



Greenline HT Plus C and E



User Guide

Art. no: 290410-9

Version: 1.0



Thank you for choosing a heat pump from IVT Industrier

We hope that our heat pump meets your expectations and gives you many years of energy saving. We want you and your family to enjoy a good economy at the same time as you actively safeguard the environment. We have taken today's demands on heat pumps into consideration and believe that your Greenline HT Plus will give you many useful functions in the future. Your heat pump features an advanced control unit that monitors and controls the temperature in the house and contributes towards improved overall economy. The heat pump Greenline HT Plus has, for example, a holiday function, that's to say the heat pump can be set at a "low level" while you are away on holiday.

IVT is the leading heat pump manufacturer in the Nordic Countries. More than every second heat pump comes from IVT. We have worked with solutions to reduce energy consumption on the environment's terms for more than 30 years. Today we can present the widest range of heat pumps for efficient energy saving in all types of housing and properties.



A handwritten signature in dark ink, appearing to read 'Johnny Wärnelöv'.

Johnny Wärnelöv
Managing director IVT Industrier AB

Manual for Heat pump Greenline HT Plus C and E
IVT Industrier AB, 2004-06-27
Article number: 290410-9
Version 1.0

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For the user

Important information

The heat pump Greenline HT Plus represents a new generation of heat pumps from IVT Industrier. It contains numerous functions to control the temperature and production of hot water in the house. The control unit Rego 637 is the brains of the heat pump. Rego 637 includes a control and monitoring function that stores important settings about the heat pump's operation and maintenance. The settings are made by the installer and the user via a control panel on the front of the heat pump. Settings intended for the user, are presented under the headings *Basic functions* and *Extra functions*.

When the heat pump has been installed and started there are a number of points you should check regularly. This may concern an alarm triggering or performing basic maintenance actions. First of all you should perform these actions yourself. This manual describes each step in detail. If the problem remains you should contact your dealer.



Note

It is important as the user that you read through this chapter. Under no circumstances may the user make settings that are designed for the installer. This can cause serious malfunction of the heat pump.

This is how your heat pump works

The heat pump collects stored solar energy

The heat pump Greenline HT Plus represents a new generation of heat pumps from IVT Industrier. The heat pump has been manufactured for easy and reliable use as well as to provide your house with inexpensive and environment friendly heating. The easiest way to describe how a heat pump works is to say it works like a refrigerator, however, the other way round. In a refrigerator heat is moved from the inside to the outside. In a heat pump heat stored in the ground, rock or water, is moved into the house. The heat pump collects a few degrees of the stored solar energy. The heat is led into the house via a hose. The temperature is then increased in the heat pump and the heat is distributed to the house's heating system.



Rock heat



Soil heat



Lake heat

Technology in and around the heat pump

The heat pump consists of four main parts:

1. **Evaporator**
Evaporates the refrigerant to gas and at the same time transfers the heat from the heat transfer fluid to the refrigerant circuit.
2. **Condenser**
Condenses the gas to fluid again and transfers the heat to the heating system.
3. **Expansion valve**
Lowers the pressure of the refrigerant.
4. **Compressor**
Increases the pressure of the refrigerant.

These four main parts are linked in three circuits. A refrigerant circulates in the heat pump, which in some parts of the circuit is in a liquid state and in other parts in a gas state. Read more about the properties of the refrigerant in the sidebar to the right.

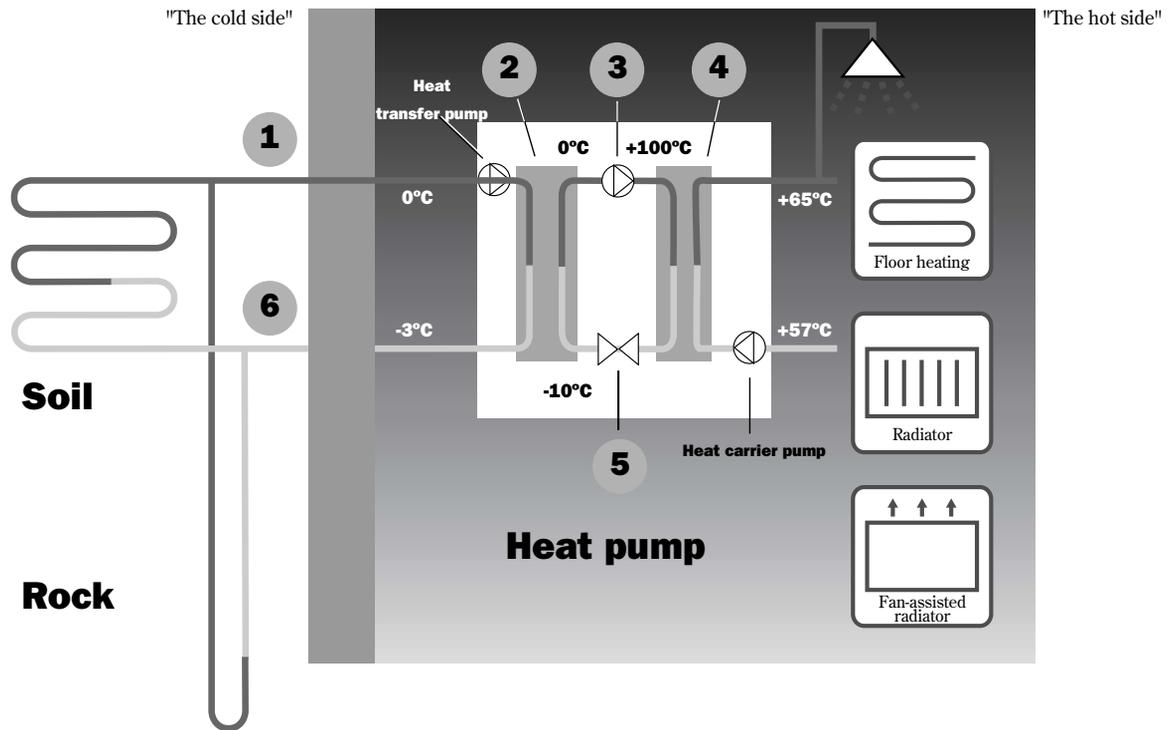
See the detailed description of the technologies used in the heat pump on the next page.



Note

Boiling point in relation to the pressure:

The boiling point of different liquids varies with pressure, the higher the pressure, the higher the boiling point. For example, water boils at +100°C at normal pressure. Double the pressure and water boils at +120°C. Half the pressure and water then boils at +80°C. The refrigerant in the heat pump acts in the same way, the boiling point changes when the pressure changes. However, the boiling point of the refrigerant is as low as approximately -40°C at atmospheric pressure. Consequently, it is also suitable for low heat source temperatures.



- 1 Heat transfer fluid in. A hose is connected here that collects the stored solar energy from, e.g., the soil or rock. The hose contains a heat transfer fluid, which is a mixture of water and anti-freeze. The fluid collects the heat from the rock and with the help of the HTF pump leads it into the heat pump and the evaporator. The temperature is then approximately 0°C.
- 2 In the evaporator the heat transfer fluid meets the refrigerant. At this stage the refrigerant is in a fluid state and is at approximately -10°C. When the refrigerant meets the zero degree heat transfer fluid it starts to boil. It then forms a vapour, which is led into the compressor. The temperature of the vapour is 0°C.
- 3 The pressure of the refrigerant increases in the compressor and the vapour temperature rises from 0°C to approximately +100°C. The warm gas is then forced into the condenser.
- 4 The condenser is the heat pump's heat emitting part. Here the heat is transferred to the house's heating system (radiators and floor heating) and the hot water system. The vapour is cooled in the condenser and becomes fluid. The pressure in the refrigerant is still high when it is led on to the expansion valve.
- 5 The refrigerant pressure is then lowered in the expansion valve. At the same time, the temperature also drops to approximately -10°C. When the refrigerant has passed through the valve and the evaporator it changes to vapour again.
- 6 In heat transfer fluid out, the heat transfer fluid is led out from the heat pump to the rock to collect new stored solar energy. The temperature of the fluid is approximately -3°C.

Component parts of the heat pump

IVT Greenline HT Plus C

Three-way valve

The valve switches between heating the heating water and hot water.

Hot water heater

The cylinder is double-shelled and holds approximately 165 litres of hot water and 60 litres of the heating water.

Electric cassette

The electric cassette is used to provide extra output in cold weather conditions, with large water consumption and at hot water peaks.

Reset button

Press in the button if the overheat protector on the electric cassette has tripped. The button is located on the side.

Condenser

The condenser condenses the vapour to fluid again and transfers the heat to the heating system.

Heat carrier pump

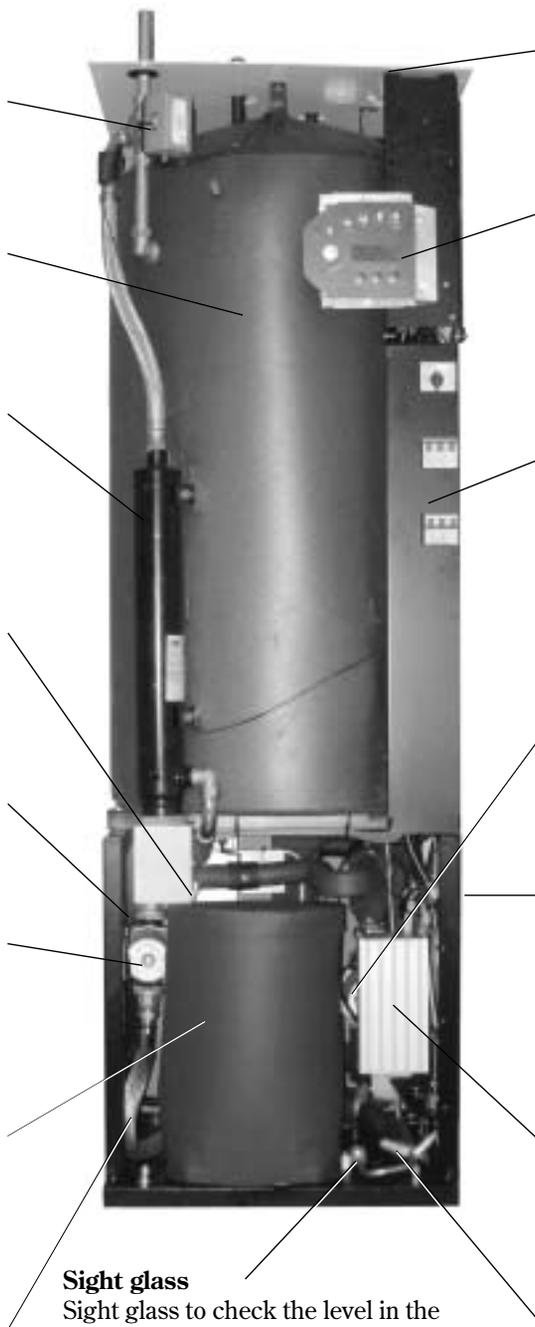
The pump ensures the heating water circulates within the heating system.

Compressor

The compressor increases the pressure of the refrigerant. The temperature of the vapour increases from 0°C to approximately +100°C. The compressor is insulated to decrease the noise level.

Flexible hoses

The hoses counteract vibrations in the heat pump.



Socket

Connections for the mains supply as well as sensors.

Control panel

The control panel has a background lit menu display with four rows of text information, three buttons and a dial.

Distribution box

The distribution box is enclosed. It houses a reset function for the motor cut-out as well as miniature circuit-breakers (MCB) for the heat pump and electric cassette.

Heat transfer fluid pump

The pump is insulated and features an anti-corrosive finish. It ensures the heat transfer fluid circulates from, e.g. the rock to the heat pump.

Evaporator

The evaporator evaporates the refrigerant to gas and transfers heat from the heat transfer fluid to the refrigerant circuit (behind the heat pump).

Control unit Rego 637

The control unit is enclosed. It controls and monitors all heat pump functions.

Expansion valve

Lowers the pressure of the refrigerant that is to enter the evaporator and collect energy from, e.g. the rock.

Sight glass

Sight glass to check the level in the refrigerant circuit. Air bubbles must not form in the sight glass when the heat pump is running. However, there might be bubbles when the heat pump is started and stopped.

IVT Greenline HT Plus E

Three-way valve

The valve switches between heating the heating water and hot water.

Particle filter

The filter can be opened for easy cleaning. It also has a shut off function.

Electric cassette

The electric cassette is used to provide extra output in cold weather conditions, with large water consumption and at hot water peaks.

Reset button

Press in the button if the overheat protector on the electric cassette has tripped. The button is located on the side.

Condenser

The condenser condenses the vapour to fluid again and transfers the heat to the heating system.

Heat carrier pump

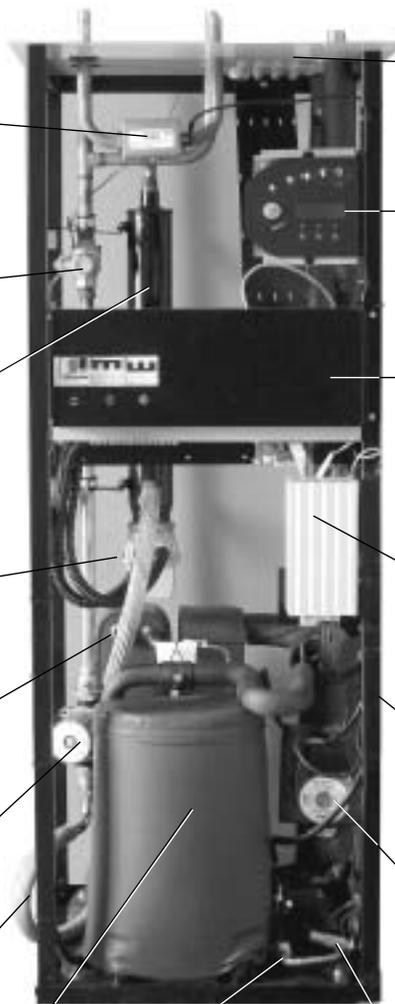
The pump ensures the heating water circulates within the heating system.

Flexible hoses

The hoses counteract vibrations in the heat pump.

Compressor

The compressor increases the pressure of the refrigerant. The temperature of the vapour increases from 0°C to approximately +100°C. The compressor is insulated to decrease the noise level.



Socket

Connections for the mains supply as well as sensors.

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The control panel has a background lit menu display with four rows of text information, three buttons and a dial.

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The control unit is enclosed. It controls and monitors all heat pump functions.

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The evaporator evaporates the refrigerant to gas and transfers heat from the heat transfer fluid to the refrigerant circuit (behind the heat pump).

Heat transfer fluid pump

The pump is insulated and features an anti-corrosive finish. It ensures the heat transfer fluid circulates from, e.g. the rock into the heat pump.

Expansion valve

Lowers the pressure of the refrigerant that is to enter the evaporator and collect energy from, e.g. the rock.

Sight glass

Sight glass to check the level in the refrigerant circuit. Air bubbles must not form in the sight glass when the heat pump is running. However, there might be bubbles when the heat pump is started and stopped.

Control unit Rego 637

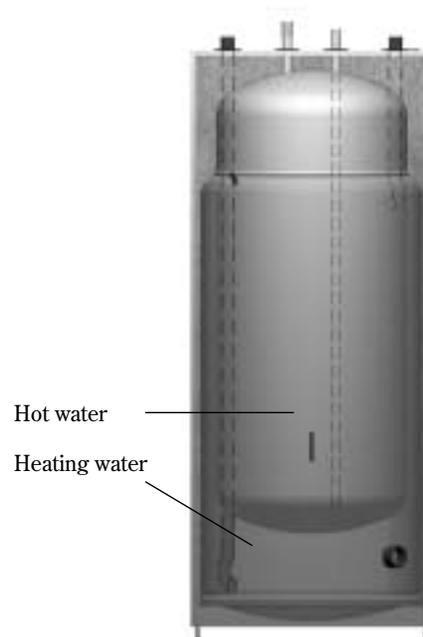
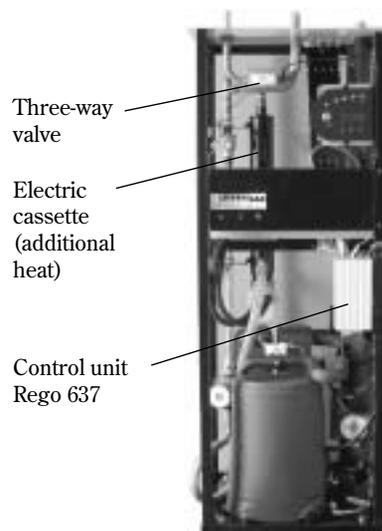
The control unit Rego 637 is the brains of the heat pump. It makes sure the heat pump gives the best energy savings and that it runs for many years. The control unit controls and monitors the heating and hot water supply in your house. The monitoring function is especially important. It shuts down the heat pump in the event of operational disturbances so that no critical parts are damaged.

Additional heat gives more output

When the heat pump can not manage to heat the house by itself, for example, if there is a considerable drop in the outdoor temperature, the control unit ensures the additional heat source is connected. Together the heat pump and additional heat guarantee the right temperature in the house. Additional heat in the Greenline HT Plus is provided by a built in electric cassette. Additional heat can never completely take over the heating from the heat pump. It only adds the output necessary for the heat pump to be able to produce the right temperature. When the heat pump can once again manage heating on its own the additional heat is automatically disconnected.

Hot water is given priority over heating water

In a house with water based heating a difference is made between heating water and hot water. The heating water is for radiators/floor heating and hot water is for showers and taps. Hot water is heated in a hot water cylinder. The hot water cylinder is fitted with a sensor that senses the temperature of the hot water. In Greenline HT Plus C there is a hot water cylinder inside the heat pump while Greenline HT Plus E has an external hot water heater. The heating water passes through the hot water cylinder's outer shell and heats up the hot water cylinder's inner tank. The control unit makes sure the heating of hot water is always given priority over the heating of the heating water. This means you never need to be without hot water. The control unit controls a three-way valve that switches between heating the heating water and hot water. Once the hot water has been heated the three-way valve switches so that the heating water is heated.



Double-shelled hot water heater

The control unit's two methods to control the heat pump

The control unit uses two different methods to control the heat pump. These two methods are: *Control with an outdoor sensor* and *Control with an outdoor sensor supplemented with a room sensor*.

Control with an outdoor sensor

Control with an outdoor sensor is the most common method used by the control unit to control the heat pump. When the heat pump is delivered it is set for this control method. A sensor is fitted on the outside wall of the house. It sends signals to the control unit in the heat pump. Control with an outdoor sensor means that the heat pump automatically regulates the heating in the house depending on the outdoor temperature. If the outdoor temperature drops, i.e. it becomes colder; the radiators inside the house will become warmer.

You determine the temperature of the radiators, in relation to the outdoor temperature, with the help of a number of settings such as selecting the heat curve on the control unit. A lower curve gives higher energy savings.

Control with an outdoor sensor supplemented with a room sensor

Control with an outdoor sensor supplemented with a room sensor means that you also place a sensor in a central position inside the house. This is connected to the heat pump and provides the control unit with information about the room temperature. The signals affect the control unit's settings (curves) and ensure the heat pump gives the best possible energy savings.

This control method is used when factors other than the outdoor temperature influence the indoor temperature. Examples include the use of a stove or fan-assisted radiator, or if the house is sensitive to the wind.

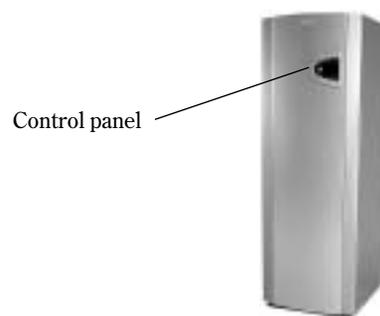


Note

It is only the room where the room sensor is located that can influence regulation of the temperature.

The control panel

All settings are made from the control panel. It also displays heat production statistics and information about different alarms. When you have made your settings, the control panel makes sure they are saved in the control unit Rego 637 to carry out your wishes.



Control panel

Buttons and lamps



Power switch (ON/OFF)

You start and stop the heat pump using the power switch button.

Lamp on: The heat pump is on.

Lamp flashes: The heat pump is off.



Operating status

Lamp on: The heat pump (compressor) is operational.



Additional heat status

Lamp on: The heat pump is using additional heat from, e.g. an electric cassette.



Hot water status

Lamp on: The heat pump is heating water in the cylinder.

Lamp flashes: The heat pump has a hot water peak or is producing extra hot water.



Alarm status

Lamp flashes: A fault has occurred in the heat pump.

Lamp on: The alarm has been acknowledged, but the fault remains.

Heat



Heat

Pressing once gives a shortcut to the most frequent temperature settings.

Info



Info

Pressing once gives continuous information about the heat pump's and additional heat's operating conditions.

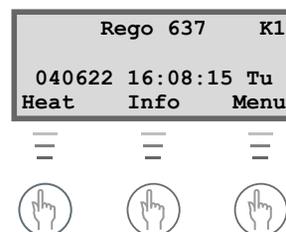
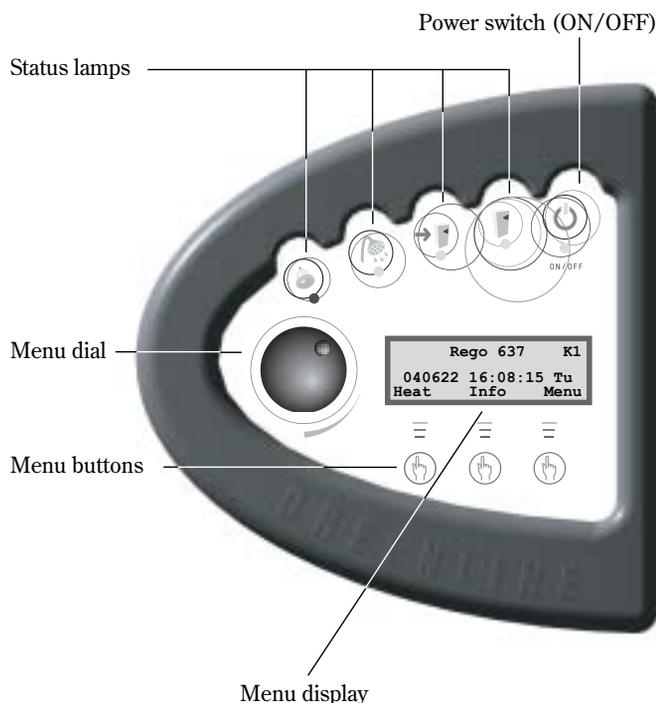
Menu



Menu

Press once to enter the main menu.

The main menu contains all setting menus and temperature displays.



Menu dial

The menu dial is used to scroll through the menu display windows. Turn the menu dial clockwise (to the right) to move down through the menus. Turn the menu dial anti-clockwise (to the left) to move up through the menus. You also determine the values of different settings by using the dial.

The menu display gives you information and the chance to make settings. You can:

- Choose different temperature and hot water settings.
- Choose extra hot water and the holiday function.
- See alarm causes and receive corrective instructions.
- Obtain operating statistics.



Initial menu display



How to use the control panel

The principle of the control panel is based on the user using three menu buttons and a menu dial to move between the different menus and settings. On the lower row of the menu display you will always see information about the significance of the buttons. The function of the buttons changes depending on which window you are currently in.

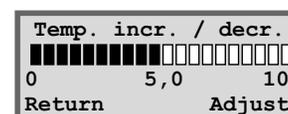
Example

If, from the initial menu, you press the Heat button, you will access the menu *Temp. incr. / decr.* In this menu you can increase and decrease the heating in the house. Note that the significance of the buttons has now changed. You can either return to the initial menu by pressing the Return button or you can choose to change the heating setting in the house by pressing the Adjust button. If you press the Adjust button you can increase or decrease the heating in the house by using the menu dial. Save your adjustment by pressing the Save button.



+

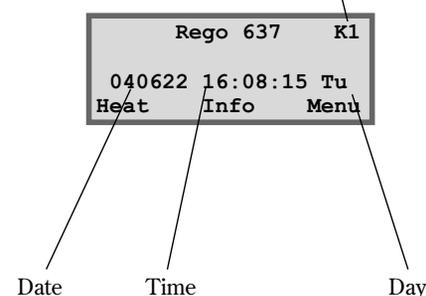
Initial menu



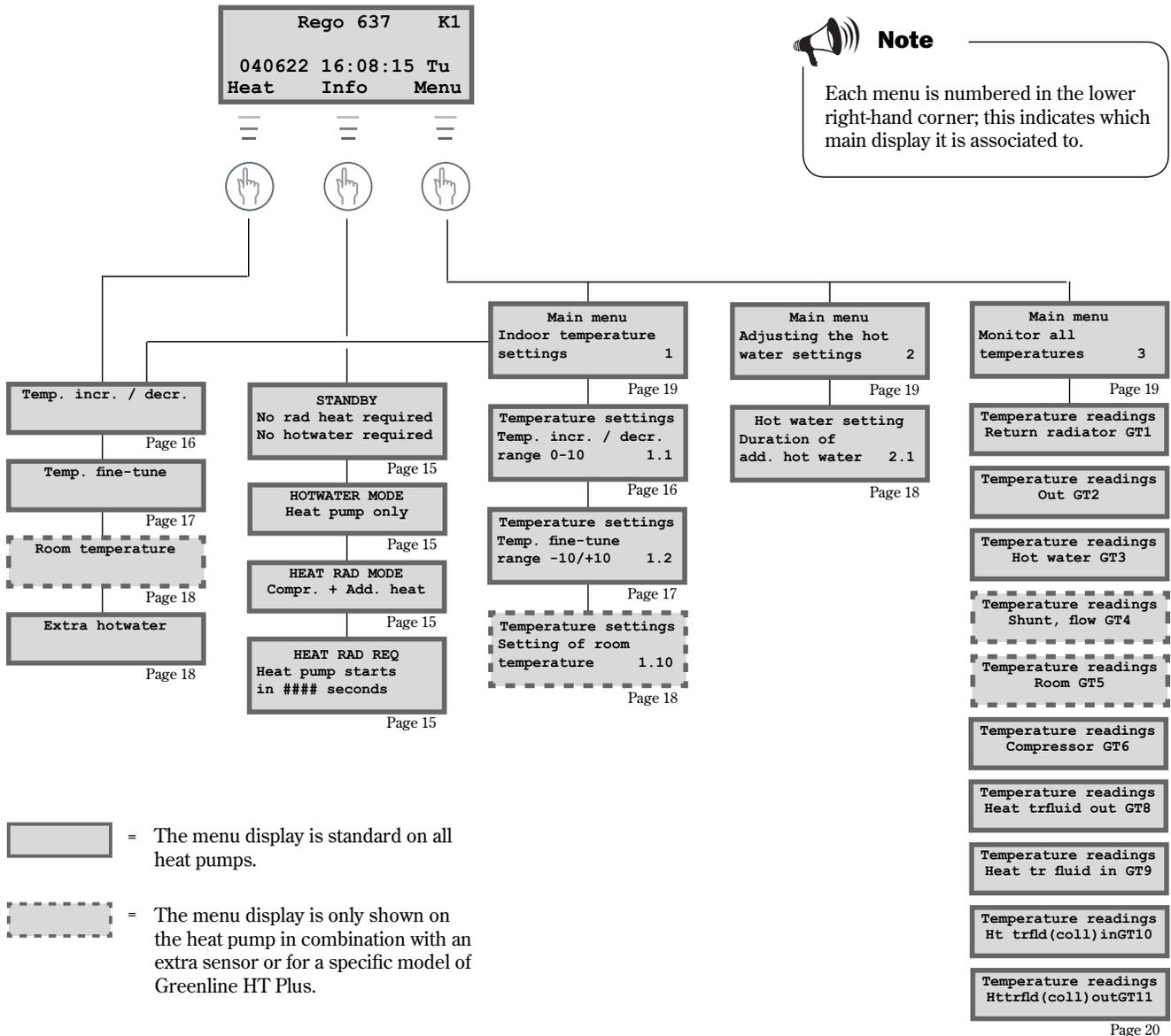
Basic functions (Customer level 1)

Basic functions (Customer level 1) are the functions most frequently used and the ones you have the most benefit of. You reach the basic functions by pressing one of the Heat, Info or Menu buttons in the initial menu. The designation K1 in the upper right corner indicates you are in *Basic functions - Customer level 1*.

Initial menu Customer level 1



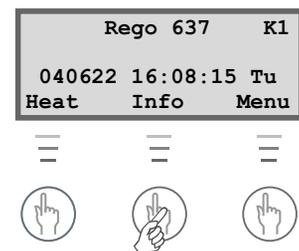
Menu outline for Basic functions (Customer level 1)



Select scrolling information on the menu display

If you press the Info button in the initial menu you will receive continuous information about the heat pump's operation and working temperatures. This is what to do:

1. Press the Info button in the initial menu. Here follows a few of the windows displayed:



The heat pump is in standby mode.

STANDBY
No rad heat required
No hotwater required

The heat pump is producing hot water. You see at which temperature the heat pump will stop and the present temperature. Note that the stop temperature is read at the bottom of the cylinder. The hot water is a few degrees warmer.

HOTWATER MODE
Heat pump only
Stop temp 53,0°
Present temp 42,0°

The heat pump and additional heat are running.

HEAT RAD MODE
Compr. + Add. heat
Stop temp 45,0°
Present temp 44,0°

The heat pump has received signals that it should produce heating. It now waits for the restart time to countdown to zero.

HEAT RAD REQ
Heat pump starts
in 320 seconds

Return to the initial menu by pressing one of the buttons or turn the dial.

Set the heating

It is easy to set the heating level on the heat pump. However, before we explain how to do this it is important to understand the relation between the outdoor temperature, return temperature and heat curve slope. The easiest way to explain the relation is with a heat curve.

Heat curve

You use the heat curve to help set the indoor temperature you would like. The heat pump is controlled by the outdoor temperature. When the weather becomes colder the heat pump ensures more heating is produced automatically.

Return temperature:

The return temperature is the temperature of the water that returns to the heat pump from the radiators. The water led out from the heat pump to the heating system is normally 7-10°C higher than the return temperature. When the outdoor temperature is -10°C and curve 4 is set, the pump attempts to keep the return water at approximately 40°C. If instead the temperature is 35°C, the flow water is heated until the return water is warm enough.

Outdoor temperature:

The outdoor temperature determines how much heating the heat pump should produce. A sensor placed outdoors sends signals to the control unit, which then adjusts the heat pump.

Curve slope:

You can change the curve slope to increase or decrease the heating in the house. The scale is between 0-10.

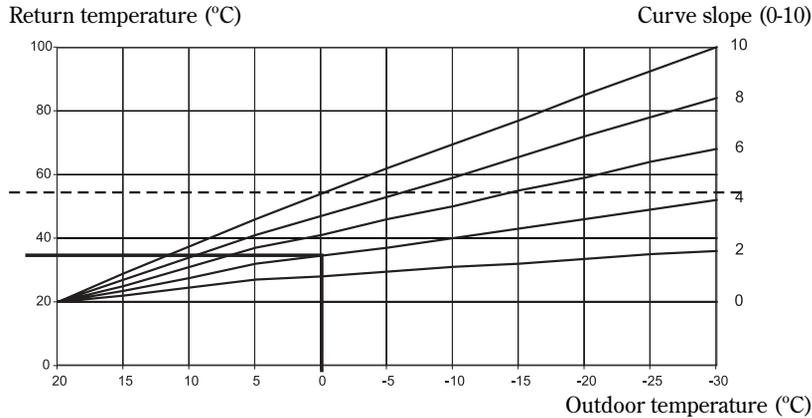


Note

On delivery the heat pump curve slope is set to position 4. This means that the return temperature is +35°C when it is 0°C outdoors.

Change the curve slope

The heat pump's production of heat is adjusted by increasing or decreasing the curve slope in the *Temp. incr. / decr.* menu. This is especially effective in cold weather conditions.



Dashed line:

If the return temperature exceeds 57°C an alarm is given and the compressor switches off. The heat pump starts automatically when the return temperature drops.

Curve slope:

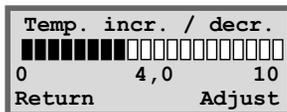
- 2-4 Normal setting for floor heating.
- 4-6,5 Normal setting for radiators.
- 7-10 Abnormal high setting.

From the heat curve we see that curve slope 4 gives a return temperature of +35°C when it is 0°C outdoors. If the outdoor temperature drops we can see that the return temperature increases. The colder the outdoor temperature the higher the return temperature. At an outdoor temperature of approximately -30°C we see the curve slope has reached the limit value (+57°C) for the return temperature.

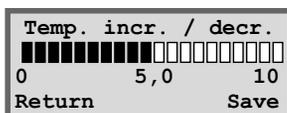
In cold weather (below -5°C):

If you are not satisfied with the indoor temperature when it is colder than -5°C outdoors, you need to change the slope of the heat curve. This is what to do:

1. Press the Heat button in the initial menu.



2. Press the Adjust button.
3. Turn the menu dial clockwise to increase the heating. Turn the menu dial anti-clockwise to lower the heating. (Adjust in small increments, 0.5-1.0 units is usually enough.)



4. Save the new value by pressing the Save button.



Note

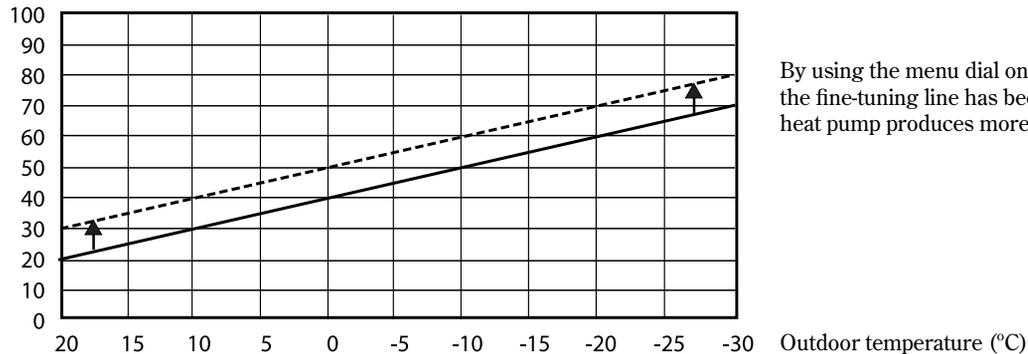
You should wait at least two days when increasing or decreasing the heating before making a new adjustment.

At outdoor temperatures around 0°C you should "adapt the heat curve" to obtain the desired indoor temperature. Read how to "adapt the curve" in the section *Extra functions - Customer level 2 / Temperature settings / Adapting the heat curve.*

Fine-tune the heat curve

The heat curve can also be fine-tuned. Fine-tuning means that you offset the heat curve in parallel. Fine-tuning is done from the *Temp. fine-tune* menu. The diagram for fine-tuning shows how the dashed line has been offset upwards in parallel. This means the heating has been fine-tuned in a positive direction and the heat pump will be instructed to maintain a higher temperature on the return water at all outdoor temperatures.

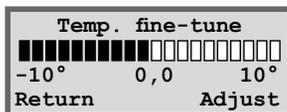
Return temperature (°C)



In warm weather (above +5°C):

If you are not satisfied with the indoor temperature when it is warmer than +5°C outdoors, you should offset the curve in the *Temp. fine-tune* menu. This is what to do:

1. Press the Heat button in the initial menu.
2. Turn the menu dial clockwise until you reach the menu *Temp. fine-tune*.



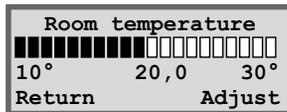
3. Press the Adjust button.
4. Turn the menu dial clockwise to increase the heating.
Turn the menu dial anti-clockwise to lower the heating.
(Adjust in small increments, 0.5-1.0 units is usually enough.)
5. Save the new value by pressing the Save button.

Set the desired room temperature

If you have a room sensor connected to the heat pump you can set the temperature in the room from the Room temperature menu. From Extra functions (Customer level 2) you can also set how much you want the sensor to influence the heating system.

This is what to do:

1. Press the Heat button in the initial menu.
2. Turn the menu dial clockwise until you reach the menu *Room temperature*.



3. Press the Adjust button.
4. Turn the menu dial clockwise to increase the room temperature.
Turn the menu dial anti-clockwise to lower the room temperature.
5. Save the new value by pressing the Save button.

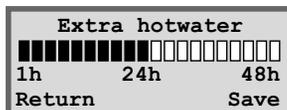
Set the heat pump for extra hot water

You can obtain extra hot water by temporarily increasing the temperature of the water in the hot water cylinder. The temperature increase is effected with the help of the heat pump's electric cassette. A higher water temperature gives more hot water when, for example, a large number of people wish to shower. The heat pump first makes sure that the water reaches a temperature of 50-55°C. The electric cassette then continues to heat the water to approximately 65°C. You choose how long the function should run using the *Extra hotwater* menu. This is what to do:

1. Press the Heat button in the initial menu.
2. Turn the menu dial clockwise until you reach the menu *Extra hotwater*.



3. Press the Adjust button.
4. Turn the menu dial clockwise to choose the number of hours that the electric cassette should be on (e.g. 24 hours).



5. Save the value by pressing the Save button.



Note

The example describes how to set the required room temperature with the help of a connected room sensor. The range is 10°C to 30°C.



Note

When the set time has elapsed you must repeat the setting to get extra hot water again.

Heating and hot water settings

Move to the temperature settings for heating on customer level 1 like this:

1. Press the Menu button in the initial menu.

```

Main menu
Indoor temperature
settings          1
Return           Select
  
```

2. Press the Select button and scroll through the heating menus with the menu dial.

Move to the temperature settings for hot water on customer level 1 like this:

1. Turn the menu dial clockwise until you reach the menu *Adjusting the hot water settings*.

```

Main menu
Adjusting the hot
water settings    2
Return           Select
  
```

2. Press the Select button and scroll through the hot water menus using the menu dial.

```

Rego 637   K1
040622  16:08:15  Tu
Heat     Info     Menu
  
```



Note

Each menu is numbered in the lower right-hand corner; this indicates which main display it is associated to.

Read the temperatures on the heat pump

There are several different temperature sensors in the heat pump. Each sensor plays an important part in the heat pump's daily operations. It may, for example, adjust the heat production so that the pump does not become overheated. Proceed as follows to read the temperatures on the heat pump:

1. Press the Menu button in the initial menu.
2. Turn the menu dial clockwise until you reach the menu *Monitor all temperatures* (menu 3).

```

Main menu
Monitor all
temperatures     3
Return           Select
  
```

3. Press the Select button.
4. Turn the menu dial to scroll through all the heat pump's temperature sensors. See the next page.

All the temperature sensor menus

All the windows associated with the heat pump's temperature sensors are presented below. Note that you cannot make any settings in these menus, only read the current values. Some menus are standard for all models of Greenline HT Plus while others are only available in combination with different accessories.

The sensors give an alarm if the temperature is outside of the permitted interval/values.



Note

All sensors are not included as standard on the heat pump, some are available as accessories for different application areas. See more information under respective menus.

Temperature readings
Return radiator GT1
Off 21,3° Now 21,7°
Return

The menu shows the temperature in the heating system's return, i.e. the water from the radiators back to the heat pump in heating mode. This temperature varies depending on the outdoor temperature.

Temperature readings
Out GT2
14,0°
Return

The menu shows the outdoor temperature. Some deviation compared to the true temperature may occur due to thermal radiation from the house to the installed outdoor sensor.

Temperature readings
Hot water GT3
Set 51,0° Now 46,0°
Return

The menu shows the set and present temperature in the lower section of the outer container in the hot water cylinder/heater. The temperature is approximately 5°C lower than the temperature of the hot water inside the inner container.

Temperature readings
Shunt, flow GT4
Tgt 40,3° Now 43,0°
Return

The menu only applies together with a flow sensor. If an extra curve with mixing valve is used, for example, for a floor heating system, you can see the temperature on the flow water in the circuit. The temperature varies with the outdoor temperature.

Temperature readings
Room GT5
Tgt 20,0° Now 19,5°
Return

The menu only applies together with a room sensor. The menu shows the set point value and present temperature in the room where the sensor is fitted.

Temperature readings
Compressor GT6
90,0°
Return

The menu shows the compressor's working temperature. The temperature varies between 70°C and 125°C during operations.

Temperature readings
Heat trfluid out GT8
45,0°
Return

The menu shows the temperature of the radiator water as it leaves the heat pump. It varies depending on the outdoor temperature and whether the heat pump is in hot water production mode.

Temperature readings
Heat tr fluid in GT9
22,0°
Return

The menu shows the temperature of the water that is led into the heat pump. It varies depending on the outdoor temperature and whether the heat pump is in hot water production mode. The heat pump stops at 54°C for reasons of safety.

Temperature readings
Ht trfld(coll)inGT10
0,0°
Return

The menu shows the temperature of the heat transfer fluid that is led into the heat pump from the bore hole or the ground. It can vary between -5°C to +8°C during a season.

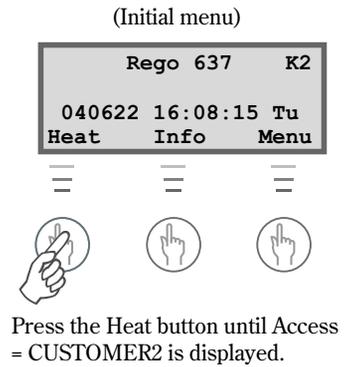
Temperature readings
Httrfld(coll)outGT11
-4,0°
Return

The menu shows the temperature of the heat transfer fluid that is led out of the heat pump to the bore hole or the ground. Normally, during operations, it is 1.5 - 5.0 degrees lower than the heat transfer fluid that is led into the heat pump.

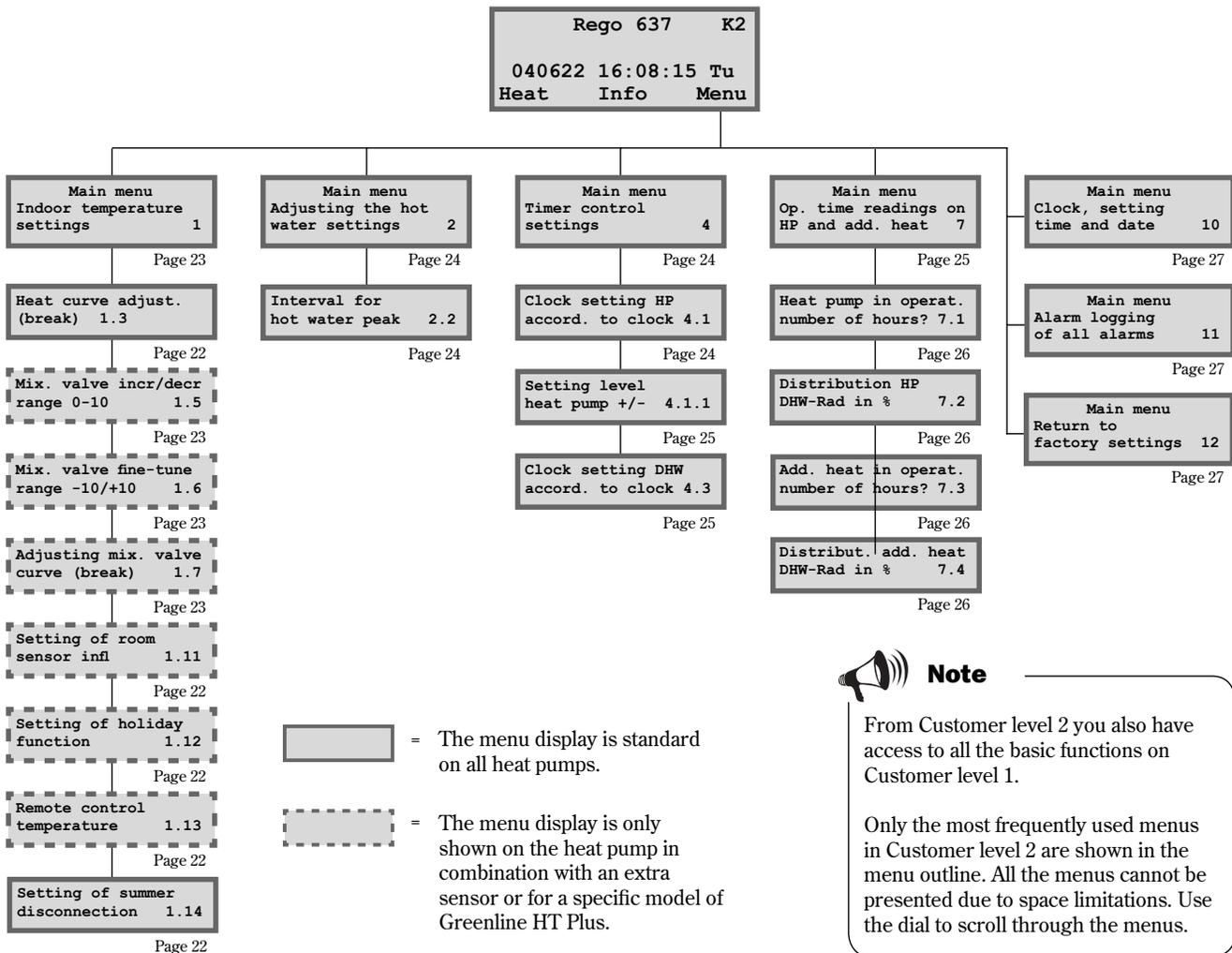
Extra functions (Customer level 2)

In the section Basic functions (Customer level 1) we presented the functions that you will probably use the most and which you will receive the most benefit from. However, there are numerous extra functions that you can use to control your heat pump. This can, for example, include activating the heat pump's holiday function or setting the time and date. If no settings are made on Customer level 2 (K2), the menu display will automatically return to Customer level 1 (K1) after 30 minutes. Proceed as follows to access the extra functions on Customer level 2:

1. Press the Heat button until Access = CUSTOMER2 is displayed
2. Press the Menu button to open the *Main menu*. From Customer level 2 you also have access to all Customer level 1 functions.



Menu outline for Extra functions (Customer level 2)



Temperature settings

Proceed as follows to access the temperature settings for the heating on Customer level 2:

1. Press the Heat button until Access = CUSTOMER2 is displayed.
2. Press the Menu button.
3. Press the Select button and scroll through the menus with the menu dial.

```

Main menu
Indoor temperature settings 1
Return Select

```

Adapting the heat curve

You can "break" the heat curve up or down every fifth outdoor degree. For example, you can make a hump in the curve at 0°C. The purpose of breaking the curve is to be able to influence the heat pump's heat production at extra sensitive outdoor temperatures.

```

Temperature settings
Heat curve adjust. (break) 1.3
Return Select

```

Room sensor influence

The menu is only shown for heat pumps having a room sensor installed. You use the menu to set how much the room sensor shall influence the heat curve. A higher value will have a greater effect. Please note that the room sensor only fine-tunes the heat curve. Consequently, it is important the basic setting of the heat curve's slope and fine-tuning are correct.

```

Temperature settings
Setting of room sensor infl. 1.11
Return Select

```

Holiday function

The menu is only shown for heat pumps having a room sensor installed. The holiday function gives you the possibility to choose a number of days when the room temperature will be lowered to 15°C (the temperature is not adjustable). When the days have passed the heat pump returns to the normal heating setting. Hot water production is not affected by the holiday function.

```

Temperature settings
Setting of holiday function 1.12
Return Select

```

Remote control

The menu is only shown for heat pumps having a room sensor installed. In addition, special remote control equipment is needed. This equipment is available as an accessory. You can switch between the remote control mode and normal mode using a telephone.

```

Temperature settings
Remote control temperature 1.13
Return Select

```

Summer disconnection

The function means the heat pump only produces hot water when the outdoor temperature rises above the set value.

```

Temperature settings
Setting of summer disconnection 1.14
Return Select

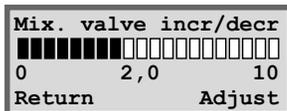
```

Set extra heat curve with mixing valve

If you have floor heating combined with radiators you should set an extra heat curve with mixing valve. The mixing valve is a valve that lets water through in different amounts. It prevents the floor from becoming too hot and destroying the flooring. The menu is only displayed when there is an extra flow sensor, T4 (GT4), on the heat pump. You set the extra heat curve using two menus: *Mix. valve incr/decr* and *Mix. valve fine-tune*.

Increase or decrease the mixing valve

1. Press the Heat button until Access = CUSTOMER2 is displayed.
2. Press the Heat button.
3. Turn the menu dial clockwise until you reach the menu *Mix. valve incr/decr*



4. Press the Adjust button.
5. Turn the menu dial clockwise to choose a higher heat curve. Turn the menu dial anti-clockwise to choose a lower heat curve.
6. Save the new value by pressing the Save button.

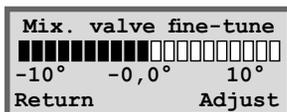


Note

The initial position of the floor heating circuit is heat curve 2. The scale covers the range 0 to 10. Extra heat curve with mixing valve only works with an extra flow sensor T4 (GT4).

Fine-tune the mixing valve

1. Press the Heat button until Access = CUSTOMER2 is displayed.
2. Press the Heat button.
3. Turn the menu dial clockwise until you reach the menu *Mix. valve fine-tune*



4. Press the Adjust button.
5. Turn the menu dial clockwise to set an upward, parallel offset on the curve. Turn the menu dial anti-clockwise to set a downward parallel offset on the curve.
6. Save the new value by pressing the Save button.



Note

In the example we describe how to fine-tune the extra heat curve. The scale covers the range -10°C to +10°C.

Hot water settings

Hot water peak

Recurring increase in the hot water temperature

The *Interval for hot water peak* menu is used to set the interval for a recurring increase in the hot water temperature. If, for example, you set the value seven days, the temperature is increased once a week to approximately 65°C.

```
Hot water setting
Interval for
hot water peak  2.2
Return          Select
```

Timer control

Open the setting menus for timer control like this:

1. Press the Heat button until Access = CUSTOMER2 is displayed.
2. Press the Menu button.
3. Turn the menu dial clockwise until you access the menu *Timer control settings* (menu 4).
4. Press the Select button and scroll through the menus using the menu dial.

```
Main menu
Indoor temperature
settings          1
Return           Select
```

```
Main menu
Timer control
settings         4
Return          Select
```

Clock setting of the heat pump according to clock

The function *Clock setting HP accord. to clock* is for those who want the heat pump to produce different amounts of heat at different times of the day and on different days of the week. This allows you to make further energy savings.

Example:

You want to set the heat pump so that it maintains a 5°C lower radiator temperature on Mondays between 22:00 and 06:00.

1. Turn the dial clockwise until you access the menu *Clock setting HP accord. to clock* (menu 4.1).
2. Press the Select button.
3. Turn the menu dial clockwise to choose the day. Now press the Adjust button to select the weekday with the symbol ^. Turn the menu dial clockwise one step to activate the start day. The weekday now has a capital letter.
4. Press the right-hand arrow (->) until the cursor reaches the first two zeros (00).

```
Clock setting
Clock setting HP
accord. to clock 4.1
Return          Select
```

```
Clock setting HP 1
mo      00:00-00:00
^
Return  Adjust
```

```
Clock setting HP 1
Mo      00:00-00:00
^
Return  ->
```

```
Clock setting HP 1
Mo      00:00-00:00
^^
Return  ->
```

5. Turn the menu dial until the value 22:00 is displayed.
6. Press the right-hand arrow twice (->) to move the cursor two steps to the right.
7. Turn the menu dial until the value 06:00 is displayed.
8. Press the right-hand arrow so it is replaced by the Save function.
9. Finish the setting by pressing the Save button.
10. Press the Return button.
11. Turn the menu dial clockwise until you reach the menu *Setting level heat pump +/-* (menu 4.1.1).
12. Press the Select button and set the temperature to -5°C, which is to apply for the chosen time zone.
13. Finish by pressing the Save button.

```
Clock setting HP 1
Mo      22:00-06:00
Return  <-    ->
```

```
Clock setting HP 1
Mo      22:00-06:00
                ^^
Return  <-    Save
```

```
Clock setting HP 1
Setting level heat
pump +/-      4.1.1
Return        Select
```



Note

If you would like to make the setting for every day of the week, carry out the instruction shown in the example seven times, once for each weekday.

The temperature set under 4.1.1 applies to all active time zones.

Clock setting of the hot water according to clock

The *Clock setting DHW accord. to clock* (menu 4.3) works in exactly the same way as *Clock setting HP accord. to clock* (menu 4.1). You can choose to completely disable hot water heating to save energy. This is primarily effective when peak tariffs are charged. The procedure is the same as in the previous example. Use this to make your settings.

```
Clock setting
Clock setting DHW
accord. to clock 4.3
Return          Select
```

Reading operating times on the heat pump and additional heat

Statistics concerning the heat pump and additional heat operations are stored in the control unit. For example, you can see how many hours they have been running. To view the operating times for the heat pump and additional heat:

1. Press the Heat button until Access = CUSTOMER2 is displayed.
2. Press the Menu button.

```
Main menu
Indoor temperature
settings      1
Return       Select
```

3. Turn the menu dial clockwise until you reach the menu *Op time readings on HP and add. heat* (menu 7).
4. Press the Select button and scroll through the menus using the menu dial.

```

Main menu
Op. time readings on
HP and add. heat  7
Return           Select

```

The number of hours the heat pump has been in operation

The menu shows the number of hours that the heat pump has been in operation since the day of installation.

```

Op. time readings
Heat pump in operat.
number of hours? 7.1
Return           Select

```

The heat pump's hot water mode and heating mode operations as a percentage

The menu show the heat pump's allocation between hot water mode and heating mode. The allocation is stated as a percentage. Heating mode refers to heating of the radiator water.

```

Op. time readings
Distribution HP
DHW-Rad in %    7.2
Return           Select

```

The number of hours additional heat has been in operation

The menu shows the number of hours additional heat has been in operation since the day of installation.

```

Op. time readings
Add. heat in operat.
number of hours? 7.3
Return           Select

```

Additional heat's hot water mode and heating mode operations as a percentage

The menu shows the heat addition's allocation between hot water mode and heating mode. The allocation is stated as a percentage. Heating mode refers to heating of the radiator water.

```

Op. time readings
Distribut. add. heat
DHW-Rad in %    7.4
Return           Select

```

Set the time and date

The heat pump has functions that are dependent on both the clock and date. Thus it is important that these are correct. This is how you access the menu *Clock, setting time and date*:

1. Press the Heat button until Access = CUSTOMER2 is displayed.
2. Press the Menu button.

- Turn the menu dial clockwise until you reach the menu *Clock, setting time and date* (menu 10).
- Press the Select button and make your settings using the menu dial and menu buttons.

```

Main menu
Clock, setting
time and date    10
Return          Select

```

Alarms given by the heat pump

You can easily see any alarms given by the heat pump. The menu provides you with information about the alarm type and when it occurred. If there is an asterisk (*) in the menu window this means the alarm is still active, i.e. the cause of the alarm remains. This is how you access the *Alarm logging of all alarms* (menu 11):

- Press the Heat button until Access = CUSTOMER2 is displayed.
- Press the Menu button.
- Turn the menu dial clockwise until you reach the menu *Alarm logging of all alarms* (menu 11).
- Press the Select button and scroll using the menu dial between any alarms that may have previously occurred. Alarms are stored in chronological order. Read more about the heat pump's alarms under the heading *All alarms*.

```

Main menu    K2
Indoor temperature
settings      1
Return       Select

```

```

Main menu
Alarm logging
of all alarms  11
Return        Select

```

Return to factory settings

If you want to restore the factory settings on the heat pump you can easily reset all the settings you have made. This is how you access the *Return to factory settings* menu (menu 12):

- Press the Heat button until Access = CUSTOMER2 is displayed.
- Press the Menu button.
- Turn the menu dial clockwise until you reach the menu *Return to factory settings* (menu 12).
- Press the Select button.
- Return to the factory settings by pressing the Yes button. When you return to the factory settings all the adjustments made on customer levels 1 and 2 are reset such as temperature settings and time control settings.

```

Main menu    K2
Indoor temperature
settings      1
Return       Select

```

```

Main menu
Return to
factory settings 12
Return          Select

```

Maintenance

Your heat pump requires a minimum of maintenance, however, we still recommend some servicing to get optimal performance from your heat pump. Check the following items a few times during the first year. You should then check them once or twice a year:

- Sight glass
- Expansion vessel
- Particle filter
- Protective anode (only models with a stainless steel hot water cylinder)

Maintenance inside the heat pump

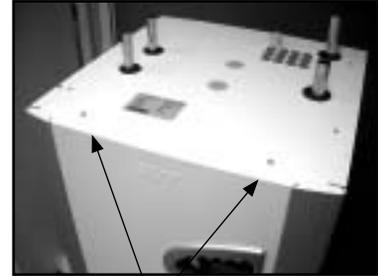
Make sure you disconnect the main power supply before opening the heat pump. Turn off the power switch that precedes the heat pump.

Opening the front cover

On certain models you will need to open the front cover to access some of the maintenance areas, e.g. the sight glass and particle filter. The front cover is secured at the top by two screws.

This is how you remove the front cover from the heat pump:

1. Unscrew the two screws on the top. See the picture.
2. Tilt the front cover towards you.
3. Lift the front cover up to release the lower edge.



Remove the front cover by unscrewing the screws on the top.

Sight glass

Sometimes when the heat pump has started you can see the fluid in the refrigerant circuit bubble for a few minutes in the sight glass. This is completely normal. However, if it bubbles continuously you should contact your dealer.

Sight glass



If the sight glass shows green this means there is no moisture in the system. If it is yellow there is moisture in the system. If this happens, contact your dealer.



Greenline HT Plus E



Warning

For reasons of safety the main power supply must be disconnected before working on the heat pump.

Only an accredited refrigeration company is permitted to work on the heat transfer fluid circuit.

Expansion vessel

A plastic expansion vessel is connected to the heat pump heat transfer circuit (cold side). The level in the vessel should not fall below the minimum level 1/3. If the fluid level is too low, contact your dealer. After discussions with your dealer filling can take place as set out below:

The heat pump **must** be in operation all the time while filling.

1. Remove the cover on the valve on top of tank. Now carefully open the valve (figure 1).
2. Check that the valve is fully open (figure 2).
3. Fill with anti-freeze or water (to 2/3) with the help of a clean watering can or the like (figure 3).
4. Close the valve and finish by screwing on the cover (figure 4).

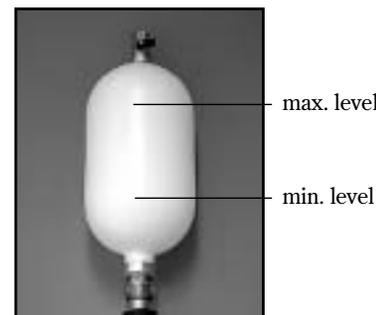


Figure 1



Figure 2



Figure 3

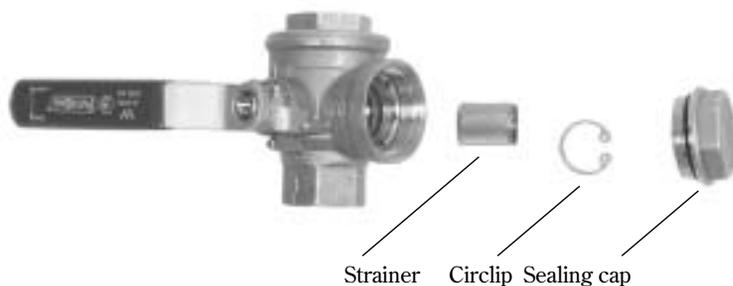


Figure 4

Particle filter

The task of a particle filter is to ensure no particles or dirt enter the heat exchangers. Over time the filter can become clogged and will need cleaning. There are particle filters on both the hot and cold sides. To clean the particle filters:

1. Shut down the heat pump using the ON/OFF button.
2. Close the valve and unscrew the sealing cap.
3. Loosen the circlip holding the screen in the valve. Use the supplied circlip pliers.
4. Lift out the screen from the valve and wash clean with water.
5. Refit the screen, the circlip and sealing cap.
6. Open the valve and start the heat pump using the ON/OFF button.



Note

On the cold side the particle filter is located outside of the heat pump. It may be concealed by insulation material or a black box.

On Greenline HT E Plus the hot side's particle filter is fitted inside the heat pump. On Greenline HT Plus C it is located outside of the heat pump.



Greenline HT Plus E

Checking the protective anode

Checking the protective anode only applies to stainless steel hot water cylinders. At the top of the hot water cylinder, under the insulation, there is a protective anode. The task of the anode is to prevent corrosion so the hot water cylinder does not corrode away. The hot water cylinder must be filled with water in order for the protective anode to work.

There are two types of protective anodes: a sacrificial anode and an electronic anode.

Sacrificial anode

The sacrificial anode can corrode depending on the water quality. If the diameter of the anode has been reduced to a few millimetres it must be replaced. This is how you check the sacrificial anode:

1. Shut off the main cold water supply.
2. Open a tap and let the water run out to reduce the pressure in the hot water cylinder.
3. Unscrew the anode from the heat pump and check its diameter.

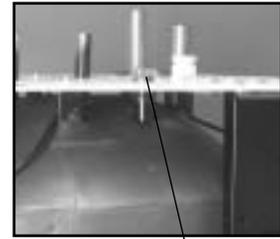
Electronic anode

If the protective anode is electronic there is a control box showing the status of the anode. The diode lamps are either green or red. If green, the protective anode is operating and working normally. Red can indicate a fault. When large amounts of hot water are used (e.g. with a bath) the lamp may show red for a short period without there being a fault. However, if the red light is on for more than ten hours this indicates the anode is faulty and you should contact your dealer. If the fault occurs at the weekend you can wait to the next working day before contacting your dealer.

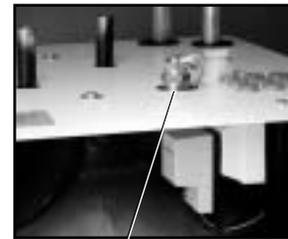


Note

If the diameter of the anode has been reduced to a few millimetres it must be replaced as soon as possible.



Sacrificial anode



Electronic anode



Control box with diode lamps

Savings

The heat pump's task is to produce heating of the house as cost-effectively as possible. You can influence operating costs by your own settings for the heat pump. In addition you can influence your energy savings by, e.g.

- Lowering the indoor temperature.
- Opening thermostat valves completely.

Lowering the indoor temperature

The lower the indoor temperature the better the heating economy. So make sure you do not set the heat curve too high. Use your heating system in the best possible way by keeping the entire surface of radiators or floor coils warm.

1. Seal windows and doors, but not too tight.
2. When you air the room, do it quickly and with a cross draught.

Opening thermostat valves completely

The thermostat valves on radiators and floor coils can have a negative effect on the heating system by slowing the flow and, by doing so, the heat pump must compensate with a higher temperature. If thermostat valves are installed they should be opened fully, except in bedrooms or other areas where a lower temperature is required. In these rooms they can be somewhat closed.



Lower the heating.



Open the thermostat valves completely.

What to do if a fault occurs

The control unit has an advanced monitoring system that gives alarms if anything unforeseen happens in the heat pump. Most alarms are rectified by you the user and there is never any risk that you can damage anything in the heat pump when you reset an alarm.

If a room sensor is installed the lamp on this will come on when the heat pump gives an alarm.

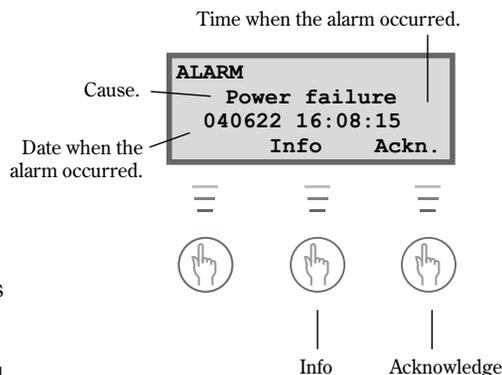
Example of an alarm:

Info button:

When you press the Info button and turn the menu dial, information is displayed as well as possible actions to rectify the alarm.

Ackn. button:

When you press the Ackn. button the alarm lamp on the control panel goes out and the heat pump starts again within 15 minutes if there is a heating requirement. If the fault has not been rectified the lamp will remain lit. Should several alarms have occurred on the heat pump, turn the menu dial clockwise to find out more information about each alarm.



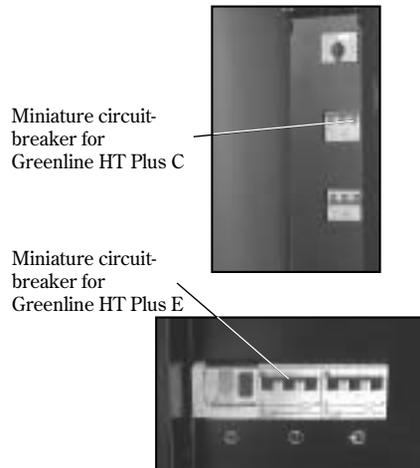
Dimmed menu display

Possible cause 1: Blown fuse in the house's fuse box/distribution box.

- Action:
1. Check the fuses in the house's fuse box.
 2. Replace the fuse if necessary. If miniature circuit breakers have tripped these are reset by pushing up the toggle switch.
 3. The heat pump automatically returns to its operating mode 15 minutes after the fault has been rectified.

Possible cause 2: The heat pump's miniature circuit-breaker has tripped.

- Action:
1. Reset the heat pump's miniature circuit-breaker by pushing up the centre toggle switch.
 2. The heat pump automatically returns to its operating mode 15 minutes after the fault has been rectified.



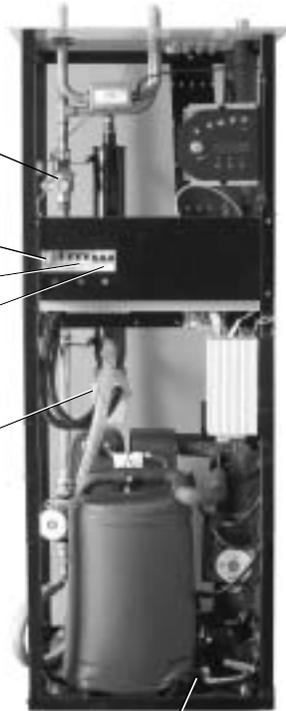
Note
For technical reasons the heat pump does not restart until 15 minutes after a stoppage.

Fuses and reset buttons on the heat pump

Greenline HT Plus C



Greenline HT Plus E



- Particle filter**
Cleanable, with shutoff switch.
- Fuse 1**
Reset switch for motor cut-out compressor.
- Fuse 2**
Reset switch for the heat pump's miniature circuit-breaker.
- Fuse 3**
Reset switch for the electric cassette's miniature circuit-breaker.
- Fuse 4**
Reset button for the electric cassette overheat protection.
NOTE! The button must be pressed in firmly.

Sight glass

Sight glass

All alarms

An alarm can sometimes occur temporarily due to various reasons. However, there is never a risk involved in resetting an alarm. All the alarms that can appear in the menu display are described on the following pages. The descriptions give you an idea about the nature of the alarm and what you can do to rectify it. The text often refers to different fuses and reset buttons on the heat pump. These are shown in the figures above.

List of all alarms:

- Motor cut-out compressor
- Motor cut-out HTF pump
- Compressor temperature
- Low pressure switch
- High pressure switch
- Electric cassette
- Power failure
- Phase sequence error
- High return to the heat pump
- Heat transfer fluid out max
- High heat transfer fluid delta
- Sensor fault
- Heat transfer fluid in under limit and heat transfer fluid out under limit

Motor cut-out compressor (MB1)

Possible cause 1: Intermittent fault or overload on the power supply.

- Action:
1. Press the Ackn. button.
The alarm indication goes out even if the fault has not been rectified.
 2. Press in the motor cut-out button on the heat pump. (Fuse 1).
 3. Wait for the heat pump to start.

Possible cause 2: Current level (A) on the motor cut-out is set too low.

The current drawn by the compressor varies during summer/winter operations.

- Action:
1. Contact your dealer.

Possible cause 3: Contactor or cut-out faulty, or loose electrical connections to the compressor.

- Action:
1. Contact your dealer.

Possible cause 4: Compressor error.

- Action:
1. Contact your dealer.

The menu display shows:

ALARM	(MB1)
Compr. circ. Switch	
040622 16:08:15	
Info	Ackn.



Note

The reset switch for the compressor can be found under heading *Fuses and resetting buttons on the heat pump.*

Motor cut-out HTF pump (MB2)

(Applies to models C11, E11, E14 and E17)

Possible cause 1: The HTF pump is blocked due to contamination.

- Action:
1. Press the Ackn. button.
 2. Loosen the venting screw and remove the dirt.
 3. Help to start the pump with a screwdriver.
The alarm indication goes out even if the fault has not been rectified.

Possible cause 2: Faulty electric motor on HTF pump.

- Action:
1. Contact your dealer.

Possible cause 3: Temporary error.

- Action:
1. Contact your dealer should repeated faults occur.

The menu display shows:

ALARM	(MB2)
HTF c-pump switch	
040622 16:08:15	
Info	Ackn.



Note

The alarm indication goes out when acknowledging the alarm even if the fault has not been rectified.

Compressor temperature T6 (GT6)

The menu display shows:

ALARM	(GT6)
Compr. superheat	
040622 16:08:15	
Info	Ackn.

Possible cause 1: The working temperature of the compressor is too high.

- Action:
1. Press the Ackn. button.
 2. Contact your dealer at repeated alarms.

Possible cause 2: Intermittent temperature rise due to abnormal operating conditions

- Action:
1. Press the Ackn. button.
 2. Wait and see.

Low pressure switch (LP)

The menu display shows:

ALARM	(LP)
Low pressure switch	
040622 16:08:15	
Info	Ackn.

Possible cause 1: Air in the heat transfer system.

- Action:
1. Press the Ackn. button.
 2. Check the expansion vessel.
 3. Fill with fluid if necessary.
 4. Listen for air in the system. If air is heard constantly, contact your dealer.

Possible cause 2: The particle filter on the cold side is clogged.

- Action:
1. Check the particle filter.
 2. Clean the particle filter if necessary.
 3. Press the Ackn. button.

Possible cause 3: Lack of refrigerant in the heat transfer circuit.

- Action:
1. Press the Ackn. button.
 2. Wait for the heat pump to start.
 3. Check whether it bubbles continuously in the sight glass.
 4. If it bubbles continuously, contact your dealer.

Possible cause 4: The HTF pump has stopped or is set at too low a speed.

- Action:
1. Press the Ackn. button.
 2. Check that the pump has not stopped or is set at the wrong speed.

Possible cause 5: Ice formation in the heat exchanger due to a lack of anti-freeze in the heat transfer circuit.

- Action:
1. Contact your dealer.

Possible cause 6: Faulty expansion valve (the alarm appears in time periods of 3-4 weeks).

- Action:
1. Contact your dealer.



Note

LP in the menu display stands for low pressure switch.

Pressure switch high (HP)

Possible cause 1: Air in the heating system.

- Action:
1. Press the Ackn. button.
 2. Check whether there is air in the radiators.
 3. Fill the heating system and vent if necessary.

Possible cause 2: Not enough flow over the heat pump.

- Action:
1. Press the Ackn. button.
 2. Check that the heat carrier pump has not stopped.
 3. Check that all the valves are open. The thermostat valves in heating systems should be fully open and in floor heating systems at least half of the coils should be fully open.
 4. Possibly increase the speed of the heat carrier pump.

Possible cause 3: The particle filter on the hot side is clogged.

- Action:
1. Press the Ackn. button.
 2. Check the filter.
 3. Clean the filter if necessary.

Possible cause 4: The refrigerant circuit is overfilled.

- Action:
1. Contact your dealer.

Possible cause 5: The drying filter is clogged.

- Action:
1. Contact your dealer.

The menu display shows:

ALARM	(HP)
High press. switch	
040622 16:08:15	
Info	Ackn.



Note

HP in the menu display stands for high pressure switch.



Note

Increase the speed of the heat carrier pump:

Use a screwdriver or a coin to increase the speed of the heat carrier pump. Turn one step anti-clockwise.



Electric cassette (EK)

Possible cause 1: The electric cassette 's miniature circuit-breaker has tripped.

- Action:
1. Press the Ackn. button.
 2. Reset the miniature circuit breaker button on the heat pump (circuit breaker 3) by pushing up the toggle switch.
 3. Contact your dealer if the miniature circuit breaker trips again.

Possible cause 2: The electric cassette's overheat protection has tripped.

- Action:
1. Press the Ackn. button.
 2. Reset the overheat protector (circuit breaker 4) by pressing in the button on the electric cassette's protective casing. The circuit breaker is reset when you hear a clicking sound.
 3. Check that the particle filter on the hot side is clean.

The menu display shows:

ALARM	(EK)
Electrical cassette	
040622 16:08:15	
Info	Ackn.



Note

The miniature circuit-breaker button for the electric cassette can be found under the heading *Fuses and reset buttons on the heat pump*.

The most frequent cause for the overheat protection tripping is a poor flow over the electric cassette, which can be due to air in the heat pump or that the particle filter is clogged.

Power failure

The heat pump maintains all its settings in case of a power failure. When the power returns the heat pump automatically starts up according to the previous settings.

Possible cause: **One or two phases to the heat pump are down.**

- Action:
1. Check that the fuses in the house's distribution box have not blown.
 2. Change the fuse if necessary. If you have miniature circuit-breakers and these have tripped you reset them by pushing up the toggle switch.
 3. The heat pump automatically returns to operating mode once the fault has been rectified.

The menu display shows:

ALARM
Power failure
040622 16:08:15
Info Ackn.

Phase sequence fault

Possible cause 1: **One or two phases to the heat pump are down.**

- Action:
1. Check that the fuses in the house's distribution box have not blown.
 2. Change the fuse if necessary. If you have miniature circuit-breakers and these have tripped you reset them by pushing up the toggle switch.
 3. The heat pump automatically returns to operating mode once the fault has been rectified.

Possible cause 2: **Phase sequence to the heat pump is incorrect.**
(The alarm may only be rectified by an electrician.)

- Action:
1. Press the Ackn. button.
 2. Switch the phase sequence on the incoming supply.
The heat pump starts automatically once the phase sequence has been switched.

The menu display shows:

ALARM
3-phase incorrect
040622 16:08:15
Info Ackn.



Note

If the power does not return on all phases at the same time during external electrical work, there is a risk that the Rego control unit gives a false alarm for a phase sequence error.

High Heat transfer fluid delta T8/T9 (GT8/GT9)

The heat pump gives an alarm when the temperature difference between the sensors T8 (GT8) and T9 (GT9) is too high.

Possible cause 1: **Not enough flow over the heat pump.**

- Action:
1. Check that the heat carrier pump has not jammed.
 2. Check that all the valves are open. The thermostat valves in heating systems should be fully open and in floor heating systems at least half of the coils should be fully open.

Possible cause 2: **The particle filter on the hot side is clogged.**

- Action:
1. Clean the particle filter.

The menu display shows:

ALARM	GT8/GT9
High HTF delta	
040622 16:08:15	
Info	Ackn.

High return to the heat pump T9 (GT9)

There is a sensor T9 (GT9) in the heat pump, which for reasons of safety, stops the compressor if the temperature of the return water from the radiators becomes too high. The limit lies at approximately 58°C.

Possible cause 1: The heating setting is too high.

Action: 1. Lower the heating setting (*Temp. incr. / decr.*).

Possible cause 2: The valves on the radiators or floor heating system are closed.

Action: 1. Open all valves.
2. Press the Ackn. button.

Possible cause 3: The hot water temperature is set too high.

Action: 1. An alarm is given in hot water mode.
Contact the installer to adjust the hot water temperature.

Possible cause 4: The flow across the heat pump is greater than the flow in the heating system.

(Only applies if a bypass is fitted.)

Action: 1. Reduce the speed of the heat carrier pump or increase the speed of the main pump in the heating system.
2. Contact your dealer.

The menu display shows:

ALARM	(GT9)
High return HP	
040622 16:08:15	
Info	Ackn.

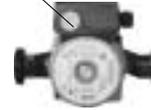


Note

The heat pump starts automatically when the temperature drops.

Lower the speed of the heat carrier pump:

Use a screwdriver or a coin to lower the speed of the heat carrier pump. Turn one step clockwise. The lowest speed should be avoided.



Heat transfer fluid out max T8 (GT8)

There is a sensor T8 (GT8) in the heat pump, which for reasons of safety, stops the compressor if the temperature of the water going out to the radiators becomes too high.

Possible cause 1: Not enough flow over the heat pump.

Action: 1. Check that the heat carrier pump has not jammed.
2. Check that all the valves are open. The thermostat valves in heating systems should be fully open and in floor heating systems at least half of the coils should be fully open.

Possible cause 2: The particle filter on the hot side is clogged.

Action: 1. Clean the particle filter.

The menu display shows:

ALARM	(GT8)
HTF out max	
040622 16:08:15	
Info	Ackn.



Note

The heat pump starts automatically when the alarm is reset and the water temperature has dropped to its normal value.

Sensor fault

All sensors connected to the heat pump can give an alarm when defective. In the example to the right it is sensor T1 (GT1), Return radiator, which has given an alarm. All sensors give alarms in the same way. Read more about the sensors under heading *All the temperature sensor menus*.

The menu display shows: e.g.

ALARM	(GT1)
Sensor return rad.	
040622 16:08:15	
Info	Ackn.



Note

Switch off the power before checking the resistance of the cable.

Possible cause 1: Temporary error.

Action: 1. Wait and see.

Possible cause 2: Short circuit or broken sensor cable.

Action: 1. If you have an ohmmeter you can disconnect the sensor and check the cable's resistance. Compare with the sensor table in the section *Technical information*. Otherwise contact your dealer.

Possible cause 3: Defective sensor or incorrect connection.

Action: 1. Contact your dealer.

HTF in under limit T10 (GT10) and HTF out under limit T11 (GT11)

The menu display shows:

ALARM	(GT10)
HTF in under limit	
040622 16:08:15	
Info	Ackn.

Possible cause 1: Temporary low heat transfer fluid temperature.

Action: 1. Wait and see.
2. If the alarm returns, contact your dealer.

Possible cause 2: Too low flow on the cold side.

Action: 1. Check the particle filter.
2. Clean the filter if it is clogged with dirt.

Possible cause 3: The minimum heat transfer fluid temperature has been set too low.

Action: 1. Wait and see.
2. If the alarm returns, contact your dealer.

The menu display shows:

ALARM	(GT11)
HTF out under limit	
040622 16:08:15	
Info	Ackn.

In a groundwater system the cause may also be:

Possible cause 4: Clogged filter in the groundwater circuit.

Action: 1. Clean the filter.

Possible cause 5: The motor cut-out or a fuse on the pump in the groundwater system has tripped.

Action: 1. Reset the motor cut-out or fuse.

Possible cause 6: Faulty pump in the groundwater circuit.

Action: 1. Contact your dealer.

Technical information

The heat pump's factory settings

The table shows the factory settings for all the settings that can be changed by the installer.

Menu	Setting	Factory setting
1.1	Temp. incr. / decr.	4
1.2	Temp. fine-tune	0°
1.3	Adapting the heat curve	0°
1.4	Heat curve hysteresis	5°
1.5	Mix. valve incr/decr	4
1.6	Mix. valve fine-tune	0°
1.7	Adapting the mixing valve curve	0°
1.8	Mixing valve curve neutral zone	3°
1.9	Mixing valve curve max at GT4	60°
1.10	Setting the room temperature	20°
1.11	Setting the room sensor influence	5
1.12	Setting of holiday function	0 days
1.13	Remote control temperature	Not active
1.14	Setting of summer disconnection	18°
2.1	Number of hours for extra hot water	0 hours
2.2	Interval for hot water peak	Not active
2.3	Setting of hot water temperature	51°
2.4	Setting of DHW hysteresis	4°
4.1	Clock setting HP accord. to clock	Not active
4.1.1	Setting level heat pump +/-	0°
4.2	Clock setting additional heat according to clock	Not active
4.3	Clock setting hot water according to clock	Not active
5.2	Select connection capacity electric cassette	2/3
5.4	Select function only add. heat	off
5.5	Select function additional heat	yes
5.7	Select external controls	0
5.10	Select operation alt. P2	P2 cont. operat.
5.11	Select operation alt. P3	P3 with comp.
8.1	Setting additional heat timer	60 minutes

Sensor table

The table shows all sensor resistance at different temperatures.

Temperature (°C)	kΩ
-40	154.300
-35	111.700
-30	81.700
-25	60.400
-20	45.100
-15	33.950
-10	25.800
-5	19.770
0	15.280
5	11.900
10	9.330
15	7.370
20	5.870
25	4.700
30	3.790
35	3.070
40	2.510
45	2.055
50	1.696
55	1.405
60	1.170
65	0.980
70	0.824
75	0.696
80	0.590
85	0.503
90	0.430

Technical information

Model Greenline HT Plus		6 C/E	7 C/E	9 C/E	11 C/E	14 E	17 E
Emitted /Supplied output at 0/35°C ¹	kW	5.9/1.3	7.3/1.6	9.1/2	10.7/2.2	14.4/3.1	16.7/3.7
Emitted /Supplied output at 0/50°C ¹	kW	5.4/1.7	6.9/2.1	8.4/2.6	10.1/3.0	13.9/4.2	16.2/4.9
Minimum flow heating medium ¹	l/s	0.14	0.18	0.22	0.26	0.35	0.40
Nominal flow heating medium	l/s	0.20	0.25	0.31	0.37	0.50	0.57
Permitted ext. pressure drop heating medium at nominal flow	kPa	36	36	34	33	54	51
Nominal flow cooling medium	l/s	0.30	0.38	0.46	0.57	0.78	0.90
Permitted ext. pressure drop cooling medium at nominal flow	kPa	49	45	44	80	74	71
Max pressure radiator system	bar	1.5					
Max press. cooling medium system	bar	4					
Highest outg. heating medium temp.	°C	65					
Operating temperature heat transfer system	°C	-5 to +20					
Integrated heat/HTF pump		Yes					
Electrical connection		400V, N3-Phase					
Add. heat reconnectable	kW	3.0 / 6.0 / 9.0					
Recommended fuse size depends on electrical additional heat							
Electric cassette 6 kW	AT	16	16	20	25	25	25
Electric cassette 9 kW	AT	20	25	25	25	32	32
Compressor		Scroll					
Refrigerant R407C	kg	1.35	1.4	1.5	1.9	2.2	2.3
Connection. heating medium	Cu/DN	22	22	22	22	28	28
Connection. cooling medium	Cu/DN	28	28	28	28	35	35
Dimensions E-model (WxDxH)	mm	600x600x1520					
Weight E-model	kg	146	152	155	170	190	195
Dimensions C-model (WxDxH)	mm	600x600x1800					
Weight C-model							
Copper/Stainless hot w cylinder	kg	230/200	231/201	240/210	218	-	-
Integrated double-shelled hot w cyl. on the C-model. Copper or stainless*		Copper / stainless	Copper / stainless	Copper / stainless	Stainless	-	-
Domestic hot water C-model	litres	165	165	165	165	-	-
Control unit		Rego 637					

¹ Output data at 0/35°C and 0/50°C and min heating medium flow are stated according to the European standard EN 255. Additional heat not included.

* Anode included in C-models with stainless hot water cylinder.

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