure the HeatMate® to the heater must then be removed.



Remove screws

#### Step 5: Positioning and attaching the heater



The heater must be placed at the intended installation location in a vibration-damped position (see section "General instructions before installation").

The heater is then fixed in place using the fixing brackets supplied.

The fixing brackets can be mounted flexibly at the appropriate screw points on the housing. It must be ensured that the heater is properly secured with at least three fixing brackets to ensure a stable installation.

#### Step 6: Potential equalization on the heater

Equipotential bonding must be attached to a screw connection on the appliance. It not only ensures safety, but also increases the service life of your heating system as electrochemical corrosion is reduced.

#### Step 7: Exhaust gas floor duct



##### Example: Flue gas duct downwards

The flue gas floor duct (art. no. 0186150) must be guided through the prepared hole in the floor, ensuring that the grille is facing downwards. The duct is then securely screwed to the floor using the fixing holes provided.

### Step 8: Apply silicone to the exhaust pipe



The high-temperature silicone red tube 32 ml (art. no. 091007) must be reapplied around the exhaust pipe micro (art. no. 018627). This ensures that the exhaust system is optimally sealed.



### Step 9: Slip the fresh air hose over the exhaust pipe

The exhaust pipe (art. no. 14-N000) must be routed through the fresh air hose (art. no. 014120). The hose clamps (art. no. 014250) must be pushed over the fresh air hose. This can no longer be done after the flue pipe has been connected.

An exhaust pipe end piece (art. no. 0754695) is recommended to prevent small animals from entering the system. When installing a silencer as an intermediate piece, an approx. 10 cm long flue pipe must be used.

### Step 10: Connecting the flue pipe to the heater



The flue pipe must be attached to the heater using a hinge bolt clamp (art. no. 014244). The additional use of high-temperature silicone is recommended for optimized sealing.

Hinge pin clamp

### Step 11: Connect the fresh air hose to the heater



Push the fresh air hose over the connection on the heater and secure with a hose clamp.

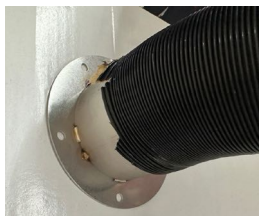
To install a silencer inside the vehicle, the exhaust pipe and the fresh air hose must already be connected to the silencer in the vehicle. The special silencer works according to the pipe-in-pipe principle, allowing it to be easily integrated into the exhaust duct inside the vehicle. The fresh air hose is then connected to the floor duct and the exhaust pipe is discharged to the outside.

### Step 12: Insert the flue pipe through the floor duct



Guide the flue pipe through the center of the floor duct.

### Step 13: Connect the fresh air hose to the floor duct



Push the fresh air hose over the outer pipe of the flue gas floor duct and secure it with the hose clamp (from step 7).

### Step 14: Attach the silencer under the vehicle

The silencer (item no. 070592) must be mounted on the chassis or in a suitable position under the vehicle using the mounting brackets and securely fastened.

### Step 15: Connect the exhaust pipe to one end of the silencer



The exhaust pipe must be pushed onto a connection of the silencer and then securely fastened with the previously pushed-on hinge bolt clamp.

### Step 16: Connecting the exhaust pipe end piece



The section of exhaust pipe removed in Step 7 must be slid over the open end of the muffler and securely fastened using a hinged bolt clamp.

The exhaust pipe end piece should be inserted into the exhaust pipe with the pipe side first, until it reaches the perforated section, and then secured with a hinged bolt clamp.

Depending on the chosen distance between the muffler and the exhaust end piece, it is recommended to additionally secure the exhaust end piece to the chassis to prevent it from falling off due to vibrations.

### Step 17: Connect the cables

Slide the piece of exhaust pipe cut off in step 7 over the free end of the silencer and fix it securely with a hinge bolt clamp. Insert the exhaust pipe end piece with the pipe side into the exhaust pipe until it reaches the hole structure and then secure it with a hinge bolt clamp.

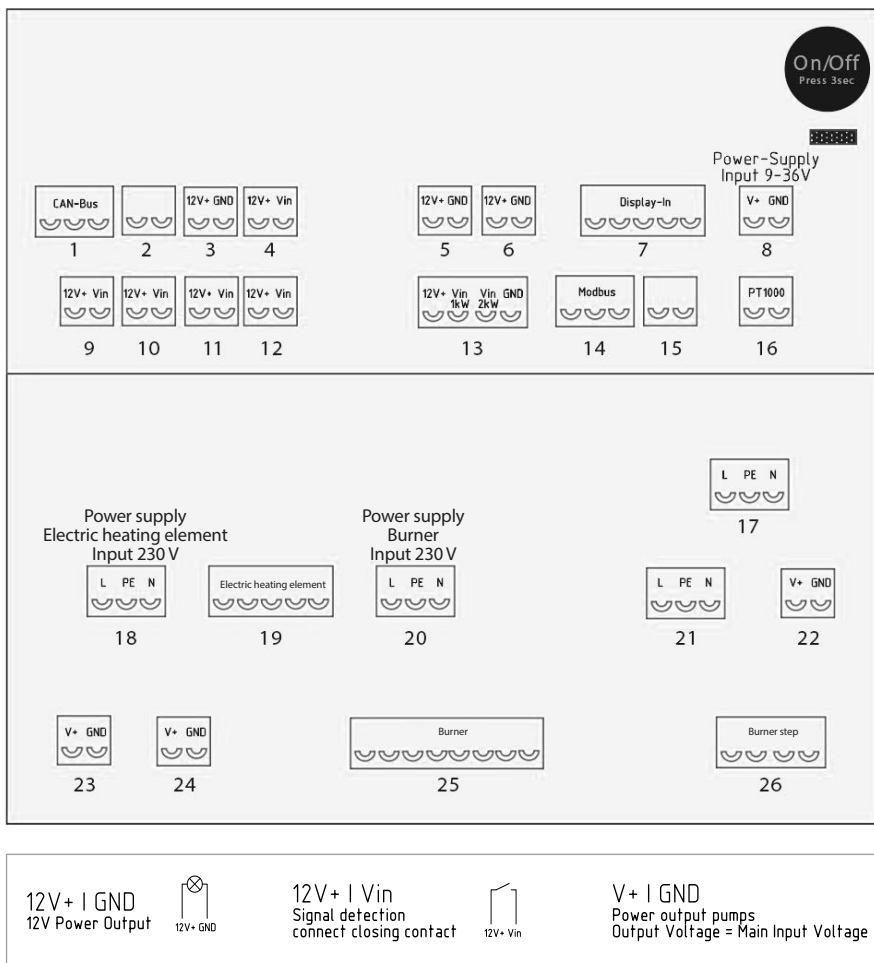
Depending on the distance selected between the silencer and the exhaust pipe end piece, it is recommended that the exhaust pipe end piece is also fixed to the chassis to prevent it from falling down in the event of vibrations.

Designation	Art.-No.
Exhaust pipe	14-N000
Exhaust pipe end piece	0754695
Exhaust floor bushing	0186150
Fresh air hose	014120
Hose clamp	014250
Hinge bolt clamp	014244
Silencer	070592

## Step 18: Installing the HeatMate® control unit

If the HeatMate® was previously removed, it must be reattached to the heater in this step.

The electrical connectors must be connected to the connections on the heater. Follow the installation instructions in the illustration. Make sure that all connectors engage correctly to ensure a reliable electrical connection.



1. CAN bus
2. not assigned
3. Thermal stop
4. On/Off potential-free (close 3sec=on/off)
5. Inverter wake-up
6. Fault message
7. Display
8. DC power supply
9. Fresh water warm plus
10. Auto tank control
11. Room thermostat 1
12. Room thermostat 2
13. Electric heating on/off (close Vin(1kW) for 1kW, close Vin(2kW) for 2kW, both close for 3kW)
14. Modbus
15. not assigned
16. Boiler temperature
17. Burner preheating
18. AC-In electric heating element
19. Output electric heating element
20. AC-In burner
21. Safety temperature limiter
22. Circulation pump
23. Pump heating circuit 2
24. Pump heating circuit 1
25. Burner
26. Burner stage

## Step 19: Connecting the power supply

The heater is equipped with two separate 230 V power supplies, which are labeled "Mains" and "Electric heater". The electric heater can therefore be operated independently of the burner and control unit from a separate voltage source. This configuration is particularly advantageous if the battery capacity is limited, as in this case the electric heater can only be supplied from outside the vehicle.

A 6A fuse is required for "Mains", while the "E-heater" must be fused with 16A, as loads of up to 3kW are drawn here.

In addition to the control unit, the circulation pump (not included in the scope of delivery) and an internal circulation pump are also supplied via the 9-36 VDC supply. The necessary fuse protection must therefore be designed for 40 W plus the power of the pumps used.

## Filling & venting the system

### Antifreeze

The heating system must be filled with a water-antifreeze mixture to prevent system components from freezing. Commercially available antifreezes, which are produced on the basis of crude oil, are generally labeled as "harmful and irritating". We therefore recommend the use of climate and environmentally friendly plant-based antifreezes (art. no. 190094), which have been specially developed for heating systems. These antifreezes are not hazardous to health and pose no danger to the user or the environment.

To determine the amount of antifreeze required, roughly calculate the volume of the heating system itself as well as the volume of the installed pipes and the consumers used (e.g. towel dryer, water-air heat exchanger, convectors). Also allow for a reserve of at least 10 % to compensate for leaking quantities and residual quantities in the storage tank. In an open, unpressurized system, this is an expansion tank; in a closed, pressurized system, it is an expansion tank.

### Flushing unit



The use of a flushing device is recommended to fill the system. This contains a powerful pump and a storage tank for filling with heating fluid. This type of flushing device is also known as a "solar flushing device" or "filling station".

Fill the antifreeze into the storage tank of the flushing device according to the manufacturer's instructions. If a pressurized system is being filled, the normal operating pressure is 1.5 bar.

### Step 1: Connect the cables

Connect the two lines of the flushing device to the double T connection on the heating system. Make sure that the line of the flushing pump is connected in the direction of the heating circuit and the line that leads back to the storage tank is connected to the connection in the direction of the heating appliance. This ensures that the liquid first circulates through the installation via the flow pipe and finally through the boiler.

### Step 2: Instructions for flushing the system

#### Preparation:

Make sure that all valves in the heating circuit are fully open and that there are no blockages or obstructions. In systems with two heating circuits, it is possible to flush only one heating circuit first, while the other is excluded from the flushing process by shutting it off. The second heating circuit can then be flushed separately.

Before you start the circulation, you must shut off the expansion vessel in open (unpressurized) systems to prevent overflow!

#### 1. Commissioning the flush:

Start the flush pump and slowly open the shut-off valves on the double T-piece to the heating circuit to avoid sudden pressure peaks in the heating pipes. Ensure that the maximum operating pressure of the system is not exceeded during this process.

#### 2. Flushing duration and observation:

Flushing takes time. As soon as the liquid has flowed through the entire heating circuit, returned to the storage tank and all air has been flushed out, allow the flushing to run continuously for around 30 to 60 minutes. Make sure that no more air bubbles are visible in the storage tank of the flushing device. This procedure ensures thorough flushing of the heating circuits and optimizes the functionality of the system.

#### 3. Ending the flushing process:

If no more air bubbles are visible in the return line, stop the circulation pump and at the same time shut off the lines leading from the flushing device and the lines leading to the flushing device in the double T-piece. This will prevent the static pressure from causing heating fluid to run back into the storage tank and air to be drawn into the system.

Disconnect the connection to the flushing device.

### Step 3: Venting

First allow the heating system to rest for a few minutes so that air bubbles can collect and settle at the venting points. Then start venting at the lowest point, usually at the heater. If an automatic air vent is installed here, wait until no more air is separated and the hissing noise stops. Continue by opening all other venting points in the system one after the other and releasing the air.

After the first venting, it is advisable to carry out at least one or two further passes to ensure that all air bubbles are removed. If there is still air in the system, it can be helpful to move the vehicle during the process so that any remaining air bubbles are directed to the bleed points. As soon as there is no more air in the system, the line to the expansion tank can be opened.

The venting process requires patience, but a well vented system will ensure proper circulation and prevent problems such as overflowing of the expansion tank or insufficient heat output.

### Step 4a: Establish operating pressure (only for closed systems)

Connect the return-flow line to the flushing unit and, with the pump switched on, slowly build up pressure in the system. Always keep an eye on the pressure gauge. The normal operating pressure is 1.5 bar.

### Step 4b: Adjust the expansion vessel's fill level (open systems only)

Fill the expansion vessel with antifreeze until the liquid reaches the bottom rim of the vessel. Avoid overfilling, because the volume of the heating fluid will expand as it heats up during operation. Small residual air bubbles may also remain in the system and could cause the vessel to overflow.

During operation, when the system is hot, the heating fluid should occupy no more than two-thirds of the expansion vessel to ensure proper function and adequate pressure compensation.

### Step 5: Start circulation and repeat the venting procedure.

Start the circulation pump to put the heating system into operation. If a SCHEER pump is installed and you observe that the pump runs briefly and then stops, this indicates that air is still trapped inside the pump housing. In that case, the pump's built-in dry-run protection intervenes to prevent damage from insufficient fluid supply.

Such behaviour suggests the system may not have been flushed thoroughly. Check the venting and make sure all heating circuits are completely free of air before starting the pump again.



## Commissioning

Ensure that there is enough fuel in the tank for the heater to draw fuel at its pickup point.

**Operating the heater without heating fluid can destroy the unit, so make sure the heater is completely filled before you continue with commissioning.**

Open all valves in the fuel line.

### Step 1: Starting the heater

Press the main switch of the heater to turn it on. The current boiler temperature will be shown on the display. If the error message "Check AC burner" appears during initial commissioning, refer to the "Troubleshooting" section for further instructions.

### Step 2: Start the burner



If the boiler temperature is below 50 °C, a 60-second preheating phase will begin automatically. After this phase, the burner will start automatically.

The fan starts up, and at the same time, the diesel pump begins drawing in fuel. Check the vacuum gauge on the fuel filter. A slight movement is normal, but the needle must not enter the red zone.

Note: If the gauge enters the red zone, this indicates either a blockage in the fuel line or an undersized line diameter, causing excessive suction resistance.



After approximately 10 seconds, the burner enters the ignition phase. If sufficient fuel has not yet been drawn in, the burner will switch to fault mode. This is shown on the HeatMate® display.

Until the target temperature is reached for the first time, the display will show the message "Preheating."

To reset the burner and restart the ignition process, press the reset button. Once the burner has been successfully reset, the red warning light will go out and the startup process will resume.

**Important: Do not press the reset button for longer than 2 seconds!**

Repeat this process as needed until the fuel filter is properly filled. With very long diesel lines, air bubbles may hinder suction. In such cases, frequent resets may be required.

The lower filter bowl containing the filter element must be completely filled. In the upper sight glass, a fuel level of approximately 3 cm must be reached.



**Note: During the suction process, no bubbles or foam should appear in the filter. Some bubble formation is normal during initial commissioning. However, if this does not disappear within 60 seconds, the fuel line must be checked for leaks.**

Once the fuel filter is filled, the burner startup process will begin. The first burner ignition may be slightly uneven due to initial variations in fuel supply. From the second start onwards, the burner should start smoothly and consistently.

### Step 3: Heating up the system

First, heat up the boiler only and continuously monitor the fill level of the expansion vessel. Then open the valves for the circulation of the heating circuits. As you do so, observe the fill level in the expansion vessel — it should rise gradually. A sudden or sharp increase indicates the presence of air bubbles in the system.

Ensure that all areas of the system are heating evenly. If a pipe remains cold beyond a certain point, this may indicate a blockage or trapped air in the line. In such cases, additional venting is required. Refer to "Filling and Venting the System" -> Steps 3–5.

### Step 4: Testing the domestic hot water heating

Draw hot water from a tap or outlet.

### Troubleshooting

	Maintenance Interval
Burner does not start despite frequent resets, diesel filter is empty or insufficiently filled	<ul style="list-style-type: none"><li>Does the vacuum gauge on the filter enter the red zone when starting the burner? -&gt; Fuel line may be blocked; pump cannot draw fuel</li><li>Do bubbles or foam appear in the oil filter when starting the burner? -&gt; Check diesel supply lines for leaks</li></ul>
Domestic hot water is not or not sufficiently heated, and boiler temperature does not drop / burner switches off despite hot water being drawn	<ul style="list-style-type: none"><li>Bleed the heating system. In pressureless, open systems, move the vehicle.</li><li>Check potable water system for leaks</li></ul>
Domestic hot water is not sufficiently heated	<ul style="list-style-type: none"><li>Check flow rate of fresh water -&gt; If necessary, reduce flow (water temperature should be approx. 50 °C)</li></ul>
HeatMate® has reached target temperature, heating circuit remains cold	<ul style="list-style-type: none"><li>Bleed the system; air bubbles in the lines are preventing circulation</li><li>If necessary, flush the system again</li></ul>
Expansion vessel overflows (in open, pressureless systems)	<ul style="list-style-type: none"><li>Check whether the volume of the expansion vessel is sufficient (expansion of 50/50 glycol-water mix approx. 4%)</li><li>Bleed the system (sudden expansion of air bubbles can cause overflow)</li></ul>
Electric heater does not heat	<ul style="list-style-type: none"><li>Check power supply (check automatic shutdown of battery management system)</li><li>Check plug connections</li><li>Check activation on the control unit</li><li>If the system was operated without heating fluid, the electric heater may be damaged due to high temperatures. Contact the manufacturer</li></ul>
Heater produces soot / strong odor	<ul style="list-style-type: none"><li>Is the fuel supply in the filter free of bubbles/foam? If not: check fuel line for leaks</li><li>Is the fresh air supply interrupted or insufficient? Does exhaust enter the fresh air intake? YES: Seal the exhaust system</li><li>Check exhaust valves, if necessary adjust burner settings</li></ul>
Diesel smell near the heating system	<ul style="list-style-type: none"><li>Guide the vent hose of the diesel filter back into the housing of the heater (transparent silicone hose on the fuel filter).</li></ul>

## Troubleshooting

<b>HeatMate® displays the error "Check AC Polarity" after switching on</b>	<ul style="list-style-type: none"> <li>• Check if the 230V power supply is correctly connected (phase to phase).</li> <li>• Rotate the Schuko plug and wait 30 seconds.</li> <li>• Check if the inverter provides a clean 230V potential between L and PE. If necessary, create a bridge from N to PE or adjust the inverter settings accordingly (follow the inverter manufacturer's instructions).</li> </ul>
<b>Device cannot be switched on</b>	<ul style="list-style-type: none"> <li>• Check if a 9–36V power supply is present at HeatMate® (terminal 8) — ensure correct polarity.</li> <li>• After a short circuit in the DC power supply, a fine fuse inside the housing must be replaced. -&gt; Contact the manufacturer. Unauthorized opening of the control unit voids the warranty.</li> </ul>
<b>Heating circuit pumps are not working</b>	<ul style="list-style-type: none"> <li>• The heating circuit pumps are powered by the input voltage (vehicle electrical system) of the HeatMate®. -&gt; Ensure that the pump's voltage matches the HeatMate® input voltage.</li> <li>• Is the pump's dry-run protection active (repeated starting and stopping)? -&gt; Bleed the system.</li> <li>• Are the heating circuits activated via the HeatMate® control panel? -&gt; Check that the LED above the button is illuminated.</li> <li>• Are connected thermostats closing the demand contact?</li> <li>• Ensure that the contact at terminal 9 is not closed (unplug connector).</li> </ul>

# Water heater nano

## Installation instructions

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