



ELDI PREHEATER INSTALLATION GUIDE 2022



CONTROL YOUR CLIMATE

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ON MAY 25th 2018 THE NEW GENERAL DATA PROTECTION REGULATION CAME INTO FORCE. PLEASE TAKE A LOOK AT OUR UPDATED PRIVACY POLICY ON OUR WEBSITE

1. GENERAL

VEHTEC offers the Eldi preheater, an all electric heater for optimum preheating of diesel, hybrid, gas and electric vehicles. This independently operated electric heater with an option of 400V AC or 230V AC power supply is one of our solution for zero emission climate control system without any harmful exhaust gas or noise. Eldi Preheater is an all- in-one heater which comes with an internal circulation pump that doesn't have to rely on the vehicle's own system.

With a heating output of 2-10kW, suitable even for extreme outdoor weather conditions. Our Eldi preheaters have been in the market since 30 years.

The preheater is optionally supplied with a complete kit that includes connection cables of desired lengths and even with a quick power supply connector set to the heater. The inlet line is simply connected in series or parallel to the heating system line with hose fittings according to your measurements.

For optimal heating, Eldi Preheaters can be operated with FleetHeat, a remote-controlled system that activates the heaters based on preset temperature threshold and departure time of the bus. This ensures that the bus has achieved an optimal temperature before it leaves the depot which makes the system an efficient solution while saving money.

2. INSTALLATION

Installation should only be performed by a qualified electrician with materials supplied and approved by VEHTEC AB.

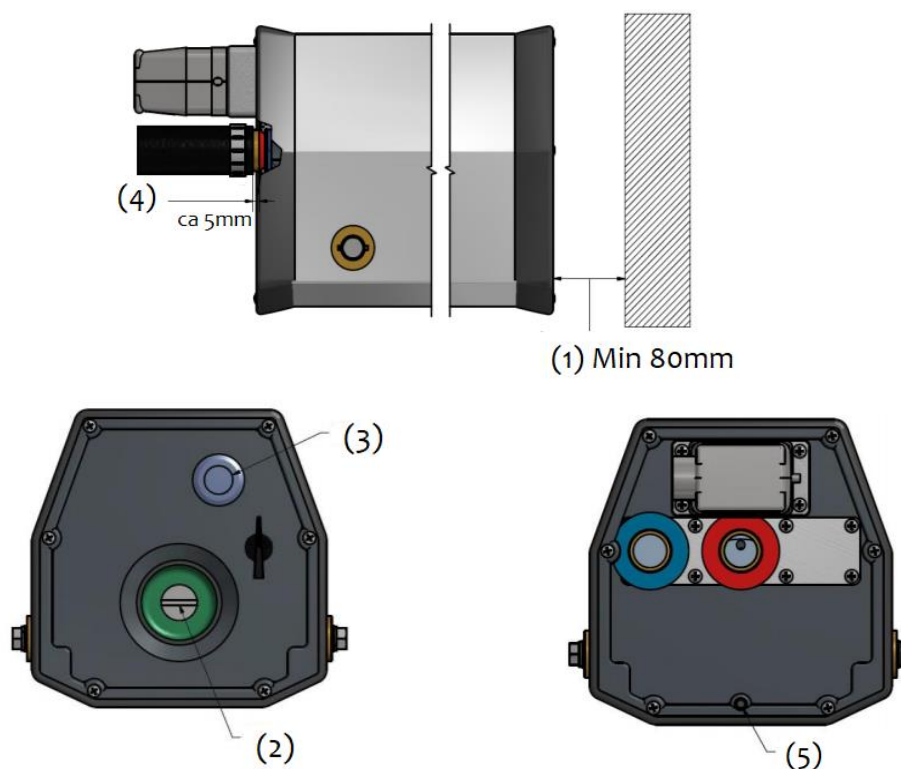
2.1 HEATER PLACEMENT

The heater must be placed in a location where it is protected from any external damage, for example in the engine area or under the seat. The heater should be mounted horizontally using M8 mounting bolts on to the external casing which already has a mounting provision. See the marking "**INSTALL HEATER WITH THIS SIDE UP**" to spot the top of the unit.

The pump side of the heater should not be placed closer than 80 mm to the wall (1). This way you can easily access the pump control screw (2) and also reset the overheat protection (3).

Install the additionally provided 8mm PVC slang in order to discharge possible condensation inside the heater (5).

⚠ Note: If the heater has not been used for a couple of months, make sure the pump is not stuck by losing the first screw (2) and then use a flat screwdriver to make sure the second screw inside can be moved to ensure the pump impeller is not stuck.



2.2 CONNECTION TO HEATING SYSTEM

The heater is connected to the existing heating system of the vehicle and therefore heats both the engine and cabin at the same time. Before connecting the heater to the heating system of the vehicle, make sure to check the direction of flow so that connection is made properly.

When connecting the hoses, always begin with connecting the inlet pipe on the side marked with a blue or black ring (8). Make sure there is a 5mm gap between the colored rings and the hose (4).

To prevent dry-out upon the first start and to ensure there is no air in the heater always let some water flow into the inlet pipe of the heater and out via the outlet pipe before connecting the hose to the outlet pipe. Make sure valves are not closed before activating the heater.



(8)

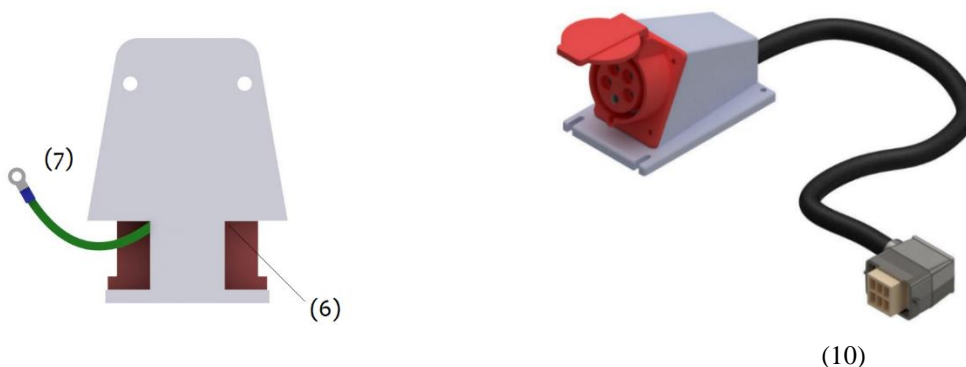
2.3 CONNECTION TO POWER SUPPLY

Type 912320101 is connected to a 230V single phase 16A wall outlet and must be connected to a grounded outlet. [Cable size: 1.5mm²]

Type 912330301 connects to a 230V 3-phase 16A (Norway). [Cable size: 2.5mm²]

All the other models are connected to a 400V three phase 16A power supply. [Cable size: 2.5mm²]

To prevent the power supply cable **(10)** from being damaged always ensure their placement is in such a way that the doors do not press against them and neither any sharp objects get to penetrate or cut into them. The Eldi preheater must be positioned in a way that it is protected against spraying and mechanical damage. Installation of heater can be slightly inclined towards the condensation water drain outlet with 8mm PVC slang as that will allow to clear all the condensed water completely. There is a weak area on the main power socket of extension cable set to make a hole for condensation water **(6)**. When the main power socket does not have a mounting plate, the supplied ground wire with the power socket must be terminated to a scraped and cleaned area on the mounting body **(7)**.



POWER PLUG

912320101 2/3kW 230VAC 16A PLUG

9130301 3/6kW 400VAC 16A PLUG

91761 7,6kW 400VAC 16A PLUG

91981 9,8kW 400VAC 16A PLUG

(FOR NORWAY 912330301 3/6kW 230VAC 3-PHASE 230VAC 4-POLE PLUG)

⚠ NOTE: The internal ground connection must be continuous from the body to the grounded socket. Check that the ground connection is intact with a suitable instrument. The flexible conduit that provides protection for the connection cable between the main power supply and the heater must be routed and secured to avoid contact with hot parts. Pay special attention to the proximity of the unit to the turbocharger and exhaust pipe.

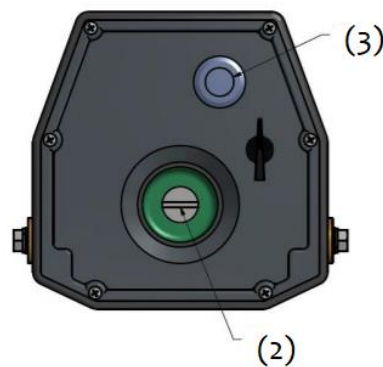
3. SERVICE AND TROUBLESHOOTING

3.1 REGULAR MAINTENANCE

The power supply cable should be examined for signs of damage or aging. Damaged cables must be replaced immediately. Make sure that the ground connection is intact.

When connecting the heater after not being used for a long time, the power supply connector is to be made sure in good condition with clean pins and also check if the pump impeller is stuck by removing the first screw **(2)** which is located on the pump with an appropriate tool and make sure that the pump circulates correctly by rotating the second screw located inside the first screw **(2)** with a flat screwdriver.

3.2 TROUBLESHOOTING



Problem	Solution
The pump is stuck	Try to loosen the first screw (2) that is located on the pump, use an appropriate tool for this. Then use a flat screwdriver to make sure the second screw can be moved.

Problem	Solution
The heater is switched on but the water does not circulate.	<ol style="list-style-type: none"> 1. Make sure there is no air left in the system. This can be done by connecting only the inlet pipe marked with a blue or black ring and then releasing air in the heater before connecting the hose to the outlet pipe marked with a red ring. 2. Check if the pump is not stuck, see above. 3. Make sure the valves are open allowing the water to circulate.

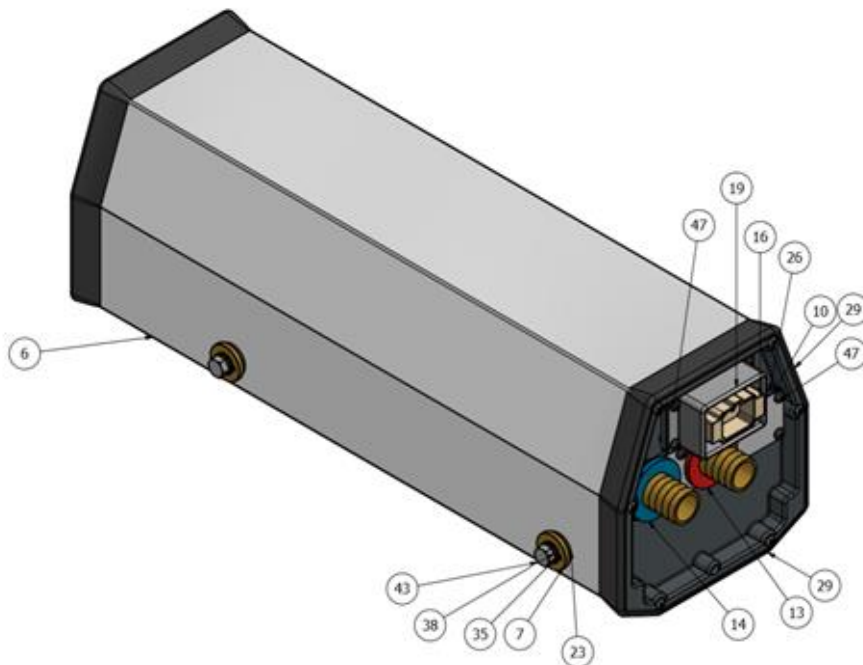
Problem	Solution
The heater does not heat correctly.	<p>The most common reason is due to the tripping of overheat protection switch.</p> <p>If this happens, press the red button (3) located on the back of the heater to activate.</p>

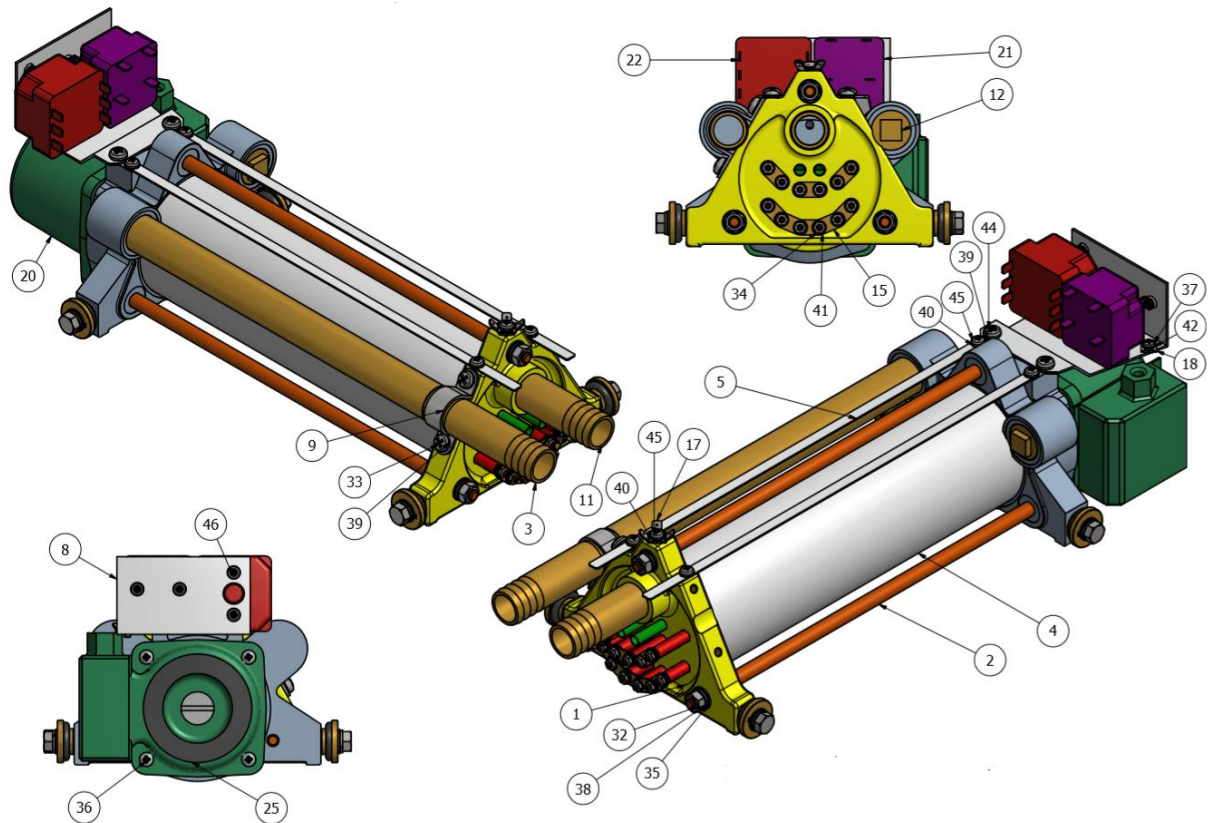
3.3 SERVICE AND REPAIR

To repair the heater you have to take it out from its metal cover **(6)**

How to take out the heater:

1. Remove the 6 screws **(48)** that are attached to the plastic cover on the pipe side.
2. Remove the 4 housing screws **(7)** that attach the heater to the metal cover.
3. Gently disconnect the ground cable located inside of the metal cover.
 - ⚠ **Note:** Be careful not to damage the ground cable.
4. Gently take out the heater from its metal cover.





Replacing the overheat protection

Before replacing the overheat protection:

Check if the overheat protection has tripped, this can be done by pressing the red button. If the button is stuck but goes back to its normal position after pressing it, that means the overheat protection has tripped and is now working again.

1. Remove all the cables connected to the overheat protection
2. Remove the temperature sensor from the tube next to heating element
3. Loosen the 2 screws on the plate **(8)** to replace the overheat protection


Replacing the thermostat

1. Remove all the cables connected to the thermostat
2. Remove the temperature sensor from the tube next to heating element
3. Loosen the 2 screws on the plate **(8)** to change the thermostat

Replacing the O-rings

Before replacing the O-rings:

If the leakage comes from the pipe side and you see water near the pipes, make sure that the hoses are connected properly. The leakage may come from here and not from the heater itself. To prevent leakage, be careful not to use the heater when not filled with water as dry heating may cause the O-rings to get damaged.

1. Remove the 6 screws **(48)** that are attached to the plastic cover on the pipe side
 2. Remove the 4 housing screws **(7)** that attach the heater to the metal cover
 3. Gently disconnect the ground cable located inside of the metal cover
-  **Note:** Be careful not to damage the ground cable
4. Gently take out the heater from its metal cover
 5. Disconnect the element cable from the element **(1)**
 6. Remove the M8 bolts **(32)** from the element **(1)**
 7. Open the heater by removing the pump house **(28)** , heating element attached to the brass gavel **(1)** and heating pipe **(4)**

 **Note:** Be aware of glycol and water dripping out

8. Carefully clean the area O-rings are placed, remove all the residue
9. Always replace both O-rings at the same time
10. Make sure the mountings for the O-ring are clean and there are no visible cracks
11. Gently place the O-ring in its mounting
12. Clean the heating pipe **(4)** before putting it back and continuing mounting the heater.
13. Do not use torque more than 20Nm to tighten the M8 bolts **(32)** from the element **(1)** side when reattached
14. Reassemble all the dismantled parts to finish the repair work

Replacing the Pump

Before replacing the pump:

It is possible that the pump is just temporarily stuck.

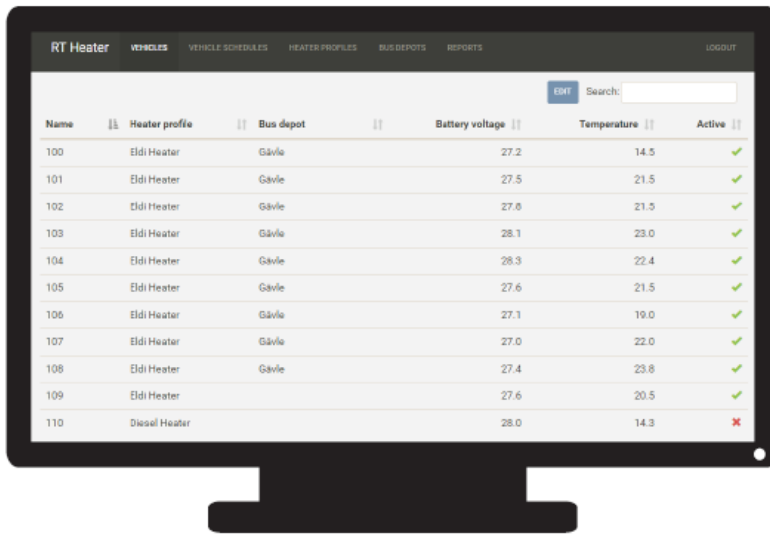
Check this by following the instructions in the troubleshooting section.

1. Disconnect the pump cable from the pump **(20)**
2. Loosen the 4 screws **(36)** that mounts the pump **(20)** on the pump house **(28)**
3. Carefully clean the area where you place the pumps O-ring.
4. There are 2 types of O-rings provided, use the right one based on the pump house **(28)**
5. Use kit B for the currently manufactured pump house **(28)**
6. Use kit A for outdated pump house **(28)** version
7. Gently place the O-ring in place and mount the new pump.

4. AFTERMARKET SPARE PARTS

Item	Parts number	Description
1	919820102	Element 9,8 kW
	917620102	Element 7,6 kW
	916020102	Element 6 kW
	913020102	Element 3 kW
3	910920416	Intake Pipe 9,8 kW / 7,6 kW
	910920417	Intake Pipe 9,8 kW / 7,6 kW Threaded
	910620416	Intake Pipe 6 kW
	910620417	Intake Pipe 6 kW Threaded
	910320416	Intake Pipe 3 kW
	910320417	Intake Pipe 3 kW Threaded
4	910920401	Heating Pipe 9,8 kW/7,6 kW
	910620401	Heating Pipe 6 kW
	910320401	Heating Pipe 3 kW
11	910020430	Outlet Pipe
	910020431	Outlet Pipe Threaded
16	910020379	Pin Connector
19	910020327	Electric Fitting
20	910000305	Pump
21	910020304	Thermostat
22	910020303	Overheat Protection
24	910020230	O-Ring 89
28	910020157	Pump House
		Inner Cable Harness Package 9,8 kW / 7,6 kW
		Inner Cable Harness Package 6 kW
		Inner Cable Harness Package 3 kW

5. FLEETHEAT REMOTE CONTROL FOR ELDI HEATER



The screenshot shows a web interface for 'RT Heater' with a navigation menu including 'VEHICLES', 'VEHICLE SCHEDULES', 'HEATER PROFILES', 'BUS DEPOTS', and 'REPORTS'. A search bar is visible. The main content is a table with the following data:

Name	Heater profile	Bus depot	Battery voltage	Temperature	Active
100	Eldi Heater	Gävle	27.2	14.5	✓
101	Eldi Heater	Gävle	27.5	21.5	✓
102	Eldi Heater	Gävle	27.0	21.5	✓
103	Eldi Heater	Gävle	28.1	23.0	✓
104	Eldi Heater	Gävle	28.3	22.4	✓
105	Eldi Heater	Gävle	27.6	21.5	✓
106	Eldi Heater	Gävle	27.1	19.0	✓
107	Eldi Heater	Gävle	27.0	22.0	✓
108	Eldi Heater	Gävle	27.4	23.8	✓
109	Eldi Heater	Gävle	27.6	20.5	✓
110	Diesel Heater		28.0	14.3	✗



Eldi heating system can be remotely operated, which gives the bus operators complete control over the temperature of the vehicle and battery level ensuring that the bus can leave the depot under the optimum condition. FleetHeat also enables the bus operators to monitor the amount of fuel burned by the diesel heaters during operational hours of the buses. There are also other features in Fleetheat for monitoring the production of solar power for vehicles with integrated solar panels on the roof of the bus, this system solution is part of VEHTEC solar power system which also includes a solar charge controller.

The Intelligent FleetHeat unit can make operations of various systems energy efficient with customizable functions that enables the module to integrate universally. This system has enabled bus operators to have a control over cost savings during the daily operations by making the systems onboard energy efficient.

FleetHeat gathers information on local weather conditions and automatically adapts the heating requirements for each bus and maintains a predefined temperature.

FleetHeat support for preheating the buses provides the drivers with comfort which is ensured from the beginning of the shift and gives a chance to start the transport route picking up passengers on a warm bus.