

Vitotronic 200
Type KO1B, KO2B
Weather-compensated, digital boiler control unit

For applicability, see the last page

VITOTRONIC 200



Vitotronic 200, KO1B



Vitotronic 200, KO2B

Safety instructions

Safety instructions

 Please follow these safety instructions closely to prevent accidents and material losses.

Safety instructions explained

 **Danger**
This symbol warns against the risk of injury.

 **Please note**
This symbol warns against the risk of material losses and environmental pollution.

Note

Details identified by the word "Note" contain additional information.

Target group

These instructions are exclusively intended for authorised contractors.

- Work on gas installations must only be carried out by a registered gas fitter.
- Work on electrical equipment must only be carried out by a qualified electrician.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

Regulations to be observed

- National installation regulations
- Statutory regulations for the prevention of accidents
- Statutory regulations for the protection of the environment
- Codes of Practice of the relevant trade associations
- All current safety regulations as defined by DIN, EN, DVGW, TRGI, TRF, VDE and all locally applicable standards
 - Ⓐ ÖNORM, EN, ÖVGW-TR Gas, ÖVGW-TRF and ÖVE
 - ⓐ SEV, SUVA, SVGW, SVTI, SWKI, VKF and EKAS guideline 1942: LPG, part 2

Safety instructions for working on the system

Working on the system

- Where gas is used as the fuel, close the main gas shut-off valve and safeguard it against unintentional reopening.
- Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer 'live'.
- Safeguard the system against reconnection.

 **Danger**
Hot surfaces can cause burns.

- Before maintenance and service work, switch OFF the appliance and let it cool down.
- Never touch hot surfaces on the boiler, burner, flue system or pipework.

 **Please note**
Electronic assemblies can be damaged by electrostatic discharge.
Prior to commencing work, touch earthed objects such as heating or water pipes to discharge static loads.

Repair work

 **Please note**
Repairing components that fulfil a safety function can compromise the safe operation of your system.
Replace faulty components only with genuine Viessmann spare parts.

Auxiliary components, spare and wearing parts

 **Please note**
Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.
For replacements, use only original spare parts supplied or approved by Viessmann.

Safety instructions for operating the system

If you smell gas

 **Danger**
Escaping gas can lead to explosions which may result in serious injury.

- Never smoke. Prevent naked flames and sparks. Never switch lights or electrical appliances on or off.
- Close the gas shut-off valve.
- Open windows and doors.
- Evacuate any people from the danger zone.
- Notify your gas or electricity supply utility from outside the building.
- Have the power supply to the building shut off from a safe place (outside the building).

Safety instructions (cont.)**If you smell flue gas****Danger**

Flue gas can lead to life threatening poisoning.

- Shut down the heating system.
- Ventilate the installation site.
- Close doors to living spaces to prevent flue gases from spreading.

Flue systems and combustion air

Ensure that flue systems are clear and cannot be sealed, for instance due to accumulation of condensate or other causes. Ensure an adequate supply of combustion air.

Instruct system users that subsequent modifications to the structural conditions are not permissible (e.g. cable/pipework routing, cladding or partitions).

**Danger**

Leaking or blocked flue systems, or an inadequate supply of combustion air can cause life threatening poisoning from carbon monoxide in the flue gas.

Ensure the flue system is in good working order. Apertures for supplying combustion air must be non-closable.

Extractors

Operating appliances that route exhaust air outdoors (cooker hoods, extractors, air conditioning units, etc.) can create negative pressure. If the boiler is operated at the same time, this can lead to reverse flow of the flue gas.

**Danger**

The simultaneous operation of the boiler and appliances that route exhaust air outdoors can result in life threatening poisoning due to reverse flow of the flue gas.

Fit an interlock circuit or take suitable steps to ensure an adequate supply of combustion air.

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Symbols

Symbol	Meaning
	Reference to other document containing further information
	Additional information, not safety relevant
	Step in a diagram: The numbering corresponds to the sequence of work.

Intended use

The appliance is only intended to be installed and operated in sealed unvented heating systems that comply with EN 12828, with due attention paid to the associated installation, service and operating instructions as well as the details in the datasheet. It is only designed for the heating up of heating water.

Commercial or industrial usage for a purpose other than the heating up of heating water shall be deemed inappropriate.

Intended use presupposes that a fixed installation in conjunction with permissible components designed for this purpose has been carried out.

Every other use will be deemed to be inappropriate. Any resulting losses are excluded from the manufacturer's liability.

Any usage beyond this must be approved by the manufacturer for the individual case.

Intended use also includes the adherence to maintenance and inspection intervals.

Product information

The **Vitotronic 200, type KO1B and KO2B** for weather-compensated operation are designed for use in single boiler systems. One heating circuit without mixer and 2 heating circuits with mixer can be controlled.

Standard delivery

- Control unit base and top
- Outside temperature sensor
- Boiler water temperature sensor
- Cylinder temperature sensor
- Power cable

Installing the control unit base

 Boiler installation instructions

Fitting the top of the control unit for type KO1B

- !** **Please note**
'Live' voltage can lead to PCB damage.
Switch OFF the power supply at the control unit.

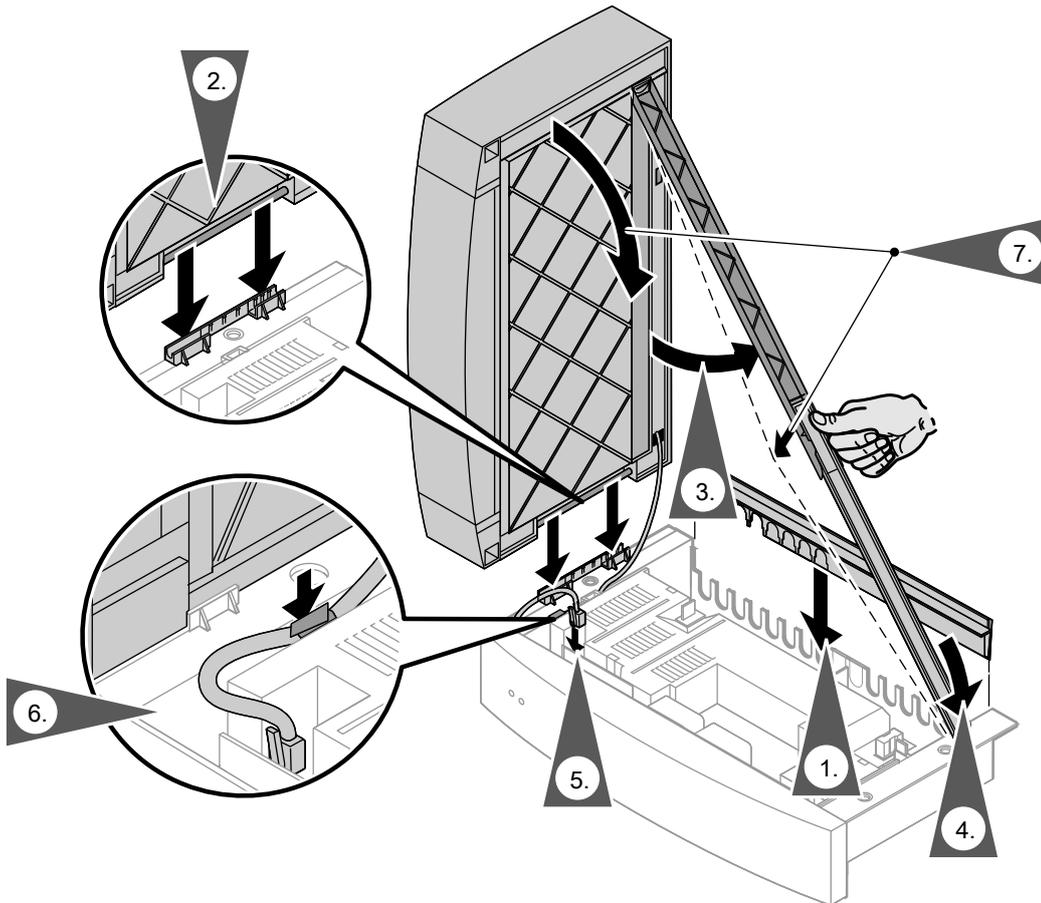


Fig.1

Opening the control unit

Type KO1B

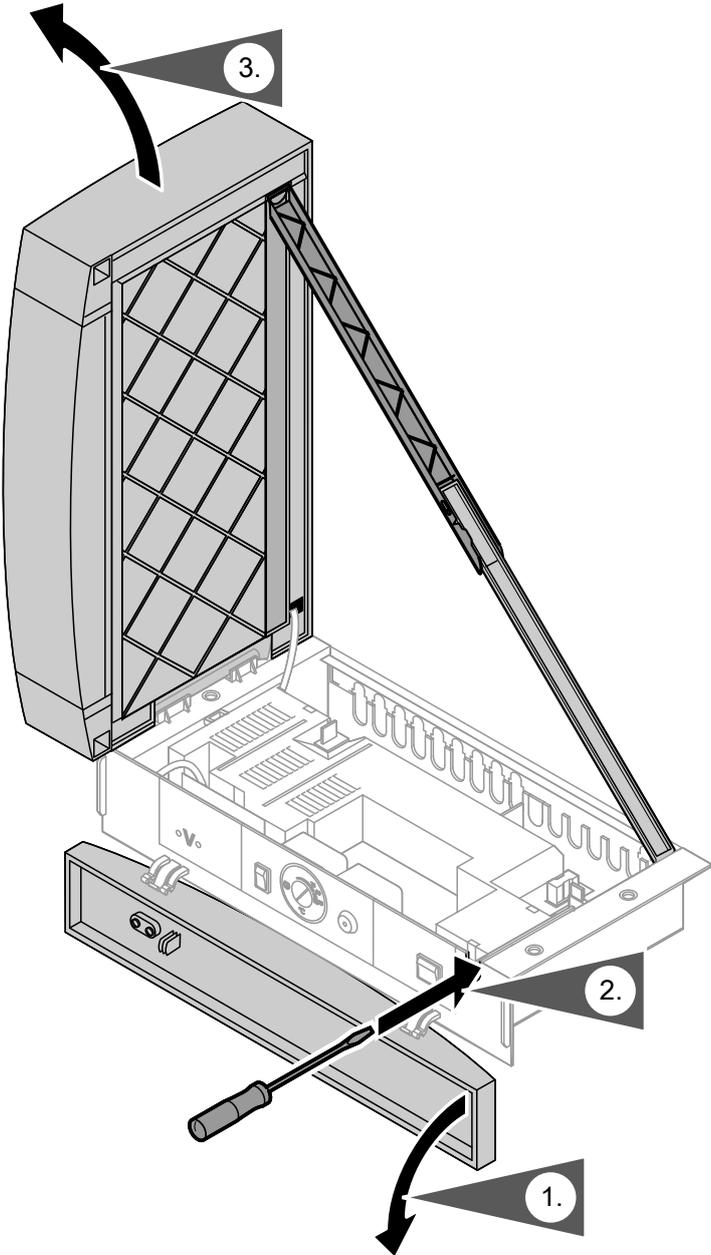


Fig.2

Opening the control unit (cont.)

Type KO2B

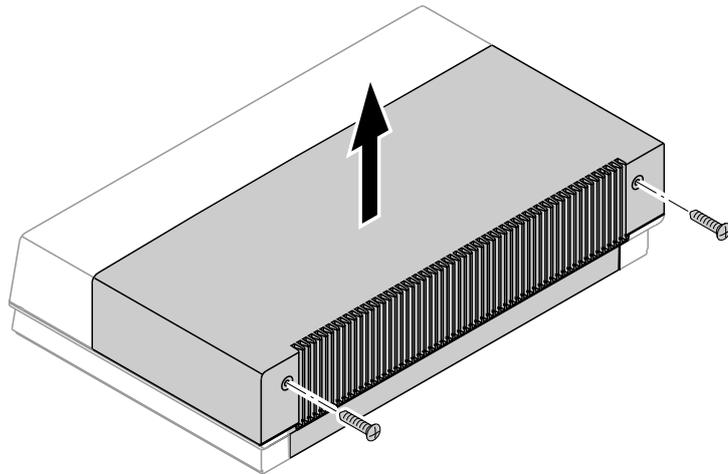


Fig.3

Plugging in the coding card

Only insert the boiler coding card supplied with the boiler pack (see table on page 84).

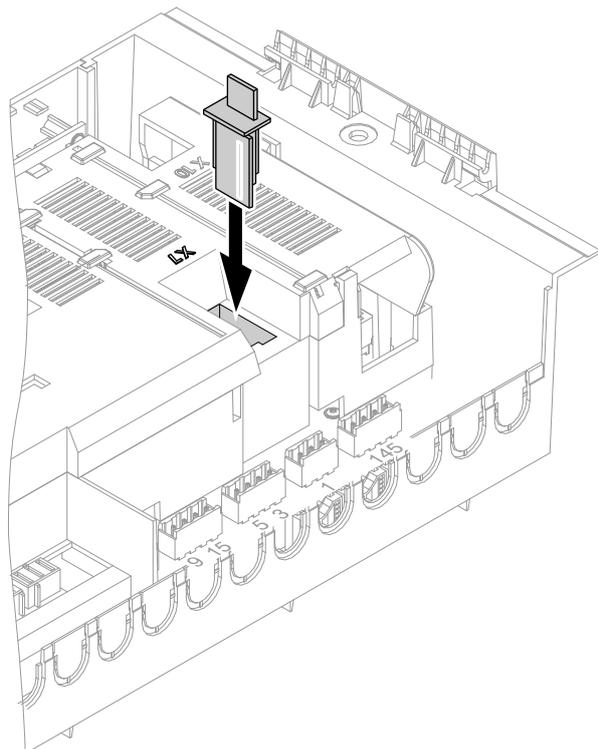


Fig.4

Insert the boiler coding card through the opening in the cover into slot "X7".

Adjusting the high limit safety cut-out (if required)

The high limit safety cut-out is set to 110 °C in the delivered condition. It can be reset to 100 °C.

Note
The temperature value cannot be set back.

Adjusting the high limit safety cut-out (if... (cont.))

When adjusting the safety cut-out to 100 °C, **never** set the temperature controller higher than 75 °C.

Type KO1B

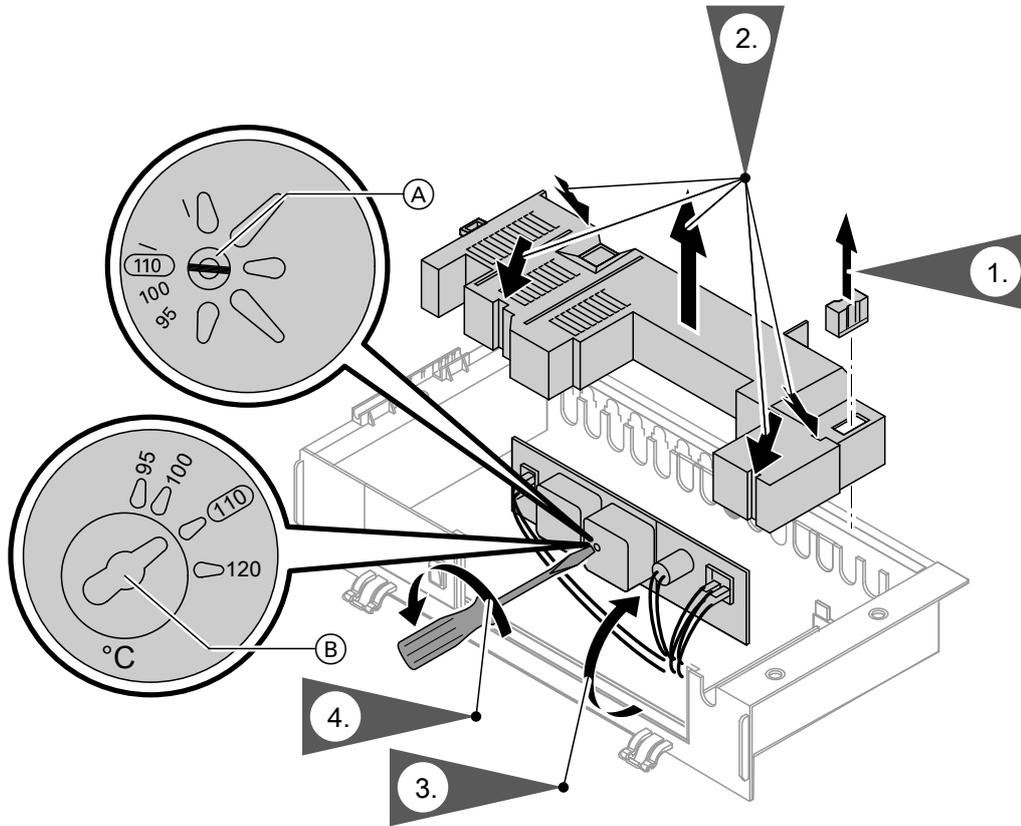


Fig.5

- (A) Slotted screw for EGO products
- (B) Slotted screw for JUMO products

Adjusting the high limit safety cut-out (if... (cont.))

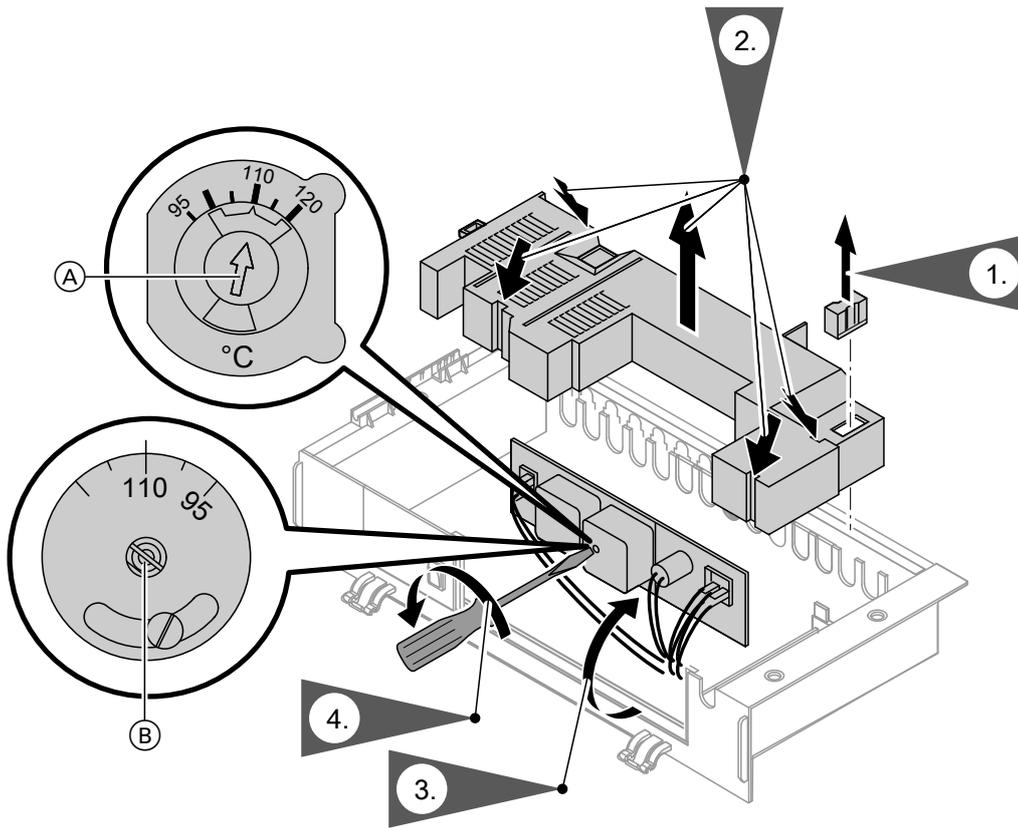


Fig.6

- Ⓐ Slotted screw for Rathgeber products
- Ⓑ Slotted screw for JUMO products

Type KO2B

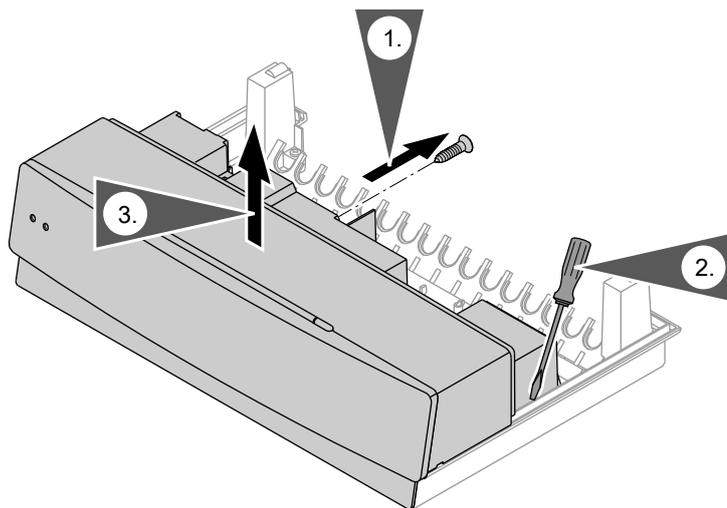


Fig.7

Adjusting the high limit safety cut-out (if... (cont.))

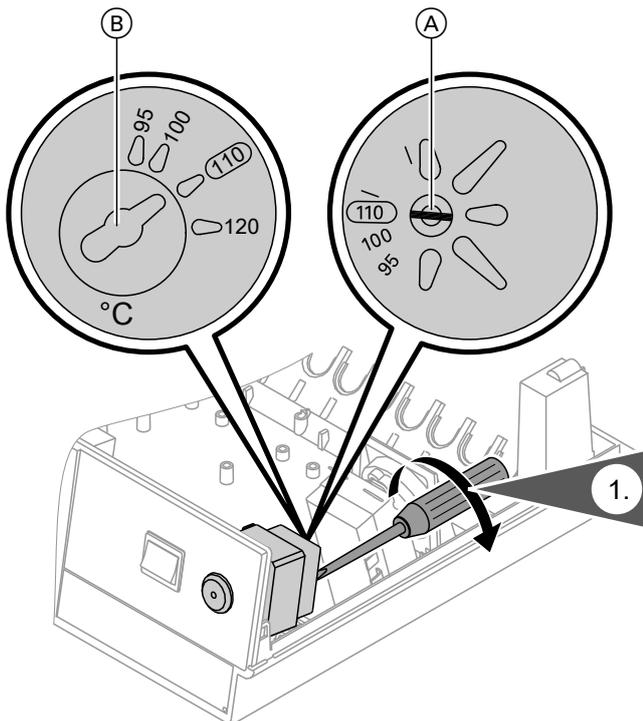


Fig.8

- (A) Slotted screw for EGO products
- (B) Slotted screw for JUMO products

Adjusting the temperature controller (if required)

The temperature controller is set to 75 °C in the delivered condition. It can be adjusted to 87/95 °C.

Note

Never set the temperature controller higher than 75 °C if the high limit safety cut-out has been adjusted to 100 °C.



Please note

Excessive DHW temperatures can damage the DHW cylinder.

If the system is operated with a DHW cylinder, the maximum permissible DHW temperature must not be exceeded. If necessary, install suitable safety equipment for this purpose.

1. Remove rotary selector "75".
2. Using a pair of pointed pliers, break off the cams between "75" and "90" or "95" from the stop dial, as shown in the diagram.
3. Install rotary selector "90" so that the mark sits between "75" and "90" or "95". Turn rotary selector "90" clockwise as far as it will go.

Type KO1B

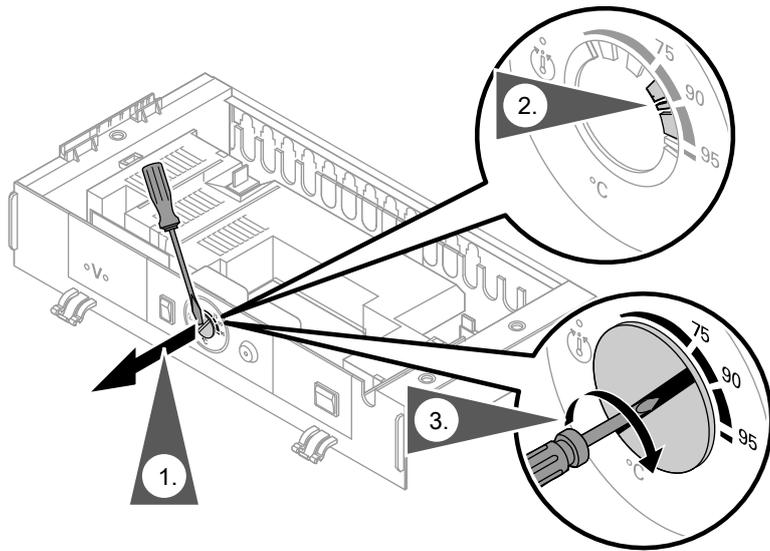


Fig.9

Type KO2B

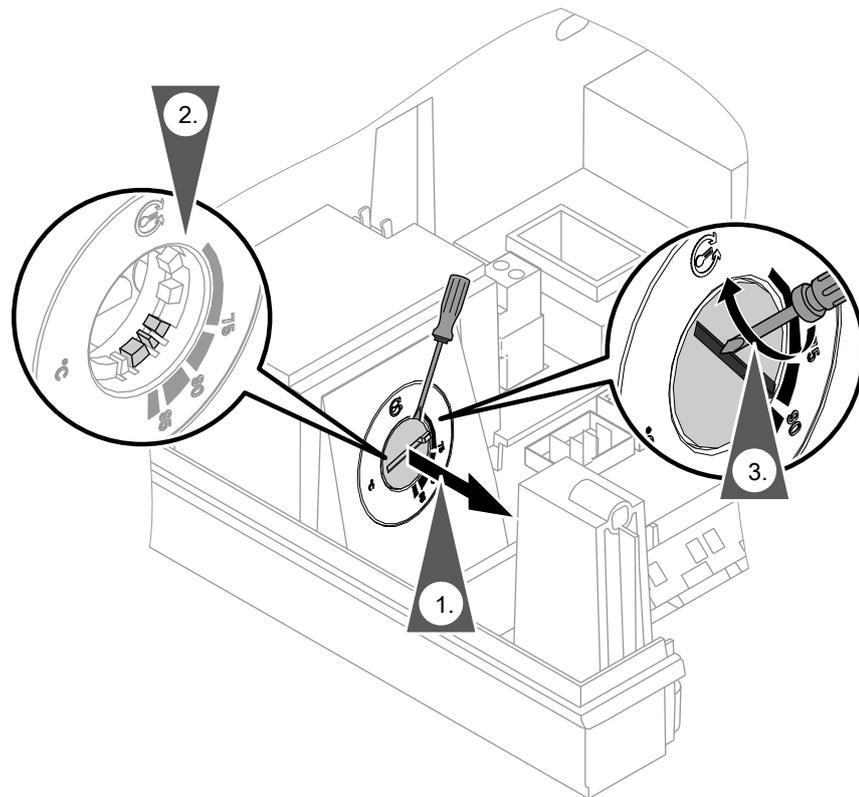


Fig.10

Overview of electrical connections



Danger

Incorrect wiring can lead to serious injury from electrical current and result in appliance damage.

- Route LV leads < 42 V and cables > 42 V/120 V~/230 V~ separately.
- Only strip the minimum of insulation from cables, as close to the terminals as possible, and bundle tightly to the corresponding terminals.
- Secure cables with cable ties.

- When connecting external switching contacts and on-site components, observe the insulation requirements of IEC/EN 60335-1.



Please note

Electronic assemblies can be damaged by static loads.

Prior to commencing work, touch an earthed object such as a heating or water pipe to discharge static load.

For opening the control unit, see page 9.

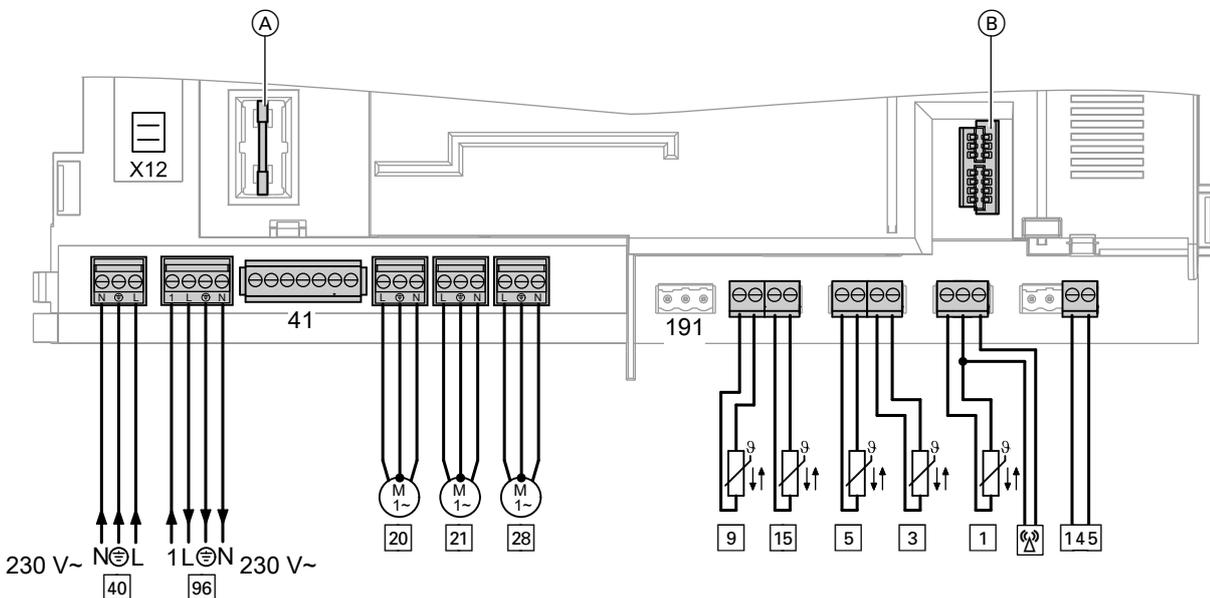


Fig. 11

- (A) MCB/fuse
- (B) Coding card slot

Connections on the low voltage PCB

Plug	Component
1	Outside temperature sensor/radio clock receiver (accessories)
3	Boiler water temperature sensor
5	Cylinder temperature sensor
9	Buffer temperature sensor (accessories)
15	Flue gas temperature sensor (accessories)
145	KM BUS subscriber (accessories), e.g. EA1 extension
191	Two-stage/modulating burner extension (part of the standard boiler delivery)

PCB connections 230 V~

Plug	Component
20	Heating circuit pump A1 for heating circuit 1
21	Circulation pump for cylinder heating (DHW cylinder accessory)
28	DHW circulation pump
40	Power supply

Overview of electrical connections (cont.)

Plug	Component
41	Burner
96	Power supply for accessories
X12	External burner start, stage 1

Inserting cables/leads and applying strain relief

Blank off unnecessary apertures in the lower part of the control unit with cable grommets (not cut out).

Cable with cast-on cable entry	Cable without cast-on cable entry

Connecting the sensors

Low voltage connections at the PCB (see page 15)

Plug	Component
1	Outside temperature sensor/radio clock receiver (accessories)
3	Boiler water temperature sensor
5	Cylinder temperature sensor
9	Buffer temperature sensor (accessories)
15	Flue gas temperature sensor (accessories)

Fitting and connecting an outside temperature sensor

Fitting location for outside temperature sensor

- North or north-westerly wall, 2 to 2.5 m above ground level; in multi storey buildings, in the upper half of the second floor.
- Not above windows, doors or ventilation outlets.
- Not immediately below balconies or gutters.
- Never render over.

Outside temperature sensor connection

2-core lead, length up to 35 m with a cross-section of 1.5 mm²

Connecting the sensors (cont.)

Wireless outside temperature sensor

 "Wireless base station" installation and service instructions

Connecting the pumps

Available pump connections

Connections on the 230 V~ PCB

Plug	Component
20	Heating circuit pump for heating circuit HC1/A1
21	Circulation pump for cylinder heating
28	DHW circulation pump

Pumps 230 V~

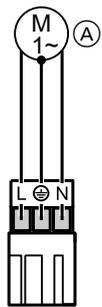


Fig. 12

- (A) Pump
- (B) To the control unit

Rated current	4(2) A~
Recommended connecting cable	H05VV-F3G 0.75 mm ² or H05RN-F3G 0.75 mm ²

Pumps with power consumption greater than 2 A

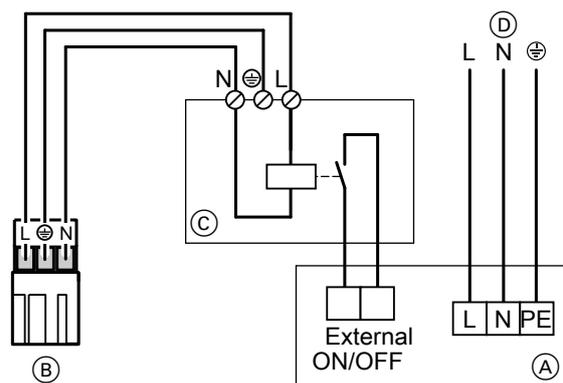


Fig. 13

- (A) Pump
- (B) To the control unit
- (C) Contactor
- (D) Separate power supply (observe manufacturer's details)

Connecting the pumps (cont.)

Pumps 400 V~

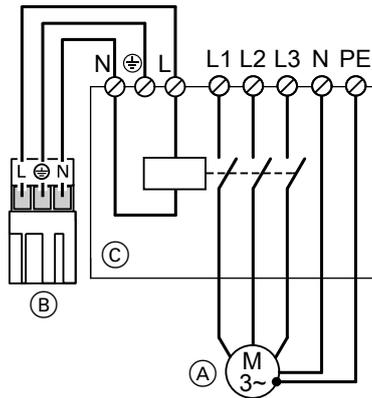


Fig. 14

- (A) Pump
- (B) To the control unit
- (C) Contactor

For switching the contactor

Rated current	4(2) A~
Recommended connecting cable	H05VV-F3G 0.75 mm ² or H05RN-F3G 0.75 mm ²

External burner start

! **Please note**
 'Live' contacts lead to short circuits or phase failure.
 The external connection **must be potential-free**.

If the contact is closed, burner stage 1 is started and the boiler water temperature is limited by the temperature controller.

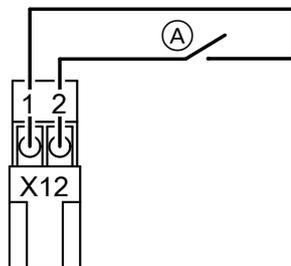


Fig. 15

- (A) External starting (floating contact)

Rated voltage	230 V~
Rated current	6 A~
Recommended connecting cable	H05VV-F3G 0.75 mm ²

Provisional burner operation

Insert jumper across terminals 1 and 2 of plug "X12".

Burner stage 1 is started. The boiler water temperature is limited by the temperature controller.

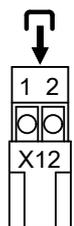


Fig. 16

External demand via switching contact

Connection options:

- Plug 96
- EA1 extension (accessories, see page 91)

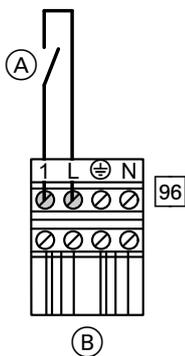
Connection



Please note

'Live' contacts lead to short circuits or phase failure.
The external connection **must be potential-free**.

Plug 96



(A) Floating contact

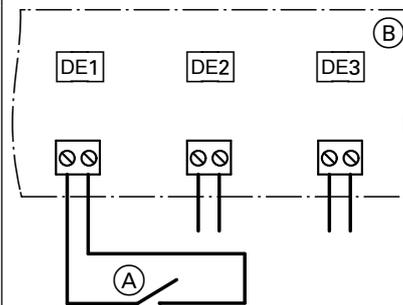
(B) Plug 96

Rated voltage 230 V~

Rated current 10 mA~

Recommended connecting cable H05VV-F3G 0.75 mm²

EA1 extension



(A) Floating contact

(B) EA1 extension

When the contact is closed, burner operation is load-dependent. The boiler water is heated to the value set in coding address "9b" in the **"General"** group. The boiler water temperature is limited by this set value and the electronic maximum limit (coding address "06" in the **"Boiler"** group).

Codes

Plug 96	EA1 extension
"40:1" in the "General" group	Set "3A" (DE1), "3b" (DE2) or "3C" (DE3) in the "General" group to 2.
<ul style="list-style-type: none"> ▪ Set the effect of the function on the relevant heating circuit pump in coding address "d7" in the "Heating circuit" group. ▪ Select the effect of the function on the circulation pump for cylinder heating in coding address "5F" in the "DHW" group. 	

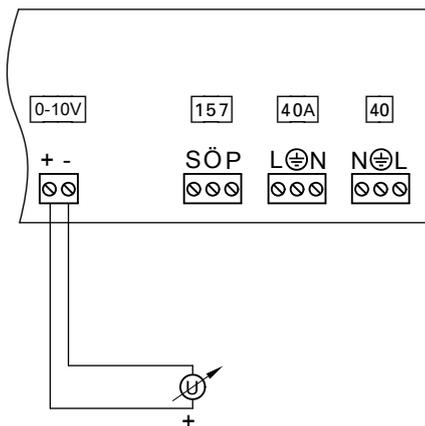
External demand via 0 – 10 V input

Connection at input 0 – 10 V to **EA1 extension** (see page 91).

Ensure DC separation between the earth conductor and the negative pole of the on-site voltage source.

Note coding address "1E" in the **"General"** group.

External demand via 0 – 10 V input (cont.)



0–1 V ≙ No default set boiler water temperature
 1 V ≙ Set value 10 °C
 10 V ≙ Set value 100 °C

Fig.17

Installation

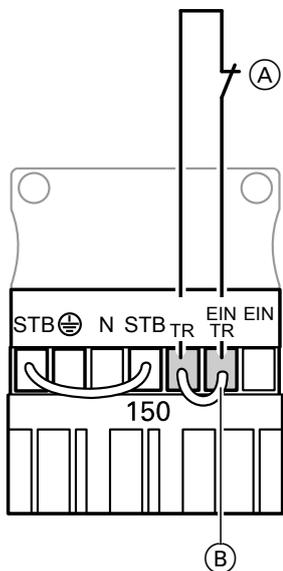
External blocking via switching contact

Connection options:

- Plug 96
- EA1 extension (accessories, see page 91)
- Plug 150 of external extension H5 (accessories, see page 93).

! **Please note**
 'Live' contacts lead to short circuits or phase failure.
 The external connection **must be potential-free**.

Plug 150

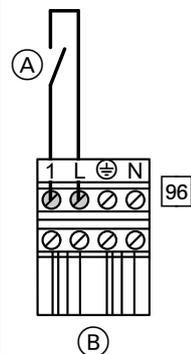


- (A) Floating contact
- (B) **Remove** jumper "TR" – "ON/TR"

When contact is open, the burner is switched OFF.

Note
 Connect **only** safety shutdown equipment, e.g. a temperature limiter, to these terminals.

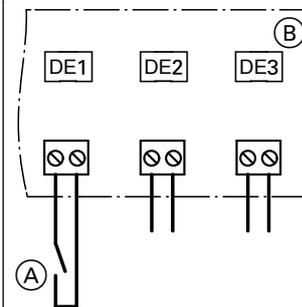
Plug 96



- (A) Floating contact
- (B) Plug 96

When the contact is closed, the burner is switched OFF. The heating circuit pump and circulation pump for cylinder heating are switched according to the set code (see the following table "Codes").

EA1 extension



- (A) Floating contact
- (B) EA1 extension

External blocking via switching contact (cont.)

- ! Please note**
- The heating system has **no frost protection** while it is blocked.
 - The boiler is not held at the lower boiler water temperature.

Codes

Plug 96	EA1 extension
"40:2" in the "General" group	Set "3A" (DE1), "3b" (DE2) or "3C" (DE3) in the "General" group to 3 or 4.
<ul style="list-style-type: none"> Set the effect of the function on the heating circuit pump in coding address "d6" in the "Heating circuit" group. Set the effect of the function on the circulation pump for cylinder heating in coding address "5E" in the "DHW" group. 	

Connecting a pressure-jet oil/gas burner

The burner cable is included in the standard delivery of the boiler.

Connect the burner in accordance with **DIN 4791**.
Max. power consumption 4 (2) A.

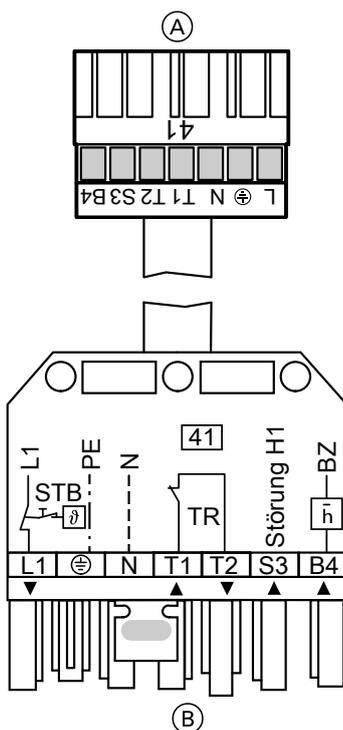


Fig. 18

- (A) To the control unit
- (B) To the burner

Burner without plug

Install the mating plug from Viessmann or from the burner manufacturer; connect the burner cable.

Terminal codes

- L1 Phase via high limit safety cut-out to the burner
- PE Earth conductor to burner
- N Neutral conductor to burner
- T1, T2 Control chain
- S3 Connection for burner fault
- B4 Connection for hours run meter
- ▼ Signal pass direction:
Control unit → Burner
- ▲ Signal pass direction:
Burner → Control unit

Equipment codes

- STB Control unit high limit safety cut-out
- TR Control unit temperature controller
- H1 Burner fault signal
- BZ Hours run meter

Extending two-stage/modulating burners, part no. 7404 960

The function extension is supplied with the boiler.

Extending two-stage/modulating burners, part... (cont.)

Max. power consumption

- Two-stage: 1 (0.5) A
- Modulating: 0.1 (0.05) A

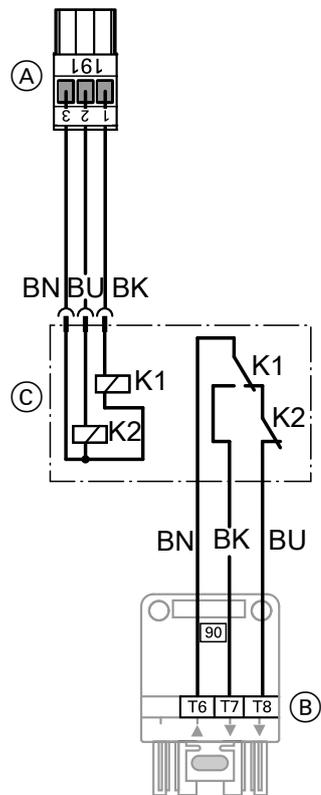


Fig. 19

- (A) To the control unit
- (B) To the burner
- (C) Junction box with relay K1 and K2

Terminal codes

T6, T7, T8 Control chain "Burner stage 2", via two-point controller
Control chain "modulation controller", via three-point controller

- T6 From the burner
- T7 Modulating burner close
- T8 Modulating burner open/stage 2 ON

▼ Signal flow direction:
Control unit → burner
▲ Signal flow direction:
Burner → control unit

Colour coding to IEC 60 757

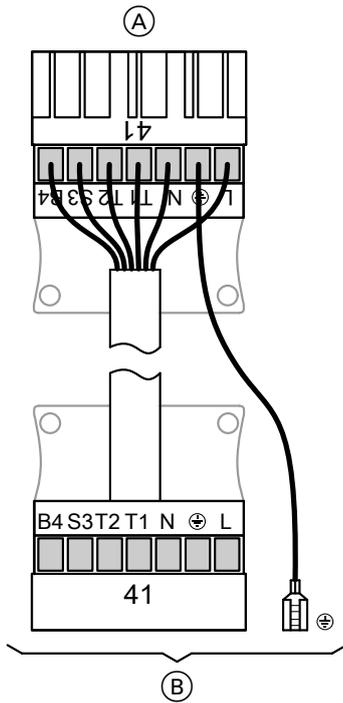
- BK Black
- BN Brown
- BU Blue

Connecting an atmospheric burner

The burner cable is included in the standard delivery of the boiler.

Connect the burner to **DIN 4791** [or local regulations].

Connecting an atmospheric burner (cont.)



Terminal codes
 T1, T2 Control chain
 S3 Burner fault
 B4 Hours run meter

Fig. 20

- (A) To the control unit
- (B) To the burner control unit

Extension, two-stage burner, part no. 7827 417

The function extension is supplied with the boiler.

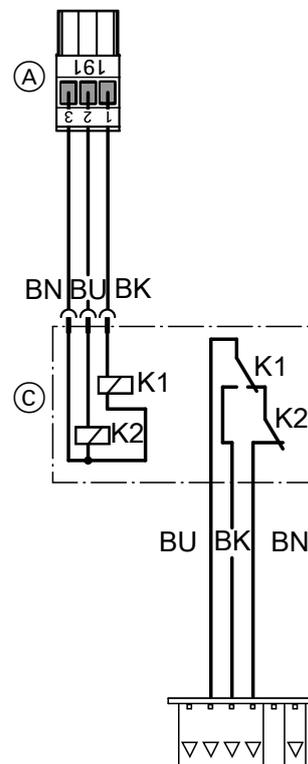


Fig. 21

- (A) To the control unit
- (B) To the burner control unit
- (C) Junction box with relay K1 and K2

Connecting an atmospheric burner (cont.)

Colour coding to IEC 60757

BK Black

BN Brown

BU Blue

Power supply

Isolators for non-earthed conductors

- Install an isolator in the power cable to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for full isolation. This isolator must be fitted in the permanent electrical installation, in line with the installation requirements.
- We additionally recommend installing an AC/DC-sensitive RCD, type B  , for DC (fault) currents that can occur with energy efficient equipment.

Power supply for accessories and external components

- For accessories and external components that will not be connected to the control unit, we recommend making the power connection to the same fuse, or at the very least in-phase with the control unit.
- Connection to the same MCB/fuse provides additional safety when the power is switched off. Observe the power consumption of the connected consumers.

Additional regulations for oil and gas combustion equipment

- Observe the national combustion equipment ordinance for your region.
- For oil and gas combustion equipment above 100 kW an "emergency stop switch" must be installed outside the installation room, in line with the Sample Combustion Ordinance "FeuVO".
- For combustion equipment to EN 50156-1, the "emergency stop switch" installed on site must comply with the requirements of EN 50156-1.



Danger

Incorrectly executed electrical installations can result in injuries from electrical current and in appliance damage.

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:

- IEC 60364-4-41
- VDE regulations
- Technical connection requirements specified by the local power supply utility
- Protect the power cable on site with a fuse/MCB of up to 16 A.



Danger

The absence of component earthing can lead to serious injury from electric current if an electrical fault occurs.

The appliance and pipework must be connected to the equipotential bonding of the building.



Danger

Incorrect core allocation can result in serious injury and damage to the appliance. Never interchange cores "L" (brown) and "N" (blue).

Colour coding to IEC 60757

BN Brown (L)

BK Black

BU Blue (N)

GY Grey

GNYE Green/yellow (PE)

Power supply (cont.)

Power supply for several accessories

Power supply for all accessories via the control unit

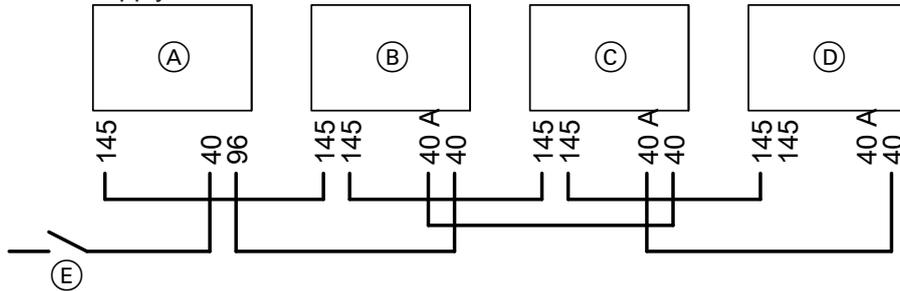


Fig. 22

Some accessories with direct power supply

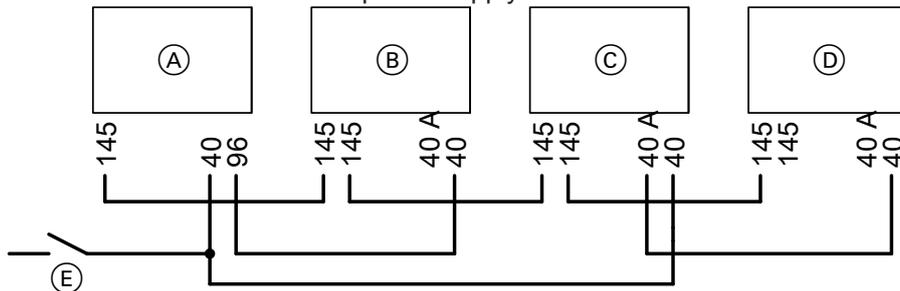


Fig. 23

- (A) Boiler control unit
- (B) Extension kit, mixer M2
(internal fuse protection 2 A)
- (C) Extension kit, mixer M3
(internal fuse protection 2 A)
- (D) EA1 extension and/or solar control module,
type SM1
(internal fuse protection 2 A)
- (E) ON/OFF switch

[40] A Power supply

[96] Power supply for accessories in the boiler control unit

[145] KM BUS

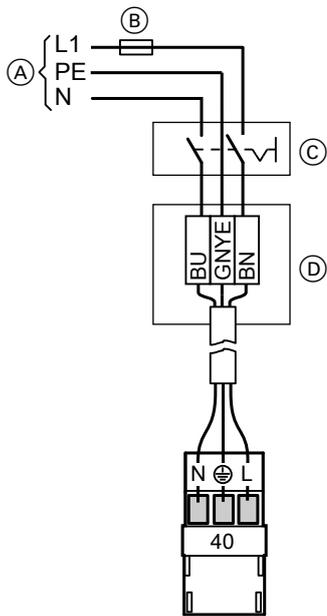
If the current flowing to the connected working parts (e.g. circulation pumps) is higher than the fuse rating of the accessory, only use the output concerned to control an on-site relay.

If the max. total system current is exceeded, connect one or more accessories directly to the mains supply via an ON/OFF switch.

Note

In this event, the accessories concerned cannot be isolated with the ON/OFF switch on the control unit.

Control unit power supply



1. Check whether the power cable to the control unit has appropriate fuse protection.
2. Connect the power cable in the wiring chamber.
3. Insert plug **40** into the control unit.

Fig.24

- (A) Mains voltage 230 V~
- (B) Fuse (max. 16 A~)
- (C) Mains isolator, 2-pole (on site)
- (D) Junction box (on site)

Testing the high limit safety cut-out

Type KO1B

1. Hold down the **"test"** key (position "⏏") until the burner shuts down:
The temperature controller "⏏" is bridged. When the boiler water temperature reaches the safety temperature, the high limit safety cut-out switches the burner off.
2. Release the **"test"** key.
3. Wait until the boiler water temperature has dropped approx. 15 to 20 K below the selected safety temperature.
4. Press the reset button.

Type KO2B

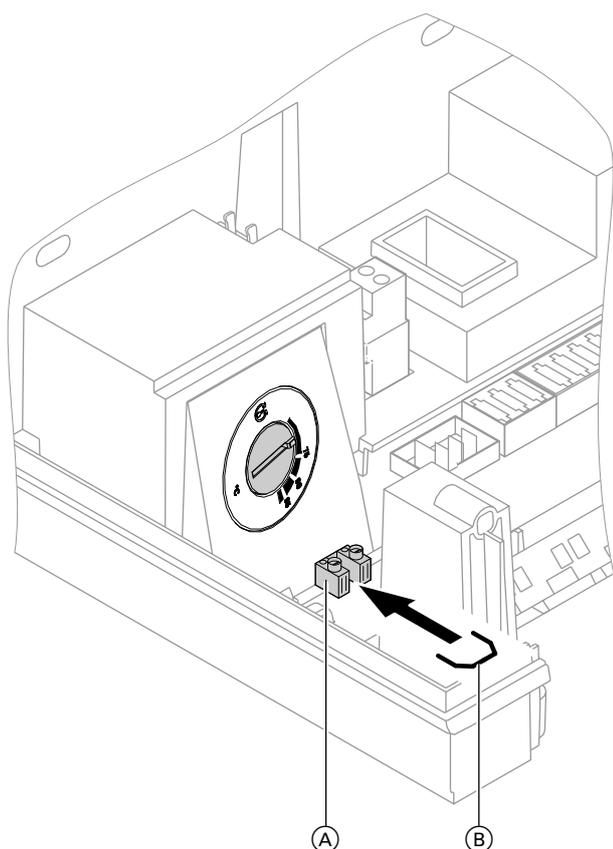


Fig.25

1. Shut down the heating system.
2. Insert jumper (B) at test terminals (A).
3. Switch on the heating system.
The temperature controller "⏏" is bridged. When the boiler water temperature reaches the safety temperature, the high limit safety cut-out switches the burner off.
4. Shut down the heating system.
5. Remove jumper (B).
6. Switch on the heating system.
7. Wait until the boiler water temperature has dropped approx. 15 to 20 K below the selected safety temperature.
8. Press the reset button.

Changing the language

At the commissioning stage, the display is in German (factory setting).

Sprache	
Deutsch	DE <input checked="" type="checkbox"/>
Bulgarski	BG <input type="checkbox"/>
Cesky	CZ <input type="checkbox"/>
Dansk	DK <input type="checkbox"/>
Wählen mit 	

Fig.26

Setting the date and time

The time and date need to be reset during commissioning and after a prolonged time out of use.

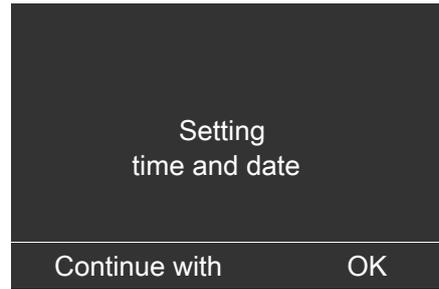


Fig.27

Adjusting coding addresses

The control unit must be adjusted subject to the system equipment level. For steps and overviews on codes, see chapters "Coding level 1" and "Coding level 2".

Adjusting heating curves

The heating curves represent the relationship between the outside temperature and the boiler water or flow temperature.

Simplified: The lower the outside temperature, the higher the boiler water or flow temperature.

The boiler water or flow temperature in turn affects the room temperature.

Settings in the delivered condition:

- Slope = 1.4
- Level = 0

Adjusting heating curves (cont.)

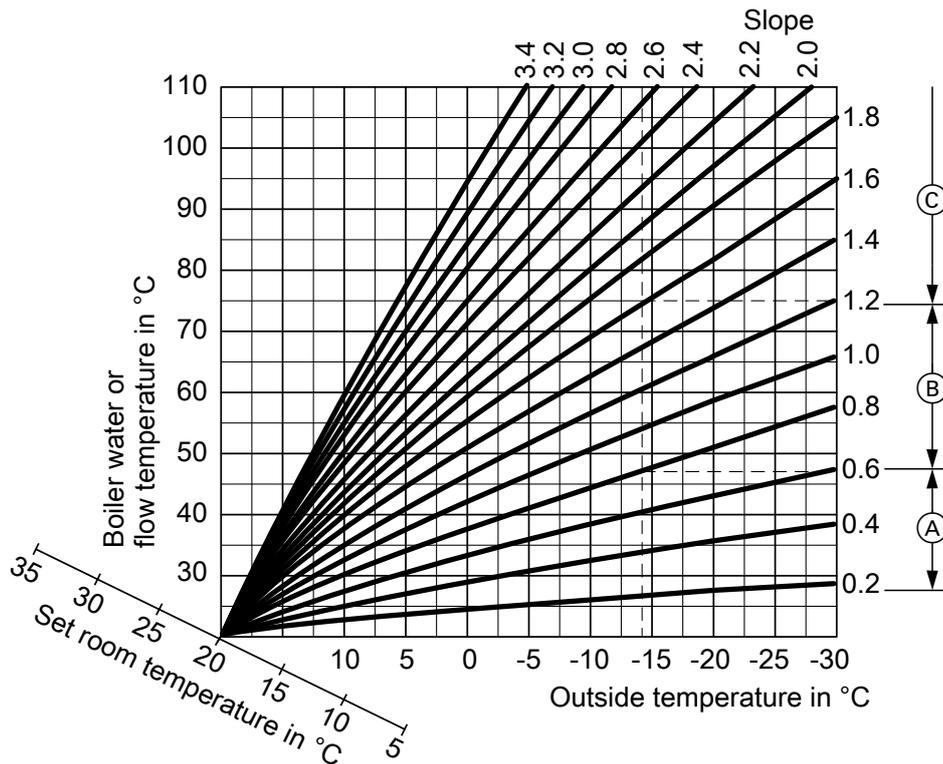


Fig. 28 Example for outside temperature $-14\text{ }^{\circ}\text{C}$

- (A) Underfloor heating system, slope 0.2 to 0.8
- (B) Low temperature heating system, slope 0.8 to 1.6
- (C) Heating systems with a boiler water temperature in excess of $75\text{ }^{\circ}\text{C}$, slope greater than 1.6

Set room temperature, adjusting

Individually adjustable for each heating circuit. The heating curve is offset along the axis of the set room temperature. With the heating circuit pump logic function enabled, the curve modifies the starting and stopping characteristics of the heating circuit pump.

Standard set room temperature

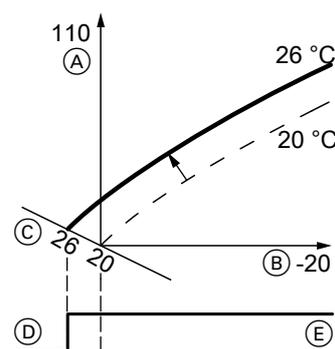


Fig. 29 Adjustment of standard set room temperature from $20\text{ }^{\circ}\text{C}$ to $26\text{ }^{\circ}\text{C}$

- (A) Boiler water temperature or flow temperature in $^{\circ}\text{C}$
- (B) Outside temperature in $^{\circ}\text{C}$
- (C) Set room temperature in $^{\circ}\text{C}$
- (D) Heating circuit pump Off
- (E) Heating circuit pump On

- 1.
2. "Heating"

Adjusting heating curves (cont.)

3. Select heating circuit.
4. "Set room temperature"
5. Set the required value.

Reduced set room temperature

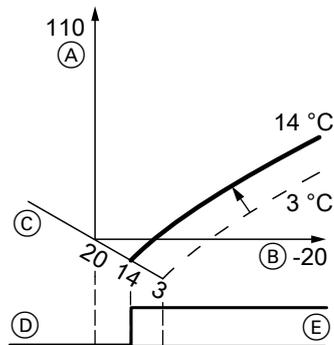


Fig. 30 Adjustment of reduced set room temperature from 3 to 14 °C

- (A) Boiler water temperature or flow temperature in °C
- (B) Outside temperature in °C
- (C) Set room temperature in °C
- (D) Heating circuit pump Off
- (E) Heating circuit pump On

1. ≡
2. "Heating"
3. Select heating circuit.
4. "Set reduced room temp"
5. Set the required value.

Changing the slope and level

Individually adjustable for each heating circuit.

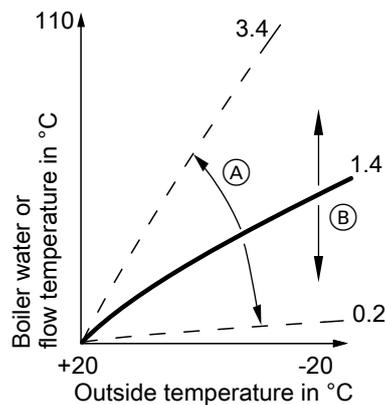


Fig.31

- (A) Changing the slope
- (B) Changing the level (vertical parallel offset of the heating curve)

1. ≡
2. "Heating"
3. Select heating circuit.
4. "Heating curve"
5. "Slope" or "Level"
6. Set heating curve according to the system requirements.

(cont.)

Example: Heating curve setting with slope 1.5

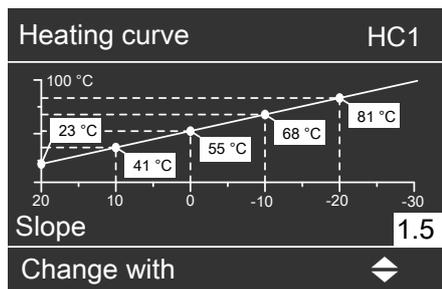


Fig.32

Connecting the control unit to the LON

- The LON communication module (accessories) must be plugged in.
 - LON communication module installation instructions
- Vitotronic 200-H:
 - The LON communication module (accessories) must be plugged in.
 - Installation and service instructions Vitotronic 200-H
- **Never** allocate the same subscriber number twice within one LON.
- Within an individual LON, the system number (coding address "98" in the "General" group) must always be the same.
- **Only program one control unit** as the fault manager.
- The data transfer via LON can take several minutes.

Commissioning

Example of a single boiler system with Vitotronic 200-H and Vitocom 200

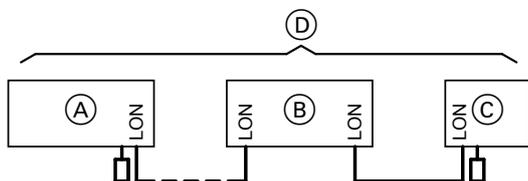


Fig.33

- (A) Boiler control unit
- (B) Vitotronic 200-H
- (C) Vitocom
- (D) LON

All codes detailed in the table are listed in the "General" group.

(A)	(B)	(C)
Subscriber no. 1 Code "77:1"	Subscriber no. 10 Code "77:10"	Subscriber no. 99
Control unit is fault manager, Code "79:1"	Control unit is not fault manager, Code "79:0"	Appliance is fault manager
Control unit transmits the time, Code "7b:1"	Control unit receives the time, Set code "81:3"	Appliance receives the time
Control unit sends outside temperature, Set code "97:2"	Control unit receives outside temperature, Set code "97:1"	—
Viessmann system number, Code "98:1"	Viessmann system number, Code "98:1"	—
LON subscriber fault monitoring, Code "9C:20"	LON subscriber fault monitoring, Code "9C:20"	—

Connecting the control unit to the LON (cont.)

Carrying out a LON subscriber check

The subscriber check is used to test communication with the system devices connected to the fault manager.

Preconditions:

- The control unit must be programmed as **fault manager** (code "79:1" in the **"General"** group).
- The LON subscriber number must be programmed in all control units.
- The LON subscriber list in the fault manager must be up to date.

1. Press **OK** and **≡**; simultaneously for approx. 4 s.

2. **"Service functions"**

3. **"Subscriber check"**

The list of all connected LON subscribers appears.

4. Select subscriber.

5. Start the subscriber check with **"OK"**.

Note

*During the subscriber check, the display of the relevant subscriber shows the subscriber no. and **"Wink"** for approx. 1 min.*

- Successfully tested subscribers are designated with **"OK"**.
- Unsuccessfully tested subscribers are identified with **"Not OK"**.

To carry out another subscriber check, update the subscriber list with **"Delete list?"**.

Entering a service PIN for LON subscribers

Only required if the control unit is linked into a LON with third party appliances.
To identify the installed LON communication module, the control unit sends a message to all LON subscribers.
The LON subscriber is identified with the service PIN.

1. Press **OK** and **≡**; simultaneously for approx. 4 s.

2. **"Service functions"**

3. **"Service PIN"**

Entering a PIN for Vitocom 100, type GSM2

1. Press **OK** and **≡**; simultaneously for approx. 4 s.

2. **"Service functions"**

3. **"Enter Vitocom PIN code"**

4. Enter the PIN digits one by one.

Calling up coding levels

- The display of the codes is specified by the heating system configuration.
- The codes are divided into groups:
 - "General"
 - "Boiler"
 - "DHW"
 - "Solar"
 - "Heating circuit 1/2/3"
 - "All codes std device"

In this group, all codes of the coding levels are listed in ascending order (except the codes in the "Solar" group).
- Heating systems with one heating circuit without mixer and one or 2 heating circuits with mixer: In the following, the heating circuit without mixer is designated "Heating circuit 1" and the heating circuits with mixer as "Heating circuit 2" or "Heating circuit 3".
- If the heating circuits have been designated individually, the chosen designation appears instead.

Coding level 1

1. Press **OK** and  simultaneously for approx. 4 s.

2. "Coding level 1"

3. Select group.
4. Select coding address.
5. / for the required value in line with the following tables.

Coding level 2

1. Press **OK** and  simultaneously for approx. 4 s.
2. Press **OK** and  simultaneously for approx. 4 s.
3. "Coding level 2"
4. Select group.
5. Select coding address.
6. / for the required value in line with the following tables.

Leaving the coding level

1. Press  until "Service" is displayed.
2. "Terminate service?"
3. "Yes"
4. Confirm with **OK**.

Note

The system exits the respective coding level automatically after 30 min.

Resetting codes to their delivered condition

Select "Standard setting" in the respective coding level.

Note

This also resets codes in the other coding level.

"General" group**Coding**

Coding in the delivered condition		Possible change	
System design			
00:1	One heating circuit without mixer A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system schemes, see the following table

Value address 00: ...	Description
2	1 heating circuit without mixer A1 (heating circuit 1), with DHW heating, is recognised automatically.
3	1 heating circuit with mixer M2 (heating circuit 2), without DHW heating
4	1 heating circuit with mixer M2 (heating circuit 2), with DHW heating
5	1 heating circuit without mixer A1 (heating circuit 1), one heating circuit with mixer M2 (heating circuit 2), without DHW heating, is recognised automatically.
6	1 heating circuit without mixer A1 (heating circuit 1), one heating circuit with mixer M2 (heating circuit 2), with DHW heating, is recognised automatically.
7	2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating
8	2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating
9	1 heating circuit without mixer A1 (heating circuit 1), 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating, is recognised automatically.
10	1 heating circuit without mixer A1 (heating circuit 1), 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating, is recognised automatically.

Coding in the delivered condition		Possible change	
Internal circulation pump function			
51:0	Only if a buffer temperature sensor is connected: Boiler circuit pump (output 20) always runs.	51:1	Do not adjust
		51:2	When there is demand, the boiler circuit pump only starts if the burner is operational. Note <i>The boiler circuit pump runs on after the burner has stopped.</i>

Subscriber no.			
77:1	LON subscriber number	77:2 to 77:99	LON subscriber number adjustable from 1 to 99: 1 = Boiler control unit 10 – 90 = Vitotronic 200-H 97 – 98 = Vitogate 99 = Vitocom

"General" group (cont.)

Coding in the delivered condition		Possible change	
Detached house/apartment building			
7F:1	Detached house	7F:0	Apartment building Holiday program and time program for DHW heating can be set separately.
Lock out controls			
8F:0	Operation enabled in standard menu and in extended menu. Note <i>The respective code is only activated when you exit the service menu (see page 55).</i>	8F:1	Operation blocked in standard menu and in extended menu. Emissions test mode can be enabled.
		8F:2	Operation enabled in standard menu, blocked in extended menu. Emissions test mode can be enabled.
Set flow temperature for external demand			
9b:70	Set minimum boiler water temperature during external demand 70 °C	9b:0 to 9b:127	Set value adjustable from 0 to 127 °C.

"Boiler" group**Coding**

Coding in the delivered condition		Possible change	
Burner type			
02:0	Single-stage burner	02:1	Two-stage burner
		02:2	Modulating burner
Gas/oil operation			
03:0	Do not adjust		
Boiler water temperature, maximum limit			
06:74	Electronic maximum limit for boiler water temperature set to 74 °C. Note <i>The code has no effect during DHW heating demand.</i>	06:20 to 06:127	Adjustable from 20 to 127 °C. Note <i>Observe the temperature controller setting (see page 13).</i>
Flue gas monitor			
1F:0	With flue gas temperature sensor: Flue gas temperature is not monitored for burner service indication.	1F:1 to 1F:250 °C	When the limit for the flue gas temperature is exceeded, "Service" is displayed.
Burner service in 100 hours			
21:0	No service interval (hours run) selected.	21:1 to 21:100	The number of hours run before the burner should be serviced, adjustable from 100 to 10,000 h. 1 step $\hat{=}$ 100 h
Service interval in months			
23:0	No interval for burner service	23:1 to 23:24	Interval adjustable from 1 to 24 months.

"Boiler" group (cont.)

Coding in the delivered condition		Possible change	
Service status			
24:0	No "Service" indication on the display	24:1	"Service" indicator is shown on the display (the address is automatically set and must be manually reset after a service has been carried out).

"DHW" group**Coding**

Coding in the delivered condition		Possible change	
Cylinder heating control type			
55:0	Cylinder heating hysteresis ± 2.5 K	55:1	Adaptive cylinder heating (see page 83)
Set DHW temperature, reheating suppression			
67:40	For solar DHW heating: Set DHW temperature 40 °C. Reheating is suppressed above the selected set temperature (DHW heating blocked by the boiler).	67:0 to 67:90	Set DHW temperature adjustable from 0 to 90 °C (limited by boiler-specific parameters).
Enable DHW circulation pump			
73:0	DHW circulation pump: "ON" according to time program	73:1 to 73:6	During the time program "ON" 1 to 6 times/h for 5 min
		73:7	Constantly "ON"

"Solar" group

Only in conjunction with solar control module, type SM1.

Coding

Coding in the delivered condition		Possible change	
Speed control solar circuit pump			
02:0	Solar circuit pump is not speed-controlled.	02:1	Solar circuit pump is speed-controlled with wave packet control.
		02:2	Solar circuit pump is speed-controlled with PWM control.
Cylinder maximum temperature			
08:60	Set DHW temperature (maximum cylinder temperature) 60 °C.	08:10 to 08:90	Set DHW temperature adjustable from 10 to 90 °C.
Stagnation time reduction			
0A:5	Temperature differential for stagnation time reduction (reduction in the speed of the solar circuit pump to protect system components and heat transfer medium) 5 K.	0A:0	Stagnation time reduction disabled.
		0A:1 to 0A:40	Temperature differential adjustable from 1 to 40 K.

"Solar" group (cont.)

Coding in the delivered condition		Possible change	
Flow rate solar circuit			
0F:70	Solar circuit flow rate at the maximum pump speed 7 l/min.	0F:1 to 0F:255	Flow rate adjustable from 0.1 to 25.5 l/min; 1 step \pm 0.1 l/min.
Extended solar control functions			
20:0	No extended control function enabled.	20:1	Additional function for DHW heating.
		20:2	Differential temperature control 2.
		20:3	Differential temperature control 2 and auxiliary function.
		20:4	Differential temperature control 2 for central heating backup.
		20:5	Thermostat function.
		20:6	Thermostat function and auxiliary function.
		20:7	Solar heating via external heat exchanger without additional temperature sensor.
		20:8	Solar heating via external heat exchanger with additional temperature sensor.
		20:9	Solar heating of two DHW cylinders.

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group**Coding**

Coding in the delivered condition		Possible change	
Priority DHW heating			
A2:2	Cylinder priority control for heating circuit pump and mixer	A2:0	Without cylinder priority for heating circuit pump and mixer
		A2:1	Cylinder priority only for mixers
		A2:3 to A2:15	Modulating priority for mixers, i.e. the heating circuit receives a reduced amount of heat.
Economy function, outside temperature			
A5:5	With heating circuit pump logic function (economy control): Heating circuit pump "OFF" when outside temperature (OT) is 1 K higher than the set room temperature (RT_{set}) $OT > RT_{set} + 1 K$	A5:0	Without heating circuit pump logic function
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump "OFF" see following table

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	$OT > RT_{set} + 5 K$
2	$OT > RT_{set} + 4 K$
3	$OT > RT_{set} + 3 K$
4	$OT > RT_{set} + 2 K$
5	$OT > RT_{set} + 1 K$

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"		
6	OT > RT _{set}		
7 to	OT > RT _{set} - 1 K		
15	OT > RT _{set} - 9 K		
Coding in the delivered condition		Possible change	
Extended economy function, adjusted outside temperature			
A6:36	Extended economy mode disa- bled .	A6:5 to A6:35	Extended economy mode enabled, i.e. at a variably adjustable value between 5 and 35 °C plus 1 °C, the burner and heating circuit pump will stop and the mixer will close. The basis for this is the adjusted outside temperature. The adjusted outside temperature is based on the actual outside temperature and a time constant, which takes the cooling down of an average building into consideration.
Extended economy function, mixer			
A7:0	Only for heating circuits with mixer: Without mixer economy function	A7:1	With mixer economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": <ul style="list-style-type: none"> ▪ If the mixer has been trying to close for longer than 20 min. Heating circuit pump "ON": <ul style="list-style-type: none"> ▪ If the mixer changes to control function. ▪ If there is a risk of frost
Pump idle time, transition reduced mode			
A9:7	With pump idle time (heating circuit pump "OFF", see function description, page 78) Note <i>The max. idle period is 10 h.</i>	A9:0 A9:1 to A9:15	Without pump idle time With pump idle time, adjustable from 1 to 15: 1 = short idle time 15 = long idle time
Weather-compensated/room temperature hook-up			
b0:0	With remote control: Heating mode/reduced mode: Weather-compensated (change code only for heating circuits with mixer)	b0:1	Heating mode: Weather-compensated Reduced mode: With room temperature hook-up
		b0:2	Heating mode: With room temperature hook-up Reduced mode: Weather-compensated
		b0:3	Heating mode/reduced mode: With room temperature hook-up
Economy function, room temperature			
b5:0	With remote control: No room temperature-dependent heating circuit pump logic function (change code only for heating circuits with mixer)	b5:1 to b5:8	For heating circuit pump logic function, see the following table

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Parameter address b5:...	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
1	$RT_{\text{actual}} > RT_{\text{set}} + 5 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} + 4 \text{ K}$
2	$RT_{\text{actual}} > RT_{\text{set}} + 4 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} + 3 \text{ K}$
3	$RT_{\text{actual}} > RT_{\text{set}} + 3 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} + 2 \text{ K}$
4	$RT_{\text{actual}} > RT_{\text{set}} + 2 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} + 1 \text{ K}$
5	$RT_{\text{actual}} > RT_{\text{set}} + 1 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}}$
6	$RT_{\text{actual}} > RT_{\text{set}}$	$RT_{\text{actual}} < RT_{\text{set}} - 1 \text{ K}$
7	$RT_{\text{actual}} > RT_{\text{set}} - 1 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} - 2 \text{ K}$
8	$RT_{\text{actual}} > RT_{\text{set}} - 2 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} - 3 \text{ K}$

Coding in the delivered condition	Possible change
-----------------------------------	-----------------

Min. flow temperature heating circuit

C5:20	Electronic minimum flow temperature limit 20 °C (only when operating with standard room temperature)	C5:1 to C5:127	Minimum limit adjustable from 1 to 127 °C (limited by boiler-specific parameters).
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Max. flow temperature, heating circuit

C6:74	Electronic maximum flow temperature limit set to 74 °C	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C (limited by boiler-specific parameters).
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Heating program - changeover

d5:0	With external heating program changeover (observe setting for coding addresses "3A", "3b" and "3C" in the "General" group). Heating program switches to "Constant central heating with reduced room temperature" or "Standby mode" (subject to the setting of the set reduced room temperature).	d5:1	Heating program switches to "Constant operation with standard room temperature".
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Ext. heating program changeover to heating circuit

d8:0	With EA1 extension: No heating program changeover	d8:1	Heating program changeover via input DE1
		d8:2	Heating program changeover via input DE2
		d8:3	Heating program changeover via input DE3

Screed drying

F1:0	Screed drying disabled	F1:1 to F1:6	Screed drying adjustable, with choice of 6 temperature/time profiles (see page 78)
		F1:15	Constant flow temperature 20 °C (see page 78)

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Coding in the delivered condition		Possible change	
Party mode time limit			
F2:8	Time limit for party mode or external operating program changeover via pushbutton: 8 h ^{*1} Note <i>Observe settings of coding addresses "3A", "3b", "3C" in the "General" group and "d5" and "d8" in the "Heating circuit..." group.</i>	F2:0 F2:1 to F2:12	No time limit ^{*1} Time limit adjustable from 1 to 12 h ^{*1}
Start temperature raising			
F8:-5	Outside temperature limit for raising the reduced set room temperature -5 °C, see example on page 80 Observe the setting of coding address "A3".	F8:+10 to F8:-60 F8:-61	Outside temperature limit adjustable from +10 to -60 °C. Function disabled
End temperature raising			
F9:-14	Outside temperature limit for raising the reduced set room temperature to the standard set room temperature -14 °C, see example on page 80	F9:+10 to F9:-60	Outside temperature limit adjustable from +10 to -60 °C
Set flow temperature increase			
FA:20	Raising of the set boiler water/flow temperature by 20 % when changing from operation with reduced room temperature to operation with standard room temperature. See example on page 80.	FA:0 to FA:50	Temperature rise adjustable from 0 to 50 %.
Duration set flow temperature increase			
Fb:30	Time period for raising the set boiler water temperature/flow temperature (see coding address "FA") 60 min. See example on page 80.	Fb:0 to Fb:150	Time period adjustable from 0 to 300 min. 1 step \triangleq 2 min

^{*1} In the "Heating and DHW" operating program, party mode ends **automatically** when the system changes over to operation with standard room temperature.

"General" group**Coding**

Coding in the delivered condition		Possible change	
00:1	One heating circuit without mixer A1 (heating circuit 1), without DHW heating	00:2 to 00:10	For system schemes, see the following table

Value address 00: ...	Description
2	1 heating circuit without mixer A1 (heating circuit 1), with DHW heating, is recognised automatically.
3	1 heating circuit with mixer M2 (heating circuit 2), without DHW heating
4	1 heating circuit with mixer M2 (heating circuit 2), with DHW heating
5	1 heating circuit without mixer A1 (heating circuit 1), one heating circuit with mixer M2 (heating circuit 2), without DHW heating, is recognised automatically.
6	1 heating circuit without mixer A1 (heating circuit 1), one heating circuit with mixer M2 (heating circuit 2), with DHW heating, is recognised automatically.
7	2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating
8	2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating
9	1 heating circuit without mixer A1 (heating circuit 1), 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), without DHW heating, is recognised automatically.
10	1 heating circuit without mixer A1 (heating circuit 1), 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3), with DHW heating, is recognised automatically.

Coding in the delivered condition		Possible change	
1E:0	With EA1 extension (analogue input 0 – 10 V): Temperature demand from 0 to 100 °C: 1 V \triangleq 10 °C 10 V \triangleq 100 °C	1E:1	Temperature demand from 30 to 120 °C: 1 V \triangleq 30 °C 10 V \triangleq 120 °C
2E:0	Without wireless outside temperature sensor	2E:1	With wireless outside temperature sensor; automatic recognition.
		2E:2	Wireless outside temperature sensor not used.
32:0	Do not adjust		
33:0	Do not adjust		
34:0	Do not adjust		
35:0	Without EA1 extension	35:1	With EA1 extension; automatic recognition.
36:0	Function output 157 at EA1 extension: Fault message	36:1	Do not adjust
		36:2	Do not adjust
3b:0	Function input DE2 at EA1 extension: No function	3b:1	Heating program - changeover

"General" group (cont.)

Coding in the delivered condition		Possible change	
		3b:2	External demand with set minimum boiler water temperature. Setting of set value in coding address "9b" in this group.
		3b:3	External blocking
		3b:4	External blocking with fault message
		3b:5	Fault message input
		3b:6	Brief operation, DHW circulation pump (pushbutton function). Setting of DHW circulation pump runtime in coding address "3d" in this group.
3C:0	Function input DE3 at EA1 extension: No function	3C:1	Heating program - changeover
		3C:2	External demand with set minimum boiler water temperature. Setting of set value in coding address "9b" in this group.
		3C:3	External blocking
		3C:4	External blocking with fault message
		3C:5	Fault message input
		3C:6	Brief operation, DHW circulation pump (pushbutton function). Setting of DHW circulation pump runtime in coding address "3d" in this group.
3d:5	DHW circulation pump runtime for brief operation: 5 min	3d:1 to 3d:60	Runtime adjustable from 1 to 60 min.
3 A:0	Function input DE1 at EA1 extension: No function	3 A:1	Heating program - changeover
		3 A:2	External demand with set minimum boiler water temperature. Setting of set value in coding address "9b" in this group.
		3 A:3	External blocking
		3 A:4	External blocking with fault message
		3 A:5	Fault message input
		3 A:6	Brief operation, DHW circulation pump (pushbutton function). Setting of DHW circulation pump runtime in coding address "3d" in this group.
40:0	Function input 96 : No function	40:1	External demand
		40:2	External blocking
41:10	Do not adjust		
42:10	Do not adjust		
51:0	Only if buffer temperature sensor is connected: Boiler circuit pump (output 20) always runs.	51:1	Do not adjust
		51:2	When there is demand, the boiler circuit pump only starts if the burner is operational.

"General" group (cont.)

Coding in the delivered condition		Possible change	
			Note <i>The boiler circuit pump runs on after the burner has stopped.</i>
52:0	Without buffer temperature sensor	52:1	With buffer temperature sensor; automatic recognition.
54:0	Without solar thermal system	54:1	With Vitosolic 100; automatic recognition.
		54:2	With Vitosolic 200; automatic recognition.
		54:3	With solar control module, type SM1, without auxiliary function; automatic recognition.
		54:4	With solar control module, type SM1, with auxiliary function, e.g. central heating backup; automatic recognition.
6E:50	No display correction for outside temperature	6E:0 to 6E:49	Display correction –5 K to display correction –0.1 K
		6E:51 to 6E:99	Display correction +0.1 K to display correction +4.9 K
76:0	Without LON communication module	76:1	With LON communication module; automatic recognition.
77:1	LON subscriber number	77:2 to 77:99	LON subscriber number adjustable from 1 to 99: 1 = Boiler control unit 10 – 90 = Vitotronic 200-H 97 – 98 = Vitogate 99 = Vitocom
79:1	With LON communication module: Control unit is fault manager.	79:0	Control unit is not fault manager.
7b:1	With LON communication module: Control unit transmits the time.	7b:0	No time transmission.
7F:1	Detached house	7F:0	Apartment building Holiday program and time program for DHW heating can be set separately.
80:6	A fault message is issued if a fault occurs for at least 30 s.	80:0	A fault message is issued without delay.
		80:2 to 80:199	Minimum fault duration before a fault message is issued, adjustable from 10 to 995 s. 1 step $\hat{=}$ 5 s
81:1	Automatic summer/wintertime changeover	81:0	Manual summer/wintertime changeover
		81:2	Use of radio clock receiver; automatic recognition.
		81:3	With LON communication module: The control unit receives the time.
88:0	Temperature displayed in °C (Celsius)	88:1	Temperature displayed in °F (Fahrenheit)

"General" group (cont.)

Coding in the delivered condition		Possible change	
8F:0	Operation enabled in standard menu and in extended menu. Note <i>The respective code is only activated when you exit the service menu (see page 55).</i>	8F:1	Operation blocked in standard menu and in extended menu. Emissions test mode can be enabled.
		8F:2	Operation enabled in standard menu, blocked in extended menu. Emissions test mode can be enabled.
8 A:175	Do not adjust		
90:128	Time constant for calculating the adjusted outside temperature 21.3 h	90:1 to 90:199	Subject to the set value, the flow temperature is adjusted quickly (low values) or slowly (high values) when the outside temperature changes. 1 step \pm 10 min
95:0	Without communication interface Vitocom 100, type GSM	95:1	With communication interface Vitocom 100, type GSM; automatic recognition.
97:0	With LON communication module: The outside temperature of the sensor connected to the control unit is used internally.	97:1	The control unit receives the outside temperature.
		97:2	The control unit sends the outside temperature to the Vitotronic 200-H.
98:1	Viessmann system number (in conjunction with monitoring several systems via Vitocom 300).	98:1 to 98:5	System number adjustable from 1 to 5.
9b:70	Set minimum boiler water temperature during external demand 70 °C	9b:0 to 9b:127	Set value adjustable from 0 to 127 °C.
9C:20	LON subscriber monitoring If there is no response from a subscriber for 20 min, the values specified in the control unit are used. Only then will a fault message be issued.	9C:0	No monitoring
		9C:5 to 9C:60	Time adjustable from 5 to 60 min
9F:8	Only for heating circuits with mixer: Differential temperature 8 K	9F:0 to 9F:40	Differential temperature adjustable from 0 to 40 K.

"Boiler" group**Coding**

Coding in the delivered condition		Possible change	
02:0	Single-stage burner	02:1	Two-stage burner
		02:2	Modulating burner
03:0	Do not adjust		
04:0	Burner switching hysteresis 4 K	04:1	Burner switching hysteresis is heat demand-dependent: ERB50 function (values from 6 to 12 K)
		04:2	Burner switching hysteresis is heat demand-dependent:

"Boiler" group (cont.)

Coding in the delivered condition		Possible change	
			ERB80 function (values from 6 to 20 K)
06:74	Electronic maximum limit for boiler water temperature set to 74 °C. Note <i>The code has no effect during DHW heating demand.</i>	06:20 to 06:127	Maximum limit adjustable from 20 to 127 °C. Note <i>Observe the "C" temperature controller setting (see page 13)</i>
0b:0	Do not adjust		
10:20	Hook-up delay for enabling stage 2 in addition to stage 1 during heating operation (integral) = 2560 Ks	10:0 to 10:199	Hook-up delay adjustable from 0 to 25,472 Ks. 1 step \triangleq 128 Ks
11:20	Hook-up delay for enabling stage 2 in addition to stage 1 during cylinder heating (integral) = 2560 Ks	11:0 to 11:199	Hook-up delay adjustable from 0 to 25,472 Ks. 1 step \triangleq 128 Ks
12:20	Shutdown delay for blocking stage 1 in addition to stage 2 (integral) = 2560 Ks	12:0 to 12:199	Shutdown delay adjustable from 0 to 25,472 Ks. 1 step \triangleq 128 Ks
13:6	Shutdown differential 6 K The burner shuts down when the set boiler water temperature is exceeded.	13:0	Without shutdown differential
		13:1 to 13:20	Shutdown differential adjustable from 1 to 20 K.
15:15	Do not adjust		
16:6	Modulating burner offset during start optimisation 6 K	16:0 to 16:15	Offset adjustable from 0 to 15 K.
17:120	Modulating burner control amplification 12 %/K	17:0 to 17:255	Setting subject to adaptation of modulating burner to the boiler type from 0 to 25.5 %/K 1 step \triangleq 0.1 %/K
18:30	Modulating burner integral action time 300 s	18:1 to 18:199	Setting subject to adaptation of modulating burner to the boiler type from 10 to 1990 s 1 step \triangleq 10 s
1A:6	Duration of the start optimisation for modulating burner 6 min	1A:0 to 1A:60	Duration adjustable from 0 to 60 min.
1C:120	Signal B4 at plug  not available: Compensation of signal delay for hours run meter. Time from initiation of burner start signal at T2 in plug  to opening of the solenoid valve. At each burner start, 120 s will be taken off the runtime.	1C:1 to 1C:199	Delay adjustable from 1 to 199 s. This time is deducted from the operating time at every burner start. E.g. operating situations where the burner is shut down via the mechanical temperature controller, but a burner demand is still present (hours run continue to be counted). If required, change the coding address "06" in this group.
1F:0	With flue gas temperature sensor: Flue gas temperature is not monitored for burner service indication	1F:1 to 1F:250 °C	When the limit for the flue gas temperature is exceeded, "Service" is displayed.
21:0	No service interval (hours run) selected.	21:1 to 21:100	The number of hours run before the burner should be serviced, adjustable from 100 to 10,000 h.

"Boiler" group (cont.)

Coding in the delivered condition		Possible change	
			1 step \pm 100 h
23:0	No interval for burner service	23:1 to 23:24	Interval adjustable from 1 to 24 months.
24:0	No "Service" indication on the display	24:1	"Service" indicator is shown on the display (the address is automatically set and must be manually reset after a service has been carried out).
26:0	Burner fuel consumption (stage 1): No count if "26:0" and "27:0" are programmed.	26:1 to 26:99	Input from 0.1 to 9.9 1 step \pm 0.1 l/h or gallons/h Note <i>Values of coding addresses "26" and "27" are added together.</i>
27:0	Burner fuel consumption (stage 1): No count if "26:0" and "27:0" are programmed.	27:1 to 27:199	Input from 10 to 1990 1 step \pm 10 l/h or gallons/h
28:0	No burner interval ignition	28:1 to 28:24	Time interval adjustable from 1 to 24 h. Burner is force-started once every 30 s.
29:0	Burner fuel consumption (stage 2) No count if "29:0" and "2A:0" are programmed.	29:1 to 29:99	Input from 0.1 to 9.9 1 step \pm 0.1 l/h or gallons/h Note <i>Values of coding addresses "29" and "2A" are added together.</i>
2A:0	Burner fuel consumption (stage 2). No count if "29:0" and "2A:0" are programmed.	2A:1 to 2A:199	Input from 10 to 1990 1 step \pm 10 l/h or gallons/h

"DHW" group**Coding**

Coding in the delivered condition		Possible change	
55:0	Cylinder heating hysteresis \pm 2.5 K	55:1	Adaptive cylinder heating (see page 83)
56:0	Set DHW temperature adjustable from 10 to 60 °C	56:1	Set DHW temperature adjustable from 10 to above 60 °C Note <i>Observe the maximum permissible DHW temperature. Change over temperature controller "G".</i>
58:0	Without auxiliary function for DHW heating	58:10 to 58:60	Input of a 2nd set DHW temperature, adjustable from 10 to 90 °C (observe coding address "56" in this group)

"DHW" group (cont.)

Coding in the delivered condition		Possible change	
59:0	Cylinder heating: Start point -2.5 K Stop point +2.5 K	59:1 to 59:10	Start point adjustable from 1 to 10 K below set value.
5b:0	Do not adjust		
5E:0	Circulation pump for cylinder heating at "External blocking" signal: Control mode	5E:1	"Off"
		5E:2	"On"
5F:0	Circulation pump for cylinder heating at signal "External demand": Control mode	5F:1	"Off"
		5F:2	"On"
60:20	During DHW heating, the boiler water temperature is up to 20 K higher than the set DHW temperature.	60:5 to 60:50	The differential between the boiler water temperature and the set DHW temperature is adjustable from 5 to 50 K.
61:0	The circulation pump for cylinder heating is started subject to boiler water temperature.	61:1	The circulation pump for cylinder heating starts immediately.
62:10	Circulation pump with max 10 min run-on time after cylinder heating	62:0	No circulation pump run-on
		62:1 to 62:15	Run-on time adjustable from 1 to 15 min
67:40	For solar DHW heating: Set DHW temperature 40 °C. Re-heating is suppressed above the selected set temperature (DHW heating blocked by the boiler).	67:0 to 67:90	Set DHW temperature adjustable from 0 to 90 °C (limited by boiler-specific parameters).
71:0	DHW circulation pump: "ON" according to time program	71:1	"OFF" during DHW heating to set value 1
		71:2	"ON" during DHW heating to set value 1
72:0	DHW circulation pump: "ON" according to time program	72:1	"OFF" during DHW heating to set value 2
		72:2	"ON" during DHW heating to set value 2
73:0	DHW circulation pump: "ON" according to time program	73:1 to 73:6	During the time program "ON" 1 to 6 times/h for 5 min
		73:7	Constantly "ON"

"Solar" group

Only in conjunction with solar control module, type SM1

Coding

Coding in the delivered condition		Possible change	
00:8	Start temperature differential for solar circuit pump 8 K	00:2 to	Start temperature differential adjustable from 2 to 30 K

"Solar" group (cont.)

Coding in the delivered condition		Possible change	
		00:30	
01:4	Stop temperature differential for solar circuit pump 4 K	01:1 to 01:29	Stop temperature differential adjustable from 1 to 29 K
02:0	Solar circuit pump is not speed-controlled	02:1	Solar circuit pump is speed-controlled with wave packet control
		02:2	Solar circuit pump is speed-controlled with PWM control
03:10	Temperature differential for the start of speed control 10 K	03:5 to 03:20	Temperature differential adjustable from 5 to 20 K
04:4	Controller amplification of the speed control 4 %/K	04:1 to 04:10	Controller amplification adjustable from 1 to 10 %/K
05:10	Min. speed of the solar circuit pump 10 % of the max. speed.	05:2 to 05:100	Min. speed of the solar circuit pump adjustable from 2 to 100 %.
06:75	Maximum speed of the solar circuit pump 75 % of maximum possible speed	06:1 to 06:100	Max. speed of the solar circuit pump adjustable from 1 to 100 %.
07:0	Interval function of the solar circuit pump switched off	07:1	Interval function of the solar circuit pump switched on. To capture the collector temperature more accurately, the solar circuit pump periodically starts for a short duration.
08:60	Set DHW temperature (maximum cylinder temperature) 60 °C	08:10 to 08:90	Set DHW temperature adjustable from 10 to 90 °C.
09:130	Maximum collector temperature (to protect system components) 130 °C	09:20 to 09:200	Temperature adjustable from 20 to 200 °C.
0b:0	Frost protection function for solar circuit switched off	0b:1	Frost protection function for solar circuit switched on (not required with Viessmann heat transfer medium)
0C:1	Delta T monitoring enabled No flow rate captured in the solar circuit, or flow rate too low.	0C:0	Delta T monitoring disabled
0d:1	Night-time DHW circulation monitoring enabled Unintentional flow in the solar circuit is captured (e.g. at night).	0d:0	Night-time DHW circulation monitoring disabled
0E:1	Heat statement in conjunction with Viessmann heat transfer medium	0E:2	Do not adjust
		0E:0	No heat statement
0F:70	Solar circuit flow rate at maximum pump speed 7 l/min	0F:1 to 0F:255	Flow rate adjustable from 0.1 to 25.5 l/min. 1 step \approx 0.1 l/min
0 A:5	Temperature differential for stagnation time reduction (reduction in the speed of the solar circuit pump to protect system components and heat transfer medium) 5 K	0 A:0	Stagnation time reduction is disabled.
		0 A:1 to 0 A:40	Temperature differential adjustable from 1 to 40 K.

"Solar" group (cont.)

Coding in the delivered condition		Possible change	
10:0	Target temperature control switched off (see coding address "11")	10:1	Target temperature control switched on
11:50	Set solar DHW temperature 50 °C <ul style="list-style-type: none"> ▪ Target temperature control switched on (code "10:1"): Temperature at which the solar heated water is to be stratified into the DHW cylinder. ▪ Code "20:9" (heating of 2 DHW cylinders) is set: When the set DHW temperature is achieved in one DHW cylinder, the 2nd DHW cylinder is heated. 	11:10 to 11:90	The set solar DHW temperature is adjustable from 10 to 90 °C.
12:20	Minimum collector temperature (minimum start temperature for the solar circuit pump) 20 °C	12:0	No minimum limit enabled
		12:1 to 12:90	Minimum collector temperature adjustable from 1 to 90 °C.
20:0	No extended control function enabled.	20:1	Additional function for DHW heating
		20:2	Differential temperature control 2
		20:3	Differential temperature control 2 and auxiliary function
		20:4	Differential temperature control 2 for central heating backup
		20:5	Thermostat function
		20:6	Thermostat function and auxiliary function
		20:7	Solar heating via external heat exchanger without additional temperature sensor
		20:8	Solar heating via external heat exchanger with additional temperature sensor
20:9	Solar heating of 2 DHW cylinders		
22:8	Start temperature differential with central heating backup (code "20:4" must be set) 8 K	22:2 to 22:30	Start temperature differential adjustable from 2 to 30 K
23:4	Stop temperature differential with central heating backup (code "20:4" must be set) 4 K	23:2 to 23:30	Stop temperature differential adjustable from 1 to 29 K
24:40	Start temperature for thermostat function (code "20:5" or "20:6" must be set) 40 °C	24:0 to 24:100	Start temperature for thermostat function adjustable from 0 to 100 K
25:50	Stop temperature for thermostat function (code "20:5" or "20:6" must be set) 50 °C	25:0 to 25:100	Stop temperature for thermostat function adjustable from 0 to 100 K
26:1	Priority for DHW cylinder 1 with cyclical heating (code "20:9" must be set)	26:0	Priority for DHW cylinder 1 without cyclical heating
		26:2	Priority for DHW cylinder 2 without cyclical heating
		26:3	Priority for DHW cylinder 2 with cyclical heating
		26:4	Cyclical heating without priority for one of the DHW cylinders

"Solar" group (cont.)

Coding in the delivered condition		Possible change	
27:15	Cyclical heating time 15 min Once the DHW cylinder with priority is heated up, the DHW cylinder without priority is heated for a maximum duration equal to the set cyclical heating time.	27:5 to 27:60	The cyclical heating time is adjustable from 5 to 60 min.
28:3	Cyclical pause time 3 min. After the selected cyclical heating time for the DHW cylinder without priority has expired, the rise in collector temperature is captured during the cyclical pause time.	28:1 to 28:60	Cyclical pause time is adjustable from 1 to 60 min.

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group**Coding**

Coding in the delivered condition		Possible change	
A0:0	Without remote control	A0:1	With Vitotrol 200A or Vitotrol 200 RF; automatic recognition.
		A0:2	With Vitotrol 300A or Vitotrol 300 RF; automatic recognition.
A1:0	Only with Vitotrol 200A: All settings available on the remote control can be carried out.	A1:1	Only party mode can be set at the remote control.
A2:2	Cylinder priority control for heating circuit pump and mixer	A2:0	Without cylinder priority for heating circuit pump and mixer
		A2:1	Cylinder priority only for mixers
		A2:3 to A2:15	Modulating priority for mixers, i.e. the heating circuit receives a reduced amount of heat.
A3:2	Outside temperature below 1 °C: Heating circuit pump "ON" Outside temperature above 3 °C: Heating circuit pump "OFF"	A3:-9 to A3:15	Heating circuit pump "ON/OFF" (see the following table)

- !** **Please note**
With settings below 1 °C there is a risk that pipes outside the thermal envelope of the house could freeze up.
Standby mode in particular should be taken into consideration, e.g. during holidays.

Parameter Address A3:...	Heating circuit pump	
	"On"	"Off"
-9	-10 °C	-8 °C
-8	-9 °C	-7 °C
-7	-8 °C	-6 °C
-6	-7 °C	-5 °C
-5	-6 °C	-4 °C
-4	-5 °C	-3 °C

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Parameter Address A3:...	Heating circuit pump	
	"On"	"Off"
-3	-4 °C	-2 °C
-2	-3 °C	-1 °C
-1	-2 °C	0 °C
0	-1 °C	+1 °C
1	0 °C	+2 °C
2 to 15	+1 °C to +14 °C	+3 °C to +16 °C

Coding in the delivered condition		Possible change	
A4:0	With frost protection	A4:1	No frost protection; this setting is only possible if code "A3:-9" has been set. ! Please note Observe information on coding address "A3".
A5:5	With heating circuit pump logic function (economy control): Heating circuit pump "OFF" when outside temperature (OT) is 1 K higher than the set room temperature (RT_{set}) $OT > RT_{set} + 1 K$	A5:0	Without heating circuit pump logic function
		A5:1 to A5:15	With heating circuit pump logic function: Heating circuit pump "OFF" see following table

Parameter address A5:...	With heating circuit pump logic function: Heating circuit pump "OFF"
1	$OT > RT_{set} + 5 K$
2	$OT > RT_{set} + 4 K$
3	$OT > RT_{set} + 3 K$
4	$OT > RT_{set} + 2 K$
5	$OT > RT_{set} + 1 K$
6	$OT > RT_{set}$
7 to 15	$OT > RT_{set} - 1 K$ $OT > RT_{set} - 9 K$

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Coding in the delivered condition		Possible change	
A6:36	Extended economy mode disabled	A6:5 to A6:35	Extended economy mode enabled, i.e. at a variably adjustable value between 5 and 35 °C plus 1 °C, the burner and heating circuit pump will stop and the mixer will close. The basis for this is the adjusted outside temperature. The adjusted outside temperature is based on the actual outside temperature and a time constant, which takes the cooling down of an average building into consideration.
A7:0	Only for heating circuits with mixer: Without mixer economy function	A7:1	With mixer economy function (extended heating circuit pump logic): Heating circuit pump also "OFF": <ul style="list-style-type: none"> ▪ If the mixer has been trying to close for longer than 12 min. Heating circuit pump "ON": <ul style="list-style-type: none"> ▪ If the mixer changes to control function. ▪ If there is a risk of frost
A9:7	With pump idle time (heating circuit pump "OFF", see function description, page 78) Note <i>The max. idle period is 10 h.</i>	A9:0	Without pump idle time
		A9:1 to A9:15	With pump idle time, adjustable from 1 to 15: 1 = short idle time 15 = long idle time
b0:0	With remote control: Heating mode/reduced mode: Weather-compensated (change code only for heating circuits with mixer)	b0:1	Heating mode: Weather-compensated Reduced mode: With room temperature hook-up
		b0:2	Heating mode: With room temperature hook-up Reduced mode: Weather-compensated
		b0:3	Heating mode/reduced mode: With room temperature hook-up
b2:8	With remote control and for the heating circuit, operation with room temperature hook-up must be programmed: Room influence factor 8 (change code only for heating circuits with mixer)	b2:0	Without room influence
		b2:1 to b2:64	Room influence factor adjustable from 1 to 64.
b5:0	With remote control: No room temperature-dependent heating circuit pump logic function (change code only for heating circuits with mixer)	b5:1 to b5:8	For heating circuit pump logic function, see the following table

Parameter address b5:...	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
1	$RT_{actual} > RT_{set} + 5 K$	$RT_{actual} < RT_{set} + 4 K$
2	$RT_{actual} > RT_{set} + 4 K$	$RT_{actual} < RT_{set} + 3 K$

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Parameter address b5:...	With heating circuit pump logic function:	
	Heating circuit pump "OFF"	Heating circuit pump "ON"
3	$RT_{\text{actual}} > RT_{\text{set}} + 3 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} + 2 \text{ K}$
4	$RT_{\text{actual}} > RT_{\text{set}} + 2 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} + 1 \text{ K}$
5	$RT_{\text{actual}} > RT_{\text{set}} + 1 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}}$
6	$RT_{\text{actual}} > RT_{\text{set}}$	$RT_{\text{actual}} < RT_{\text{set}} - 1 \text{ K}$
7	$RT_{\text{actual}} > RT_{\text{set}} - 1 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} - 2 \text{ K}$
8	$RT_{\text{actual}} > RT_{\text{set}} - 2 \text{ K}$	$RT_{\text{actual}} < RT_{\text{set}} - 3 \text{ K}$

Coding in the delivered condition		Possible change	
C4:1	Do not adjust		
C5:20	Electronic minimum flow temperature limit 20 °C (only when operating with standard room temperature)	C5:1 to C5:127	Minimum limit adjustable from 1 to 127 °C (limited by boiler-specific parameters).
C6:74	Electronic maximum flow temperature limit set to 74 °C	C6:10 to C6:127	Maximum limit adjustable from 10 to 127 °C (limited by boiler-specific parameters).
d3:14	Heating curve slope: 1.4.	d3:2 to d3:35	Heating curve slope adjustable from 0.2 to 3.5
d4:0	Heating curve level: 0	d4:-13 to d4:40	Heating curve level adjustable from -13 to 40
d5:0	With external heating program changeover (observe setting for coding addresses "3A", "3b" and "3C" in the "General" group): Heating program switches to "Constant central heating with reduced room temperature" or "Standby mode" (subject to the setting of the set reduced room temperature).	d5:1	Heating program switches to "Constant operation with standard room temperature".
d6:0	Heating circuit pump at signal "External blocking": Control mode (Observe settings of coding addresses "3A", "3b" and "3C" in the "General" group).	d6:1	"Off"
		d6:2	"On"
d7:0	Heating circuit pump at signal "External demand": Control mode (Observe settings of coding addresses "3A", "3b" and "3C" in the "General" group).	d7:1	"Off"
		d7:2	"On"
d8:0	With EA1 extension: No heating program changeover	d8:1	Heating program changeover via input DE1
		d8:2	Heating program changeover via input DE2
		d8:3	Heating program changeover via input DE3
E1:1	With remote control:	E1:0	Set day temperature adjustable from 3 to 23 °C

"Heating circuit 1", "Heating circuit 2", "Heating circuit 3" group (cont.)

Coding in the delivered condition		Possible change	
	Set day value adjustable at the remote control from 10 to 30 °C	E1:2	Set day temperature adjustable from 17 to 37 °C
E2:50	With remote control: No display correction of the actual room temperature	E2:0 to E2:49	Display correction –5 K to display correction –0.1 K
		E2:51 to E2:99	Display correction +0.1 K to display correction +4.9 K
F1:0	Screed drying disabled	F1:1 to F1:6	Screed drying adjustable, with choice of 6 temperature/time profiles (see page 78)
		F1:15	Constant flow temperature 20 °C (see page 78)
F2:8	Time limit for party mode or external operating program changeover via pushbutton: 8 h ^{*1} Note <i>Observe settings of coding addresses "3A", "3B", "3C" in the "General" group and "d5" and "d8" in the "Heating circuit..." group.</i>	F2:0	No time limit ^{*1}
		F2:1 to F2:12	Time limit adjustable from 1 to 12 h ^{*1} .
F8:–5	Outside temperature limit for raising the reduced set room temperature –5 °C, see example on page 80 Observe the setting of coding address "A3".	F8:+10 to F8:–60	Outside temperature limit adjustable from +10 to –60 °C.
		F8:–61	Function disabled.
F9:–14	Outside temperature limit for raising the reduced set room temperature to the standard set room temperature –14 °C, see example on page 80	F9:+10 to F9:–60	Outside temperature limit adjustable from +10 to –60 °C
FA:20	Raising of the set boiler water or flow temperature by 20 % when changing from operation with reduced room temperature to operation with standard room temperature. See example on page 80.	FA:0 to FA:50	Temperature rise adjustable from 0 to 50 %.
Fb:60	Time period for raising the set boiler water or set flow temperature (see coding address "FA") 60 min. See example on page 80.	Fb:0 to Fb:150	Time period adjustable from 0 to 300 min. 1 step \cong 2 min.

^{*1} In the "Heating and DHW" operating program, party mode ends **automatically** when the system changes over to operation with standard room temperature.

Calling up the service menu

Press **OK** and **≡** simultaneously for approx. 4 s.

Note

"Coding level 2" is only displayed if this level has been enabled:

Press **OK** and **↶** simultaneously for approx. 4 s.

"Service"	
"Diagnosis"	
	"General"
	"Heating circuit 1/2/3"
	"DHW"
	"Solar"
	"Brief scan"
	"Reset data"
"Actuator test"	
"Coding level 1"	
"Coding level 2"	
"Fault history"	
"Service functions"	
	"Subscriber check"
	"Service PIN"
	"Enter Vitocom PIN code"
	"Service reset"
"Terminate service"	

Closing the service menu

1. Press **OK** and **≡** simultaneously for approx. 4 s.
2. Select **"Terminate service?"**.
3. Select **"Yes"**.
4. Confirm with **OK**.

Note

The system exits the service menu automatically after 30 min.

Scanning operating data

Operating data can be scanned for various areas (see **"Diagnosis"** on page 55).

Operating data on heating circuits with mixer or on a solar thermal system can only be scanned if the relevant components are installed in the system.

For further information on operating data, see chapter "Brief scan".

Note

If a scanned sensor is faulty, "- -" appears on the display.

1. Press **OK** and **≡** simultaneously for approx. 4 s.
2. **"Diagnosis"**
3. Select required group, e.g. **"General"**.

Resetting operating data

Display	Explanation
"Adjusted outside temp"	The adjusted outside temperature is reset to the actual value.
"Max. flue gas temp"	Max. flue gas temp
"Burner"	Burner hours run
"Burner starts"	Burner starts
"Fuel consumption"	Fuel consumption
In conjunction with a solar thermal system:	
"Diff t monitor"	Differential temperature monitoring
"Solar energy"	Solar energy yield
"Sol circ pmp starts"	Starts of the solar circuit pump
"Solar stagnation"	Stagnation time
"Solar circuit pump"	Hours run by the solar circuit pump
"Incorrect circ."	
"SM1 output 22"	Hours run of the actuator at output 22
"SM1 outp.22 starts"	Starts of the actuator at output 22

Saved operating data (e.g. hours run) can be reset to 0.

1. Press **OK** and **≡** simultaneously for approx. 4 s.
2. **"Diagnosis"**

3. **"Reset data"**
4. Select required value or **"All details"**.

Brief scan

In the brief scan, you can scan temperatures, software versions and connected components for example.

1. Press **OK** and **≡** simultaneously for approx. 4 s.
2. **"Diagnosis"**
3. **"Brief scan"**
4. Press **OK**.
The display shows 11 lines with 6 fields each.

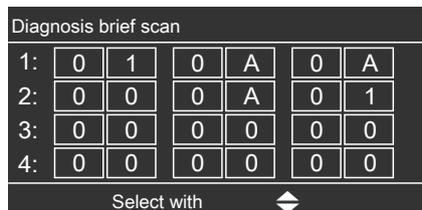


Fig.34

	1	2	3	4	5	6
1:	System scheme 01 to 10		Software version, control unit		Software version, programming unit	
2:	Burner type 0: Single-stage 1: Two-stage 2: Modulating	0	0		Appliance ID CU-ID	
3:	0	0	Number of KM BUS subscribers		Software version, solar control module, type SM1	
4:	0	0	0	0	0	0

Brief scan (cont.)

	1	2	3	4	5	6
5:	0	0	0	0	0	Software version, EA1 extension
6:	0:	0:	0	0	0	0
7:	LON subnet address/system number		LON node address		0	0
8:	SNVT config. 0: Auto 1: Tool	Software version, communic. coproc.	Software version, neuron chip		Subscriber no.	
	Heating circuit HC1		Heating circuit HC2		Heating circuit HC3	
9:	Remote control 0: Without 1: Vitotrol 200A or Vitotrol 200 RF 2: Vitotrol 300A or Vitotrol 300 RF	Software version Remote control	Remote control 0: Without 1: Vitotrol 200A or Vitotrol 200 RF 2: Vitotrol 300A or Vitotrol 300 RF	Software version Remote control	Remote control 0: Without 1: Vitotrol 200A or Vitotrol 200 RF 2: Vitotrol 300A or Vitotrol 300 RF	Software version Remote control
10:	0	0	0	0	0	0
11:	0	0	Software version, mixer extension kit Note <i>The displays in fields 3 and 5 are identical.</i>	0	Software version, mixer extension kit	0

Carrying out an actuator test

1. Press **OK** and  simultaneously for approx. 4 s.
2. "Actuator test"

The actuators listed in the table can be tested at the relay outputs subject to system equipment level and control unit configuration.

Note

Before an actuator is selected, all actuators are switched to zero volt.

Display		Explanation
"All actuators"	Off	All actuators have been switched off.
"Base load"	On	The modulating burner is operated at minimum output.
"Burner"	On	Single stage burner is switched on.
"Burner stage 1"	On	Two-stage burner: Burner stage 1 is switched on.
"Full load"	On	The modulating burner is operated at maximum output.
"Burner stage 1 + 2"	On	Two-stage burner: Burner stages 1 and 2 are switched on.
"Burner modulation"	Open	Modulating burner
"Burner modulation"	Neutral	Modulating burner
"Burner modulation"	Close	Modulating burner
"Output 20"	On	Actuator at output  (heating circuit without mixer A1)
"Cylinder prim pump"	On	Actuator at output 

Carrying out an actuator test (cont.)

Display		Explanation
"DHW circ pump"	On	Actuator at output 28
"Central fault message"	On	Central fault message facility at output 157 of EA1 extension.
"Htg circ pump HC2"	On	Actuator at output 20 of mixer extension kit (heating circuit with mixer M2)
"Mixer HC2"	Open	Actuator at output 52 of mixer extension kit (heating circuit with mixer M2)
"Mixer HC2"	Close	Actuator at output 52 of mixer extension kit (heating circuit with mixer M2)
"Htg circ pump HC3"	On	Actuator at output 20 of mixer extension kit (heating circuit with mixer M3)
"Mixer HC3"	Open	Actuator at output 52 of mixer extension kit (heating circuit with mixer M3)
"Mixer HC3"	Close	Actuator at output 52 of mixer extension kit (heating circuit with mixer M3)
"EA1 output 1"	On	Contact "P - S" on plug 157 of EA1 extension closed.
"Solar circuit pump"	On	Solar circuit pump at output 24 at solar control module, type SM1
"Solar circ pmp min"	On	Solar circuit pump at output 24 at solar control module, type SM1 set to min. speed.
"Solar circ pmp max"	On	Solar circuit pump at output 24 at solar control module, type SM1 set to max. speed.
"SM1 output 22 "	On	Actuator at output 22 at solar control module, type SM1

Information regarding the mixer motor rotational direction

The flow temperature must rise when the mixer opens.

If the temperature drops, the motor is turning in the wrong direction or the mixer set is incorrectly fitted (observe the mixer installation instructions).

Checking the sensors

1. Press **OK** and  simultaneously for approx. 4 s.
2. "Diagnosis"
3. Select group (see page 55).
4. Scan actual temperature of the relevant sensor.

Service indicator

Set limits in coding addresses "1F", "21" and "23" in the "Boiler" group.
When these values are reached, "Service" appears on the display and  flashes.

Note

If a service is carried out prematurely, set code "24:1" in the "Boiler" group to "24:0". The selected service parameters for hours run and time intervals restart at 0.

If coding address "24" is not reset, "Service" will be displayed again on the following Monday.

Acknowledging the service display

1. Follow the instructions on the display.
The service message is transferred to the menu.
2. Service the appliance.

Service indicator (cont.)

3. Reset code "24:1" to "24:0" in the **"Boiler"** group.

Note

If coding address "24" is not reset, "Service" will be displayed again on the following Monday.

4. Press **OK** and **≡** simultaneously for approx. 4 s.

5. **"Service functions"**

6. **"Service reset"**

The selected service parameters for hours run and time intervals restart at 0.

Calling up acknowledged service messages

1. **≡**

2. **"Service"**

Fault display

In the event of a fault, the red fault indicator on the control unit flashes. "Fault" is shown on the display and Δ flashes.
Press **OK** to display the fault code.

For an explanation of the fault code see chapter "Fault codes".
For some faults, the type of fault is also displayed in plain text.

Note

If a central fault message facility is connected, this is started.

Acknowledging a fault display

Follow the instructions on the display.

Note

*The fault message is transferred to the menu.
The central fault message facility, if connected, is switched off.
If an acknowledged fault is not remedied, the fault message will be re-displayed the following day and the fault message facility restarted.*

Calling up acknowledged fault messages

1. \equiv :

2. "Fault"

Calling up fault codes from the fault memory (fault history)

The 10 most recent faults (including those remedied) are saved and can be called up.
Faults are sorted by date.

Press **OK** and \equiv : simultaneously for approx. 4 s.

Note

The list can be deleted.

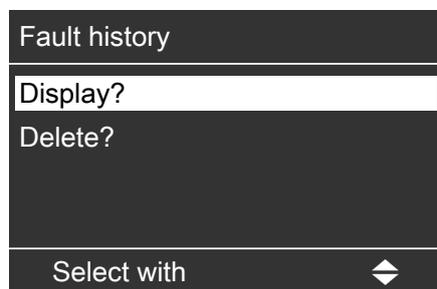


Fig.35

Fault messages

Displayed fault code	System characteristics	Cause	Measures
0F	Control mode	Service "0F" is only displayed in the fault history.	Service the appliance. Note <i>After servicing, select code "24:0".</i>
10	Operates as if the outside temperature was 0 °C.	Short circuit, outside temperature sensor	Check outside temperature sensor (see page 85).
18	Operates as if the outside temperature was 0 °C.	Lead break, outside temperature sensor	Check outside temperature sensor (see page 85).

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
19	Operates as if the outside temperature was 0 °C.	Communication error, wireless outside temperature sensor	Check wireless connection (place wireless outside temperature sensor close to the wireless base station). Log off wireless outside temperature sensor, then log on again. Replace if necessary (see separate installation and service instructions).
30	<ul style="list-style-type: none"> ▪ With DHW cylinder: Circulation pump for cylinder heating on, boiler is maintained at set cylinder temperature. ▪ Without DHW cylinder: Boiler is regulated by the temperature controller. 	Short circuit, boiler water temperature sensor	Check boiler water temperature sensor (see page 84).
38	<ul style="list-style-type: none"> ▪ With DHW cylinder: Circulation pump for cylinder heating on, boiler is maintained at set cylinder temperature. ▪ Without DHW cylinder: Boiler is regulated by the temperature controller. 	Lead break, boiler water temperature sensor	Check boiler water temperature sensor (see page 84).
40	Mixer is being closed.	Short circuit, flow temperature sensor, heating circuit with mixer M2 (heating circuit 2)	Check the flow temperature sensor (see page 84).
44	Mixer is being closed.	Short circuit, flow temperature sensor, heating circuit with mixer M3 (heating circuit 3)	Check the flow temperature sensor (see page 84).
48	Mixer is being closed.	Lead break, flow temperature sensor, heating circuit with mixer M2 (heating circuit 2)	Check the flow temperature sensor (see page 84).
4C	Mixer is being closed.	Lead break, flow temperature sensor, heating circuit with mixer M3 (heating circuit 3)	Check the flow temperature sensor (see page 84).
50	Circulation pump for cylinder heating on: Set cylinder temperature = set boiler water temperature; priorities are cancelled.	Short circuit, cylinder temperature sensor	Check cylinder temperature sensor (see page 84).
52	No heating of heating water buffer cylinder	Short circuit, buffer temperature sensor	Check buffer temperature sensor (see page 84).
58	Circulation pump for cylinder heating on: Set cylinder temperature = set boiler water temperature; priorities are cancelled.	Lead break, cylinder temperature sensor	Check cylinder temperature sensor (see page 84).



Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
5A	No heating of heating water buffer cylinder	Lead break, buffer temperature sensor	Check buffer temperature sensor (see page 84). Without buffer temperature sensor: Set code "52:0" in the "General" group.
90	Control mode	Short circuit, temperature sensor [7], connection at the solar control module, type SM1.	Check temperature sensor [7] (see separate installation and service instructions).
91	Control mode	Short circuit, temperature sensor [10], connection at the solar control module, type SM1.	Check temperature sensor [10] (see separate installation and service instructions).
92	No solar DHW heating	Short circuit, collector temperature sensor, connection of temperature sensor [6] at the solar control module, type SM1, or at S1 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
93	Control mode	Short circuit, temperature sensor, connection at S3 of the Vitosolic	Check sensor at the solar control unit (see separate installation and service instructions).
94	No solar DHW heating	Short circuit, cylinder temperature sensor, connection of temperature sensor [6] at the solar control module, type SM1, or at S2 of the Vitosolic	Check sensor at the solar control unit (see separate installation and service instructions).
98	Control mode	Lead break, temperature sensor [7], connection at the solar control module, type SM1.	Check temperature sensor [7] (see separate installation and service instructions).
99	Control mode	Lead break, temperature sensor [10], connection at the solar control module, type SM1.	Check temperature sensor [10] (see separate installation and service instructions).
9 A	No solar DHW heating	Lead break, collector temperature sensor, connection of temperature sensor [6] at the solar control module, type SM1, or at S1 of the Vitosolic.	Check sensor at the solar control unit (see separate installation and service instructions).
9b	Control mode	Lead break, temperature sensor, connection at S3 of the Vitosolic	Check sensor at the solar control unit (see separate installation and service instructions).
9C	No solar DHW heating	Lead break, cylinder temperature sensor, connection of temperature sensor [6] at the solar control module, type SM1, or at S2 of the Vitosolic	Check sensor at the solar control unit (see separate installation and service instructions).

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
9E	Control mode	No flow rate in solar circuit or flow rate too low, or temperature limiter has responded.	Check solar circuit pump and solar circuit. Acknowledge fault message (see separate installation and service instructions).
9F	Control mode	Fault, solar control module, type SM1 or Vitosolic Displayed if a fault occurs at these devices that has no fault code in the Vitotronic.	Check solar control unit (see separate installation and service instructions).
A7	Control mode with incorrect time	Incorrect time set	Reset time.
b0	Control mode	Short circuit, flue gas temperature sensor	Check the flue gas temperature sensor (see page 85).
b1	Control mode	Communication error, programming unit	Check connections, replace the programming unit if required.
b5	Control mode	Internal fault	Check PCB is plugged in correctly (see parts list).
b7	Boiler is regulated by the temperature controller.	Coding card fault	Plug in or replace the boiler coding card (see page 10).
b8	Control mode	Lead break, flue gas temperature sensor	Check the flue gas temperature sensor (see page 85). Without flue gas temperature sensor: Set code "1F:0" in the "Boiler" group.
b9	Control mode	Internal fault	Acknowledge fault message, repeat data input.
bA	Mixer of heating circuit 2 continues to regulate.	Communication error, mixer extension kit	Check connections and rotary selector setting (see page 87).
bb	Mixer of heating circuit 3 continues to regulate.	Communication error, mixer extension kit	Check connections and rotary selector setting (see page 87).
bC	Control mode without remote control	Communication error, Vitotrol remote control unit, heating circuit without mixer A1 (heating circuit 1)	Check connections, cable (see separate installation and service instructions) and coding address "A0" in the "Heating circuit..." group. With wireless remote control: Place the remote control near the wireless base station and check connection (see separate installation and service instructions).
bd	Control mode without remote control	Communication error, Vitotrol remote control, heating circuit with mixer M2 (heating circuit 2)	Analogue fault code "bc"
bE	Control mode without remote control	Communication error, Vitotrol remote control, heating circuit with mixer M3 (heating circuit 3)	Analogue fault code "bc"
bF	Control mode No communication via LON	Incorrect LON communication module	Replace LON communication module.



Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
C1	Control mode	Communication error, EA1 extension	Check connections (see page 91). Without EA1 extension: Set code "35:0" in the "General" group.
C2	Control mode	Lead break, KM BUS to solar control module or to Vitosolic	Check KM BUS cable and appliance. Without solar control unit: Set code "54:0" in the "General" group.
Cd	Control mode	Communication error, Vitocom 100	Check connections and Vitocom 100 (see separate installation and service instructions). Without Vitocom 100: Set code "95:0" in the "General" group.
CF	Control mode No communication via LON	Communication error, LON communication module of the control unit	Check LON communication module and replace if required. Without LON communication module: Set code "76:0" in the "General" group.
d1	Boiler cools down.	Burner fault	Check the burner.
d6	Control mode	Input DE1 at EA1 extension reports a fault.	Remedy fault at appliance concerned.
d7	Control mode	Input DE2 at EA1 extension reports a fault.	Remedy fault at appliance concerned.
d8	Control mode	Input DE3 at EA1 extension reports a fault.	Remedy fault at appliance concerned.
dA	Control mode without room influence	Short circuit, room temperature sensor, heating circuit without mixer A1 (heating circuit 1)	Check room temperature sensor (see page 84).
db	Control mode without room influence	Short circuit, room temperature sensor, heating circuit with mixer M2 (heating circuit 2)	Check room temperature sensor (see page 84).
dC	Control mode without room influence	Short circuit, room temperature sensor, heating circuit with mixer M3 (heating circuit 3)	Check room temperature sensor (see page 84).
dd	Control mode without room influence	Lead break, room temperature sensor, heating circuit without mixer A1 (heating circuit 1)	Check room temperature sensor (see page 84) and remote control settings (see separate installation and service instructions).
dE	Control mode without room influence	Lead break, room temperature sensor, heating circuit with mixer M2 (heating circuit 2)	Analogue fault code "dd"
dF	Control mode without room influence	Lead break, room temperature sensor, heating circuit with mixer M3 (heating circuit 3)	Analogue fault code "dd"

Fault messages (cont.)

Note

"Subscriber fault" ... is displayed in the case of LON subscriber faults.

Faults that are not displayed at the programming unit

Boiler cold, burner does not start

Enable emissions test function (see operating instructions).

▪ **The pumps connected at the control unit are not running** ⇒

Check the operating voltage (mains isolator, power cable, plug [40], ON/OFF switch, fuse F1, 6.3 A (slow)).

Fuse F1 faulty:

1. Pull out all 230 V plugs from the control unit (pumps, burner).
2. Replace the F1 fuse.
3. To determine the faulty device, reconnect all 230 V devices in sequence, until the faulty device is identified.

▪ **Pumps are running** ⇒

Is plug [41] 'live' between L1 and N?

No	Yes			
Check plug [41], burner connecting cable and high limit safety cut-out, as well as any other limiters (low water indicator, pressure limiter, etc.) that may be installed.	The fault is unlikely to be due to the control unit; instead the burner connection area or the burner itself may be the cause: Is terminal T1 of plug [41] 'live' when connected?			
	<table border="1"> <tr> <td>No</td> <td>Yes</td> </tr> <tr> <td>Check any burner equipment (fuses, gas pressure switch, etc.).</td> <td>Check the temperature controller; the burner must start in accordance with the selected delay (e.g. oil pre-heating). If the burner is still not operating, repeat the previous checks. It may be that faulty accessories are preventing the burner from starting.</td> </tr> </table>	No	Yes	Check any burner equipment (fuses, gas pressure switch, etc.).
No	Yes			
Check any burner equipment (fuses, gas pressure switch, etc.).	Check the temperature controller; the burner must start in accordance with the selected delay (e.g. oil pre-heating). If the burner is still not operating, repeat the previous checks. It may be that faulty accessories are preventing the burner from starting.			

Boiler water temperature is too high or too low

Compare the actual and the set boiler water temperature.

▪ **Set value too high or too low** ⇒

Check the settings for the set room temperatures, time phases, heating curves and coding addresses (at the control unit and any remote controls that may be installed):

1. Select very high standard set room temperature and very low reduced set room temperature.
2. Set time phases so that in the next few minutes, the system will change from operation at standard room temperature to operation at reduced room temperature or vice versa.
3. The changeover must effect a significant set value change for the boiler water temperature.
4. Check external hook-ups (e.g. EA1 extension).

▪ **Set value OK** ⇒

The fault lies with temperature capture.

1. Check the boiler water temperature with a thermometer inside the sensor well.
2. Compare the values from the boiler water temperature sensor with the pressure drop curve.
3. Check the switch-off point of the electromechanical temperature controller.

Boiler hot enough, but the heating circuit pump connected to the control unit is not running

Enable emissions test function (see operating instructions).

▪ **Heating circuit pump is running** ⇒

Check heating curve, set values and heating circuit pump logic, possibly also external hook-ups or high DHW demand.



Faults that are not displayed at the... (cont.)

▪ **Heating circuit pump not running** ⇒

Is plug  'live' between L and N?

No	Yes
<p>Check fuse F1, 6.3 A (slow). If the fuse has blown:</p> <ol style="list-style-type: none"> 1. Pull plug . 2. Replace the F1 fuse. 3. Repeat this test if fuse F1 remains intact but the pump connection does not go 'live'. Possibly replace the main PCB. 	<ol style="list-style-type: none"> 1. Check pump connection and pump. 2. Check any further switching devices that may be installed (e.g. maximum temperature controller).

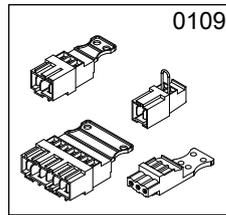
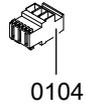
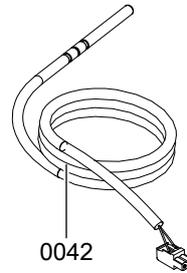
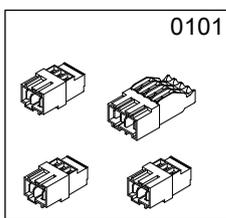
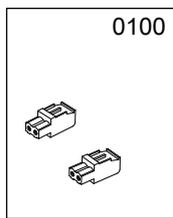
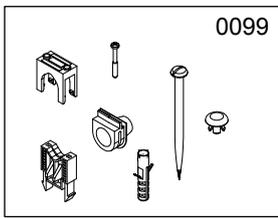
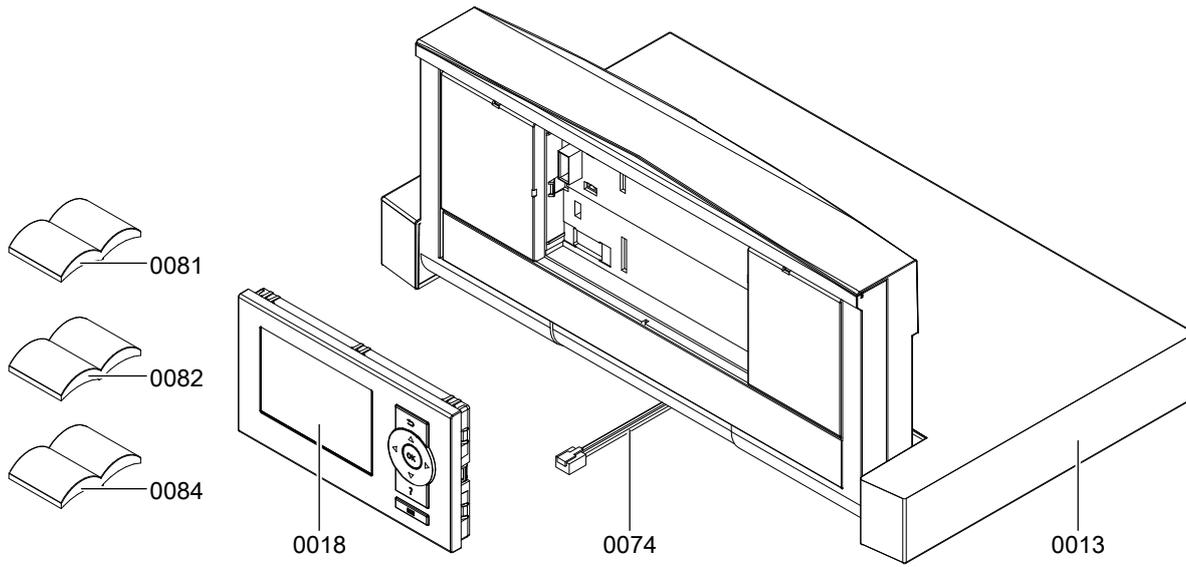
Ordering parts

The following details are required when ordering parts:

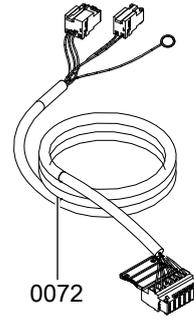
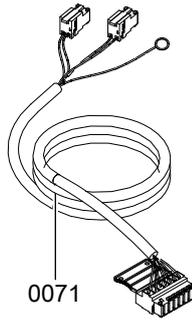
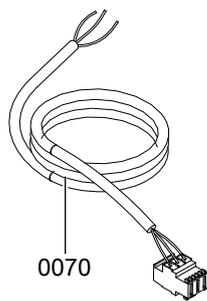
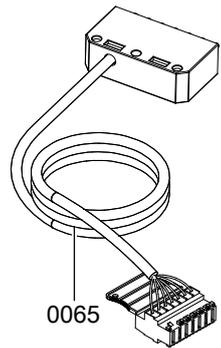
- Serial no. (see type plate (A))
- Assembly (from this parts list)
- Position number of the individual part within the assembly (from this parts list)

Parts lists

Parts list type KO1B



0042



0065

0070

0071

0072

Fig.36

Parts list type KO1B (cont.)

Pos.	Part
0013	Casing, upper part (drawer)
0018	Programming unit
0042	Temperature sensor with plug
0065	Burner connecting cable with plug [41] (for boilers with pressure-jet oil/gas burners)
0070	Power cable with plug [40]
0071	5-core burner connecting cable with plug [41] (for boilers with an intermittent ignition system)
0072	6-core burner connecting cable with plug [41] (for boilers with an intermittent ignition system)
0074	Connecting cable
0081	Operating instructions
0082	Abridged operating instructions
0084	Installation and service instructions
0099	Fixing screws
0100	Plugs for sensors (5 pce) and plugs for KM BUS (2 pce)
0101	Plugs for pumps (3 pce) and plug [96]
0102	Plugs "X12" (3 pce)
0104	Power plug [40] (3 pce)
0109	Burner plugs [41], [90], [151] and [191]

Parts list type KO1B (cont.)

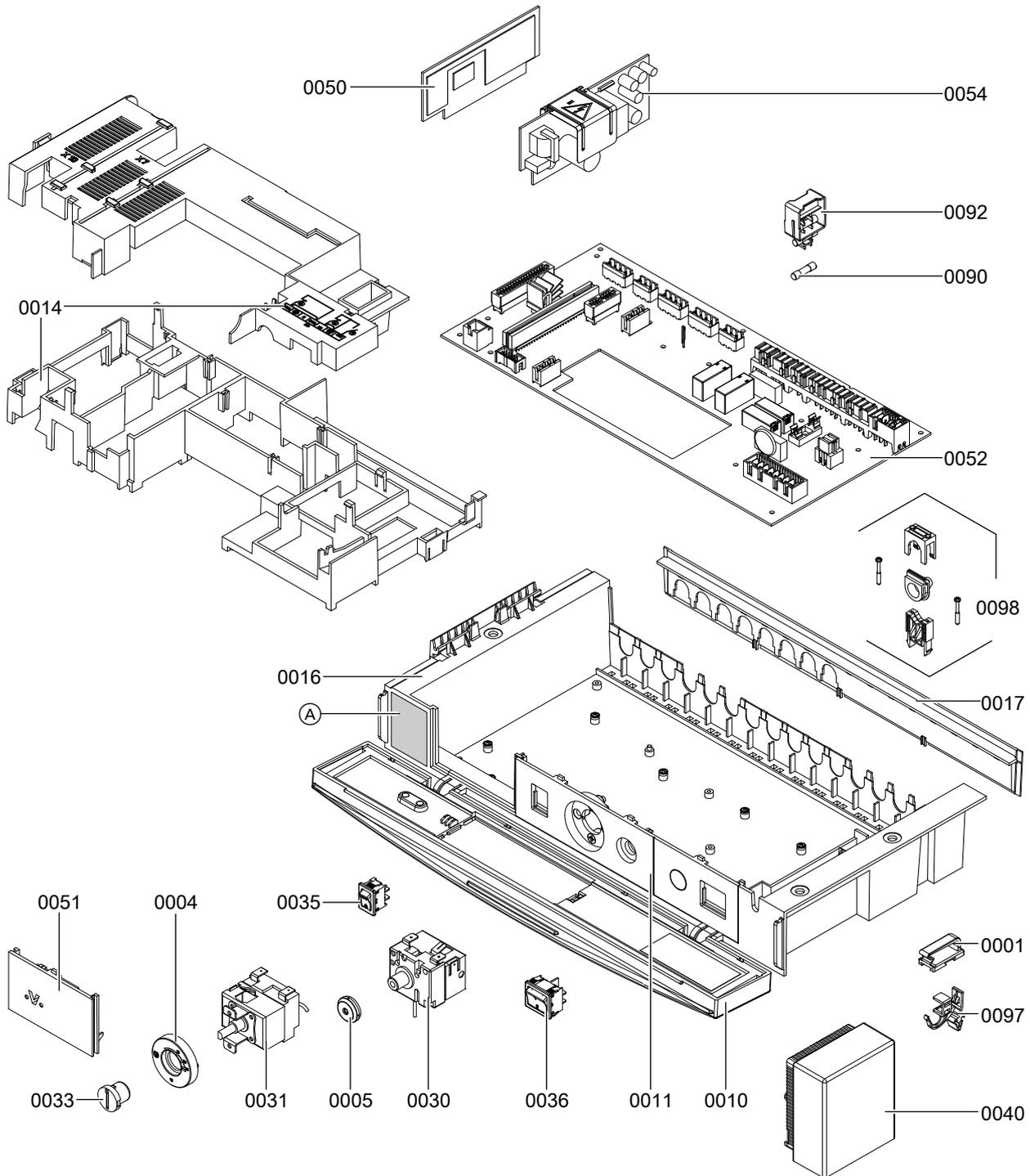


Fig.37

Ⓐ Type plate

Parts list type KO1B (cont.)

Pos.	Part
0001	Cable clamp
0004	Stop dial for temperature controller
0005	Plug for high limit safety cut-out
0010	Front cover
0011	Front user panel, bottom right
0014	PCB covers
0016	Casing, lower section
0017	Back cover
0030	High limit safety cut-out
0031	Temperature controller
0033	Temperature controller rotary selector
0035	Pushbutton, single pole (" Test " button)
0036	Switch, 2-pole (ON/OFF switch)
0040	Outside temperature sensor
0050	PCB
0051	Optolink PCB
0052	Main PCB
0054	Power supply unit PCB
0090	Fuse 6.3 A (slow), 250 V~
0092	Fuse holder
0097	Snap-in hook
0098	Strain relief fittings and cable entries

Parts list type KO2B

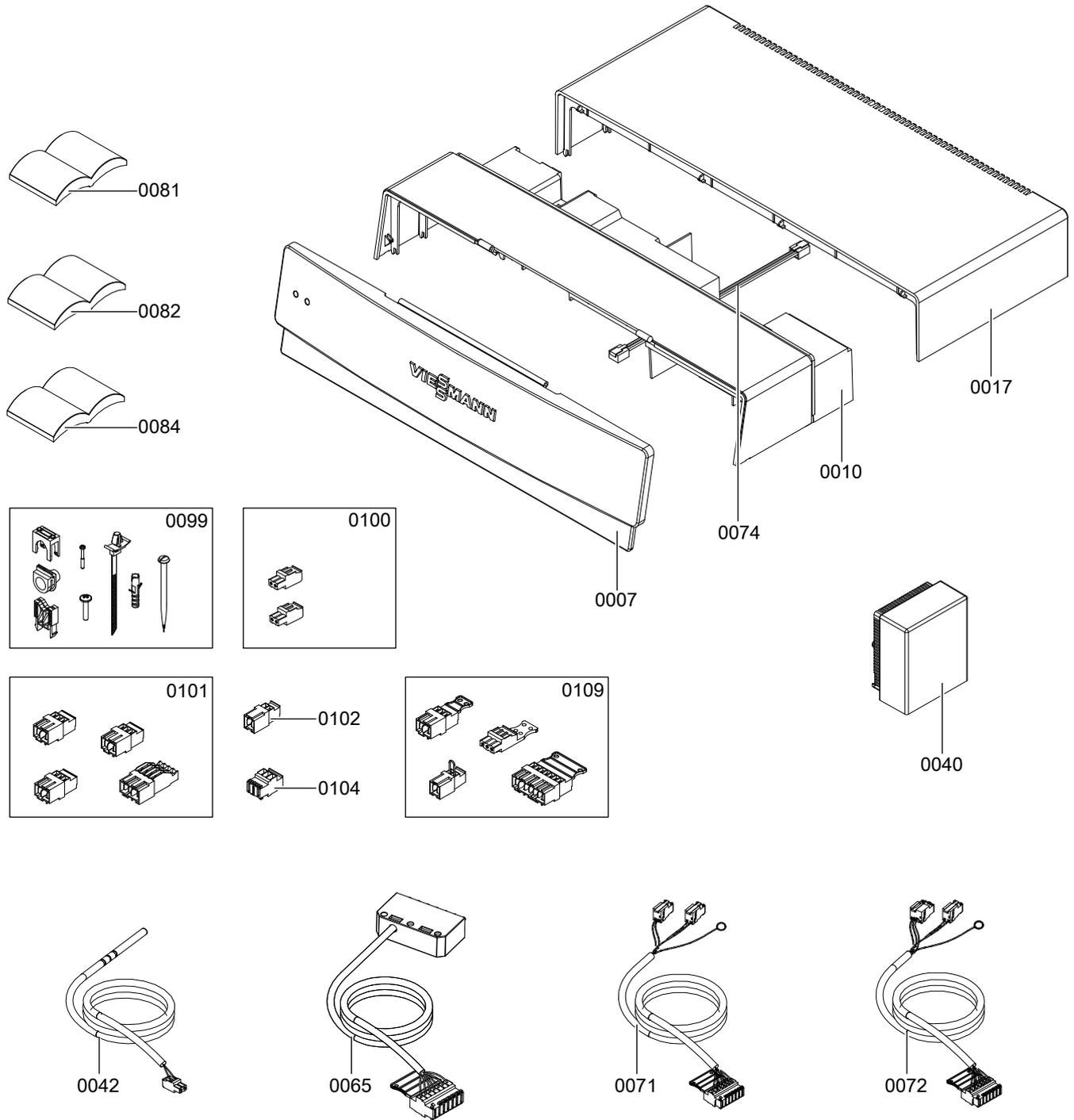


Fig.38

Parts list type KO2B (cont.)

Pos.	Part
0007	Front cover
0010	Casing, upper part
0017	Casing, upper part, back
0040	Outside temperature sensor
0042	Temperature sensor with plug
0065	Burner connecting cable with plug 41 (for boilers with pressure-jet oil/gas burners)
0071	5-core burner connecting cable with plug 41 (for boilers with an intermittent ignition system)
0072	6-core burner connecting cable with plug 41 (for boilers with an intermittent ignition system)
0074	Connecting cable
0081	Operating instructions
0082	Abridged operating instructions
0084	Installation and service instructions
0099	Fixing screws
0100	Plugs for sensors (5 pce) and plugs for KM BUS (2 pce)
0101	Plugs for pumps (3 pce) and plug 96
0102	Plugs "X12" (3 pce)
0104	Power plug 40 (3 pce)
0109	Burner plugs 41 , 90 , 151 and 191

Parts list type KO2B (cont.)

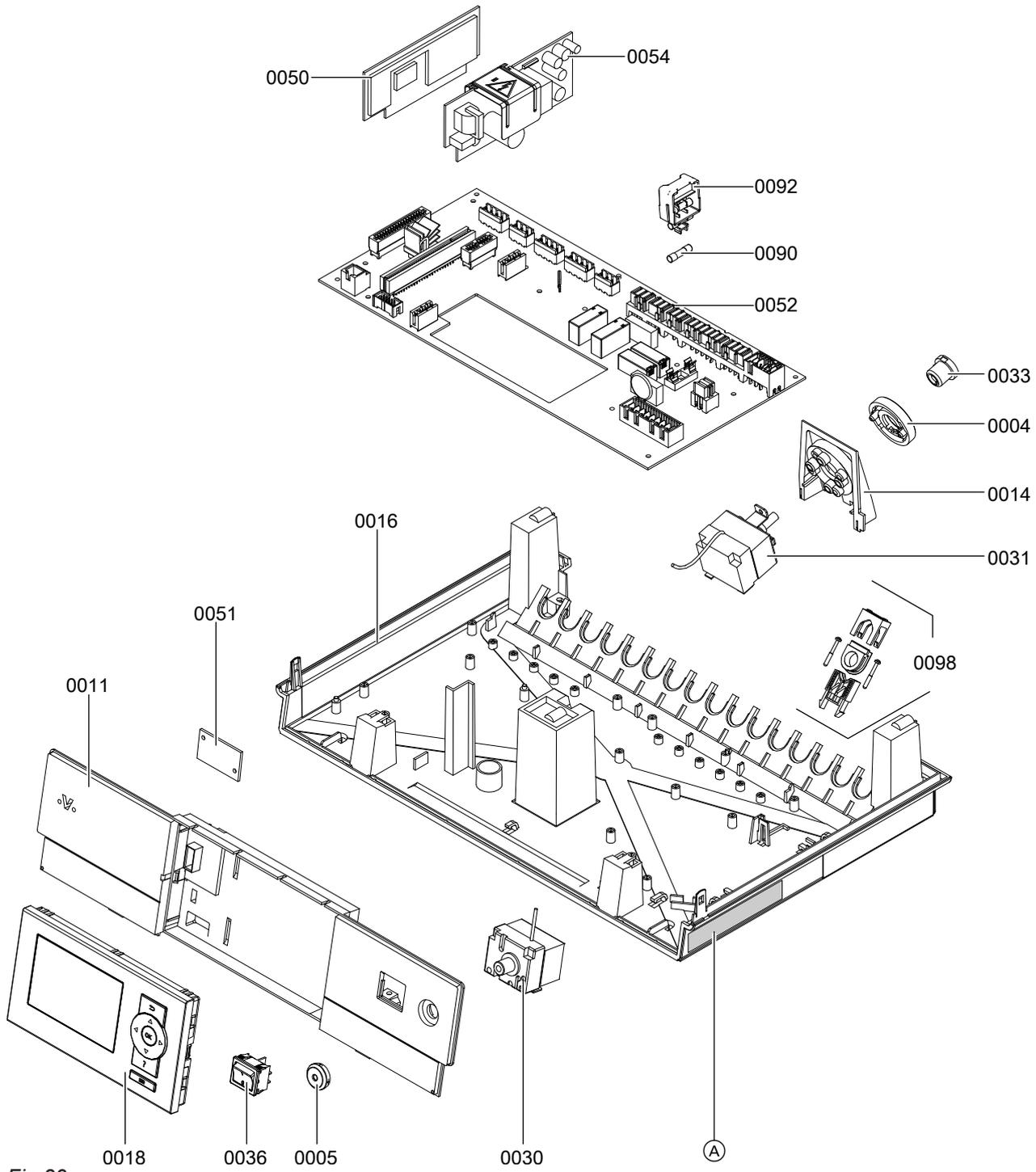


Fig.39

Parts list type KO2B (cont.)

Pos.	Part
0004	Stop dial for temperature controller
0005	Plug for high limit safety cut-out
0011	Front user panel
0014	Temperature controller bracket
0016	Casing, lower section
0018	Programming unit
0030	High limit safety cut-out
0031	Temperature controller
0033	Temperature controller rotary selector
0036	Switch, 2-pole (ON/OFF switch)
0050	PCB
0051	Optolink PCB
0052	Main PCB
0054	Power supply unit PCB
0090	Fuse 6.3 A (slow), 250 V~
0092	Fuse holder
0098	Strain relief fittings and cable entries

Boiler water temperature control

Brief description

- The boiler water temperature is regulated by starting or stopping the burner or through modulation. In the delivered condition, the switching differential is ± 2 K, relative to the current set value.
- The set boiler water temperature is determined from the following parameters:
 - Set flow temperature of the heating circuits connected to the control unit and the heating circuits connected via the LON BUS
 - External demand
 - Set DHW temperature
- The boiler coding card specifies a minimum boiler water temperature that must be maintained to protect the boiler.
- When the DHW cylinder is heated, the default set boiler water temperature is 20 K above the set DHW temperature (adjustable via coding address "60" in the "DHW" group).

Functions

The boiler water temperature is captured by the following equipment:

- High limit safety cut-out STB (liquid expansion)
- Temperature controller TR (liquid expansion)
- Boiler water temperature sensor NTC 10 k Ω

Upper control range limits:

- High limit safety cut-out STB 110/100/95 °C
- Temperature controller TR 75/87/95 °C
- Electronic maximum temperature limit:
 - Setting range: 20 to 127 °C
 - Changed via coding address "06" in the "Boiler" group.
 The limit is only effective within the control range (not for DHW cylinder heating).

Lower control range limits:

In standard mode and when frost protection is enabled, the boiler water temperature will be regulated subject to the respective boiler.

Auxiliary circuits

- Extension for controlling a two-stage/modulating burner (see page 21).
- External hook-ups (messages) via EA1 extension (see page 91).
- Plug "X12" for external burner start (see page 18).
- Plug 96 for external demand (see page 19) or external blocking (see page 20).

Switching hysteresis, burner

Permanent switching hysteresis

Code "04:0"

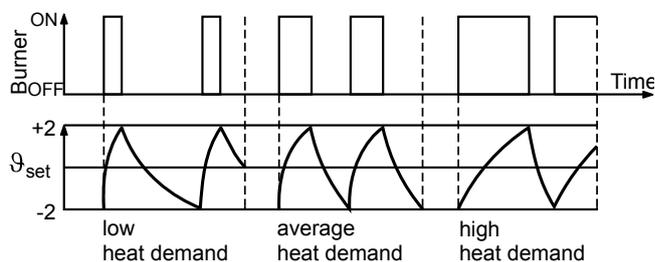


Fig.40

Heat demand-dependent switching hysteresis

The heat demand-dependent switching hysteresis takes the boiler utilisation level into account. The switching hysteresis, i.e. the burner runtime, varies subject to the current heat demand.

ERB50 function

Code "04:1"

Depending on the heat demand, values between 6 and 12 K result.

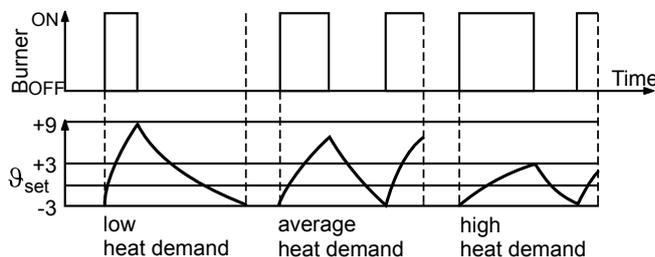


Fig.41

ERB80 function

Code "04:2"

Depending on the heat demand, values between 6 and 20 K result.

Boiler water temperature control (cont.)

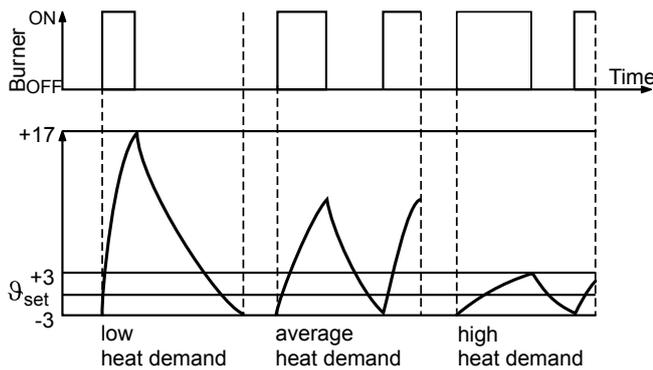


Fig.42

Control sequence for burner switching hysteresis of 4 K

Boiler goes cold

(Set value -2 K)

The burner start signal is set at the set boiler water temperature -2 K. The burner starts its own monitoring program.

The burner start may be delayed by a few minutes, depending on the number of auxiliary circuits and the combustion type.

Boiler heats up

(set value $+2$ K)

The burner shuts down.

Modulating burner:

The burner stop point is determined by the stop differential (coding address "13").

Heating circuit control unit

Brief description

- The control unit has control circuits for one heating circuit without mixer A1 (heating circuit 1) and 2 heating circuits with mixer M2 (heating circuit 2) and M3 (heating circuit 3).
- The set flow temperature of each heating circuit is determined from the following parameters:
 - Outside temperature
 - Set room temperature
 - Operating mode
 - Heating curve slope and level
- The flow temperature of the heating circuit without mixer is equal to the boiler water temperature.
- The flow temperature of the heating circuits with mixer is regulated by the stepped opening or closing of the mixers.
 - The mixer motor control changes the actuating and pause times subject to the control differential (control deviation).

Functions

The heating circuit without mixer is subject to the boiler water temperature and its control range limits.

The heating circuit pump is the only actuator.

The flow temperature of the heating circuits with mixer is captured by the flow temperature sensor of the relevant heating circuit.

Time program

The control unit switches between "Central heating with standard room temperature" and "Central heating with reduced room temperature" in line with the time program in the "Heating and DHW" operating program.

Every operating mode has its own set level.

You can set up to 4 time phases.

Outside temperature

A heating curve must be set to adjust the control unit to the building and the heating system.

The heating curve characteristics determine the set boiler water temperature subject to outside temperature. The control unit regulates in line with an average outside temperature. This is composed of the actual and the adjusted outside temperature.

Heating circuit control unit (cont.)

Room temperature

In conjunction with a remote control and room temperature hook-up (coding address "b0" in the **"Heating circuit..."** group):

The room temperature has a greater influence on the set boiler water temperature than the outside temperature has. Changed via coding address "b2" in the **"Heating circuit..."** group.

DHW temperature

Priority control

- With priority control: (code "A2:2" in the **"Heating circuit..."** group):
The set flow temperature is set to 0 °C during cylinder heating.
The mixer closes and the heating circuit pump is switched off.
- Without priority control:
The heating circuit control unit continues to operate with the same set value.
- With modulating priority control in conjunction with heating circuits with mixer:
The heating circuit pump remains switched on. The set flow temperature of the heating circuits will be reduced, for as long as the set boiler water temperature has not been reached during cylinder heating. The set flow temperature is determined from the following parameters:
 - Outside temperature
 - Differential between the set and the actual boiler water temperature
 - Heating curve slope and level
 - Setting of coding address "A2" in the **"Heating circuit..."** group

Heating circuit pump logic – Economy circuits

The heating circuit pump is switched off (set flow temperature set to 0 °C) if one of the following criteria is met:

- The outside temperature exceeds the value selected via coding address "A5" in the **"Heating circuit..."** group.
- The adjusted outside temperature exceeds the value selected via coding address "A6" in the **"Heating circuit..."** group.
- The mixer has been attempting to close for more than 12 min. (mixer economy function, coding address "A7" in the **"Heating circuit..."** group).

- The duration of the pump idle time selected via coding address "A9" in the **"Heating circuit..."** group has been reached.

Precondition:

- There is no risk of frost.
- Coding address "b0" in the **"Heating circuit..."** group must be set to 0.

Note

If, during the pump idle time, the system is switched to heating mode or the set room temperature is increased, the heating circuit pump is switched ON, even if the time has not yet elapsed.

- The actual room temperature exceeds the value selected via coding address "b5" in the **"Heating circuit..."** group.

Screed drying

- In conjunction with a heating circuit with mixer.
- For drying screeds, observe the information provided by the screed manufacturer.
- The heating circuit pump of the heating circuit with mixer is switched on and the flow temperature is maintained in accordance with the selected profile.
- After completion (30 days), the mixer circuit will automatically be regulated via the set parameters again.
- Observe EN 1264.
- The report to be provided by the heating contractor must contain the following details regarding heat-up:
 - Heat-up data with respective flow temperatures
 - Max. flow temperature achieved
 - Operating state and outside temperature at time of heating system handover
- The various temperature profiles are adjustable via coding address "F1" in the **"Heating circuit..."** group.
- The function continues after power failure or after the control unit has been switched off. When the screed drying function ends or code "F1:0" is set manually, the **"Heating and DHW"** operating program is activated.

Temperature profile 1: (EN 1264-4) code "F1:1"

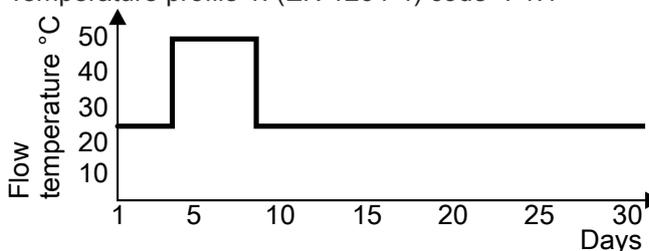


Fig.43

Heating circuit control unit (cont.)

Temperature profile 2: (ZV parquet and flooring technology) code "F1:2"

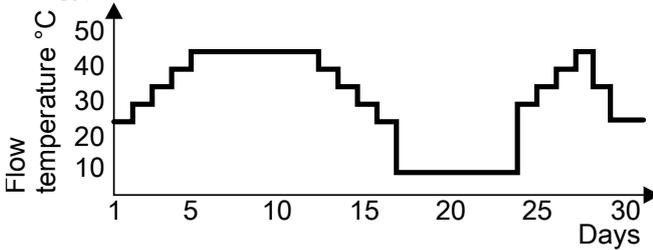


Fig.44

Temperature profile 3: Code "F1:3"

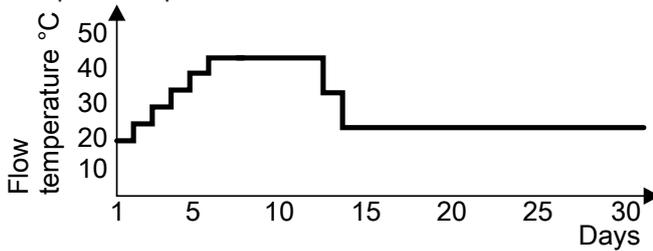


Fig.45

Temperature profile 4: Code "F1:4"

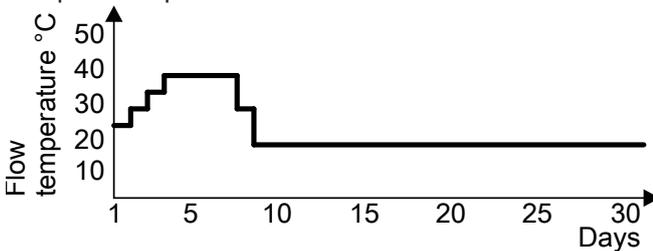


Fig.46

Temperature profile 5: Code "F1:5"

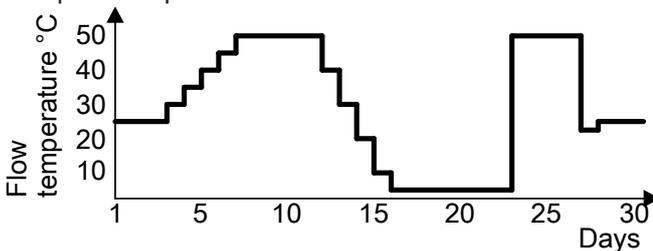


Fig.47

Temperature profile 6: Code "F1:6"

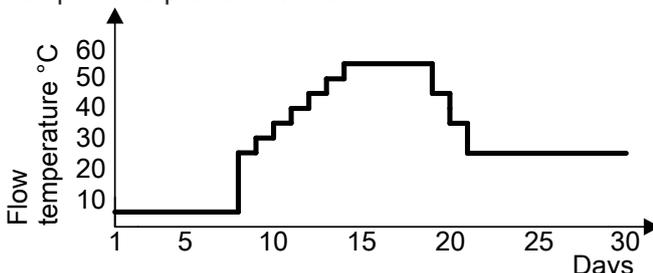


Fig.48

Temperature profile 7: Code "F1:15"

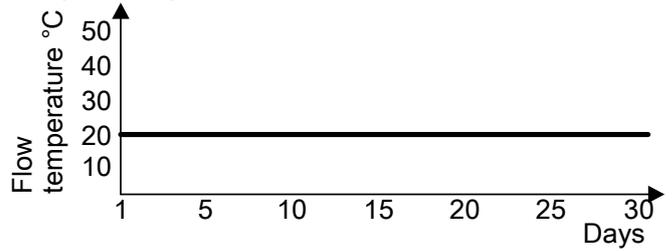


Fig.49

System dynamics

You can influence the control characteristics of the mixers via coding address "C4".

Frost protection

The flow temperature is maintained in accordance with the heating curve for the reduced set room temperature, but at min. 10 °C.

A variable frost limit can be set in accordance with coding address "A3" in the "Heating circuit..." group.

Flow temperature control

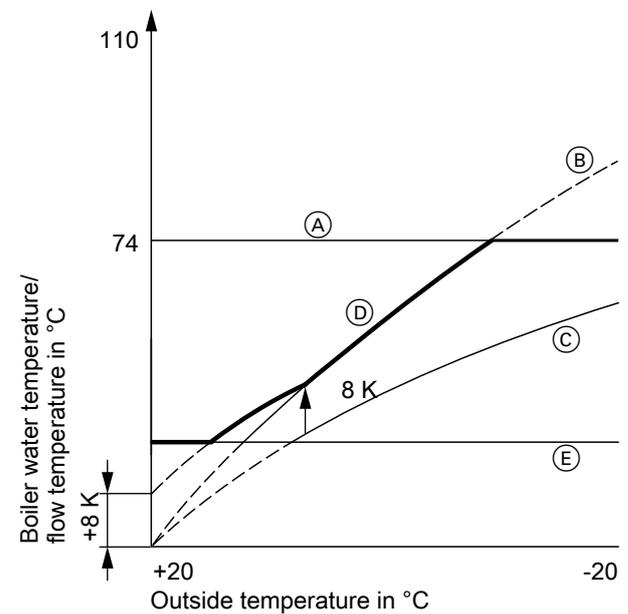


Fig.50

- (A) Electronic maximum boiler water temperature limit
- (B) Slope = 1.8 for heating circuit without mixer
- (C) Slope = 1.2 for heating circuit with mixer
- (D) Boiler water temperature (at differential temperature = 8 K)
- (E) Lower boiler water temperature, defaulted by the boiler coding card

Differential temperature:

The differential temperature can be adjusted via coding address "9F" in the "General" group.

Function description

Heating circuit control unit (cont.)

Delivered condition: 8 K.

The differential temperature is the minimum value by which the boiler water temperature should be higher than the highest currently required flow temperature of the heating circuit with mixer.

- System with only one heating circuit with mixer:
The set boiler water temperature is automatically regulated to 8 K above the set flow temperature.
- System with a heating circuit without mixer and a heating circuit with mixer:
The set boiler water temperature operates in accordance with its own heating curve. The differential temperature of 8 K to the set flow temperature is preset at the factory.

Raising the reduced room temperature

During operation with reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature. The temperature is raised in accordance with the selected heating curve, but **no higher** than the set standard room temperature.

Example using the settings in the delivered condition

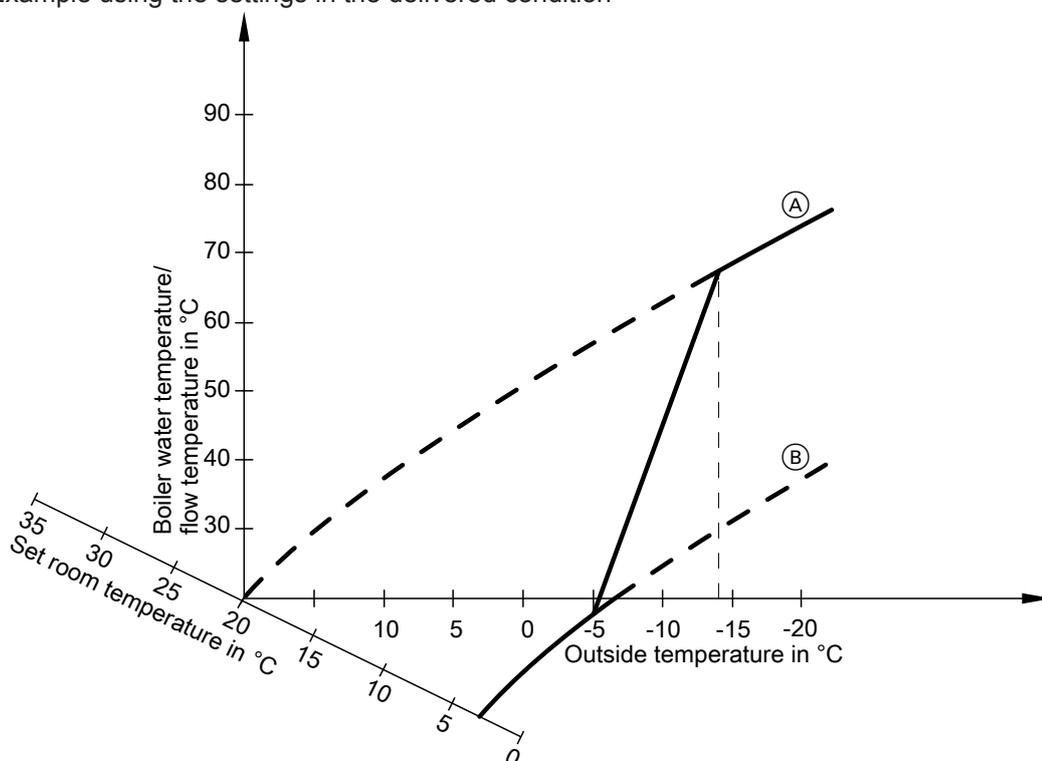


Fig. 51

- Ⓐ Heating curve for operation with standard room temperature
- Ⓑ Heating curve for operation with reduced room temperature

Reducing the heat-up time

During the transition from operation with reduced room temperature to operation with standard room temperature, the boiler water or flow temperature will be raised in accordance with the selected heating curve. This boiler water temperature/flow temperature increase can be initiated automatically.

The value and duration of the additional increase of the set boiler water or flow temperature can be adjusted in coding addresses "FA" and "Fb".

Heating circuit control unit (cont.)

Example using the settings in the delivered condition

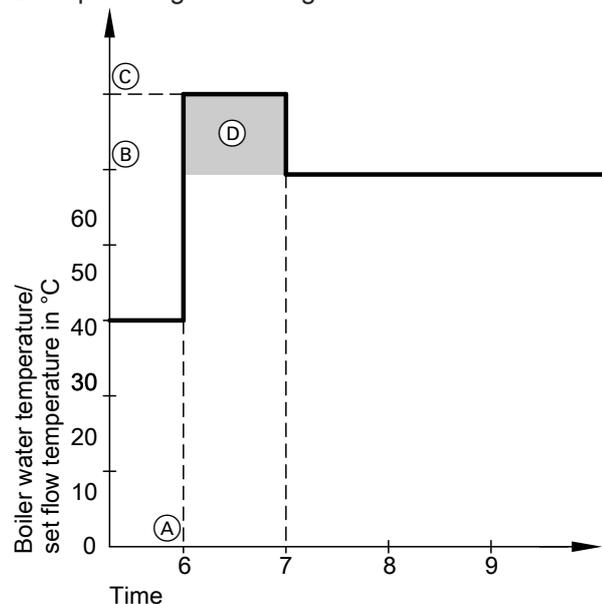


Fig.52

- (A) Start of operation with standard room temperature
- (B) Set boiler water/flow temperature in accordance with the selected heating curve
- (C) Set boiler water/flow temperature in accordance with coding address "FA":
 $50\text{ °C} + 20\% = 60\text{ °C}$
- (D) Duration of operation with raised set boiler water/flow temperature in accordance with coding address "Fb":
 60 min

Control sequence

Mixer circuit

The mixer motor will not be controlled within the "neutral zone" ($\pm 1\text{ K}$).

Flow temperature drops

(Set value -1 K)

The mixer motor receives the signal "Mixer open". The signal duration lengthens with an increasing control differential. The duration of pauses reduces with an increasing control differential.

Flow temperature rises

(Set value $+1\text{ K}$)

The mixer motor receives the signal "Mixer close". The signal duration lengthens with an increasing control differential. The duration of pauses reduces with an increasing control differential.

Cylinder temperature control

Brief description

- Cylinder temperature control is a constant temperature control. It operates by starting and stopping the circulation pump for cylinder heating. The switching differential is ± 2.5 K.
- When the DHW cylinder is heated, the default set boiler water temperature is 20 K above the set DHW temperature (adjustable via coding address "60" in the "DHW" group).

Functions

Time program

An automatic or an individual time program may be selected for DHW heating and the DHW circulation pump. Compared with the heating circuit heat-up phase, DHW heating starts 30 min earlier in automatic mode. The individual time program enables up to 4 time phases per day to be set for DHW heating and the DHW circulation pump for every day of the week. All cylinder heating sequences will be completed independently of the time program.

In conjunction with coding address "7F" in the "General" group

- Detached house
Code "7F:1":
 - Automatic mode
The heating times for heating circuit 1 are applied to systems with two or three heating circuits.
 - Individual time program
The time phases for DHW heating and the DHW circulation pump have the same effect on all heating circuits.
- Apartment building
Code "7F:0":
 - Automatic mode
For systems with two or three heating circuits, the heating times for the relevant heating circuit will be applied.
 - Individual time program
The time phases for DHW heating and the DHW circulation pump can be adjusted **individually for each heating circuit**.

Priority control

- With priority control: (code "A2:2" in the "Heating circuit..." group):
 - The set flow temperature is set to 0 °C during cylinder heating.
 - The mixer closes and the heating circuit pump is switched off.
- Without priority control:
 - The heating circuit control unit continues to operate with the same set value.
- With modulating priority control in conjunction with heating circuits with mixer:
 - The heating circuit pump remains switched on. The set flow temperature of the heating circuits will be reduced, for as long as the set boiler water temperature has not been reached during cylinder heating. The set flow temperature is determined from the following parameters:
 - Outside temperature
 - Differential between the set and the actual boiler water temperature
 - Heating curve slope and level
 - Setting of coding address "A2" in the "Heating circuit..." group

Frost protection

The DHW cylinder will be heated to 20 °C if the DHW temperature sinks below 5 °C.

Auxiliary function for DHW heating

Select a second set DHW temperature in coding address "58" in the "DHW" group. This function is enabled by setting the fourth DHW time phase for DHW heating.



Operating instructions

Set DHW temperature

The set DHW temperature can be adjusted between 10 and 60 °C.

Cylinder temperature control (cont.)

The set value range can be extended to 90 °C at coding address "56" in the **"DHW"** group.

DHW circulation pump

This delivers hot water to the draw-off points at adjustable times.

Four time phases can be selected at the control unit for every day.

Auxiliary circuits

With extension EA1:

DHW heating can be blocked or enabled by switching the heating program (see coding address "d5" in the **"Heating circuit..."** group).

The DHW circulation pump can be controlled for a short period via a floating contact. The time is adjustable via coding address "3d" in the **"General"** group.

System with solar control unit

A third set DHW temperature can be specified in coding address "67" in the **"DHW"** group.

The DHW cylinder is only reheated by the boiler if the temperature falls below this value.

Control sequence

Code "55:0", cylinder heating

The DHW cylinder goes cold (set value -2.5 K, adjustable via coding address "59"):

- The set boiler water temperature is set 20 K higher than the set DHW temperature (adjustable via coding address "60").

Note

*The value set in coding address "06" in the **"Boiler"** group for the maximum boiler water temperature limit has no effect.*

- Pump on:
 - Starting the circulation pump for cylinder heating subject to the boiler water temperature (code "61:0").
The circulation pump starts when the boiler water temperature is 7 K higher than the DHW temperature.
 - Immediate start of the circulation pump for cylinder heating (code "61:1").

The DHW cylinder is hot (set value +2.5 K):

- The set boiler water temperature is returned to the weather-compensated set value.
- Pump run-on:
 - The cylinder primary pump runs on after cylinder heating until the following criteria are met:
 - The difference between the boiler water temperature and the DHW temperature is less than 7 K.
 - The weather-compensated set boiler water temperature has been reached.
 - The set DHW temperature is exceeded by 5 K.
 - The set max. run-on time has been reached (coding address "62").
- Without pump run-on (code "62:0").

Code "55:1", adaptive cylinder heating

With adaptive cylinder heating, the speed of the temperature rise during DHW heating is taken into account.

The DHW cylinder goes cold (set value -2.5 K, adjustable via coding address "59"):

- The set boiler water temperature is set 20 K higher than the set DHW temperature (adjustable via coding address "60").

Note

*The value set in coding address "06" in the **"Boiler"** group for the maximum boiler water temperature limit has no effect.*

- Pump on:
 - Starting the circulation pump for cylinder heating subject to the boiler water temperature (code "61:0").
The circulation pump starts when the boiler water temperature is 7 K higher than the DHW temperature.
 - Immediate start of the circulation pump for cylinder heating (code "61:1").

The DHW cylinder is hot:

- The control unit checks whether the boiler will be required to supply heat after the cylinder has been heated up or whether residual boiler heat should be transferred to the DHW cylinder. Accordingly, the control unit determines the burner and circulation pump shutdown points to prevent the set DHW temperature being substantially exceeded after the cylinder has been heated up.

Components

Coding card

Boiler	Coding card		
	Display in brief scan	Identification	Part no. spare part
Vitola 200, type VB2A, VX2A	00e1:02	7435 808	7834 995
Vitola 222, type VE2A			
Vitoladens 300-T, type VW3B			
Vitorond 100, type VR2B, 18 to 63 kW			
Vitorond 111, type RO2D	01e1:02	7435 809	7834 996
Vitorondens 200-T, type BR2 and BR2A			
Vitorondens 222-F, type BS2A			
Vitorondens 200-T, type J2RA, 67.6 to 107.3 kW	00c6:02	7435 811	7834 998
Vitorond 100, type VR2B, 80 to 100 kW			
Vitogas 200-F, type GS2, 72 to 144 kW	00f0:02	7435 806	7834 993
Vitogas 200-F, type GS2, 11 to 60 kW			

Fuse

For location of the fuse, see parts list.

F1:

- 6.3 A (slow), 250 V~
- Breaking capacity H

- Max. power loss ≤ 2.5 W
- To protect the overall appliance, the burner, pumps and PCB

Sensors

Boiler water, cylinder, buffer, flow and room temperature sensors

- The flow temperature sensor (contact temperature sensor) is inserted into socket "2" of the extension kit (see page 88).
- The room temperature sensor is connected at terminals 3 and 4 in the Vitotrol 300A.



Vitotrol 300A installation and service instructions

Sensors (cont.)

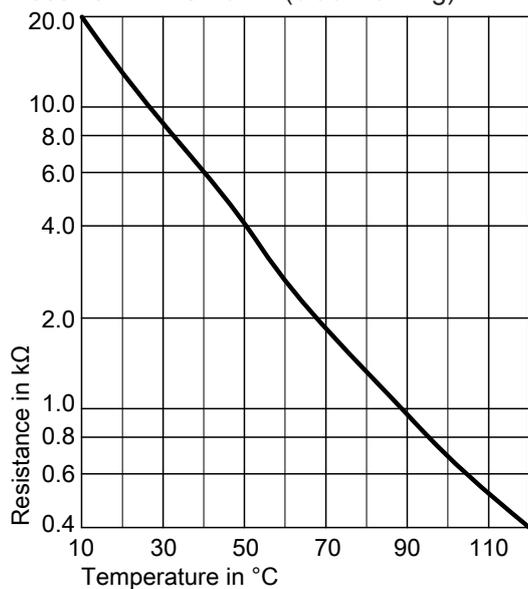
Viessmann NTC 10 k Ω (blue marking)

Fig. 53

1. Pull out corresponding plug.
2. Check the sensor resistance and compare it with the curve.
3. In the case of severe deviation, check the installation and replace the sensor if required.

Outside temperature sensor

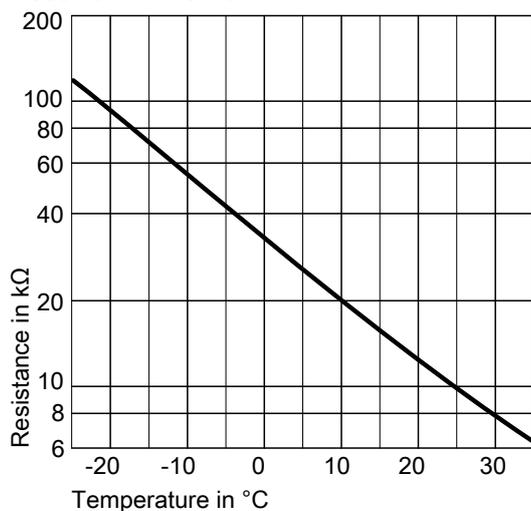
Viessmann NTC 10 k Ω 

Fig. 54

1. Pull out plug 1.
2. Check the sensor resistance across plug terminals 1 and 2, and compare with the curve.
3. If the event of severe deviation from the curve, disconnect the wires from the sensor and repeat the test on the sensor.
4. Depending on the result, replace the lead or the outside temperature sensor.

Flue gas temperature sensor, part no. 7452 531

When a specified limit is reached (see coding address "1F" in the **"Boiler"** group), a service display appears.

The burner is not blocked.

Components

Sensors (cont.)

Viessmann NTC 20 k Ω (orange marking)

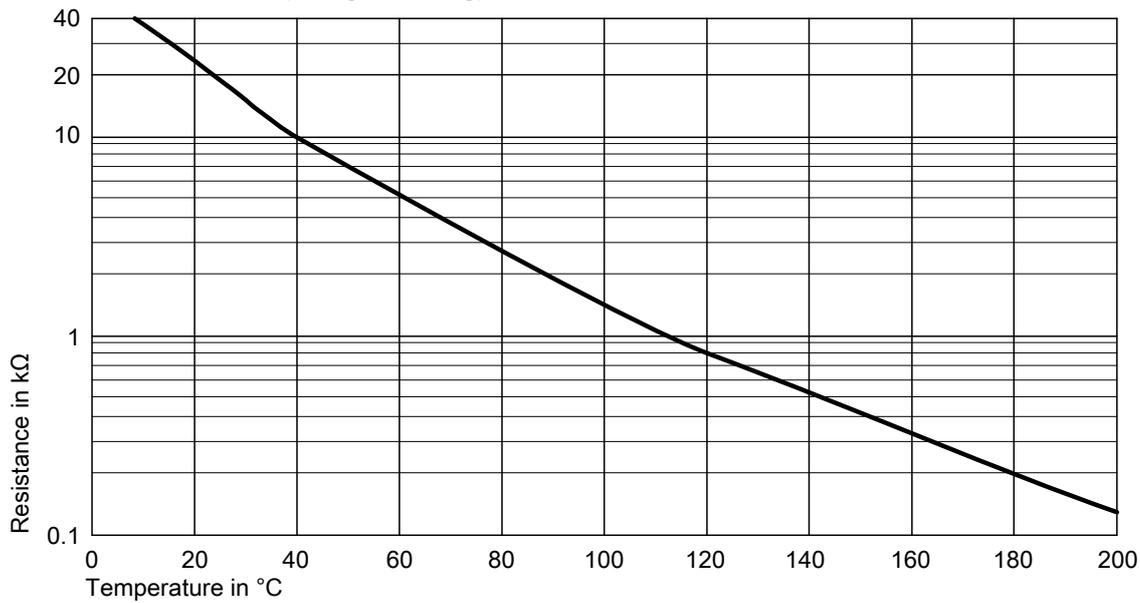


Fig.55

1. Pull out plug 15.
2. Check the sensor resistance and compare it with the curve.
3. In the case of severe deviation, check the installation and replace the sensor if required.

Radio clock receiver

Part no. 7450 563

Via the radio clock receiver, the time is automatically set at the control unit and any remote control that may be connected.

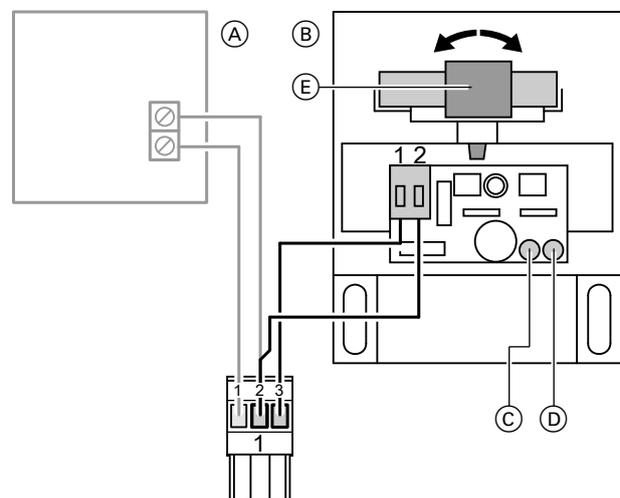


Fig.56

- (A) Outside temperature sensor
- (B) Radio clock receiver
- (C) Green LED
- (D) Red LED
- (E) Aerial

Connection

2-core lead, length max. 35 m with a cross-section of 1.5 mm².

Radio clock receiver (cont.)

Checking the reception

During reception, the green LED on the radio clock receiver flashes.
The red LED illuminates:

Rotate the aerial until reception is confirmed by the flashing of the green LED.

Specification

IP rating	IP 43
Permissible ambient temperature during operation, storage and transport	-40 to +70 °C

Mixer extension kit

Part no. 7301 062 For wall mounting	Part no. 7301 063 For mixer mounting
<p>Components:</p> <ul style="list-style-type: none"> ▪ Mixer PCB with terminals for separate mixer motor ▪ Flow temperature sensor as contact temperature sensor with 5.8 m connecting lead and plug ▪ Plug for connecting the heating circuit pump, mixer motor, power cable and KM BUS lead 	<p>Components:</p> <ul style="list-style-type: none"> ▪ Mixer PCB with mixer motor for Viessmann mixers (not for flanged mixers) ▪ Flow temperature sensor as contact temperature sensor with 2.0 m connecting lead and plug ▪ Plug for connecting the heating circuit pump, power cable and KM BUS lead

Mixer extension kit (cont.)

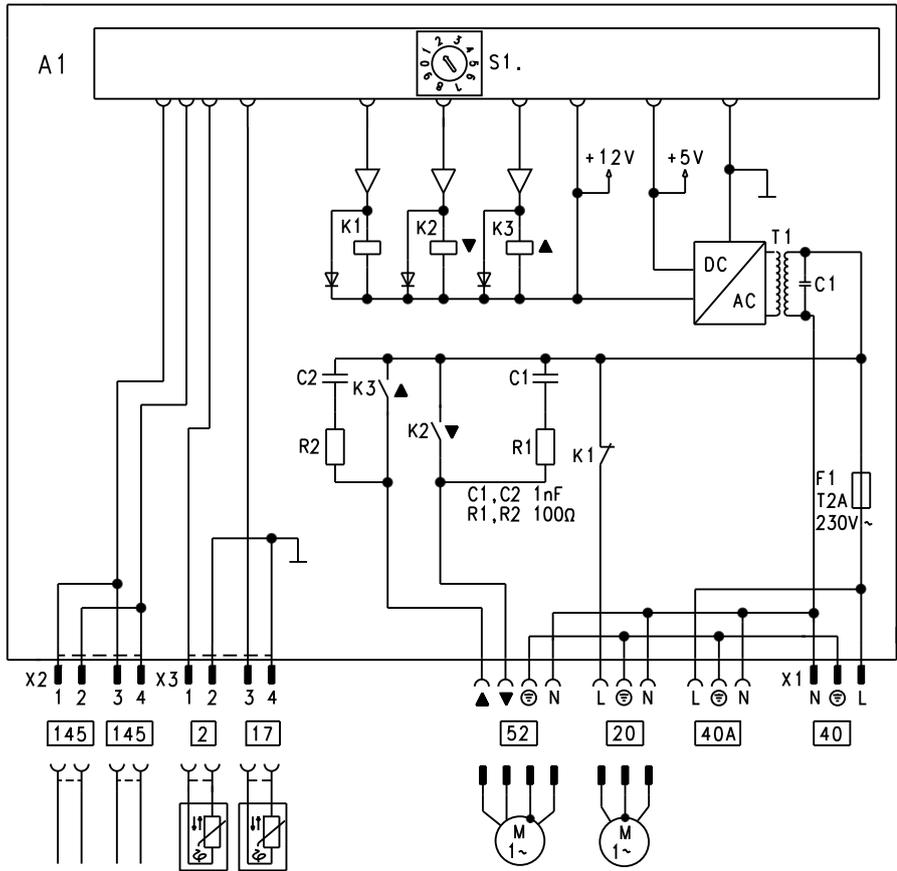


Fig. 57

- A1 Main PCB
- F1 MCB/fuse
- S1 Rotary selector

Plugs 230 V~		LV plug	
20	Heating circuit pump (on site)	2	Flow temperature sensor
40	Power supply 230 V/50 Hz	17	Return temperature sensor (here without function)
40A	Power supply for accessories	145	KM BUS cable for connection with the control unit and an additional extension kit
52	Mixer motor		

Rotary selector setting

Heating circuit affected by the mixer	Rotary selector S1
Heating circuit 2 with mixer M2	"2" (delivered condition)
Heating circuit 3 with mixer M3	"4"

Mixer extension kit (cont.)

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	
▪ Wall mounting	1.5 W
▪ Mixer mounting	5.5 W
Safety category	I
IP rating	IP 32 D to EN 60 529, ensure through design/installation
Permissible ambient temperature	
▪ Operation	0 to +40 °C
▪ Storage and transport	-20 to +65 °C
Rated relay output breaking capacity	
▪ Heating circuit pump 	2 (1) A 230 V~
▪ Mixer motor	0.2 (0.1) A 230 V~

Mixer motor, part no. 7450 657

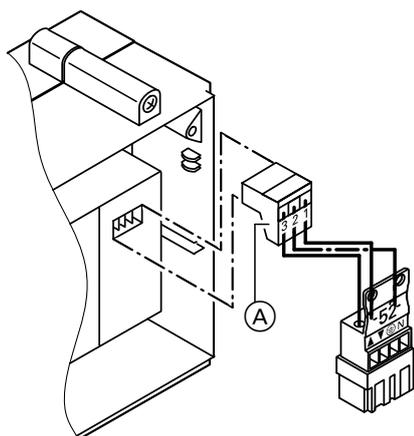


Fig. 58

- (A) Plug in the mixer motor
- ▲ Mixer "Open"
- ▼ Mixer "Close"

Specification

Rated voltage	230 V~
Rated frequency	50 Hz
Rated current	2 A
Power consumption	4 W
Safety category	I
IP rating	IP 42
Torque	3 Nm
Runtime for 90° <	120 s

Checking the rotational direction of the mixer motor

After being switched on, the extension kit implements a self-test. During this, the mixer is opened and closed again.

Note the rotational direction of the mixer motor during its self-test. Then manually set the mixer back to "Open".

Note

The flow temperature must now rise. If the temperature drops, the motor is either turning in the wrong direction or the mixer insert is incorrectly fitted.



Mixer installation instructions

Mixer extension kit (cont.)

Changing the rotational direction of the mixer motor

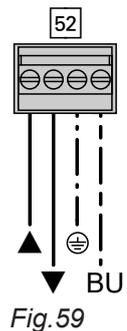


Fig.59

1. Remove the upper casing cover of the extension kit.



Danger

An electric shock can be life-threatening. Before opening the boiler, disconnect from the mains voltage, e.g. at the fuse or the mains isolator.

2. At plug 52, swap the cores at terminals ▲ and ▼.
3. Fit the casing cover.

Temperature limiter for restricting the maximum temperature

Immersion thermostat. 7151 728
Contact thermostat, part no. 7151 729

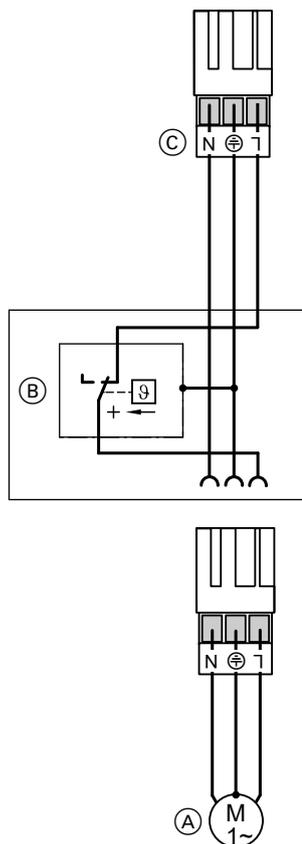


Fig.60

- (A) Heating circuit pump
- (B) Temperature controller/temperature limiter
- (C) Plug 20 of the temperature controller/temperature limiter to the control unit

Electromechanical temperature limiter according to the liquid expansion principle. Switches the heating circuit pump off when the set value has been exceeded. The flow temperature is only slowly reduced in this situation, i.e. it may be several hours before the system restarts again automatically. Connection: Screw terminals for 1.5 mm²

Specification

Setting range	30 to 80 °C
Switching differential	
▪ Immersion thermostat	max. 11 K
▪ Contact thermostat	max. 14 K

EA1 extension, part no. 7452 091

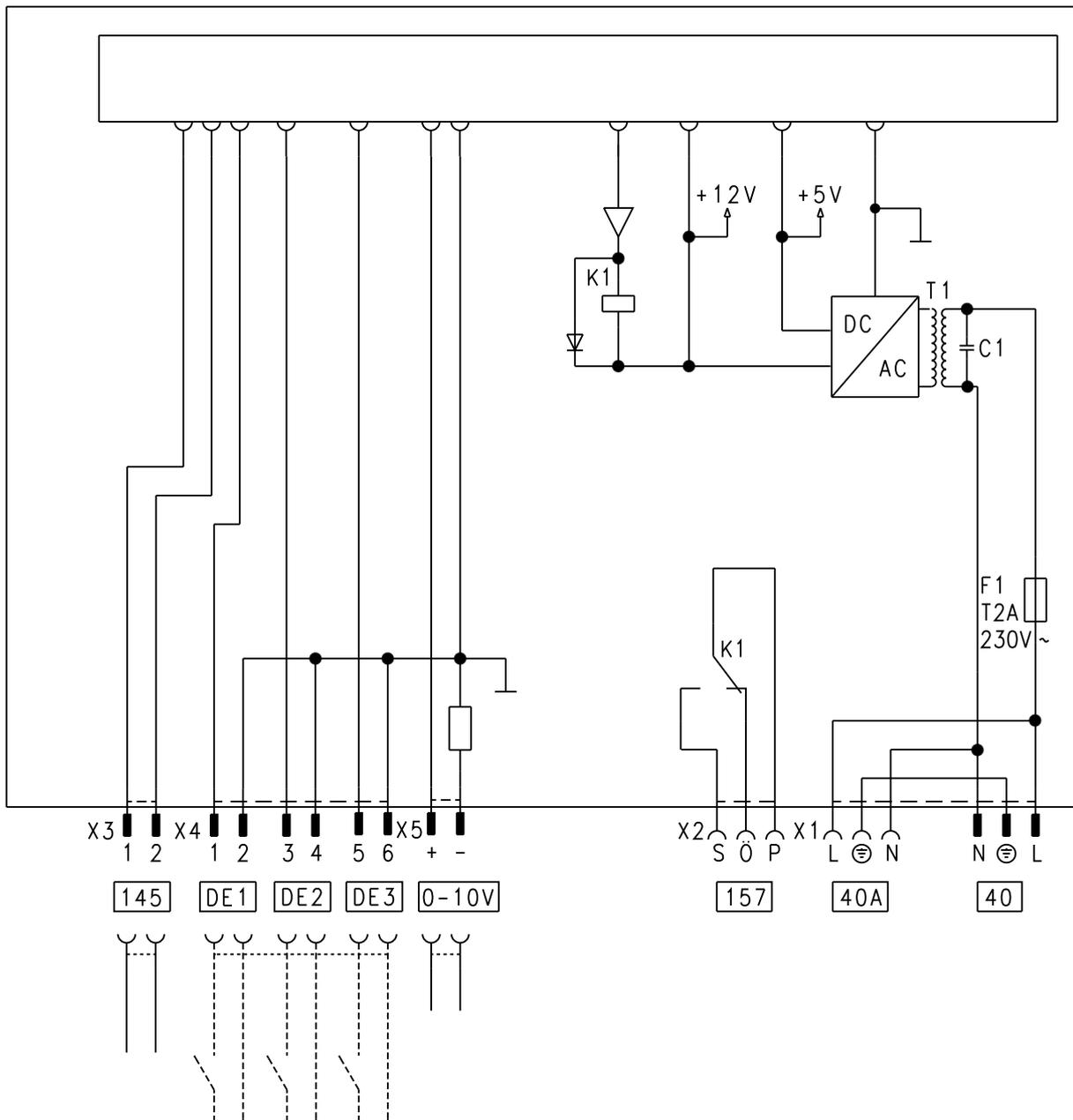


Fig.61

- F1 MCB/fuse
- DE1 Digital input 1
- DE2 Digital input 2
- DE3 Digital input 3
- 0 – 10 V 0 – 10 V input

- 40 Power supply
- 40 A Power supply for additional accessories
- 157 Switching contact (floating)
- 145 KM BUS

Digital inputs DE1 to DE3

Functions:

- External operating program changeover for heating circuits 1 to 3 separately
- External blocking
- External blocking with fault message input
- External demand with set minimum boiler water temperature
- Fault message input
- Brief operation of the DHW circulation pump

When connecting external contacts, observe the requirements of safety category II, i.e. 8.0 mm air and creep paths and maintain a 2.0 mm insulation thickness against 'live' parts.

EA1 extension, part no. 7452 091 (cont.)

Input function assignment

Select the input functions by means of the following codes in the **"General"** group at the boiler control unit:

- DE1: Coding address "3A"
- DE2: Coding address "3b"
- DE3: Coding address "3C"

Assigning the operating program changeover function to the heating circuits

The assignment of the operating program changeover to the **relevant heating circuit** is specified via coding address "d8" in the **"Heating circuit..."** group:

- Code "d8:1": Changeover via input DE1
- Code "d8:2": Changeover via input DE2
- Code "d8:3": Changeover via input DE3

The effect of the operating program changeover is selected via coding address "d5" in the **"Heating circuit..."** group.

Duration of the operating program changeover

The changeover only occurs for as long as the switching contact is closed.

If the operating program changeover is activated by closing the contact with a button, set the duration of the operating program changeover in coding address "F2".

DHW circulation pump runtime for brief operation

The DHW circulation pump can also be started outside the enable times set in the time program.

The DHW circulation pump is started by closing the contact at DE1, DE2 or DE3 by means of a pushbutton. The runtime is adjusted via coding address "3d" in the **"General"** group.

Analogue input 0 – 10 V

The 0 – 10 V hook-up provides an additional set boiler water temperature:

0 – 1 V is taken as "no set boiler water temperature default".

Note

Ensure DC separation between the earth conductor and the negative pole of the on-site voltage source.

Coding address "1E" in the **"General"** group:

- "1E:0" \triangleq temperature demand adjustable, ranging from 0 to 100 °C
 - 1 V \triangleq 10 °C set value change
 - 10 V \triangleq 100 °C set value change
- "1E:1" \triangleq temperature demand adjustable, ranging from 30 to 120 °C
 - 1 V \triangleq 30 °C set value change
 - 10 V \triangleq 120 °C set value change

Output 157

Central fault message facility connection (code "36:0" in the **"General"** group)

External extension H5, part no. 7199 249

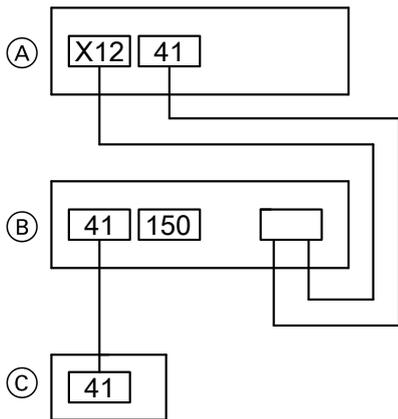


Fig. 62

- (A) Vitotronic
- (B) External extension H5
- (C) Burner

Connections at plug 150:

- External burner blocking
- External safety equipment
- Provisional burner operation
- Flue gas damper

! Please note
 'Live' contacts lead to short circuits or phase failure.
 The external connections must be **potential-free**.

Plug 150 **must** remain plugged in, even if no connection is made.

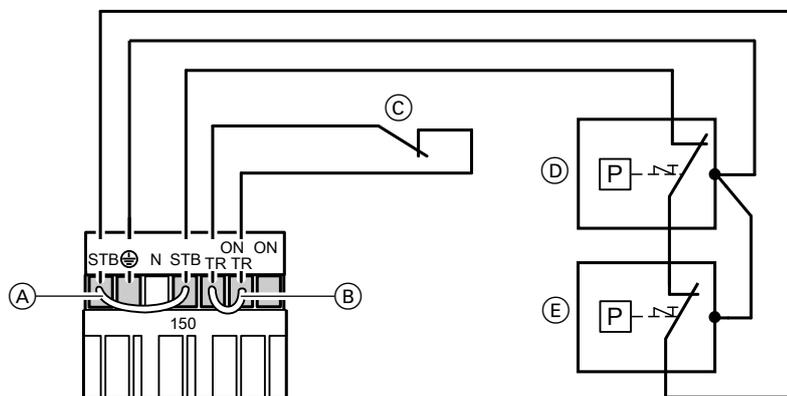


Fig. 63

- (A) Jumper "STB" – "STB"
- (B) Jumper "TR" – "ON/TR"
- (C) External burner blocking (floating contact)
- (D) Minimum pressure limiter
- (E) Other external safety equipment

External burner blocking

1. Remove jumper "TR" – "ON/TR".
2. Connect the floating contact.
 Opening this contact leads to a controlled shutdown.

! Please note
 Connecting external control units can damage the boiler.
 Connect only safety shutdown equipment, e.g. a temperature limiter, to these terminals.
 There is **no frost protection** for the heating system while the burner is switched off. The boiler is not held at the lower boiler water temperature.

External safety equipment

1. Remove jumper "STB" – "STB".
2. Connect the external safety equipment in series.

Temporary operation (burner stage 1)

Insert jumper "TR" – "ON/TR" across "TR" – "ON".

Motorised flue gas damper

Part no.:

- 9586 971 to 975
- 9589 074
- 9542 627

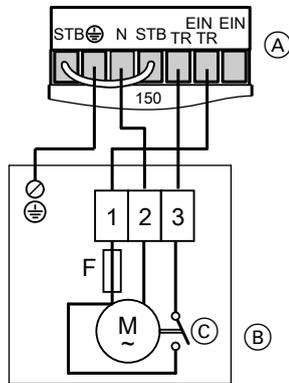


Fig.64

- (A) Plug 150
- (B) Flue gas damper motor
- (C) Limit switch

If making this connection, remove jumper "TR – ON/TR".

Function check

The burner may only start after the flue gas damper has opened 90 % of the pipe cross-section and the limit switch has been activated.

Check the switch function by testing the voltage:

- Flue gas damper closed (switch open):
No voltage at terminal 3.
- Flue gas damper open (switch closed):
Voltage at terminal 3

Vitoair draught stabiliser, part no. 7338 725, 7339 703

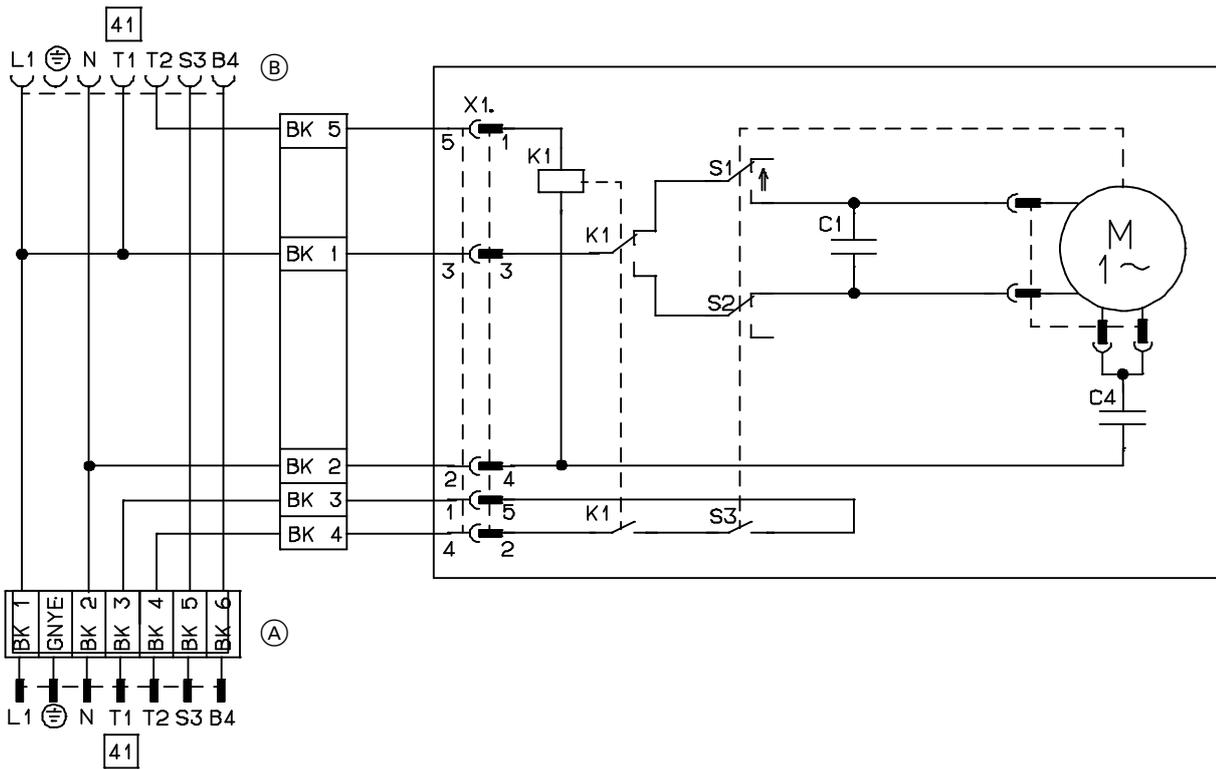


Fig.65

- (A) To the burner
- (B) To the control unit

Colour coding to IEC 60757
 BK Black
 GNYE Green/Yellow

Function check

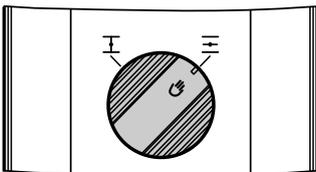


Fig.66

Press the rotary selector on the motor and simultaneously turn it to its central position.

- Burner enabled by the control unit ⇒ The rotary selector should move towards "⊢".
- Burner is off ⇒ The rotary selector should move towards "⊥".

Motor faulty

Press rotary selector on the motor and turn it clockwise beyond position "⊢", as far as it will go.

Designations in the system examples

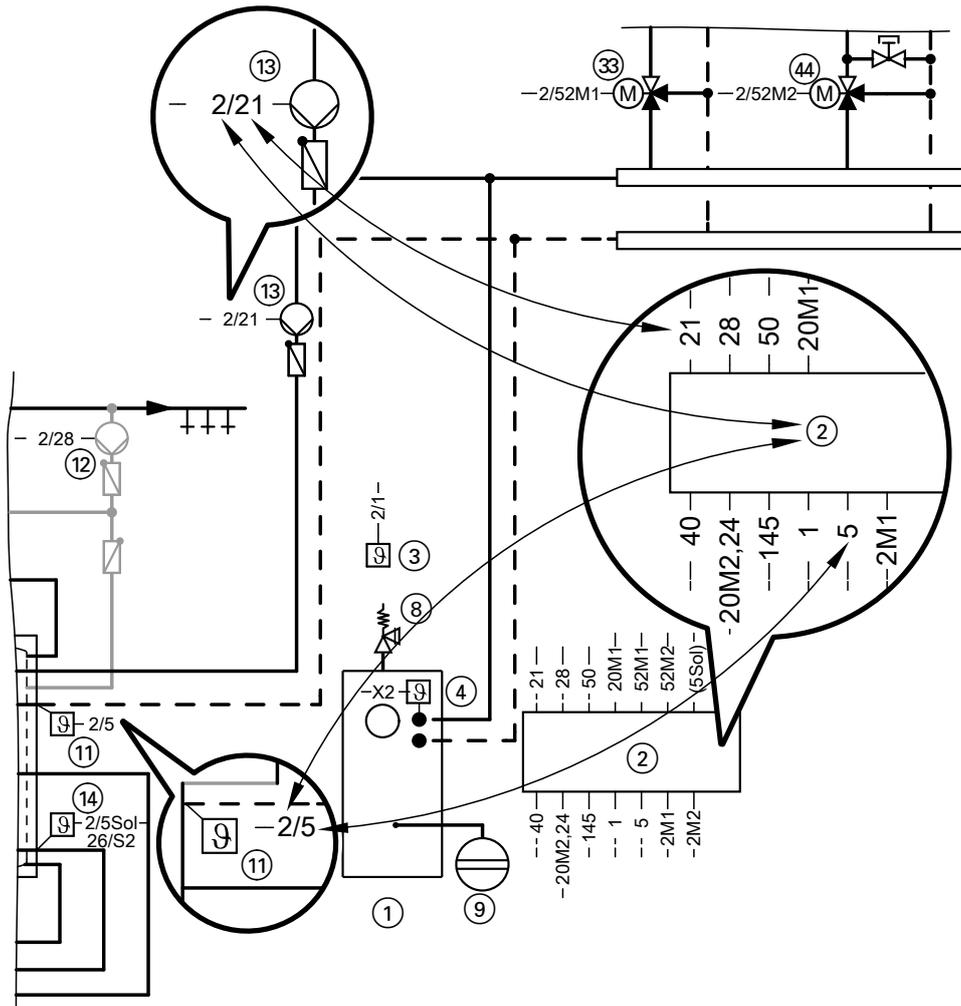


Fig.67

System example 1, ID: 4605372_1404_04

One heating circuit without mixer and one heating circuit with mixer plus DHW heating

Hydraulic installation scheme

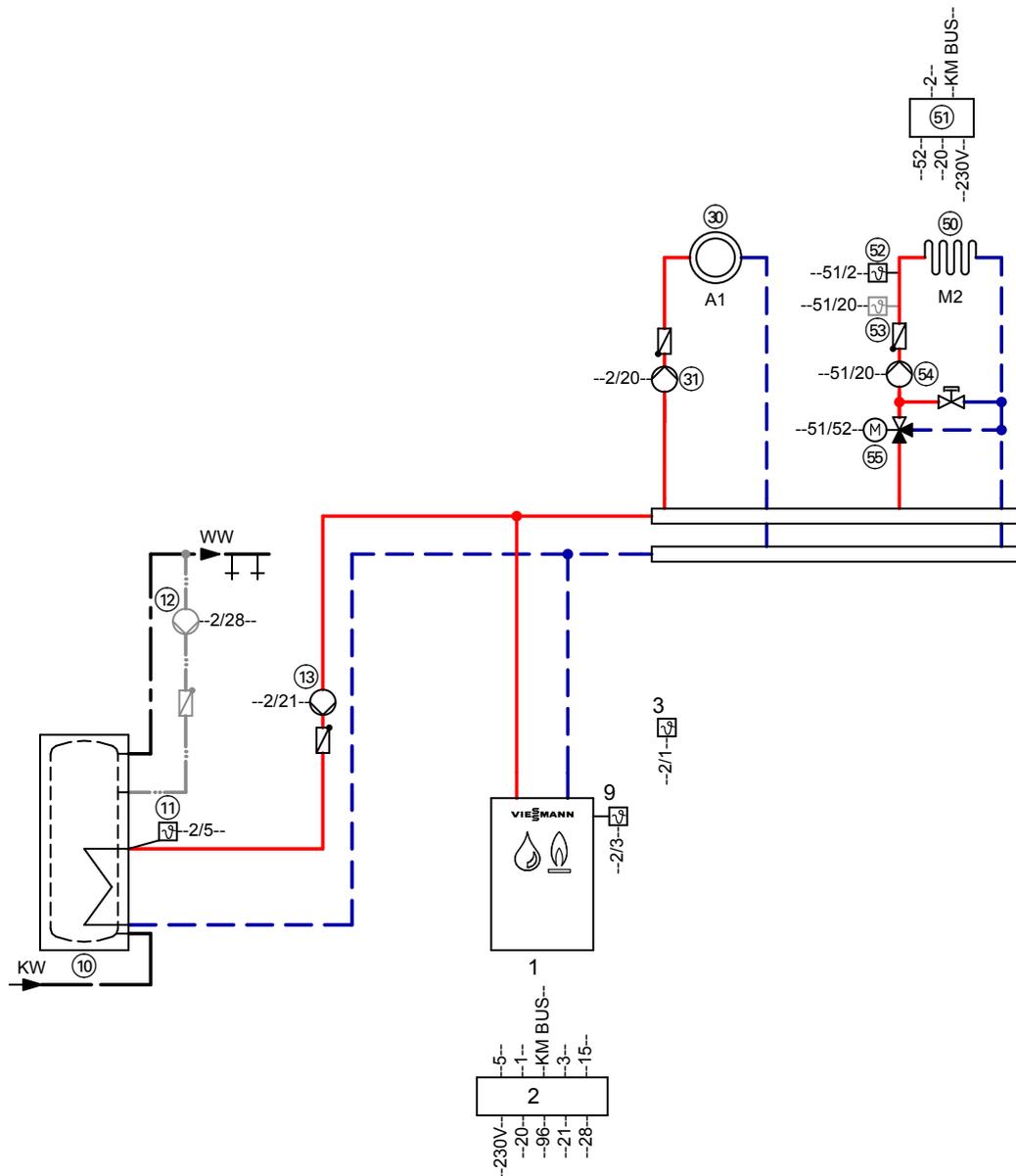


Fig. 68 **Note:** This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.

Equipment required

Pos.	Designation
①	Boiler with
②	Control unit
	<ul style="list-style-type: none"> ▪ Vitola 200, 222 or Vitoladens 300-T with Vitotronic 200, type KO1B ▪ Vitorond 100, 111, Vitogas 200-F or Vitorondens 200-T, 222-F with Vitotronic 200, type KO2B
③	Outside temperature sensor ATS
⑨	Boiler water temperature sensor KTS

System example 1, ID: 4605372_1404_04 (cont.)

Pos.	Designation
	DHW heating by the boiler
⑩	DHW cylinder (integrated for the Vitorond 111, Vitola 222 and Vitorondens 222-F)
⑪	Cylinder temperature sensor STS
⑫	DHW circulation pump ZP
⑬	Circulation pump for cylinder heating UPSB
	Heating circuit 1
③①	Heating circuit pump, heating circuit A1 or Divicon heating circuit distributor
	Heating circuit 2
⑤①	Extension kit, mixer M2 Components:
⑤②	▪ Flow temperature sensor M2 (contact temperature sensor)
⑤⑤	▪ Mixer PCB with mixer motor M2 or
⑤②	Mixer PCB and flow temperature sensor (contact temperature sensor) M2
⑤⑤	Mixer motor M2
⑤③	Temperature limiter for underfloor heating circuit
⑤④	Heating circuit pump M2 and 3-way mixer or Divicon heating circuit distributor
	Accessories (optional)
⑤	Two-stage/modulating burner extension
⑥	Flue gas temperature sensor AGS
⑦	EA1 extension
⑥②	1 switching output (floating changeover contact) Central fault message
⑥③	3 digital inputs <ul style="list-style-type: none"> ▪ External blocking ▪ External demand ▪ External operating program changeover ▪ Brief operation, DHW circulation pump
⑥④	1 analogue input (0 to 10 V) Default set boiler water temperature
⑥⑤	Vitotrol 200A
⑥⑥	Vitotrol 300A
⑦①	Vitocomfort 200
	As an alternative to hardwired remote control units, the following wireless accessories may be used.
⑨⑨	A wireless base station is required for operation with the following components: <ul style="list-style-type: none"> ▪ Vitotrol 200 RF ▪ Vitotrol 300 RF with table-top dock ▪ Vitotrol 300 RF with wall mounting bracket ▪ Vitocomfort 200 ▪ Wireless outside temperature sensor ▪ Wireless repeater

System example 1, ID: 4605372_1404_04 (cont.)

Pos.	Designation
⑥7	Radio clock receiver
⑥8	KM BUS distributor, in there are several KM BUS subscribers KM BUS subscribers: <ul style="list-style-type: none"> ▪ EA1 extension ⑦ ▪ Vitotrol 200A ⑥5 ▪ Vitotrol 300A ⑥6 ▪ Wireless base station ⑨9 ▪ Vitocom 100, type GSM2 ⑦0
⑦0	Vitocom 100, type GSM2
⑦4	Vitocom 100, type LAN1 with LON communication module
⑥9	Vitocom 200, type LAN2 with LON communication module
⑧0	External extension H5
⑧1	Motorised flue gas damper (only for the Vitogas 200-F)

Required codes

Group	Code	Function
"General"	"00:3"	System version: Without heating circuit 1 ③0 and with- out DHW heating
	"00:4"	System version: Without heating circuit 1 ③0 and with DHW heating

Electrical installation scheme

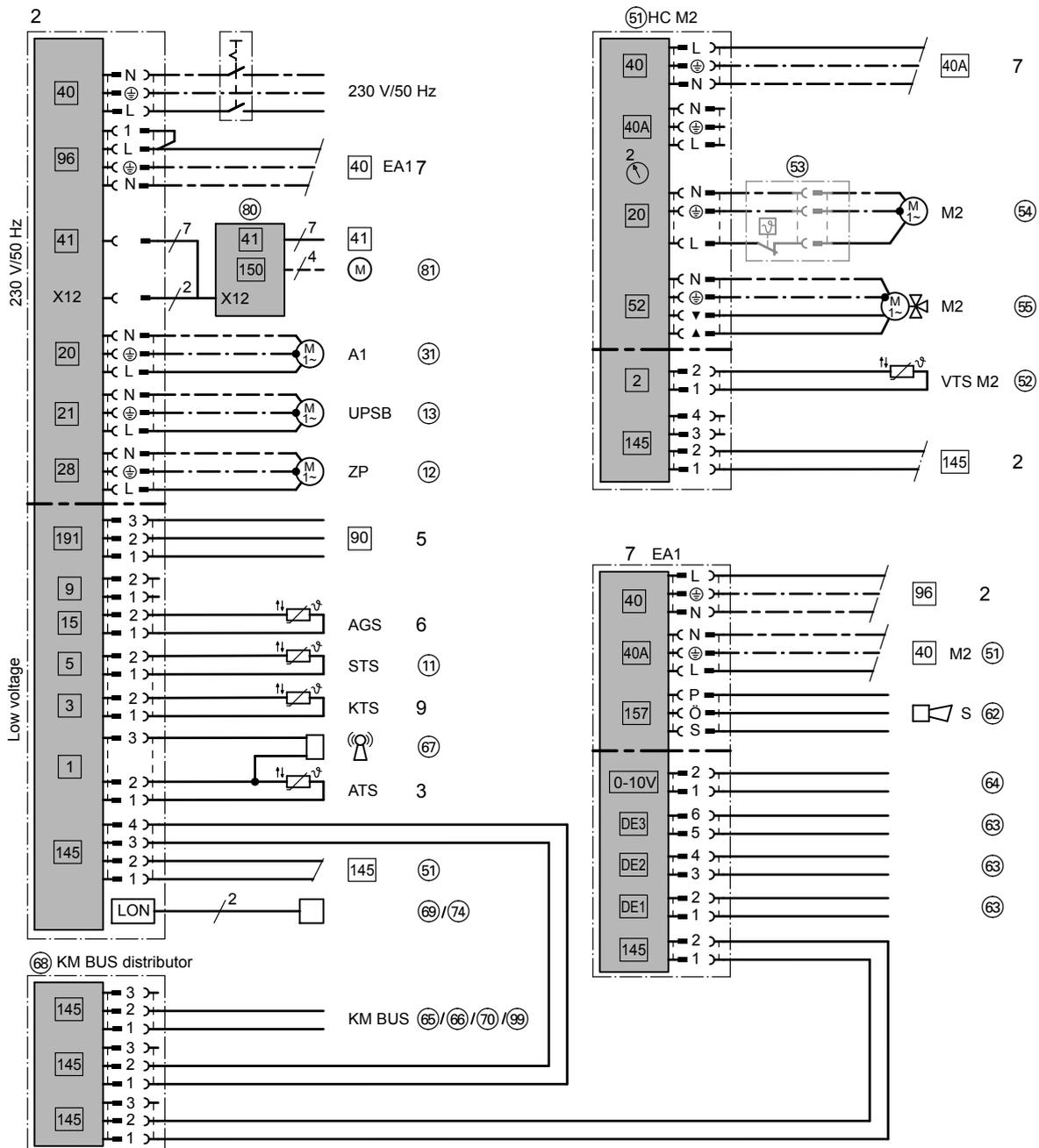


Fig.69

System example 2, ID: 4605373_1404_04

One heating circuit without mixer and 2 heating circuits with mixer plus DHW heating (optional solar DHW heating)

Hydraulic installation scheme

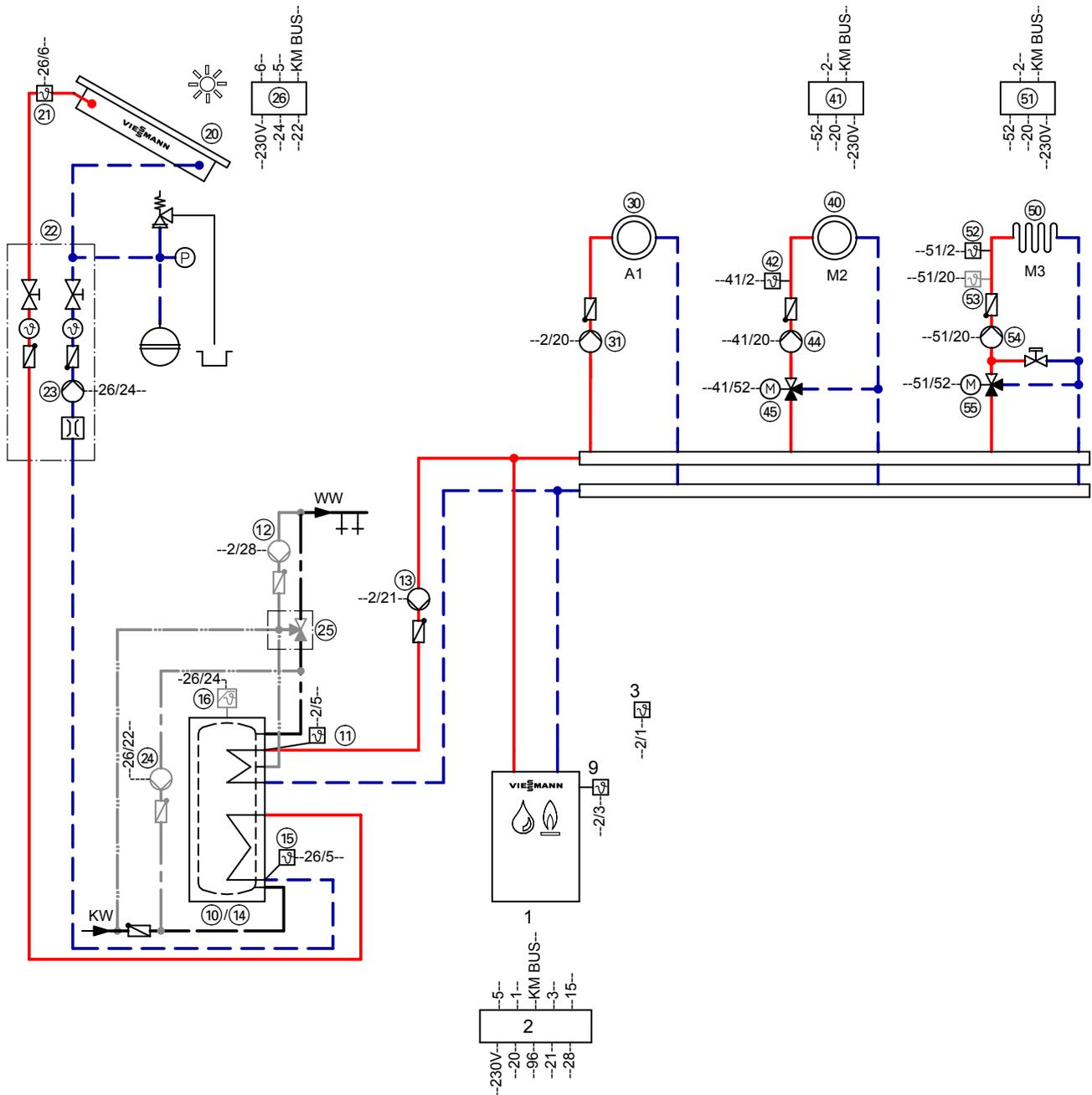


Fig. 70 **Note:** This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.

Equipment required

Pos.	Designation	
①	Boiler with	
②		Control unit
③		▪ Vitola 200 or Vitoladens 300-T with Vitotronic 200, type KO1B
⑨		▪ Vitorond 100, Vitogas 200-F or Vitorondens 200-T with Vitotronic 200, type KO2B
③	Outside temperature sensor ATS	
⑨	Boiler water temperature sensor KTS	
	DHW heating by the boiler	
⑩/⑭	DHW cylinder, dual mode	
⑪	Cylinder temperature sensor STS	
⑫	DHW circulation pump ZP	
⑬	Circulation pump for cylinder heating UPSB	
	DHW heating by the solar thermal system	
⑮	Cylinder temperature sensor SOL	
⑯	High limit safety cut-out STB	
	Solar collectors	
⑳	Collector temperature sensor KOL	
㉑	Solar-Divicon, type PS10 with integral solar control module, type SM1 ㉒	
㉒	or	
	Solar-Divicon, type PS20 without control unit, with separate solar control module, type SM1 ㉒	
㉒	Solar control module, type SM1	
㉓	Solar circuit pump	
㉔	Circulation pump (transfer)	
㉕	Thermostatic DHW circulation set for DHW circulation pump	
	or	
	Automatic thermostatic mixing valve without DHW circulation pump	
㉗	Junction box	
	Heating circuit 1	
㉘	Heating circuit pump, heating circuit A1	
㉙	or	
	Divicon heating circuit distributor	
	Heating circuit 2	
㉚	Extension kit, mixer M2	
	Components:	
㉛	Flow temperature sensor M2/M3 (contact temperature sensor)	
㉜	Mixer PCB with mixer motor M2	
	or	
㉛	Extension kit, mixer M2	
	Components:	
㉛	Mixer PCB and flow temperature sensor M2 (contact temperature sensor)	
㉜	Mixer motor M2	
㉝	Heating circuit pump M2 and 3-way mixer	
	or	
	Divicon heating circuit distributor	

System example 2, ID: 4605373_1404_04 (cont.)

Pos.	Designation
50	Heating circuit 3
51	Extension kit, mixer M3 Components:
52	Flow temperature sensor M3 (contact temperature sensor)
55	Mixer PCB with mixer motor M3 or
51	Extension kit, mixer M3 Components:
52	Mixer PCB and flow temperature sensor M3 (contact temperature sensor)
55	Mixer motor M3
53	Temperature limiter for underfloor heating circuit
54	Heating circuit pump M3 and 3-way mixer or Divicon heating circuit distributor
	Accessories (optional)
5	Two-stage/modulating burner extension
6	Flue gas temperature sensor AGS
7	EA1 extension
62	1 switching output (floating changeover contact) Central fault message
63	3 digital inputs <ul style="list-style-type: none"> ▪ External blocking ▪ External demand ▪ External operating program changeover ▪ Brief operation, DHW circulation pump
64	1 analogue input (0 to 10 V) Default set boiler water temperature
65	Vitotrol 200A
66	Vitotrol 300A
71	Vitocomfort 200
	As an alternative to hardwired remote control units, the following wireless accessories may be used.
99	A wireless base station is required for operation with the following components: <ul style="list-style-type: none"> ▪ Vitotrol 200 RF ▪ Vitotrol 300 RF with table-top dock ▪ Vitotrol 300 RF with wall mounting bracket ▪ Vitocomfort 200 ▪ Wireless outside temperature sensor ▪ Wireless repeater

System example 2, ID: 4605373_1404_04 (cont.)

Pos.	Designation
⑥7	Radio clock receiver
⑥8	KM BUS distributor, in there are several KM BUS subscribers KM BUS subscribers: <ul style="list-style-type: none"> ▪ EA1 extension ⑦ ▪ Vitotrol 200A ⑥5 ▪ Vitotrol 300A ⑥6 ▪ Wireless base station ⑨9 ▪ Vitocom 100, type GSM2 ⑦0 ▪ Solar control module, type SM1 ②6
⑦0	Vitocom 100, type GSM2
⑦4	Vitocom 100, type LAN1 with communication module
⑥9	Vitocom 200, type LAN2 with communication module or
⑧0	External extension H5
⑧1	Motorised flue gas damper (only for the Vitogas 200-F)

Required codes

Group	Code	Function
"General"	"00:7"	System version: Without heating circuit 1 ③0 and with-out DHW heating
	"00:8"	System version: Without heating circuit 1 ③0 and with DHW heating
"Solar"	"02:0"	Solar circuit pump ②3 without variable speed control
	"02:1"	Variable speed solar circuit pump ②3 with wave packet control
	"02:2"	Variable speed solar circuit pump ②3 with PWM control
	"20:1"	Auxiliary function for DHW heating ①4

System example 2, ID: 4605373_1404_04 (cont.)

Electrical installation scheme

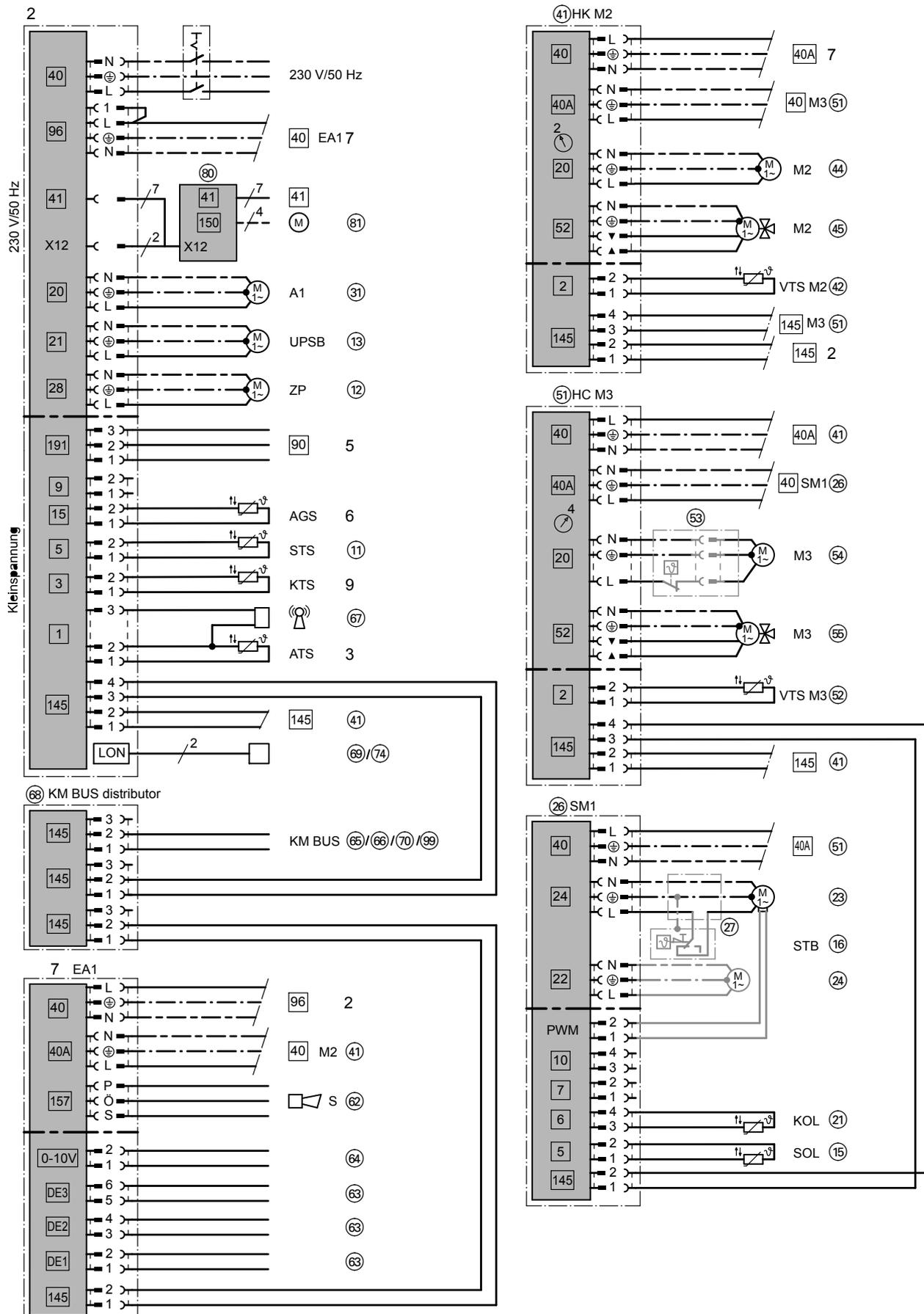


Fig.71

5456 905 GB

System example 3, ID: 4605377_1404_04 (cont.)

Pos.	Designation
④	Shunt pump
⑨	Boiler water temperature sensor KTS
⑭	Temperature controller T1
⑮	Temperature controller T2
⑯	Contact relay
	DHW heating by the boiler
⑩	DHW cylinder
⑪	Cylinder temperature sensor STS
⑫	DHW circulation pump ZP
⑬	Circulation pump for cylinder heating UPSB
	Heating circuit
⑤①	Extension kit with mixer M2 Components:
⑤②	Flow temperature sensor M2 (contact temperature sensor)
⑤⑤	Mixer PCB with mixer motor M2 or
⑤①	Extension kit with mixer M2 Components:
⑤②	Mixer PCB and flow temperature sensor M2 (contact temperature sensor)
⑤⑤	Mixer motor M2
⑤③	Temperature limiter for underfloor heating circuit
⑤④	Heating circuit pump M2 and 3-way mixer or Divicon heating circuit distributor
	Accessories (optional)
⑤	Two-stage/modulating burner extension
⑥	Flue gas temperature sensor AGS
⑳	Resistor, 825 Ω
⑦	EA1 extension
⑥②	1 switching output (floating changeover contact) Central fault message
⑥③	3 digital inputs <ul style="list-style-type: none"> ▪ External blocking ▪ External demand ▪ External operating program changeover
⑥④	1 analogue input (0 to 10 V) Default set boiler water temperature
⑥⑤	Vitotrol 200A
⑥⑥	Vitotrol 300A

System example 3, ID: 4605377_1404_04 (cont.)

Pos.	Designation
	Alternatives to hardwired Vitotrol 200A and 300A remote controls
⑩⑩	Wireless base station
⑩①	Vitotrol 200 RF
⑩②	Vitotrol 300 RF with table-top dock
⑩③	Vitotrol 300 RF with wall mounting bracket
⑩④	Wireless outside temperature sensor
⑩⑤	Wireless repeater
⑥⑦	Radio clock receiver
⑥⑧	KM BUS distributor, in there are several KM BUS subscribers KM BUS subscribers:
	▪ EA1 extension ⑦
	▪ Vitotrol 200A ⑥⑤
	▪ Vitotrol 300A ⑥⑥
	▪ Wireless base station ⑩⑩
⑦⑩	Vitocom 100, type GSM2
⑦①	Vitocom 100, type LAN1 with communication module
⑦②	Vitocom 200, type LAN2 with communication module
⑧①	External extension H5
⑧①	Motorised flue gas damper

Required codes

Group	Code	Function
"General"	"00:3"	System version: Only heating circuit with mixer ⑤① and without DHW heating
	"00:4"	System version: Only heating circuit with mixer ⑤① and with DHW heating
"Boiler"	"02:1"	Two-stage burner operation

System example 3, ID: 4605377_1404_04 (cont.)

Electrical installation scheme

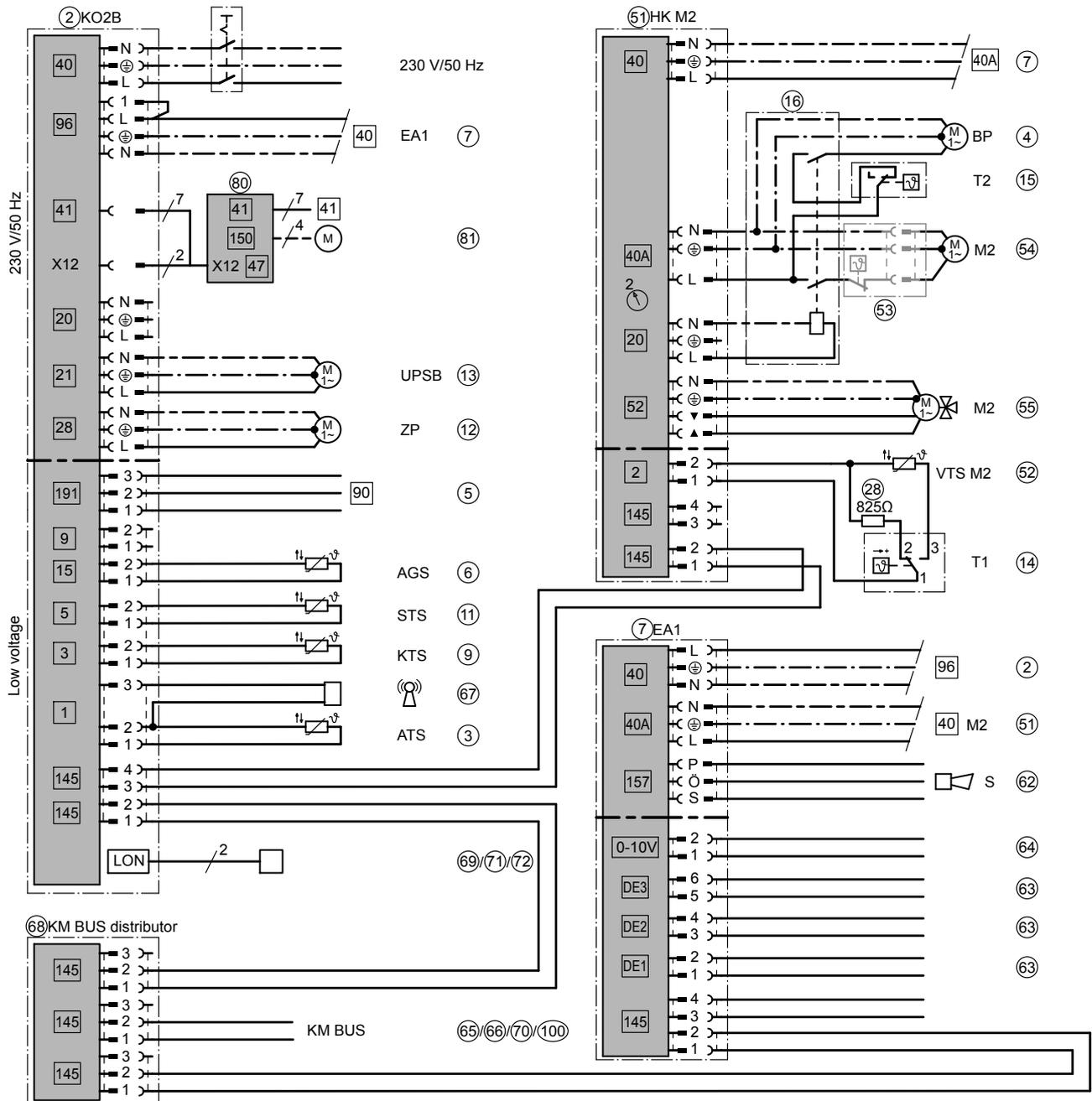


Fig.73

System example 4, ID: 4605378_1404_04

Single boiler system: Vitogas with one heating circuit with mixer, distribution pump and low pressure distributor

Hydraulic installation scheme

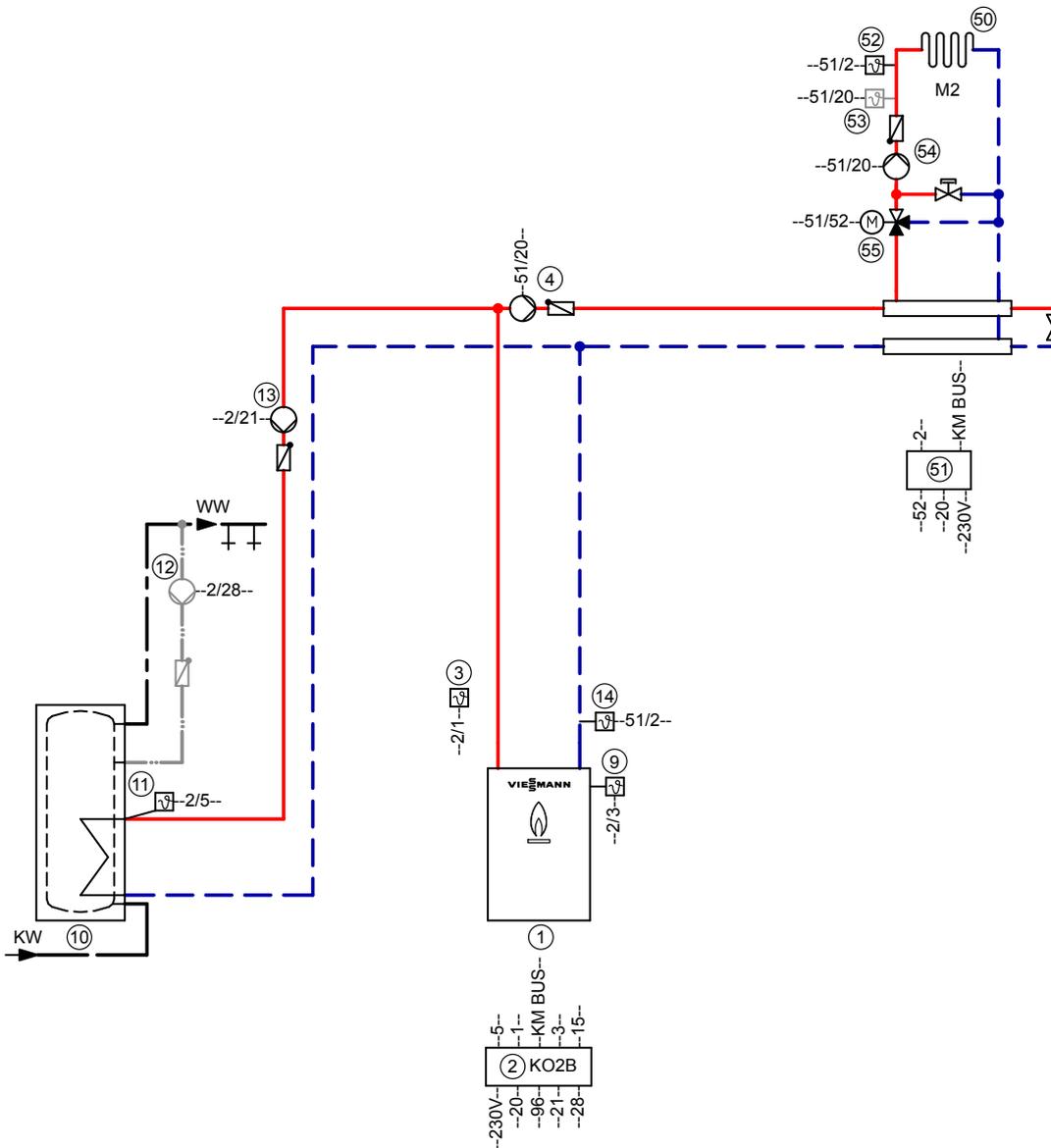


Fig. 74 *Note: This scheme is a general example without shut-off valves or safety equipment. This does not replace the need for on-site engineering.*

Equipment required

Pos.	Designation
①	Boiler with
②	Control unit Vitogas 200-F with Vitotronic 200, type KO2B

System example 4, ID: 4605378_1404_04 (cont.)

Pos.	Designation
③	Outside temperature sensor ATS
④	Distribution pump
⑨	Boiler water temperature sensor KTS
⑭	Temperature controller T1
⑯	Contact relay
	DHW heating by the boiler
⑩	DHW cylinder
⑪	Cylinder temperature sensor STS
⑫	DHW circulation pump ZP
⑬	Circulation pump for cylinder heating UPSB
	Heating circuit
⑤①	Extension kit with mixer M2 Components:
⑤②	Flow temperature sensor M2 (contact temperature sensor)
⑤⑤	Mixer PCB with mixer motor M2 or
⑤①	Extension kit with mixer M2 Components:
⑤②	Mixer PCB and flow temperature sensor M2 (contact temperature sensor)
⑤⑤	Mixer motor M2
⑤③	Temperature limiter for underfloor heating circuit
⑤④	Heating circuit pump M2 and 3-way mixer or Divicon heating circuit distributor
	Accessories (optional)
⑤	Two-stage/modulating burner extension
⑥	Flue gas temperature sensor AGS
⑳	Resistor, 825 Ω
⑦	EA1 extension
⑥②	1 switching output (floating changeover contact) Central fault message
⑥③	3 digital inputs <ul style="list-style-type: none"> ▪ External blocking ▪ External demand ▪ External operating program changeover
⑥④	1 analogue input (0 to 10 V) Default set boiler water temperature
⑥⑤	Vitotrol 200A
⑥⑥	Vitotrol 300A

System example 4, ID: 4605378_1404_04 (cont.)

Pos.	Designation
	Alternatives to hardwired Vitotrol 200A and 300A remote controls
⑩⑩	Wireless base station
⑩①	Vitotrol 200 RF
⑩②	Vitotrol 300 RF with table-top dock
⑩③	Vitotrol 300 RF with wall mounting bracket
⑩④	Wireless outside temperature sensor
⑩⑤	Wireless repeater
⑥⑦	Radio clock receiver
⑥⑧	KM BUS distributor, in there are several KM BUS subscribers KM BUS subscribers:
	▪ EA1 extension ⑦
	▪ Vitotrol 200A ⑥⑤
	▪ Vitotrol 300A ⑥⑥
	▪ Wireless base station ⑩⑩
⑥⑨	Vitocom 100, type GSM2
⑦⑦	Vitocom 100, type LAN1 with communication module
⑦①	Vitocom 200, type LAN2 with communication module
⑧⑦	External extension H5
⑧①	Motorised flue gas damper

Required codes

Group	Code	Function
"General"	"00:3"	System version: Only heating circuit with mixer ⑤⑦ and without DHW heating
	"00:4"	System version: Only heating circuit with mixer ⑤⑦ and with DHW heating
"Boiler"	"02:1"	Two-stage burner operation

System example 4, ID: 4605378_1404_04 (cont.)

Electrical installation scheme

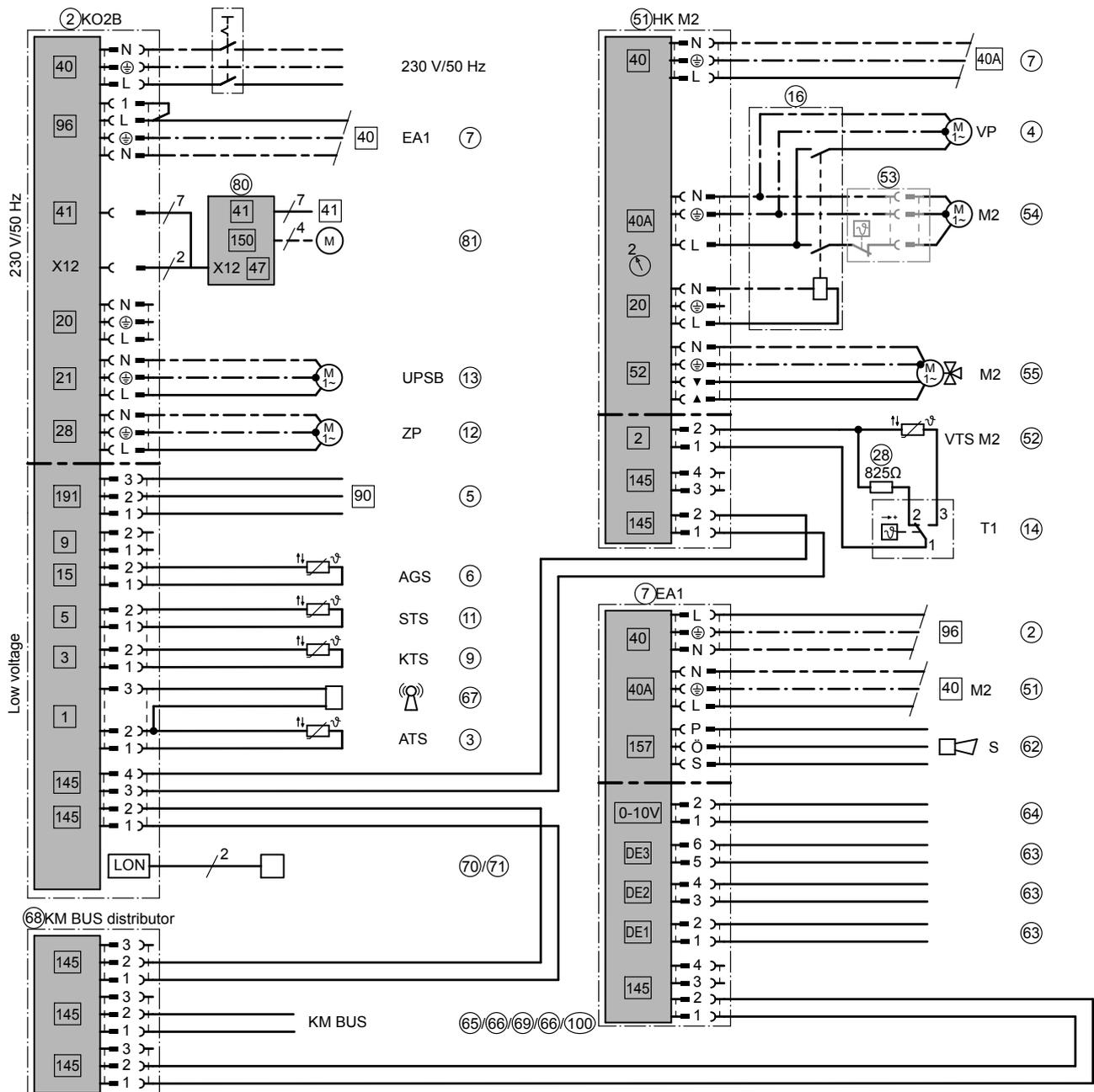


Fig. 75

Connection and wiring diagram

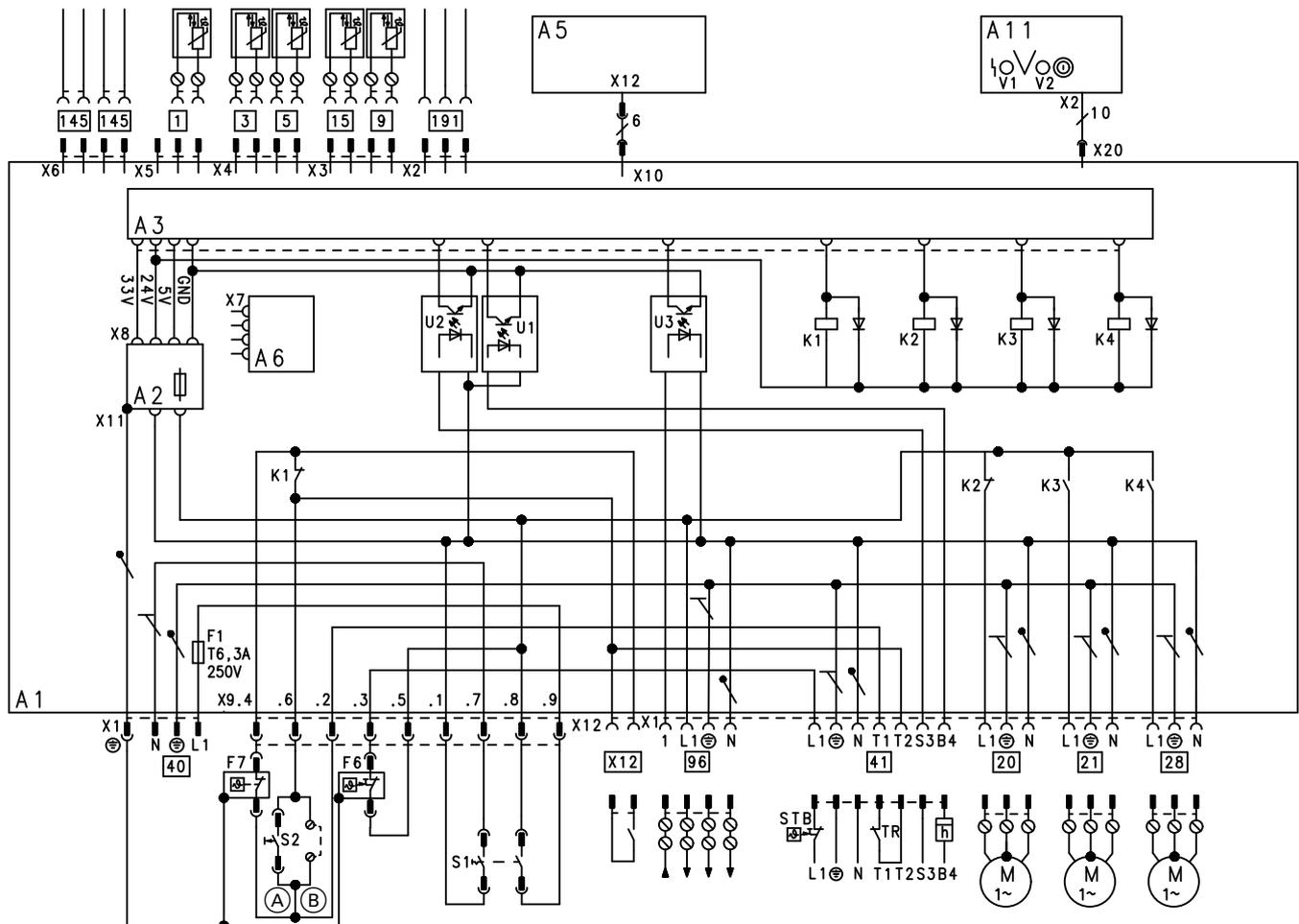


Fig.76

- (A) Type KO1B: Pushbutton
- (B) Type KO2B: Terminals

- A1 Main PCB
- A2 Power supply unit PCB
- A3 PCB
- A5 Programming unit
- A6 Coding card
- A11 Optolink PCB
- X Electrical interfaces
- F1 MCB/fuse
- F6 High limit safety cut-out 110 °C (100 °C)
- F7 Temperature controller 75 °C (87 °C, 95 °C)
- K1-K4 Relay
- S1 ON/OFF switch
- S2 Test key (only for type KO1B)
- U1 to U3 Optocoupler
- V1 Fault indicator (red)
- V2 ON indicator (green)

- 96 Power supply, accessories/external demand/ external blocking
- X12 External burner start (stage 1)

LV plug

- 1 Outside temperature sensor (radio clock receiver (accessories))
- 3 Boiler water temperature sensor
- 5 Cylinder temperature sensor
- 9 Buffer temperature sensor (accessories)
- 15 Flue gas temperature sensor (accessories)
- 145 KM BUS subscriber (accessories)
- 191 Two-stage/modulating burner extension (part of the standard boiler delivery)

Plug 230 V~

- 20 Heating circuit pump A1 (accessories)
- 21 Circulation pump for cylinder heating (accessories)
- 28 DHW circulation pump (on site)
- 40 Power supply, 230 V/50 Hz
- 41 Oil/gas burner (connection according to DIN 4791)

Specification		
Rated voltage		230 V~
Rated frequency		50 Hz
Rated current		6 A~
Power consumption		5 W
Safety category		I
IP rating		IP 20 D to EN 60 529, ensure through design/installation
Function		Type 1 B to EN 60730-1
Permiss. ambient temperature		
▪ Operation		0 to +40 °C Installation in living spaces or boiler rooms (standard ambient conditions)
▪ Storage and transport		-20 to +65 °C
Rated relay output breaking capacity at 230 V~:		
20	Heating circuit pump	4 (2) A~ ²
21	Circulation pump for cylinder heating	4 (2) A~ ²
28	DHW circulation pump	4 (2) A~ ²
41	Burner plug	4 (2) A~
90	Burner plug (two-stage)	1 (0.5) A~
90	Burner plug (modulating)	0.1 (0.05) A~
	Total	max. 6 A~

Settings and equipment

Tick the modified function.

Function in the delivered condition	Modified function
High limit safety cut-out set to 110 °C	<input type="checkbox"/> Changed to °C
Temperature controller set to 75 °C	<input type="checkbox"/> Changed to °C
Remote control Control without remote control	With remote control <input type="checkbox"/> Vitotrol 200 at heating circuit 1 <input type="checkbox"/> Vitotrol 200 at heating circuit 2 <input type="checkbox"/> Vitotrol 200 at heating circuit 3 <input type="checkbox"/> Vitotrol 300 at heating circuit 1 <input type="checkbox"/> Vitotrol 300 at heating circuit 2 <input type="checkbox"/> Vitotrol 300 at heating circuit 3
Electronic maximum limit <ul style="list-style-type: none"> ▪ Heating circuit 1 74 °C ▪ Heating circuit 2 74 °C ▪ Heating circuit 3 74 °C Electronic minimum limit <ul style="list-style-type: none"> ▪ Heating circuit 1 20 °C ▪ Heating circuit 2 20 °C ▪ Heating circuit 3 20 °C 	<input type="checkbox"/> Changed to °C <input type="checkbox"/> Changed to °C <input type="checkbox"/> Changed to °C <input type="checkbox"/> Changed to °C <input type="checkbox"/> Changed to °C <input type="checkbox"/> Changed to °C
Heating curves <ul style="list-style-type: none"> ▪ Slope = 1.4 ▪ Level = 0 	Heating curves for: <input type="checkbox"/> Heating circuit 1 Changed to - Slope - Level <input type="checkbox"/> Heating circuit 2 Changed to - Slope - Level <input type="checkbox"/> Heating circuit 3 Changed to - Slope - Level <input type="checkbox"/> Changed toK
<ul style="list-style-type: none"> ▪ Differential temperature 8 K 	
Heating circuit pumps In the "Heating and DHW" heating program, the heating circuit pumps are switched off if the outside temperature exceeds the set room temperature by more than 1 K. Characteristics in the "Only DHW" program: <ul style="list-style-type: none"> ▪ The heating circuit pumps are only started when there is a risk of frost. ▪ Any connected mixers remain closed (switching to control function when there is a risk of frost). 	<input type="checkbox"/> The heating circuit pump for heating circuit 1 remains on. <input type="checkbox"/> The heating circuit pump for heating circuit 2 remains on. <input type="checkbox"/> The heating circuit pump for heating circuit 3 remains on. <input type="checkbox"/> The heating circuit pumps are switched off before the set room temperature is achieved. <input type="checkbox"/> The heating circuit pumps are controlled according to coding address "b5". <input type="checkbox"/> Heating circuit pumps for heating circuits with mixer are switched off if the mixer has been closed for longer than 12 min.

Settings and equipment (cont.)

Function in the delivered condition	Modified function
Heating circuit 1 Heating mode/reduced mode Weather-compensated	<input type="checkbox"/> Heating mode: Weather-compensated Reduced mode: With room temperature hook-up <input type="checkbox"/> Heating mode: With room temperature hook-up Reduced mode: Weather-compensated <input type="checkbox"/> Heating mode/reduced mode: With room temperature hook-up
Heating circuit 2 Heating mode/reduced mode Weather-compensated	<input type="checkbox"/> Heating mode: Weather-compensated Reduced mode: With room temperature hook-up <input type="checkbox"/> Heating mode: With room temperature hook-up Reduced mode: Weather-compensated <input type="checkbox"/> Heating mode/reduced mode: With room temperature hook-up
Heating circuit 3 Heating mode/reduced mode Weather-compensated	<input type="checkbox"/> Heating mode: Weather-compensated Reduced mode: With room temperature hook-up <input type="checkbox"/> Heating mode: With room temperature hook-up Reduced mode: Weather-compensated <input type="checkbox"/> Heating mode/reduced mode: With room temperature hook-up
Frost protection Frost protection enabled from 1 °C	<input type="checkbox"/> Frost protection for heating circuit 1 cancelled. <input type="checkbox"/> Frost protection for heating circuit 2 cancelled. <input type="checkbox"/> Frost protection for heating circuit 3 cancelled. <input type="checkbox"/> Frost protection for heating circuit 1 changed to °C <input type="checkbox"/> Frost protection for heating circuit 2 changed to °C <input type="checkbox"/> Frost protection for heating circuit 3 changed to °C
Switching hysteresis The switching hysteresis for the burner is 4 K	<input type="checkbox"/> ERB50 function <input type="checkbox"/> ERB80 function
Heating system with DHW heating: <ul style="list-style-type: none"> ▪ DHW is heated at the times when DHW heating is enabled. ▪ With cylinder priority control. ▪ Setting range for DHW temperature 10 to 60 °C. ▪ Circulation pump for cylinder heating starts if the boiler water temperature is 7 K higher than the actual DHW temperature. ▪ Circulation pump for cylinder heating runs on for a maximum of 10 min after cylinder heating. ▪ Without adaptive DHW cylinder control ▪ DHW circulation pump on only during active cylinder heating. 	<input type="checkbox"/> Without cylinder priority control. <input type="checkbox"/> Setting range for DHW temperature 10 to 95 °C. <input type="checkbox"/> Circulation pump starts immediately. <input type="checkbox"/> During cylinder heating, the circulation pump for cylinder heating is switched OFF when the set DHW temperature is reached. <input type="checkbox"/> With adaptive cylinder control. <input type="checkbox"/> DHW circulation pump on according to its individual time program.

Function in the delivered condition	Modified function
<ul style="list-style-type: none"> ▪ Without auxiliary function for DHW heating. 	<input type="checkbox"/> With auxiliary function for DHW heating, input of a second set value of°C.
	<p>Connected accessories</p> <ul style="list-style-type: none"> <input type="checkbox"/> Mixer extension kit for heating circuit with mixer, heating circuit 2 <input type="checkbox"/> Mixer extension kit for heating circuit with mixer, heating circuit 3 <input type="checkbox"/> KM BUS distributor <input type="checkbox"/> Wireless base station <input type="checkbox"/> Wireless repeater <input type="checkbox"/> Radio clock receiver <input type="checkbox"/> Flue gas temperature sensor <input type="checkbox"/> Temperature limiter for underfloor heating <input type="checkbox"/> Solar control module, type SM1 <input type="checkbox"/> Vitosolic <input type="checkbox"/> Vitocom 100, type LAN1 <input type="checkbox"/> Vitocom 100, type GSM2 <input type="checkbox"/> Vitocom 200, type LAN2 <input type="checkbox"/> Vitocom 300, type LAN3 <input type="checkbox"/> Vitocomfort 200 <input type="checkbox"/> Two-stage/modulating burner extension <input type="checkbox"/> Vitoair <input type="checkbox"/> Motorised flue gas damper <input type="checkbox"/> EA1 extension <input type="checkbox"/> External extension H5

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Applicability

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