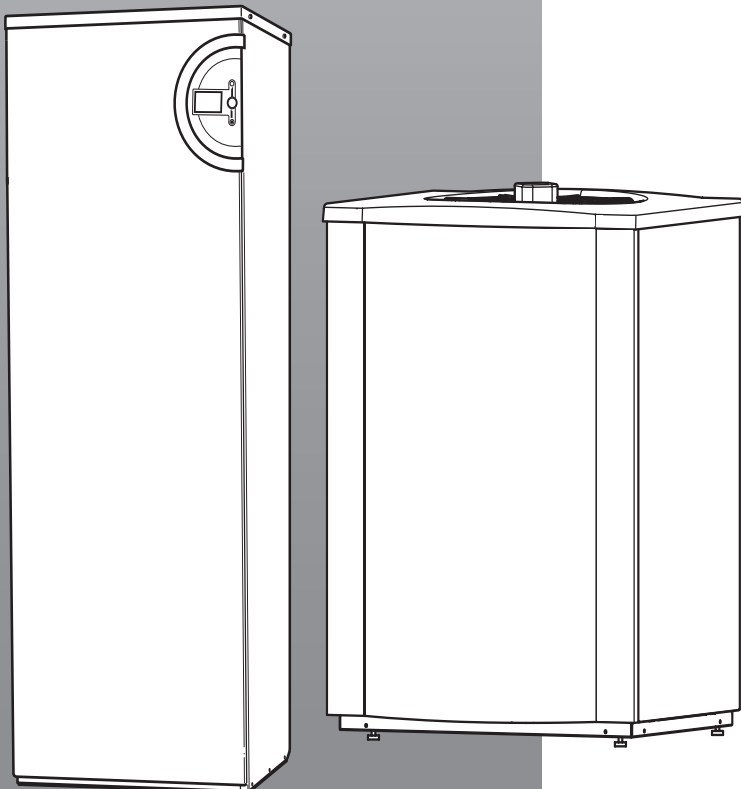


# USER MANUAL

AIR TO WATER HEAT PUMP WITH DOMESTIC HOT WATER DISTRIBUTION UNIT

# GREENSOURCE

6 KW, 7 KW AND 9.5 KW



6 720 641 467-00.11



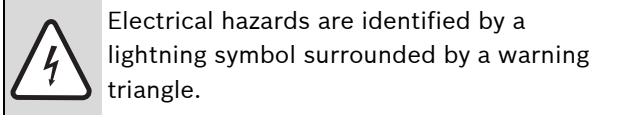
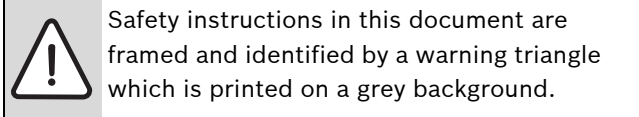
# TABLE OF CONTENTS

<b>1</b>	<b>Explanation of symbols and safety information</b>	<b>3</b>
1.1	Explanation of symbols	3
1.2	Safety precautions	3
<hr/>		
<b>2</b>	<b>The Benchmark scheme</b>	<b>4</b>
<hr/>		
<b>3</b>	<b>Use</b>	<b>5</b>
3.1	General information	5
3.2	Heat pump function	5
<hr/>		
<b>4</b>	<b>Standard delivery</b>	<b>7</b>
4.1	Greensource 6-9.5	7
4.2	Internal unit	7
<hr/>		
<b>5</b>	<b>Control unit</b>	<b>8</b>
5.1	Additional heat gives more output	8
5.2	Hot water is given priority over heating water	8
5.3	Automatic defrosting	8
5.4	control unit function	8
5.5	Heating control	8
<hr/>		
<b>6</b>	<b>Control panel</b>	<b>10</b>
6.1	Control panel parts	10
6.2	Control panel function	10
6.3	Settings	11
6.4	Menu	11
<hr/>		
<b>7</b>	<b>Maintenance</b>	<b>18</b>
7.1	Removing the external casing	18
7.2	Remove dirt and leaves	18
7.3	Protective covers	18
7.4	Filter	18
7.5	Evaporator	19
7.6	Snow and ice	19
<hr/>		
<b>8</b>	<b>Error management</b>	<b>20</b>
8.1	Example of an alarm:	20
8.2	Dimmed menu display	20
8.3	Emergency mode	20
8.4	All alarms and warning windows	20
8.5	Alarm window	21
8.6	Warning window	23
8.7	Information from the heat pump	23
<hr/>		
<b>9</b>	<b>Specification</b>	<b>25</b>
9.1	Factory settings	25

# 1 EXPLANATION OF SYMBOLS AND SAFETY INFORMATION

## 1.1 EXPLANATION OF SYMBOLS

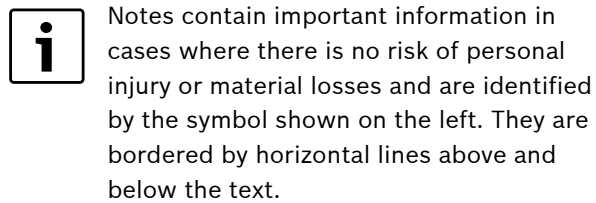
### WARNING SYMBOLS



Signal words indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- **NOTICE** indicates possible damage to property or equipment, but where there is no risk of injury.
- **CAUTION** indicates possible injury.
- **WARNING** indicates possible severe injury.
- **DANGER** indicates possible risk to life.

### IMPORTANT INFORMATION



### ADDITIONAL SYMBOLS

Symbol	Meaning
▶	a step in an action sequence
→	a reference to a related part in the document or to other related documents
•	a list entry
–	a list entry (second level)

Tab. 1

## 1.2 SAFETY PRECAUTIONS

### GENERAL

- ▶ Read the guide carefully and keep it to hand for future use.

### INSTALLATION AND COMMISSIONING

Installation and commissioning may only be carried out by a qualified contractor.

### RISK OF DAMAGE DUE TO OPERATOR ERROR

Operator errors can result in injury and damage to property.

- ▶ Ensure that children never operate this appliance unsupervised or play with it.
- ▶ Ensure that only personnel who can operate this appliance correctly have access to it.

### SERVICE AND MAINTENANCE

- ▶ Only qualified personnel may carry out repairs. Incorrect repairs can lead to serious risks to the user, and a reduction in savings.
- ▶ Only use original spare parts.
- ▶ Service and maintenance must be carried out annually by an authorised service representative.

## 2 THE BENCHMARK SCHEME

Worcester, Bosch Group is a licensed member of the Benchmark Scheme which aims to improve the standards of installation and commissioning of domestic heating and hot water systems in the UK and to encourage regular servicing to optimise safety, efficiency and performance.

Please ensure that the installer has fully completed the Benchmark Checklist on the inside back pages of the installation instructions supplied with the product and that you have signed it to say that you have received a full and clear explanation of its operation. The installer is legally required to complete a commissioning checklist as a means of complying with the appropriate Building Regulations (England and Wales).

All installations must be notified to Local Area Building Control either directly or through a Competent Persons Scheme. A Building Regulations Compliance Certificate will then be issued to the customer who should, on receipt, write the Notification Number on the Benchmark Checklist.

This product should be serviced regularly to optimise its safety, efficiency and performance. The service engineer should complete the relevant Service Record on the Benchmark Checklist after each service.

The Benchmark Checklist may be required in the event of any warranty work and as supporting documentation relating to home improvements in the optional documents section of the Home Information Pack.

## 3 USE

### 3.1 GENERAL INFORMATION

Worcester Greensource is a range of heat pumps that draw energy from the outside air for heating purposes, as well as for DHW heating if required. This product range comprises the Greensource 6, Greensource 7 and Greensource 9.5. Consequently, it covers the entire heat demand.

The Greensource 6-9.5 heat pumps can be linked to the HWDU-151 internal unit. The internal unit contains a DHW cylinder, thereby creating a complete system for central heating and DHW. If required, the internal unit acts as a additional heater. In such cases, the control unit is fitted to the internal unit.

Once the heat pump has been installed and started, there are a number of points that should be checked regularly. This may concern an alarm triggering or performing basic maintenance actions. In the first instance the customer should try to rectify this and this manual describes each step. If the problem is repeated, you should contact the dealer.

These operating instructions describe the Greensource heat pump, its components, maintenance, adjustments etc. The operation of the internal unit is described in a separate manual. Please read this document carefully, even if you are operating the Greensource 6-9.5 together with the HWDU-151.

### 3.2 HEAT PUMP FUNCTION

The heat pump draws energy from outside air. This energy is transferred by heated water into the heating system (radiators and/or underfloor heating system) of the building and possibly for DHW heating. The internal unit is equipped with a DHW cylinder.

Under certain conditions, e.g. when it is very cold outside, the heat pump requires additional energy. This is provided via an internal unit.

The heat pump comprises four main components:

- **Evaporator**  
Transfers heat from the air to the refrigerant circuit and simultaneously evaporates the refrigerant into a gas.
- **Compressor**  
Increases the refrigerant pressure.
- **Condenser**  
Condenses the gas into a liquid and transfers heat into the heating system.
- **Expansion valve**  
Reduces the refrigerant pressure.

A refrigerant circulates through the heat pump. In some sections of the circuit it is in liquid form, in others it is gaseous.

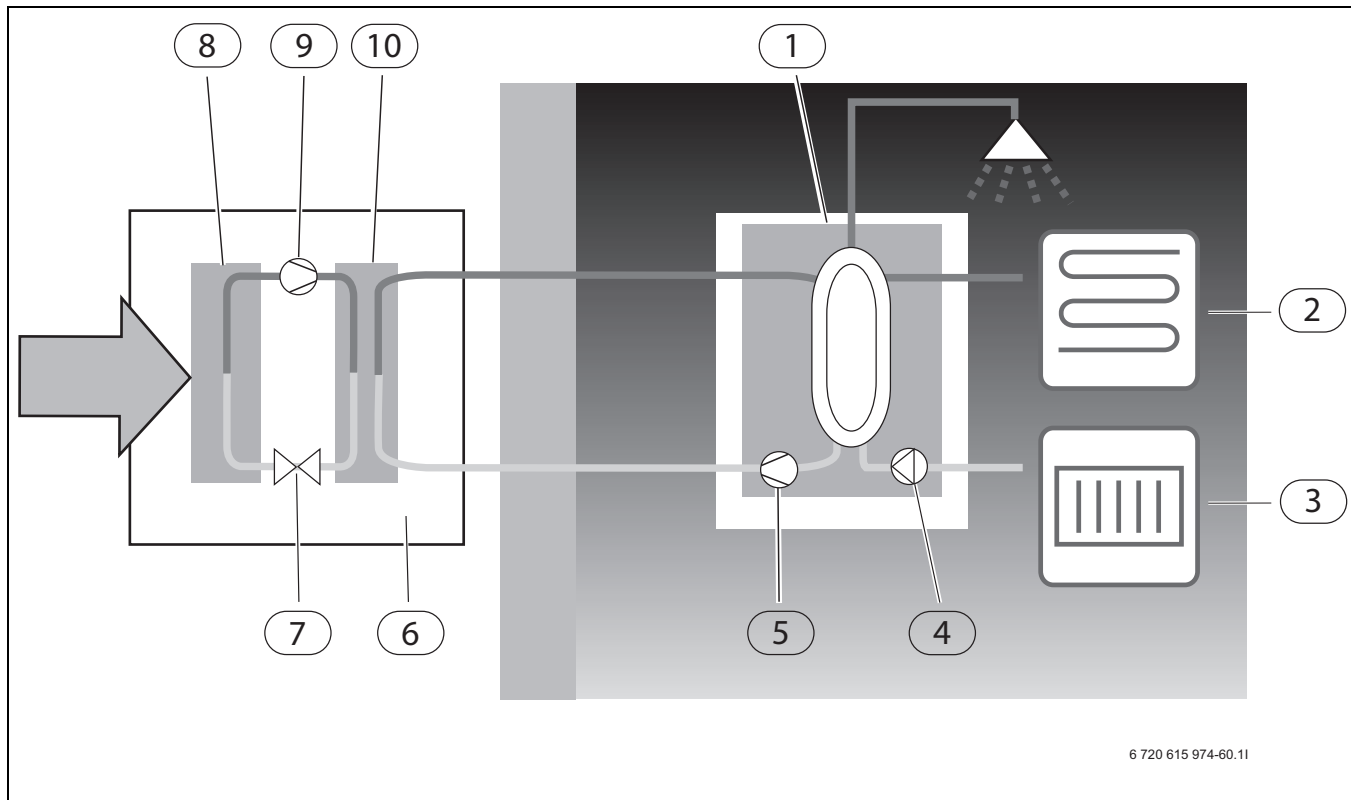


Fig. 1 Greensource with HWDU-151 – function description

- 1 Internal unit
- 2 Underfloor heating system
- 3 Radiators
- 4 Heating circuit pump
- 5 Heat transfer medium pump
- 6 Heat pump
- 7 Expansion valve
- 8 Evaporator
- 9 Compressor
- 10 Condenser

- The fan blows air through the evaporator.
- The air meets the refrigerant in the evaporator. At this point, the refrigerant is in liquid form. The refrigerant begins to boil as soon as it meets the warmer air. The resulting vapour is routed into the compressor.
- The pressure of the refrigerant increases in the compressor and the temperature of the gas rises to approx. +100 °C. The warm gas is then forced into the condenser.
- Energy in the condenser is transferred to the heat transfer fluid circuit. The gas is cooled down and becomes fluid. The pressure in the refrigerant is still high when it is routed to the expansion valve.
- Inside the heat pump, the energy is routed to the heating system (underfloor heating system and/or radiators) and via the DHW cylinder into the DHW system of the building.
- The refrigerant pressure is reduced by the expansion valve, from where the refrigerant is routed to the evaporator. The refrigerant changes back into its gaseous form whilst it runs through the evaporator.

## 4 STANDARD DELIVERY

### 4.1 GREENSOURCE 6-9.5

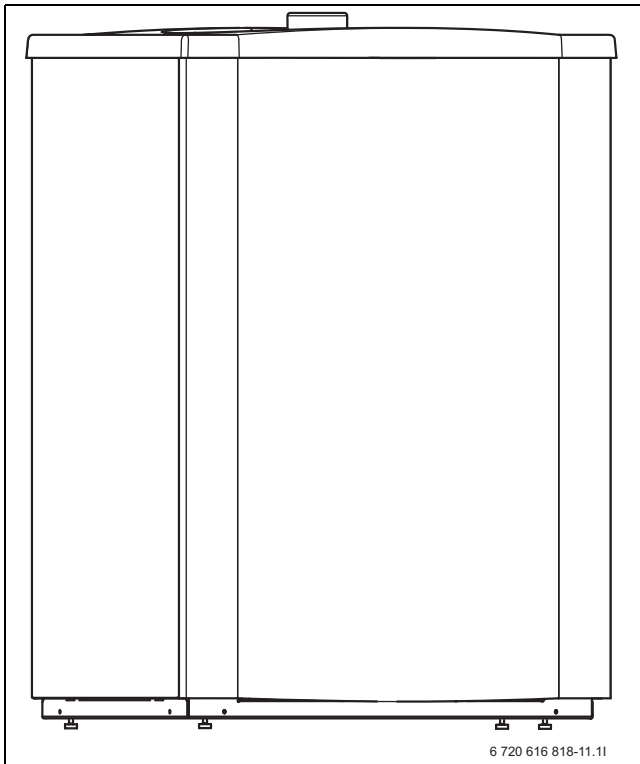


Fig. 2 Heat pump

### 4.2 INTERNAL UNIT

The control unit is integrated into the HWDU-151 when the heat pump is combined with an internal unit, which also incorporates a DHW cylinder. The heat pump is installed externally; the internal unit internally.

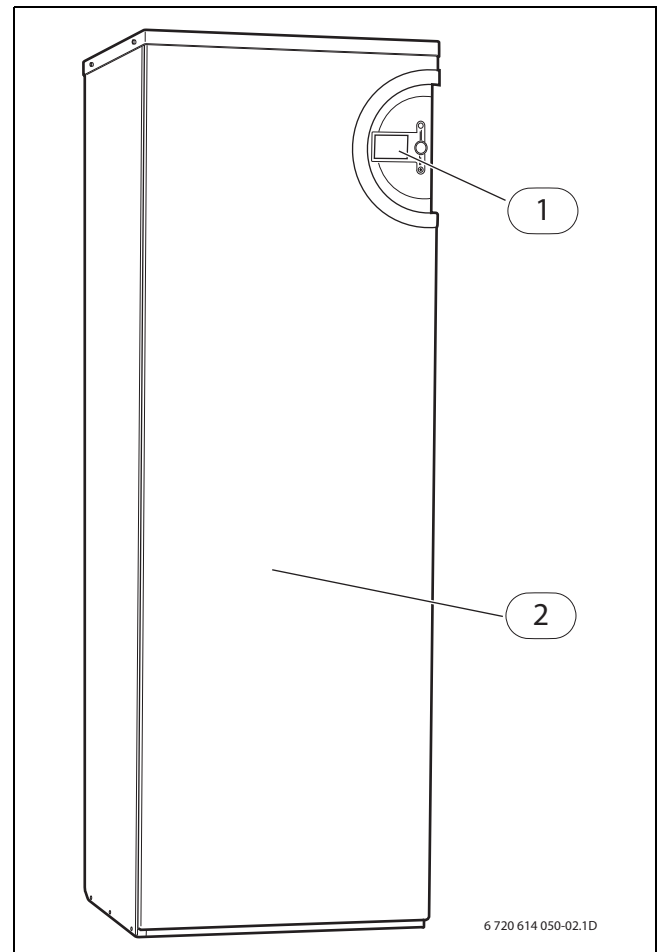


Fig. 3 Internal unit

- 1 Control panel
- 2 DHW cylinder

## 5 CONTROL UNIT

The control unit regulates and monitors the central heating and DHW. The monitoring function shuts down the heat pump in case of operating faults. This prevents damage to important heat pump components.

### 5.1 ADDITIONAL HEAT GIVES MORE OUTPUT

Should the heat pump fail to deliver sufficient energy for heating the building or if it was stopped because of outside temperatures below approx. -20 °C, then the heating operation needs to be boosted. For this, the following option is available: Internal unit. If the heat pump only covers part of the energy demand for heating, the shortfall in heating output will be supplied by the additional heater. The electric additional heater is switched off when the heat pump can cover the prevailing energy demand again.

### 5.2 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 and floor coils and hot water is for showers and taps.

If the system is equipped with an internal unit, then the DHW is heated inside the DHW cylinder in the internal unit. A temperature sensor for monitoring the DHW temperature is fitted. The heating water is routed through the heating water jacket of the DHW cylinder and thereby heats the internal cylinder. As soon as DHW is called for, the control unit switches central heating off and changes over to DHW priority.

### 5.3 AUTOMATIC DEFROSTING

Ice forms on the evaporator at outside temperatures below +10°C. When ice forms to an extent that it obstructs the air flow through the evaporator automatic defrosting starts.

Defrosting is controlled by a four-way valve. The valve reverses the flow of the refrigerant in the circuit so that the hot gas from the compressor melts the ice on the evaporator fins.

An additional function enables defrosting of the fan. Warm air is drawn through the fan and thereby prevents it from freezing up again.



The compressor stops for up to 60 s when defrosting is activated or deactivated.

### 5.4 CONTROL UNIT FUNCTION

During installation, the heat pump needs to be set to a specific operating mode. The operating mode depends on the respective operating conditions of the heat pump as well as on its surroundings.

The installer must set up the heat pump in accordance with the required operation and respective conditions.

#### 5.4.1 HEAT PUMP WITH INTERNAL UNIT

The control unit adjusts its operating mode automatically, if the heat pump is operated in conjunction with an internal unit. Specifically, this means that the heat pump operates with a additional heater in the form of the internal unit and that DHW is heated inside the DHW cylinder of the internal unit. A temperature sensor fitted externally transmits the outside temperature to the control unit. The control unit regulates the generation of heat and DHW based on the currently captured and selected values.

### 5.5 HEATING CONTROL

The control unit regulates heat generation for the heating either exclusively via the outside temperature sensor (weather-compensated control) or via a combination of outside temperature sensor and room temperature sensor (room temperature-dependent control).

#### 5.5.1 WEATHER-COMPENSATED CONTROL

As a standard, the heat pump control unit operates in weather-compensated mode. The outside temperature sensor is mounted on the coldest external wall of the building which is least exposed to sunlight. The outside temperature sensor signals the current outside temperature to the control unit. Via the heat pump flow temperature, the control unit automatically adapts the internal room temperature of the building subject to the prevailing outside temperature.

At the control unit, users can determine the flow temperature in relation to the outside temperature by modifying the heating curve setting. The heating curve shows the heating water flow temperature in relation to the outside temperature. Selecting a lower heating curve results in a lower flow temperature and subsequently higher energy savings.



---

### 5.5.2 WEATHER-COMPENSATED CONTROL WITH ROOM TEMPERATURE DEPENDENCE

---



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

---

Weather-compensated control with room temperature dependence means that a temperature sensor (accessory) is located in the lead room of the building. The room temperature sensor is connected to the heat pump and signals the current room temperature to the control unit. The room temperature sensor influences the heating curve flow temperature. The flow temperature is reduced if the actual room temperature is higher than the selected temperature.

A room temperature sensor is appropriate if, apart from the outside temperature, other factors influence the temperature inside the building, e.g. open fireplace, fan heater, building subject to wind influence or direct sunlight.

## 6 CONTROL PANEL

All settings are made and possible alarms are displayed via the control panel. The control panel enables the control unit to be controlled in accordance with user requirements.

If the heat pump is supplied together with an internal unit, control panel and control unit are integrated into the internal unit.

### 6.1 CONTROL PANEL PARTS

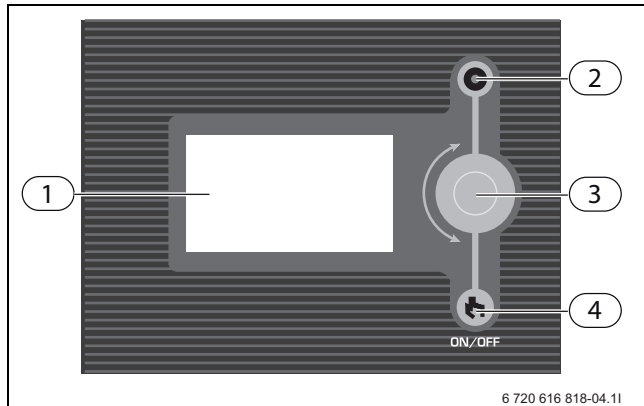


Fig. 4 Internal unit control panel

- 1 Display
- 2 ON and fault indicator
- 3 Menu dial
- 4 Main ON/OFF switch

#### STATUS LAMP

- **Lamp lights green:** Switch in ON position.
- **Lamp flashes green:** Switch in OFF position.
- **Lamp not lit:** No voltage to control unit.
- **Lamp flashes red:** an alarm has been triggered and the alarm has not been acknowledged (→ Chapter 8).
- **Lamp lights red:** a fault has occurred. Contact the installer.



The ON and fault indicator of the control panel are located on the outside of the control panel.

#### MENU DIAL

The menu dial is used to navigate between the menu windows and to change the values of different settings. The menu dial is also used to confirm selections.

#### SWITCH

The power switch button is used to start and switch off the heating installation.

### MENU DISPLAY

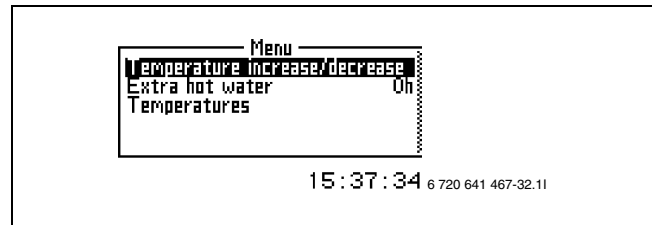


Fig. 5

### 6.2 CONTROL PANEL FUNCTION

The menu dial is used to navigate the menus.

- ▶ Turn the menu dial anti-clockwise to scroll down through the menus.
- ▶ Turn the menu dial clockwise to scroll up through the menus.
- ▶ Press the menu dial to confirm the selection, when the desired row is marked.

At the top and bottom of each sub menu there are back arrows to take you back to the previous menu.

- ▶ Press the menu dial when the back arrow is marked.

#### 6.2.1 SYMBOL OVERVIEW

Symbols for different functions and components that are in operation are displayed in the lower part of the menu window.

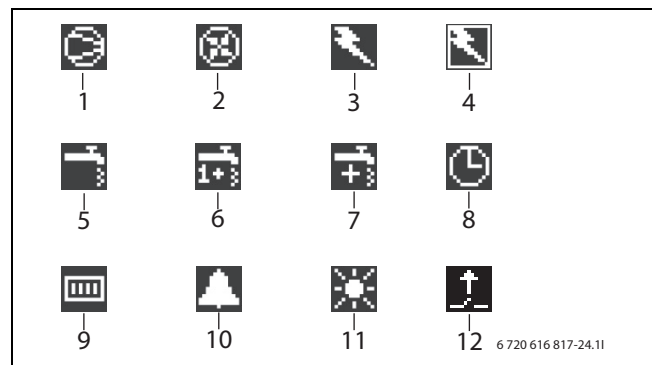


Fig. 6

- 1 Compressor
- 2 Fan
- 3 Electric additional heater
- 4 Power guard
- 5 DHW mode
- 6 DHW peak (pasteurisation)
- 7 Additional hot water
- 8 Time control
- 9 Heating mode
- 10 Alarm
- 11 Holiday mode
- 12 External input enabled

## 6.3 SETTINGS

The function menus are split into different levels to cover various requirements.

- **Menu** Customer level, the most common functions.
- **Advanced menu** Customer level, other functions.
- **Installer/Service** Basic settings for installers or service representatives.

Users of the heating installation only see what is available in the two customer levels.

## 6.4 MENU

The initial menu in the control unit is called **Menu**. The most frequent functions are included here. In **Menu** shows the functions that your heating unit is set for. For example it shows **Extra hot water** only if a water heater is connected.

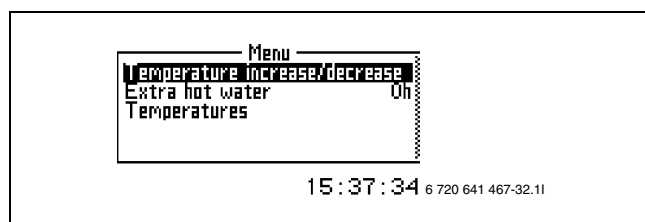


Fig. 7

### 6.4.1 SET THE HEATING

Depending on whether the system is equipped with a room temperature sensor or not, two options for setting up the heating system are available.

#### HEATING SETUP WITH NO ROOM TEMPERATURE SENSOR INSTALLED:

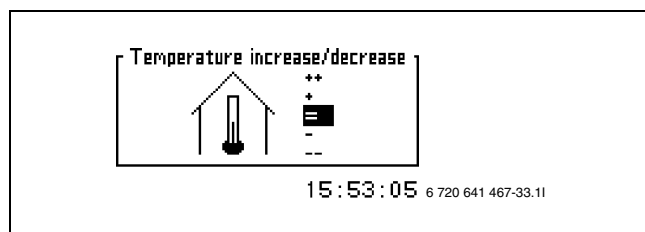


Fig. 8

- ▶ Select the menu **Temperature increase/decrease**.  
Select one of the options below:
  - ++ Much warmer (approx. +1 °C)
  - + Warmer (approx. +0.5 °C)
  - = No temperature change
  - - Colder (approx. -0.5 °C)
  - -- Much colder (approx. -1 °C)
- ▶ Press menu dial. Select **Save** to confirm your choice.

#### HEATING SETUP WITH A ROOM TEMPERATURE SENSOR INSTALLED:

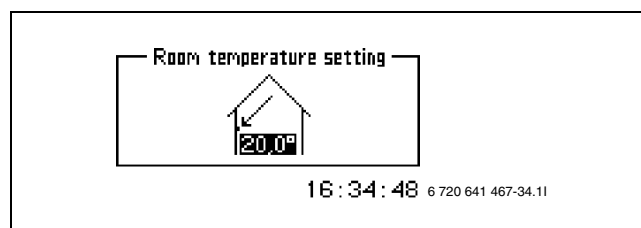


Fig. 9

- ▶ Select **Room temperature setting** in the menu.
- ▶ Enter the desired room temperature. Min = +10°C, max = +35°C.
- ▶ Select **Save** to save the change or **Cancel** to return without saving.

Under **Advanced** you can also set how much you want the room sensor to affect the heating system (→ Chapter 6.4.4).



After raising or lowering the temperature setting wait at least a whole day before making another temperature adjustment.

### 6.4.2 EXTRA HOT WATER

If a DHW cylinder is installed, the DHW temperature can be increased temporarily to approx. 65 °C with function **Extra hot water**. In this case the heat pump is supported in raising the temperature by the additional heater.

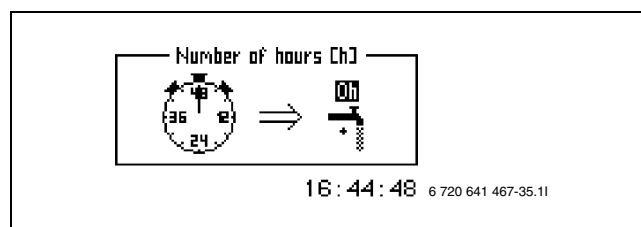


Fig. 10

- ▶ Select **Extra hot water** in the menu.
- ▶ Set the number of hours that the function is to be active by twisting the menu dial. Turn the knob clockwise to increase and anticlockwise to reduce.
- ▶ Select **Save** to save the change or **Cancel** to return without saving.

### 6.4.3 TEMPERATURES

Under **Temperatures** displays the current temperatures for the sensors which are most important for controlling heating and the hot water.

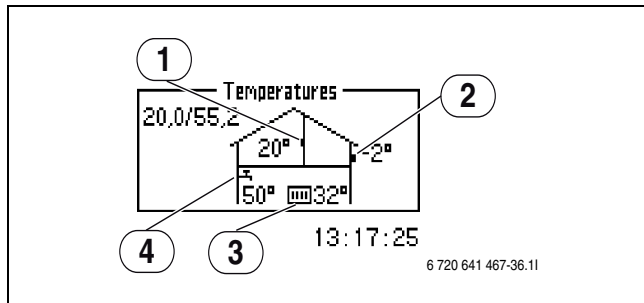


Fig. 11

- 1 Room temperature sensor (accessory)
- 2 Outside temperature sensor
- 3 Flow temperature sensor
- 4 DHW temperature sensor

► Select **Temperatures** in the menu

**Flow temperature sensor (T1)** indicates the heating system flow temperature. This is the temperature of the heating water routed into the heating system.

**Outside temperature sensor (T2)** indicates the outside temperature.

**DHW temperature sensor (T3)** is only displayed if a DHW cylinder is installed. The display indicates the temperature in the lower section of the outer cylinder of the DHW cylinder. This temperature is approx. 5°C lower than the temperature of the DHW in the inner cylinder.

**Room temperature sensor (T5)** is only displayed if a room temperature sensor is installed. The display indicates the temperature of the room where the sensor is installed.



The display can also indicate the respective V and H values. In the example shown V is 20.0 °C, H is 45.6 °C. V and H are described in (→ chapter 6.4.5).

### 6.4.4 ADVANCED MENU

Under **Advanced** there are extra functions that can be used to affect the heating unit.

To get to **Advanced**:

- Press the menu dial and hold it pressed for approx 5 seconds.

### OVERVIEW

Extended menu
Temperature
Hot water
Timers
Setting the clock
Display
Alarm
Access level
Return to factory settings
Deactivate alarm buzzer
Program version

Tab. 2

### 6.4.5 TEMPERATURE

#### SET THE HEATING

This describes the heating settings.

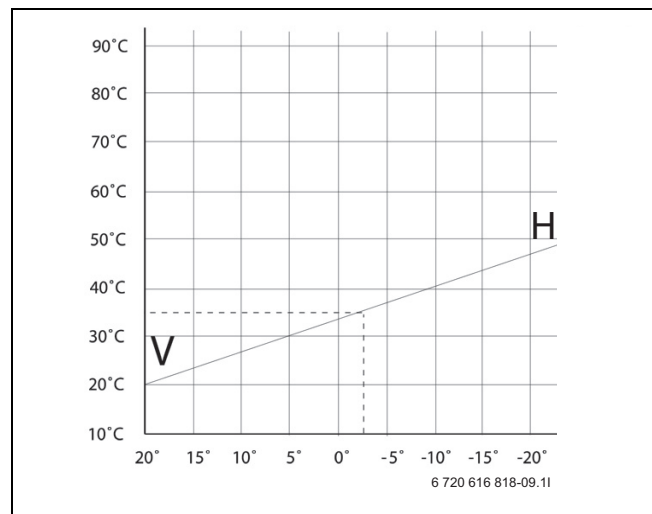


Fig. 12

**The heat curve** determines the relationship between the outdoor temperature and the flow line temperature. It is possible to adjust the Left and Right values or the value for every fifth degree between them.



In the delivered condition, the heating curve slope V=20 and H=45.6 are set.  
 V=22, H=30: Underfloor heating embedded in screed.  
 V=22, H=35: Underfloor heating between joists.  
 V=20, H=55: Radiator heating system.

To set the heat curve:

- ▶ Select **Heat curve** in the menu **Heating system temperature**.
- ▶ Select the value that is to be changed by twisting the dial.
- ▶ Mark the value by pressing the dial once.

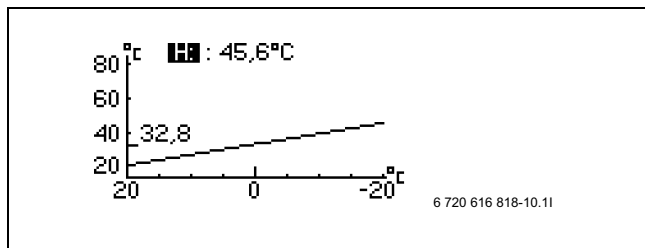


Fig. 13

- ▶ Turn the menu dial to change the selected value.
- ▶ Press the menu dial once and select save.

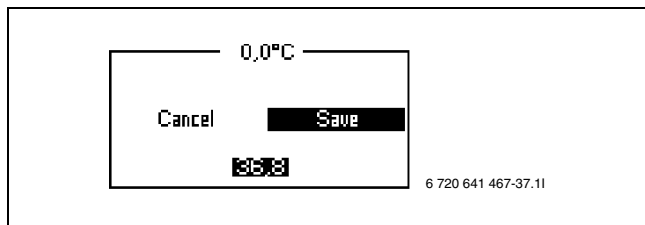


Fig. 14

The heating curve can end up with a kink if a single value of the curve is changed. This case occurs, for example, if a temperature around 0 °C should be raised.

- ▶ Turn the menu dial until the 0 °C is highlighted.
- ▶ Press the menu dial to highlight the flow temperature value.
- ▶ Turn the menu dial to set the required temperature.

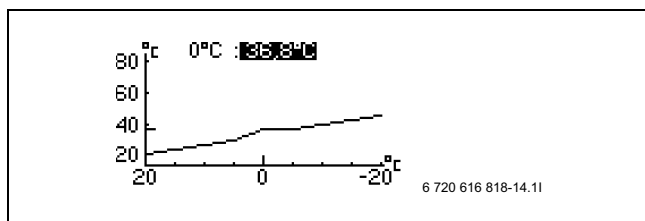


Fig. 15

- ▶ Press the menu dial to save the modified curve.

Terminate menu point **Heat curve**:

- ▶ Turn the menu dial until the highlighted return arrow is displayed.

- ▶ Press menu dial.

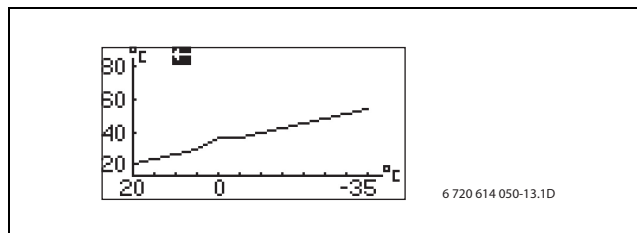


Fig. 16

The “Hysteresis” determines the point when the heat pump compressor starts and stops relative to the heating curve value. This value shifts relative to the heating curve. This value shifts relative to the heating curve to prevent a continuous cycling of the compressor.

Generally, the factory setting does not need to be changed.

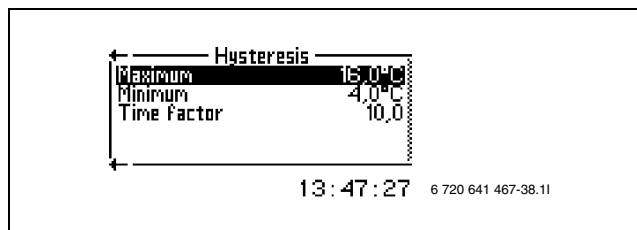


Fig. 17

#### SETTING THE REQUIRED ROOM TEMPERATURE

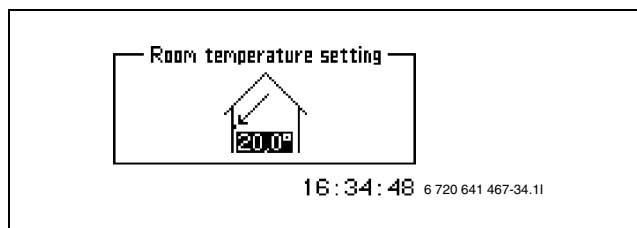


Fig. 18

- ▶ Select **Room temperature setting** in the menu.
- ▶ Enter the desired room temperature. Min = +10°C, max = +35°C.
- ▶ Select **Save** to save the change or **Cancel** to return without saving.

**Room sensor influence** means that the influence of the sensor on the heating system can be adjusted.

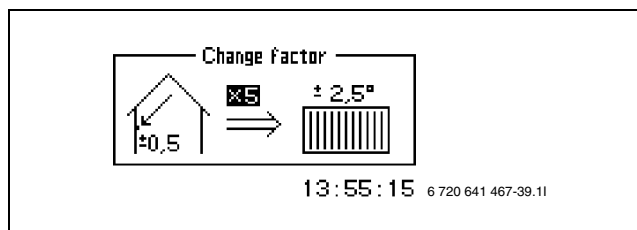


Fig. 19

To adjust the influence of the room sensor on the heating system, increase or decrease the change factor.

- ▶ Select **Room sensor influence** in the menu.

- ▶ Select **Change factor** in the sub-menu.
- ▶ Give the desired value by turning the menu dial. Min = 0, max = 10.
- ▶ Press the dial in once and select **Save** by turning the menu dial.

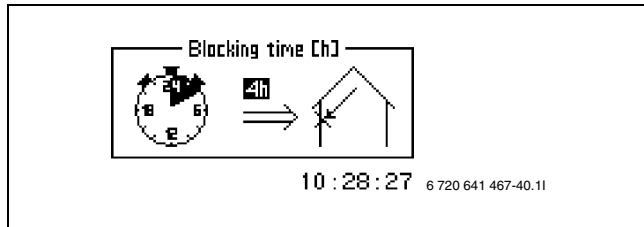


Fig. 20

**Blocking time** means that the influence of the room sensor on the heating system is blocked for a set time after a heat lowering period, to give the heat pump the opportunity to raise the flow line temperature at a slower speed.

**TIME LIMITED SETTINGS**

**Time control heating** enables you to increase or reduce the temperature on different days of the week for custom times.



Timer control is not recommended in normal conditions as it can negatively affect energy consumption.

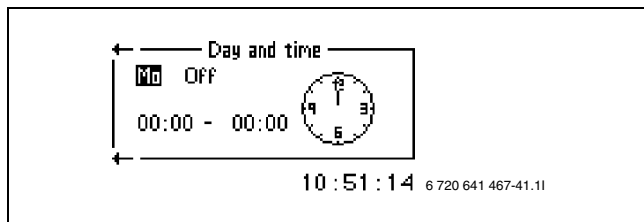


Fig. 21

- ▶ Select menu option **Time control heating**.
- ▶ Select **Day and time**.
- ▶ Enter day and time.
- ▶ Select **On**.
- ▶ Select **Save**.

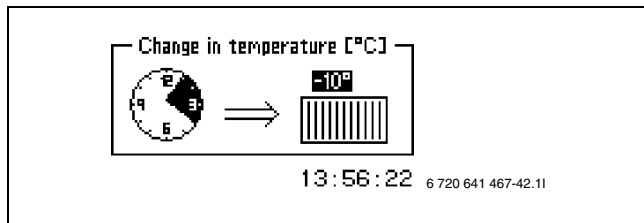


Fig. 22

- ▶ Select **Change in temperature** and select the required value. Minimum = -20°C, maximum = +20°C.
- ▶ Select **Save**.

Remove a time control:

- ▶ Take out relevant time control according to the above.
- ▶ Select mode **Off**.

**Holiday** allows the possibility of reducing (or increasing) the temperature between two set dates.

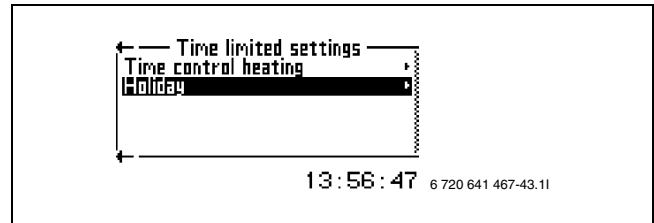


Fig. 23

- ▶ Select menu option **Holiday**.

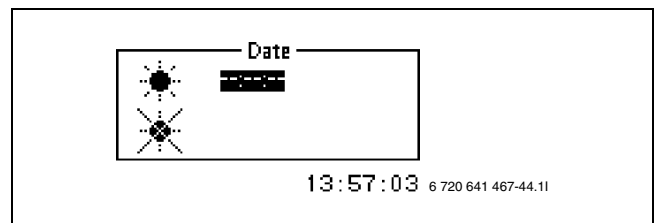


Fig. 24

- ▶ Select the start and end date in the format YY/MM/DD.
- ▶ Select **Save**.

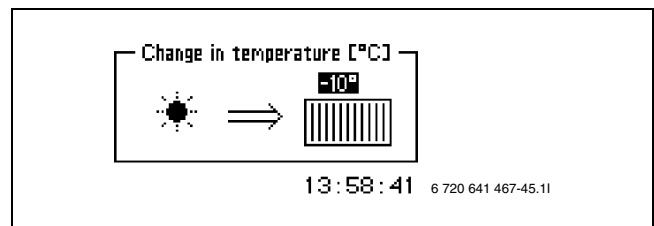


Fig. 25

- ▶ Select **Change in temperature** and select the required value. Minimum = -20°C, maximum = +20°C.

To cancel the function:

- ▶ Select **Holiday**.
- ▶ Change the end date to the date *before* the start date.

**Remote control** offers the option of reducing (or increasing) the temperature by means of an external (telephone) signal. This function requires that appropriate equipment is installed.

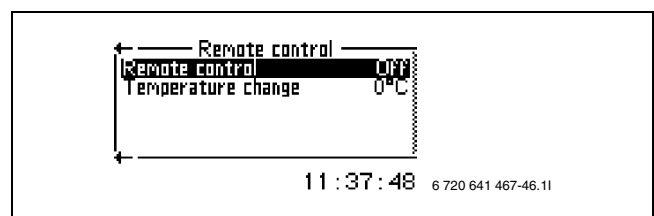


Fig. 26

To enable this function:

- ▶ Select menu option **Remote control**.
- ▶ Select **Remote control On**.
- ▶ **Change in temperature**, set the amount of degrees that the flow line temperature is to be changed.

### EXTERNAL CONTROL HEATING

**External control heating** offers the option of shutting down the heat generation independent of the temperature by means of an external (telephone) signal.

To enable this function:

- ▶ Select **External control heating**.
- ▶ Change the setting for **External control blocking heating** to **On**.



Only activated selections are displayed. All selections made are activated at the same time by the external input.

### HEATING SEASON

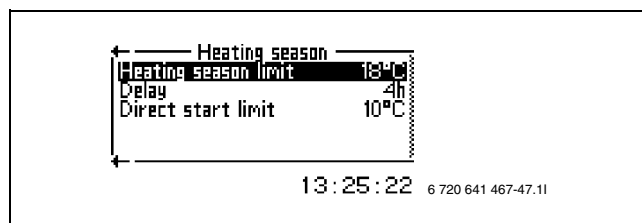


Fig. 27

The heat pump and the additional heater produce heat only when the outdoor temperature falls below the adjustable value **Heating season limit**.

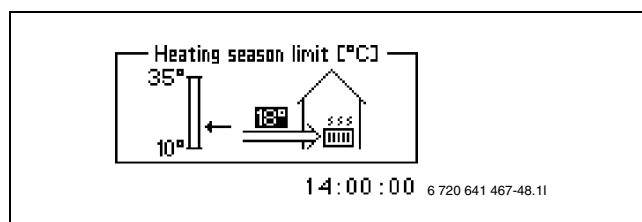


Fig. 28

To avoid lots of starts and stops of the heat pump when the outdoor temperature lies close to the limit value, the activity of this function is delayed with the settable value **Delay**.

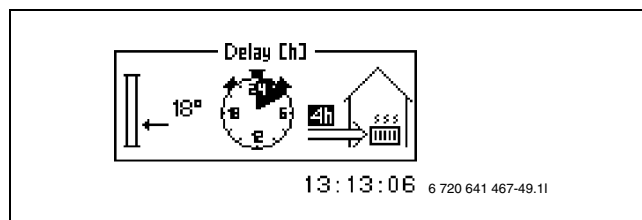


Fig. 29

**Direct start limit** means that the delay is set aside and heat production starts immediately if the temperature drops below the set value.

### HEATING, MAXIMUM OPERATING TIME AT HOT WATER REQUIREMENT



Fig. 30

This function ensures the hot water requirement during heat production. The time is adjustable between 0 and 60 minutes.

### 6.4.6 DHW SETTINGS

The menus for DHW settings are only shown if a DHW cylinder is installed.

#### EXTRA HOT WATER

With menu point **Extra hot water** the DHW temperature can be raised temporarily to approx. 65 °C. In this case the heat pump is supported in raising the temperature by the additional heater.

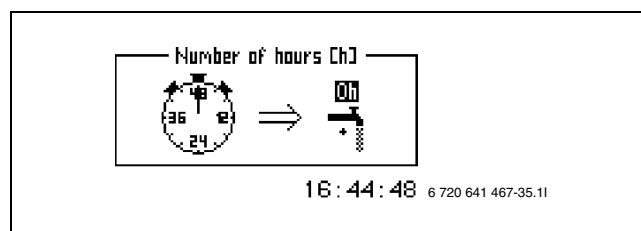


Fig. 31

- ▶ Select menu option **Extra hot water**.
- ▶ Turn the menu dial to set the duration of this function in hours. Turning clockwise/anti-clockwise lengthens/shortens the duration.

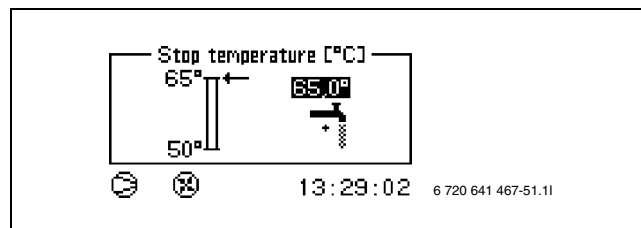


Fig. 32

- ▶ Set the required **Stop temperature**.
- ▶ Select **Save**, to save your settings or **Cancel** to discard your changes.

In menu **Extra hot water** you can check how long **Timers** is still available.



Repeat the adjustment after the selected time has expired to start a new period with Extra hot water. Whilst the Extra hot water function is operational the number of hours can also be increased.

**HOT WATER PEAK**

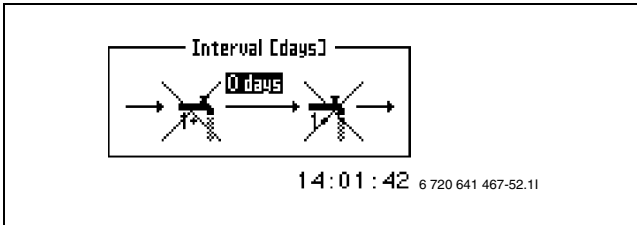


Fig. 33

**Regular increase of the DHW temperature** The interval for pasteurisation is set in menu **Hot water peak**. If you select 7 days, for example, then the DHW temperature is raised to approx. 65 °C every seventh day. With **Start time** you determine when pasteurisation should commence.

**TIME CONTROL HOT WATER**

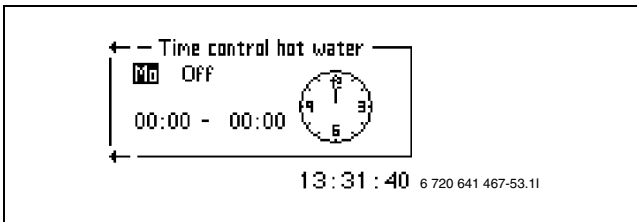


Fig. 34

Function **Time control hot water** enables the complete shutdown of DHW heating to save energy. This may be appropriate during periods when high electricity tariffs are applied. This will, however, result in a reduced DHW provision. You enable this function like all other time controls.



**Time control hot water** can impair the DHW availability.

**EXTERNAL CONTROL HOT WATER**

**External control hot water** offers the option of shutting down the DHW generation independent of the temperature by means of an external (telephone) signal.

To enable this function:

- ▶ Select **External control hot water**.
- ▶ Change the setting for **External control blocking heating** to **On**.



Only activated selections are displayed. All selections made are activated at the same time by the external input.

**6.4.7 TIMERS**

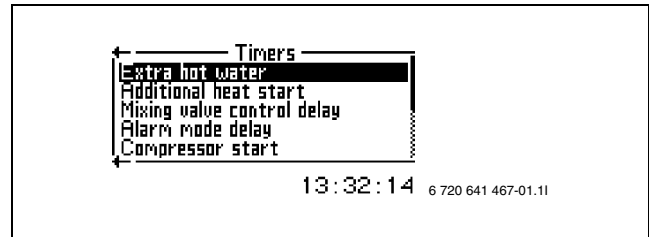


Fig. 35

There are a number of timers in the control unit. The statuses for these are shown in the menu **Timers**.

**Extra hot water** indicates the period for which the required function Extra Hot Water is available.

**Additional heat start** indicates the remaining time for delaying the start of the additional heater.

**Mixing valve control delay** indicates the delay for the mixer control after expiry of the additional heater start delay.

**Alarm mode delay** indicates the remaining time until the additional heater starts following an alarm issue.

**Compressor start** indicates the time before the compressor starts.

**Delay before defrost** indicates the remaining time before a permissible defrost.

**Heating, maximum operating time at hot water demand** indicates the time remaining before the maximum time for heating mode is reached, if a simultaneous DHW demand is active.

**Hot water, maximum operating time at heating system demand** indicates the remaining time before the maximum time for DHW heating is reached, if a simultaneous heating demand is active.

**6.4.8 SETTING THE CLOCK**

The heat pump has functions that are dependent on both the time and date. Thus it is important that these are correct.

To set the date and time:

- ▶ Select **Setting the clock** in the advanced menu.

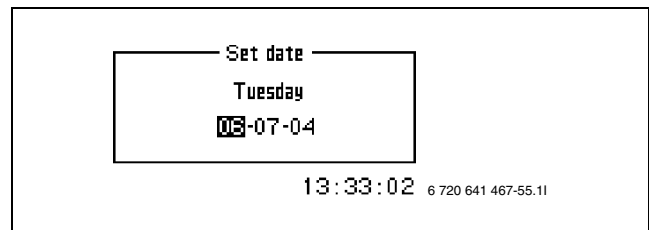


Fig. 36

- ▶ Select **Set date** to adjust. This is done using the menu dial in the order, Year-Month-Day.



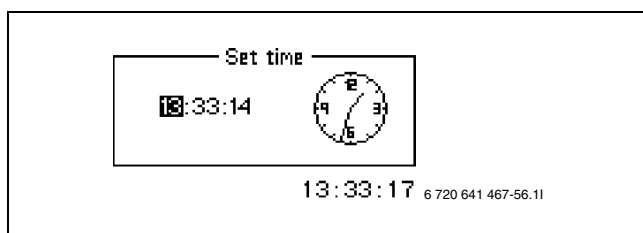


Fig. 37

- ▶ Select **Set time** and set the time with the menu dial.

#### 6.4.9 DISPLAY

In menu **Display** you can adjust the display contrast and brightness.

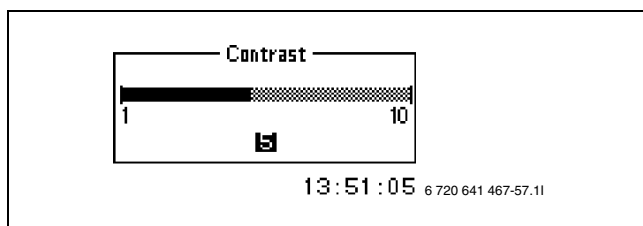


Fig. 38

- ▶ Select **Contrast** and select the required value with the menu dial.

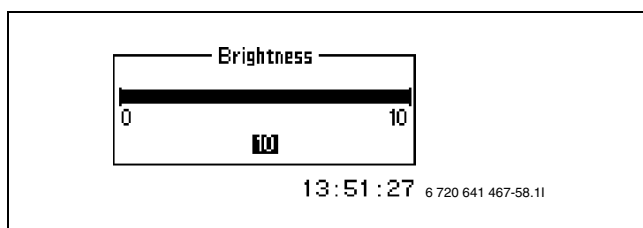


Fig. 39

- ▶ Select **Brightness** and select the required value with the menu dial.

#### 6.4.10 ALARM

Any alarms and warnings that have occurred are saved, together with the time when they occurred. If there is an alarm symbol in the menu window this means the alarm is still active, and some form of action is required. (→ Chapter 8).

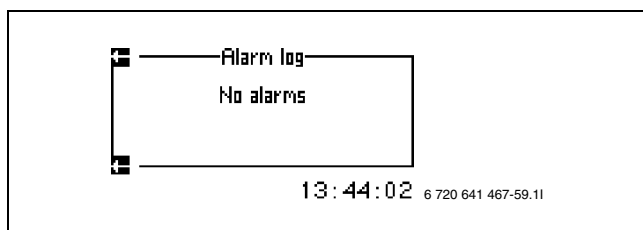


Fig. 40

Call up menu point:

- ▶ Select **Alarm log**.

#### 6.4.11 ACCESS LEVEL

This menu is used by the installer and the service engineer. Level 0 = customer is standard.

#### 6.4.12 RETURN TO FACTORY SETTINGS

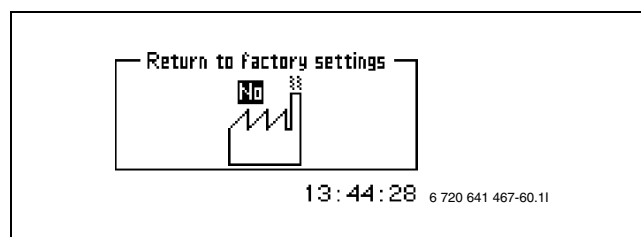


Fig. 41

To reset all settings and return to default settings:

- ▶ Select **Return to factory settings**.
- ▶ Select **Yes**.
- ▶ Select **Save**.

This does not affect the settings made in the Installer/Service level.

#### 6.4.13 DEACTIVATE ALARM BUZZER

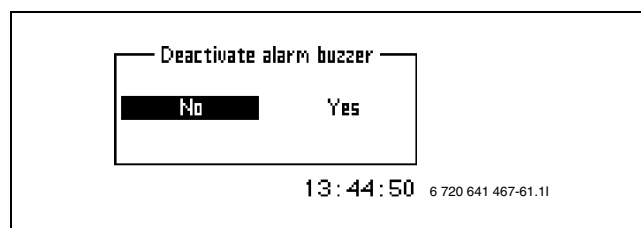


Fig. 42

When an alarm occurs, an alarm window is displayed and a warning signal sounds. This warning signal is quiet if the alarm is acknowledged or returned (→ Chapter 8).

To deactivate the alarm buzzer:

- ▶ Select **Deactivate alarm buzzer**.
- ▶ Select **Yes**.
- ▶ Select **Save**.

#### 6.4.14 PROGRAM VERSION

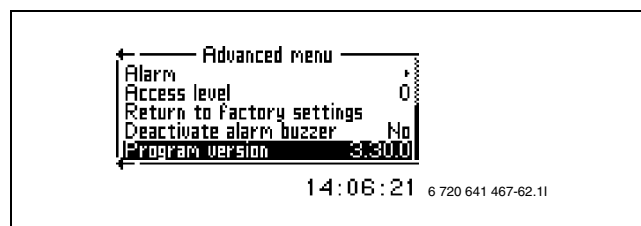



Fig. 43

The program version of the control unit is displayed. It is useful to have this information on hand when contacting the dealer or installer.

## 7 MAINTENANCE

The heat pump requires a minimum of maintenance, however, some servicing is still required to get optimal performance from your heat pump. Check the following items a few times per year:



**DANGER:** The heat pump is connected to high current.

- ▶ Break the power supply before rectifying.

### 7.1 REMOVING THE EXTERNAL CASING

Some maintenance areas are only accessible after removal of the external casing.

Remove the external casing:

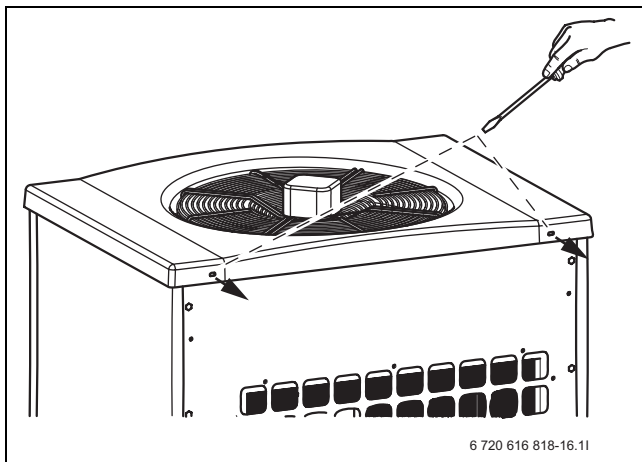


Fig. 44

- ▶ Undo the cover screws and remove the cover from the heat pump.

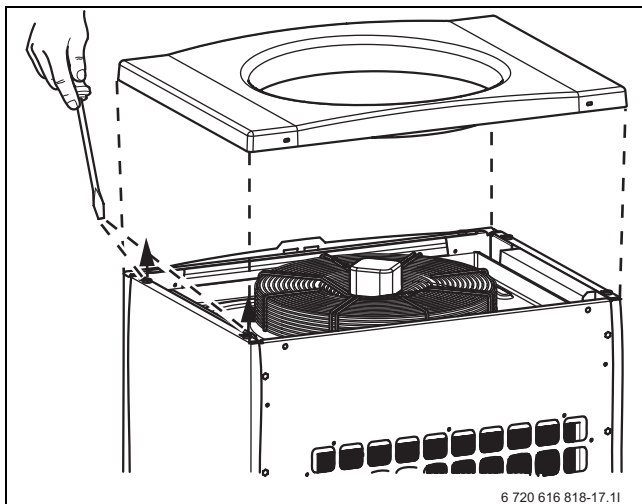



Fig. 45

- ▶ Undo the screws on the top of the heat pump turning them a quarter turn.
- ▶ Pivot the external casing outward.
- ▶ Lift the external casing to release the sections from the bottom.

### 7.2 REMOVE DIRT AND LEAVES



**WARNING:** The thin aluminium fins are sensitive and can be damaged easily through incorrect handling.

- ▶ Never use hard objects.
- ▶ Wear protective gloves during cleaning to protect your hands from cuts.

- ▶ Remove the r.h. external casing (looking from the front).
- ▶ Open the cleaning aperture at the side of the heat pump.
- ▶ Remove dirt and leaves with a brush.
- ▶ Check that the drain hole is clear. If required, flush with water.
- ▶ Remove dirt and leaves from the evaporator compartment at the back of the heat pump (→ Fig. 46).

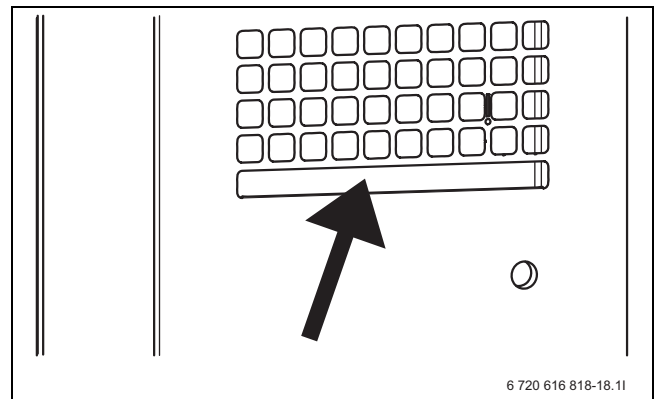


Fig. 46

### 7.3 PROTECTIVE COVERS

Over time dust and other dirt will collect on the heat pump.

- ▶ Wipe the outside with a damp cloth if necessary.
- ▶ Scratches and damage to the outer plates should be touched up using an anti corrosive rust-inhibitor.
- ▶ Use normal car polish to protect the paint.

### 7.4 FILTER

The filter prevents particles and dirt from entering the heat pump interior. Over time, the filter can become blocked and must be cleaned.



Fit the filter into the heat pump return.

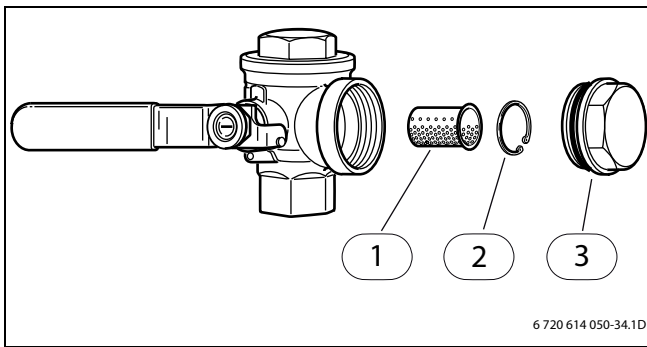


Fig. 47


- 1 Filter
- 2 Locking ring
- 3 Plug

Cleaning the filter:

- ▶ Switch off the heat pump with the ON/OFF switch.
- ▶ Remove the valve and plug.
- ▶ Remove the locking ring that retains the filter inside the valve. For this use the pliers supplied.
- ▶ Remove the filter from the valve and flush the filter with water.
- ▶ Refit the filter, locking ring and plug.
- ▶ Open the valve and start the heat pump via the ON/OFF switch.

## 7.5 EVAPORATOR

If a coating (for example dust or dirt) has built up on the surface of the evaporator (coil fins), it should be wiped off.



**WARNING:** The thin aluminium fins are fragile and can be damaged if careless. Never wipe the delicate fins with a cloth.

- ▶ Use protective gloves to protect your hands from cuts.
- ▶ Do not use a too powerful water jet.

Clean the evaporator:

- ▶ Switch off the heat pump with the ON/OFF switch.
- ▶ Remove casing (→ chapter 7.1).
- ▶ Spray degreasing agent onto the evaporator fins.
- ▶ Wash off coating and cleaning agent with water. You can clean the fins from the inside via the cleaning aperture if the evaporator is severely contaminated. Any cleaning agent you may use collects in the drain hose.


## 7.6 SNOW AND ICE

In some regions and during time of heavy snowfall, snow can settle on the grille on the back of the unit.

- ▶ Brush off snow from the casing holes.

- ▶ Remove snow and ice from the grille at the top of the heat pump.

To prevent icing, the heat pump is equipped with automatic defrosting. In the event of any problems, this may need adjusting. Contact your dealer.



**WARNING:** During defrosting, ice can come off the fan grille and can be blown off at high speed.

- ▶ Avoid close proximity of the heat pump during operation.
- ▶ Never look into the fan during defrosting.

## 8 ERROR MANAGEMENT

The control unit has an advanced monitoring system that gives alarms if anything unforeseen happens. The customer can correct most alarms themselves. There is never a risk of affecting something when an alarm is reset once or twice. Contact the dealer/service engineer in the event of repeated alarms.

### 8.1 EXAMPLE OF AN ALARM:

When an alarm is triggered, an alarm window is displayed and a warning signal sounds. The alarm window displays the alarm causes and the time and date that the alarm occurred.

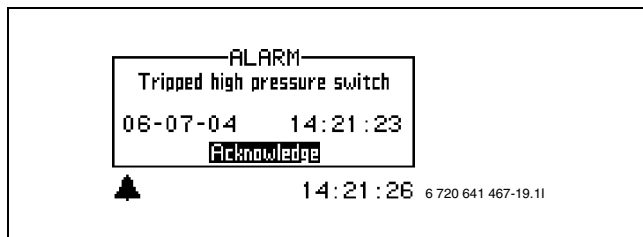


Fig. 48

If you press the menu dial whilst **Acknowledge** is highlighted, the alarm symbol is cancelled from the display and the alarm log, and the alarm buzzer is silenced. The alarm signal continues to be shown if a fault is not remedied. The ON and fault indicators change from flashing red to constant red indications. Every alarm is stored in the fault log. Active alarms are indicated by the alarm symbol.

### 8.2 DIMMED MENU DISPLAY

#### 8.2.1 POSSIBLE CAUSE 1: FAULTY FUSE IN THE DOMESTIC POWER SUPPLY.

- ▶ Check whether all domestic fuses are OK.
- ▶ If required, change/reset fuse/MCB.

After the fault has been remedied, the heat pump restarts automatically 15 minutes later.

#### 8.2.2 POSSIBLE CAUSE 2: AN MCB IN THE CONTROL PANEL OR IN THE INTERNAL UNIT HAS TRIPPED.

- ▶ Contact the dealer.

### 8.3 EMERGENCY MODE

The emergency function is available for the electric additional heater in the internal unit. Information in this connection is contained in the operating instructions of the internal unit.

In emergencies heat generation is covered by the electric additional heater. This enables heat to be provided until the customer service remedies the fault.



Emergency mode should not be mistaken for alarm mode. In alarm mode the heat pump stops. Heat generation continues to be regulated by the control unit.

### 8.4 ALL ALARMS AND WARNING WINDOWS

An alarm can 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 in this section. The descriptions give an idea about the nature of the alarm and what can be done to rectify it.

The alarm log (see **Advanced menu**) shows the alarms and warnings that have occurred.

#### 8.4.1 LIST OF ALL ALARMS:

- **Tripped low pressure switch**
- **Tripped high pressure switch**
- **Failure / Short circuit on sensor.**
- **Faulty function in 4-way valve**
- **T6 High hot gas temperature**
- **Fault on electric additional heat**
- **T8 High flow temperature.**
- **Low temperature in condenser**
- **Tripped motor cut-out**
- **Air/Water pump not connected**
- **Fault in I/O card control cabinet/electric boiler**
- **Tripped motor cut-out fan**

#### 8.4.2 LIST OF ALL WARNINGS:

- **Is the heat pump fused for this output?**
- **High temperature difference heat transfer fluid**

#### 8.4.3 LIST OF ALL INFORMATION WINDOWS

- **Heat pump is now working at its highest permitted temperature**
- **Add. heat is now working at its highest permitted temperature**
- **This setting means that additional heat can take over operation**
- **Temporary stop of hot water production**
- **Temporary stop of compressor operation**

## 8.5 ALARM WINDOW

### 8.5.1 TRIPPED LOW PRESSURE SWITCH

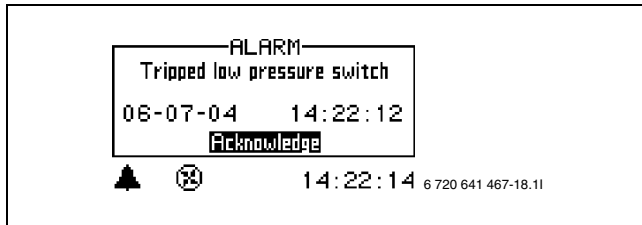


Fig. 49

#### POSSIBLE CAUSE 1: EVAPORATOR BLOCKED.

- ▶ Clean evaporator (→ chapter 7.5).
- ▶ Select **Acknowledge**.
- ▶ Wait until the heat pump starts again.
- ▶ Notify customer service if the alarm occurs frequently.

#### POSSIBLE CAUSE 2: FAN BLOCKED.

- ▶ Remove debris that blocks the fan.
- ▶ Select **Acknowledge**.
- ▶ Wait until the heat pump starts again.
- ▶ Notify customer service if the alarm occurs frequently.

#### Possible cause 3: Refrigerant circuit fault.

- ▶ Select **Acknowledge**.
- ▶ Wait until the heat pump starts again.
- ▶ Notify customer service if the alarm occurs frequently.

### 8.5.2 TRIPPED HIGH PRESSURE SWITCH

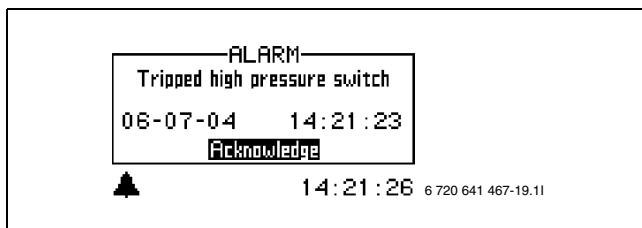


Fig. 50

#### POSSIBLE CAUSE 1: AIR IN THE HEATING SYSTEM.

- ▶ Select **Acknowledge**.
- ▶ Check whether air is in the heating system.
- ▶ Fill the heating system and vent if required.

#### POSSIBLE CAUSE 2; BLOCKED PARTICLE FILTER:

- ▶ Select **Acknowledge**.
- ▶ Check filter.
- ▶ Clean filter if required (→chapter 7.4).

#### POSSIBLE CAUSE 3: INADEQUATE FLOW RATE ACROSS THE HEAT PUMP.

- ▶ Select **Acknowledge**.
- ▶ Check whether the primary heating circuit pump has stopped.

- ▶ Check whether all valves are open. In a heating system incorporating thermostatically controlled valves, these valves must be fully open. In underfloor heating systems, at least 50% of all heating loops must be open.
- ▶ Where appropriate, select a higher speed for the primary heating circuit pump.
- ▶ Notify customer service if the fault continues to occur.

### 8.5.3 FAILURE / SHORT CIRCUIT ON SENSOR

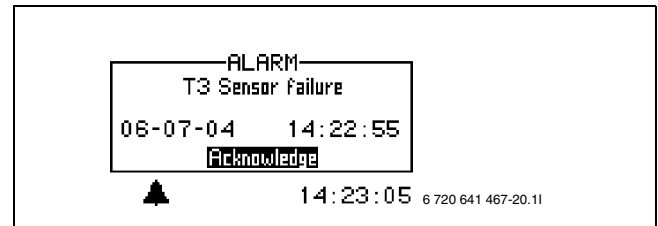


Fig. 51

All sensors connected to the heating installation can give an alarm in the event of a fault. In the example, it is sensor T3, hot water, which has given an alarm. All sensors give alarms in the same way.

#### PROBABLE CAUSE 1; TEMPORARY FAULT:

- ▶ Wait.

#### PROBABLE CAUSE 2; DEFECTIVE SENSOR OR INCORRECT CONNECTION:

- ▶ Notify customer service if the fault continues to occur.

### 8.5.4 FAULTY FUNCTION IN 4-WAY VALVE

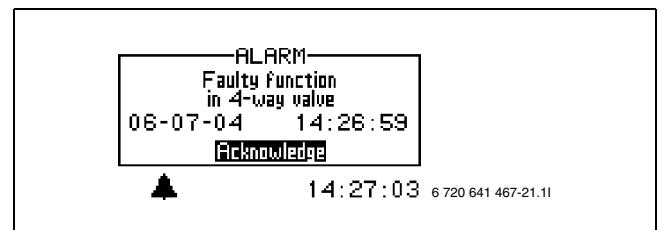


Fig. 52

#### POSSIBLE CAUSE 1: 4-WAY VALVE FAULTY.

- ▶ Select **Acknowledge**.
- ▶ Notify customer service if the alarm occurs frequently.

**8.5.5 T6 HIGH HOT GAS TEMPERATURE**

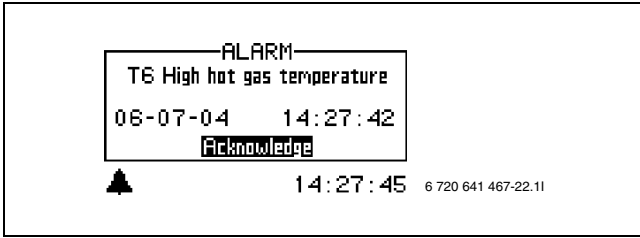


Fig. 53

**Possible cause 1: Excessive compressor operating temperature.**

- ▶ Select **Acknowledge**.
- ▶ Contact the dealer in the event of repeated alarms.

**Possible cause 2: Occasionally excessive temperature caused by unusual operating condition.**

- ▶ Select **Acknowledge**.
- ▶ Wait. Notify customer service if alarm repeatedly occurs.

**8.5.6 FAULT ON ELECTRIC ADDITIONAL HEAT (INTERNAL UNIT)**

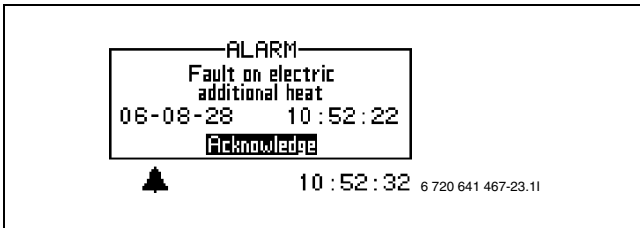


Fig. 54

**Possible cause 1: Overheat protection of the additional heater has tripped.**

- ▶ Select **Acknowledge**.
- ▶ Reset the overheat protection of the electric additional heater.
- ▶ Contact the dealer in the event of repeated alarms.

**8.5.7 FAULT ON ADDITIONAL HEAT FOR HEATING SYSTEM (ELECTRIC/OIL BOILER)**

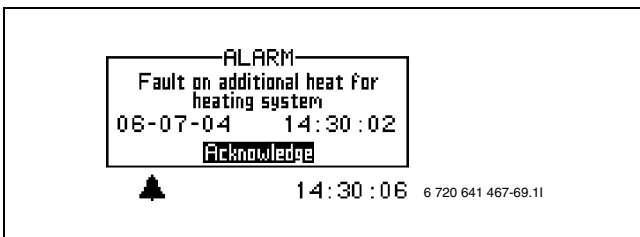


Fig. 55

**Possible cause 1: Overheat protection of the additional heater has tripped.**

- ▶ Select **Acknowledge**.
- ▶ Reset overheat protection of the additional heater.
- ▶ Contact the dealer in the event of repeated alarms.

**8.5.8 T8 HIGH FLOW TEMPERATURE**

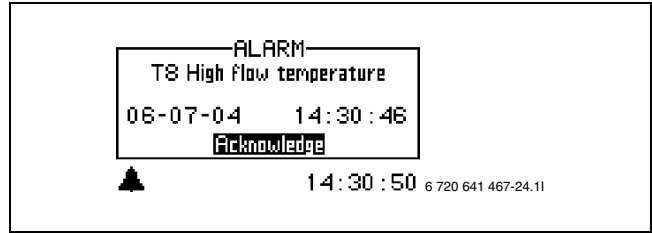


Fig. 56

Temperature sensor T8 is fitted inside the heat pump. This stops the compressor for safety reasons as soon as the flow temperature exceeds the selected value.

**POSSIBLE CAUSE 1: FILTER BLOCKED.**

- ▶ Select **Acknowledge**.
- ▶ Check filter.
- ▶ Clean filter if required (→chapter 7.4).

**POSSIBLE CAUSE 2: INADEQUATE FLOW RATE ACROSS THE HEAT PUMP.**

- ▶ Select **Acknowledge**.
- ▶ Check whether the primary heating circuit pump has stopped.
- ▶ Check whether all valves are open. In a heating system incorporating thermostatically controlled valves, these valves must be fully open. In underfloor heating systems, at least 50% of all heating loops must be open.
- ▶ Where appropriate, select a higher speed for the primary heating circuit pump.
- ▶ Notify customer service if the fault continues to occur.

**8.5.9 LOW TEMPERATURE IN CONDENSER**

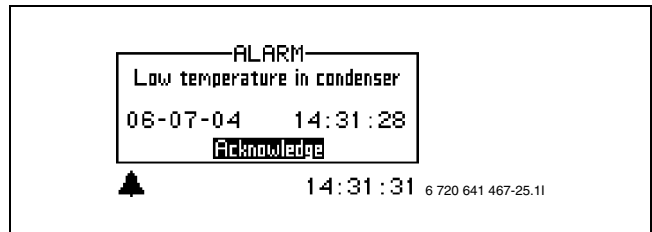


Fig. 57

The alarm is triggered because the temperature inside the heat pump is too low. Initially, a warning is issued. Following four warnings within two hours, an alarm is triggered.

**POSSIBLE CAUSE 1: AIR IN THE HEATING SYSTEM.**

- ▶ Select **Acknowledge**.
- ▶ Check whether air is in the heating system.
- ▶ Fill the heating system and vent if required.

**POSSIBLE CAUSE 2; BLOCKED PARTICLE FILTER:**

- ▶ Select **Acknowledge**.
- ▶ Check filter.

- ▶ Clean filter if required (→chapter 7.4).

**POSSIBLE CAUSE 3: PRIMARY HEATING CIRCUIT PUMP FAULT.**

- ▶ Check whether the primary heating circuit pump has stopped.
- ▶ Notify customer service if the fault continues to occur.

**POSSIBLE CAUSE 4: INADEQUATE/NO FLOW RATE ACROSS THE HEAT PUMP.**

- ▶ Select **Acknowledge**.
- ▶ Check whether the primary heating circuit pump has stopped.
- ▶ 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.
- ▶ Notify customer service if the fault continues to occur.

**POSSIBLE CAUSE 5: INADEQUATE AMOUNT OF WATER IN THE DOMESTIC HEATING SYSTEM.**

- ▶ Contact the dealer.

**8.5.10 TRIPPED MOTOR CUT-OUT**

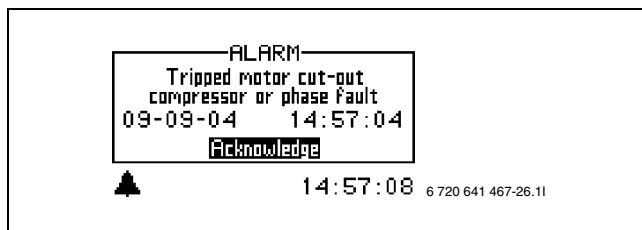


Fig. 58

**POSSIBLE CAUSE 1: OCCASIONAL FAULT OR ELECTRICITY NETWORK OVERLOADED.**

- ▶ Select **Acknowledge**.
- ▶ Wait until the heat pump starts again.
- ▶ Notify customer service if the fault continues to occur.

**Possible cause 2: Power supply to the heat pump failed.**

- ▶ Contact the dealer.

**8.6 WARNING WINDOW**

**8.6.1 HIGH TEMPERATURE DIFFERENCE HEAT TRANSFER FLUID**

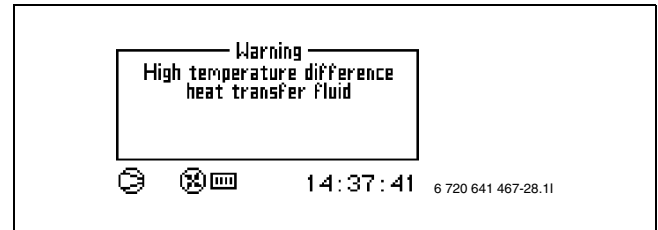


Fig. 59

This warning window is displayed when the temperature difference between sensors T8 and T9 becomes too high.

**PROBABLE CAUSE 1; INSUFFICIENT FLOW OVER THE HEAT PUMP:**

- ▶ Check whether the primary heating circuit pump has stopped.
- ▶ Check whether all valves are open. In a heating system incorporating thermostatically controlled valves, these valves must be fully open. In underfloor heating systems, at least 50% of all heating loops must be open.

**POSSIBLE CAUSE 2; BLOCKED PARTICLE FILTER:**

- ▶ Clean filter (→ chapter 7.4).

**8.7 INFORMATION FROM THE HEAT PUMP**

**8.7.1 HEAT PUMP IS NOW WORKING AT ITS HIGHEST PERMITTED TEMPERATURE**

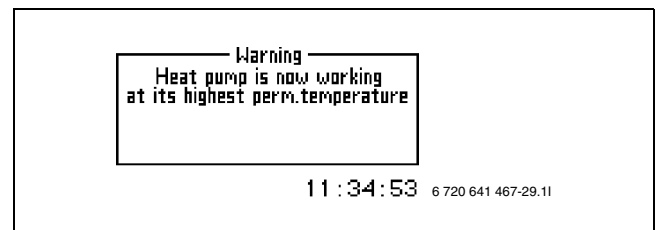


Fig. 60

Temperature sensor T9 is fitted inside the heat pump. This stops the compressor for safety reasons as soon as the return temperature is too high. The limit is approx. 59 °C.

**PROBABLE CAUSE 1; THE HEAT SETTING IS SET SO HIGH THAT THE HEATING SYSTEM'S RETURN TEMPERATURE IS TOO HIGH:**

- ▶ Reduce the temperature setting.

**PROBABLE CAUSE 2; THE HOT WATER TEMPERATURE IS SET TOO HIGH:**

- ▶ Contact the dealer.

### **PROBABLE CAUSE 3; THE UNDER FLOOR HEATING SYSTEM OR RADIATOR VALVES ARE CLOSED:**

- ▶ Open the valves.

### **PROBABLE CAUSE 4; THE FLOW ACROSS THE HEAT PUMP IS GREATER THAN THE FLOW IN THE HEATING SYSTEM:**

- ▶ Contact the dealer.

#### **8.7.2 ADD. HEAT IS NOW WORKING AT ITS HIGHEST PERMITTED TEMPERATURE**

Temperature sensor T9 is fitted inside the heat pump. This stops the compressor for safety reasons and limits the electric additional heater as soon as the return temperature is too high. The limit for the electric additional heater is approx. 58 °C.

#### **PROBABLE CAUSE 1; THE HEAT SETTING IS SET SO HIGH THAT THE HEATING SYSTEM'S RETURN TEMPERATURE IS TOO HIGH:**

- ▶ Reduce the temperature setting.

#### **8.7.3 THIS SETTING MEANS THAT ADDITIONAL HEAT CAN TAKE OVER OPERATION**

Information appears if **Electric cassette limitation start temperature**, **Electric cassette forced shut off**, **Mixing valve limitation start temperature** or **Mixing valve force close** are set more than 1 degree lower than T9 high return temperature.

#### **POSSIBLE CAUSE 1: THE INSTALLER SETS A HIGH VALUE FOR ONE OF THE ABOVE SETTINGS.**

- ▶ Contact the dealer.

#### **8.7.4 TEMPORARY STOP OF HOT WATER PRODUCTION**

In case of DHW operation and if the temperature captured at sensor T6 is higher than for envelope stop (factory-set value: 117 °C), this message is issued until T3 has fallen 5 K below the temperature which was captured by T3 when the message appeared. This message stops the compressor for DHW heating.

#### **POSSIBLE CAUSE 1: EXCESSIVE TEMPERATURE DIFFERENTIAL BETWEEN EVAPORATION AND CONDENSING. THE COMPRESSOR PERMITS THE ADDITIONAL HEATER TO SUPPLY THE CORRECT TEMPERATURE IF IT CANNOT DO SO ON ITS OWN.**

#### **POSSIBLE CAUSE 2: LOW REFRIGERANT LEVEL.**

#### **8.7.5 TEMPORARY STOP OF COMPRESSOR OPERATION**

Could occur for two different reasons:

1. If the temperature captured by sensor T2 is lower than the lowest temperature envelope. Switches back when the temperature captured by sensor T2 is higher than the lowest temperature envelope for 30 minutes.
2. In case of heating operation and if the temperature captured by sensor T6 is higher than for envelope stop (factory-set value: 117 °C). Switches back when the temperature captured by sensor T2 has risen by 2 K.

The compressor stops and the additional heater starts.

#### **POSSIBLE CAUSE 1: OUTSIDE TEMPERATURE LOWER THAN -20 °C.**

#### **POSSIBLE CAUSE 2: EXCESSIVE TEMPERATURE DIFFERENTIAL BETWEEN EVAPORATION AND CONDENSING. THE COMPRESSOR PERMITS THE ADDITIONAL HEATER TO SUPPLY THE CORRECT TEMPERATURE IF IT CANNOT DO SO ON ITS OWN.**

#### **POSSIBLE CAUSE 3: LOW REFRIGERANT LEVEL.**









Worcester, Bosch Group  
Cotswold Way, Warndon, Worcester WR4 9SW.  
Tel. 0844 892 9900

Worcester, Bosch Group is a brand name of Bosch Thermotechnology Ltd.  
**worcester-bosch.co.uk**

6 720 642 344

**WORCESTER, BOSCH GROUP:**

TECHNICAL: 08705 266241

SERVICE: 08457 256206

SPARES: 01905 752571

LITERATURE: 0844 892 9800

TRAINING: 01905 752526

SALES: 01905 752640

**WEBSITE: [worcester-bosch.co.uk](http://worcester-bosch.co.uk)**

The logo for Worcester Bosch Group features a stylized, wavy graphic element on the left, composed of three overlapping, curved lines in shades of grey. To the right of this graphic, the word "WORCESTER" is written in a large, bold, black, sans-serif font. Below "WORCESTER", the words "Bosch Group" are written in a smaller, bold, black, sans-serif font.

**WORCESTER**  
**Bosch Group**