

For the competent person

## Installation instructions



VRC 470

VRC 470

**GB, IE**

## **Legal information**

Document type:	Installation instructions
Product:	VRC 470
Target group:	Authorised competent person
Language:	EN
Document number_version:	0020116690_01
Created on:	11.10.2012

## **Publisher/manufacturer**

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# 1 Notes on the documentation

## 1 Notes on the documentation

### 1.1 Observing other applicable documents

- ▶ Always observe all operating and installation instructions enclosed with components of the system.

### 1.2 Storing documents

#### Handing over documents

- ▶ Pass these instructions and all other applicable documents on to the system operator.

### 1.3 Applicability of the instructions

These instructions apply for the following products only:

#### VRC 470/3 and VRC 470/4 article number

Great Britain	0020108130
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### 1.4 Nomenclature

The term "heat pump" is used when any of the following heat pumps are meant.

- **VWS 36/4 230 V**
- **VWL 35/4 S 230 V**
- **VWL 85/2 A 230 V**
- **VWL 115/2 A 230 V**
- **VWL 115/2 A 400 V**

The term "hybrid heat pump" is used when the **VWS 36/4 230 V** or **VWL 35/4 S 230 V** heat pump is meant.

The term "monoblock heat pump" is used when the **VWL 85/2 A 230 V**, **VWL 115/2 A 230 V**, or **VWL 115/2 A 400 V** heat pump is meant.



## 2 Safety

### 2.1 Required personnel qualifications

This manual is intended for persons with the following qualifications.

#### 2.1.1 Authorised competent person

The installation, assembly and removal, start-up, maintenance, repair and decommissioning of Vaillant products and accessories must only be carried out by authorised competent persons.



#### Note

Each competent person is qualified for specific activities on the basis of their training. They must only work on units if they have the required qualification.

When working on the units, the competent persons must observe all applicable directives, standards, laws and other regulations.

### 2.2 General safety information

#### 2.2.1 Installation by skilled tradesmen only

The unit must be installed by a qualified, skilled tradesman, who is responsible for compliance with the applicable requirements, regulations and directives.

- ▶ Read through these installation instructions carefully.
- ▶ Carry out the activities that are described in these installation instructions.
- ▶ During the installation, observe the following safety instructions and regulations.

#### 2.2.2 Risk of death from live connections

When working in the electronics box of the boiler, there is a risk of death from electric shock. Continuous voltage is present on the mains connection terminals, even if the main switch is turned off.

- ▶ Switch the main switch off before working on the electronics box of the boiler.
- ▶ Disconnect the boiler from the power mains by disconnecting the mains plug or by de-energising the boiler via a partition with a contact opening of at least 3 mm (e. g. fuses or power switches).
- ▶ Check that the boiler is de-energised.
- ▶ Secure the power supply against being switched on again.
- ▶ Open the electronics box only when the boiler is disconnected from the power supply.

#### 2.2.3 Risk of death from contaminated drinking water

The controller is furnished with an anti-Legionella function to protect against infection by germs (Legionella). When the

function is activated, the water in the domestic hot water cylinder is heated to over 60°C for at least one hour.

- ▶ Set the anti-Legionella function when installing the controller.
- ▶ Explain to the operator how the anti-Legionella function works.

#### 2.2.4 Risk of scalding from hot water

There is a danger of scalding at the hot water draw-off points if the set target temperature is greater than 60 °C. Young children and elderly persons are particularly at risk, even at lower temperatures.

- ▶ Select a moderate set target temperature.
- ▶ Inform the operator about the risk of scalding when the anti-Legionella function is switched on.

#### 2.2.5 Material damage due to unsuitable installation room

If you are installing the controller in a moist environment, the electronics may be damaged by moisture.

- ▶ The controller should only be installed in dry rooms.

#### 2.2.6 Danger due to error functions

- ▶ Ensure that the heating system is in a technically perfect condition.
- ▶ Ensure that no safety or monitoring devices have been removed, bridged or disabled.
- ▶ Immediately rectify any faults and damage that may affect safety.
- ▶ Install the controller in a location where it is not covered by furniture, curtains, or other objects.
- ▶ If thermostatic control is activated, advise the operator that, in the room where the controller is mounted, all the radiator valves must be fully open.
- ▶ Do not use the unit's free terminals as supports for other wiring.
- ▶ At lengths of over 10 m, 230 V supply cables must be laid separately from sensor or bus lines.

### 2.3 Requirements for lines

- ▶ Use standard commercial cables for wiring.

#### Minimum cross-section

Supply line 230 V (pump or mixer mains cable)	≥ 1.5 mm <sup>2</sup>
Bus line (extra-low voltage)	≥ 0.75 mm <sup>2</sup>
Sensor line (extra-low voltage)	≥ 0.75 mm <sup>2</sup>

#### Maximum line length

Sensor lines	≤ 50 m
Bus lines	≤ 300 m



## 2 Safety



### 2.4 CE label



The CE label shows that the products comply with the basic requirements of the following directives as stated on the identification plate:

- Electromagnetic compatibility directive (Council Directive 2004/108/EC)
- Low voltage directive (Council Directive 2006/95/EC)

### 2.5 Intended use

#### State-of-the-art technology

In the event of inappropriate or improper use, damage to the product and other property may arise.

The controller controls a heating installation with a Vaillant heater with eBUS interface in a way that is weather-controlled and time-dependent.

The controller can control the hot water generation from a connected domestic hot water cylinder.

If a circulation pump is connected, the controller can also control the hot water supply and circulation.

Operation is permissible with the following components and accessories:

- Domestic hot water cylinder (conventional)
- Vaillant **VIH RL shift-load cylinder**
- **VMS** solar pump unit
- **VWL 35/4 S 230 V** and **VWS 36/4 230 V** heat pump
- Circulation pump for the hot water supply in combination with the **VR 40** multi-functional module
- Second heating circuit in combination with the **VR 61/4** mixer module
- Solar plant in combination with the **VR 68/2** solar module
- Remote control unit in combination with the **VR 81/2** remote control module
- **VWL 85/2 A 230 V**, **VWL 115/2 A 230 V** and **VWL 115/2 A 400 V** heat pump in combination with the **VWZ AI VWL X/2** IO module
- **recoVAIR.../4** ventilation unit (applies for controller version VRC 470/4)

#### Observe the instruction manual

Intended use includes the following:

- observing the included operating, installation and servicing instructions for the Vaillant product and any other system components
- compliance with all inspection and maintenance conditions listed in the instructions.

#### Improper use

Any other use that is not specified in these instructions, or use beyond that specified in this document shall be considered improper use. Any direct commercial or industrial use is also deemed to be improper.

#### Caution.

Improper use of any kind is prohibited.

## 3 Overview of the equipment

### 3.1 Identification plate

The identification plate is located on the rear side of the controller electronics (PCB) and is no longer accessible from the outside after the controller has been installed in the boiler or after it has been wall-mounted in the living area.

The identification plate contains the following information:

Applies to: Weather compensator

Information on the identification plate	Meaning
Serial number	For identification
VRC XXX	Unit designation
V	Operating voltage
mA	Current consumption
CE label	Unit complies with European standards and directives
Waste container	Proper disposal of the unit

### 3.2 Checking the scope of delivery

Quantity	Component
1	Controller
1	VRC 693 external sensor or VRC 9535 external sensor
1	Fastening material (2 bolts and 2 rawl plugs)
1	6-way edge connector
1	3-pin pin header connector
1	Instructions for use
1	Installation instructions

► Check that the scope of delivery is complete.

### 3.3 Possible combinations with expansion modules

The systems and controllers have minimum requirements for the expansion modules. If you do not comply with the minimum requirements and install earlier versions of the expansion modules, you will not be able to use all functions or the heating installation may be inoperable.

#### Minimum requirements for version VRC 470/3 or VRC 470/4 controllers

- from VR 61/2
- VR 68/2
- VR 81/2

#### Minimum requirement for systems with hybrid heat pumps

- from VRC 470/2
- from VR 61/3
- VR 68/2
- VR 81/2

#### Minimum requirement for systems with monoblock heat pumps

- from VRC 470/3
- from VR 61/4
- VR 68/2
- VR 81/2

#### Minimum requirement for systems with the reco-VAIR.../4 ventilation unit

- from VRC 470/4
- from VR 61/4
- VR 68/2
- VR 81/2

## 4 Installation

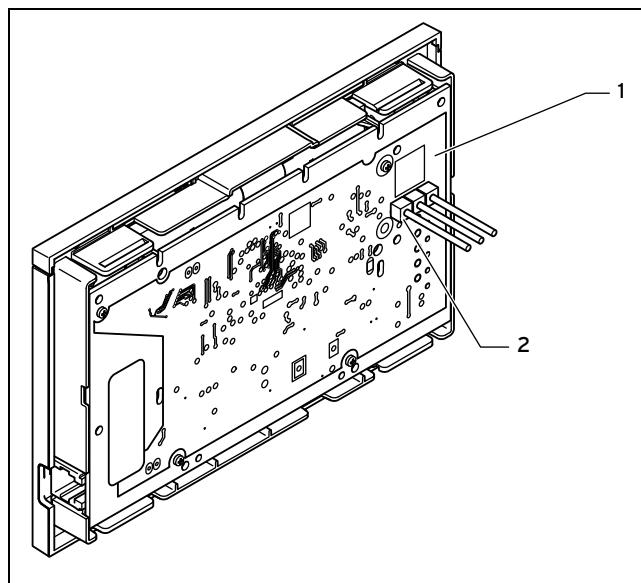
You can either install the controller within the boiler or install it separately on a wall in the living area.



#### Note

If you have installed a hybrid system (heat pump and boiler), you must install the controller in the living area.

### 4.1 Installing the controller in the living room

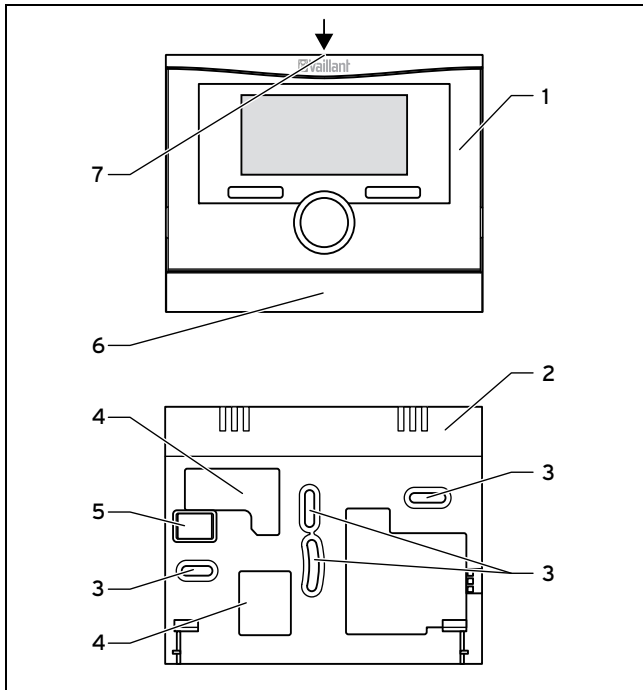


- 1 Controller PCB      2 3-pin pin header connector

1. Check that the 3-way pin header is connected to the controller PCB.
2. If required, remove the 3-way pin header connector.
3. Install the controller on an interior wall of the main living room in such a way that perfect recording of the room temperature is ensured.

## 4 Installation

- Height: ≈ 1.5 m



- |                           |   |
|---------------------------|---|
| 1 Controller              | 5 Pin header with terminals for the eBUS line |
| 2 Wall-mounting base      | 6 Wall-mounting base cover                    |
| 3 Mounting holes          | 7 Slot for screwdriver                        |
| 4 Openings for cable duct |   |

- Mark the right position on the wall. Take the eBUS line routing into account when doing so.
- Drill two holes in line with the mounting holes (3).
  - Diameter of mounting hole: 6 mm
- Route the eBUS line through one of the cable ducts (4).
- Insert the rawl plugs supplied.
- Use the screws supplied to secure the wall-mounting base.
- Connect the eBUS line to the terminal block.
- Carefully insert the controller in the wall-mounting base. Ensure that the pin header (5) on the wall-mounting base fits into the intended connector in the controller.
- Carefully press the controller into the wall-mounting base until the locking tabs on the controller are heard to latch into the sides of the wall-mounting base.

### 4.2 Installing the controller in the boiler



#### Note

When installing the controller in the electronics box of the boiler, follow the instructions for installing a controller in the installation instructions for the boiler.

- Disconnect the power supply to the boiler.
- Disconnect the boiler from the power mains by pulling out the mains plug or de-energising the boiler using a partition with a contact opening of at least 3 mm.
- Secure the power supply against being switched on again.
- Check that there is no voltage in the boiler.

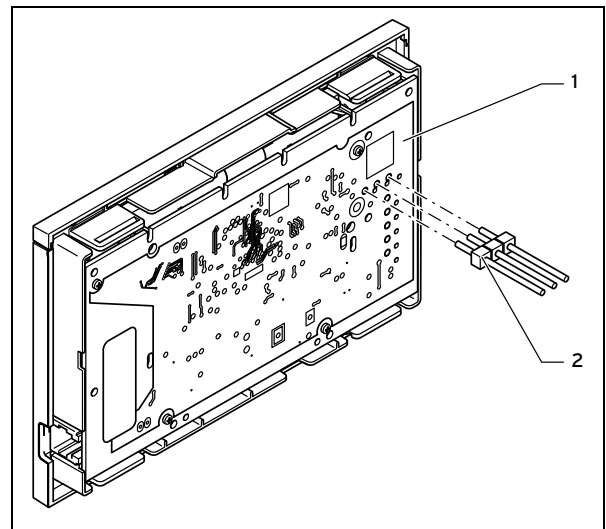
- If necessary, open the front panel on the boiler.
- Remove the operator control screen from the boiler for the controller module.
- Carefully lever the controller off the wall-mounting base.
- Alternatives 1 / 2**

**Conditions:** Vertical plug connections with pins in the electronics box.

- ▶ If required, remove the 3-way pin header connector.
- ▶ Carefully push the controller into the plug connection of the electronics box.

- Alternatives 2 / 2**

**Conditions:** Horizontal plug connections with no pins on the electronics box.



- |                  |                |
|------------------|----------------|
| 1 Controller PCB | 2 3-pin header |
|------------------|----------------|

- ▶ Connect the 3-way pin header connector supplied with the controller to the short ends in the 3 horizontal openings on the controller PCB.
  - ▶ Carefully push the controller with the pin header connector into the plug connection of the electronics box.
- Install the external sensor. (→ Page 8)
  - Connect the external sensor.
  - Switch on the power supply to the boiler.
  - Bring the boiler into operation.
  - If necessary, close the front panel of the boiler.

### 4.3 Fitting the external sensor

The conditions for the installation site are as follows:

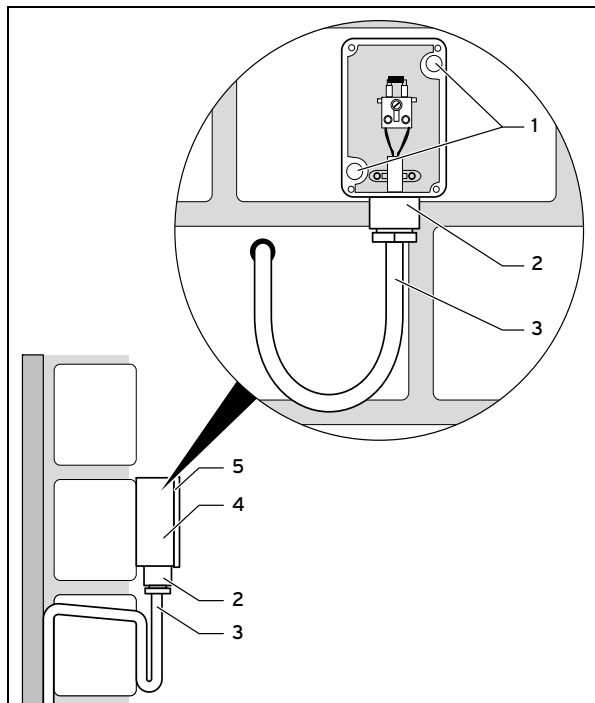
- not fully protected from wind
- not particularly draughty
- not in direct sunlight
- not affected by heat sources
- on a north or north-west facing façade
- in buildings with up to three floors, it should be located two-thirds of the way up the façade,
- in buildings with more than three floors, it should be fitted between the second and third floor



## 4.3.1 Install the VRC 693 or VRC 9535 external sensor

1. Mark the position on the wall. Observe the cable routing for the external sensor.
2. Route the connection cable (3) on-site with a slight incline to the outside and with a loop to catch drips.
3. Remove the casing cover (5) from the external sensor.
4. **Alternatives 1 / 2**

Conditions: VRC 693 external sensor

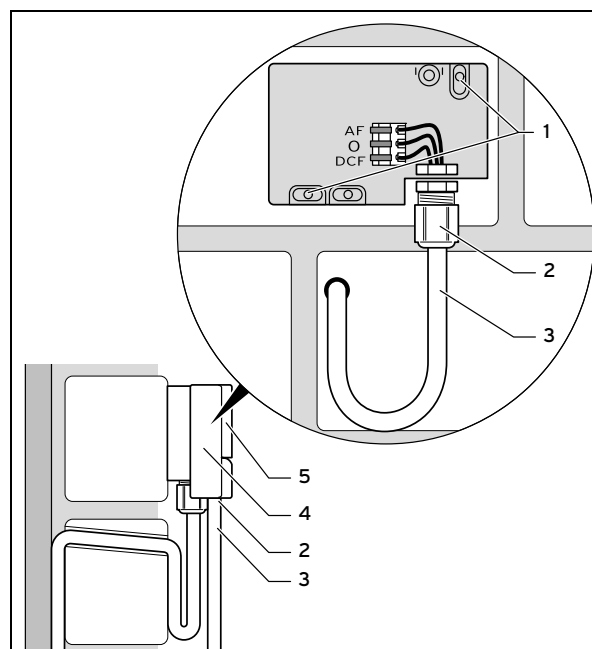


- |                                   |                      |
|-----------------------------------|----------------------|
| 1 Mounting holes                  | 4 Wall-mounting base |
| 2 Cap nut for cable duct          | 5 Housing cover      |
| 3 Connection cable with drip loop |                      |

- ▶ Drill two holes in line with the mounting holes (1).
  - Diameter of mounting hole: 6 mm

## 4. Alternatives 2 / 2

Conditions: VRC 9535 external sensor



- |                                   |                      |
|-----------------------------------|----------------------|
| 1 Mounting holes                  | 4 Wall-mounting base |
| 2 Cap nut for cable duct          | 5 Housing cover      |
| 3 Connection cable with drip loop |                      |

- ▶ Drill two holes in line with the mounting holes (1).
  - Diameter of mounting hole: 6 mm
- 5. Insert the rawl plugs supplied.
- 6. Fix the wall-mounting base (4) to the wall using two bolts. The cable duct must point downwards.
- 7. Unfasten the cap nut (2) slightly and slide the connection cable through the cable duct from below.
- 8. Connect the external sensor.
- 9. Retighten the cap nut (2).
  - ◁ The seal in the cable duct adapts to the diameter of the cable used.
    - Diameter of connection cable: 4.5 ... 10 mm
- 10. Place the seal between the wall-mounting base and the housing cover.
- 11. Secure the housing cover.

## 5 Start-up

When you start the controller for the first time after electrical installation or after replacement, the installation assistant starts automatically. You can use this installation assistant to make the main settings for the heating installation.



### Note

To be able to use the controller to set the temperature for the hot water generation and heating circuit, you must set the maximum value for the temperatures on the boiler.

## 6 Operating

The operating concept, an operation example, and the menu structure are all contained in the operating manual for the controller.

All settings that you have made using the installation assistant can be changed again at a later time via the operating level for the **Installer level** system operator.

Overview of installation assistant set-up options (→ Page 59)

## 6 Operating

The controller has two operating levels, the access level for the operator and the access level for the competent person.

You can use the left-hand selection button **Menu** and the list entry **Installer level** to access the setting and read-out options.



### Note

The setting and read-out options for the operator, the operating concept and an operating example are described in the operating instructions for the controller.

Installer level overview (→ Page 60)

## 7 Operating and display functions

The path details given at the start of each function description indicate how you reach this function in the menu structure.

The square brackets contain the level of detail to which the function belongs.

You can use the left-hand selection button **Menu** and the list entry **Installer level** to set the operating and display functions.

### 7.1 Service information

#### 7.1.1 Entering contact details

**Menu** → **Installer level** → **Service information** → **Enter contact details**

- You can enter your contact details (company name and phone number) in the controller.
- As soon as the date of the next service appointment is reached, the operator can view these contact details in the display of the controller.

#### 7.1.2 Entering the service date

**Menu** → **Installer level** → **Service information** → **Service date**

- In the controller, you can save a date (day, month, year) for the next regular service.

When the date for the next service appointment is reached, the message "**Service**" is displayed in the basic display of the controller.

If a service date is saved in the heat generator, the message "**Service heat generator 1**" appears on the heat generator when this date is reached.

The message is switched off if:

- the date is in the future.
- the initial date 01.01.2011 is set.

To find out which service date to enter, refer to the instructions for your heat generator.

### 7.2 System configuration: System

#### 7.2.1 Reading the system status

**Menu** → **Installer level** → **System configuration** [**System --**] → **Status**

- This function allows you to read the status of the heating system. If there is no fault, the message "**OK**" appears here. If there is a fault, the status "**Fault**" is displayed. If you press the right selector button the list of error messages (→ Page 22) is displayed.

#### 7.2.2 Reading the water pressure of the heating system

**Menu** → **Installer level** → **System configuration** [**System --**] → **Water pressure**

- This function allows you to read the water pressure of the heating system.

#### 7.2.3 Reading the hot water generation status

**Menu** → **Installer level** → **System configuration** [**System --**] → **Domestic hot water**

- You can use this function to read the hot water generation status (**Charged**, **Not charged**).

#### 7.2.4 Reading the collector temperature

**Menu** → **Installer level** → **System configuration** [**System --**] → **Collector temp**

- This function allows you to read the current temperature at the collector sensor.

An additional list entry is displayed under **System configuration** if a **VR 68/2** solar module or a **VMS** solar pump unit is connected.

#### 7.2.5 Setting the frost protection delay

**Menu** → **Installer level** → **System configuration** [**System --**] → **Frost protect. delay**

- This function allows you to delay activation of the frost protection function by setting a delay time.

The frost protection function guarantees frost protection in the heating installation for all connected heating circuits in the operating modes **Off** and **Eco** (outside the set time period).

If the outside temperature falls below 3 °C, the set-back temperature is applied as the target room temperature. The heating pump is switched on.

The frost protection function is also activated when the measured room temperature falls below the preset set-back temperature (regardless of the measured outside temperature).

If you set a delay time, the frost protection function will be suppressed during this period. This function is only effective if the **Eco** or **Frost protection** setting is selected for the **System off mode** function.

## 7.2.6 Setting the pump anti-cycling time

**Menu** → **Installer level** → **System configuration [System --]** → **Pump blocking time**

- You can use this function to set the pump anti-cycling time. During this time, the heating pump remains switched off in order to save energy.

For each heating circuit, the controller checks if the measured flow temperature is close to 2 K at the calculated target value. If this is the case for 15 minutes, the pump of the heating circuit in question is deactivated for the set anti-cycling time. The mixer remains in its current position. The set anti-cycling time may be reduced depending on the outside temperature.

Example:

Anti-cycling time set = 60 minutes

Outside temp. 20 °C = Anti-cycling time 60 minutes

Outside temp. 5 °C = Anti-cycling time 5 minutes

## 7.2.7 Setting the maximum pre-heating time

**Menu** → **Installer level** → **System configuration [System --]** → **Max. pre-heat**

- This function allows you to start the heating function for the heating circuits a set amount of time before the first period of the day, so that the target room temperature is already reached at the beginning of the first period.

The start of heating is determined as a function of the outside temperature (OT):

- OT ≤ -20 °C: preset duration of the pre-heat time
- OT ≥ +20 °C: no pre-heat time

The duration of the pre-heat time is interpolated linearly between these two values.

## 7.2.8 Setting the maximum pre-switch-off time

**Menu** → **Installer level** → **System configuration [System --]** → **Max. pre-switch-off time**

- Using this function, you can avoid unnecessary heating in the heating system immediately before a defined set-back time by setting a pre-switch-off time.

After you have set the operator's desired maximum period of time, the controller calculates the actual time period depending on the outside temperature.

The period for the pre-switch-off time is determined depending on the outside temperature (OT):

OT ≤ -20 °C: no pre-switch-off

OT ≥ +20 °C: set maximum pre-switch-off time

The duration of the pre-switch-off time is calculated as a linear function between these two values.

The earliest start time for the pre-switch-off time is 00:00 (midnight).

## 7.2.9 Setting the temperature threshold for constant heating

**Menu** → **Installer level** → **System configuration [System --]** → **OT constant heating**

- You use this function to define the temperature value.

If the outside temperature is lower than or equal to the defined temperature value, the controller regulates the heating circuit with the set day temperature and heating curve, even outside of the time period.

Set temperature value ≤ OT: No set-back or total shut-down

## 7.2.10 Reading the software version

**Menu** → **Installer level** → **System configuration [System --]** → **Control modules**

- You can use this function to read the software versions of the display, the heat generator and the expansion modules.

## 7.2.11 Configuring the heating circuit

**Menu** → **Installer level** → **System configuration [System --]** → **Heating circuit conf.**

- You can use this function to define on which heating circuit(s) you want to effect the setting of the operating mode and desired temperature from the operator level.

Example: There are two connected heating circuits and you select **HEATING 1**. For both heating circuits, use the left-hand selection button **Menu** → **Basic settings** → **Operation mode** to activate **Automatic mode**. If the operator now uses the right-hand selection button **Operating mode** to change the operating mode to **Comfort mode**, the operating mode for **HEATING 1** is changed. **HEATING 2** continues to be operated in "**Automatic mode**".

## 7.2.12 Activating the adaptive heating curve

**Menu** → **Installer level** → **System configuration [System --]** → **Adaptive heat curve**

- You can use this function to activate an automatic heating curve.

If you have activated this function using the set value **Yes**, the controller automatically adjusts the heating curve. The automatic adjustment of the heating curve is performed in small steps. Use the **Heating curve** function to adapt the heating curve to the building so that the **Adaptive heating curve** function still has to carry out the fine adjustment. For

## 7 Operating and display functions

this, the controller must be installed in the living room and the thermostat function must be activated.

### 7.2.13 Defining the system diagram

**Menu → Installer level → System configuration [System --] → System diagram**

- You use this function to determine the system diagram.

The system diagram that is defined must match the heating installation fitted. You will find the possible system diagrams in the "System diagrams" section.

### 7.2.14 Activating automatic cooling

**Applies to:** Controller version VRC 470/4

**Menu → Installer level → System configuration [System --] → Auto. cooling**

- Use this function to activate or deactivate automatic cooling.

If a heat pump is connected and the **Autom. cooling** function is activated, the controller automatically switches between heating and cooling.

### 7.2.15 Activating source regeneration

**Applies to:** Controller version VRC 470/4

**Menu → Installer level → System configuration [System --] → Source regeneration**

- If a heat pump is connected and the **Autom. cooling** function is activated, you can use the **Source regeneration** function.

If the **Days away from home** function is activated, the controller switches heating and cooling off. If you also activate the **Source regeneration** function, the controller switches cooling on again and ensures that the heat from the living room is returned to the earth via the heat pump.

### 7.2.16 Setting the target flow temperature for the pool

**Menu → Installer level → System configuration [System --] → Pool flow temp. target**

- If a monoblock heat pump is connected, you can use this function to set the target flow temperature for the pool.

If the pool demands heat, the external pool controller sends a signal to multi-function input 1, and the pool is heated to the flow temperature set.

### 7.2.17 Reading the current room air humidity

**Menu → Installer level → System configuration [System --] → Curr. room air humidity**

- You can use this function to read the current room air humidity. The room air humidity sensor is installed in the controller.

The function is activated only if the controller is installed in the living room.

### 7.2.18 Reading the current dew point

**Menu → Installer level → System configuration [System --] → Current dew point**

- This function allows you to read the current dew point.

The current dew point is calculated from the current room temperature and room air humidity. The controller obtains the values for calculating the current dew point from the room temperature sensor and room air humidity sensor.

The function is activated only if the controller is installed in the living room.

### 7.2.19 Setting the dew point offset

**Menu → Installer level → System configuration [System --] → Dew point offset**

- With this function, you can set the dew point offset.

The offset is a safety margin that is added to the dew point. The controller always selects the maximum for the flow temperature calculated from the flow temperature set and the dew point + offset.

### 7.2.20 Defining the hybrid manager

**Menu → Installer level → System configuration [System --] → Hybrid manager**

- If a monoblock heat pump is connected, an additional list entry appears under "System configuration".

This function allows you to determine the hybrid manager with which the heating installation should be controlled.

**triVAI:** The price-oriented hybrid manager picks the heat generator on the basis of the rates set in relation to the energy requirement.

**Bivalence pt:** The bivalence point hybrid manager picks the heat generator on the basis of the outside temperature.

## 7.3 Add-on module system configuration

If a monoblock heat pump is connected, additional list entries for the add-on module functions appear under **System configuration** in the display.

### 7.3.1 Setting the multi-function output

**Menu → Installer level → System configuration [Add-on module ----] → Multi-function output 2**

- You can use the multi-function output 2 to control the circulation pump, dehumidifier or anti-legionella pump.

Depending on the system diagram specified, the multi-function output 2 is specified with a single function, or you can set a function from a selection of two or three.

## 7.3.2 Setting the multi-function input

**Menu** → **Installer level** → **System configuration** [**Add-on module** ----] → **Multi-function input 1**

- If you set the multi-function input 1 to **Pool demand** (not possible with all system diagrams), heating circuit 1 becomes a pool circuit. If you set the multi-function input 1 to **1xcircul.**, you can activate the circulation pump by pressing the button once.

## 7.3.3 Deactivating devices on the request of the energy provider

**Menu** → **Installer level** → **System configuration** [**Add-on module** ----] → **Energy provider**

- The energy provider can use this function to send a deactivation signal.

The deactivation signal relates to the heat pump, the auxiliary boiler and the system's heating and cooling functions. This allows you to determine which devices and functions are deactivated by the controller in the event of a deactivation signal. The devices and functions specified are deactivated until the energy provider cancels the deactivation signal.

## 7.3.4 Setting the auxiliary boiler output

**Menu** → **Installer level** → **System configuration** [**Add-on module** ----] → **Auxiliary boiler output**

- You can use this function to set the level (max. output) at which the auxiliary boiler should work when heat is required.

You can operate the auxiliary boiler at three different levels (outputs).

## 7.4 Heat generator system configuration

If a heat pump is connected, **Heat generator 2** also appears in the display.

If **Heat generator 1** and **Heat generator 2** are listed in the path specification, the description of functions applies to both heat generators. If only one heat generator is listed in the path specification, the description of functions also only applies for the heat generator listed.

### 7.4.1 Reading the status of the heat generator

**Menu** → **Installer level** → **System configuration** [**Heat generator 1** and, where required, **Heat generator 2** ----] → **Status**

- You can use this function to read the current status of the heat generator (boiler): **Off**, **Heat.mode.** (Heating mode), **DHW** (hot water generation) and **Cooling**.

### 7.4.2 Reading the value of temperature sensor VF1

**Menu** → **Installer level** → **System configuration** [**Heat generator 1** and, where required, **Heat generator 2** ----] → **VF1**

- This function allows you to read the current value of temperature sensor VF1.

### 7.4.3 Setting the hot water bivalence point

**Menu** → **Installer level** → **System configuration** → [**Heat generator 1** ----] → **HW bivalence pt**

- If a monoblock heat pump is connected, you can use the **HW bivalence point** function.

When outside temperatures are low, an auxiliary boiler helps the heat pump to generate the energy required for hot water generation. You can use this function to set the outside temperature below which the auxiliary boiler is enabled.

### 7.4.4 Setting the heating bivalence point

**Menu** → **Installer level** → **System configuration** → [**Heat generator 1** ----] → **Heating bivalence pt**

- If a monoblock heat pump is connected, you can use the **Heating bivalence point** function.

When outside temperatures are low, an auxiliary boiler helps the heat pump to generate the energy required for heating. You can use this function to set the outside temperature below which the auxiliary boiler is enabled.

### 7.4.5 Defining the boiler type

**Menu** → **Installer level** → **System configuration** → [**Heat generator 2** ----] → **Boiler type**

- This function allows you to select which heat generator, apart from the heat pump, is still installed.

To ensure that the heat pump and additional heat generator can work effectively and in coordination, you must select the applicable heat generator. If the heat generator setting is incorrect, this may lead to increased costs for the operator.

### 7.4.6 Setting the auxiliary boiler bivalence point

**Menu** → **Installer level** → **System configuration** → [**Heat generator 2** ----] → **Aux. heater bival. pt**

- If a monoblock heat pump is connected, you can use the **aux. heater bival. pt** function.

When outside temperatures are low, an auxiliary boiler helps the heat pump to generate the energy required. You can use this function to set the outside temperature above which the auxiliary boiler remains switched off.

## 7 Operating and display functions

### 7.5 System configuration: Heating circuit

**HEATING 2** is only shown on the display if a **VR 61/4** mixer module is connected.

If **HEATING 1** and **HEATING 2** are referred to in the path specification, the description of functions applies to both heating circuits. If only one heating circuit is listed in the path specification, the description of functions also only applies for the listed heating circuit.

#### 7.5.1 Activating the heating circuit

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Heating circuit type**

- You can use this function to define whether **HEATING 1** is active or inactive.

You can use the **Inactive** value to deactivate the unused heating circuit.

#### 7.5.2 Reading the end of the current time period

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Auto day temp until**

- With this function, you can stipulate whether or not a set time period is active for the **Automatic** mode and how much of the period is still remaining. To do this, the controller must be in "**Automatic mode**". The information is specified in hr:min.

#### 7.5.3 Setting the day temperature

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Day temperature**

- This function allows you to set the desired day temperature for the heating circuit.

#### 7.5.4 Reading the room temperature

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Room temperature**

- This function allows you to read the current value of the room temperature sensor that is integrated in the controller.

#### 7.5.5 Setting the set-back temperature

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Set-back temp.**

- This function allows you to set the desired set-back temperature for the heating circuit.

The set-back temperature is the temperature to which the heating is to be reduced at times of low heat demand (e.g. overnight).

### 7.5.6 Reading the target flow temperature

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Flow temp. target**

- You use this function to read the target flow temperature for the heating circuit.

### 7.5.7 Reading the current flow temperature

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Flow temp. current**

- You use this function to read the current flow temperature for the heating circuit.

### 7.5.8 Reading the heating pump status

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Pump status**

- This function allows you to read the current status (On, Off) of the heating pump for the heating circuit.

### 7.5.9 Reading the status of the heating circuit mixer

**Menu** → **Installer level** → **System configuration** [**HEATING 2** ----] → **Mixer status**

- This function allows you to read the current status (opening, closing, stationary) of the heating circuit mixer for **HEATING 2**.

### 7.5.10 Activating room temperature control

**Menu** → **Installer level** → **System configuration** [**HEATING 1** and, where required, **HEATING 2** ----] → **Room temp control**

- This function allows you to define if the temperature sensor integrated in the controller or in the remote control unit should be used.

Prerequisite: The controller is not installed in the boiler, but is wall-mounted or the **VR 81/2** remote control unit is connected.

None: Temperature sensor is not used for control.

Thermostatic switch-on: The built-in temperature sensor measures the current room temperature in the reference room. This value is compared with the target room temperature and, if there is a difference, results in adjustment of the flow temperature by means of the so-called "Effective target room temperature". Effective room temp. target = set room temp. target + (set room temp. target - measured room temp. target). The effective target room temperature is then used for controlling instead of the set target room temperature.

Thermostat: Works in the same way as temperature control, however the heating circuit is also switched off when the measured room temperature is + 3/16 K greater than the set target room temperature. When the room temperature falls + 2/16 K below the set target room temperature again, the heating circuit is switched on again. The use of room thermostat control, in combination with careful selection of

the heating curve, leads to optimum control of the heating installation.

## 7.5.11 Activating automatic summer time detection

**Menu** → **Installer level** → **System configuration [HEATING 1 and, where required, HEATING 2 ----]** → **Summer mode offset**

- This function allows you to define whether the controller should automatically activate "Summer mode" based on a temperature calculation for all heating circuits. The controller remains in automatic mode.

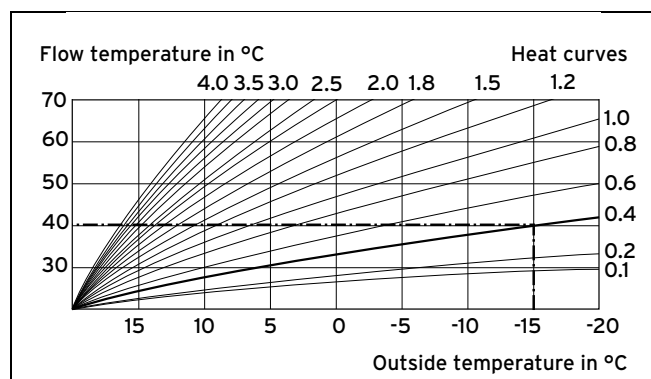
To activate this function, set an offset value (° K). The controller activates summer mode when the outside temperature is greater than or equal to the set target room temperature + the set offset value. The target room temperature is, for example, the set-back temperature at night and the day temperature during the day. The controller deactivates Summer mode when the outside temperature is lower than the target room temperature + the set offset value -1 K.

## 7.5.12 Setting the heating curve

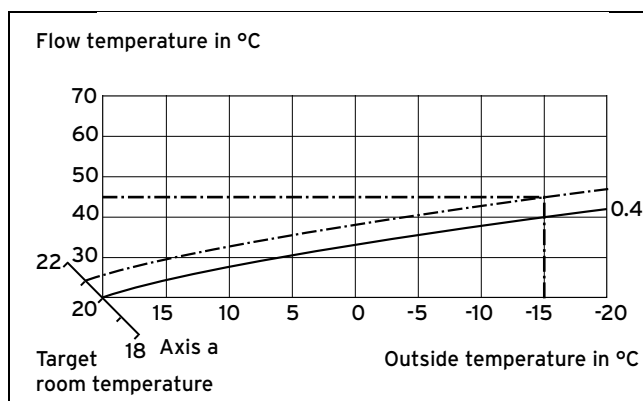
**Menu** → **Installer level** → **System configuration [HEATING 1 and, where required, HEATING 2 ----]** → **Heating curve**

- If the heating curve setting is not sufficient to control the living room climate according to the operator's wishes, you can adapt the heating curve setting made during installation.

If you activate the **Adaptive heat curve** function, the value of the heating curve is adapted to the insulation of the building.



The illustration shows the possible heating curves for a target room temperature of 20 °C. If, for example, heating curve 0.4 is selected, a flow temperature of 40 °C is maintained at an outside temperature of -15 °C.



If heating curve 0.4 is selected and 21 °C rather than 20 °C is specified as the target room temperature, the heating curve is shifted as shown in the illustration. The heating curve is displaced according to the value of the room target temperature along axis a which is angled at 45°. This means that when the outside temperature is -15 °C, the control provides a flow temperature of 45 °C.

## 7.5.13 Setting the minimum flow temperature for the heating circuit

**Menu** → **Installer level** → **System configuration [HEATING 1 and, where required, HEATING 2 ----]** → **Min. temperature**

- This function enables you to specify a minimum value for the flow temperature for each heating circuit; the controller will not fall below this value. The controller compares the calculated flow temperature with the value set for the minimum temperature and, if there is a difference, adjusts to the higher value.

## 7.5.14 Setting the maximum flow temperature for the mixing circuit

**Menu** → **Installer level** → **System configuration [HEATING 2 ----]** → **Max. temperature**

- You can use this function to enter a maximum value for the flow temperature of **HEATING 2**, which should not be exceeded during control. The controller compares the calculated flow temperature with the value set for the maximum temperature and, if there is a difference, adjusts to the lower value.

## 7.5.15 Reading the status of advanced functions

**Menu** → **Installer level** → **System configuration [HEATING 1 and, where required, HEATING 2 ----]** → **Advanced functions**

- With this function, you can define whether a special operating mode (advanced function), such as **Party function** etc. is currently active for a heating circuit.

## 7.5.16 Specifying control modes outside time periods

**Menu** → **Installer level** → **System configuration [HEATING 1 and, where required, HEATING 2 ----]** → **System off mode**

## 7 Operating and display functions

- This function enables you to specify, for each heating circuit separately, the controller functions in automatic mode outside active time periods. Default setting: **Frost prot.**

You can select from three control modes, which you can adapt further by using the room temperature control.

- Frost protection: The heating function is switched off and the frost protection function is active. The heating pump is switched off. If a second heating circuit is connected, the heating pump is switched off and the heating circuit mixer is closed. The outside temperature is monitored. When the outside temperature falls below 3 °C, the controller switches the heating pump on for 10 minutes after the end of the frost protection delay time. If a second heating circuit is connected, the heating circuit mixer remains closed. After the end of the time, the controller checks that the flow temperature is lower than 13 °C. If the temperature is greater than 13 °C, the heating pump is switched off. If a second heating circuit is connected, the temperature of the VF2 temperature sensor is evaluated and the heating pump is switched off at a temperature greater than 13 °C. If the temperature is lower than 13 °C, the controller switches the heating function on and activates the heating pump. The controller sets the target room temperature to 5 °C and checks again if the outside temperature has reached 4 °C. If the outside temperature is greater than 4 °C, it switches the heating function and the heating pump off.
- Eco: The heating function is switched off. If a second heating circuit is connected, the heating pump is switched off and the heating circuit mixer is closed. The outside temperature is monitored. If the outside temperature falls below 3 °C, the controller switches the heating function on after the end of the frost protection delay time. The heating pump is activated. If a second heating circuit is connected, the heating pump and the heating circuit mixer are activated. The controller controls the target room temperature to the set **Set-back temperature**. Despite the heating function being activated, the burner is only active on demand. The heating function remains active until the outside temperature rises above 4 °C, after which the controller switches the heating function off again, but the outside temperature monitoring remains active.
- Set-back temperature: The heating function is switched on and the target room temperature is set to the set **Set-back temperature** and adjusted to the **Set-back temperature**.

### 7.5.17 Activating "Cooling possible"

Menu → Installer level → System configuration [HEATING 1 and, where required, HEATING 2 ----] → Cooling possible

- If a heat pump is connected, you can use the **Cooling** function.

### 7.5.18 Setting the minimum cooling flow target value

Menu → Installer level → System configuration [HEATING 1 and, where required, HEATING 2 ----] → Min. cooling flow target value

- If a heat pump is connected, you can set the flow target value for the **Cooling** function.

### 7.5.19 Reading the day heating temperature threshold

Menu → Installer level → System configuration [HEATING 1 and, if required, HEATING 2 ----] → Heating temp limit day

- Here, you can read the preset temperature (**Desired day temperature + Summer mode offset**), at which the heating installation switches to summer mode.

### 7.5.20 Reading the set-back heating temperature threshold

Menu → Installer level → System configuration [HEATING 1 and, where required, HEATING 2 ----] → Heating temp limit ngt

- Here, you can read the preset temperature (**Set-back desired temperature + Summer mode offset**), at which the heating installation switches to Summer mode.

## 7.6 System configuration: Hot water circuit

### 7.6.1 Setting the cylinder

Menu → Installer level → System configuration [Domestic hot water ----] → Cylinder

- You can use this function to activate or deactivate a cylinder for the hot water circuit.

If a cylinder is connected to the heating installation, the setting must always be active.

### 7.6.2 Setting the target temperature for domestic hot water cylinder (desired hot water temperature)

Menu → Installer level → System configuration [Domestic hot water ----] → Cylinder temp. target

- This function allows you to define the set target temperature for a connected domestic hot water cylinder (**desired hot water temperature**). Set the set target temperature on the controller in such a way that the heat demand of the operator is covered.

The temperature for the domestic hot water cylinder must be set to the maximum value in the boiler.

### 7.6.3 Reading the current temperature of the domestic hot water cylinder

Menu → Installer level → System configuration [Domestic hot water ----] → Cyl. temp. current

- You can use this function to read the measured cylinder temperature.



## 7.6.4 Reading the status of the cylinder charge pump

Menu → Installer level → System configuration [Domestic hot water ----] → Cylinder charge pump

- This function allows you to read the status of the cylinder charge pump (On, Off).

## 7.6.5 Reading the status of the circulation pump

Menu → Installer level → System configuration [Domestic hot water ----] → Circulation pump

- This function allows you to read the status of the circulation pump (On, Off).

## 7.6.6 Defining the day for the Anti-legionella function

Menu → Installer level → System configuration [Domestic hot water ----] → Anti-legionella day

- You can use this function to define whether the Anti-legionella function is carried out daily or on a specific day.

When the Anti-legionella function is enabled, the respective cylinder and the corresponding hot water pipes are heated up to a temperature of over 60 °C on the set day or block of days. For this, the value of the target cylinder temperature is automatically raised to 70 °C (with 5 K hysteresis). The circulation pump is activated.

The function is terminated automatically when the cylinder sensor measures a temperature of > 60 °C for more than 60 minutes or after a period of 120 minutes has elapsed (to avoid getting "stuck" in this function if water is drawn simultaneously).

Factory setting = **Off** means no Anti-legionella function (due to risk of scalding)!

If "**Day away from home scheduling**" has been planned, the Anti-legionella function is not active during these days. It is activated directly on the first day after the "**Days away from home**" have elapsed and is executed on the defined weekday/block of days at the defined time.

Example: The Anti-legionella function should be executed weekly on Tuesday at 08:00. The planned "**Days away from home**" end on Sunday at 24:00 hours. The Anti-legionella function is executed on Monday at 00:00 and on Tuesday at 08:00.

## 7.6.7 Defining the time for the Anti-legionella function

Menu → Installer level → System configuration [Domestic hot water ----] → Anti-legionella time

- You can use this function to define the time for executing the Anti-legionella function.

When the time is reached on the defined day, the function starts automatically if "**Days away from home**" (holidays) are not planned.

## 7.6.8 Setting the temperature difference for cylinder charging

Menu → Installer level → System configuration [Domestic hot water ----] → Temp.diff. cylinder ch.

- If a monoblock heat pump is connected, you can use this function to set a temperature difference for cylinder charging.

For example: If the desired temperature is set to 55 °C and the temperature difference for cylinder charging is set to 10 K, cylinder charging begins as soon as the cylinder temperature drops to 45 °C.

## 7.6.9 Defining the offset for charging the domestic hot water cylinder

Menu → Installer level → System configuration [Domestic hot water ----] → Cylinder boost offset

- If a monoblock heat pump is connected, you can use this function to specify an offset value (K) for the desired temperature of the hot water. The domestic hot water cylinder is then charged to the temperature that equates to the total of the desired hot water temperature and this offset value.

## 7.6.10 Setting the maximum cylinder charging time

Menu → Installer level → System configuration [Domestic hot water ----] → Max. cylinder charge time

- If a monoblock heat pump is connected, you can use this function to set the maximum charge time for which the cylinder is charged without interruption.

The **Off** setting means that there is no time limit for the cylinder charge time.

## 7.6.11 Setting the anti-cycling time for hot water demand

Menu → Installer level → System configuration [Domestic hot water ----] → HW requirement anti-cycling time

- If a monoblock heat pump is connected, you can use this function to set a time period in which cylinder charging is blocked.

If the maximum cylinder charging time is reached but the domestic hot water cylinder connected has not yet reached its set target temperature, the **HW requirement anti-cycling time** function takes effect.

## 7.6.12 Defining the run-on time for the cylinder charge pump

Menu → Installer level → System configuration [Domestic hot water ----] → Load pump

- You can use this function to define a run-on time for the cylinder charge pump. The high flow temperature required for cylinder charging continues to be delivered to the cylinder as far as possible by means of the charge pump overrun before the heating circuits (in particular, the burner circuit) are enabled again.

## 7 Operating and display functions

When cylinder charging ends ("Desired hot water temperature" reached), the controller switches the heat generator off. The run-on time for the cylinder charge pump starts. The controller switches the cylinder charge pump off after the run-on time has elapsed if a **VIH RL** cylinder is connected that is located after a low loss header.

### 7.6.13 Activating parallel cylinder charging (domestic hot water cylinder and mixer circuit)

**Menu** → **Installer level** → **System configuration [Domestic hot water ----]** → **Paral. Cyl. charge**

- You can use this function to define, for the connected mixing circuit, that the mixer circuit should continue to be heated during charging of the domestic hot water cylinder.

When the function **Paral. cyl. charge** is enabled, the mixer circuit continues to be supplied while the cylinder is being charged. Provided there is a demand for heat in the mixer circuit, the controller does not deactivate the heating pump in the mixer circuit. **HEATING 1** is always deactivated during cylinder charging.

### 7.7 Solar circuit system configuration

If a **VR 68/2** solar module is connected, additional list entries for the solar functions appear under "System configuration" in the display. If **[Solar circuit ----]** appears in the path specification, the description of functions only applies when the **VR 68/2** solar module is connected.

#### 7.7.1 Reading the value of the cylinder sensor SP2

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Sensor cylinder 2**

- This function allows you to read the current measured value of the SP2 cylinder sensor.

#### 7.7.2 Reading the value of the sensor solar gain

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Sensor solar gain**

- You can use this function to read the current measured value of the yield of the solar yield sensor.

#### 7.7.3 Reading the status of the solar pump

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Status solar pump**

- You can use this function to read the current status of the KOL1-P solar pump (On, Off).

#### 7.7.4 Reading the value of the TD1 sensor

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Sensor TD1**

- This function allows you to read the current measured value of the TD1 cylinder sensor.

#### 7.7.5 Reading the value of the TD2 sensor

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Sensor TD2**

- This function allows you to read the current measured value of the TD2 cylinder sensor.

#### 7.7.6 Reading the status of the multi relay

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Status multi relay**

- You can use this function to read the current status of the MA multi relay (On, Off).

#### 7.7.7 Reading the runtime of the solar pump

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Solar pump runtime**

- You can use this function to read the measured operating hours of the KOL1-P solar pump since start-up or since the last reset.

#### 7.7.8 Resetting the solar pump running time

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Solar pump runtime**

- You can use this function to reset the total operating hours of the KOL1-P solar pump back to zero.

#### 7.7.9 Activating the solar pump on switch-on differential control

**Menu** → **Installer level** → **System configuration [Solar circuit ----]** → **Pump activation duration control**

- This function allows you to keep the solar circuit at the activation value, and thus in operation, for as long as possible. The pump is periodically switched on and off depending on the switch-on differential (the difference between the collector temperature and the cylinder temperature).

When the switch-on differential is reached, the function starts with 30% of the activation duration, which means the pump switches on for 18 seconds and off for 42 seconds.

If the switch-on differential increases, then the activation duration is also increased, e.g. the pump is switched on for 45 seconds and off for 15 seconds.

If the switch-on differential decreases, then the activation duration is reduced, e.g. the pump is switched on for 20 seconds and off for 40 seconds. The period length is always a minute.

You cannot use this function in combination with a **VMS** solar pump unit.

## 7.7.10 Defining the priority for charging the domestic hot water cylinder

**Menu** → **Installer level** → **System configuration** [**Solar circuit** ----] → **Lead cylinder**

- In systems with more than one solar charged domestic hot water cylinder, the lead cylinder is charged as a priority. You can use this function to define a lead cylinder.

1 = Cylinder 1 is the cylinder with cylinder sensor SP1

2 = Cylinder 2 is the cylinder with cylinder sensor TD1

This function is only effective if you have selected **Cylinder 2** for the multi relay when making the setting.

## 7.7.11 Setting the flow rate of the solar circuit

**Menu** → **Installer level** → **System configuration** [**Solar circuit** ----] → **Solar flow volume**

- This value is used to calculate the solar yield. To set the correct value, you must measure the volume flow.

## 7.7.12 Activating the solar pump boost

**Menu** → **Installer level** → **System configuration** [**Solar circuit** ----] → **Solar pump boost**

- This function allows you to activate a pump kick for the solar pump, in order to speed up the temperature recording of the collector temperature. Depending on the design, there is a time delay in some collectors during calculation of the measured value for temperature recording. With the **Solar pump kick** function, you can reduce the time delay. When the **Solar pump kick** function is activated, the solar pump is switched on for 15 s (solar pump boost), when the temperature at the collector sensor has risen by 2 K/hour. This transports the heated solar fluid to the point of measurement more quickly. If the temperature difference between the collector and the cylinder exceeds the preset switch-on difference, the solar pump runs for an appropriate length of time to heat up the cylinder (difference control).

## 7.7.13 Setting the solar circuit protection

**Menu** → **Installer level** → **System configuration** [**Solar circuit** ----] → **Solar pump boost**

- With this function, you can define a temperature threshold for the calculated collector temperature in the solar circuit. If the available solar heat exceeds the current heat demand (e.g. all cylinders fully charged), the temperature in the collector field may rise steeply.
- If the protection temperature set at the collector sensor is exceeded, the solar pump is switched off to protect the solar circuit (pump, valves, etc.) against overheating. The solar pump is switched back on once the system has cooled down (30 K hysteresis). In combination with a **VMS** solar pump unit, the setting parameters are hidden. The solar pump unit has its own protection function, which is always active.

## 7.7.14 Defining the maximum temperature for solar cylinder

**Menu** → **Installer level** → **System configuration** → **Solar circuit** → [**Solar cylinder 1/2**----]**Max. temperature**

- This function allows you to define a maximum value as a limit for the solar cylinder temperature, in order to guarantee the highest possible yield from the solar cylinder heating, but also to ensure protection against calcification. The maximum of cylinder sensors SP1 and SP2 is used for the measurement. For the second cylinder (swimming pool) cylinder sensor TD1 is used.
- If the set maximum temperature is exceeded, the controller switches the solar pump off. Solar charging is only enabled again once the temperature at the active sensor drops 1.5 K below the maximum temperature. The maximum temperature can be set separately for each cylinder. The programmed maximum temperature must not exceed the cylinder's maximum permissible water temperature!

## 7.7.15 Defining the switch-on differential for solar charging

**Menu** → **Installer level** → **System configuration** → [**Solar cylinder 1/2** ----] → **On temp. diff.**

- This function allows you to define a differential value for starting solar charging. If the temperature difference between cylinder sensor SP2 and collector sensor KOL1 exceeds the set value, the controller switches the solar pump on and the solar cylinder is charged. The differential value can be defined separately for two connected solar cylinders.

You cannot use this function in combination with a **VMS** solar pump unit.

## 7.7.16 Defining the switch-off differential for solar charging

**Menu** → **Installer level** → **System configuration** → [**Solar cylinder 1/2** ----] → **Off temp. diff.**

- This function allows you to define a differential value for stopping solar charging. If the temperature difference between cylinder sensor SP2 and collector sensor KOL1 falls below the set value, the controller switches the solar pump off and the solar cylinder is no longer charged. The off temperature differential value must be at least 1 K less than the set on temperature differential value. The value for the setting difference is therefore automatically adjusted when 1 K is exceeded. You can define the differential value separately for two connected solar cylinders.

You cannot use this function in combination with a **VMS** solar pump unit.

## 7.7.17 Defining the switch-on differential for the second difference control

**Menu** → **Installer level** → **System configuration** → [**2nd difference control** ----] → **On temp. diff.**

## 7 Operating and display functions

- This function allows you to define a difference value for starting solar support. If the temperature difference between cylinder sensor TD1 and temperature sensor TD2 in the return of the solar circuit exceeds the set value, the controller activates the MA output (multi relay). This function only operates if you select a system diagram with solar heating support.

### 7.7.18 Defining the off temperature difference value for second difference control

Menu → Installer level → System configuration → [2nd difference control ----] → Off temp. diff.

- This function allows you to define a difference value for stopping solar support. If the temperature difference between cylinder sensor TD1 and temperature sensor TD2 in the return of the solar circuit falls below the set value, the controller deactivates the output MA (multi relay). This function only operates if you select a system diagram with solar heating support.

### 7.7.19 Solar circuit installation country

Menu → Installer level → System configuration [Solar circuit ----] → Installation country

- You use this function to define in which country the system is operated. This setting is only required for calculating the time of the sunrise (activation of the pump boost).

## 7.8 Ventilation system configuration

Applies to: Controller version VRC 470/4

If the **recoVAIR.../4** ventilation unit and up to three air quality sensors are connected, additional list entries for the ventilation unit functions appear in the display.

### 7.8.1 Reading the air quality sensor

Menu → Installer level → System configuration [Ventilation ----] → Air quality sensor 1/2/3

- You can use this function to read the measured values from the air quality sensor.

### 7.8.2 Setting the maximum value for air quality sensor

Menu → Installer level → System configuration [Ventilation ----] → Max. air quality s.

- You can use this function to set a maximum value for the air quality.

If the air quality exceeds the maximum value specified, the controller activates the **recoVAIR.../4** ventilation unit accordingly. You will find a detailed description of functions in the **recoVAIR.../4** manual.

## 7.9 Selecting the expansion module for sensor/ actuator test

Menu → Installer level → Sensor/ actuator test → [Select module]

- This function allows you to select a connected expansion module for the sensor and actuator test. The controller lists the actuators and sensors of the selected expansion module. If you confirm the selection of an actuator with "Ok", the controller activates the relay. The actuator's function can now be checked. Only the activated actuator is active, all other actuators are "deactivated" at this time.

For example, you can drive a mixer in the "OPEN" direction and check that it is connected the right way round or activate a pump and check that it starts up. If you select a sensor, the controller shows the measured value of the selected sensor. For the selected component, read the measured values from the sensors and check whether the individual sensors are providing the expected values (temperature, pressure, flow rate, etc.).

## 7.10 Activating the screed drying function

Menu → Installer level → Screed drying function → HEATING 1 and, if applicable HEATING 2

- You can use this function to "dry heat" freshly laid screed in accordance with the construction regulations, according to a defined time and temperature plan.

When screed drying is activated, all the selected operating modes are interrupted. The controller controls the flow temperature of the controlled heating circuit according to a pre-set program, regardless of the outside temperature. The function is available for **HEATING 1** and, if applicable, **HEATING 2**, but not for both heating circuits at the same time. If a **VR 61/4** mixer module is connected, the function is only available for **HEATING 2**. The controller operates **HEATING 1** in the set mode. Target flow temperature on start day 1: 25 °C.

Days after starting the function	Target flow temperature for this day [°C]
1	25
2	30
3	35
4	40
5	45
6 - 12	45
13	40
14	35
15	30
16	25
17 - 23	10 (frost protection function, pump in operation)
24	30
25	35
26	40
27	45
28	35

Days after starting the function	Target flow temperature for this day [°C]
29	25

In the display, the mode is displayed with the current day and the target flow temperature. You can set the current day manually.

When the function is started, the current time of the start is saved. The day is changed exactly at this time.

After a mains Off/On, screed drying starts with the last active day.

The function ends automatically when the last day of the temperature profile has elapsed (day = 29) or if you set the start day to 0 (day = 0).

### 7.11 Changing the code for Installer level

**Menu → Installer level → Change code**

- This function allows you to change the access code for the "**Installer level**" operating level.

If the code is no longer available, you must reset the controller to the factory setting in order to obtain access to Installer level again.

# 8 Troubleshooting

## 8 Troubleshooting

### 8.1 Error messages

If a fault occurs in the heating system, an error message will appear in the controller display instead of the basic display. You can access the basic display again by pressing function key "Back".

You can also read all current error messages under the following menu point:

**Menu → Information → System status → Status [Fault]**

- If there is a fault, the status "Fault" is displayed. In this case, the right-hand selector button has the function **Display**. Press the right-hand selector button to display a list of fault messages.



#### Note

Not all error messages in the list appear automatically on the display.

Display	Meaning	Connected appliances	Cause
<b>Fault: Heat generator 1</b>	Fault: Heat generator 1	Condensing unit/heat pump	See instructions, Heat generator 1
<b>Fault: Heat generator 2</b>	Fault: Heat generator 2	Condensing unit/heat pump	See instructions, Heat generator 2
<b>Communication fault: Heat generator 1</b>	Communication fault: Heat generator 1	Heat generator 1	Cable defective, plug connection not correct
<b>Communication fault: Heat generator 2</b>	Communication fault: Heat generator 2	Heat generator 2	Cable defective, plug connection not correct
<b>Communication fault: VIH RL</b>	Cylinder connection fault	<b>VIH RL</b> cylinder	Cable defective, plug connection not correct
<b>External current anode fault</b>	External current anode fault cylinder	<b>VIH RL</b> cylinder	Cable defective, plug connection not correct, external current anode defective
<b>Sensor T1 fault</b>	Fault in temperature sensor 1	Temperature sensor 1	Cable defective, plug connection not correct, temperature sensor defective
<b>Sensor T2 fault</b>	Fault in temperature sensor 2	Temperature sensor 2	Cable defective, plug connection not correct, temperature sensor defective
<b>Sensor T3 fault</b>	Fault in temperature sensor 3	Temperature sensor 3	Cable defective, plug connection not correct, temperature sensor defective
<b>Sensor T4 fault</b>	Fault in temperature sensor 4	Temperature sensor 4	Cable defective, plug connection not correct, temperature sensor defective
<b>Heat exchanger calcified</b>	Heat exchanger of the heat generator is calcified	Heat generator	See heat generator instructions
<b>VR 68/2 communication fault</b>	<b>VR 68/2</b> solar module connection fault	<b>VR 68/2</b> solar module	Cable defective, plug connection not correct
<b>Sensor KOL fault</b>	Collector sensor fault	<b>VR 68/2</b> solar module	Collector sensor defective
<b>Sensor SP1 fault</b>	Fault in cylinder sensor 1, first cylinder	<b>VR 68/2</b> solar module	Cable defective, plug connection not correct, cylinder sensor defective
<b>Sensor SP2 fault</b>	Fault in sensor cylinder 2, first cylinder	<b>VR 68/2</b> solar module	Cable defective, plug connection not correct, cylinder sensor defective
<b>Sensor TD1 fault</b>	Fault in cylinder sensor 1, second cylinder	<b>VR 68/2</b> solar module	Cable defective, plug connection not correct, cylinder sensor defective
<b>Sensor TD2 fault</b>	Fault in sensor cylinder 2, second cylinder	<b>VR 68/2</b> solar module	Cable defective, plug connection not correct, cylinder sensor defective

1) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.

Display	Meaning	Connected appliances	Cause
<b>Solar yield sensor fault</b>	Sensor solar gain fault	Solar gain sensor	Cable defective, plug connection not correct, solar gain sensor defective
<b>VR 61/4 communication fault</b>	<b>VR 61/4</b> mixer module connection fault	<b>VR 61/4</b> mixer module	Cable defective, plug connection not correct
<b>Sensor VF2 fault</b>	Flow sensor VF2 fault	<b>VR 61/4</b> mixer module	Cable defective, plug connection not correct, flow sensor defective
<b>Plugin error</b>	Faulty temperature regulation	Hybrid heat pump	Controller was installed in a heat generator incorrectly
<b>Fault room temp. sensor</b>	Faulty temperature regulation	<b>VR 81/2</b> or <b>VRC 470</b>	Sensor defective
<b>... module too old</b>	Faulty control system	... module	Module version too old
<b>Add-on module connection</b>	Faulty control system	<b>VWZ AI VWL X/2</b>	Cable defective, plug connection not correct
<b>Room air humidity sensor fault</b>	Cooling faulty	Room air humidity sensor	Room air humidity sensor defective
<b>Add-on module fault</b>	Faulty control system	<b>VWZ AI VWL X/2</b>	Cable defective, plug connection not correct
<b>Ventilation unit fault</b> <sup>1)</sup>	Malfunction in the ventilation unit	<b>recoVAIR.../4</b>	See <b>recoVAIR.../4</b> manual
<b>Ventilation unit connection missing</b> <sup>1)</sup>	Ventilation unit can no longer be controlled with the controller	<b>recoVAIR.../4</b>	Cable defective, plug connection not correct

1) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.

## 8.2 Faults

Fault	Cause	Troubleshooting
Display is dark	Appliance fault	<ul style="list-style-type: none"> <li>– Mains off/on at the heat generator that feeds the controller</li> <li>– Check power supply for the heat generator that feeds the controller</li> </ul>
No changes in the display via the rotary knob	Unit fault	<ul style="list-style-type: none"> <li>– Mains off/on at the heat generator that feeds the controller</li> </ul>
The selection buttons do not change the display.	Unit fault	<ul style="list-style-type: none"> <li>– Mains off/on at the heat generator that feeds the controller</li> </ul>

## 9 Decommissioning

### 9 Decommissioning

#### 9.1 Replacing the controller

1. If you want to replace the controller, disconnect all of the connected modules from the power supply. Observe the relevant instructions.
2. If you want to replace the controller, first shut down the heating installation.
3. To do this, follow the instructions for shutting down in the boiler instructions.
4. Disconnect the power supply to the boiler.
5. Disconnect the boiler from the power mains by pulling out the mains plug or de-energising the boiler using a partition with a contact opening of at least 3 mm.
6. Secure the power supply to the boiler against being switched on again.
7. Check that there is no voltage in the boiler.

##### 9.1.1 Removing from the wall

1. Insert the screwdriver into the slot on the wall-mounting base .
2. Carefully lever the controller off the wall mounting base .
3. Unfasten the eBUS line from the pin header on the controller and from the terminal block on the boiler.
4. Unscrew the wall-mounting base from the wall.

##### 9.1.2 Removing from the boiler

1. If necessary, open the front panel on the boiler.
2. Carefully remove the controller from the electronic box of the boiler.
3. Undo the 6-way edge connector at plug location X41 on the boiler.
4. If necessary, close the front panel on the boiler.

## 10 Customer service

To ensure regular servicing, it is strongly recommended that arrangements are made for a Maintenance Agreement. Please contact Vaillant Service Solutions (0870 6060 777) for further details.

## 11 System diagrams

There are 12 groups of system diagrams, which are described here with their connection options. If a system diagram matches the heating installation that you want to install, you must enter the number of the group in the **System diagram** function.

#### System diagram 1

- Monovalent systems with one or two heating circuits
- Boiler
- ZP/LP output on the **VR 61** with fixed circulation pump function
- Solar heating for domestic hot water

- **VIH-RL** with free-standing boiler

#### System diagram 2

- Monovalent system
- Boiler
- ZP/LP output on the **VR 61** with fixed charging pump function
- Drinking water cylinder after the low loss header, pipe coil cylinder or **VIH-RL**
- **VR 61** mandatory
- **VR 68** not possible
- **VIH-RL** and **VR 61** with wall-hung boiler

#### System diagram 3

- Monovalent system
- Boiler
- ZP/LP output on the **VR 61** with fixed charging pump function
- Two zones
- Drinking water cylinder after the low loss header, pipe coil cylinder
- **VR 61** mandatory
- **VR 68** not permitted

#### System diagram 4

- Solar system with heating support
- Boiler
- ZP/LP output on the **VR 61** with fixed charging pump function
- Multi-function output (MA) on the **VR 68** with specified heating support function
- **VR 61** mandatory
- **VR 68** mandatory

#### System diagram 5

- Monovalent system with wall-hung boiler
- With **VIH-RL** after low loss header without **VR 61**
- **VR 61** not permitted

#### System diagram 6

- Bivalent alternative systems
- Boiler and hybrid heat pump
- ZP/LP output on the **VR 61** with fixed circulation pump function
- VCW and VC + cylinder
- with one or two heating circuits
- with **VR 61**
- Boiler connected to eBUS via **VR 32**; switch position in position two on **VR 32**



#### Note

Caution: With 2-zone kit, use plan 7

#### System diagram 7

- Bivalent partially parallel system
- Boiler and hybrid heat pump
- ZP/LP output on the **VR 61** with fixed circulation pump function
- VCW and VC + cylinder
- Two heating circuits



- with 2-zone kit
- Boiler connected to eBUS via **VR 32**; switch position in position two on **VR 32**

### System diagram 8

- Bivalent parallel or partially-parallel system
- Auxiliary boiler and monoblock heat pump
- ZP/LP output on the **VR 61** with fixed circulation pump function
- with **VR 61** up to two heating circuits
- Solar drinking water heating with **VR 68**
- Multi-function output (MA1) on the **VWZ AI VWL X/2** Add-on module with specified "Active cooling" function

### System diagram 9 (applies for controller version VRC 470/4)

- Bivalent parallel or partially-parallel system
- Auxiliary boiler and monoblock heat pump
- Auxiliary boiler has its own heating pump
- ZP/LP output on the **VR 61** with fixed circulation pump function
- Multi-function output (MA1) on the **VWZ AI VWL X/2** Add-on module with specified "Active cooling" function

### System diagram 10

- Bivalent parallel or partially-parallel system
- Auxiliary boiler and monoblock heat pump
- with **VWZ-MWT** heat exchanger module
- System auxiliary boiler only for heating (separate auxiliary boiler possible for DHW)
- ZP/LP output on the **VR 61** with fixed circulation pump function
- Multi-function output (MA1) on the **VWZ AI VWL X/2** Add-on module with specified heat exchanger pump

### System diagram 11 (applies for controller version VRC 470/4)

- Bivalent parallel or partially-parallel system
- Auxiliary boiler and monoblock heat pump
- with **VWZ-MWT** heat exchanger module
- System auxiliary boiler for heating and hot water
- ZP/LP output on the **VR 61** with fixed circulation pump function
- Multi-function output (MA1) on the **VWZ AI VWL X/2** add-on module with specified heat exchanger pump function

### System diagram 12

- Bivalent parallel or partially-parallel system
- Auxiliary boiler and monoblock heat pump
- Two zones without **VR 61**
- **VR 61** not possible
- with **VWZ-MWT** heat exchanger module
- System auxiliary boiler for heating and hot water
- Multi-function output (MA1) on the **VWZ AI VWL X/2** add-on module with specified zone valve function

# 11 System diagrams

## 11.1 Legend for system diagrams

The following table applies for all system diagrams. It is to be read from left to right.

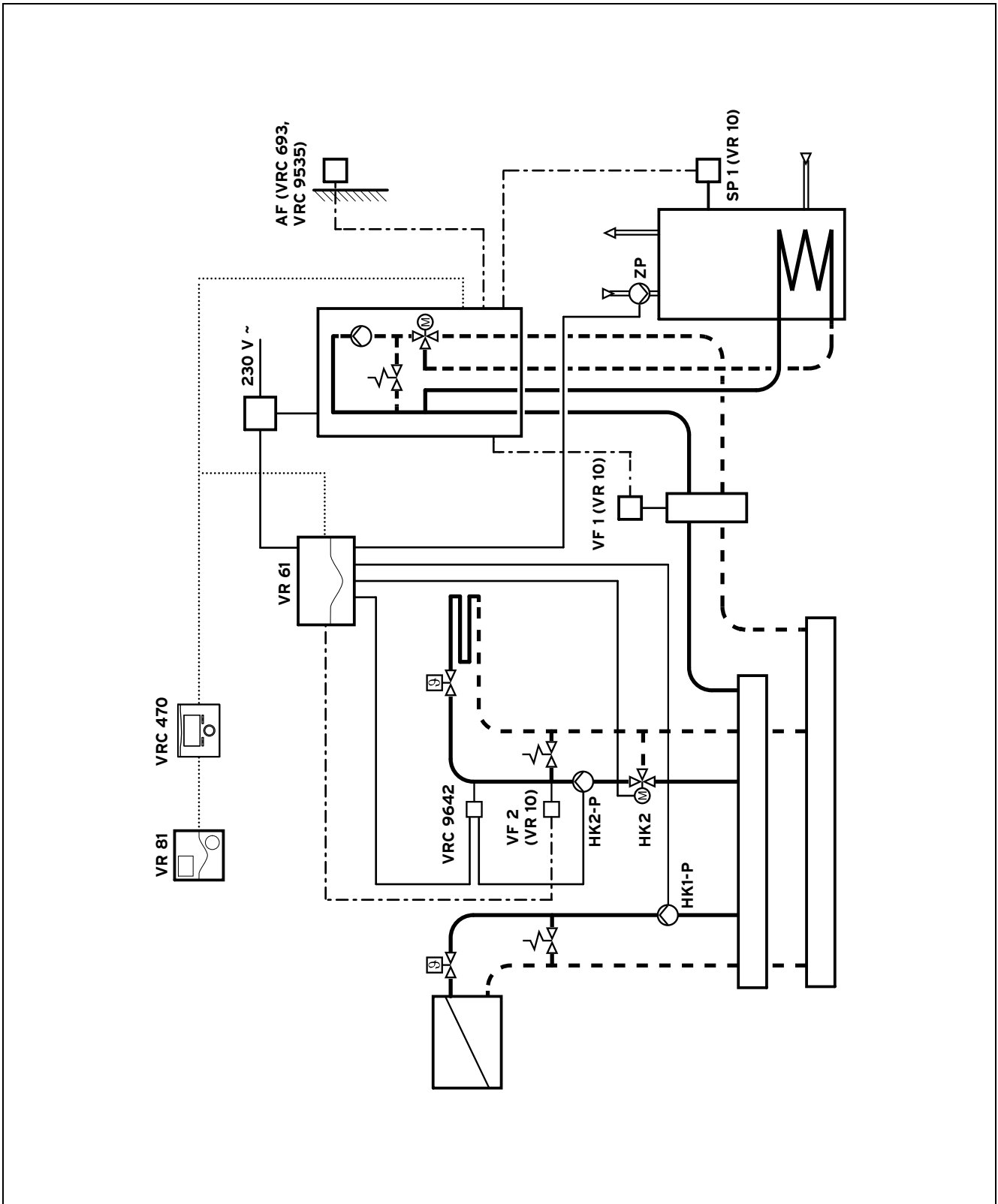
Legend point	Meaning	Legend point	Meaning
1	Heat generator	2	Heat generator pump
2a	Swimming pool circulation pump	2b	BHKW circulation pump
2c	Domestic hot water charging pump	3	Heat pump
4	Buffer cylinder	5	Domestic hot water cylinder
6	Tank in tank	7	Sequence cylinder
8	Solar combi storage tank	9	Gas cock
10	Thermostatic radiator valve	12	Unit electronics
13	Heat generator control	13a	Remote control unit
13b	Mixer module	13d	Hot water charging controller
13e	System controller	13g	Solar module
13h	Bus coupler	14	Swimming pool controller
15	Condensate pump	16	External sensor/DCF receiver
16a	External sensor	17	Drinking water station (DWS)
18a	Hot water charging sensor	18b	Hot water generation cylinder sensor
19	Maximum thermostat	20	Flush connection
21	Flue gas thermostat	22	Cut-off relay
24	Home unit	25	Solar pump unit
26a	Solar charging unit	26b	Drinking water station
27	Cylinder charge pump	28	Zone valve
29	Thermal discharge safety device	30	Non-return valve
31	Control valve	32	Cap valve
33	Dirt trap	33a	Sludge separator set
34	Increase in return flow	34a	Increase in return flow mixing
35	Flow switch	36	Thermometer
37	Air separator	38	Diverter valve (unit-internal)
39	Thermostat mixing valve	40	Heat exchanger
42a	Expansion relief valve	42b	Diaphragm expansion tank
42c	Diaphragm expansion tank – drinking water	43	Safety group – drinking water connection
45	Low loss header	48	Pressure gauge
49	Flow adjuster (Taco setter)	50	Overflow valve
51	Hydraulic block	52	Individual room control valve
53	Heat extraction module	53a	Flexible connections
56	Heat pumps for brine filling unit	57	Brine expansion tank
58	Fill and drain valve	59	Solar automatic air vent with lock
60	Purging valve	63	VFK solar collector
63a	VTK solar collector	64	Solar in-line vessel
65	Collecting container	66	Pump, cooling circuit
67	3-way mixer	68	Fan convector
69	Tundish	70	Air collector
71	VWL 10/3 SA outer unit	72	Well pump
84	Swimming pool	91	VWZ AI VWL X/2 add-on module
92	VWZ MWT 151	93	VWZ MPS 40
94	VWZ MEH 60	95	VWZ MEH 61
Yield	Yield temperature sensor		

Legend point	Meaning	Legend point	Meaning
HK-P	Heating pump	HK1-P	Heating pump
HK2-P	Heating pump	HK	Heating circuit mixer
HK1	Heating circuit mixer	HK2	Heating circuit mixer
HZ-K	Heating circuit	KOL1	Collector sensor for collector field 1
KOL1-P	Solar pump for collector field 1	KP	Circulation pump heat pump
KW	Cold water	LEG	Anti-legionella function
MA	Multi relay output	LP	Cylinder charge pump
UV1	Diverter valve 1	UV2	Diverter valve 2
UV3	Diverter valve 3	UV4	Diverter valve 4
P1	Primary hot water charging pump	P2	Secondary hot water charging pump
RF0	Return temperature sensor	RF1	Return temperature sensor/cylinder sensor
RT	Room temperature sensor	SK2-P	Diverter valve, cooling
SP	Cylinder temperature sensor (WP controller)	SP1	Cylinder temperature sensor (all)
SP2	Cylinder temperature sensor (solar cylinder)	SP3	Cylinder temperature sensor (cylinder/swimming pool)
TD1	Temperature sensor 1	TD2	Temperature sensor 2
Tprim	Temperature sensor primary circuit (DWS)	VF	Flow temperature sensor
VF1	Flow temperature sensor 1 (buffer/low loss header)	VF2	Flow temperature sensor 2
VOL	Volume flow sensor	ZP	Circulation pump
TW	----	TWW	-----•-----•-----
TWZ	----••----••----••----	Wiring	-----
Heating supply line	-----	Heating return line	-----
Solar flow line	-----	Solar return line	-----
Line (general)	-----		

# 11 System diagrams

## 11.2 System diagram 1

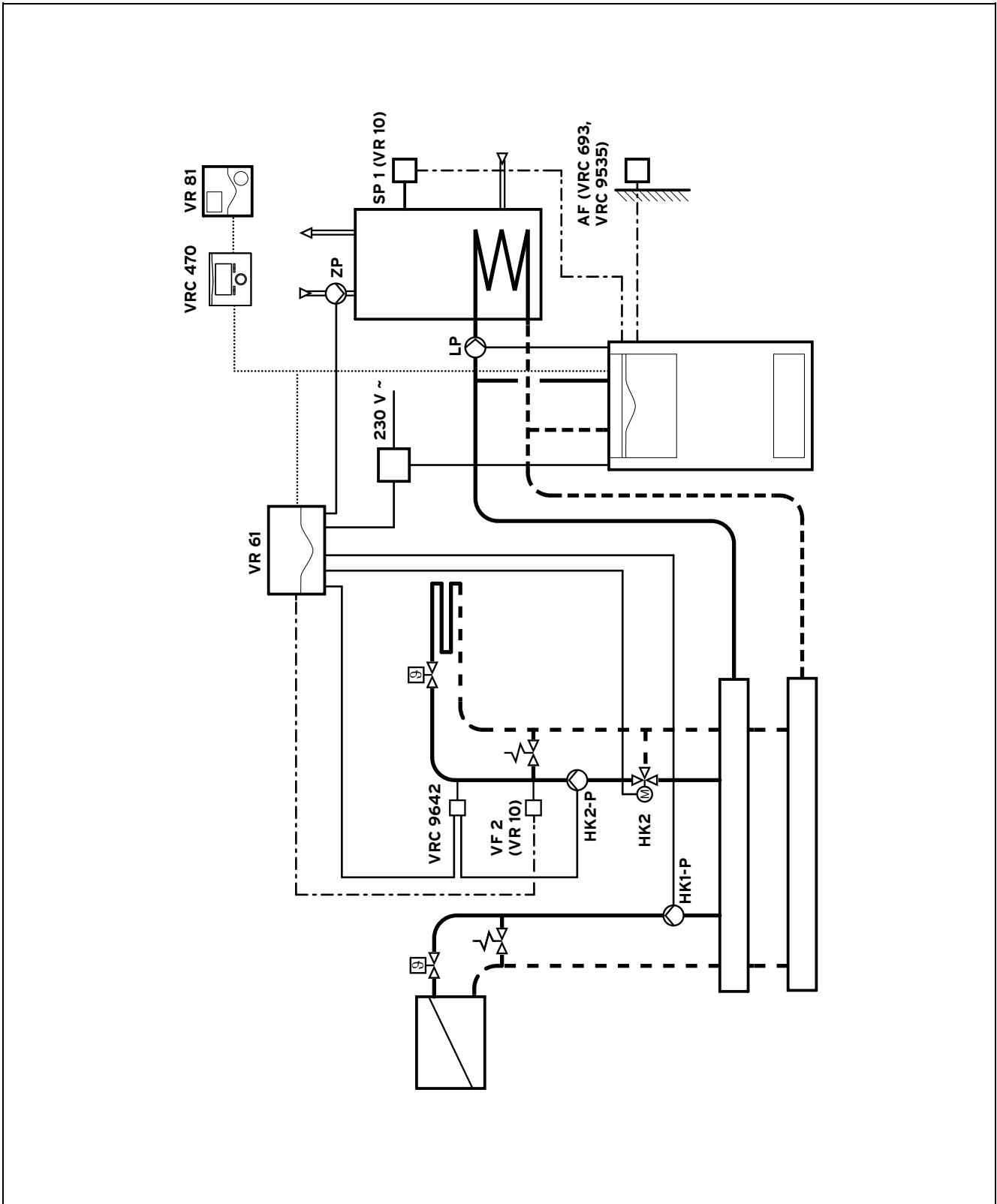
### Variant A



- Wall-hung boiler

- Two heating circuits with **VR 61**

Variant B

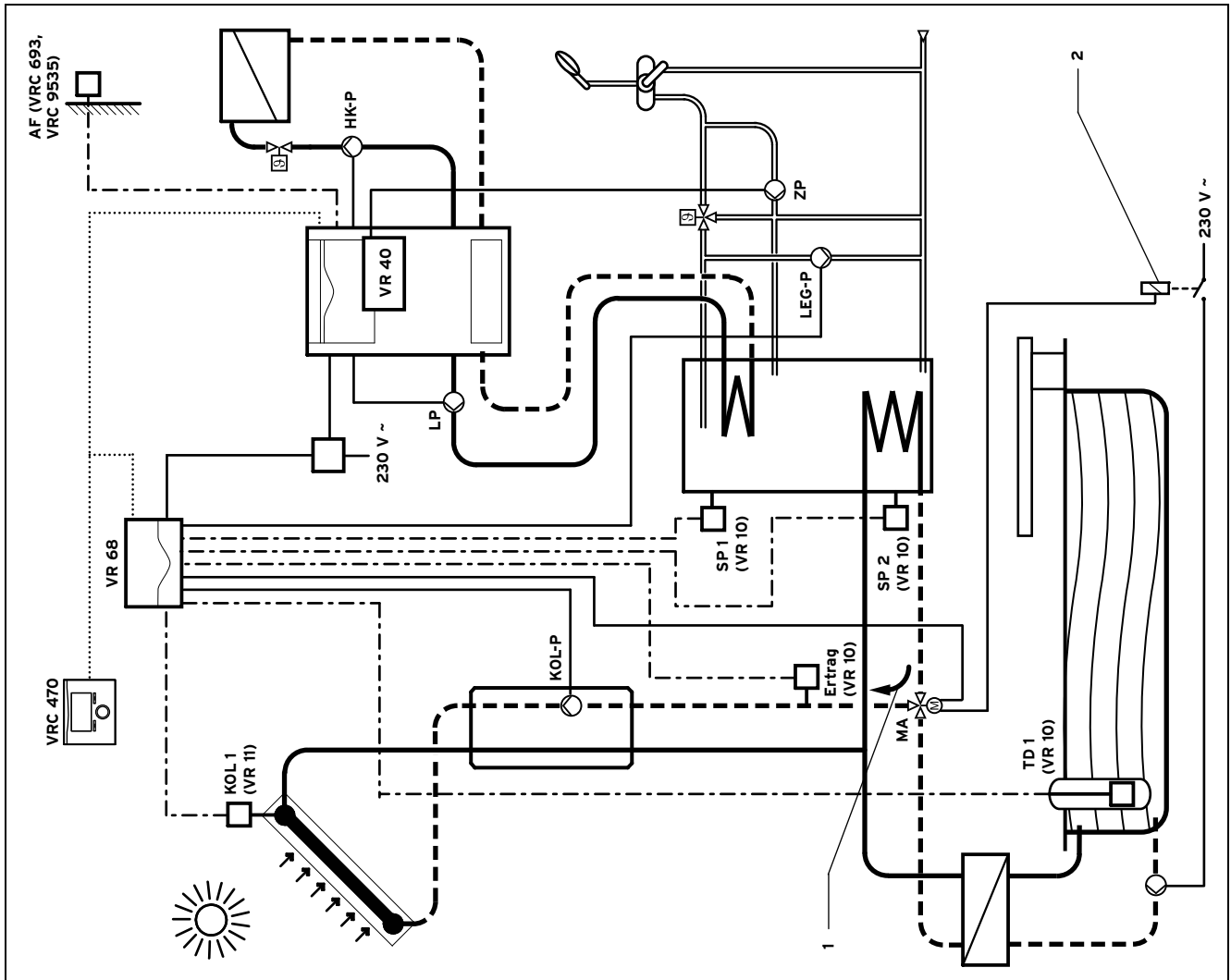


- Two heating circuits with **VR 61**
- Free-standing boiler

- Circulation pump connected at **VR 61**

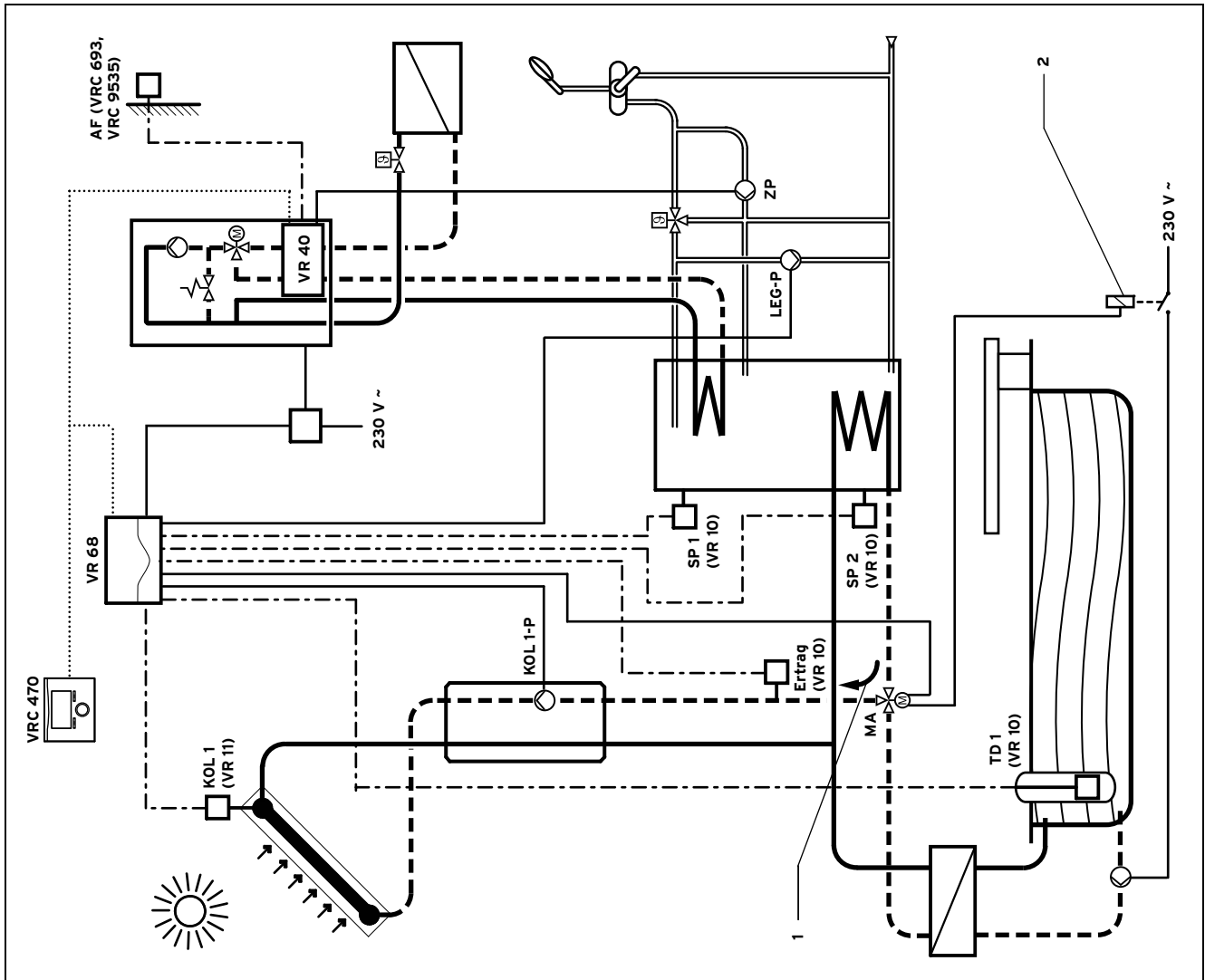
# 11 System diagrams

## Variant C



- Free-standing boiler
- One heating circuit; expansion of second heating circuit possible with **VR 61**
- Solar drinking water heating with **VR 68**
- Multi-function output (MA) is used to switch between two solar-charged cylinders

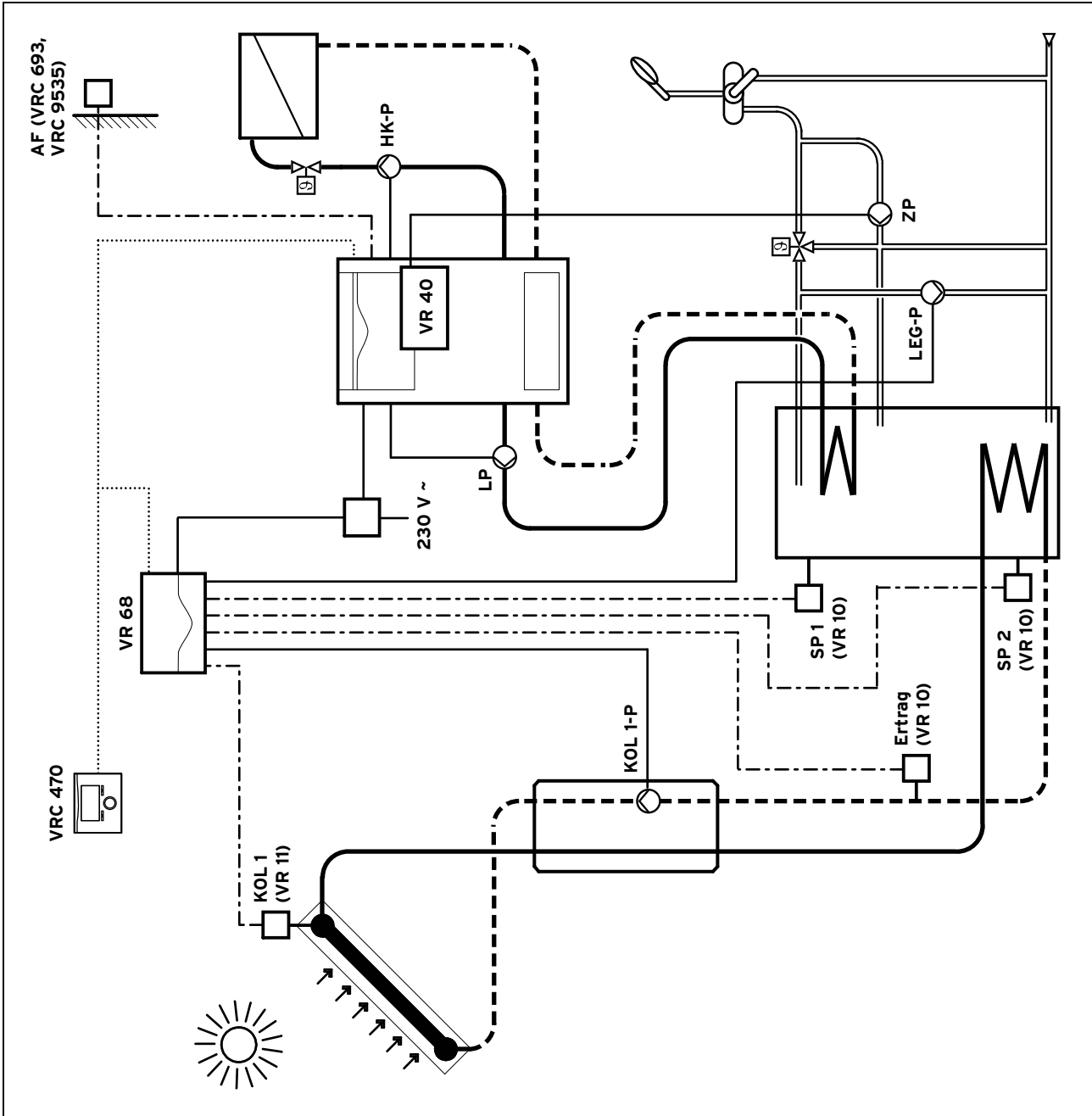
Variant D



- Wall-hung boiler
- One heating circuit; expansion of second heating circuit possible with VR 61
- Solar drinking water heating with VR 68
- Multi-function output (MA) is used to switch between two solar-charged cylinders

# 11 System diagrams

## Variant E

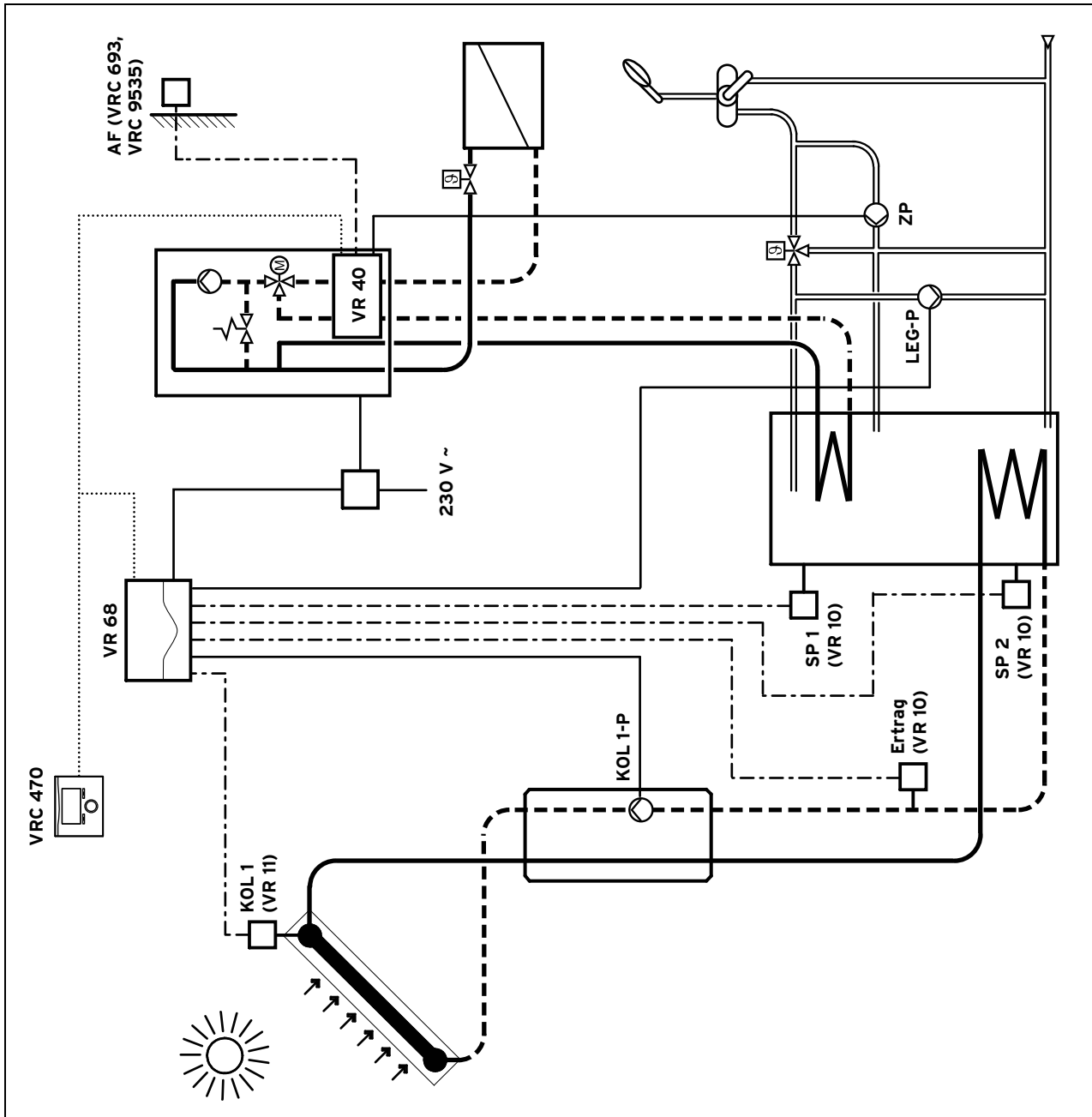


- Free-standing boiler
- One heating circuit; expansion of second heating circuit possible with **VR 61**

- Solar drinking water heating with **VR 68**



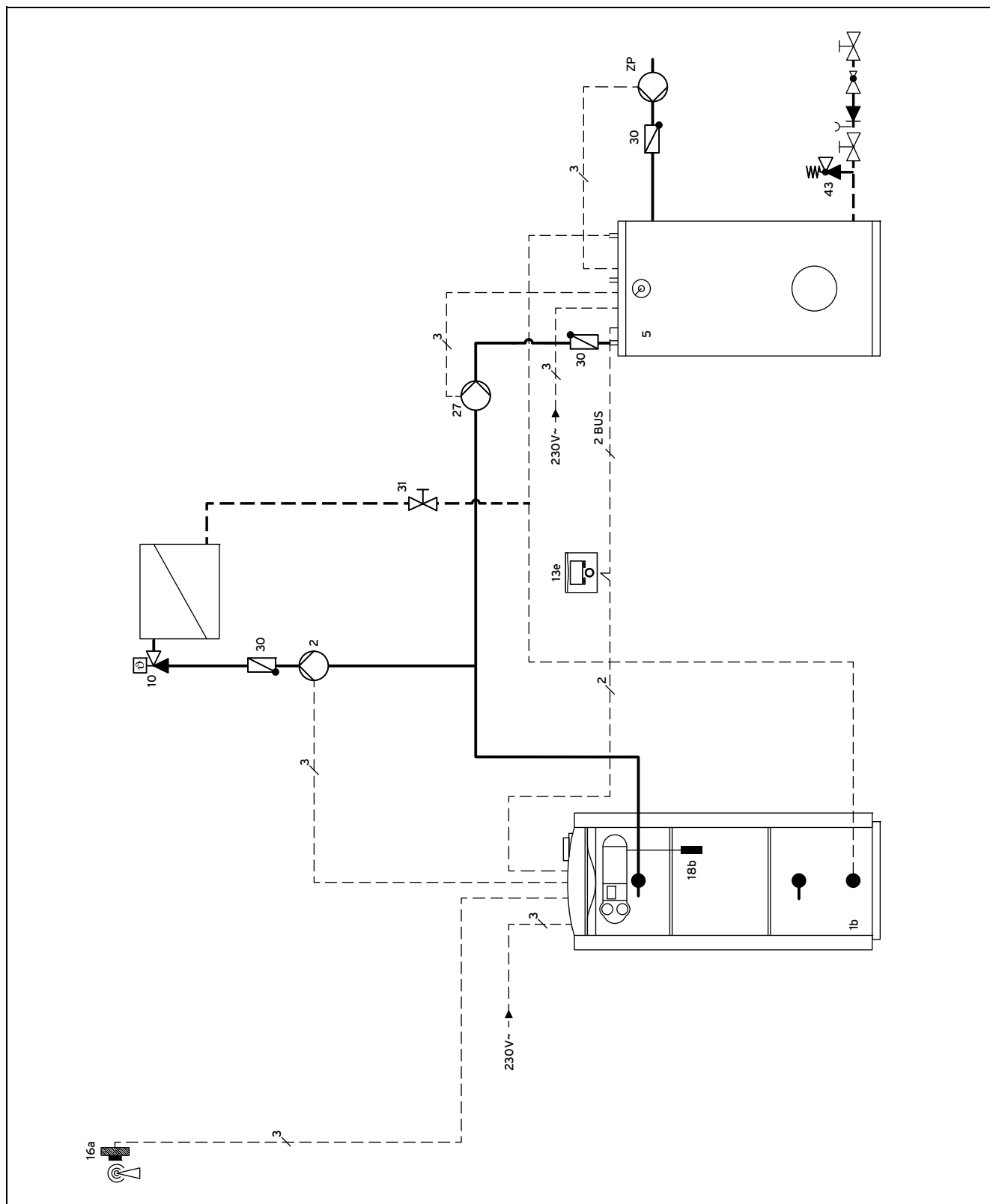
Variant F



- Wall-hung boiler
- One heating circuit; expansion of second heating circuit possible with VR 61
- Solar drinking water heating with VR 68

# 11 System diagrams

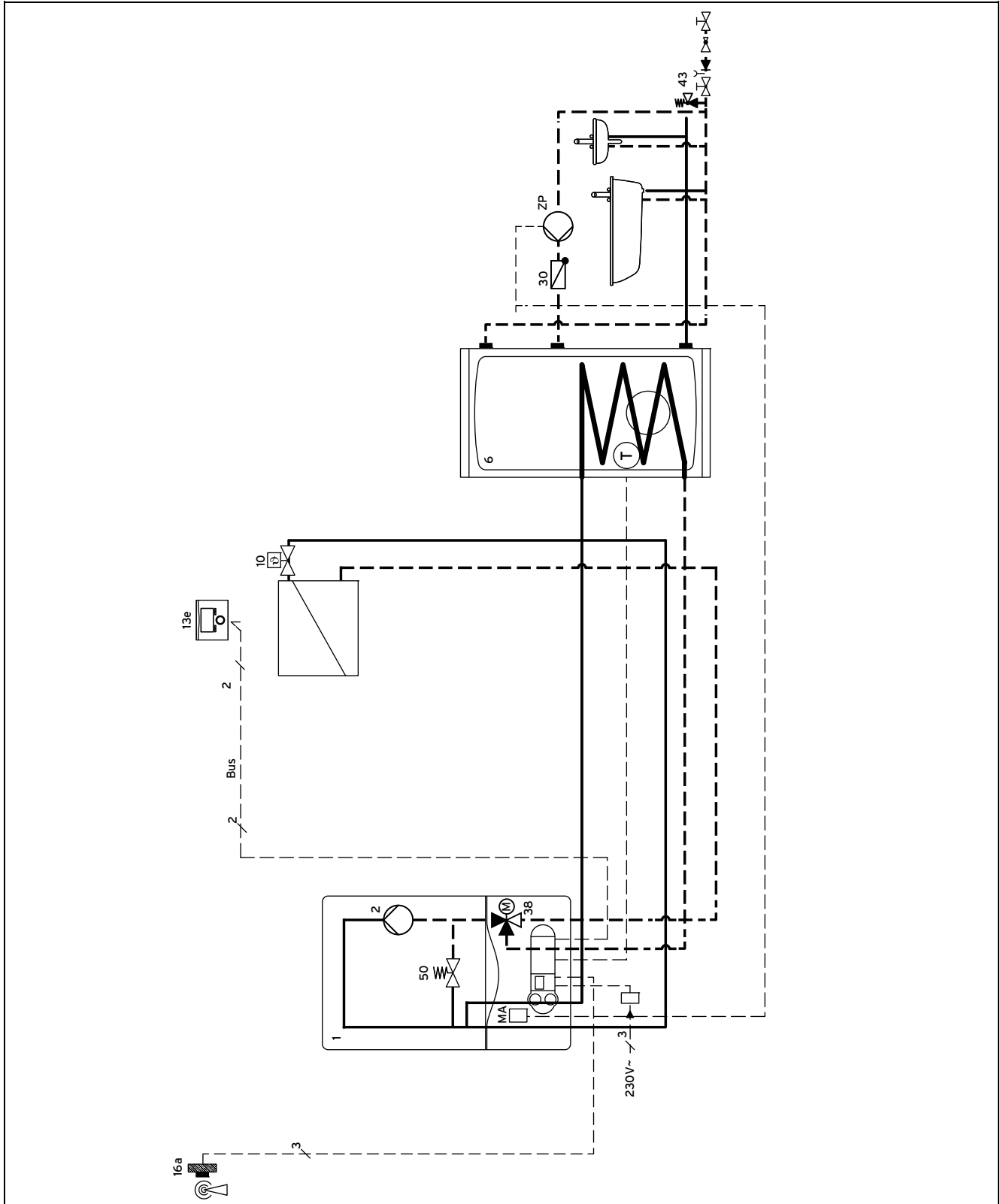
## Variant G



- Free-standing boiler
- One heating circuit; expansion of second heating circuit possible with **VR 61**

- Shift load cylinder **VIH-RL**

Variant H



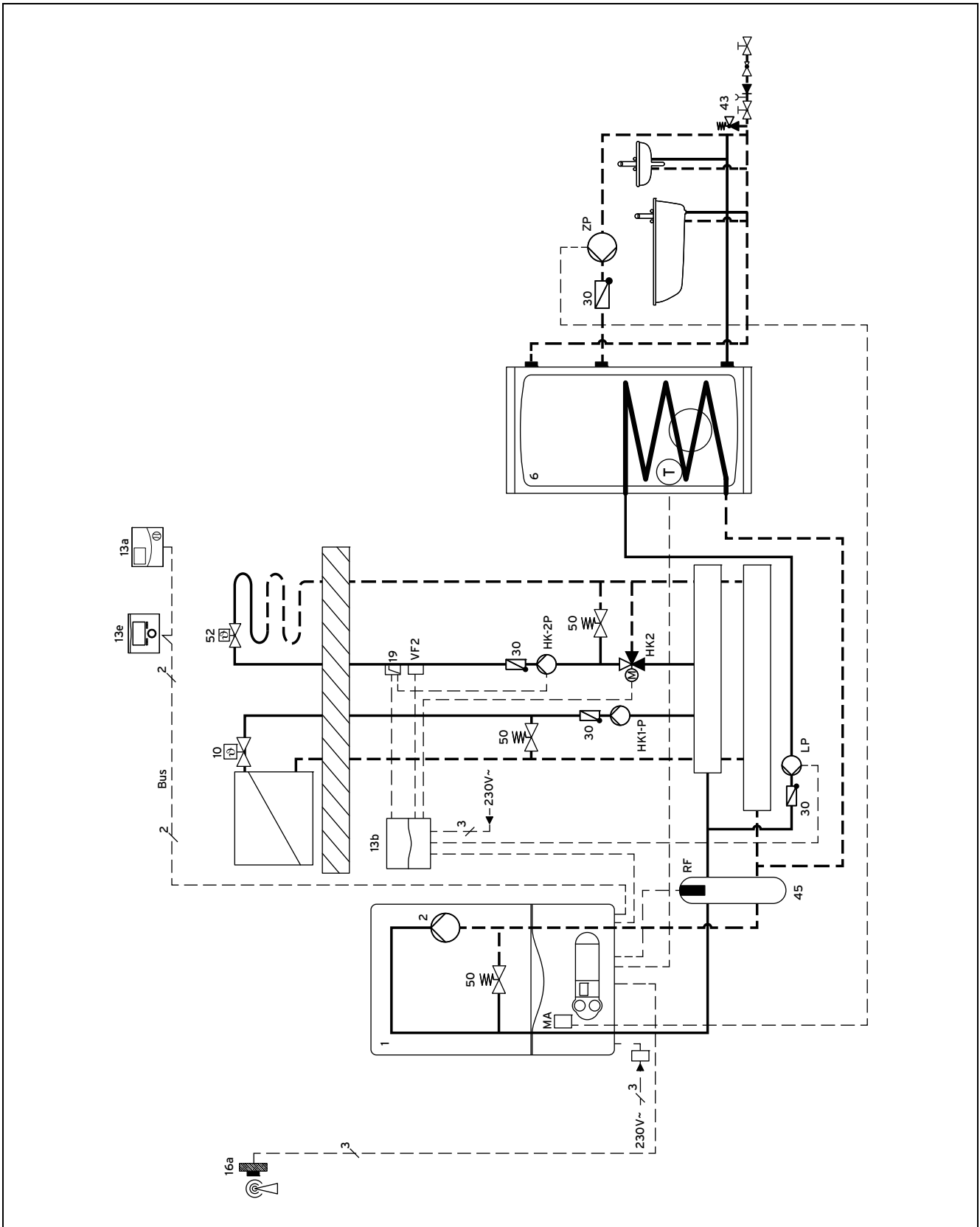
- Wall-hung boiler

- One heating circuit

# 11 System diagrams

## 11.3 System diagram 2

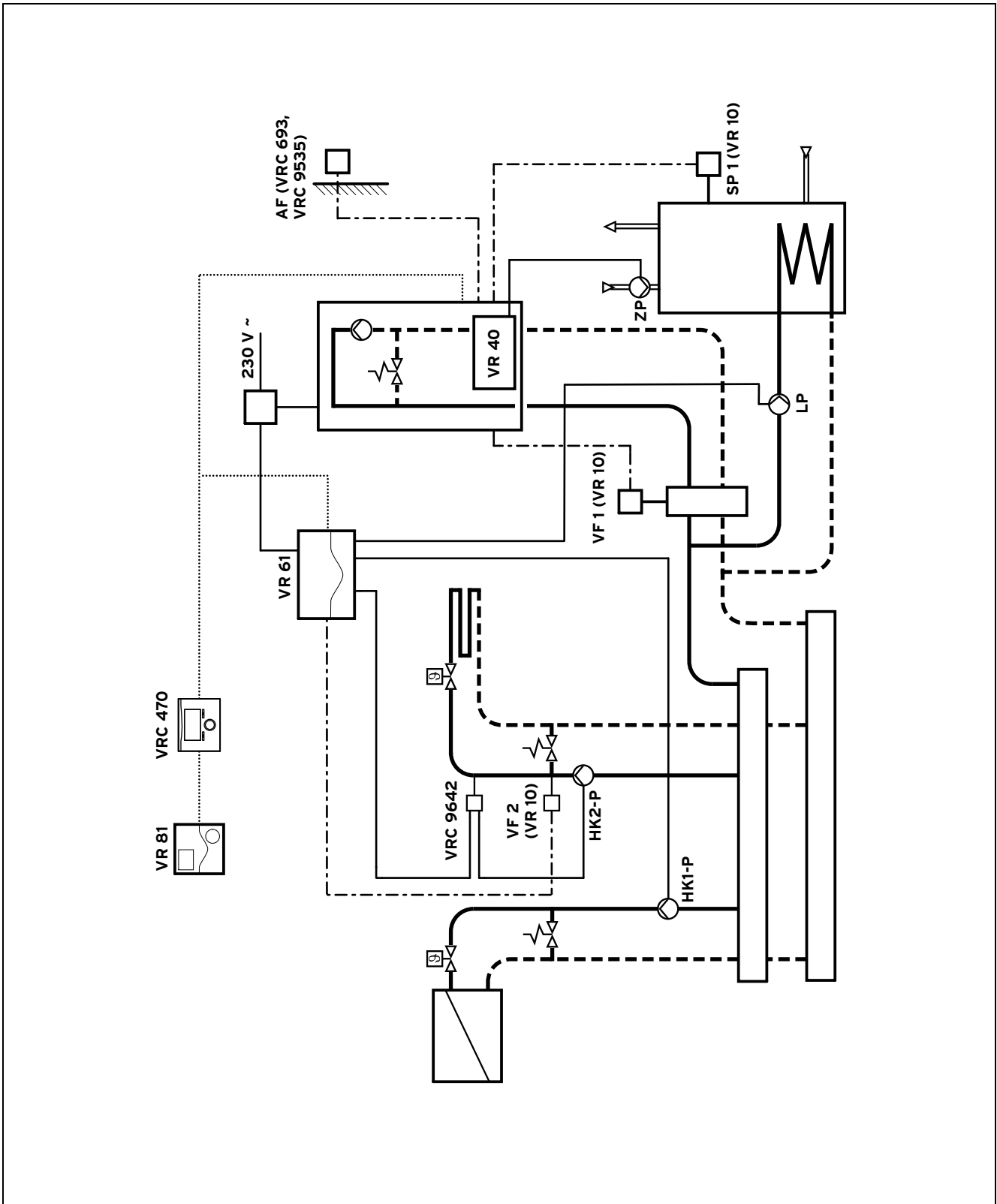
### Variant A



- Wall-hung boiler
- Domestic hot water cylinder after low loss header
- Two heating circuits with **VR 61**

11.4 System diagram 3

Variant A

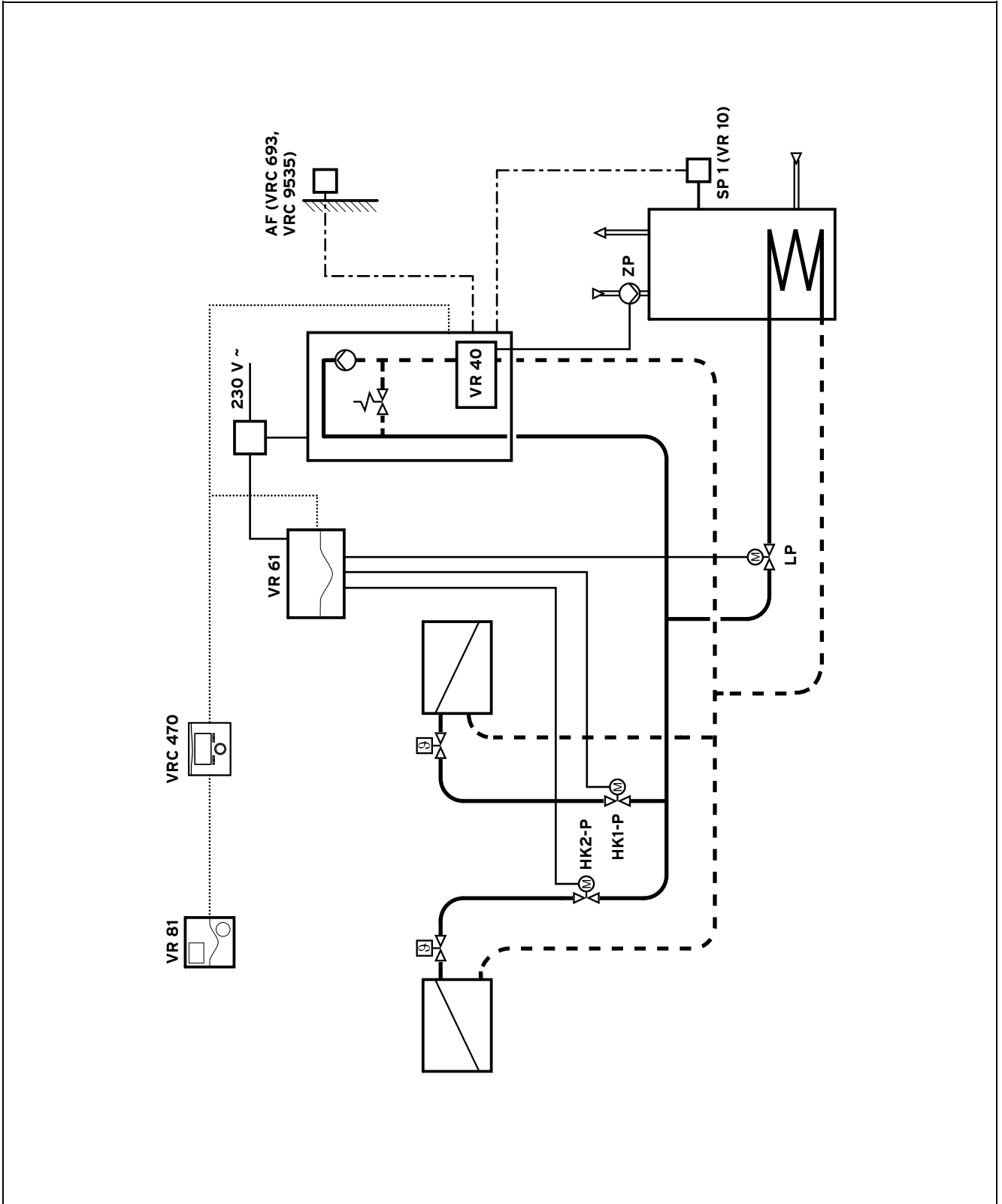


- Two zones
- Wall-hung boiler

- Cylinder with low loss header

# 11 System diagrams

## Variant B

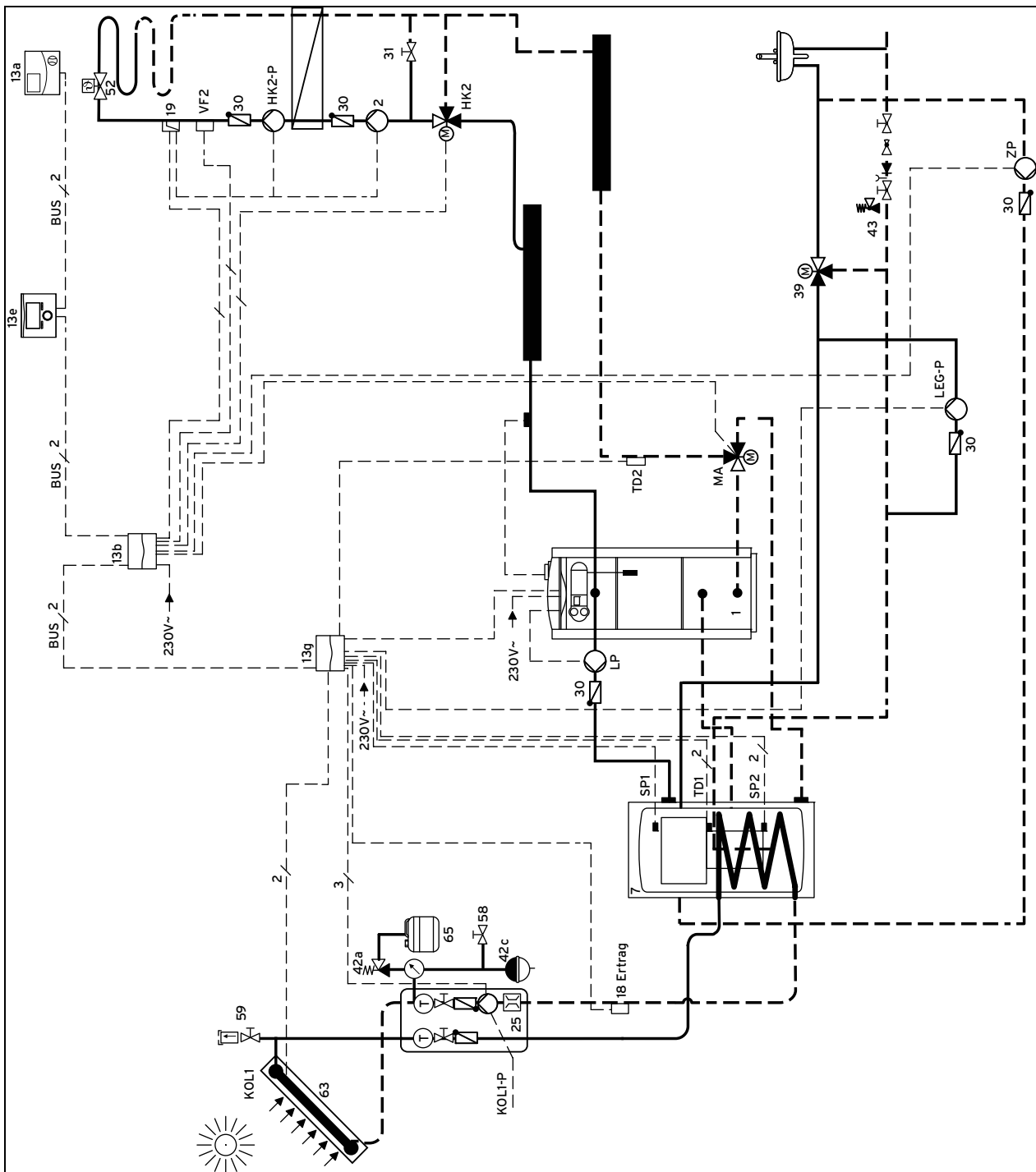


- Wall-hung boiler

- Two zones

11.5 System diagram 4

Variant A



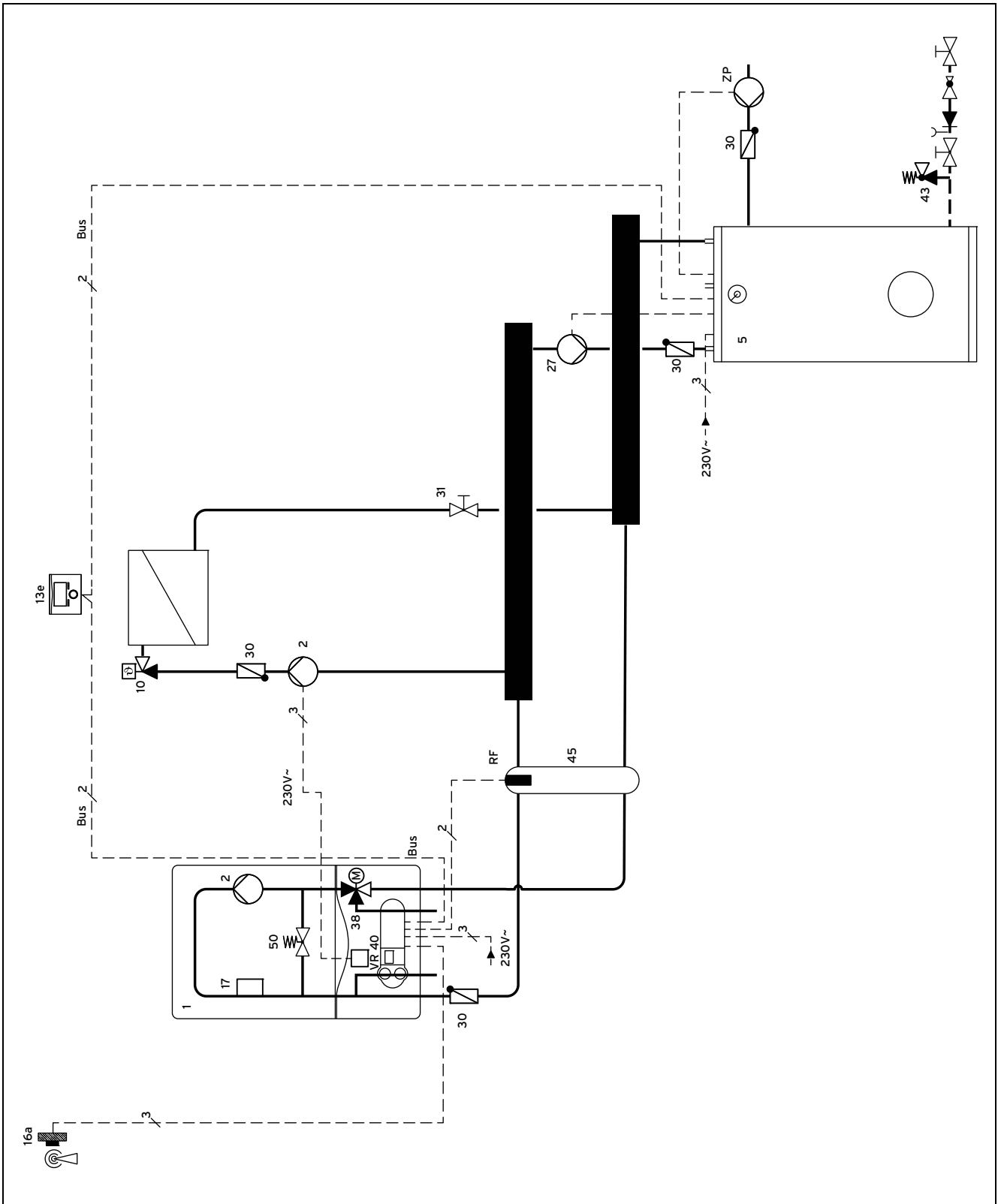
- Free-standing boiler
- One mixed heating circuit

- with VPS SC combi storage tank

# 11 System diagrams

## 11.6 System diagram 5

### Variant A

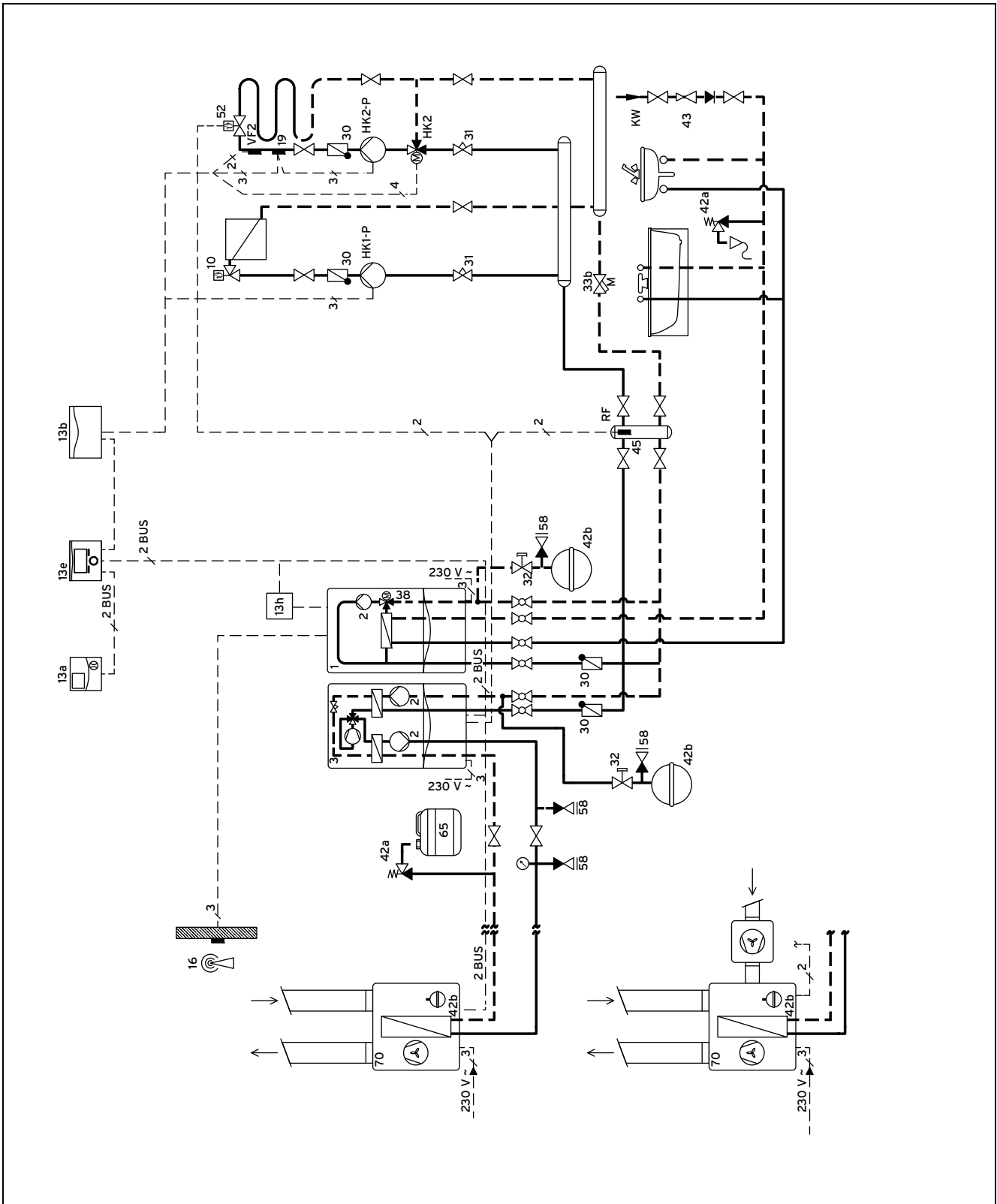


- Wall-hung boiler
- One heating circuit after low loss header; controlled with external heating pump, with **VR 40**
- Shift load cylinder **VIH-RL**



11.7 System diagram 6

Variant A

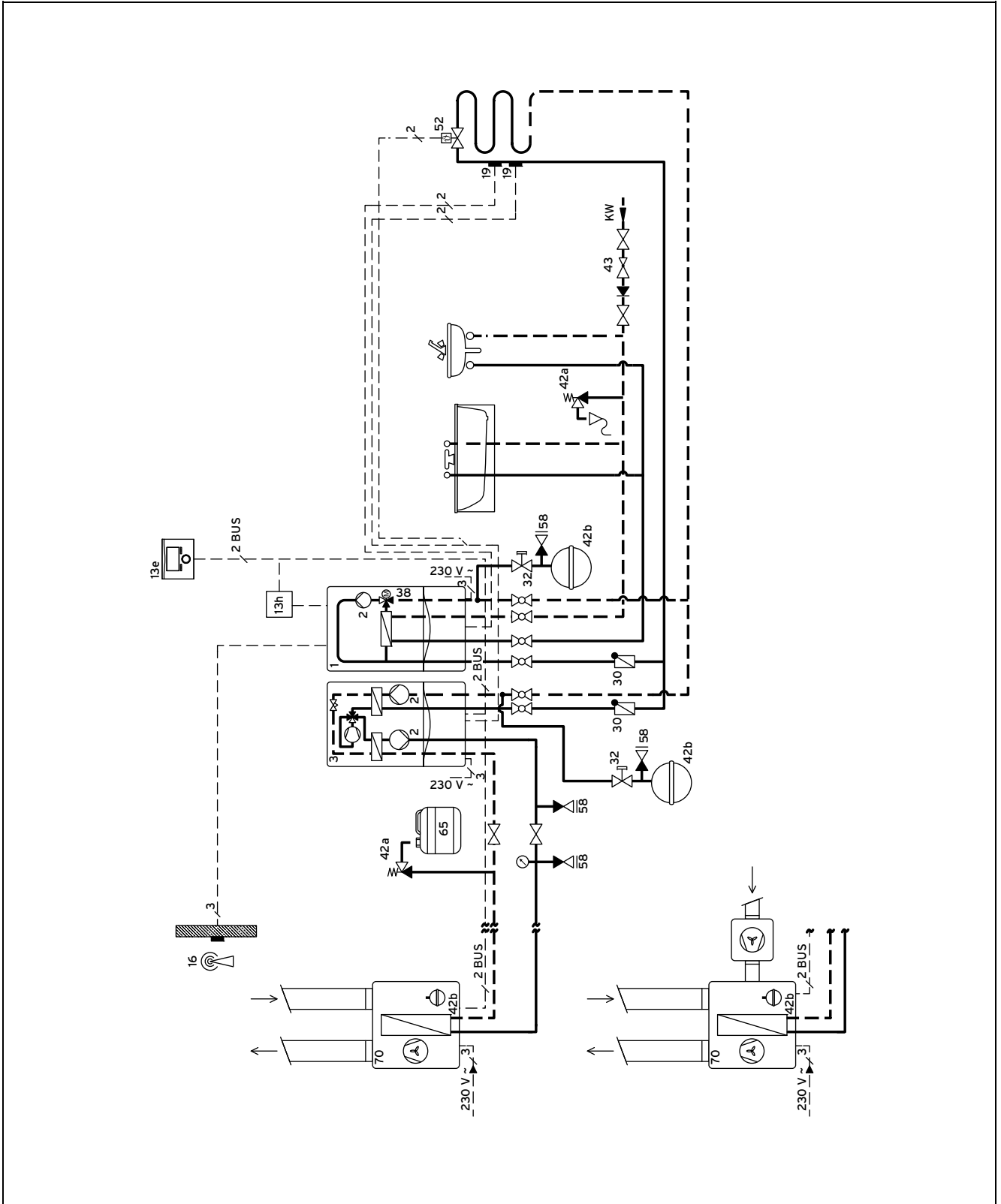


- Two heating circuits with **VR 61**

- **VR 81** and **VRC 470** installed in the relevant main living room

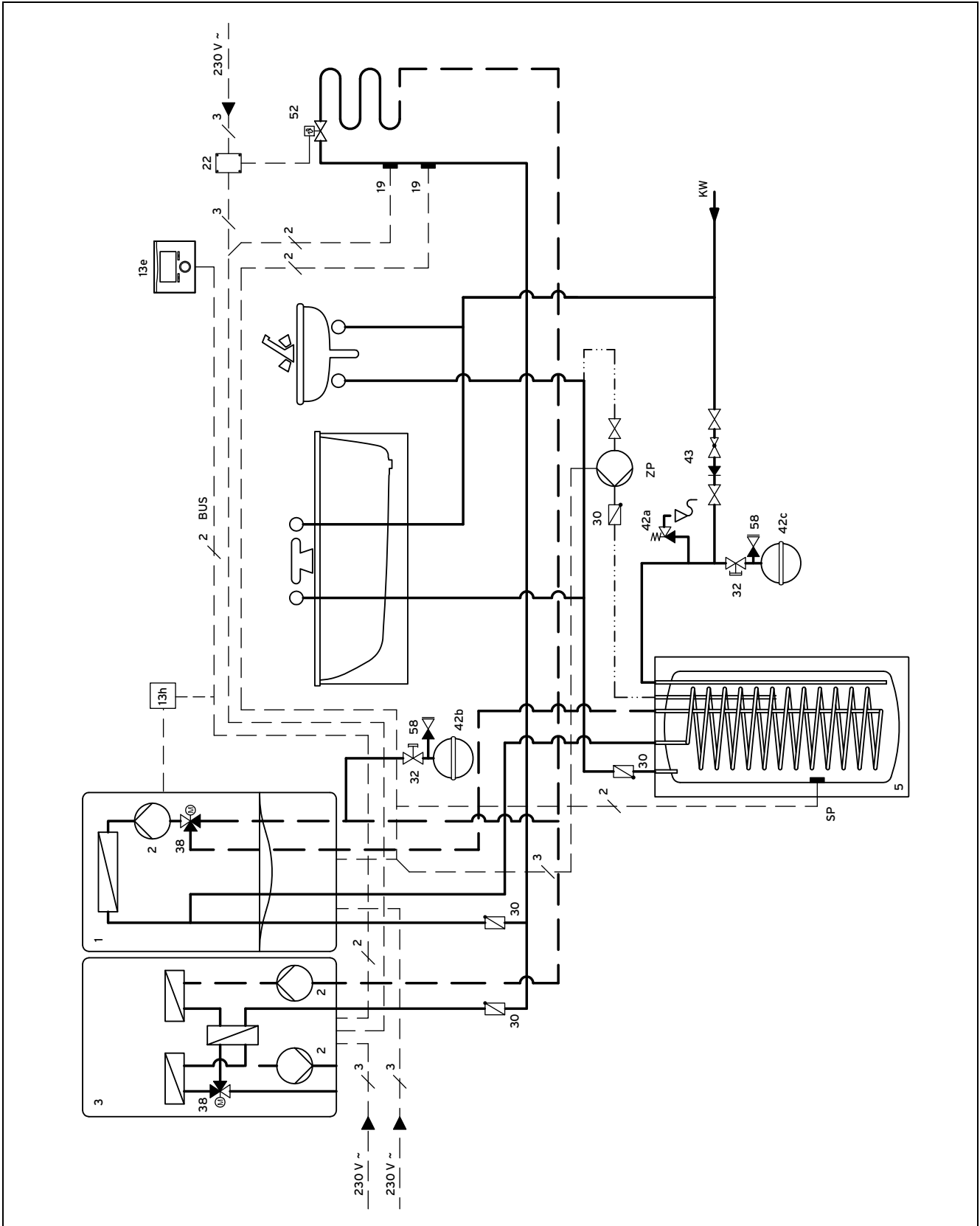
# 11 System diagrams

## Variant B



- One heating circuit

Variant C

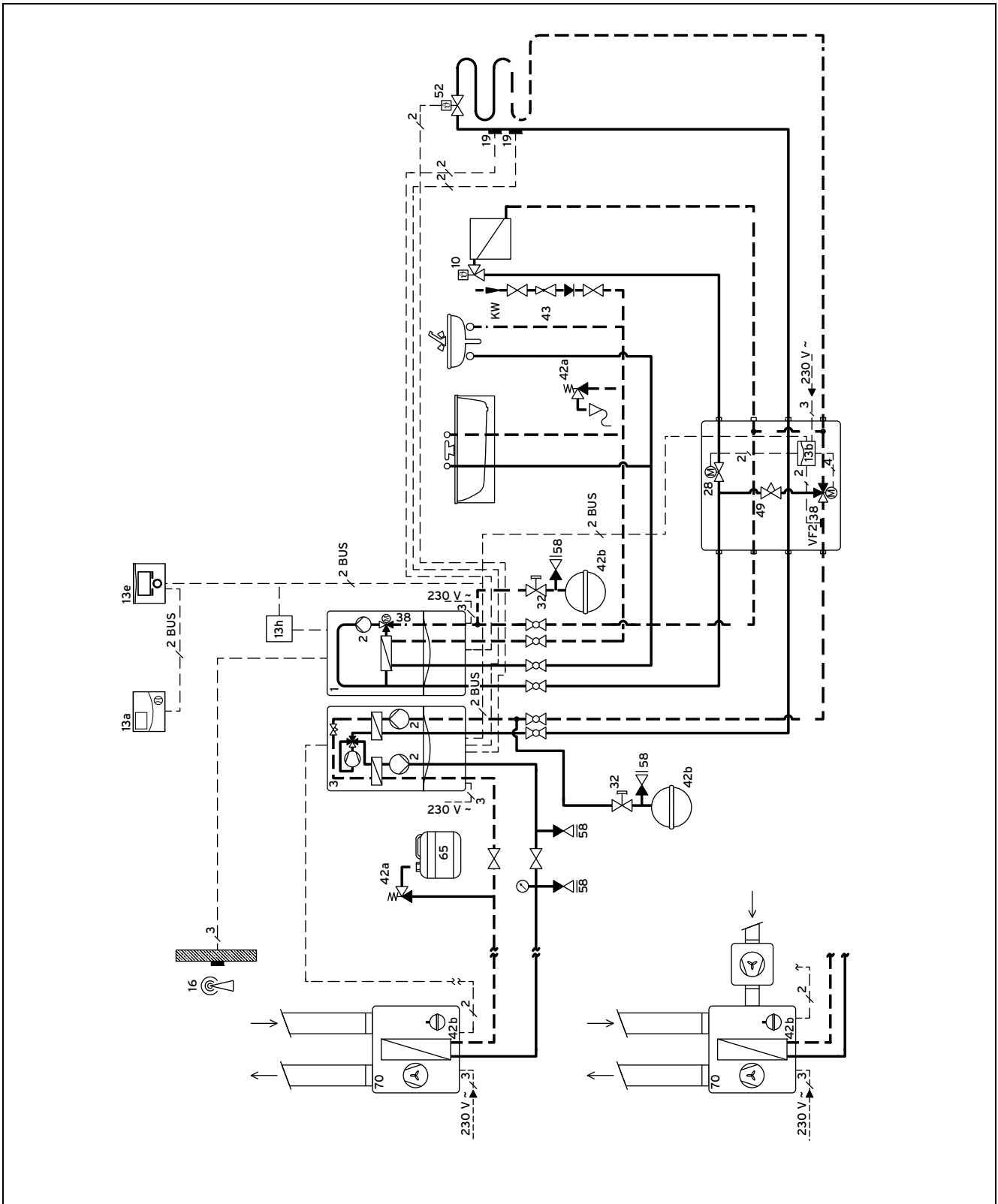


- One heating circuit

# 11 System diagrams

## 11.8 System diagram 7

### Variant A

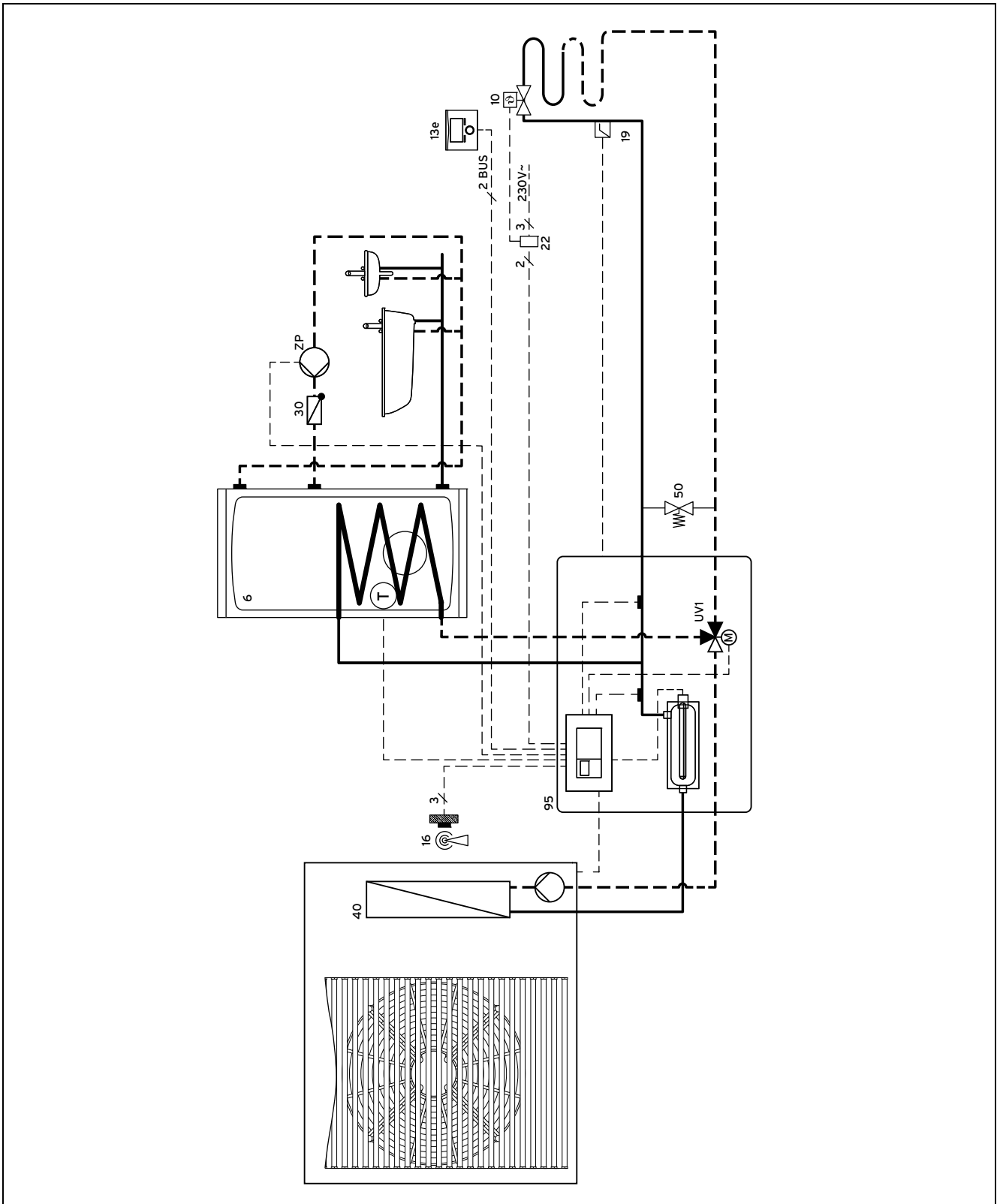


- Two heating circuits with **VWZ ZK** two-circuit kit

- Partially-parallel operation with boiler and hybrid heat pump possible

11.9 System diagram 8

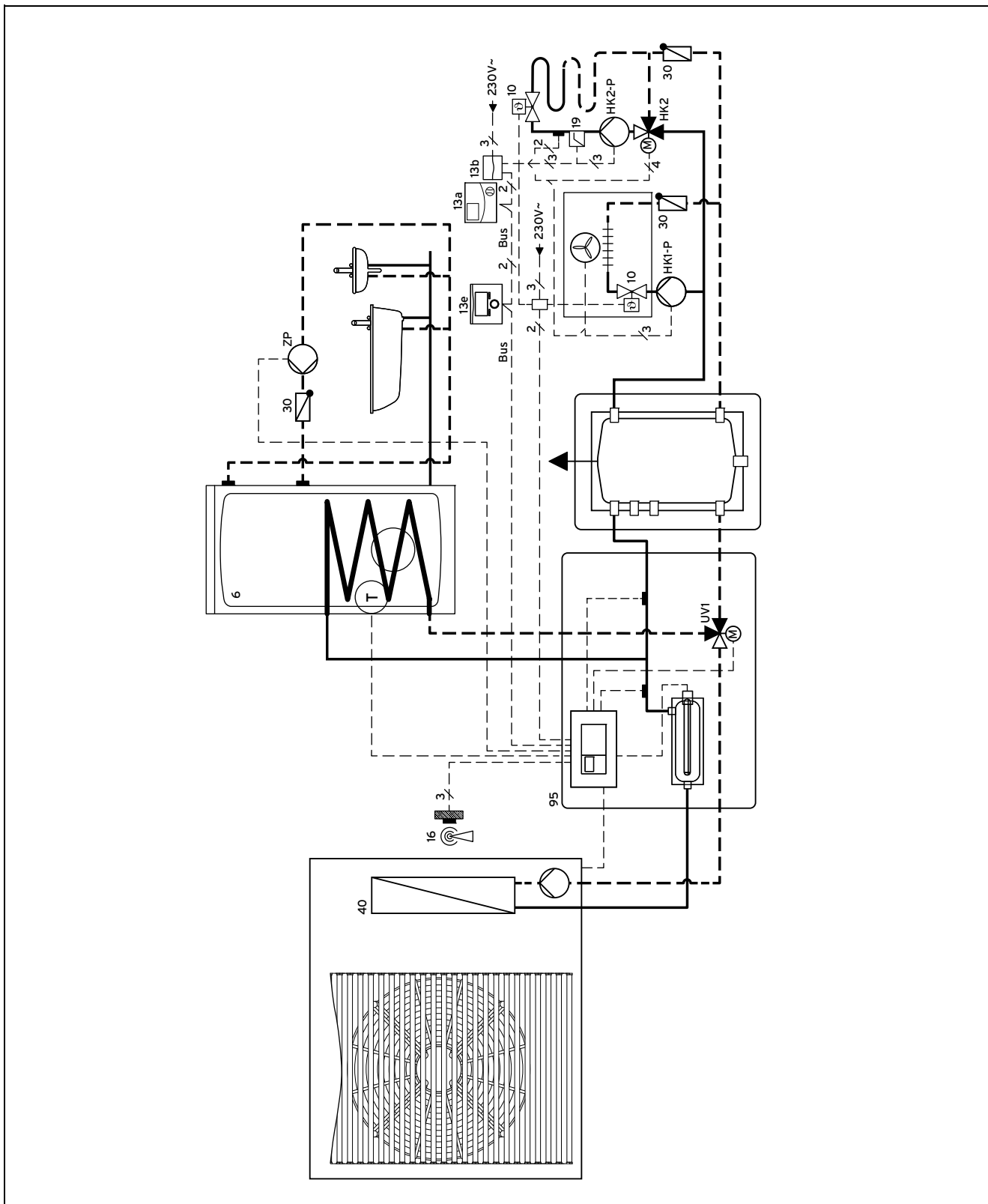
Variant A



- One heating circuit

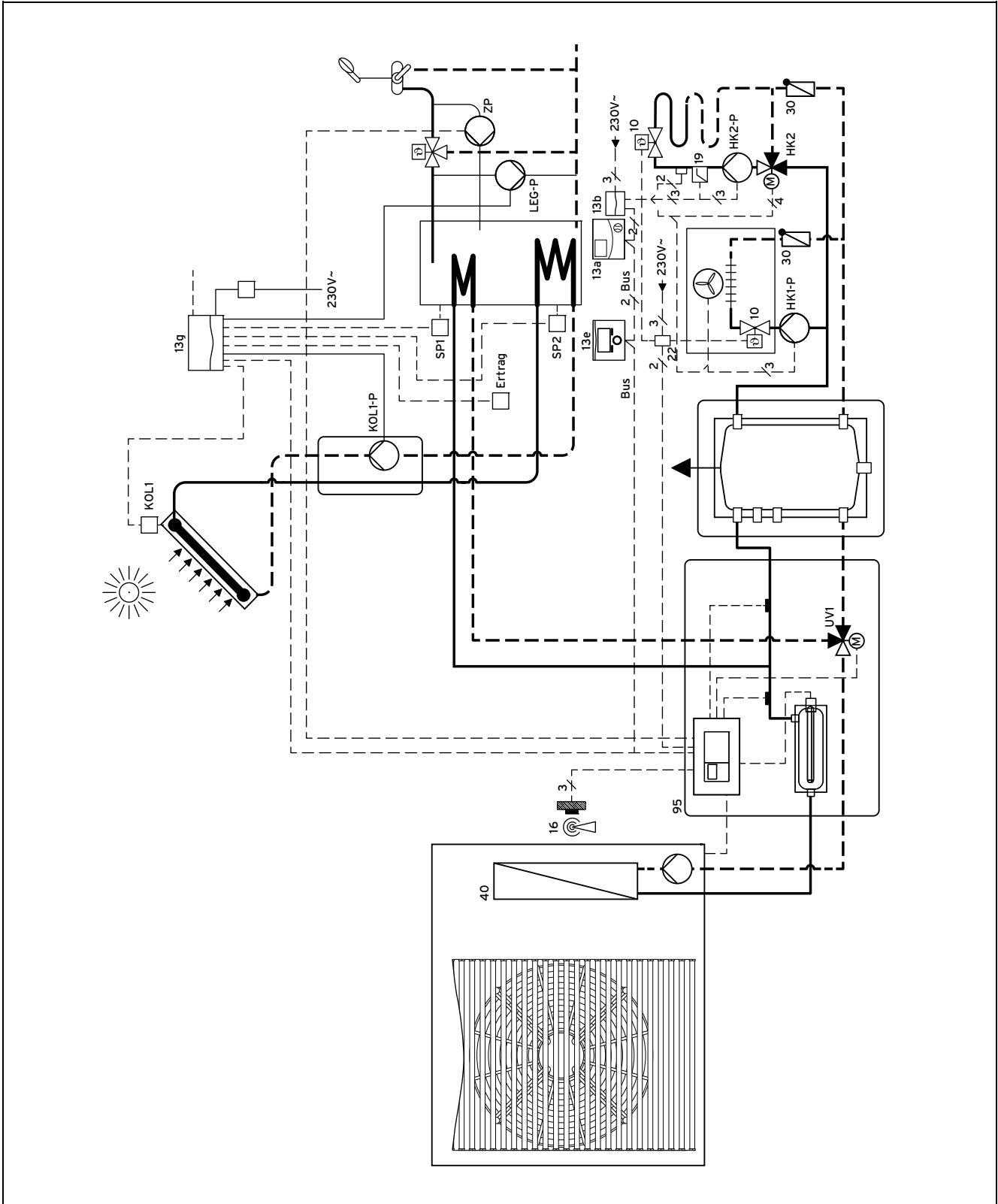
# 11 System diagrams

## Variant B



- Two heating circuits

Variant C

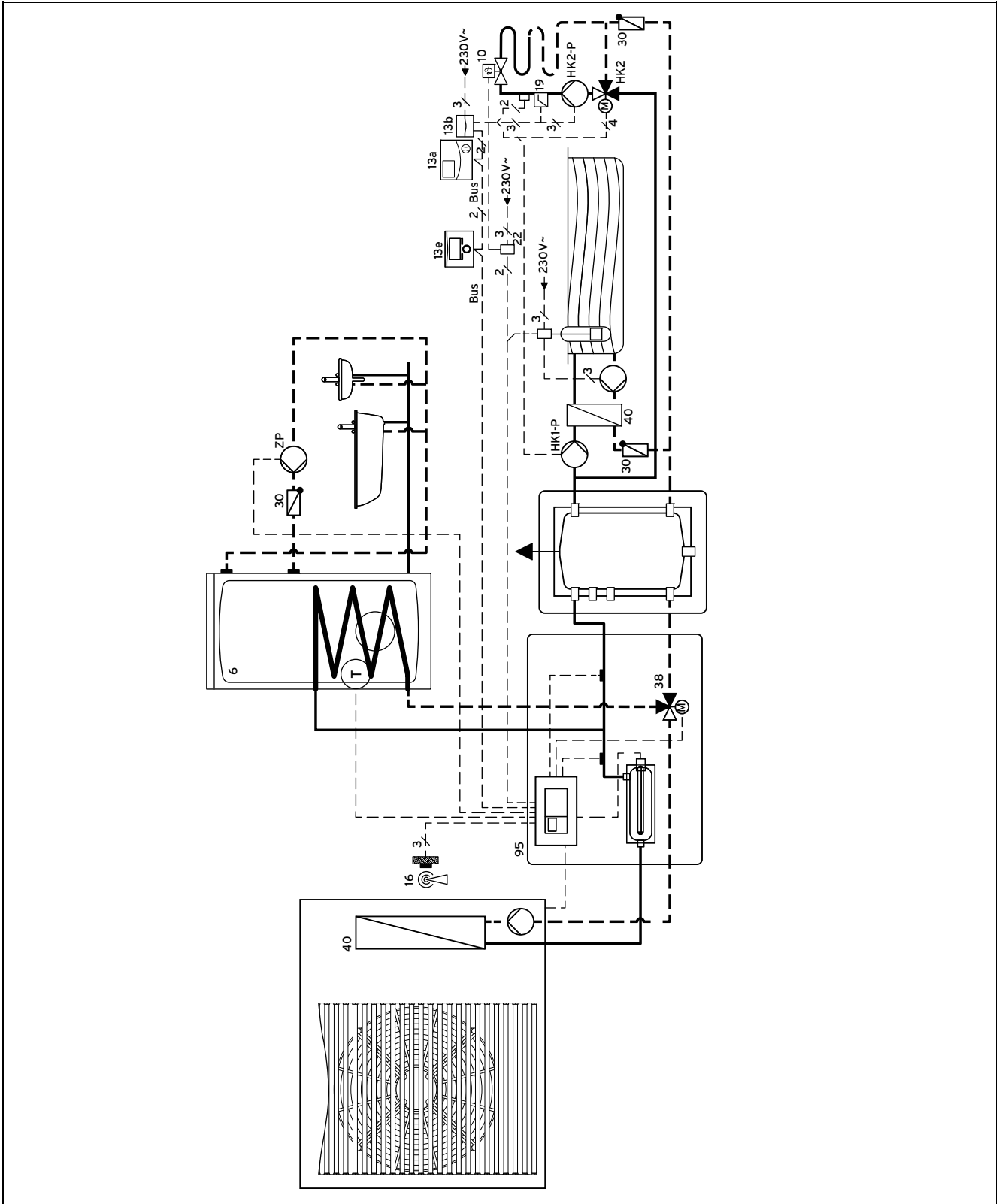


- Two heating circuits

- Solar drinking water heating with **VR 68**

# 11 System diagrams

## Variant D

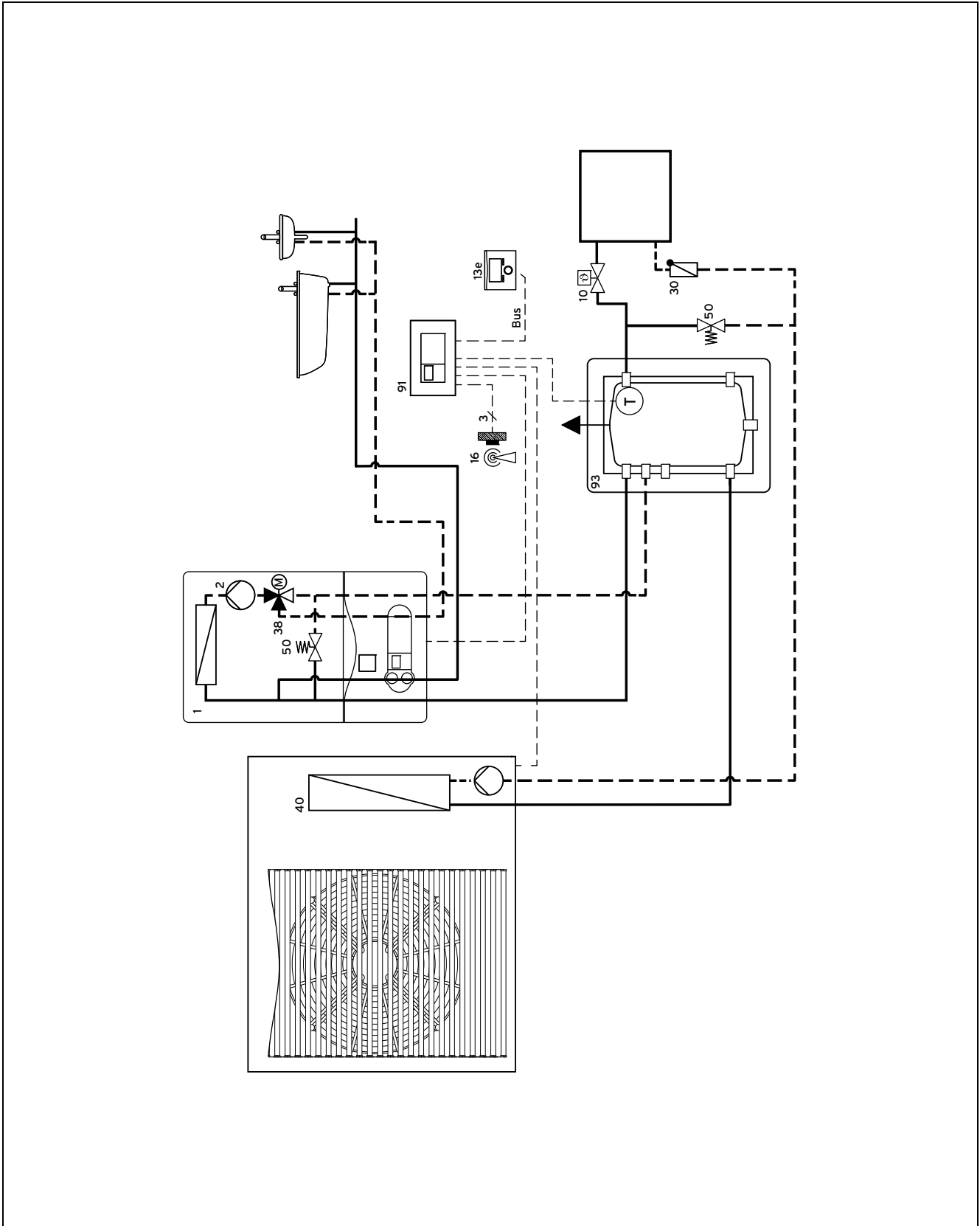


- One heating circuit and one pool circuit

- Multi-function input (ME) configured for pool



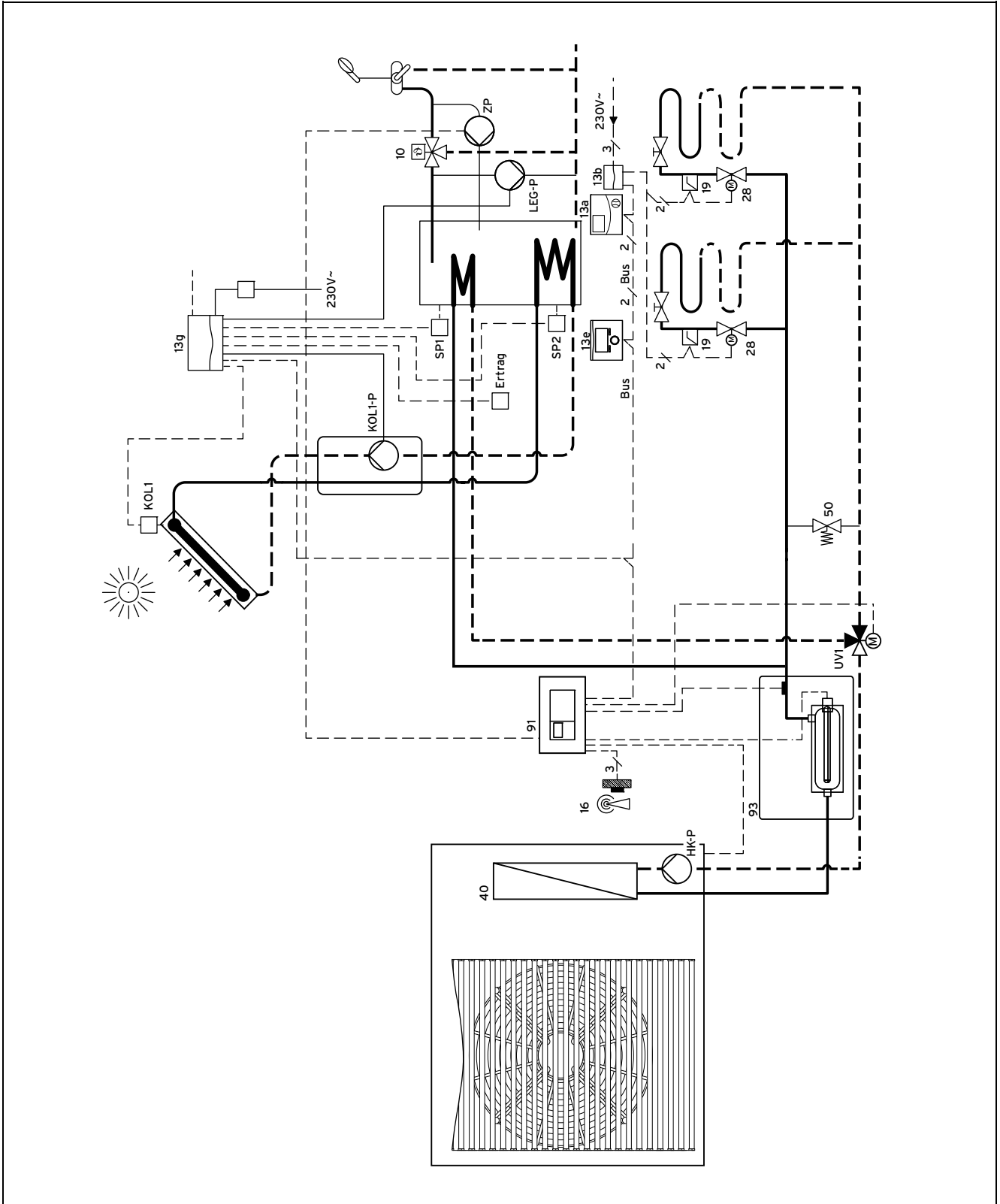
Variant E



- One heating circuit
- Auxiliary unit connected via ZH terminal or a **VR 32** at the eBUS
- With eBUS boiler; switch position for **VR 32** at position 2
- Cannot be combined with **VR 68**

# 11 System diagrams

## Variant F

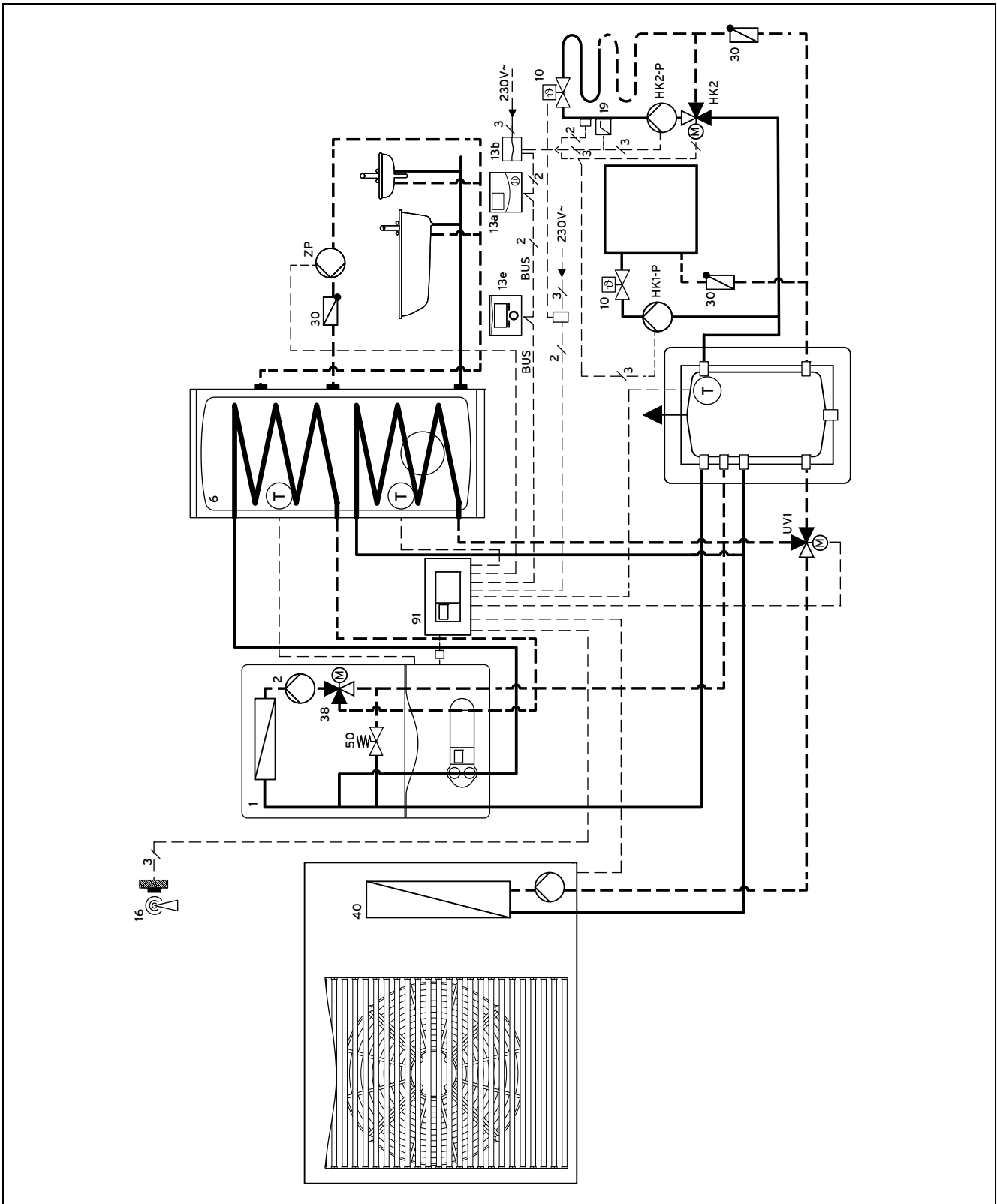


- Two zones with **VR 61**

- Solar drinking water heating with **VR 68**

11.10 System diagram 9

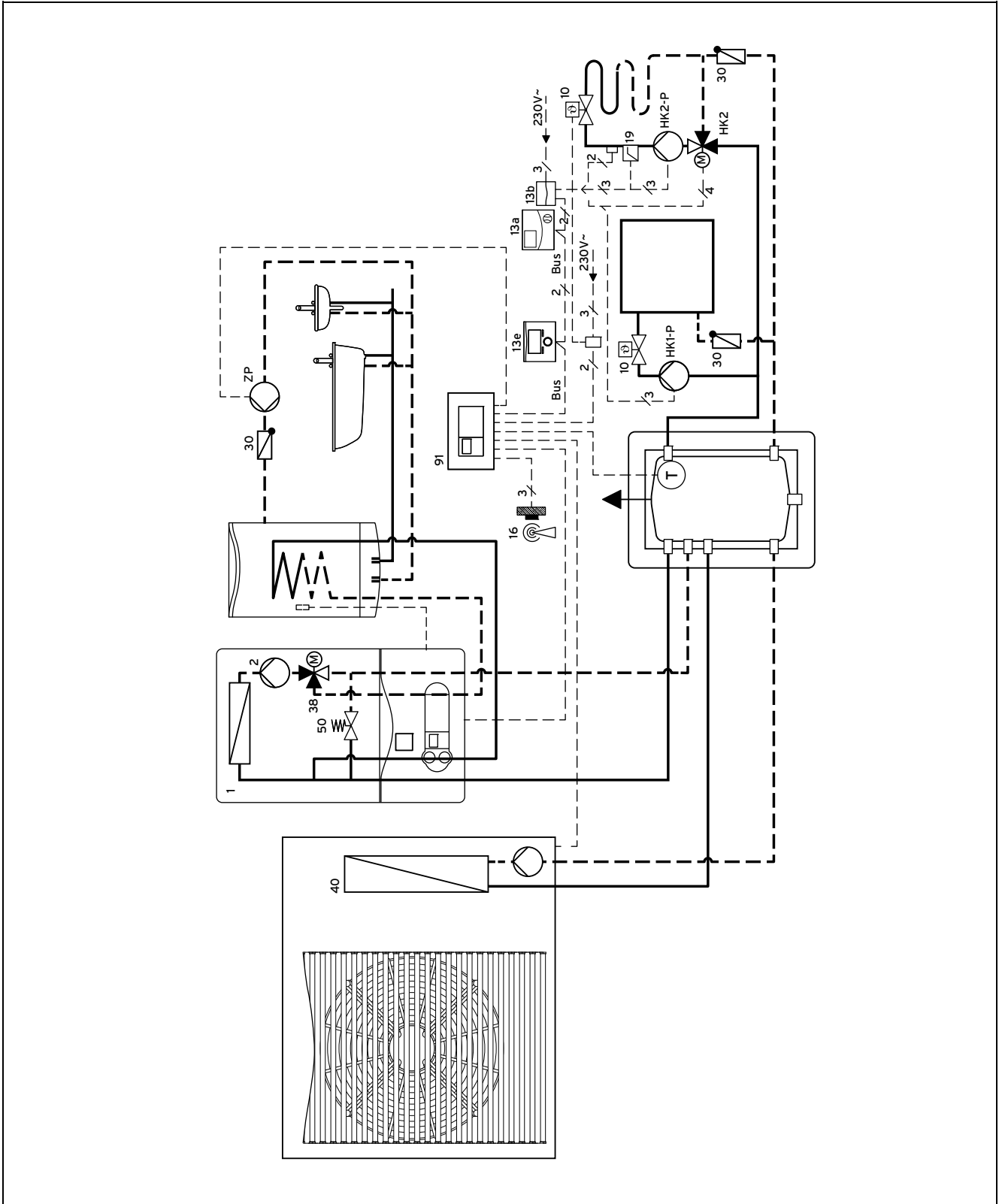
Variant A



- Two heating circuits
- Auxiliary boiler connected via ZH terminal or a **VR 32** at the eBUS
- Bivalent drinking water cylinder
- With eBUS boiler; switch position for **VR 32** at position 2

# 11 System diagrams

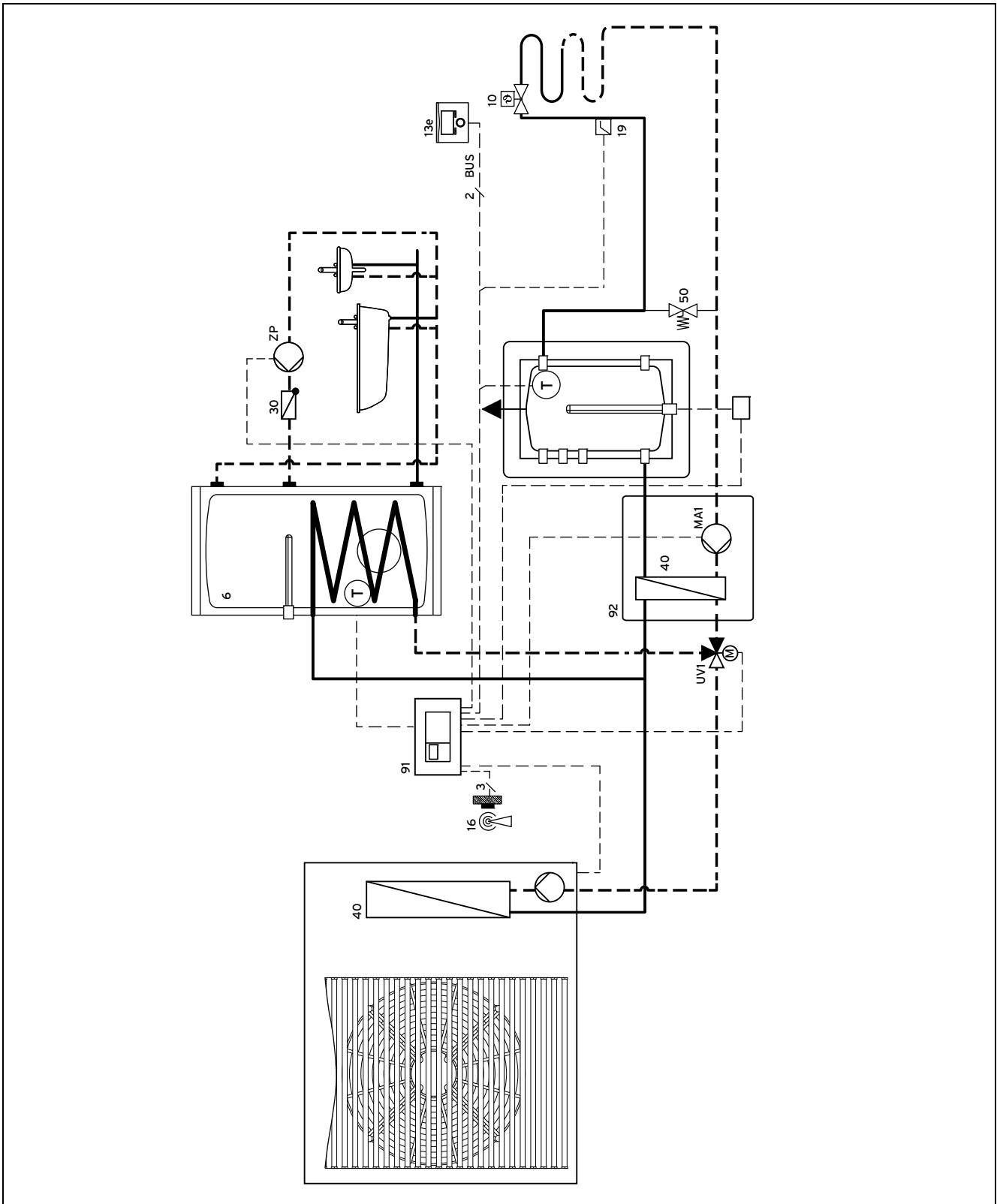
## Variant B



- Two heating circuits
- Auxiliary boiler connected via ZH terminal or a **VR 32** at the eBUS
- With eBUS boiler; switch position for **VR 32** at position 2

11.11 System diagram 10

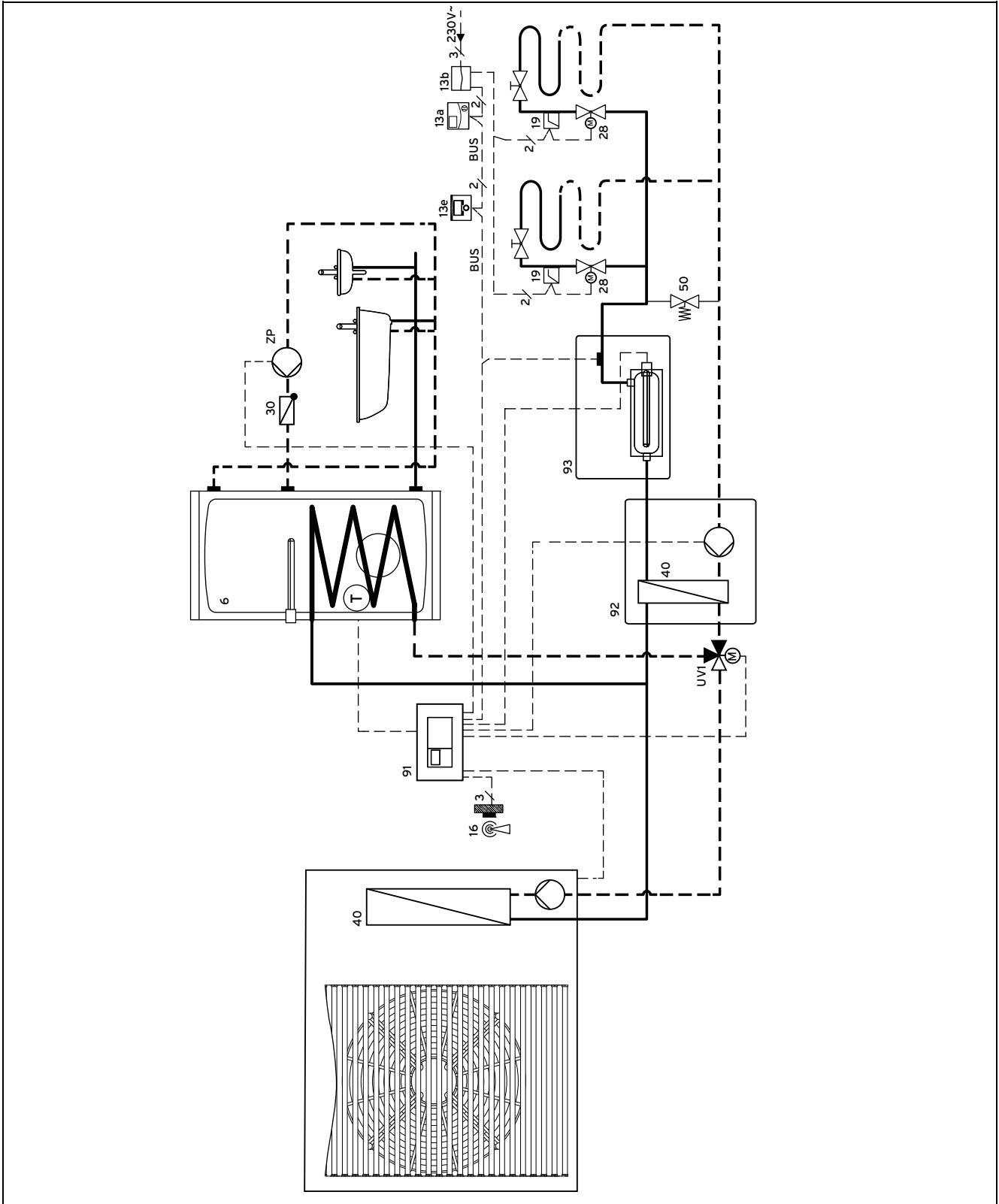
Variant A



– One heating circuit

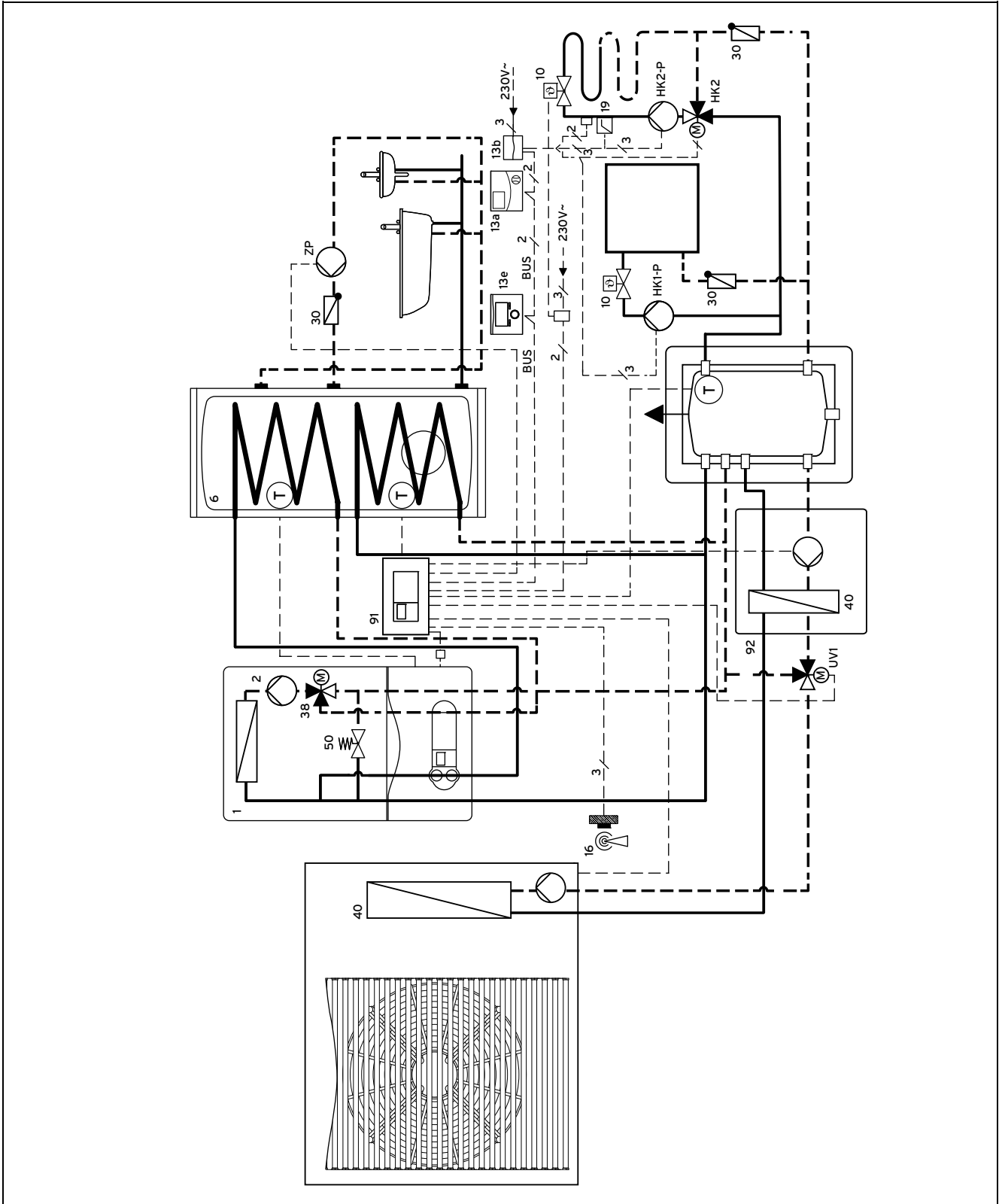
# 11 System diagrams

## Variant B



- Two heating circuits with **VR 61**

Variant C

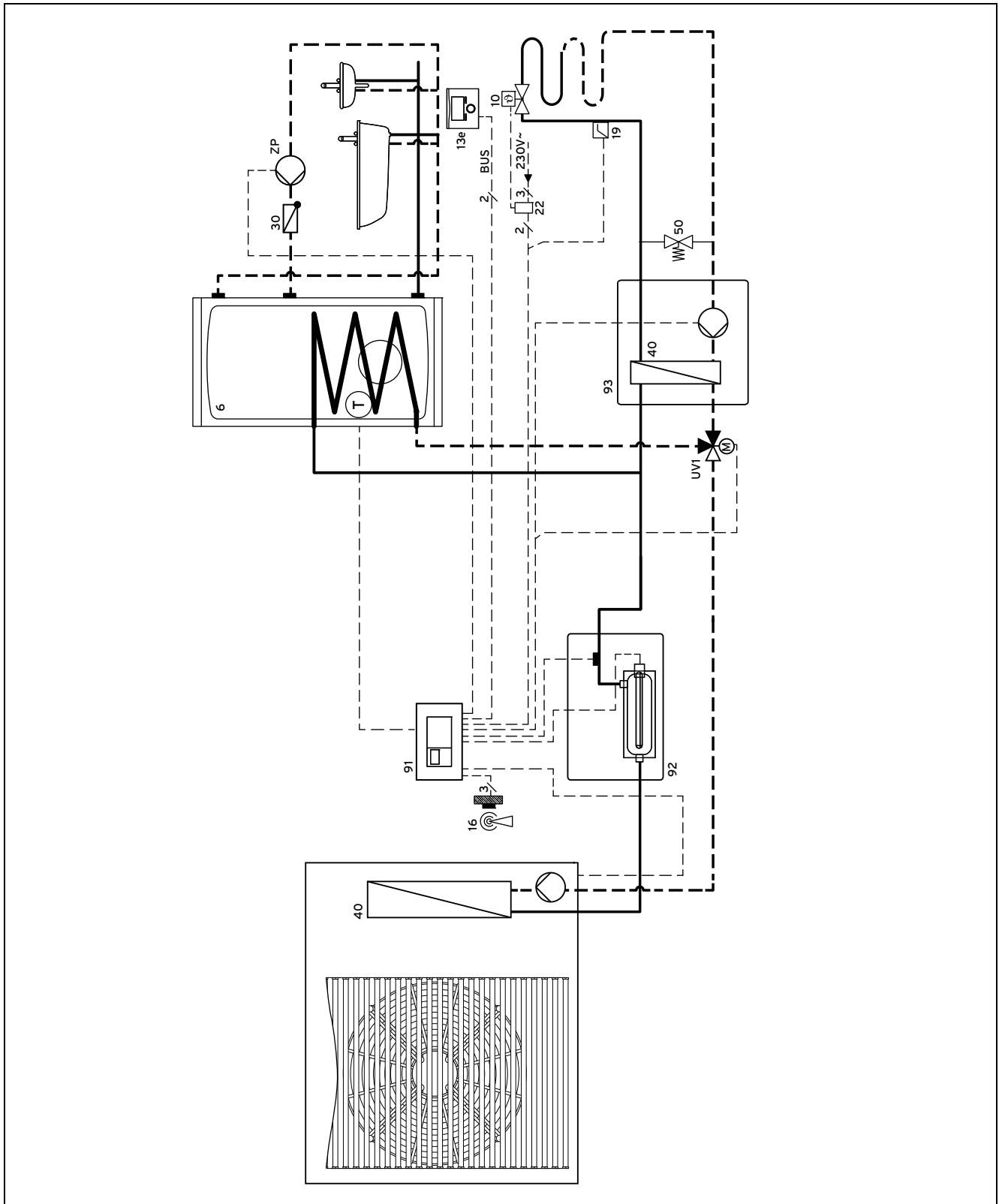


- Two heating circuits with **VR 61**
- Auxiliary boiler connected to the eBUS via ZH terminal or a **VR 32**
- Bivalent cylinder

# 11 System diagrams

## 11.12 System diagram 11

### Variant A

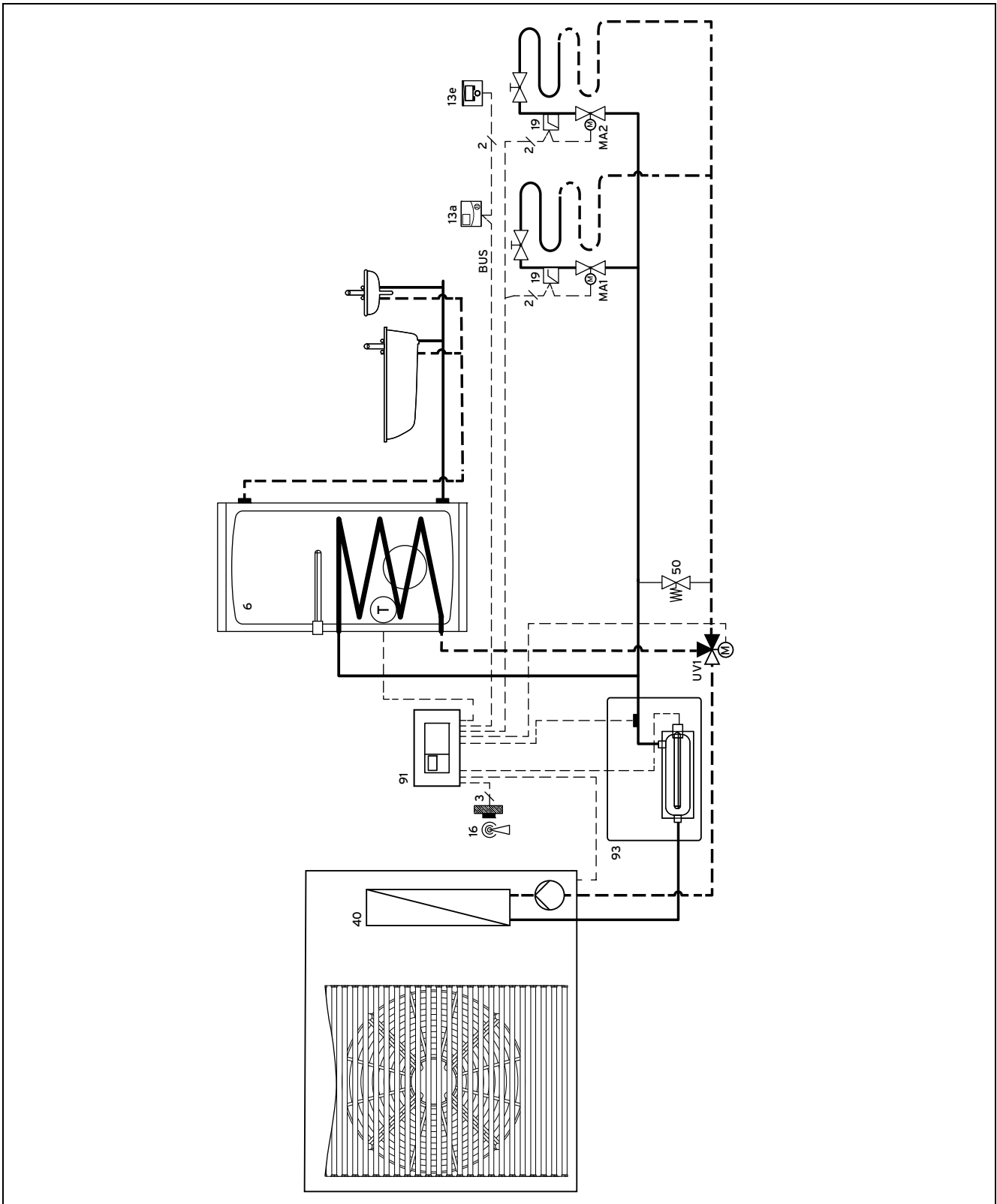


- One heating circuit



11.13 System diagram 12

Variant A



- Two zones



## Appendix

## A Overview of installation assistant set-up options

Setting	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Language				Languages for selection	English	
System drawing	1	12		1		
Heating circuit 1				Burner circuit, inactive, pool <sup>7)</sup>	Burner circuit	
Heating circuit type HK2 <sup>3)</sup>				Active, Inactive	Active	
Solar flow rate <sup>1)</sup>	0.1	165	l/min	0.1	3.5	
Solar pump boost <sup>1)</sup>				Off, On	Off	
Solar circuit protection <sup>1)</sup>	110	150	°C	1	130	
Installation country <sup>2)</sup>				Country available for selection	Germany	
Heating circuit conf. <sup>3)</sup>				HEATING 1, HEATING 2, HEATING 1 & HEATING 2	HEATING 1	
Cylinder				Active, Inactive	Active	
Auxiliary boiler <sup>5)</sup> (Gas, electricity, oil)	0	999		1	12	
Low electricity tariff <sup>5)</sup> (heat pump)	0	999		1	16	
High electricity tariff <sup>5)</sup> (heat pump)	0	999		1	20	
Boiler type				Calorific value, heating value, electric <sup>7)</sup>	Calorific value	
Ht crt. 1: Cooling possible <sup>5)</sup>				Yes, No	Yes	
Ht crt. 1: min. cooling flow target value <sup>5)</sup>	8	24	°C	1	20	
Ht crt. 2: Cooling possible <sup>5)</sup>				Yes, No		
Ht crt. 2: min. cooling flow target value <sup>5)</sup>	8	24	°C	1	20	
Max. air quality sensor <sup>6)</sup>	400	3000	ppm	100	1000	
Flow temp. target pool <sup>7)</sup>	30	50	°C	1	40	

1) Appears only if the **VR 68/2** solar module is connected.

2) Appears only if the **VMS** or **auroCOMPACT/3** solar pump unit is connected.

3) Appears only if the **VR 61/4** mixer module is connected.

4) Appears only if the **VIH RL** cylinder is connected.

5) Appears only if a heat pump is connected.

6) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.

7) Appears only if a monoblock heat pump is connected.

# Appendix

Setting	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Energy provider <sup>7)</sup>				Heat pump off Auxiliary boiler off Heat pump & auxiliary boiler off Heating off Cooling off Heating/cooling off	Heat pump off	

- 1) Appears only if the **VR 68/2** solar module is connected.  
 2) Appears only if the **VMS** or **auroCOMPACT/3** solar pump unit is connected.  
 3) Appears only if the **VR 61/4** mixer module is connected.  
 4) Appears only if the **VIH RL** cylinder is connected.  
 5) Appears only if a heat pump is connected.  
 6) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.  
 7) Appears only if a monoblock heat pump is connected.

## B Installer level overview

Setting level	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
<b>Installer level →</b>						
Enter code	000	999		1	000	
<b>Installer level → Service information → Enter contact details →</b>						
Installer	1	11	Figures	A to Z, 0 to 9, Space		
Phone	1	12	Numbers	0 to 9, space, Hyphen		
<b>Installer level → Service information → Service date →</b>						
Next service at			Date			
<b>Installer level → System configuration →</b>						
<b>System</b>						
Status	Current value*					
Water pressure	Current value		bar			
Domestic hot water	Current value		°C			
Collector temperature <sup>1), 7)</sup>	Current value		°C			
Frost protect. delay	0	12	h	1	4	
Pump blocking time	Off, 5	60	min	1	0	
Max. pre-heat	0	300	min	10	0	

- 1) Appears only if the **VR 68/2** solar module is connected.  
 2) Appears only if the **VR 61/4** mixer module is connected.  
 3) Appears only if the **VIH RL** cylinder is connected.  
 4) Appears only if the **VR 81/2** remote control unit is connected.  
 5) Appears only if the **VR 61/4** mixer module is connected.  
 6) Appears only if a heat pump is connected.  
 7) Appears only if the **VMS** solar pump unit is connected.  
 8) Appears only if a monoblock heat pump is connected.  
 9) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.  
 10) Appears only if an **auroCOMPACT/3** is connected.

\* If there is no fault, then the status is **OK**. If there is a fault, **Fault** appears here and you can read the fault message in the "Fault messages" section.

Setting level	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Max. pre-switch-off	0	120	min	10	0	
OT continuous heating	Off, -25	10	°C	1	Off	
Raising temperature <sup>2)</sup>	0	15	K		0	
Control modules	Displaying			Software version		
Heating circuit conf. <sup>2)</sup>				HK1, HK2, HK1 & HK2	HK1	
Adaptive heating curve	Current value			Yes, No	No	
System drawing	1	12			1	
Autom. cooling <sup>6)</sup>				Yes, No	No	
Source regeneration <sup>6)</sup>				Yes, No	No	
Pool flow temp. target <sup>8)</sup>	30	50	°C	1	40	
Curr. room air humidity	Current value		%rel	1		
Current dew point	Current value		°C	1		
Dew point offset	2	5	K	0.5	2	
Hybrid manager <sup>8)</sup>				triVAI, Bivalence pt	Bivalence pt	
<b>Add-on module<sup>8)</sup></b>						
Multi-function output 2				Circul.p., Dehumid., Anti-leg.pump	Circul.p.	
Multi-function input 1				Not connect., Pool de- mand, 1xcircul.	Not connect.	
Energy provider				WP off, CH off, WP&CH off, heating off, cooling of, ht./cl.off	WP off	
Auxiliary boiler output				Off, level 1, level 2, level 3	Off	
<b>Heat generator 1</b>						
Status	Current value			Off, heating mode, Hot w., cooling		
VF1	Current value		°C			
HW bivalence point <sup>8)</sup>	-20	0	°C	1	-7	
Heating bivalence point <sup>8)</sup>	-20	0	°C	1	-7	
<b>Heat generator 2</b>						
Status	Current value			Hot w., Cooling Off, Heating mode,		
VF1	Current value		°C			
Boiler type				Calorific value, Heating value, Electric <sup>8)</sup>	Calorific value	
Bival.pt auxiliary boiler <sup>8)</sup>	8	40	°C	1	10	
<b>HEATING 1</b>						
<p>1) Appears only if the <b>VR 68/2</b> solar module is connected.</p> <p>2) Appears only if the <b>VR 61/4</b> mixer module is connected.</p> <p>3) Appears only if the <b>VIH RL</b> cylinder is connected.</p> <p>4) Appears only if the <b>VR 81/2</b> remote control unit is connected.</p> <p>5) Appears only if the <b>VR 61/4</b> mixer module is connected.</p> <p>6) Appears only if a heat pump is connected.</p> <p>7) Appears only if the <b>VMS</b> solar pump unit is connected.</p> <p>8) Appears only if a monoblock heat pump is connected.</p> <p>9) Appears only if the <b>recoVAIR.../4</b> ventilation unit is connected and the <b>VRC 470/4</b> controller is used.</p> <p>10) Appears only if an <b>auroCOMPACT/3</b> is connected.</p> <p>* If there is no fault, then the status is <b>OK</b>. If there is a fault, <b>Fault</b> appears here and you can read the fault message in the "Fault messages" section.</p>						

# Appendix

Setting level	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Heating circuit type <sup>2)</sup>	Inactive	Active		Inactive, Active	Active	
Auto day temp until	Current value		hr:min			
Day temperature	5	30	°C	0.5	20	
Room temperature	Current value		°C			
Set-back temp.	5	30	°C	0.5	15	
Flow temp. target.	Current value		°C			
Flow temp. current	Current value		°C			
Pump status <sup>2)</sup>	Current value			On, Off		
Room temp control				None, Modulation, Thermost.	None	
Summer mode offset	-10	30	K	1	1	
Heat curve	0.20	4.0		0.05	1.2	
Min. temperature	15	90	°C	1	15	
Auto Off mode				Eco, Set-back, Frost prot.	Eco	
Advanced functions	Current function			None, Away, At home, Party, Cyl. boost	None	
Cooling possible <sup>6)</sup>	Current value			Yes, No	Yes	
Min. cool. flow target val. <sup>6)</sup>	8	24	°C	1	20	
Heating temp limit day	Current value		°C			
Heating temp limit ngt	Current value		°C			
<b>HEATING 2<sup>2)</sup></b>						
Heating circuit type				Inactive, Active	Active	
Auto day temp until	Current value		hr:min			
Day temperature	5	30	°C	0.5	20	
Room temperature	Current value		°C			
Set-back temp.	5	30	°C	0.5	15	
Flow temp. target.	Current value		°C			
Flow temp. current	Current value		°C			
Status of pump	Current value			On, Off		
Mixer status	Current value			Opening, Stationary, Closing		
Room temp control				None, Modulation, Thermost.	None	
Summer mode offset	0	30	K	1	1	
Heat curve	0.20	4.0		0.05	1.2	
Min. temperature	15	90	°C	1	15	

1) Appears only if the **VR 68/2** solar module is connected.

2) Appears only if the **VR 61/4** mixer module is connected.

3) Appears only if the **VIH RL** cylinder is connected.

4) Appears only if the **VR 81/2** remote control unit is connected.

5) Appears only if the **VR 61/4** mixer module is connected.

6) Appears only if a heat pump is connected.

7) Appears only if the **VMS** solar pump unit is connected.

8) Appears only if a monoblock heat pump is connected.

9) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.

10) Appears only if an **auroCOMPACT/3** is connected.

\* If there is no fault, then the status is **OK**. If there is a fault, **Fault** appears here and you can read the fault message in the "Fault messages" section.

Setting level	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Max. temperature	15	90	°C	1	75	
Auto Off mode				Eco, Set-back, Frost prot.	Frost prot.	
Advanced functions	Current function			None, Away, At home, Party, Cyl. boost	None	
Cooling possible <sup>6)</sup>	Current value			Yes, No	Yes	
Min. cool. flow target val. <sup>6)</sup>	8	24	°C	1	20	
Heatng temp limit day	Current value		°C			
Heatng temp limit ngt	Current value		°C			
<b>Domestic hot water</b>						
Cylinder				Active, Inactive	Active	
Cylinder temp. target.	35	70	°C	1	60	
Cyl. temp. current.	Current value		°C			
Cylinder charge pump	Current value			On, Off		
Circulation pump	Current value			On, Off		
Anti-legionella day				Mo, Tu, We, Th, Fr, Sa, Su, Off, Mo - Su	Off	
Anti-legionella time	0:00	23:50	hr:min	10 min	4:00	
Temp.diff. cyl. boost <sup>8)</sup>	5	20	K	1	5	
Cyl. charge offset <sup>1), 8)</sup>	15	40	K	1	25	
Max. cyl. charge time <sup>8)</sup>	Off, 20	120	min	5	45	
Anti-cycling time HW requirement <sup>8)</sup>	0	120	min	5	30	
Load pump	0	10	min	1	5	
Paral. cyl. charge <sup>2)</sup>				Off, On	Off	
<b>Solar circuit<sup>1)</sup></b>						
Sensor cylinder 2	Current value		°C			
Sensor solar gain	Current value		°C			
Solar pump status	Current value			On, Off		
Sensor TD1	Current value		°C			
Sensor TD2	Current value		°C			
Status multi relay	Current value			On, Off		
Solar pump runtime	Current value		h			
Reset runtime.				No, Yes	No	
Pump control	Current value			Off, On	Off	
Lead Cylinder	1	2		1, 2	1	
Solar flow volume	0.0	99.0	l/min	0.5	3.5	

1) Appears only if the **VR 68/2** solar module is connected.

2) Appears only if the **VR 61/4** mixer module is connected.

3) Appears only if the **VIH RL** cylinder is connected.

4) Appears only if the **VR 81/2** remote control unit is connected.

5) Appears only if the **VR 61/4** mixer module is connected.

6) Appears only if a heat pump is connected.

7) Appears only if the **VMS** solar pump unit is connected.

8) Appears only if a monoblock heat pump is connected.

9) Appears only if the **recoVAIR.../4** ventilation unit is connected and the **VRC 470/4** controller is used.

10) Appears only if an **auROCOMPACT/3** is connected.

\* If there is no fault, then the status is **OK**. If there is a fault, **Fault** appears here and you can read the fault message in the "Fault messages" section.

# Appendix

Setting level	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Solar pump boost				On, Off	Off	
Solar circuit prot.	Off, 110	150	°C	1	130	
Solar circuit <sup>10)</sup>						
Installation country <sup>7), 10)</sup>	Current value				Germany	
Solar cylinder 1 <sup>1)</sup>						
Max. temperature	20	90	°C	1	65	
On temp. diff.	2	25	K	1	7	
Off temp. diff.	1	20	K	1	3	
Solar cylinder 2 <sup>1)</sup>						
Max. temperature	20	90	°C	1	65	
On temp. diff.	2	25	K	1	7	
Off temp. diff.	1	20	K	1	3	
2nd difference control						
On temp. diff.	2	25	K	1	7	
Off temp. diff.	1	20	K	1	3	
Ventilation <sup>9)</sup>						
Air quality sensor 1	Current value		ppm			
Air quality sensor 2	Current value		ppm			
Air quality sensor 3	Current value		ppm			
Max. air quality sensor	400	3000	ppm	100	1000	
Installer level → Sensor/actuator test →						
Select module				Connected expansion modules		
VR 61 <sup>2)</sup>						
Actuator				LP/ZP, HK1-P, HK2 AUF, HK2 ZU, HK2-P		
Sensor				VF2		
VR 68 <sup>1)</sup>						
Actuator				MA, KOL1-P, LEG-P		
Sensor				KOL1, SP1, SP2, Yield, TD1, TD2		
actoSTOR <sup>3)</sup>						
Actuator				ZP, P1, P2, AL		
Sensor				T1, T2, T3, T4, Anode		
VMS <sup>7)</sup>						
Actuator				P1, UV		
<p>1) Appears only if the VR 68/2 solar module is connected.</p> <p>2) Appears only if the VR 61/4 mixer module is connected.</p> <p>3) Appears only if the VIH RL cylinder is connected.</p> <p>4) Appears only if the VR 81/2 remote control unit is connected.</p> <p>5) Appears only if the VR 61/4 mixer module is connected.</p> <p>6) Appears only if a heat pump is connected.</p> <p>7) Appears only if the VMS solar pump unit is connected.</p> <p>8) Appears only if a monoblock heat pump is connected.</p> <p>9) Appears only if the recoVAIR.../4 ventilation unit is connected and the VRC 470/4 controller is used.</p> <p>10) Appears only if an auroCOMPACT/3 is connected.</p> <p>* If there is no fault, then the status is <b>OK</b>. If there is a fault, <b>Fault</b> appears here and you can read the fault message in the "Fault messages" section.</p>						



Setting level	Values		Unit	Increment/Select	Factory reset	Setting
	Min.	Max.				
Sensor				T1, T2, F1		
recoVAIR <sup>7)</sup>						
Sensor				VOC1, VOC2, VOC3		
VWZ AI VWL X/2 <sup>8)</sup>						
Actuator				MA1, MA2, UV, ZH		
Sensor				VF1, SP1, ME, EVU		
auroCOMPACT <sup>10)</sup>						
Actuator				P1, UV		
Installer level → Screed drying function →						
HEATING 1 Day <sup>5)</sup>	00	29	Day	1	00	
Temperature <sup>5)</sup>	Current value		°C			
HEATING 2 Day <sup>2)</sup>	00	29	Day	1	00	
Temperature	Current value		°C			
Installer level → Change code →						
New code	000	999		1	00	
<p>1) Appears only if the <b>VR 68/2</b> solar module is connected.</p> <p>2) Appears only if the <b>VR 61/4</b> mixer module is connected.</p> <p>3) Appears only if the <b>VIH RL</b> cylinder is connected.</p> <p>4) Appears only if the <b>VR 81/2</b> remote control unit is connected.</p> <p>5) Appears only if the <b>VR 61/4</b> mixer module is connected.</p> <p>6) Appears only if a heat pump is connected.</p> <p>7) Appears only if the <b>VMS</b> solar pump unit is connected.</p> <p>8) Appears only if a monoblock heat pump is connected.</p> <p>9) Appears only if the <b>recoVAIR.../4</b> ventilation unit is connected and the <b>VRC 470/4</b> controller is used.</p> <p>10) Appears only if an <b>auroCOMPACT/3</b> is connected.</p> <p>* If there is no fault, then the status is <b>OK</b>. If there is a fault, <b>Fault</b> appears here and you can read the fault message in the "Fault messages" section.</p>						

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