Installation and service instructions

for contractors

Vitodens 200-W
Type B2HH, B2KH, 1.9 to 32 kW
Wall mounted gas condensing boiler with 7 inch colour touchscreen
Natural gas and LPG version

VITODENS 200-W

6219526 GB 2/2025

Please keep safe.

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 qualified contractors.

- Work on gas installations may only be carried out by a registered gas fitter.
- Work on electrical equipment may 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 environmental protection
- Codes of practice of the relevant trade associations
- Relevant country-specific safety regulations

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.
- Wear suitable personal protective equipment when carrying out any work.

Safety instructions (cont.)

⚠ **Danger**
Hot surfaces and fluids can lead to burns or scalding.
- 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 the system.
Faulty components must be replaced with original spare parts from the manufacturer.

Auxiliary components, spare and wearing parts

! **Please note**
Auxiliary components, spare parts 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 installation and replacements, use only original parts from the manufacturer or components approved by the manufacturer.

Safety instructions (cont.)

Safety instructions for operating the system

If you smell gas

Danger
Escaping gas can lead to explosions which may result in serious injury.
- Do not 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).

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.

What to do if water escapes from the appliance

Danger
If water escapes from the appliance there is a risk of electrocution.
Switch OFF the heating system at the external isolator (e.g. fuse box, domestic distribution board).

Danger
If water escapes from the appliance there is a risk of scalding.
Never touch hot heating water.

Condensate

Danger
Contact with condensate can be harmful to health.
Never let condensate touch your skin or eyes and do not swallow it.

Flue systems and combustion air

Ensure that flue systems are clear and cannot be sealed, for instance due to accumulation of condensate or other external causes.
Ensure an adequate supply of combustion air.
Inform system users that subsequent modifications to the building characteristics 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. Vents for supplying combustion air must be non-sealable.

Extractors

Operating appliances that extract air to the outside (extractor hoods, extractors, air conditioning units, central vacuum cleaning systems) can create negative pressure. If the boiler is operated at the same time, this can lead to a reverse flow of flue gas.

Safety instructions (cont.)

⚠ **Danger**
The simultaneous operation of the boiler and appliances that exhausts air to the outside can result in life threatening poisoning due to a reverse flow of flue gas.
Fit an interlock circuit or take suitable steps to ensure an adequate supply of combustion air.

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Disposal of packaging

Please dispose of packaging waste in line with statutory regulations.

Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of personal injury
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	▪ Component must audibly click into place. or ▪ Acoustic signal
	▪ Fit new component. or ▪ In conjunction with a tool: Clean the surface.
	Dispose of component correctly.
	Dispose of component at a suitable collection point. Do **not** dispose of component in domestic waste.

The steps in connection with commissioning, inspection and maintenance are found in the "Commissioning, inspection and maintenance" section and identified as follows:

Symbol	Meaning
	Steps required during commissioning
	Not required during commissioning
	Steps required during inspection
	Not required during inspection
	Steps required during maintenance
	Not required during maintenance

Intended use

The appliance is intended solely for installation and operation in sealed unvented heating systems that comply with EN 12828, with due attention paid to CECS 215-2017 and the associated installation, service and operating instructions. It is only designed for heating up heating water that is of potable water quality.

Intended use presupposes that a fixed installation in conjunction with permissible, system-specific components has been carried out.

The appliance is intended exclusively for domestic or semi-domestic use; even users who have not had any instruction are able to operate the appliance safely.

Intended use (cont.)

Commercial or industrial usage for a purpose other than heating the building or DHW shall be deemed inappropriate.

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

Incorrect usage or operation of the appliance (e.g. the appliance being opened by the system user) is prohibited and will result in an exclusion of liability. Incorrect usage also occurs if the components in the heating system are modified from their intended use (e.g. if the flue gas and ventilation air paths are sealed).

Product information

Vitodens 200-W, type B2HH, B2KH

Wall mounted gas condensing boiler with Inox-Radial heat exchanger and the following integrated components:
- Modulating MatriX-Plus burner for natural gas and LPG
- Hydraulics with 3-way diverter valve and variable speed high efficiency circulation pump
- Type B2KH: Plate heat exchanger for DHW heating
- Weather-compensated or constant temperature control unit
- Integral diaphragm expansion vessel (10 l capacity)

The selected gas category in the delivered condition and the associated nominal gas pressure are given on the boiler type plate. The type plate also shows the other gas types and pressures with which the boiler can be operated. A conversion within the stated natural gas groups is not required. For conversion to LPG (without conversion kit), see "Commissioning, inspection and maintenance".

The type plate of the heat generator contains extensive product information and an appliance-specific **QR code with the marking "i"** for direct access to product-specific information and product registration on the internet.
The QR code contains the credentials for the registration and product information portal, and the 16-digit serial number.

Note
A further label with the QR code is enclosed with the heat generator.
Stick the label in the installation and service instructions so it can be easily found again for later use.

The Vitodens 200-W may only be delivered to countries listed on the type plate. For deliveries to other countries, approved contractors must arrange individual approval on their own initiative and in accordance with the law of the country in question.

Type plate

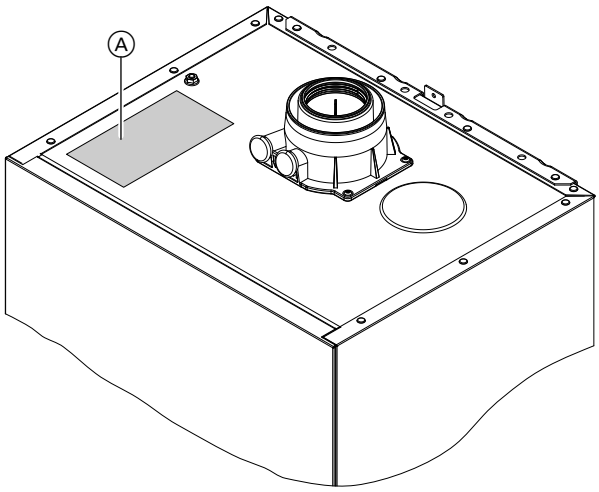

Fig. 1

Ⓐ Type plate with QR code for appliance registration

System examples

System examples with hydraulic and electrical connection diagrams and function descriptions are available to help setting up the heating system.

Detailed information regarding system examples:
www.viessmann-schemes.com

Maintenance parts and spare parts

You can identify and order maintenance parts and spare parts directly online.

Viessmann Partnershop

Login:
shop.viessmann-climatesolutions.com

Viessmann spare part app

Web application

www.viessmann.com/etapp

ViParts app

Preparing for installation

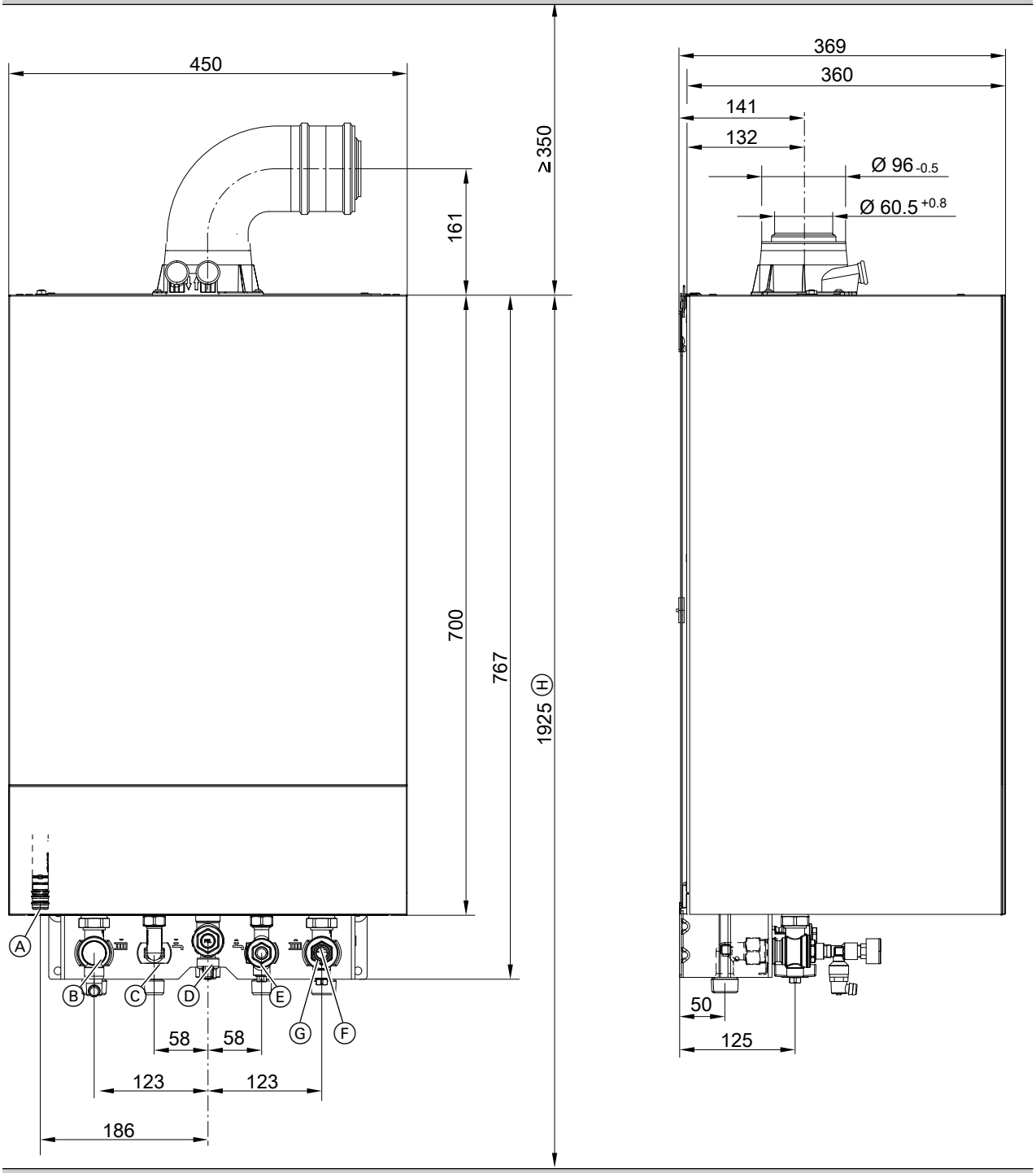

Fig. 2 Illustration shows a gas condensing combi boiler

Ⓐ Condensate drain
Ⓑ Heating flow
Ⓒ DHW (gas condensing combi boiler)
Cylinder flow (gas condensing system boiler)
Ⓓ Gas connection
Ⓔ Cold water (gas condensing combi boiler)
Cylinder return (gas condensing combi boiler)
Ⓕ Heating return
Ⓖ Filling/draining
Ⓗ Dimension for installation with DHW cylinder below the boiler

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Preparing for installation (cont.)

Note
This boiler (IP rating: IP X4) is approved for installation in wet rooms inside safety zone 1, to DIN VDE 0100.
Exposure to jets of water must be prevented.
For open flue operation, the boiler may only be operated with a splash cover.
Observe the requirements of DIN VDE 0100.

1. Subject to order: Fit supplied pre-plumbing jig, mounting frame or wall mounting bracket in the relevant installation location.

   
   Installation instructions for pre-plumbing jig or mounting frame

   Note
   Check the condition of the wall where the boiler is to be installed. For the suitability of the supplied rawl plugs for various building materials, see manufacturer's instructions: Fischer Spreizdübel SX 10 x 80
   For other construction materials, use fixing materials with sufficient load bearing capacity.

2. Prepare the water connections to the valves/fittings of the mounting bracket.
   Thoroughly flush the heating system.

   ! **Please note**
   To prevent appliance damage, connect all pipework free of load and torque stress.

   Note
   To prevent dirt from entering the connections: Do not remove the protective caps until you are about to fit the boiler.

   Note
   If an on-site expansion vessel also has to be installed: Install this expansion vessel in the cylinder return, as the 3-way diverter valve is located in the heating flow.
   Not possible with combi appliances!

   Note
   When installing a combi appliance in a basement, an additional shut-off valve can be installed in the DHW line.
   This enables easier maintenance.

3. Prepare the gas connection according to TRGI or TRF [or local regulations].

4. Prepare the electrical connections.
   - The appliance is delivered fitted with a power cable (approx. 2 m long).
     Note
     Connect the power cable to the electricity supply using a fixed connection.
   - Power supply: 230 V, 50 Hz, fuse rating max. 16 A
   - Accessory cables: 0.75 mm^2 flexible PVC cable with required number of cores for external connections

Preparing for installation (cont.)

Connection on the DHW side for gas condensing combi boiler

Cold water installation

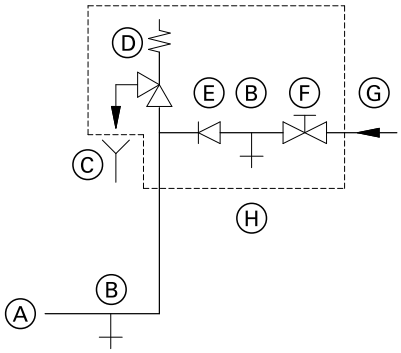

Fig. 3

Ⓐ Cold water connection of boiler
Ⓑ Drain outlet
Ⓒ Visible discharge pipe outlet point
Ⓓ Safety valve
Ⓔ Non-return valve
Ⓕ Shut-off valve
Ⓖ Cold water
Ⓗ Safety assembly

Safety assembly Ⓗ is included in the standard delivery and requires installing.
Only use a non-return valve or a combined shut-off and non-return valve in conjunction with a safety valve.
If the safety valve is used, the cold water shut-off valve on the boiler must not be shut off.
Remove the toggle on the cold water shut-off valve (if installed) to prevent it being shut off manually.

Shock arrestor

If draw-off points likely to cause water hammer are connected to the boiler's drinking water network (e.g. flush valves, washing machines, dishwashers), we recommend installing shock arrestors.

Mounting the boiler and making connections

Removing the front panel

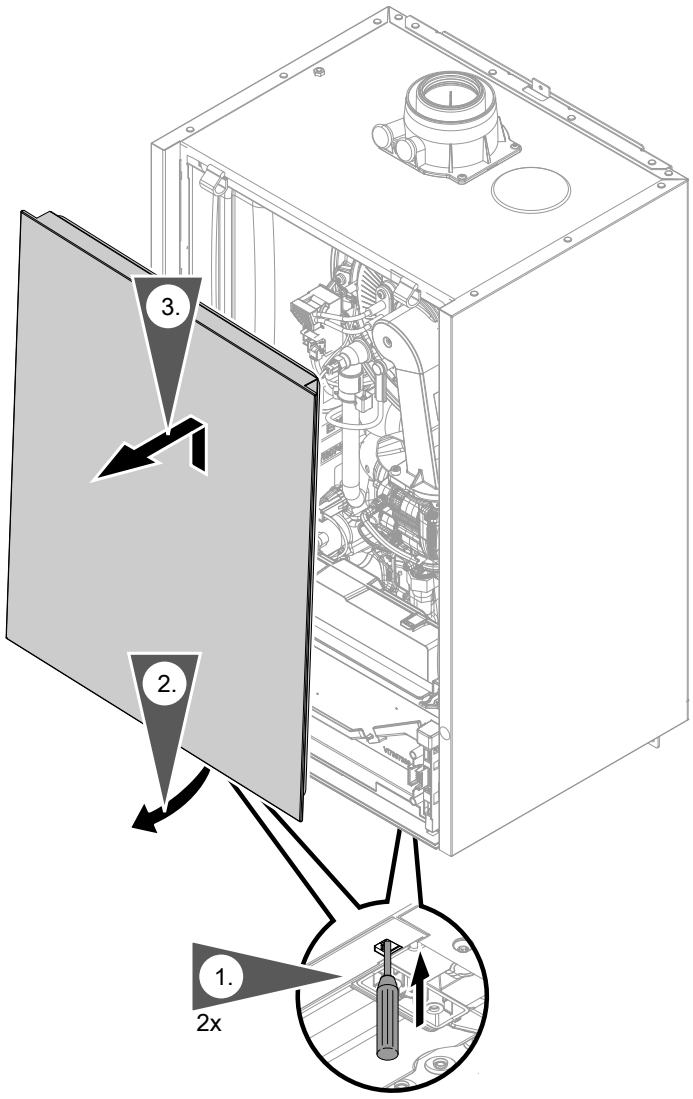

Fig. 4

1. Unlock the front panel on the underside (push in), using a screwdriver or similar tool.

2. Swivel the front panel forwards slightly and lift away upwards.

Note
Do not remove protective caps from connections on the heating water side and from the gas connection until you are about to commence installation.

Mounting the boiler on the pre-plumbing jig or mounting frame

Note
Various installation components can be found in a separate pack. Keep the installation components safe, as they will be required for later installation.

Mounting the boiler and making connections (cont.)

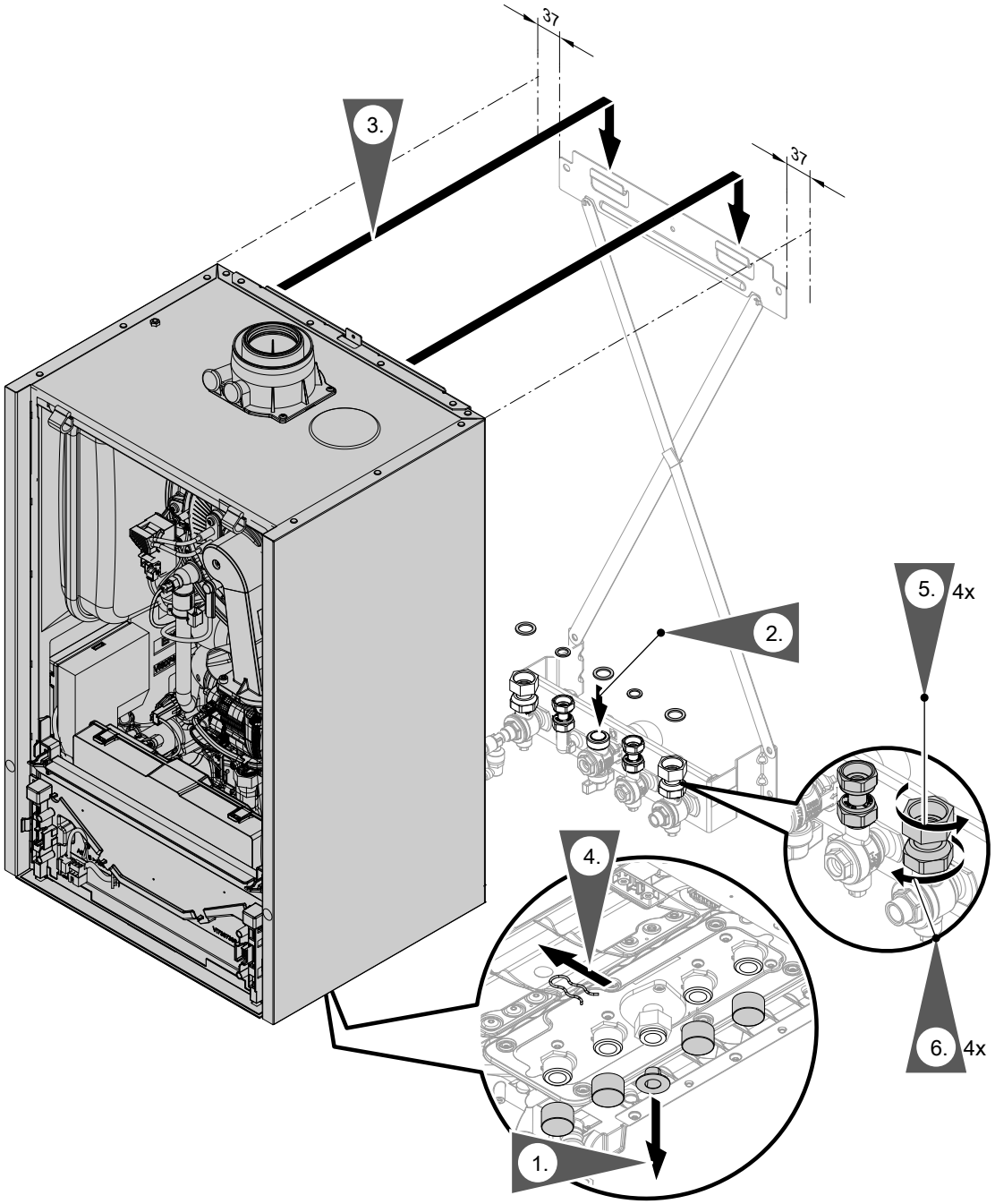

Fig. 5

Note
The diagram shows installation on a pre-plumbing jig for a gas condensing combi boiler.

The boiler can be installed on the following accessories:
- *Pre-plumbing jig*
- *Pre-plumbing jig for sub-mounting kit*
- *Mounting frame*
- *Plumbing wall mounting frame*

1. Pull off the protective caps.

2. Replace gaskets.

Internal gasket diameter:
- Gas connection Ø 18.5 mm
- Connections on the heating water side Ø 17.0 mm

Note
Gasket for gas connection is attached to the gas shut-off valve.

3. Suspend the Vitodens from the wall mounting bracket.

Note
After mounting, ensure correct seating.

Mounting the boiler and making connections (cont.)

4. ***Note***
   Only remove the clip under the gas pipe union nut once the appliance has been installed. Clip is no longer required.

5. Tighten union nuts so that they form a tight seal.

   Torque settings:
   - Union nuts G ¾: 30 Nm
   - Union nuts G ½: 24 Nm

   When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

6. Tighten locking ring fittings so that they form a tight seal:
   One turn beyond finger-tight.

Fitting the boiler to the wall mounting bracket

Note
Various installation components can be found in a separate pack. Keep the installation components safe, as they will be required for later installation.

Mounting the boiler and making connections (cont.)

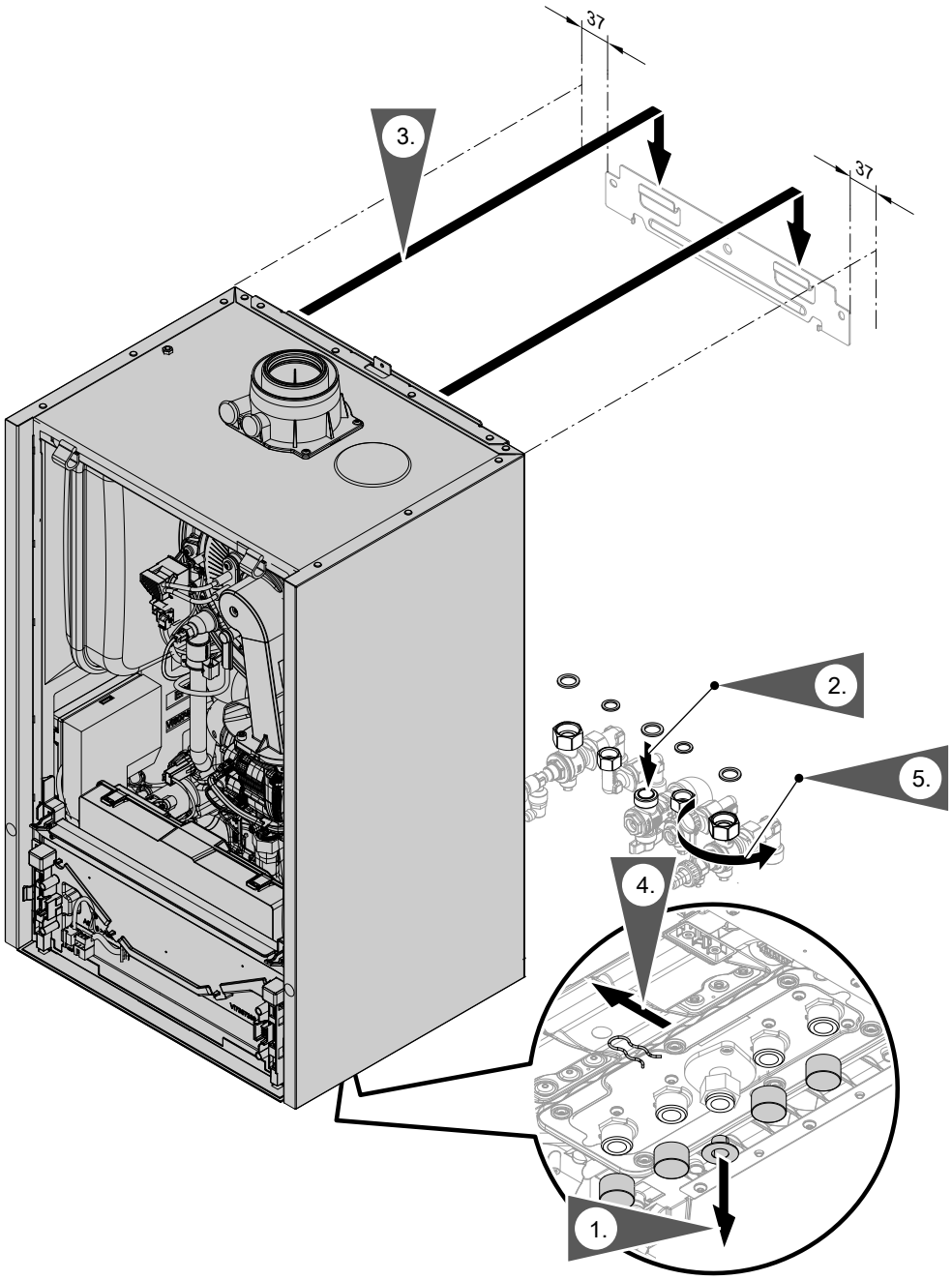

Fig. 6

1. Pull off the protective caps.

2. Replace gaskets. Fit valves and gas shut-off valve.

Internal gasket diameter:
- Gas connection Ø 18.5 mm
- Connections on the heating water side Ø 17.0 mm

Note
Gasket for gas connection is attached to the gas shut-off valve.

3. Suspend the Vitodens from the wall mounting bracket.

4. ***Note***
Only remove the clip under the gas pipe union nut once the appliance has been installed. Clip is no longer required.

5. Torque settings:
- Union nuts G ¾: 30 Nm
- Union nuts G ½: 24 Nm

When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

Mounting the boiler and making connections (cont.)

Fitting the programming unit mounting bracket on the top of the boiler

In the delivered condition, the programming unit is located on the underside of the boiler. If required for ease of operation, the programming unit can be located on the top of the boiler. To do so, reposition the bracket at the top.

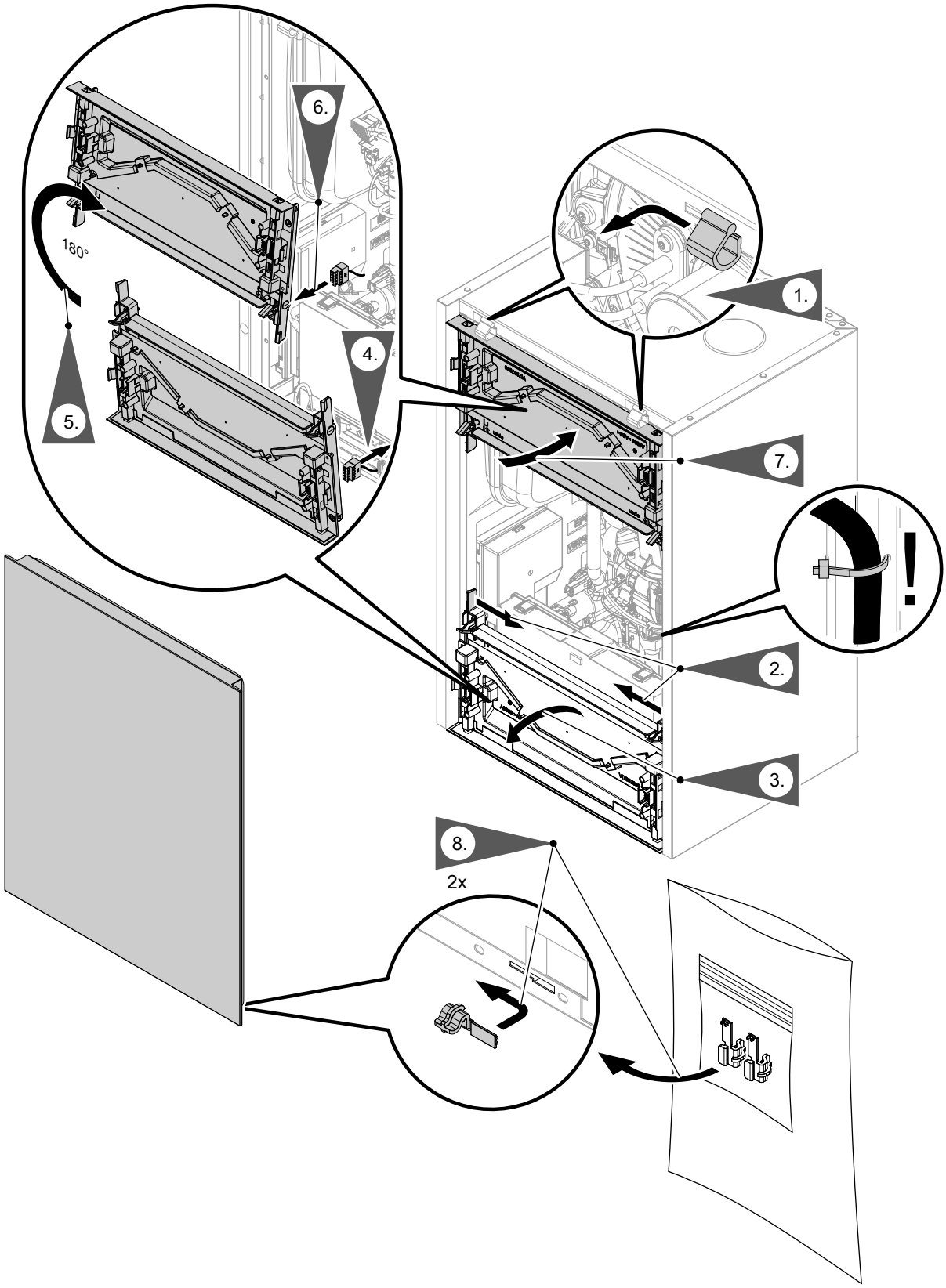

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Fig. 7

Mounting the boiler and making connections (cont.)

1. Remove the hinges and store them in case they need to be reinstalled at a later date.

4. Pull the plug of the connecting cable from the bracket.

> **!** **Please note**
> Incorrect routing of the cable can lead to heat damage and impairment of the EMC properties.
> Do not change the position of the cable or its fixture (fixing point on casing).

6. Turn the bracket over and insert the plug on the right-hand side again.

Connections on the heating water and DHW sides

If the connections have not been fitted previously, make the connections on the heating water and DHW sides.

Gas condensing system boiler

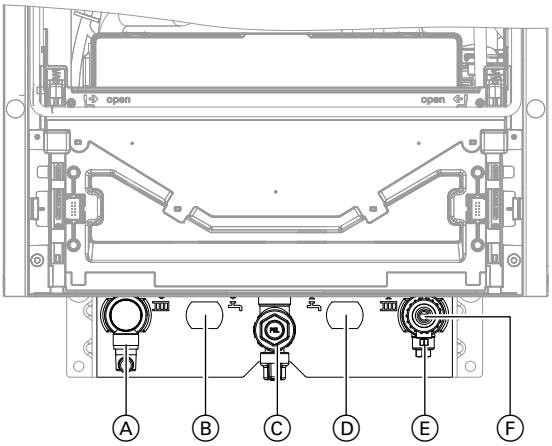

Fig. 8 Specifications for threads in conjunction with connection accessories

Ⓐ Heating flow R ¾ (male thread)
Ⓑ Cylinder flow G ¾ (male thread)
Ⓒ Gas connection R ¾ (male thread)
Ⓓ Cylinder return G ¾ (male thread)
Ⓔ Heating return R ¾ (male thread)
Ⓕ Filling/draining

Connection on the heating water side of the DHW cylinder:
The required intermediate pieces (Rp ¾, female thread) on the cylinder flow and return are part of the connection set for the DHW cylinder.
If no DHW cylinder is being connected, seal off the connections with caps.

Gas condensing combi boiler

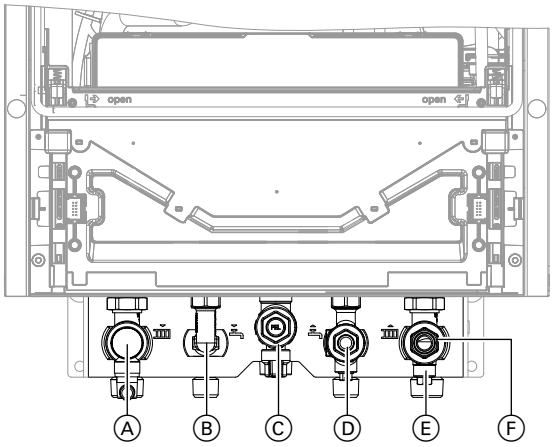

Fig. 9 Specifications for threads in conjunction with connection accessories

Ⓐ Heating flow R ¾ (male thread)
Ⓑ DHW R ½ (male thread)
Ⓒ Gas connection R ¾ (male thread)
Ⓓ Cold water R ½ (male thread)
Ⓔ Heating return R ¾ (male thread)
Ⓕ Filling/draining

Scald protection

DHW temperatures of over 60 °C can occur with gas condensing combi boilers. As a result, scald protection should be installed on site in the DHW pipe.

Condensate connection

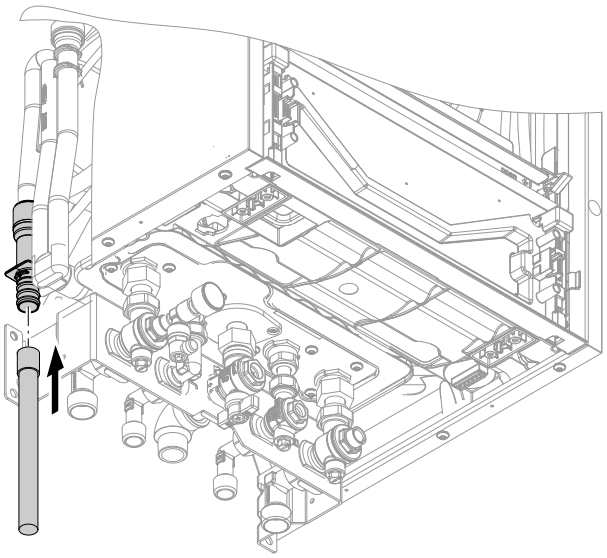

Fig. 10

1. Push the supplied drain hose on to the drain connector.

2. Connect the drain hose with a constant fall and a pipe vent to the public sewage system or to a neutralising system.

Note
Route the onward drain line inside the building as far as possible.

If the onward drain line is routed outside the building:
- *Use a min. Ø 30 mm line.*
- *Protect the line from frost.*
- *Keep the line as short as possible.*

Please note
The drain hose is used to route away any hot water discharged from the safety valve. Lay and secure the drain hose in a way that prevents any risk of scalding.

Note
Observe local waste water regulations.

Filling the trap with water

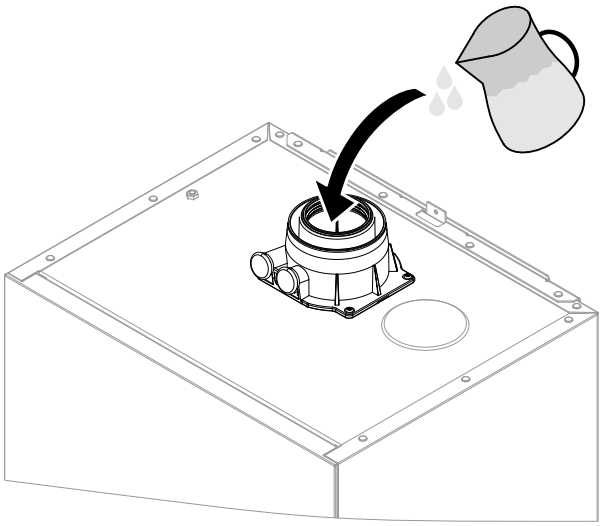

Fig. 11

Pour at least 0.3 l of water into the flue gas connection.

Please note
During commissioning, flue gas may escape from the condensate drain.
Always fill the trap with water before commissioning.

Note
If there is a risk of frost, only fill the trap just before commissioning.

Flue gas connection

Note
The "System certification" and "Skoberne GmbH flue system" labels enclosed with the technical documentation may only be used in conjunction with the Viessmann flue system made by Skoberne.

Connecting the balanced flue pipe
Installation instructions for the flue system

Flue gas connection (cont.)

Connecting several Vitodens to a shared flue system

If connecting multiple Vitodens to a common flue system at positive pressure using routing types C_{10}, C_{11}, C_{13}, C_{14}: Install a back draught safety device (accessories) in the flue gas connection and the mixing shaft of the burner on each boiler.
Installing the back draught safety devices:

Installation instructions for back draught safety device

Converting the control unit for use with a shared flue system:
- In the commissioning assistant, select the **"Multiple connections"** setting under **"Flue system type"**.

Do not carry out **commissioning** until the following conditions are met:
- Free passage through the flue gas pipes.
- Flue system with positive pressure is gas-tight.
- Inspection port covers checked for secure and tight seating.
- Apertures for ensuring sufficient combustion air supply are open and cannot be closed off.
  Note
  In open flue operation, install a rodent guard grille on the supply air aperture.
- Applicable regulations on installing and commissioning flue systems have been followed.
- Visual inspection of the flue gas connection.
  Note
  The use of lubricant prevents the gasket from shifting when the flue pipe is installed.
  When using a straight flue pipe, check that the inner ventilation air pipe is correctly fitted.

Danger
Leaking or blocked flue systems or an insufficient supply of combustion air cause life threatening poisoning due to carbon monoxide in the flue gas.
Ensure the flue system is in good working order.
Vents for interconnected combustion air supply must be non-closable in open flue operation.
Prevent condensate drainage via a wind protector.

Gas connection

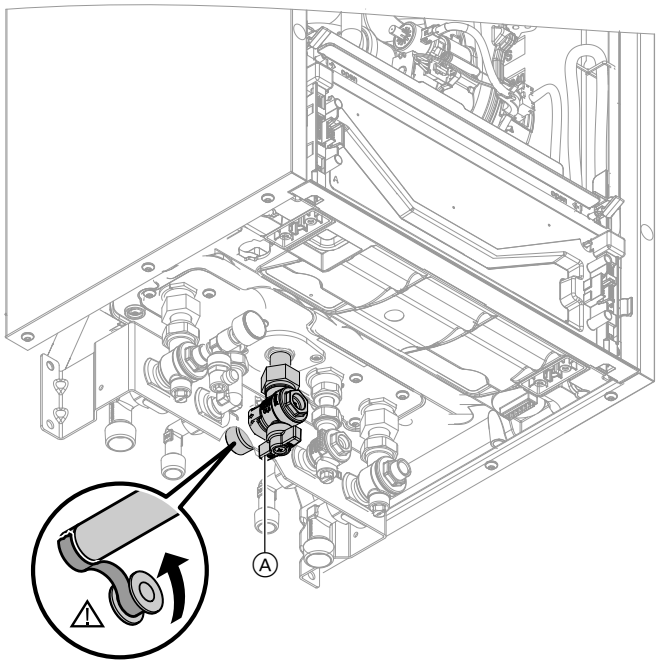

Fig. 12

1. If the gas connection has not been fitted previously, seal gas shut-off valve Ⓐ to the gas connection.
When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

Information on operation with LPG
Install an external safety solenoid valve if the boiler is installed below ground level.
An EM-EA1 extension (accessories) is required to connect the safety solenoid valve.

2. Check for leaks.

Danger
Escaping gas leads to a risk of explosion.
Check all connections on the gas side (also inside the appliance) for tightness.

Note
Only use suitable and approved leak detection agents (EN 14291) and devices for the tightness test. Leak detection agents with unsuitable constituents (e.g. nitrides, sulphides) can cause material damage.
Remove residues of the leak detection agent after testing.

Please note
Excessive test pressure will damage the boiler and gas solenoid valve.
Max. test pressure 150 mbar (15 kPa). If a higher pressure is required for leak tests, disconnect the boiler and the gas solenoid valve from the main supply pipe (undo the fitting).

3. Purge the gas line.

Electrical connections

Opening the wiring chamber

Note
If only PlusBus, the outside temperature sensor and the cylinder temperature sensor are connected to the heat generator, the wiring chamber does not need to be opened.

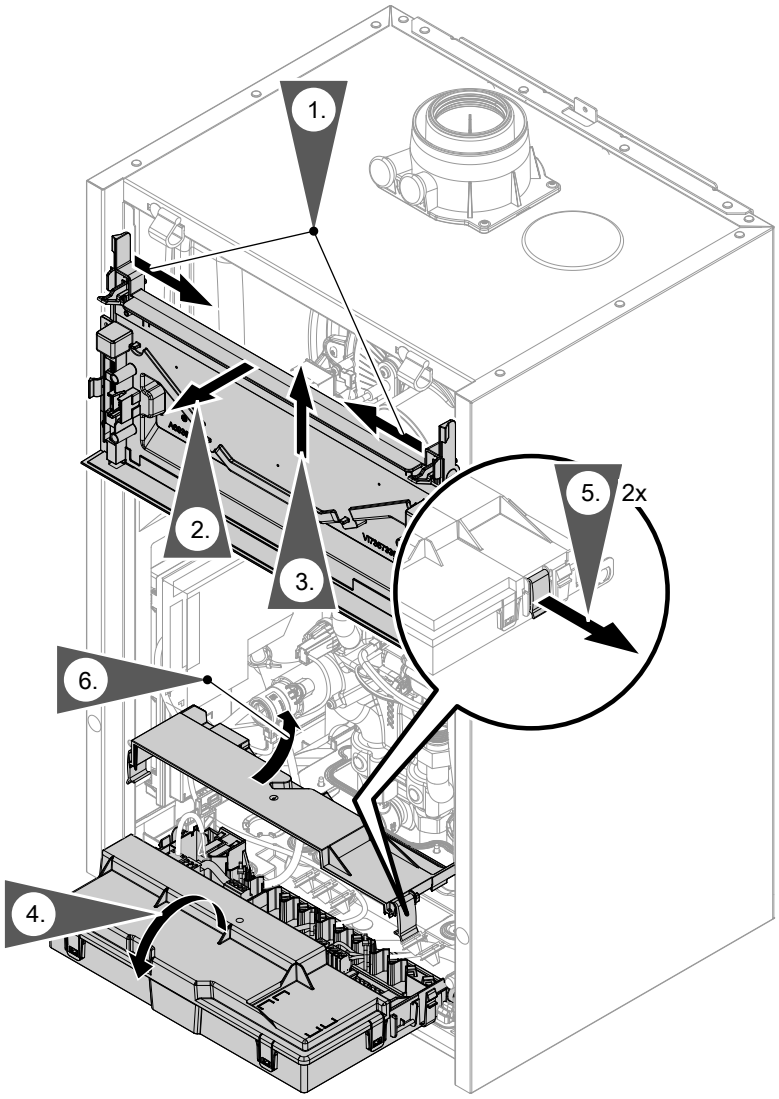

Fig. 13

Note
Steps 1 to 3 are required only if the programming unit is located at the bottom.
Do not disconnect the plug from the mounting panel.
Do not change the position of the cable or its fixture (fixing point on casing).

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

Electrical connections (cont.)

Layout of the electrical connections

Note
For further information on the connections, see the following chapters.

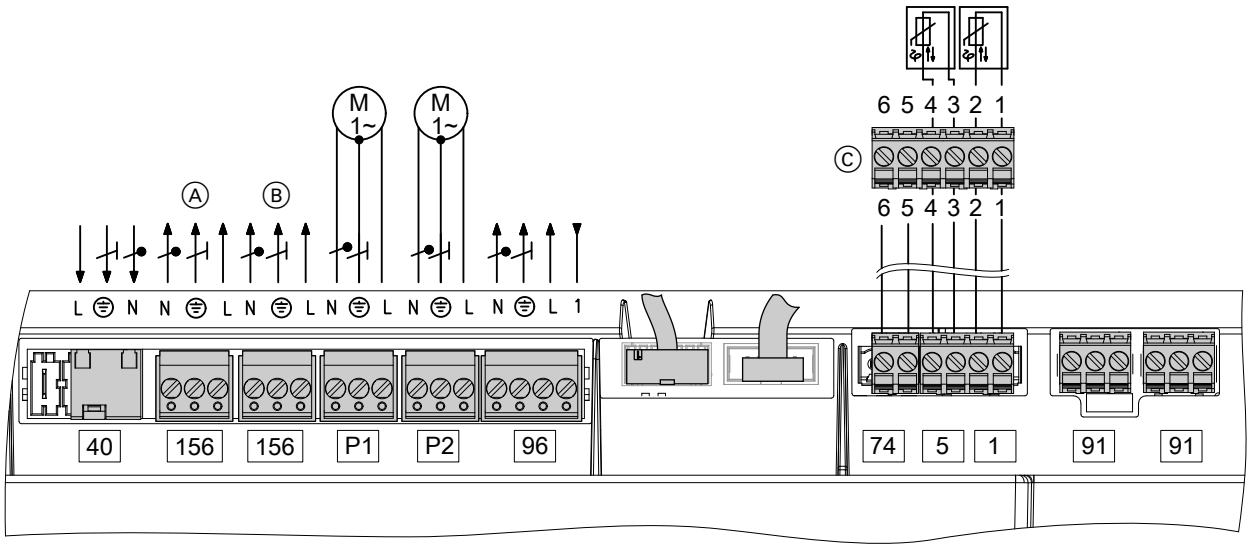

Fig. 14

Connections to 230 V~ plugs

40 Power supply

96 Configurable input 230 V, potential-free 230 V output

156 Switched power outlet

P1 Output 230 V for:
- Circulation pump (plug 21) for cylinder heating
- or heating circuit pump (plug 20) for heating circuit without mixer
- or heating circuit pump (plug 20) for heating circuit without mixer A1, without low loss header and with no other heating circuits (max. 1 heating circuit in the system).

P2 Output 230 V for:
- Heating circuit pump (plug 20) for heating circuit without mixer
- or DHW circulation pump (plug 28)
- or heating circuit pump (plug 20) for heating circuit without mixer A1, without low loss header and with no other heating circuits (max. 1 heating circuit in the system).

Ⓐ BCU burner control unit power supply (connected in the delivered condition)

Ⓑ Power supply for accessories

Ⓒ External plug on underside of appliance (see also following diagram)

Connections to extra low voltage (ELV) plugs

1 Outside temperature sensor
Terminals 1 and 2 on the external plug Ⓒ

5 Cylinder temperature sensor
Terminals 3 and 4 on the external plug Ⓒ

74 PlusBus
Terminals 5 and 6 on the external plug Ⓒ

91 CAN bus

Note on connecting accessories
When connecting accessories, observe the separate installation instructions provided with them.

Electrical connections (cont.)

On-site connections on HMU heat management unit

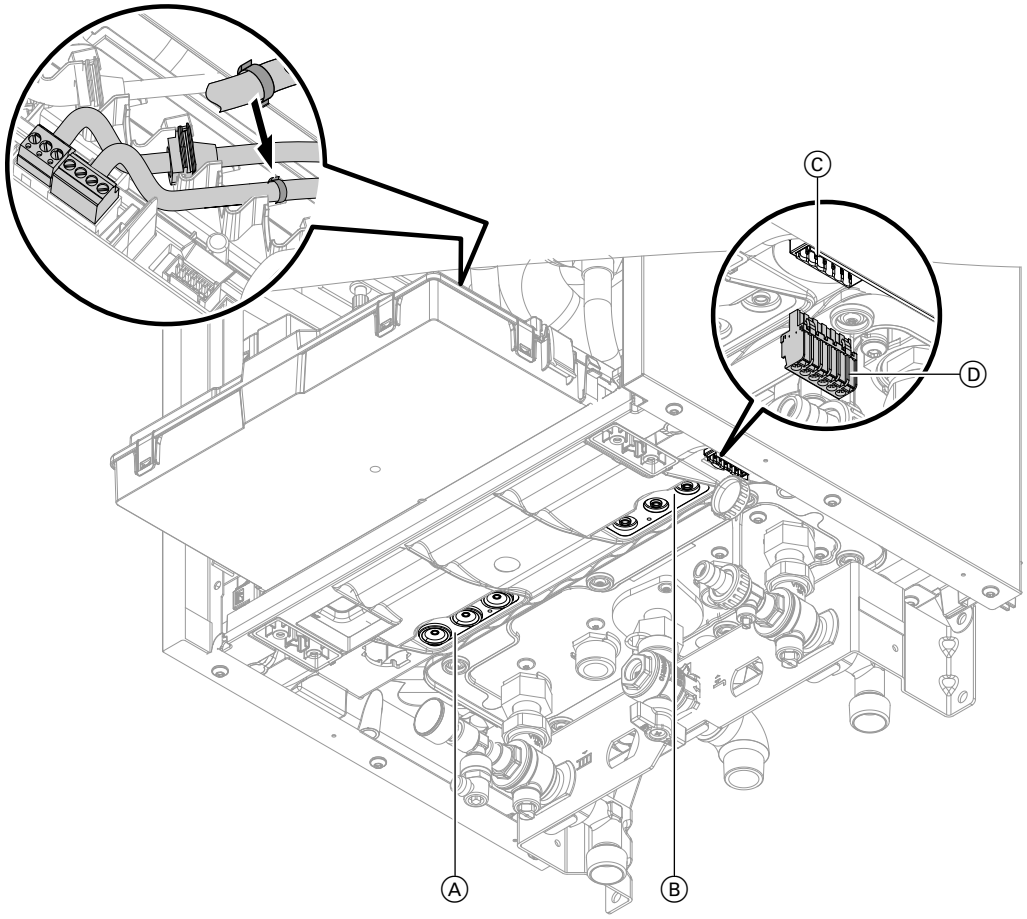

Fig. 15

Ⓐ Diaphragm grommets, 230 V cables
Ⓑ Diaphragm grommets, extra low voltage (ELV)
Ⓒ Plug-in connection on underside of appliance
Ⓓ Plug for connecting sensors and PlusBus
Remove plug from the pack of installation components.

- Open diaphragm grommets as required. Thread through only one cable at a time without a plug. Ensure diaphragm grommets are airtight. If required, remove plug from cable. After threading the cable through, re-fit the plug to the wire ferrules.
- Required plugs are supplied in separate packaging.
- For cables without strain relief bushings, provide strain relief in the wiring chamber in the form of cable ties.

Outside temperature sensor 1

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 vents
- 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 mm^2

Electrical connections (cont.)

Connecting low loss header sensor 9

The low loss header sensor is connected to the EM-P1 or EM-M1/MX extension (accessories) (ADIO electronics module).

Installation instructions for the EM-P1 or EM-M1/MX extension

Connecting the cylinder temperature sensor

Connect the cylinder temperature sensor to terminals 3 and 4 on external plug Ⓒ. See page 29.

Connecting the circulation pump to P1 and P2

Note
Observe the priority of the connections.

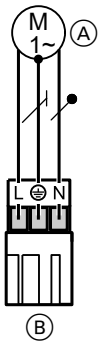

Fig. 16

Ⓐ Circulation pump
Ⓑ P1/P2 plug on HMU heat management unit

Possible connections to P1 and priority of connections:
1. Circulation pump for cylinder heating (plug 21)
2. If no circulation pump for cylinder heating is present:
   Heating circuit pump (plug 20) for heating circuit without mixer A1 in connection with low loss header and heating circuits with mixer
   Heating circuit pump for heating circuit without mixer A1, without low loss header and with no other heating circuits (max. 1 heating circuit in the system).

Possible connections to P2 and priority of connections:
1. Heating circuit pump (plug 20) for heating circuit without mixer A1 in connection with low loss header and heating circuits with mixer
2. Heating circuit pump (plug 20) for heating circuit without mixer A1, without low loss header and with no other heating circuits (max. 1 heating circuit in the system).
3. If no circulation pump for heating circuit without mixer is present:
   DHW circulation pump (plug 28)
   Note
   If a heating circuit pump for a heating circuit without mixer is installed, connect the DHW circulation pump (plug 28) to the P1 extension (accessories). Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.

The function of connections P1 and P2 is selected in the commissioning assistant by selecting the connected component in the system scheme.

Specification

Rated current	1 A
Rated voltage	230 V~

Floating switching contact connection

Connection at plug 96

One of the following functions can be connected:
- External demand
- External blocking
- DHW circulation pump external demand (pushbutton function, pump runs for 5 min). Not for Vitodens 222-W.
- Room temperature controller (room thermostat)
  In operating mode Constant operation with room temperature controller
- For external heating circuit hook-up (if installed), see chapter "External heating circuit hook-up".

Note
The pumps remain set to control function in the event of external demand and external blocking!

Electrical connections (cont.)

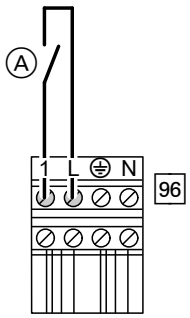

Fig. 17

Ⓐ Floating contact

Assigning functions in the commissioning assistant

See commissioning assistant in "Commissioning".

Information on connecting PlusBus subscribers

Only the following PlusBus subscribers can be connected to the control:
- 2 x EM-M1 or EM-MX extensions (ADIO electronics module)
- 2 Vitotrol 200-E
- 3 x EM-EA1 extensions (DIO electronics module)
- 1 x EM-S1 extension (ADIO or SDIO/SM1A electronics module)
- 1 x EM-P1 extension (ADIO electronics module)

The max. total length of the PlusBus lead is 50 m.
With an unscreened lead, 2-core, 0.34 mm^2.

Connection to other Viessmann appliances via CAN bus

The gas boiler can form a system network with other compatible appliances via the external CAN bus. Combining Viessmann appliances with One Base brings benefits such as shared use of a connectivity module or even joint commissioning and operation via an app.
- The Viessmann CAN bus is designed for "line" bus topology with a terminator at both ends (see diagram in next chapter).
- With CAN bus, the transmission quality and the cable lengths depend on the electrical properties of the cable.
- Only use one cable type within a CAN bus.

Note
Commissioning of all CAN bus subscribers:
See chapter "Commissioning the system as a system network (gas boiler + OneBase heat pump)".

Recommended cable

- Recommended cable for integration into an external CAN bus system:
  Bus cable (accessories), length: 5, 15 or 30 m
- For wiring on site:
  Only use cable types listed in the following tables.

Recommended cable type (on site):

CAN bus cable	In line with ISO 11898-2, twisted pair cable, shielded
▪ **Cable cross-section**	0.34 to 0.6 mm^2
▪ **Characteristic impedance**	95 to 140 Ω
▪ **Max. length** (entire CAN bus system)	200 m

Alternative cable types (on site):

CAN bus cable	2-core, CAT7, shielded
▪ Max. length (entire CAN bus system)	200 m
CAN bus cable	2-core, CAT5, shielded
▪ Max. length (entire CAN bus system)	200 m

Terminator for external CAN bus system

When integrating into an external CAN bus system, a distinction is made as to whether a CAN bus subscriber is the first, last or central subscriber.

Electrical connections (cont.)

In order to avoid communication interferences, only 1 terminator with 120 Ω may be present at the first and last subscriber for the termination of the external CAN bus system.
If the gas condensing system boiler is connected as the central subscriber, the factory-connected terminator must be removed: See the following chapters.
To check this, the resistance at one of the CAN bus connections between CAN L and CAN H can be measured after all CAN bus connections have been completed: Target value 60 Ω ± 10 %.

Note
The power supply to all devices in the CAN bus system must be interrupted for the check, otherwise the resistance cannot be measured correctly.

The gas boiler is the first or last subscriber

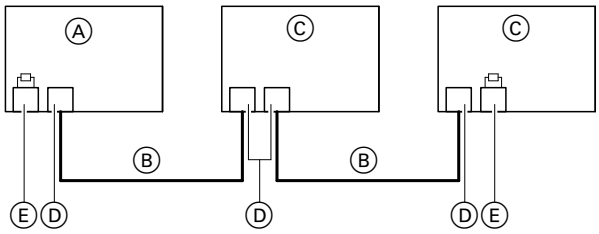

Fig. 18

Ⓐ Gas boiler connected as the first or last CAN bus subscriber

In this case, 1 connection is required at the external plug, connection 91 on the gas boiler in the HMU electronics module:
- Do not remove the factory-fitted plug 91 from the HMU electronics module; this plug contains the terminator.

Ⓑ CAN bus cable
Ⓒ Other CAN bus subscribers
Ⓓ Connection of external CAN bus without terminator
Ⓔ Connection of external CAN bus with terminator

The gas boiler is the central subscriber

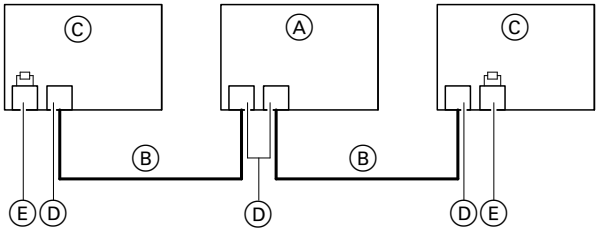

Fig. 19

Ⓐ Gas boiler as the central CAN bus subscriber

In this case, 2 connections are required at the gas boiler in the HMU electronics module:
- 1 connection in the HMU electronics module: Remove factory-fitted plug 91. Insert the BUS cable (accessories) into the same slot.
- 1 connection at the external plug, connection 91.

Ⓑ CAN bus cable
Ⓒ Other CAN bus subscribers
Ⓓ Connection of external CAN bus without terminator
Ⓔ Connection of external CAN bus with terminator

Power supply for accessories at plug 96/156 (230 V ~)

When positioned in wet rooms, accessories outside the wet area must not be connected to the power supply at the HMU heat management unit. If the boiler is not sited in a wet room, the power supply for accessories can be connected directly to the HMU heat management unit. This connection is switched directly with the ON/OFF switch of the appliance.

If the total system current exceeds 6 A, connect one or more extensions directly to the mains supply via an ON/OFF switch (see next chapter).

Electrical connections (cont.)

Power supply and PlusBus connection of accessories

Power supply of all accessories at the HMU heat management unit

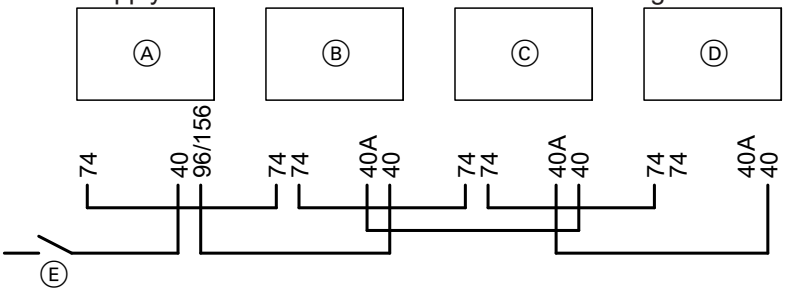

Fig. 20

Some accessories with direct power supply

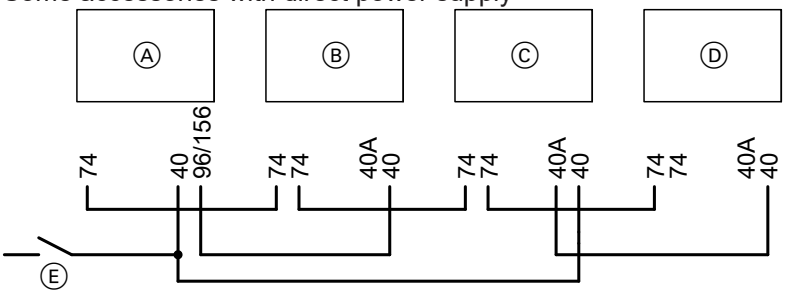

Fig. 21

Ⓐ HMU heat management unit, heat generator
Ⓑ Mixer extension kit (ADIO electronics module)
Ⓒ Mixer extension kit (ADIO electronics module)
Ⓓ EM-EA1 extension (DIO electronics module) and/or EM-S1 extension (ADIO or SDIO/ SM1A electronics module)
Ⓔ ON/OFF switch
40 Mains input
40A Power outlet
74 PlusBus
96/156 Power outlet on HMU heat management unit

PlusBus system length max. 50 m for 0.34 mm² cable cross-section and unshielded cable.
If the current flowing to the connected working parts (e.g. circulation pumps) is higher than the fuse rating of the relevant accessory, only use the output concerned to control an on-site relay.

Accessories	Internal fuse protection
EM-M1, EM-MX mixer extension kit	2 A
EM-EA1 extension	2 A
EM-S1 extension (not for Vitodens 222-F, 222-W and 333-F)	2 A

Danger
Incorrect wiring can lead to serious injury from electrical current and result in appliance damage.
- Route extra low voltage (ELV) leads < 42 V separately from cables > 42 V/230 V~.
- Only strip the minimum of insulation from cables as close as possible to the terminals and bundle tightly to the corresponding terminals.
- Secure cables with cable ties.

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Electrical connections (cont.)

Power supply 40

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

Connect the power supply and implement all safety measures (e.g. RCD circuit) in accordance with the following regulations:
- IEC 60364-4-41
- IEEE Wiring Regulation; BS 7671:2018
- Connection conditions of the local grid operator

- 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 complete isolation. The isolator must be fitted in the permanent electrical installation, in line with installation requirements.
  We also recommend installing a pulse current-sensitive RCD (RCD class A).
- Connect the power cable to the electricity supply using a fixed connection.
- If the power supply to the appliance is connected with a flexible power cable, ensure that the live conductors are pulled taut before the earth conductor in the event of strain relief failure. The length of the earth conductor wire will depend on the design.
- Max. fuse rating 16 A.

Danger
The absence of system 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.

Electrical connections (cont.)

Routing connecting cables/leads

Please note
If closures or diaphragm grommets are damaged, splashproofing is no longer ensured.
Never open or damage closures or unused diaphragm grommets on the underside of the appliance. Seal cable entries with fitted diaphragm grommets.

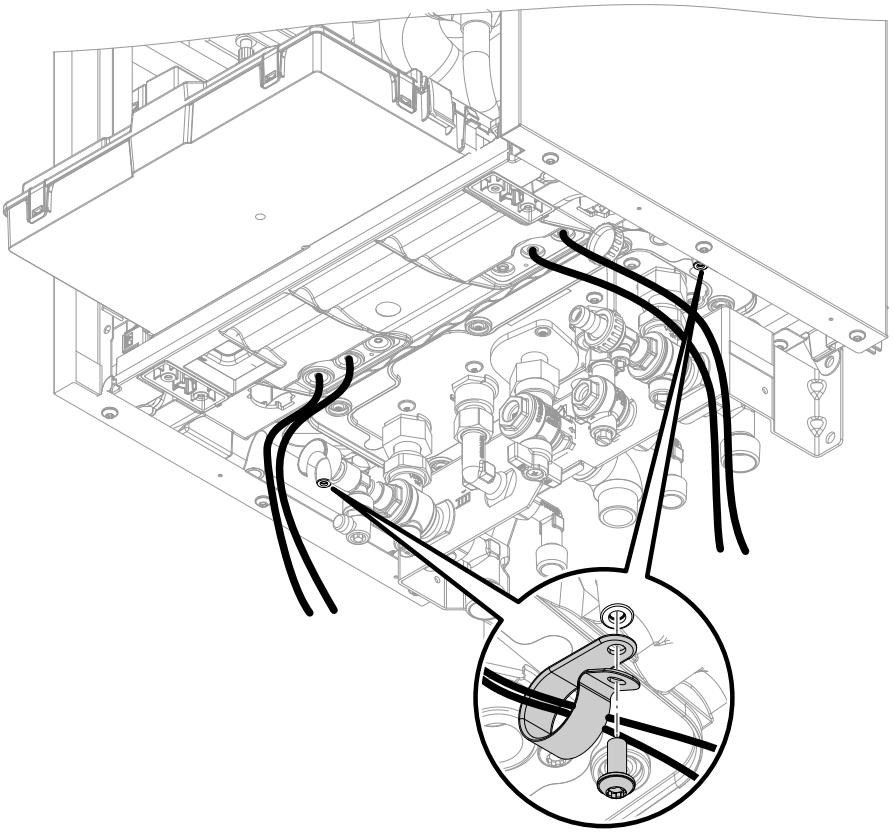

Fig. 22

Bundle cables using the supplied cable clips.
Route extra low voltage (ELV) leads < 42 V separately from cables > 42 V/230 V~.
Secure the cable clips on the underside using the supplied screws.
Do not route cables over sharp edges.

Please note
If connecting cables/leads come into contact with hot components, they will be damaged.
When routing and securing cables/leads on site, ensure that the maximum permissible temperatures for these cables/leads are not exceeded.

WiFi operational reliability and system requirements

WiFi router system requirement

- WiFi router with activated WiFi:
  The WiFi router must be protected by a sufficiently secure WPA2 password.
  Note
  - *The WPA2 password is a sequence of 8 to 63 characters.*
  - *Upper and lower case letters, numbers and special characters in ASCII are permitted.*

  The WiFi router must always have the latest firmware update.
  Do not use unencrypted connections between the heat generator and the WiFi router.
- Internet connection with high availability:
  "Flat rate" (flat rate tariff without restriction on time or data volume)
- Set the WiFi frequency to 2.4 GHz.
- Dynamic IP addressing (DHCP, delivered condition) in the network (WiFi):
  Have this checked on site by an IT expert **prior** to commissioning. Arrange for set up if required.
- Set routing and security parameters in the IP network (LAN).
  Note
  Length of password and permitted special characters depend on the respective router.
  Enable the following ports for direct outgoing connections:
  - Port 80
  - Port 123
  - Port 443
  - Port 8883

  Have this checked on site by an IT expert **prior** to commissioning. Arrange for enabling if required.

Wireless signal range of WiFi connection

The range of wireless signals may be reduced by walls, ceilings and interior fixtures. The following circumstances will reduce the strength of the wireless signal and can disrupt reception:

- On their way between transmitter and receiver, wireless signals are **damped**, e.g. by air or when penetrating walls.
- Wireless signals are **reflected** by metallic objects, e.g. reinforcements embedded in walls, metal foil of thermal insulation and thermal glazing with metallised thermal vapour deposit.
- Wireless signals are **isolated** by service ducts and lift shafts.
- Wireless signals are **disrupted** by devices that also operate with high frequency signals. Distance to such appliances: **Min. 2 m**.
  Examples of devices with high frequency signals:
  - Computers
  - Audio and video systems
  - Devices with active WiFi connection
  - Electronic transformers
  - Pre-ballasts

Install the heat generator as close as possible to the WiFi router to ensure a good WiFi connection. The signal strength can be displayed on the programming unit: See operating instructions.

Note
The WiFi signal strength can be increased with commercially available WiFi repeaters.

Angle of penetration

The reception quality remains best if radio signals hit the walls vertically.
Depending on the angle of penetration, the effective wall thickness changes and so does the extent to which the electromagnetic waves are damped.

WiFi operational reliability and system… (cont.)

Flat (unfavourable) angle of penetration

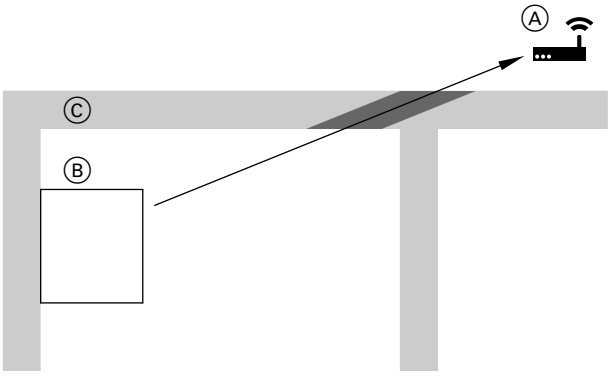

Fig. 23

Ⓐ WiFi router
Ⓑ Heat generator
Ⓒ Wall

Ideal angle of penetration

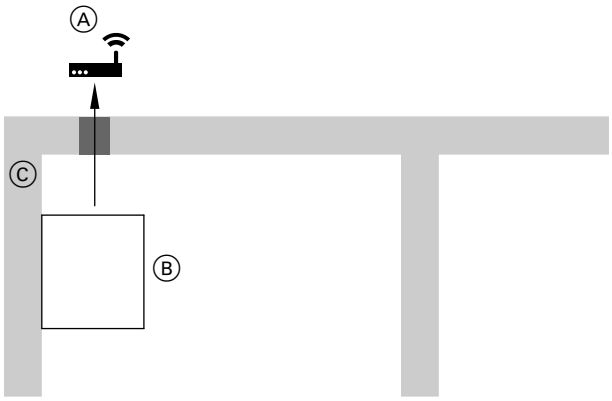

Fig. 24

Ⓐ WiFi router
Ⓑ Heat generator
Ⓒ Wall

Closing the wiring chamber

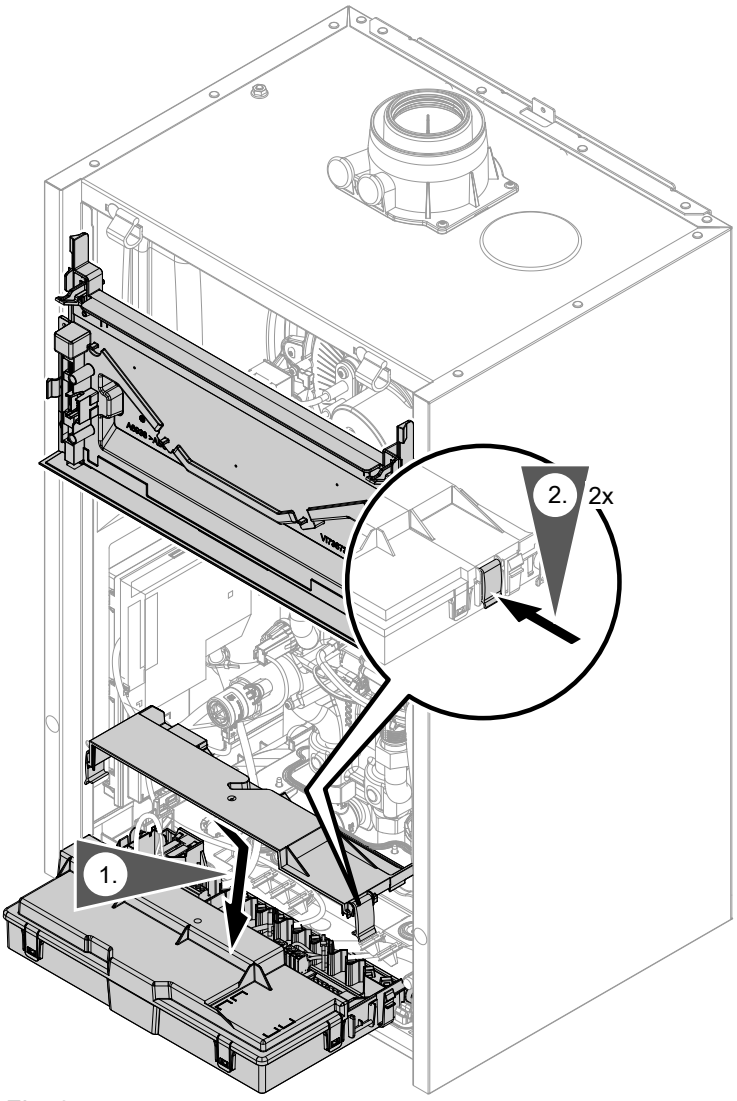

Fig. 25

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Fitting the programming unit and front panel

Programming unit located at the bottom

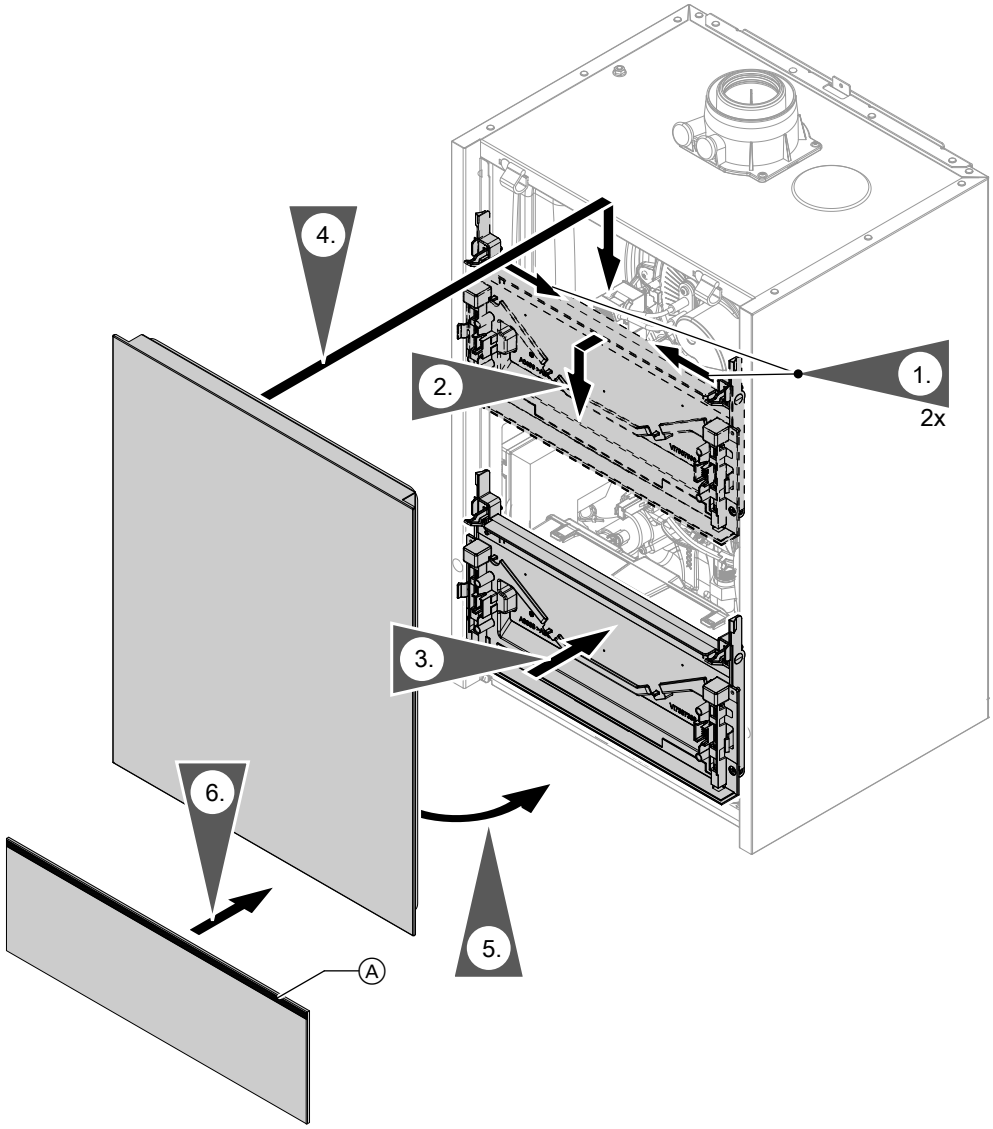

Fig. 26

Lightguide Ⓐ at the top

Fitting the programming unit and front panel (cont.)

Programming unit located at the top

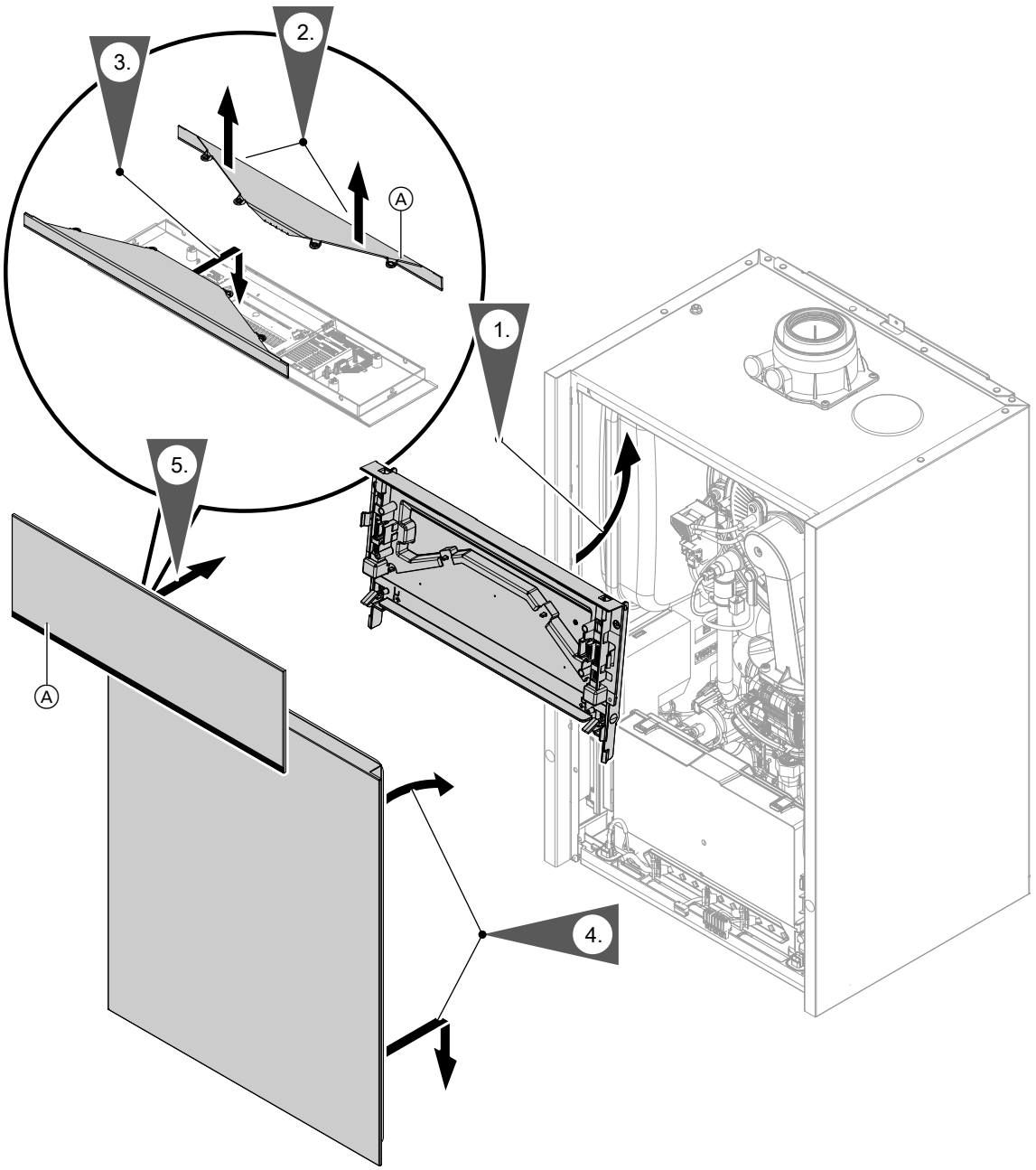

Fig. 27

1. Install the mounting panel for the programming unit at the top. See page 23.
   Reconnect the plugs to the mounting panel on the right. Do not alter where and how the cable is secured (fixing point of the cable tie).
2. Pull the Lightguide Ⓐ out of all 4 detents at once and remove. As you do so, pull it upwards between 2 detents, in the middle and at the same time. Ensure that the locking tabs do not break off.
3. Turn Lightguide Ⓐ around and clip it into place at the bottom of the programming unit.
4. Fit the front panel.
5. Fit the programming unit with Lightguide Ⓐ at the bottom.

Steps - commissioning, inspection and maintenance

Commissioning steps
Inspection steps
Maintenance steps

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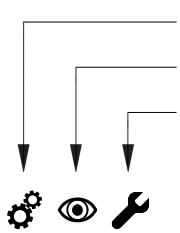
Steps - commissioning, inspection and… (cont.)



Page

Filling the trap with water

Please note
Only commission the appliance with a fully filled trap.
Check that the trap has been filled with water.

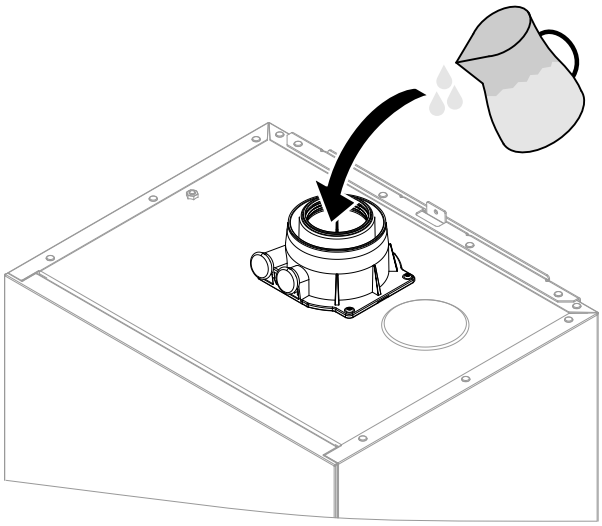


Fig. 28

Pour at least 0.3 l of water into the flue gas connection.

Please note
During commissioning, flue gas may escape from the condensate drain.
Always fill the trap with water before commissioning.

Commissioning the system with the commissioning assistant

Commissioning assistant

1. Open the gas shut-off valve.
2. If the appliance has not been switched on yet: Turn on the ON/OFF switch. The commissioning assistant starts automatically.
   If the appliance has already been switched on: See chapter "Calling up the commissioning assistant at a later point".
3. For further steps, see the commissioning assistant in the following overview.

   Note
   Once the commissioning assistant has finished, run an actuator test to check that the actuators are connected correctly and working properly.

Note
Depending on the type of heat generator, connected accessories and other settings, not all menu points will be displayed and not all functions are available.
See the technical guide or hydraulic scheme browser.

Commissioning via software tool

Note
Apps for commissioning and service are available for iOS and Android devices.

Download on the App Store

GET IT ON Google Play

The appliance automatically switches on the WiFi access point.

1. Open the gas shut-off valve.
2. ☰ should then be pressed.
3. " "Use › to call up **"Service"**.
4. " "Press **"Service"**.
5. Enter password.
6. Use › to call up **"Commissioning"**.
7. Press **"With software tool"**.
8. Follow the instructions in the app.

Commissioning the system with the commissioning… (cont.)

Commissioning assistant sequence		Explanations and references
Commissioning		
	Language	
	With programming unit	If commissioning is to be carried out at the programming unit of the heat generator.
	With software tool	The appliance automatically switches on the WiFi access point. Further commissioning steps according to the instructions of the software tool used
	Demo operation	Only for demonstration purposes. Do not select for normal heating operation.
	Units of measurement	
	Date and time	
	Operating mode	▪ Weather-compensated mode The outside temperature sensor must be connected. ▪ Constant mode Operation with constant flow temperature ▪ Room temperature-dependent operation (available only for family houses) A room temperature controller/room thermostat (accessories) must be connected to plug 96. Only one heating circuit without mixer in the system.
	Building type	▪ Family house One shared holiday program and time program for DHW heating ▪ Apartment building (room temperature-dependent mode not available) A separate holiday program can be set for each heating circuit
	Gas type	If operating with LPG, switch to **"LPG"**
	Flue system type (only Vitodens 2xx)	▪ Single connection Only **one** heat generator is connected to the flue system (factory setting). ▪ Multiple connections **Several** heat generators are connected to the flue system at positive pressure (only suitable for systems that run on natural gas).
	System pressure: ▪ Set value ▪ Range	Select the set system pressure, e.g. 1.5 bar. Select the range within which the system pressure can fluctuate around the set value, e.g. +/-0.5 bar. If the value falls below the set range for a certain period of time (set value [1.5 bar] - range [0.5 bar] = 1.0 bar), a fault message/warning message A.11 is displayed.
	Filling Air vent valve	Filling: See chapters "Filling the heating system" and "Venting the heating system".
	After confirmation with ✔, an automatic test of the flue gas temperature sensor is carried out. See the following chapter.	
If no further settings are to be performed, the commissioning assistant can now be closed.		
System scheme		
	Heating circuit 1	Heating circuit without mixer or heating circuit without mixer with external hook-up Heating circuit without mixer with pump (without low loss header and without further heating circuits, max. 1 heating circuit in the system) for e.g. fixed value control station.
	Heating circuit 2, 3 ...	Heating circuits with mixer or heating circuit with mixer with external hook-up
DHW		Settings for DHW heating according to the system components
	▪ Not available	System without DHW heating
	▪ Cylinder with one sensor	System with DHW cylinder with 1 cylinder temperature sensor

Commissioning the system with the commissioning… (cont.)

Commissioning assistant sequence	Explanations and references
▪ Cylinder with one sensor and DHW circulation pump	System with DHW cylinder with 1 DHW cylinder temperature sensor and DHW circulation pump
▪ Loading cylinder with two sensors	Gas condensing storage combi boiler or gas/solar condensing storage combi boiler with integral loading cylinder
▪ Loading cylinder with two sensors and DHW circulation pump	Gas condensing storage combi boiler or gas/solar condensing storage combi boiler with integral loading cylinder with DHW circulation pump (DHW circulation pump not possible with Vitodens 222-W).
▪ CAN bus appliance with DHW heating	▪ Only for system networks consisting of heat pump and gas condensing system boiler, type B2HH or type B3HH. ▪ With hybrid extension set (accessories): Gas condensing system boiler, types B2HE, B2HF or types B3HF, B3HG. ▪ The DHW cylinder is hydraulically connected to the gas condensing system boiler and heat pump.
Low loss header/buffer cylinder	Settings for the consumer circuits according to the system components
▪ Not available	There is no low loss header or heating water buffer cylinder in the system.
▪ Low loss header, heating only	System with low loss header, without DHW heating
▪ DHW heating upstream of low loss header	DHW heating with e.g. separate DHW cylinder connected upstream of the low loss header
▪ DHW heating downstream of low loss header	DHW heating with e.g. separate DHW cylinder connected downstream of the low loss header
▪ Buffer cylinder, heating only	System with heating water buffer cylinder, without DHW heating
▪ DHW heating upstream of buffer cylinder	DHW heating with e.g. separate DHW cylinder connected upstream of the heating water buffer cylinder
▪ DHW heating downstream of buffer cylinder	DHW heating with e.g. separate DHW cylinder connected downstream of the heating water buffer cylinder
Solar (if installed)	Solar thermal system connected to heat generator via EM-S1 extension (ADIO, SDIO/SM1A electronics module) Setting subject to the design of the solar thermal system EM-S1 extension installation and service instructions
▪ No solar function	
▪ Solar function DHW heating	
▪ Solar function for central heating backup	Only adjustable on SDIO/SM1A electronics module
▪ Solar function with preheating, 2nd cylinder	Only adjustable on SDIO/SM1A electronics module
▪ Solar function with thermostat function	Only adjustable on SDIO/SM1A electronics module

Commissioning the system with the commissioning… (cont.)

Commissioning assistant sequence	Explanations and references
Floating contact: Function selection plug 96	If a contact has been connected to plug 96 of the HMU heat management unit.
▪ No function	
▪ External demand, DHW circulation pump	Pushbutton function, DHW circulation pump runs for 5 min.
▪ External demand	Heat generator demand with adjustable set flow temperature (parameter 528.0) and set primary pump speed (parameter 1100.2)
▪ External blocking	
EM-EA1 (DIO): Function selection	If an EM-EA1 extension (DIO electronics module) is connected as a function extension.
Functions	Selection of the connected function according to the table in the EM-EA1 extension installation instructions.
Remote control units	
	Set the type of remote control and subscriber no. as assignment to the respective heating circuit. Up to 3 heating circuits can be assigned to one remote control unit. It is not possible for several remote controls to act on one heating circuit.
Maintenance	
Interval in burner hours run until next maintenance	Interval adjustable in steps of 100 h.
Interval until the next maintenance	Interval adjustable to 3, 6, 12, 18 or 24 months.

Automatic flue gas temperature sensor check

The display shows: **"Testing, flue gas temperature sensor"** and **"Active"**.
If the flue gas temperature sensor is not positioned correctly, fault message F.416 appears.
For further details regarding the flue gas temperature sensor test, see "Repairs".

Note
If fault message F.416 continues to be displayed although the flue gas temperature sensor is correctly positioned: Initial commissioning may result in burner faults e.g. caused by air in the gas line. Eliminate the fault and reset the appliance.

Note
The burner remains locked out until the test has been successfully completed.

When the fault has been remedied, turn the ON/OFF switch off and back on again.
Confirm the commissioning assistant with ✔.

Switching WiFi on/off

The appliance is equipped with an integrated WiFi communication module with extended type plate.

The internal communication module supports commissioning, maintenance and servicing with "ViGuide" online/the "ViGuide" app as well as operation via the "ViCare" app.
The access details required for establishing a connection are recorded in the form of an access code with **"WiFi symbol"**. Three copies of this code are located on the front of the programming unit.
Remove the access code label and for commissioning, affix one label to the space marked out on the type plate.
Switch on the WiFi connection and establish a connection to the router; see also page 37.
Activating the internet connection:

 Operating instructions

Affix a further label here so you can find it again for use at a later time:

Commissioning the system with the commissioning… (cont.)

Fig. 29

Affix a label in the operating instructions.

Calling up the commissioning assistant at a later point

If you need to continue commissioning later, the commissioning assistant can be reactivated at any time.

Tap the following buttons:

1. ☰
2. **"Service"**
3. Enter password **"viservice"**.
4. Use ✔ to confirm.
5. **"Commissioning"**

Commissioning the system as a system network

Commissioning Vitodens and the heat pump with Viessmann One Base

All Viessmann appliances with One Base in a system network (gas condensing system boiler + OneBase heat pump) are commissioned using the ViGuide app via the access point of the heat pump (main appliance).
See chapter "Commissioning the system" in the installation and service instructions for the heat pump.

Note
Where one or more of the Vitodens boilers have already been operational as a standalone unit, first restore the factory settings on these appliances.
In the system configuration (parameters) of the respective Viessmann appliance, run parameter 575.0 ***"Delivered condition"****. See page 74.*

Commissioning the heat pump in a system network

In a system network of one heat pump and one of the following external heat generators, commissioning is carried out via the HMI programming unit of the heat pump:
- Vitodens 200-W, type B2HH
  And
  Vitodens 300-W, type B3HH
- With hybrid extension set (Vitodens accessories):
  Vitodens 200-W, types B2HE and B2HF
  And
  Vitodens 300-W, types B3HF and B3HG

When commissioning the hybrid system network via the programming unit, commissioning must first be started and carried out on the main appliance (heat pump). Once the main appliance has been successfully commissioned, the slave appliance – the gas condensing system boiler – is commissioned.
The other connected appliances detect the connection to the main appliance.
In conjunction with a heat pump with OneBase control platform, the heat pump is always the main appliance.

Note
The ViGuide app for commissioning and servicing is available for iOS and Android devices.

Download on the App Store

GET IT ON Google Play

1. Where one or more of the other Viessmann appliances have already been operational as a standalone unit, **first** restore the factory settings on these Viessmann appliances.

   Installation and service instructions of the relevant Viessmann appliance

2. **Switch on the Viessmann appliances:**
   - Switch on all Viessmann appliances in the system network.
   - It is **essential** to observe the start sequence for the heat pump: See chapter "Start sequence for indoor/outdoor units".

Commissioning the system as a system network (cont.)

3. **Start commissioning on the heat pump (main appliance):**
   Launch the commissioning process on the heat pump via the commissioning assistant:

   Heat pump installation and service instructions.

   Note
   During commissioning of the main appliance (heat pump), a lock screen appears on the programming unit of the slave appliance (gas condensing system boiler). This lock screen disappears once commissioning on the main appliance has been successfully completed.

   - If the heat pump hasn't been switched on yet, the commissioning assistant starts automatically.
   - If the heat pump has already been switched on: See chapter "Calling up the commissioning assistant at a later point".

   For commissioning via the ViGuide app, select **"Commissioning with software tool"**:
   - The heat pump automatically activates the access point. A direct WiFi connection to a mobile device is established via the access point. This WiFi connection is independent of the home WiFi network.
   - The other connected Viessmann appliances detect the connection to the heat pump (main appliance). Some Viessmann appliances indicate on the HMI programming unit display that connection was successful.

   For commissioning via the HMI programming unit:
   - Follow the commissioning assistant.
   - The other connected Viessmann appliances detect the connection to the heat pump (main appliance). Some Viessmann appliances indicate on the HMI programming unit display that connection was successful.

4. **Commission and set up the system network:**
   For commissioning via the ViGuide app: Launch the ViGuide app on the mobile device. Follow the instructions.
   - Scan the QR code on the label.
     Or
   - Enter the name of the access point "Viessmann-xxxx" and the password ("WPA2").

   Commission all Viessmann appliances via the heat pump's access point using the ViGuide app.
   Perform all necessary settings in the ViGuide app.

5. **Further settings via the ViCare app:**
   The heat pump must be connected to the Viessmann server via the internet in order to perform settings via the ViCare app. This internet connection is established via the home WiFi.
   To set up the internet connection:

   Operating instructions

Filling the heating system

Fill water

As a heat transfer medium for DHW heating, the heating water must meet fluid category ≤ 3. This requirement is met if water of potable quality is used as heating water. For example, if additives are used, the additive manufacturer must specify which category the treated heating water comes under.

Filling the heating system (cont.)

Please note
Unsuitable fill water increases the level of deposits and corrosion and may lead to appliance damage.
- Flush the heating system thoroughly before filling.
- Only use fill water of potable water quality.
- Special antifreeze suitable for heating systems can be added to the fill water. The antifreeze manufacturer must verify its suitability.
- Fill and top-up water with a water hardness above 300 ppm must be softened, e.g. with a small softening system for heating water.

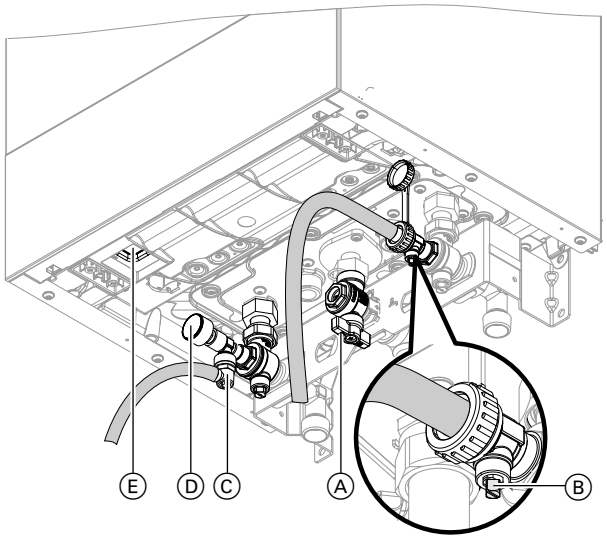


Fig. 30

Ⓔ ON/OFF switch

1. Check the pre-charge pressure of the expansion vessel.
2. Close gas shut-off valve Ⓐ.
3. Activate the filling function (see commissioning assistant or following chapter).
4. Fill the heating system at boiler drain & fill valve Ⓑ in the heating return (on the connection set or on site). Minimum system pressure > 1.0 bar (0.1 MPa). Check the system pressure at pressure gauge Ⓓ. The indicator must be in the green band. If necessary, open the on-site air vent valves.

   Note
   Ensure that the safety valve does not respond when you are filling the system. If the flow rate through the safety valve becomes too high, water may enter the combustion chamber.

5. Fit hose to air vent valve Ⓒ. Route the hose into a suitable container or drain outlet.
6. Close the shut-off valves on the heating water side.
7. Open air vent valve Ⓒ and fill valve Ⓑ in the heating return. Vent (flush) under mains pressure until no more air noise is audible.
8. Close air vent valve Ⓒ and boiler drain & fill valve Ⓑ.
   Check the system pressure at pressure gauge Ⓓ. The indicator must be in the green band.
9. Open the shut-off valves on the heating water side.

Activating the filling function

Tap the following buttons:

1. ☰
2. **"Service"**
3. Enter password **"viservice"**.
4. Use ✔ to confirm.
5. **"Service functions"**
6. **"Filling"**

Filling the heating system (cont.)

7. Activate the filling function with ✔.
   The display shows the system pressure.
   The filling function ends automatically after 20 min or when you tap ✔.

Topping up the heating water

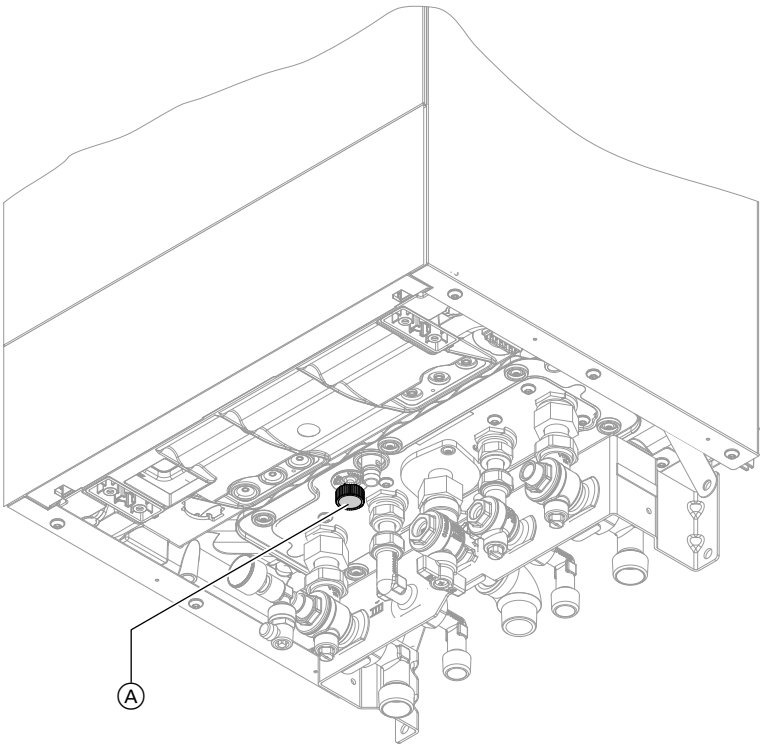


Fig. 31

If necessary, top up the heating water at top-up valve Ⓐ.

Checking all connections on the heating water and DHW sides for leaks

⚠ **Danger**
There is a risk of electric shock from escaping heating water or DHW.
When commissioning and after carrying out maintenance work, check all water side connections for leaks.

! **Please note**
Leaking hydraulic connections lead to appliance damage.
- Check the internal and on-site hydraulic connections for leaks.
- In the event of leaks, switch off the appliance immediately. Drain the heating water. Check the seating of seal rings. **Always** replace displaced seal rings.

Vent the heating system

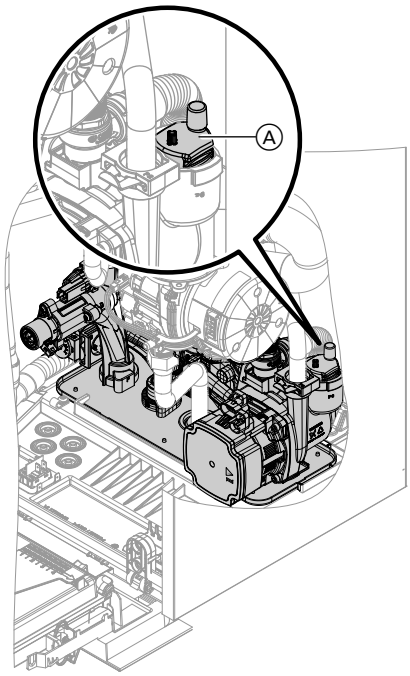


Fig. 32

1. Check whether the air vent screw in quick-action air vent valve Ⓐ of the heating circuit pump is open.
2. Close the gas shut-off valve and switch the appliance ON.
3. Activate the venting program (see commissioning assistant or following chapter).
4. Adjust the system pressure.
   The display shows the system pressure.
5. Disconnect the supply hose from the boiler drain & fill valve.
6. Open the gas shut-off valve.

Note
Leave the quick-action air vent valve open once the venting program has finished.

Activating the venting function

Tap the following buttons:

1. ☰
2. **"Service"**
3. Enter password **"viservice"**.
4. Use ✔ to confirm.
5. **"Service functions"**
6. **"Air vent valve"**
7. Activate the venting function with ✔.
   The display shows the system pressure.
   The venting function ends automatically after 20 min or when you tap ✔.

Naming the heating circuits

In the delivered condition, the heating circuits are designated "Heating circuit 1", "Heating circuit 2", "Heating circuit 3" and "Heating circuit 4".
If the system user prefers, the heating circuits can be renamed to suit the specific system.

To enter names for heating circuits:

Operating instructions

Entering contact details of heating contractor

The system operator can call up contact details when required and notify the heating contractor.

1. ☰
2. Select **"Information"**.
3. Select **"Service contact details"**.
4. Fill in the fields and confirm each with ✔.

Checking the gas type

The boiler is equipped with an electronic combustion controller that adjusts the burner for optimum combustion in accordance with the prevailing gas quality.

- For operation with natural gas, no adjustment is therefore required across the entire Wobbe index range. The boiler can be operated within the Wobbe index range 9.5 to 15.2 kWh/m³ (34.2 to 54.7 MJ/m³).
- For operation with LPG, the gas type needs to be changed on the control unit (see following chapter).

1. Determine the gas type and Wobbe index by asking your local gas supply utility or LPG supplier.
2. Record the gas type in the service report.

Converting the gas type for operation with LPG

1. To change the gas type on the control unit, see "Commissioning the system with the commissioning assistant"

   Note
   No mechanical adjustments are made to the gas solenoid valve.

2. Affix label "G31" (supplied with the technical documentation) adjacent to the type plate on the cover panel.

Removing the front panel

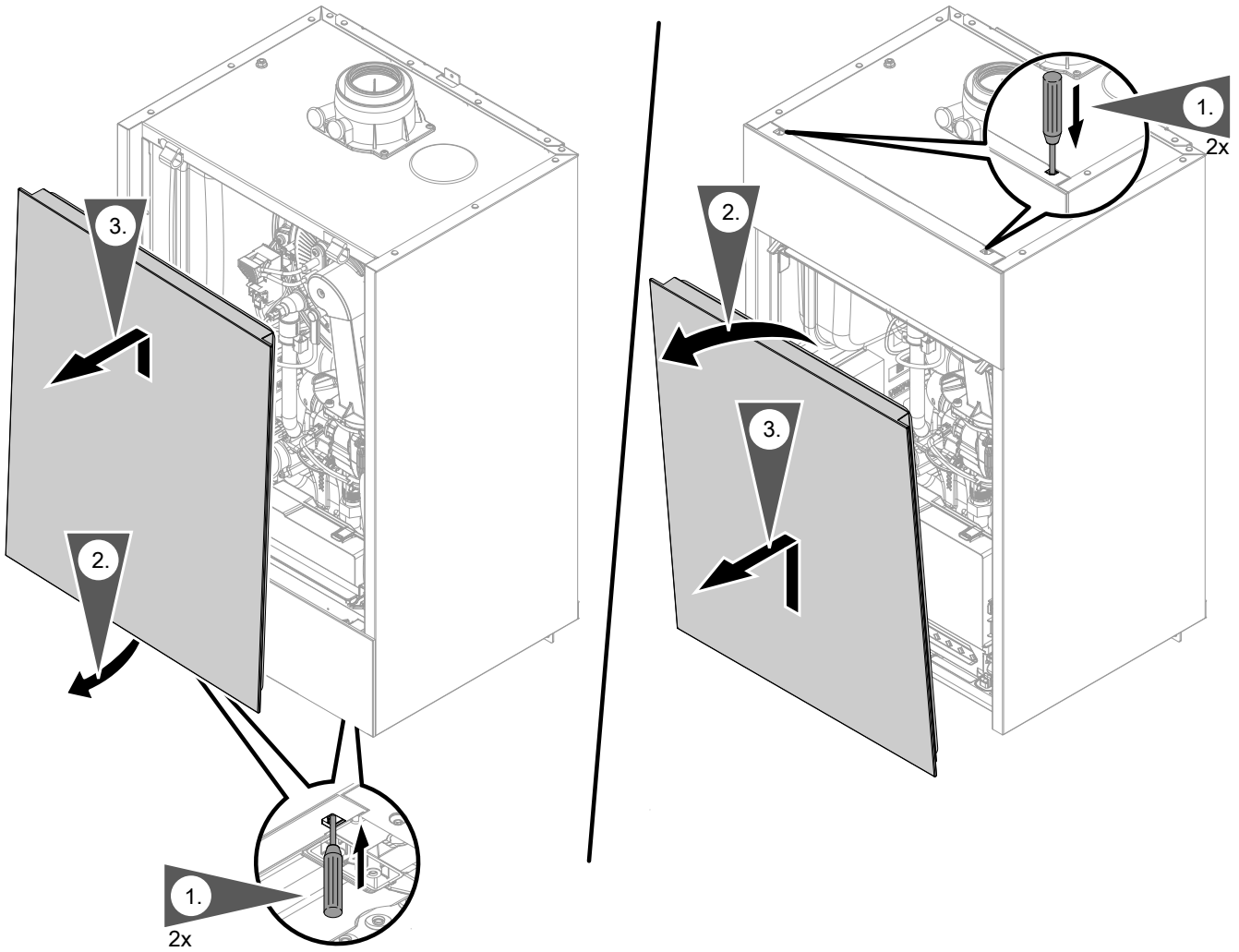


Fig. 33

Moving the programming unit to the maintenance position

To facilitate certain maintenance tasks, move the programming unit up or down, depending where it is located.

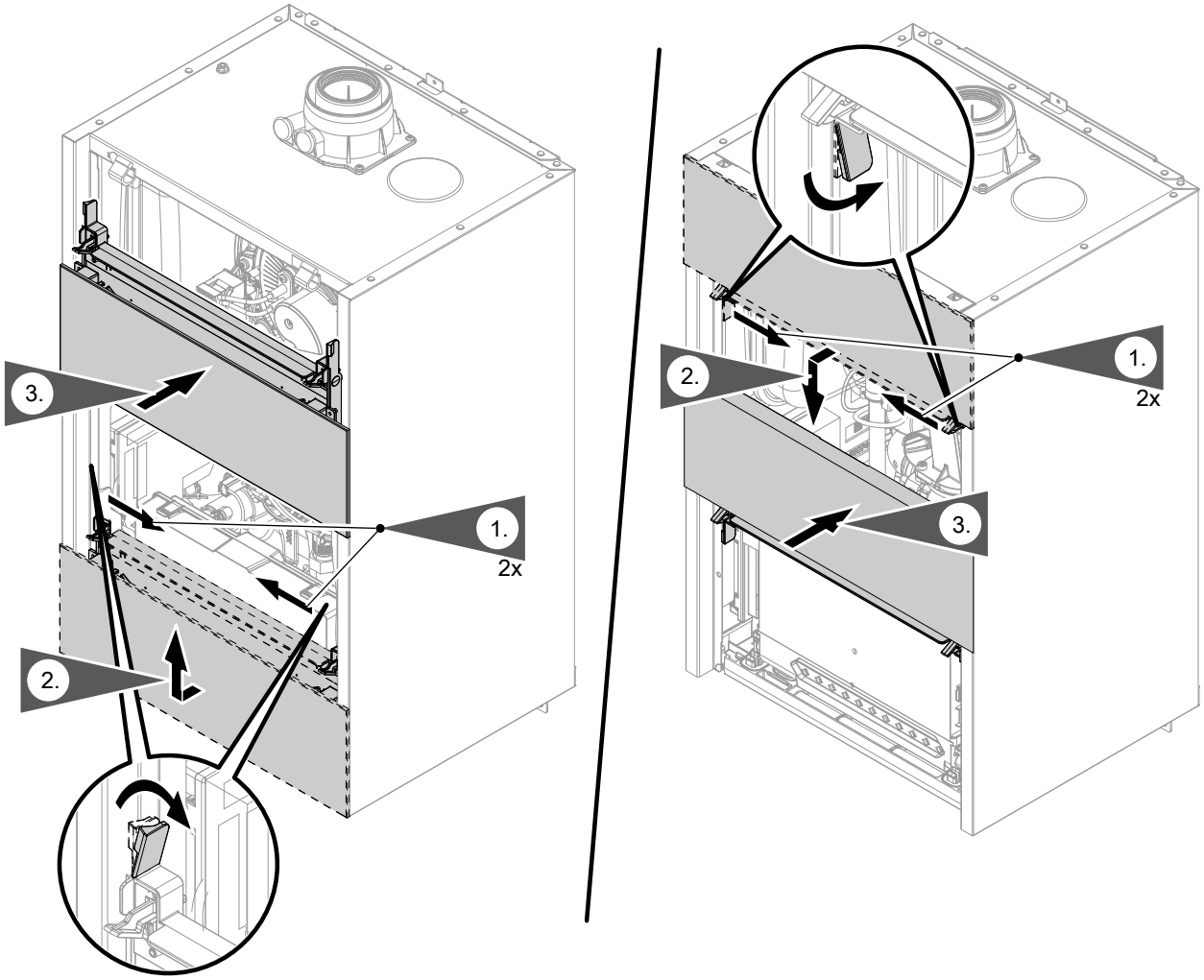


Fig. 34

Do not disconnect the plug from the mounting panel.
Do not alter where and how the cable is secured (fixing point of the cable tie).

Checking the static pressure and supply pressure

Danger
CO formation as a result of incorrect burner adjustment can have serious health implications. Always carry out a CO test before and after work on gas appliances.

Operation with LPG
Purge the LPG tank twice on commissioning/replacement. Vent the tank and gas connection line thoroughly after purging.

Checking the static pressure and supply pressure (cont.)

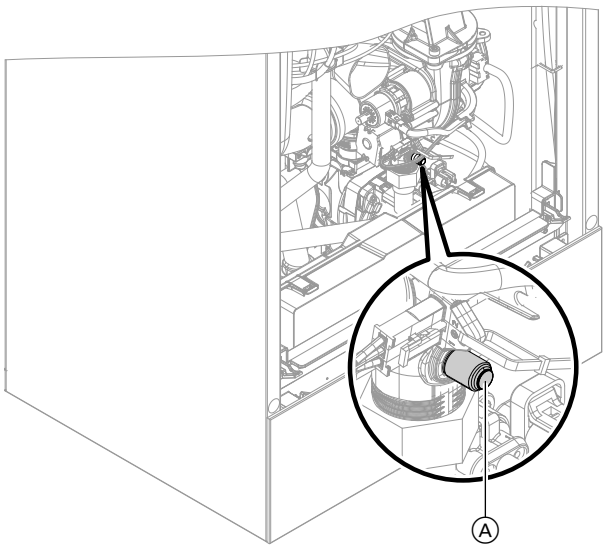


Fig. 35

1. Turn off the ON/OFF switch.
2. Close the gas shut-off valve.
3. Undo screw Ⓐ inside test connector on the gas train, but do not remove it. Connect the pressure gauge.
4. Open the gas shut-off valve.
5. Measure the static pressure and record it in the report:
   max. 57.5 mbar (5.75 kPa).
6. Turn on the ON/OFF switch and start the boiler.

   Note
   During commissioning, the appliance can enter a fault state if there are airlocks in the gas line. Reset the appliance after approx. 5 s (see operating instructions).

7. Check the supply (flow) pressure. For set values, see the following table.

   Note
   Use a suitable measuring device with a resolution of at least 0.1 mbar (0.01 kPa) to check the supply pressure.

8. Record the actual value in the report.
   Implement measures as indicated in the table below.
9. Shut down the boiler. Close the gas shut-off valve. Remove the pressure gauge. Close test connector Ⓐ with the screw.
10. Open the gas shut-off valve and start the appliance.

    ⚠ **Danger**
    Gas escaping from the test connector leads to a risk of explosion.
    Check gas tightness at test connector Ⓐ.

11. Fit front panel (see installation sequence).

Supply pressure (flow pressure)		Measures
For natural gas	**For LPG**	
< 13 mbar (1.3 kPa)	< 25 mbar (2.5 kPa)	Do not start the boiler. Notify the gas supply utility or LPG supplier.
13 to 25 mbar (1.3 to 2.5 kPa)	25 to 57.5 mbar (2.5 to 5.75 kPa)	Start the boiler.
> 25 mbar (2.5 kPa)	> 57.5 mbar (5.75 kPa)	Install a separate gas pressure governor upstream of the system. Set the pre-charge pressure to 20 mbar (2.0 kPa) for natural gas and 50 mbar (5.0 kPa) for LPG. Notify the gas supply utility or LPG supplier.

Function sequence and possible faults

	Display	Measure
Control unit issues a heat demand	No	Increase set value. Ensure heat transfer.
Yes		
Fan starts	No: Fault F.59, F.457	Check connection cables on fan. Check power supply on fan.
Yes		
Ignition	No: Fault F.359	Check ignition module (control voltage 230 V across plugs "X18.1" and "X18.3" on the burner control units). Check the gas supply.
Yes		
Gas train opens	No: Fault F.357	Check the gas supply pressure.
Yes		
Ionisation current builds	No: Fault F.369, F.380	Check distance of ionisation electrode on burner gauze assembly. Purge the gas line.
Yes		
Burner in operation	No: Shuts down below the set boiler water temperature and restarts immediately.	Check the flue system for tightness (flue gas recirculation). Check gas flow pressure.
Yes		
Automatic calibration of the combustion controller	No: Fault F.62, F.373	Ensure adequate heat transfer. Reset device.
	Fault F.346, F.377	Check gap between ionisation electrode and burner gauze assembly. Check flue system. Remove flue gas recirculation if required. Reset device. Operating instructions

For further details regarding faults, see "Troubleshooting".

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Setting the max. heating output

A limit can be set on the maximum heating output for **heating mode**. The limit is set via the modulation range.

Note
The flow rate must be checked before the max. heating output can be adjusted. Ensure adequate heat transfer.

1. Tap ☰.
2. Select **"Service"**.
3. Enter password **"viservice"**.
4. Use ✓ to confirm.
5. Select **"System configuration"**.
6. Select **"Boiler"**.
7. Parameter **596.0 "Maximum heating output"**
8. Check that a sufficient flow rate is ensured. If necessary, increase the heat transfer.
   Confirm the message with "✓".
9. ✎
10. Set required value as a % of the rated heating output and confirm with ✓. Factory setting 100 %.
11. End service functions.

Adjusting pump rate of integral circulation pump

Operation of the integral circulation pump as heating circuit pump for heating circuit 1

The pump speed and consequently the pump rate are controlled subject to the outside temperature and the switching times for heating mode or reduced mode. The minimum and maximum speeds for heating mode can be matched to the existing heating system at the control unit.

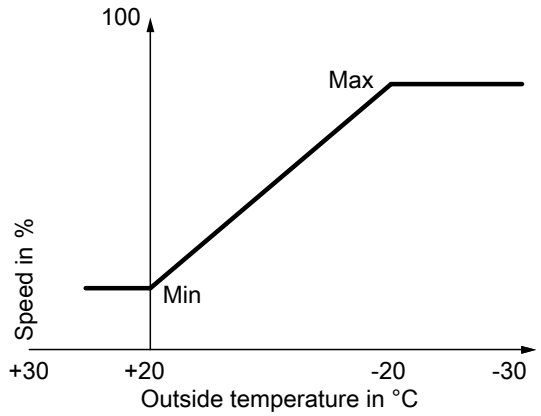

Fig. 36

Setting (%) in Heating circuit 1 group:
- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

Adjusting pump rate of integral circulation pump (cont.)

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:
  Note
  The minimum speed of 60 % is not undershot, in order to ensure the required flow rate via the internal overflow valve. Having the minimum pump rate set to 40 % ensures that the pump works more energy efficiently in weather-compensated mode.

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
11	40	60
19	40	65
25	40	75
32	40	100

- In the following system conditions, the internal circulation pump is operated at a constant speed:
  - Low loss header or heating water buffer cylinder and heating circuits with mixer
  - Continuous operation

  Speed setting (%): Parameter 1100.2 in the Boiler group

Residual head of integral circulation pump

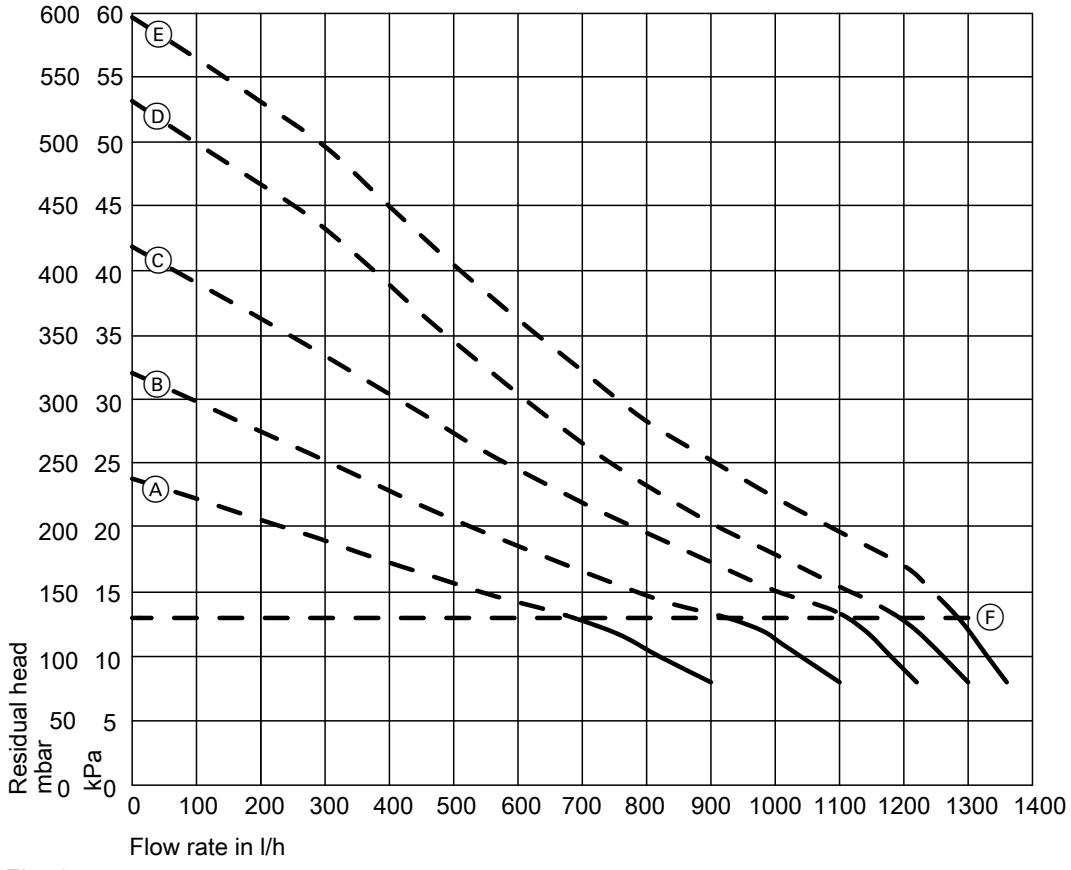

Fig. 37

Ⓕ Upper operational limit (integral bypass opens)

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Adjusting pump rate of integral circulation pump (cont.)

Curve	Pump rate of circulation pump
Ⓐ	60 %
Ⓑ	70 %
Ⓒ	80 %
Ⓓ	90 %
Ⓔ	100 %

Activating screed drying

Screed drying

6 different temperature profiles can be set for screed drying:
Preset temperature profiles can be adjusted via parameter **897.0 "Screed drying"** in the General group.
For further details, see "Function description".

Note
Screed drying applies to all connected heating circuits simultaneously.
With a combi boiler, DHW heating is not possible during screed drying. With a system boiler or storage combi boiler, after 30 minutes DHW heating is suspended for an hour (parameter 1087.1) in order to run the screed drying program.

Leak test on balanced flue system (annular gap test)

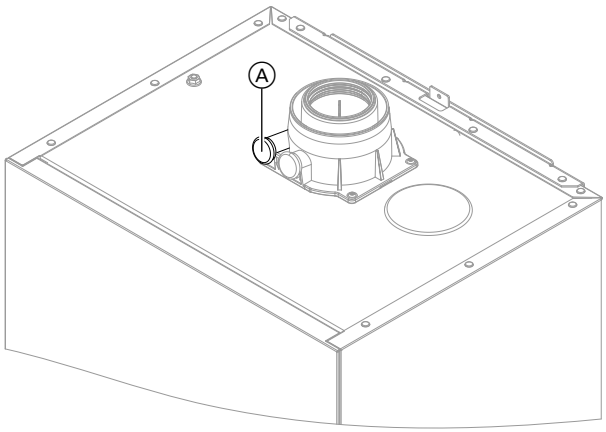

Fig. 38

Ⓐ Combustion air aperture

For balanced flue systems tested together with the heat generator, there is no requirement for a tightness test (overpressure test) during commissioning by the flue gas inspector.
In this case, we recommend that a simple tightness test is carried out during system commissioning. For this, check the CO_2 or O_2 concentration in the combustion air at the annular gap of the balanced flue pipe.
If the CO_2 concentration is less than 0.2 % or the O_2 concentration is greater than 20.6 %, the flue pipe is deemed to be sufficiently gas-tight.

If actual CO_2 values are greater or O_2 values are lower, then pressure test the flue pipe with a static pressure of 200 Pa.

! **Please note**
If the test port is not sealed, combustion air is drawn in from the room.
After the tightness test, re-seal the test port with the plug.

Removing the burner

Note
If the programming unit is located at the top: Move the programming unit down into the maintenance position.
See page 54.

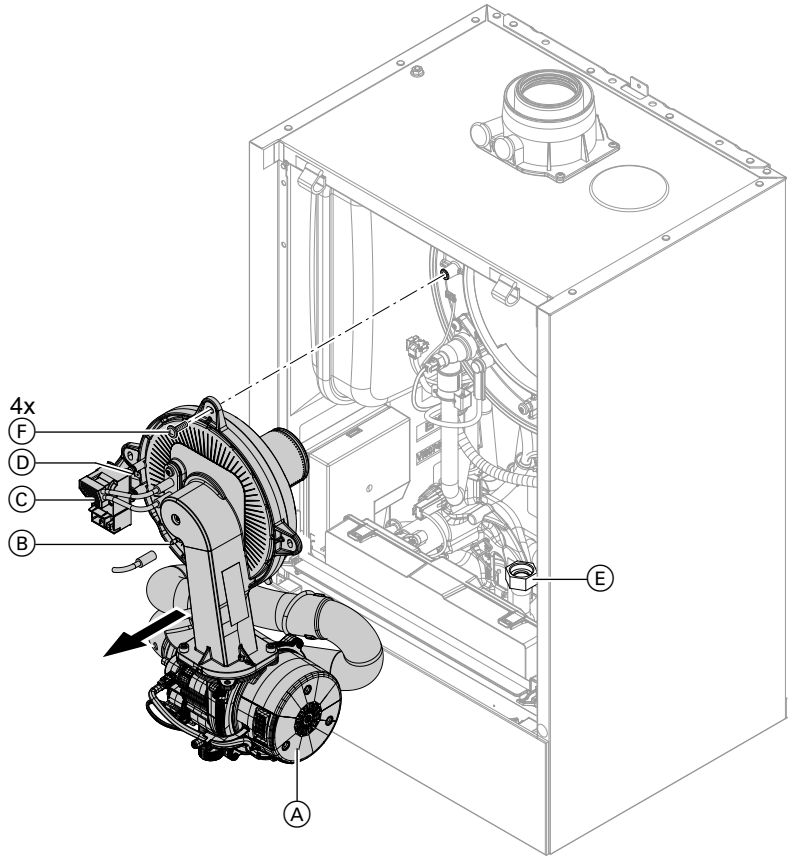

Fig. 39

1. Turn off the ON/OFF switch.

2. Close the gas shut-off valve and safeguard against reopening.

3. Disconnect cables and leads from:
- Fan motor Ⓐ (2 plugs)
- Ionisation electrode Ⓑ
- Ignition unit Ⓒ
- Earth Ⓓ

4. Undo gas supply pipe fitting Ⓔ.

5. Undo 4 screws Ⓕ and remove the burner.

Note
Cover gas connection Ⓔ so that no small parts can fall into it.

Checking the burner gasket and burner gauze assembly

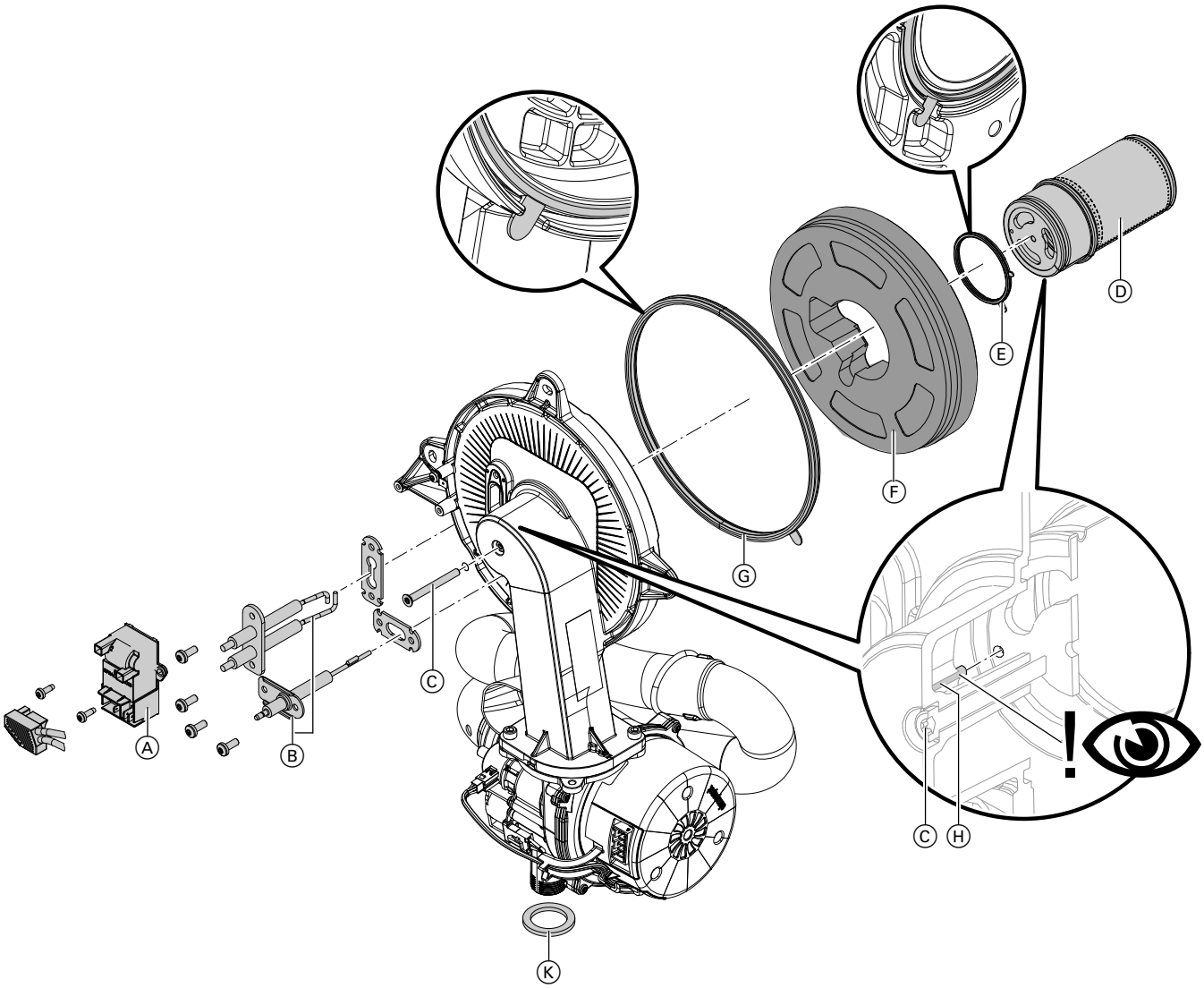

Fig. 40

Check burner gauze assembly Ⓓ, electrodes Ⓑ, thermal insulation ring Ⓕ and gasket Ⓖ for damage. Only remove and replace components if they are damaged or worn.

Note
If replacing the burner gauze assembly, also replace the gauze assembly gasket and the fixing screw.

1. Disconnect plug with ignition electrode leads from ignition unit Ⓐ.
2. Remove electrodes Ⓑ.
3. Undo Torx screw Ⓒ. Hold onto burner gauze assembly Ⓓ when undoing the screw.
4. Remove burner gauze assembly Ⓓ with gasket Ⓔ and thermal insulation ring Ⓕ. Check components for damage.
5. Install new burner gasket Ⓖ. Observe correct installation position. Align the tab as per the diagram.
6. Insert thermal insulation ring Ⓕ and burner gauze assembly Ⓓ with gasket Ⓔ. Observe correct installation position. Align the tab as per the diagram.

Checking the burner gasket and burner gauze… (cont.)

7. Align the hole in burner gauze assembly Ⓓ with burner door pin Ⓗ.

   Please note
   Incorrect positioning of the burner gauze assembly on the burner door will cause damage to the burner door.
   Insert the burner door pin into the hole in the burner gauze assembly. See chapter **"Installing the burner"**, page 62.

   Secure burner gauze assembly Ⓓ and gasket Ⓔ with Torx screw Ⓒ.
   Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life.
   Observe torque settings if a torque wrench is available.
   Torque: 3.0 Nm.

8. Check thermal insulation ring Ⓕ for firm seating.

9. Fit electrodes Ⓑ. Check clearances, see following chapter.
   Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life.
   Observe torque settings if a torque wrench is available.
   Torque: 4.5 Nm.

10. Fit the gas connection with new gasket Ⓚ.
    See chapter "**Installing the burner**".

Installing the burner gauze assembly

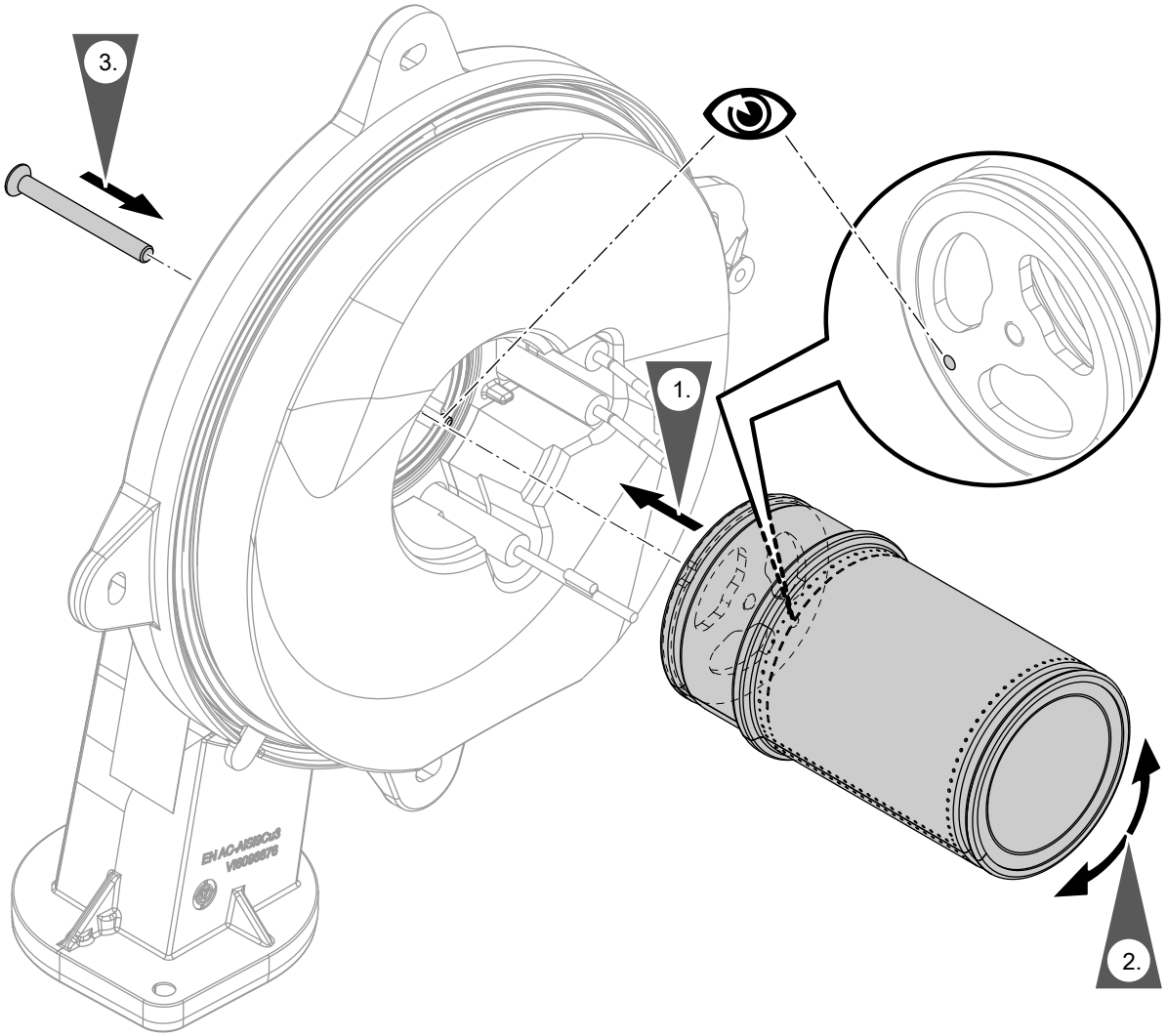

Fig. 41

Checking the burner gasket and burner gauze… (cont.)

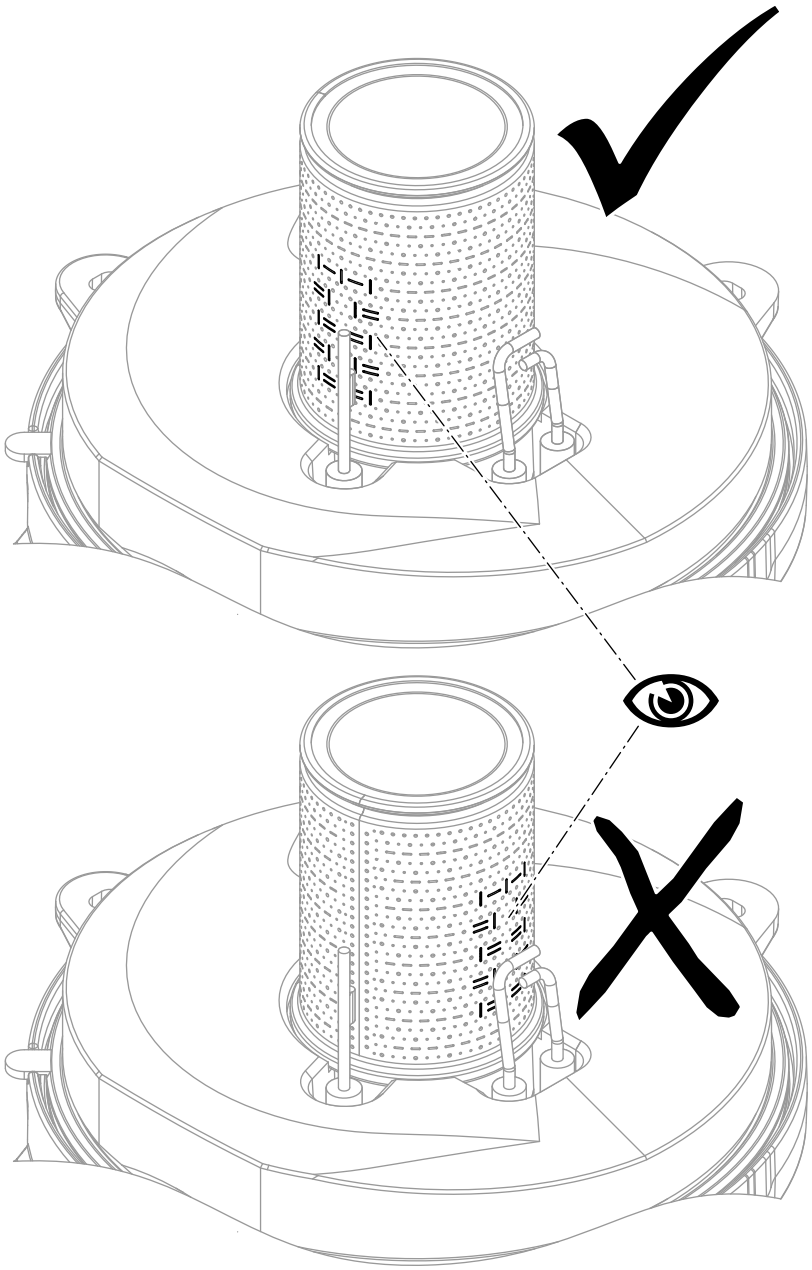

Fig. 42

Checking and adjusting the ignition and ionisation electrodes

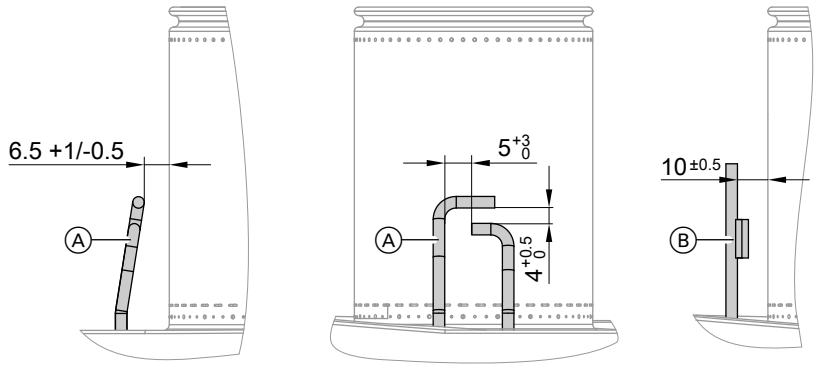

Fig. 43

Ⓐ Ignition electrodes
Ⓑ Ionisation electrode

1. Check the electrodes for wear and contamination.
2. Clean the electrodes with a small brush (not a wire brush) or sandpaper.
3. Check the electrode gaps. If the gaps are outside the tolerance range or the electrodes are damaged, replace and realign the electrodes together with new gaskets.
   Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life.
   Observe torque settings if a torque wrench is available.
   Tighten the electrode fixing screws to a torque of 4.5 Nm.

Checking the back draught safety devices

Only for multiple connections to a flue system or multi boiler systems with a flue gas cascade.

Back draught safety device in the mixing shaft of the burner

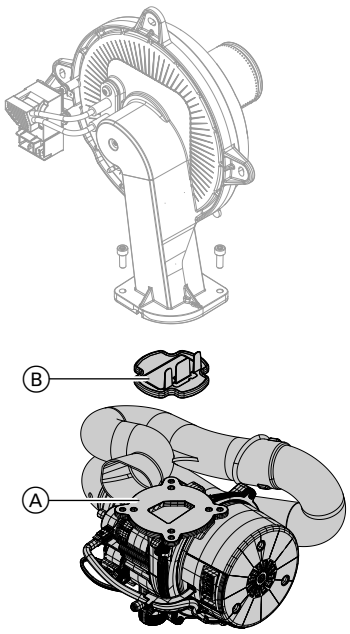

Fig. 44

1. Undo 2 screws and remove fan Ⓐ.
2. Remove back draught safety device Ⓑ.
3. Check the damper and gasket for dirt and damage. Replace if necessary.
4. Refit back draught safety device Ⓑ.

   Note
   Observe correct installation position.

5. Refit fan Ⓐ and secure with 2 screws.
   Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life.
   Observe torque settings if a torque wrench is available.
   Torque: 4.0 Nm

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Checking the back draught safety devices (cont.)

Back draught safety device in the flue gas connection

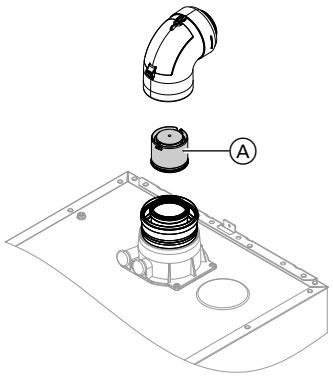

Fig. 45

1. Remove the balanced flue system.

   Note
   If the balanced flue system cannot be removed, clean and check the back draught safety device via the inspection cover.

2. Check back draught safety device Ⓐ for dirt, ease of movement and function.

3. Refit the balanced flue system.

4. Pour a small amount of water through the inspection port to ensure the back draught safety device is working.

Cleaning the heating surfaces

! **Please note**
Scratches to the surface of the heat exchanger that comes into contact with hot gas can result in corrosion damage. Brushing can cause deposits to become lodged in the gaps between the coils.
Never use brushes to clean the heating surfaces.

! **Please note**
Prevent damage due to cleaning water.
Cover electronic components with suitable watertight material.

Note
Discolouration on the heat exchanger surface is a normal sign of use. It has no bearing on the function and service life of the heat exchanger.
The use of chemical cleaning agents is not required.

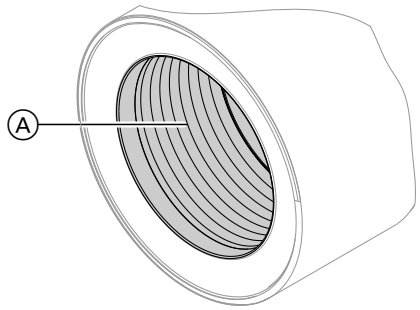

Fig. 46

1. Use a vacuum cleaner to remove combustion residues from heating surface Ⓐ of the heat exchanger.

2. Flush heating surface Ⓐ with water.

3. Check condensate drain. Clean the trap: See the following chapter.

4. Check the thermal insulation mat (if installed) in the heat exchanger for damage, replace if necessary.

Checking the condensate drain and cleaning the trap

! **Please note**
Prevent damage due to condensate.
Cover electronic components with suitable watertight material.

Checking the condensate drain and cleaning the… (cont.)

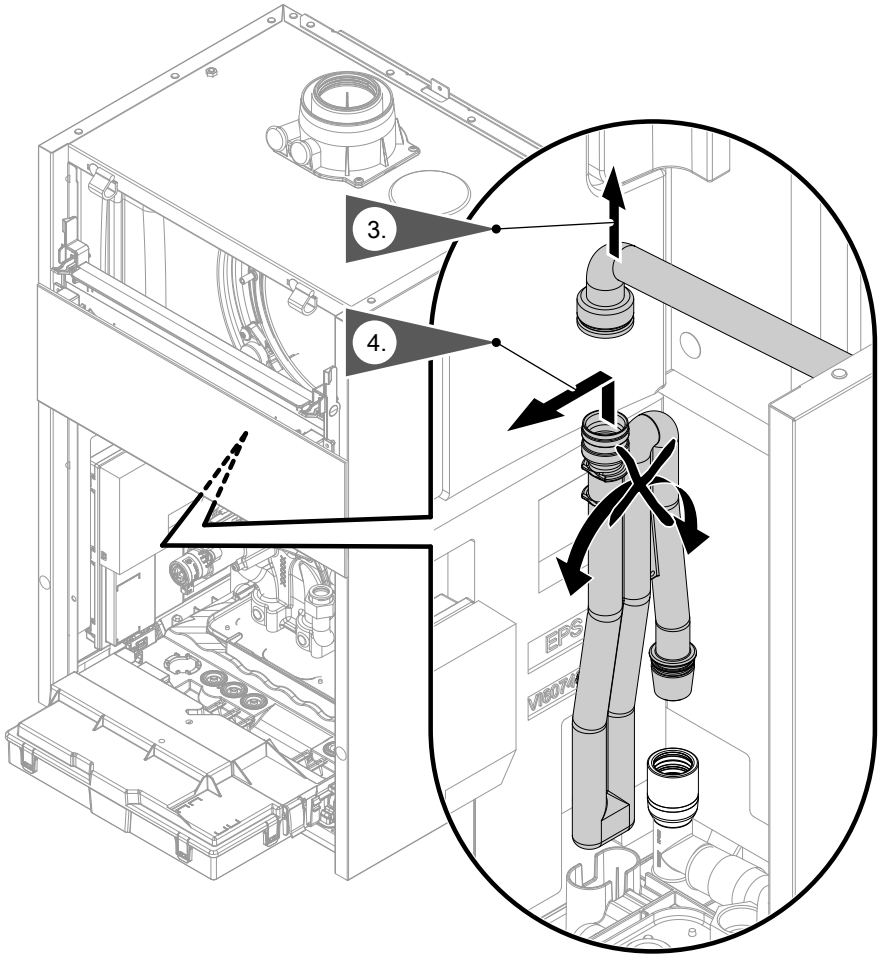

Fig. 47

1. Move the bracket together with the programming unit upwards. See "Moving the programming unit to the maintenance position".
2. Pivot the HMU heat management unit forwards.
3. Remove the black supply hose.
4. Pull trap upwards out of the drain hose.
5. Hold trap as straight as possible and remove. Ensure that no condensate runs out.
6. Clean the trap.
7. Fill the trap with water and refit it on the drain hose.

   Please note
   If the trap is not filled with water, flue gas can escape.
   Only start the appliance when the trap has been filled.
   Check that the trap is seated correctly.

Multi boiler system:
Clean the trap in the flue gas header as well.

8. Refit supply hose.
9. **Danger**
   Risk of electric shock from escaping condensate.
   Check the connections for leaks and check that the trap is seated correctly.

Note
Route the drain hose without any bends and with a constant fall.

Installing the burner

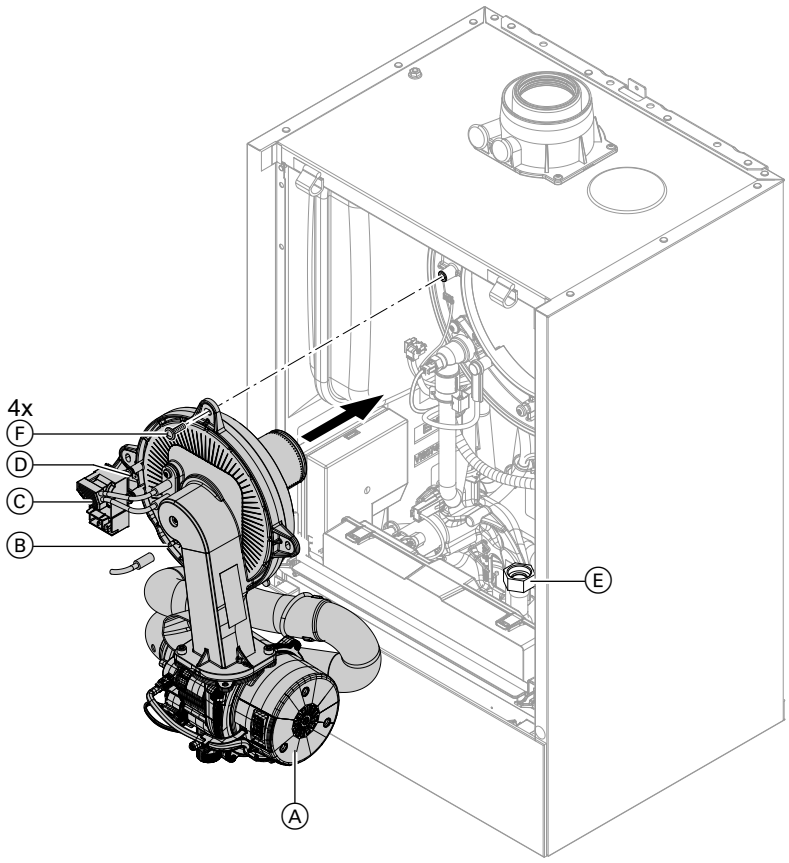

Fig. 48

1. If necessary, move the programming unit.

2. Insert the burner. Tighten screws Ⓕ diagonally. Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life.
   Observe torque settings if a torque wrench is available.
   Torque: 6.5 Nm

3. Fit gas supply pipe Ⓔ with a new gasket.
   Torque: 30 Nm

4. Check the gas connections for leaks.

   Danger
   Escaping gas leads to a risk of explosion. Check all fittings for gas tightness. In the case of wall mounted appliances, also check the gas shut-off valve fitting on the underside.

5. Connect the cables/leads:
   - Fan motor Ⓐ (2 plugs)
   - Ionisation electrode Ⓑ
   - Ignition unit Ⓒ
   - Earth Ⓓ

Checking the neutralising system (if installed)

Checking the flow limiter (only for gas condensing combi boiler)

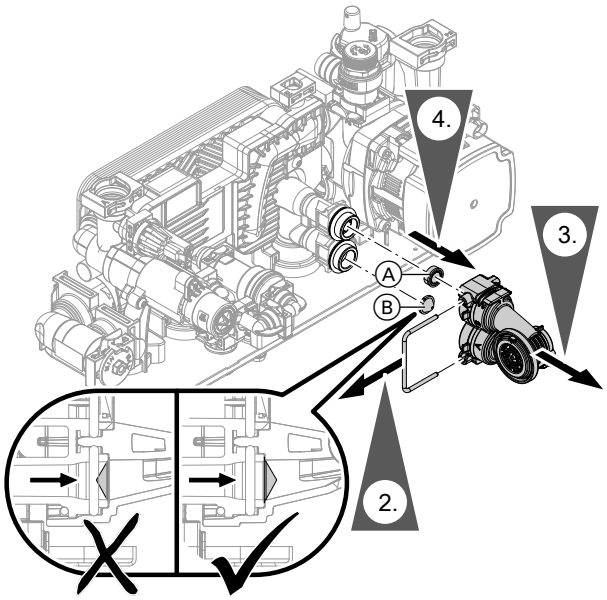

Fig. 49

1. Drain the boiler on the DHW side.
2. Remove the spring clip.
3. Remove the DHW flow sensor.
4. Check flow limiter Ⓐ and filter strainer Ⓑ. Replace if scaled or damaged.

   Note
   Install filter strainer Ⓑ with the cone pointing in the direction of flow.

5. Fit the DHW flow sensor with new gaskets.

   Danger
   Risk of electric shock from escaping heating water or DHW.
   Check all water side connections for leaks.

Note
Filter strainer Ⓑ is installed in appliances only as shown in the figure on the right:

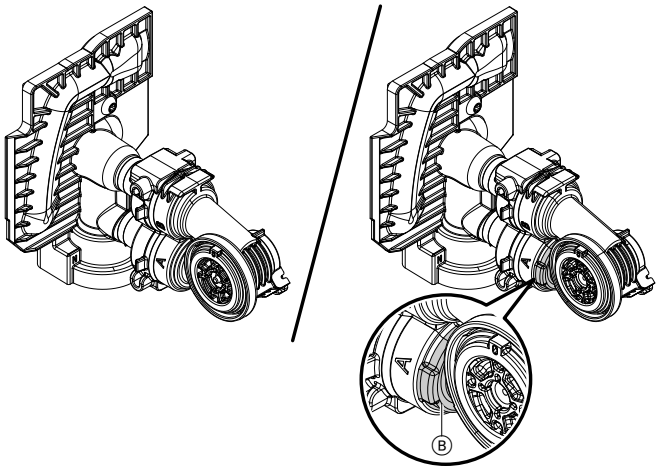

Fig. 50

Flow limiter

Appliance type	Flow rate l/min	Colour
B2KH-19	12	Red
B2KH-25	14	Pink
B2KH-32	16	Blue

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Checking the expansion vessel and system pressure

Note
The burner control unit can be removed to allow better access to the test connector:
- *Pull the burner control unit to the right at the top until the hook and loop fastening comes apart.*
- *Undo the catch and remove the burner control unit from the retainer by lifting it upwards.*

Note
The expansion vessel can lose some of its charge pressure over time. If the boiler heats up, the pressure rises to 2 or 3 bar (0.2 or 0.3 MPa). The safety valve may also respond and discharge the excess pressure. Therefore check the expansion vessel pre-charge pressure annually.

Check whether the installed expansion vessel is adequate for the system water volume.
Carry out this test on a cold system.

1. Drain the system until "0" is shown on the pressure indicator.

2. If the pre-charge pressure of the expansion vessel is lower than the static system pressure: Top up with nitrogen at the valve of the diaphragm expansion vessel until the pre-charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) higher than the static system pressure.

3. Top up with water until the charge pressure of the cooled system is at least 1.0 bar (0.1 MPa), and is 0.1 to 0.2 bar (10 to 20 kPa) higher than the pre-charge pressure of the expansion vessel.
Permiss. operating pressure: 3 bar (0.3 MPa)

Note
The expansion vessel is supplied from the factory with a pre-charge pressure of 0.7 bar (70 kPa). Do not allow the pre-charge pressure to fall below this value (boiling noises). This also applies to single floor heating systems or attic heating centres (no static pressure).
Top up with water until the charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) above the pre-charge pressure.

Checking the safety valve function

Checking the electrical connections for firm seating

Checking all gas equipment for leaks at operating pressure

⚠ **Danger**
Escaping gas leads to a risk of explosion.
Check gas equipment (including inside the appliance) for leaks.

Note
Only use suitable and approved leak detection agents (EN 14291) and devices for the tightness test. Leak detection agents with unsuitable constituents (e.g. nitrides, sulphides) can cause material damage. Remove residues of the leak detection agent after testing.

Fitting the front panel

See page 39.

Checking the combustion quality

The electronic combustion controller automatically ensures optimum combustion quality. During commissioning/maintenance, only the combustion values need to be checked. To do this, test the CO content and CO_2 or O_2 content, and record these in the report on page 166.

Note
To prevent operating faults and damage, operate the appliance with uncontaminated combustion air.

Permissible CO content

The CO content must be < 1000 ppm for all gas types.

Permissible CO_2 or O_2 content

Operation with natural gas

Rated heating output (kW)	CO_2 content (%)		O_2 content (%)	
	Upper heating output	Lower heating output	Upper heating output	Lower heating output
11	7.3 to 10.5	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6
19	7.3 to 10.5	7.5 to 10.5	2.1 to 7.6	2.1 to 7.6
25	7.3 to 10.5	7.5 to 10.5	2.1 to 7.6	2.1 to 7.6
32	7.3 to 10.0	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6

Operation with LPG
- CO_2 content: 8.4 to 11.8 %
- O_2 content: 3.1 to 8.1 %

If the actual CO, CO_2 or O_2 content is outside the respective range:
- Carry out a balanced flue system leak test.
- Check ionisation electrode and connecting cable.

If the actual CO, CO_2 or O_2 values lie outside their respective ranges, proceed as follows:
- Check the balanced flue system for leaks; see page 59.
- Check the ionisation electrode and connecting cable, see page 64.

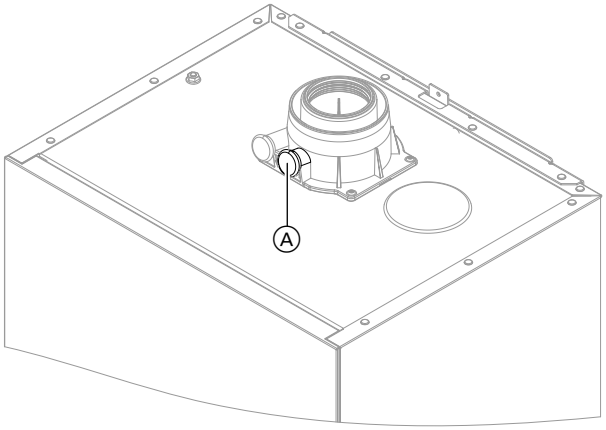

Fig. 51

Note
During commissioning, the combustion controller carries out an automatic calibration. Allow approx. 50 s after the burner has started before testing the emissions.

1. Connect a flue gas analyser at flue gas port Ⓐ on the boiler flue connection.
2. Open the gas shut-off valve. Start the boiler. Create a heat demand.
3. Adjust the lower heating output. See the following chapter.
4. Check the CO_2 content. If the actual value deviates from the permissible ranges, implement steps listed above.
5. Enter the actual value into the report.
6. Adjust the upper heating output. See the following chapter.

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Checking the combustion quality (cont.)

7. Check the CO_2 content. If the actual value deviates from the permissible ranges by more than 1 %, implement steps listed above.
8. Enter the actual value into the report.
9. Re-seal test port Ⓐ.

Danger
Escaping flue gas can damage your health.
Check test port Ⓐ for leaks.

Selecting the upper/lower heating output

Note
Ensure adequate heat transfer.

Tap the following buttons:

1. ☰
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✓.
5. **"Actuator test"**
6. Confirm with ✓.
7. Select **"Burner modulation, set value"**.
   The boiler circuit pump operates automatically at 100 %.
8. Set the lower heating output:
   Select **"Minimum heating output"**.
   The burner now operates at the lower heating output.
9. Set the upper heating output:
   Select **"Maximum heating output"**.
   The burner now operates at the upper heating output.
10. End output selection:
    ↩ or 🏠

Checking the flue system for unrestricted flow and leaks

Checking the external LPG safety valve (if installed)

Matching the control unit to the heating system

The control unit must be matched to the system equipment level.
Set the parameters according to the accessories fitted:

Accessory installation instructions

Adjusting the heating curves

Tap the following buttons:

1. ☰
2. **"Heating"**
3. Select **"Heating circuit 1"** or **"Heating circuit ..."** for the required heating circuit.
4. **"Heating curve"**

Adjusting the heating curves (cont.)

5. Set the heating curve according to the requirements of the system using **"Slope"+/–** or **"Level" +/–**.
6. ✔ to confirm

Calling up and resetting the maintenance display

In the following cases, ⚠ will be displayed (red indicator flashes):
- The specified limits have been reached.
- There is cause for a warning.

Checking maintenance messages

1. ☰
2. For **"Message lists"**
3. For **"Service"**

Acknowledging a service

1. to acknowledge the maintenance messages
2. ✔ to confirm

Note
An acknowledged service message that was not reset reappears the following Monday.

After maintenance has been carried out (Reset service)

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✔.
5. **"System configuration"**
6. **"Boiler"**
7. Select parameter **1411.0 "Clear maintenance messages"** and **"ON"**.

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

Instructing the system user

The system installer should hand the operating instructions to the system user and instruct the user in operating the system.

This includes all components installed as accessories, e.g. remote control units. In addition, the system installer must make the user aware of the required maintenance work.

DHW hygiene

For optimum DHW hygiene, avoid DHW temperatures that are < 50 °C. For larger systems and systems with low water exchange, the temperature should not drop below < 60 °C.

Hygiene function

The DHW can be heated to a specified (higher) set DHW temperature for a period of one hour.

To activate the function, see the operating instructions. Inform the system user what DHW temperatures should be set and the risks associated with having a raised outlet temperature at the draw-off points.

Calling up parameters

Calling up parameters

- Parameters are split into the following groups:
  - **"General"**
  - **"Boiler"**
  - **"DHW"**
  - **"Heating circuit ..."**
  - **"Solar"**
- 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 **"Heating circuit 2"** ... (if installed).
  If the heating circuits have been given individual names, the chosen name appears.

Note
The display and setting of some parameters is dependent on:
- *Heat generator*
- *Connected accessories and the functions associated with them*
- *"Solar" parameter group only for heat generators with solar function*

Note
- *If the heat generator is part of a "system network", all parameters can only be set via the "main appliance".*
- *Vitodens 222/333 boilers cannot be operated in a "system network"!*

Tap the following buttons:

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Use ✓ to confirm.
5. **"System configuration"**
6. Select group.
7. ∧/∨ to select parameters.
8. ✎
9. ∧/∨ for the required value according to the following tables.
10. ✓, to accept the set value.

General

Note
*Parameter values in **bold** are factory settings.*

508.0 UTC time zone

Setting of the UTC time zone in which the appliance is located.

Note
Only active if 1504.0 has been set to 2.

Value	Meaning
2	The factory setting is UTC +1 h
–24 to +24	Time difference adjustable from –12 h to +12 h in 0.5 h increments

528.0 Set flow temperature for external demand

Value	Meaning
70	Set flow temperature in the delivered condition 70 °C
20 to 85	Set flow temperature adjustable from 20 to 90 °C in 1 °C increments

General (cont.)

575.0 Reset to the "Delivered condition"

This parameter resets all parameters and commissioning settings of the appliance to the "**Delivered condition**".
Please follow the instructions on the display!

Note
The factory settings that are restored include energy statement values, heating circuit settings, meter readings and contact information for the contractor.
After execution, the appliance restarts and must then be reconfigured and put into operation.

896.0 Display correction for outside temperature

To compensate for systematic measuring errors, a correction value (offset) can be set for the outside temperature sensor.
The correction value can be positive or negative. The correction value is added to the current outside temperature measurement.

Value	Meaning
0	No correction
–10 to +10	Correction adjustable from –10 to +10 K

897.0 Screed drying

Screed drying can be set in accordance with selectable temperature/time profiles.
For individual profile curves, see chapter "Function description".

Value	Explanations
0	Not active
2	Diagram A
3	Diagram B
4	Diagram C
5	Diagram D
6	Diagram E
7	Diagram F

912.0 Automatic summer/wintertime changeover

Value	Meaning
0	No automatic summer/wintertime changeover
1	Automatic summer/wintertime changeover active

912.1 Earliest day of changeover from winter to summertime

Value	Meaning
25	Changeover from 02:00 to 03:00 occurs on the Sunday after or on this set date.
1 to 31	Day of changeover adjustable from 1st to 31st of the month

912.2 Month of changeover from winter to summertime

Value	Meaning
3	Month of changeover: March
1 to 12	Month of changeover adjustable from January to December

General (cont.)

912.3 Earliest day of changeover from summer to wintertime

Value	Meaning
25	Changeover from 03:00 to 02:00 occurs on the Sunday after or on this set date.
1 to 31	Day of changeover adjustable from 1st to 31st of the month

912.4 Month of changeover from summer to wintertime

Value	Meaning
10	Month of changeover: October
1 to 12	Month of changeover adjustable from January to December

1098.4 Gas volume correction factor

Value is provided on the gas supplier's bill.
Used for energy consumption data.

Value	Meaning
1.0000	
0.7000 to 1.0000	Gas volume correction factor adjustable from 0.7000 to 1.0000 in increments of 0.0001.

1098.5 Condensing

Value is provided on the gas supplier's bill.
Used for energy consumption data.

Value	Meaning
10	Standard for natural gas. Data in kWh/m^3 If gas type is switched to LPG, the standard value switches to 10.45
5 to 40	Calorific value adjustable from 5 to 40 kWh/m^3 in increments of 0.0001

1139.0 Outside temperature limit for cancelling reduced set room temperature

Temperature limit for cancelling set reduced room temperature

Value	Meaning
–5	Temperature limit in the delivered condition –5 °C
–61 to +10	Temperature limit adjustable from –61 to +10 °C in 1 °C increments

1139.1 Outside temperature limit for raising the reduced set room temperature to the standard set room temperature

Temperature limit for raising the set reduced room temperature to the standard set room temperature (see "Function description")

Value	Meaning
–14	Temperature limit in the delivered condition –14 °C
–60 to +10	Temperature limit adjustable from –60 to +10 °C in 1 °C increments

General (cont.)

1504.0 Source for date and time

Selection of source for date and time
The setting depends on the heat generator and accessories.
Setting: Local

Value	Meaning
0	Factory setting: The date and time are adopted from the control unit.
2	Internet protocol (see parameter "508.0")

Boiler

Note
*Parameter values in **bold** are factory settings.*

521.0 Interval in burner hours run until next maintenance

Number of burner hours to run until next service

Value	Meaning
0	Delivered condition
0 to 25500	Burner hours until next service adjustable from 0 to 25500

522.3 Interval until next maintenance

Interval until the next maintenance

Value	Meaning
0	No interval selected
1	3 months
2	6 months
3	12 months
4	18 months
5	24 months

596.0 Maximum heating output

A limit can be set on the maximum heating output for heating mode.

Note
The setting range and minimum value depend on the appliance.

Value	Meaning
100	Heating output in the delivered condition 100 %
-- up to 100	Adjustable -- up to 100 % (depending on the appliance)

597.0 Limit, max. heating output for DHW heating

A limit can be set on the maximum heating output for DHW heating.

Note
The setting range and minimum value depend on the appliance.

Value	Meaning
100	Heating output in the delivered condition 100 %
-- up to 100	Adjustable from -- to 100 %

Boiler (cont.)

1100.2 Set speed of the primary circuit pump in heating mode

Set speed of primary circuit pump
- In heating mode
- With external demand
- With demand in conjunction with a low loss header

Value	Meaning
...	Delivered condition specified by settings specific to the appliance
	Setting range depends on the appliance

1240.0 Operating mode of the primary circuit pump

Value	Meaning
1	"Automatic system" Switched on regardless of current temperature level
7	Shutdown in reduced mode (in conjunction with continuous operation or when no demand via room thermostat)

1411.0 Clear maintenance messages

Clear maintenance messages if maintenance has been performed.

Value	Meaning
0	Maintenance messages are active (if present).
1	Clear maintenance messages once.

1503.0 Minimum heating output

A limit can be set on the minimum heating output for heating mode.

Value	Meaning
...	Delivered condition specified by settings specific to the appliance
from ... to	Setting range depends on the appliance

1606.0 Minimum burner pause time

The minimum burner pause time can be set subject to boiler load.

Value	Meaning
0	Fixed setting for minimum burner pause time
1	Delivered condition, integral method (see parameter 1606.4)

1606.4 Burner integral threshold

Only effective if parameter 1606.0 is set to 1.

Value	Meaning
50	Factory setting 50 K x min
5 to 255	Adjustable from 5 to 255 K x min The higher the value, the later the burner switches off.

DHW

Note
*Parameter values in **bold** are factory settings.*

497.0 Operating mode of DHW circulation pump

DHW circulation pump

Value	Meaning
0	The DHW circulation pump runs continuously within the time program during the set time phases.
4	The DHW circulation pump operates with the cycles set in **497.3**.

497.1 DHW circulation pump for hygiene function

Operation of the DHW circulation pump while the function for increased DHW hygiene is active.

Value	Meaning
0	The DHW circulation pump runs in accordance with the set time program, irrespective of the increased DHW hygiene function.
1	The DHW circulation pump is switched on every time the increased DHW hygiene function is activated, **irrespective** of the time program for the DHW circulation pump. With this setting, the pipework can also be integrated into the increased DHW hygiene function.

Note
*The respective operating status of the DHW circulation pump depends on the setting of parameters **497.0** to **497.3** and on the respective operating status of the system.*

Danger
There is a risk of scalding at DHW temperatures **above 60 °C**.
- Limit the temperature in the DHW flow to 60 °C by means of a mixer assembly, e.g. an automatic thermostatic mixing valve (DHW cylinder accessory).
- Switch on scald protection: Via HMI programming unit or parameter **503.0**

497.2 DHW circulation pump for DHW heating

The DHW circulation pump is operated during cylinder heating.

Value	Meaning
0	The DHW circulation pump is switched off during cylinder heating.
1	The DHW circulation pump runs in accordance with the setting in **497.0**, including during cylinder heating.

Note
*The respective operating status of the DHW circulation pump depends on the setting of parameters **497.0** to **497.3** and on the respective operating status of the system.*

Example:
- Parameter **497.0** set to **0**.
- Parameter **497.2** set to **0**.
- A time phase is active in the time program for the DHW circulation pump.
- Cylinder heating is active.

The DHW circulation pump is operating in accordance with setting **497.0**.

497.3 Number of cycles DHW circulation pump

Within the time phase, the DHW circulation pump is switched on cyclically for 5 min at a time.

DHW (cont.)

Value	Meaning
0	1 cycle per h
1	2 cycles per h
2	3 cycles per h
3	4 cycles per h
4	5 cycles per h
5	6 cycles per h

503.0 Scald protection

Scald protection limits the cylinder temperature to max. 60 °C.

Note
Even with the scald protection switched on, higher outlet temperatures may occur at the draw-off points in the following cases:
- *With active hygiene function*
- *While the appliance is being calibrated*

Danger
With scald protection switched off, a set DHW temperature higher than 60 °C can be selected. Consequently there is an increased risk of scalding!
Where possible, do **not** switch off scald protection.

Value	Meaning
0	Scald protection off: DHW cylinder can be heated to the max. cylinder temperature.
1	Scald protection on: DHW heating ends when the cylinder temperature reaches 60 °C.

534.0 Circulation pump run-on

Circulation pump run-on after cylinder heating

Value	Meaning
120	Delivered condition 120 s run-on
0 to 900	Run-on time adjustable from 0 to 900 s in 60 s increments (the run-on time is rounded down to full minutes) ***Note*** *To avoid damaging the appliance, do not set the run-on time to < 120 s.*

1085.0 Cylinder heating: Set start point

The set value specifies at what temperature below the current set cylinder temperature DHW heating will start.

Value	Meaning
25	Start point 2.5 K below the set cylinder temperature
10 to 100	Adjustable start points: 10: 1.0 K ... 100: 10.0 K ***Note*** *Stop point 2.5 K **above** the set cylinder temperature*

DHW (cont.)

1087.0 Max. duration, DHW heating

DHW heating stops after expiry of the set duration, irrespective of whether the set cylinder temperature has been reached.

Note
Not adjustable on gas condensing combi boilers!

Note
*The next DHW heating period starts after expiry of duration **1087.1** at the earliest.*

Value	Meaning
240	Factory setting 240 min
0	No time limit for DHW heating
1 to 240	Duration of DHW heating adjustable from 1 to 240 min in 1 min increments

1087.1 Min. delay until next time DHW is heated

The next DHW heating period starts at the earliest after expiry of the delay set here. In each case this delay starts after DHW heating has ended.

Note
Function becomes effective when the set "Max. duration, DHW heating" (1087.0) is exceeded.
Not adjustable on gas condensing combi boilers

Value	Meaning
60	Delivered condition, delay of 60 min
1 to 90	Delay adjustable from 1 to 90 min in 1 min increments

1101.2 Set speed of the primary circuit pump for DHW heating

Set speed of the internal circulation pump when operated as a circulation pump for cylinder heating

Value	Meaning
...	Factory settings defined by settings specific to the appliance The setting range depends on the appliance.

Heating circuit 1, heating circuit 2, heating circuit 3, heating circuit 4

Note
*Parameter values in **bold** are factory settings.*

424.3 Set flow temperature increase, heating circuit 1

Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, heating circuit 1.
See chapter "Function description"

Value	Meaning
0	Delivered condition increase 0 K
0 to 20	Temperature increase adjustable from 0 to 20 K

424.4 Duration for set flow temperature increase of heating circuit 1

Duration for set flow temperature increase, heating circuit 1
See chapter "Function description"

Value	Meaning
60	Delivered condition 60 min
0 to 120	Temperature increase adjustable from 0 to 120 min

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Heating circuit 1, heating circuit 2, heating… (cont.)

426.3 Set flow temperature increase, heating circuit 2

Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, heating circuit 2.
See chapter "Function description"

Value	Meaning
0	Delivered condition increase 0 K
0 to 20	Temperature increase adjustable from 0 to 20 K

426.4 Duration for set flow temperature increase of heating circuit 2

Duration for set flow temperature increase, heating circuit 2
See chapter "Function description"

Value	Meaning
60	Delivered condition 60 min
0 to 120	Temperature increase adjustable from 0 to 120 min

428.3 Set flow temperature increase, heating circuit 3

Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, heating circuit 3.
See chapter "Function description"

Value	Meaning
0	Delivered condition increase 0 K
0 to 20	Temperature increase adjustable from 0 to 20 K

428.4 Duration for set flow temperature increase of heating circuit 3

Duration for set flow temperature increase, heating circuit 3
See chapter "Function description"

Value	Meaning
60	Delivered condition 60 min
0 to 120	Temperature increase adjustable from 0 to 120 min

430.3 Set flow temperature increase, heating circuit 4

Set flow temperature increased when changing from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, heating circuit 4.
See chapter "Function description"

Value	Meaning
0	Delivered condition increase 0 K
0 to 20	Temperature increase adjustable from 0 to 20 K

430.4 Duration for set flow temperature increase of heating circuit 4

Duration for set flow temperature increase, heating circuit 4
See chapter "Function description"

Value	Meaning
60	Delivered condition 60 min
0 to 120	Temperature increase adjustable from 0 to 120 min

933.3 DHW heating priority, heating circuit 1

Priority of DHW heating over the heating circuit.
To reduce the heat-up time, room heating can be interrupted during DHW heating. For this purpose, the heating circuit pump for heating circuit 1 is switched off.

Heating circuit 1, heating circuit 2, heating… (cont.)

Value	Meaning
0	Without priority: Simultaneous room heating and DHW heating possible (only if the DHW cylinder is installed downstream of the low loss header).
1	With priority: ▪ No room heating during DHW heating ▪ Heating circuit pump for heating circuit 1 is switched off for the duration of DHW heating.

933.6 Operating mode of heating circuit 1

Only adjust for systems with one heating circuit.
In conjunction with room temperature sensor.

Value	Meaning
4	Weather-compensated **without** room temperature influence
7	Weather-compensated **with** room temperature influence (see parameter **933.7**) ***Note*** *Parameter 2426.2 is switched on automatically.*

933.7 Room influence factor, heating circuit 1

The higher the value, the greater the influence of the room temperature on the flow temperature of the heating circuit (heating curve).
Operation with room temperature hook-up must be set for the heating circuit (parameter 933.6). Only change the value for systems with one heating circuit.
For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:
- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **933.6** set to **7**.

Value	Meaning
8	Room influence factor
0 to 64	Room influence adjustable from 0 to 64

934.3 DHW heating priority, heating circuit 2

Priority of DHW heating over the heating circuit.
To reduce the heat-up time, room heating can be interrupted during DHW heating. For this purpose, the heating circuit pump for heating circuit 2 is switched off.

Value	Meaning
0	Without priority: Simultaneous room heating and DHW heating possible (only if the DHW cylinder is installed downstream of the low loss header).
1	With priority: ▪ No room heating during DHW heating ▪ Heating circuit pump for heating circuit 2 is switched off for the duration of DHW heating.

934.5 Differential temperature, heating circuit 2

The flow temperature of the heat generator is higher than the flow temperature of the heating circuit with mixer by an adjustable differential temperature.
See chapter Function description.

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Heating circuit 1, heating circuit 2, heating… (cont.)

Value	Meaning
8	Differential temperature in delivered condition 8 K.
0 to 20	Differential temperature adjustable from 0 to 20 K

934.6 Operating mode, heating circuit 2

In conjunction with room temperature sensor

Value	Meaning
4	Weather-compensated **without** room temperature influence
7	Weather-compensated **with** room temperature influence (see also parameter 934.7). ***Note*** *Parameter 2427.2 is switched on automatically.*

934.7 Room influence factor, heating circuit 2

With room temperature influence, the set flow temperature determined from the heating curve is adjusted according to the room temperature.
The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Only change the value for the heating circuit with mixer.
For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:
- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **934.6** set to **7**.

Value	Meaning
8	Room influence factor
0 to 64	Room influence adjustable from 0 to 64

935.3 DHW heating priority, heating circuit 3

Priority of DHW heating over the heating circuit.
To reduce the heat-up time, room heating can be interrupted during DHW heating. For this purpose, the heating circuit pump for heating circuit 2 is switched off.

Value	Meaning
0	Without priority: Simultaneous room heating and DHW heating possible (only if the DHW cylinder is installed downstream of the low loss header).
1	With priority: ▪ No room heating during DHW heating ▪ Heating circuit pump for heating circuit 2 is switched off for the duration of DHW heating.

935.5 Differential temperature, heating circuit 3

The flow temperature of the heat generator is higher than the flow temperature of the heating circuit with mixer by an adjustable differential temperature.
See chapter Function description.

Value	Meaning
8	Differential temperature in delivered condition 8 K.
0 to 20	Differential temperature adjustable from 0 to 20 K

Heating circuit 1, heating circuit 2, heating… (cont.)

935.6 Operating mode, heating circuit 3

In conjunction with room temperature sensor

Value	Meaning
4	Weather-compensated **without** room temperature influence
7	Weather-compensated **with** room temperature influence (see parameter 935.7). ***Note*** *Parameter 2428.2 is switched on automatically.*

935.7 Room influence factor, heating circuit 3

With room temperature influence, the set flow temperature determined from the heating curve is adjusted according to the room temperature.
The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Only change the value for the heating circuit with mixer.
For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:
- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **935.6** set to **7**.

Value	Meaning
8	Room influence factor
0 to 64	Room influence adjustable from 0 to 64

936.3 DHW heating priority, heating circuit 4

Priority of DHW heating over the heating circuit.
To reduce the heat-up time, room heating can be interrupted during DHW heating. For this purpose, the heating circuit pump for heating circuit 2 is switched off.

Value	Meaning
0	Without priority: Simultaneous room heating and DHW heating possible (only if the DHW cylinder is installed downstream of the low loss header).
1	With priority: ▪ No room heating during DHW heating ▪ Heating circuit pump for heating circuit 2 is switched off for the duration of DHW heating.

936.5 Differential temperature, heating circuit 4

The flow temperature of the heat generator is higher than the flow temperature of the heating circuit with mixer by an adjustable differential temperature. See also chapter Function description.

Value	Meaning
8	Differential temperature in delivered condition 8 K.
0 to 20	Differential temperature adjustable from 0 to 20 K

936.6 Operating mode, heating circuit 4

In conjunction with room temperature sensor

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Heating circuit 1, heating circuit 2, heating… (cont.)

Value	Meaning
4	Weather-compensated **without** room temperature influence
7	Weather-compensated **with** room temperature influence (see parameter 936.7). ***Note*** *Parameter 2429.2 is switched on automatically.*

936.7 Room influence factor, heating circuit 4

With room temperature influence, the set flow temperature determined from the heating curve is adjusted according to the room temperature.
The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Only change the value for the heating circuit with mixer.
For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:
- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **936.6** set to **7**.

Value	Meaning
8	Room influence factor
0 to 64	Room influence adjustable from 0 to 64

1102.0 Min. speed of the variable speed primary circuit/heating circuit pump in standard mode, heating circuit 1

Minimum speed of the internal circulation pump in heating mode with standard room temperature

Value	Meaning
...	Delivered condition specified by settings specific to the heat generator Setting range depends on the appliance.

1102.1 Max. speed of the variable speed primary circuit/heating circuit pump in standard mode, heating circuit 1

Maximum speed of the internal circulation pump in heating mode with standard room temperature

Value	Meaning
...	Delivered condition specified by settings specific to the heat generator Setting range depends on the appliance.

1192.0 Minimum flow temperature limit, heating circuit 1

Limiting of set flow temperature for heating operation via heating circuit 1

Value	Meaning
20	Min flow temperature 20 °C
5 to 82	Setting range limited by parameters, depending on appliance version

1192.1 Maximum flow temperature limit, heating circuit 1

Limiting of set flow temperature for heating operation via heating circuit 1

Heating circuit 1, heating circuit 2, heating… (cont.)

Value	Meaning
82	Max. flow temperature 82 °C
20 to 82	Setting range limited by parameters, depending on appliance version

1193.0 Minimum flow temperature limit, heating circuit 2

Limiting of set flow temperature for heating operation via heating circuit 2

Value	Meaning
20	Min flow temperature 20 °C
5 to 82	Setting range limited by parameters, depending on appliance version

1193.1 Maximum flow temperature limit, heating circuit 2

Limiting of set flow temperature for heating operation via heating circuit 2

Value	Meaning
82	Max. flow temperature 82 °C
20 to 82	Setting range limited by parameters, depending on appliance version

1194.0 Minimum flow temperature limit, heating circuit 3

Limiting of set flow temperature for heating operation via heating circuit 3

Value	Meaning
20	Min flow temperature 20 °C
5 to 82	Setting range limited by parameters, depending on appliance version

1194.1 Maximum flow temperature limit, heating circuit 3

Limiting of set flow temperature for heating operation via heating circuit 3

Value	Meaning
82	Max. flow temperature 82 °C
20 to 82	Setting range limited by parameters, depending on appliance version

1195.0 Minimum flow temperature limit, heating circuit 4

Limiting of set flow temperature for heating operation via heating circuit 4

Value	Meaning
20	Min flow temperature 20 °C
5 to 82	Setting range limited by parameters, depending on appliance version

1195.1 Maximum flow temperature limit, heating circuit 4

Limiting of set flow temperature for heating operation via heating circuit 4

Value	Meaning
82	Max. flow temperature 74 °C
20 to 82	Setting range limited by parameters, depending on appliance version

Heating circuit 1, heating circuit 2, heating… (cont.)

1395.1 Heating limit: Economy function, outside temperature, heating circuit 1

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)
- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

Value	Meaning
25	Heating limit at outside temperature 25 °C
10 to 35	Heating limit adjustable from 10 to 35 °C

1396.1 Heating limit: Economy function, outside temperature, heating circuit 2

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)
- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

Value	Meaning
25	Heating limit at outside temperature 25 °C
10 to 35	Heating limit adjustable from 10 to 35 °C

1397.1 Heating limit: Economy function, outside temperature, heating circuit 3

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)
- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

Value	Meaning
25	Heating limit at outside temperature 25 °C
10 to 35	Heating limit adjustable from 10 to 35 °C

1398.1 Heating limit: Economy function, outside temperature, heating circuit 4

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)
- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

Value	Meaning
25	Heating limit at outside temperature 25 °C
10 to 35	Heating limit adjustable from 10 to 35 °C

1667.0 Pump switch-on, heating circuit pump 1, standby mode

Operating mode, heating circuit pump 1:

Value	Meaning
0	Constantly off in "Standby mode"
1 to 24	In "Standby mode", switched on 1 to 24 times a day (in constant mode for 10 min each time; in weather-compensated mode for 50 minutes each time).

Note
Setting only via software tool

1668.0 Pump switch-on, heating circuit pump 2, standby mode

Operating mode, heating circuit pump 2:

Value	Meaning
0	Constantly off in "Standby mode"
1 to 24	In "Standby mode", switched on 1 to 24 times a day (in constant mode for 10 min each time; in weather-compensated mode for 50 minutes each time).

Note
Setting only via software tool

Heating circuit 1, heating circuit 2, heating… (cont.)

1669.0 Pump switch-on, heating circuit pump 3, standby mode

Operating mode, heating circuit pump 3:

Value	Meaning
0	Constantly off in "Standby mode"
1 to 24	In "Standby mode", switched on 1 to 24 times a day (in constant mode for 10 min each time; in weather-compensated mode for 50 minutes each time).

Note
Setting only via software tool

1670.0 Pump switch-on, heating circuit pump 4, standby mode

Operating mode, heating circuit pump 4:

Value	Meaning
0	Constantly off in "Standby mode"
1 to 24	In "Standby mode", switched on 1 to 24 times a day (in constant mode for 10 min each time; in weather-compensated mode for 50 minutes each time).

Note
Setting only via software tool

Energy saving functions (setting only via software tool)

1791.0 3-way valve target position

The 3-way valve assumes the set position when there is no demand for heating operation or DHW heating.

Value	Meaning
1.	Heating
2.	Central position
3.	DHW

2426.0 Enable economy function, outside temperature, heating circuit 1

Energy saving function for the heating circuit pump of heating circuit 1 for weather-compensated room heating.

Energy saving function on:
- If the outside temperature exceeds the set room temperature plus the value in parameter **2426.1**, the circulation pump switches **off**.
- If the outside temperature falls **1 K below** the set room temperature plus the value in parameter **2426.1**, the circulation pump switches back **on**.

Value	Meaning
0	Energy saving function off
1	Energy saving function on

2426.1 Weather-compensated heating circuit pump logic for heating circuit 1 (only for weather-compensated control units)

Value	Meaning
Setting range -9 to +5 K	▪ If the adjusted outside temperature **exceeds** the set room temperature plus the value in parameter **2426.1**, the circulation pump switches **off**. ▪ If the adjusted outside temperature falls **1 K below** the set room temperature plus the value in parameter **2426.1**, the circulation pump switches back **on**.

2426.2 Room temperature-dependent heating circuit pump logic on/off for heating circuit 1

Only for weather-compensated control unit with room temperature hook-up!
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
0	Off
1	On

2426.3 Room temperature-dependent heating circuit pump logic for heating circuit 1

Only for weather-compensated control unit with room temperature hook-up!

Heating circuit 1, heating circuit 2, heating… (cont.)

Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
Setting range -2 to +5 K	▪ If the actual room temperature **exceeds** the set room temperature plus the value in parameter **2426.3**, the circulation pump switches **off**. ▪ If the actual room temperature falls **1 K below** the set room temperature plus the value in parameter **2426.3**, the circulation pump switches back **on**.

2427.0 Enable economy function, outside temperature, heating circuit 2

Energy saving function for the heating circuit pump of heating circuit 2 for weather-compensated room heating.

Energy saving function on:
- If the outside temperature exceeds the set room temperature selected plus the value in parameter **2427.1**, the circulation pump switches **off**.
- If the outside temperature falls **1 K below** the set room temperature plus the value in parameter **2427.1**, the circulation pump switches back **on**.

Value	Meaning
0	Energy saving function off
1	Energy saving function on

2427.1 Weather-compensated heating circuit pump logic for heating circuit 2 (only for weather-compensated control units)

Value	Meaning
Setting range -9 to +5 K	▪ If the adjusted outside temperature **exceeds** the set room temperature plus the value in parameter **2427.1**, the circulation pump switches **off**. ▪ If the adjusted outside temperature falls **1 K below** the set room temperature plus the value in parameter **2427.1**, the circulation pump switches back **on**.

2427.2 Room temperature-dependent heating circuit pump logic on/off for heating circuit 2

Only for weather-compensated control unit with room temperature hook-up!
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
0	Off
1	On

2427.3 Room temperature-dependent heating circuit pump logic for heating circuit 2

Only for weather-compensated control unit with room temperature hook-up!
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
Setting range -2 to +5 K	▪ If the actual room temperature **exceeds** the set room temperature plus the value in parameter **2427.3**, the circulation pump switches **off**. ▪ If the actual room temperature falls **1 K below** the set room temperature plus the value in parameter **2427.3**, the circulation pump switches back **on**.

2428.0 Enable economy function, outside temperature, heating circuit 3

Energy saving function on:
- If the outside temperature **exceeds** the set room temperature plus the value in parameter **2428.1**, the circulation pump switches **off**.
- If the outside temperature falls **1 K below** the set room temperature plus the value in parameter **2428.1**, the circulation pump switches back **on**.

Value	Meaning
0	Energy saving function off
1	Energy saving function on

2428.1 Weather-compensated heating circuit pump logic for heating circuit 3 (only for weather-compensated control units)

Value	Meaning
Setting range -9 to +5 K	▪ If the adjusted outside temperature **exceeds** the set room temperature plus the value in parameter **2428.1**, the circulation pump switches **off**. ▪ If the adjusted outside temperature falls **1 K below** the set room temperature plus the value in parameter **2428.1**, the circulation pump switches back **on**.

2428.2 Room temperature-dependent heating circuit pump logic on/off for heating circuit 3

Only for weather-compensated control unit with room temperature hook-up!

Heating circuit 1, heating circuit 2, heating… (cont.)

Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
0	Off
1	On

2428.3 Room temperature-dependent heating circuit pump logic for heating circuit 3

Only for weather-compensated control unit with room temperature hook-up!
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
Setting range -2 to +5 K	▪ If the actual room temperature **exceeds** the set room temperature plus the value in parameter **2428.3**, the circulation pump switches **off**. ▪ If the actual room temperature falls **1 K below** the set room temperature plus the value in parameter **2428.3**, the circulation pump switches back **on**.

2429.0 Enable economy function, outside temperature, heating circuit 4

Energy saving function on:
- If the outside temperature **exceeds** the set room temperature plus the value in parameter **2429.1**, the circulation pump switches **off**.
- If the outside temperature falls **1 K below** the set room temperature plus the value in parameter **2429.1**, the circulation pump switches back **on**.

Value	Meaning
0	Energy saving function off
1	Energy saving function on

2429.1 Weather-compensated heating circuit pump logic for heating circuit 4

Value	Meaning
Setting range -9 to +5 K	▪ If the adjusted outside temperature **exceeds** the set room temperature plus the value in parameter **2429.1**, the circulation pump switches **off**. ▪ If the adjusted outside temperature falls **1 K below** the set room temperature plus the value in parameter **2429.1**, the circulation pump switches back **on**.

2429.2 Room temperature-dependent heating circuit pump logic on/off for heating circuit 4

Only for weather-compensated control unit with room temperature hook-up!
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
0	Off
1	On

2429.3 Room temperature-dependent heating circuit pump logic for heating circuit 4

Only for weather-compensated control unit with room temperature hook-up!
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.

Value	Meaning
Setting range -2 to +5 K	▪ If the actual room temperature **exceeds** the set room temperature plus the value in parameter **2429.3**, the circulation pump switches **off**. ▪ If the actual room temperature falls **1 K below** the set room temperature plus the value in parameter **2429.3**, the circulation pump switches back **on**.

Heating circuit 1, heating circuit 2, heating… (cont.)

Frost protection configuration (setting only via software tool)

2855.1 Additional (passive) frost protection configuration, heating circuit 1

If the outside temperature falls below the set outside temperature limit, the corresponding heating circuit pump switches on (applies only to weather-compensated operation).

Setting	Meaning
1	= 1 °C Setting range: -9 °C to +3 °C

2856.1 Additional (passive) frost protection configuration, heating circuit 2

If the outside temperature falls below the set outside temperature limit, the corresponding heating circuit pump switches on (applies only to weather-compensated operation).

Setting	Meaning
1	= 1 °C Setting range: -9 °C to +3 °C

2857.1 Additional (passive) frost protection configuration, heating circuit 3

If the outside temperature falls below the set outside temperature limit, the corresponding heating circuit pump switches on (applies only to weather-compensated operation).

Setting	Meaning
1	= 1 °C Setting range: -9 °C to +3 °C

2858.1 Additional (passive) frost protection configuration, heating circuit 4

If the outside temperature falls below the set outside temperature limit, the corresponding heating circuit pump switches on (applies only to weather-compensated operation).

Setting	Meaning
1	= 1 °C Setting range: -9 °C to +3 °C

Solar

Note
*Parameter values in **bold** are factory settings.*

950.0 Flow rate, solar circuit at max. pump speed

Flow rate required for calculating the solar yield.

Value	Meaning
7	Flow rate 7 l/min
0.1 to 25.5	Flow rate adjustable from 0.1 to 25.5 l/min 1 step ≙ 0.1 l/min

1118.0 Min. speed solar circuit pump

Minimum speed of solar circuit pump in %

Value	Meaning
23	Minimum speed 23 %
0 to 100	Speed adjustable from 0 to 100 %

1118.1 Max. speed solar circuit pump

Maximum speed of solar circuit pump in %

Value	Meaning
84	Maximum speed 84 %
0 to 100	Speed adjustable from 0 to 100 %

Solar (cont.)

1125.0 Maximum cylinder temperature for solar DHW heating

Maximum set cylinder temperature for solar DHW heating

Danger
High DHW temperatures can cause scalding.
- Use on-site measures if required. For example, install automatic thermostatic mixing valves in the DHW pipe.
- Inform the system operator.
- Mix with cold water at the draw-off points.

Value	Explanations
60	Max. set cylinder temperature 60 °C
10 to 90	Max. set cylinder temperature adjustable from 10 to 90 °C

1126.0 Minimum collector temperature

Minimum collector temperature for starting the solar circuit pump

Value	Meaning
10	Minimum start temperature 10 °C
0	Minimum temperature limit disabled
1 to 90	Minimum start temperature adjustable from 1 to 90 °C

1126.1 Maximum collector temperature

If the maximum collector temperature is exceeded, the solar circuit pump is shut down to protect the system components (emergency collector shutdown).

Value	Meaning
130	Stop temperature 130 °C
20 to 200	Stop temperature adjustable from 20 to 200 °C

1127.0 Frost protection function for solar circuit

Frost protection function for the solar circuit

Value	Meaning
0	Off - not active
1	On - active Not required for Viessmann heat transfer medium

1136.2 Heat transfer medium solar circuit

Setting the heat transfer medium for calculating the solar yield

Value	Meaning
0	Water as a heat transfer medium
1	Viessmann heat transfer medium

1394.0 Set DHW temperature for reheating suppression

Set cylinder temperature for reheating suppression
Above the selected set cylinder temperature, reheating suppression is active.

Value	Meaning
40	Reheating suppression from set cylinder temperature 40 °C
0 to 95	Set cylinder temperature adjustable from 0 to 95 °C

Solar (cont.)

1492.0 Start temperature differential, solar circuit pump

Start temperature differential between actual cylinder temperature and actual collector temperature

Value	Meaning
8	Start temperature differential 8 K
2 to 30	Start temperature differential adjustable from 2 to 30 K

1492.1 Stop temperature differential, solar circuit pump

Stop temperature differential between actual cylinder temperature and actual collector temperature

Value	Meaning
4	Stop temperature differential 4 K
1 to 29	Stop temperature differential adjustable from 1 to 29 K

1505.0 Stagnation time reduction

Hysteresis for set cylinder temperature

Note
To protect system components and heat transfer medium, the solar circuit pump speed is reduced at the same time.

Value	Explanations
5	Temperature differential 5 K
0	Stagnation time reduction not active
1 to 40	Temperature differential adjustable from 1 to 40 K

1598.0 Start temperature for thermostat function

Temperature for activating the thermostat function
- Do not set in conjunction with parameter 1599...
- Only in conjunction with SDIO/SM1A electronics module

Value	Meaning
50	
0 to 100	Set start temperature adjustable from 0 to 100 °C

1598.1 Stop temperature for thermostat function

Temperature for deactivating the thermostat function
Do not set in conjunction with parameter 1599...

Value	Meaning
40	Only in conjunction with SDIO/SM1A electronics module
0 to 100	Set stop temperature adjustable from 0 to 100 °C

1599.0 Start temperature differential for central heating backup/solar preheating

Temperature differential at which the solar DHW cylinder heating is switched on.
- For central heating backup:
  Temperature differential between heating return temperature and heating water temperature in the DHW cylinder.
- In case of solar preheating:
  Temperature differential between DHW temperature and heating water temperature in the DHW cylinder.

Do not set in conjunction with parameter 1598...

Value	Meaning
8	8 K (only in conjunction with SDIO/SM1A electronics module)
2 to 30	Start temperature differential adjustable from 2 to 30 K

Solar (cont.)

1599.1 Stop temperature differential for central heating backup/solar preheating

Temperature differential at which the solar DHW cylinder heating is switched off.

- For central heating backup:
  Temperature differential between heating return temperature and heating water temperature in the DHW cylinder.
- In case of solar preheating:
  Temperature differential between DHW temperature and heating water temperature in the DHW cylinder.

Do not set in conjunction with parameter 1598...

Value	Meaning
4	4 K Only in conjunction with SDIO/SM1A electronics module
1 to 29	Stop temperature differential adjustable from 1 to 29 K

1719.0 Interval function solar circuit pump

For capturing the collector temperature, the collector circuit pump is cyclically switched on briefly.

Value	Meaning
0	Not active
1	Active

Subscriber numbers of connected extensions

All extensions connected to the heat generator (except the SDIO/SM1A electronics module) must have a subscriber number. The subscriber number is set on rotary switch S1 at each extension.

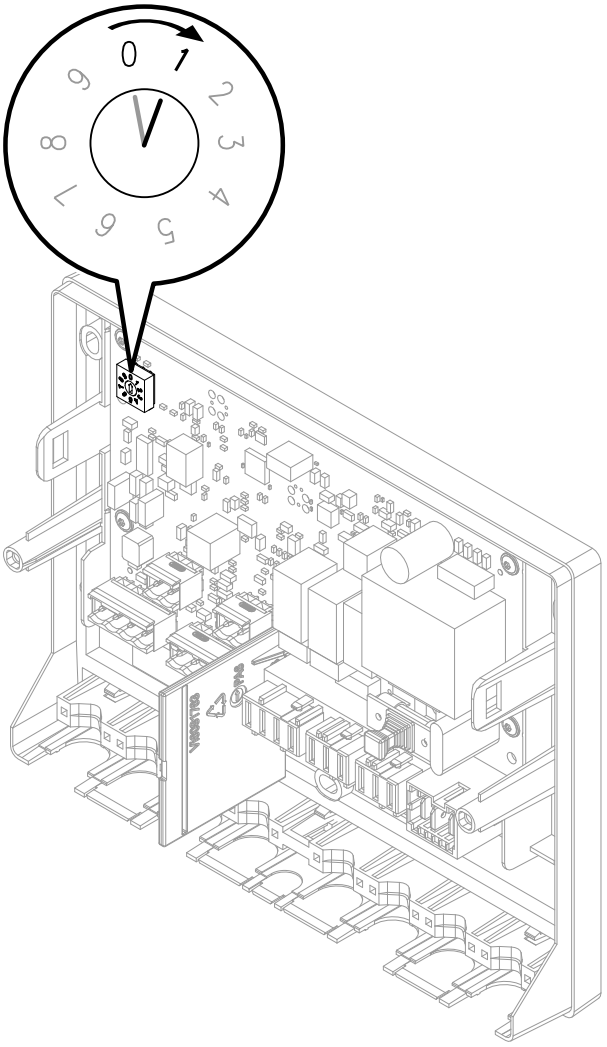

Fig. 52

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Subscriber numbers of connected extensions (cont.)

Rotary switch S1 settings:
- EM-S1 extension (system with solar collectors): **0**
- EM-EA1 extension (max. 3 extensions in one system)
  Consecutive no. (any sequence): **1** up to **3**
- EM-P1 extension
  - If no heating circuits with mixer are available in the system: **1**
  - If heating circuits with mixer (EM-M1 or EM-MX extensions) are present in the system: Always set subscriber number for EM-P1 extension to the consecutive number after EM-M1 or EM-MX extensions.
- EM-M1 or EM-MX extensions
  - Heating circuit 2 with mixer: Rotary switch on extension kit to 1
  - Heating circuit 3 with mixer: Rotary switch on extension kit to 2

Note
*EM-EA1 extensions may have the same subscriber number as the EM-P1, EM-M1 or EM-MX extensions. The following table shows an **example** of how a system may be equipped.*

Function	Electronics module	Extension	Setting Rotary switch S1
System with solar collectors	ADIO	EM-S1	**0**
Heating circuit 2 with mixer	ADIO	EM-M1/EM-MX	**1**
Heating circuit 3 with mixer	ADIO	EM-M1/EM-MX	**2**
Heating circuit 4 with mixer	ADIO	EM-M1/EM-MX	**3**
Heating circuit 1 without mixer (circulation pump downstream of low loss header)	ADIO	EM-P1	**4**
Function extensions (e.g.): ▪ Fault message input ▪ Fault message output ▪ Operating mode changeover	DIO	EM-EA1	**1**
	DIO	EM-EA1	**2**
	DIO	EM-EA1	**3**

Service menu

Calling up the service menu

Tap the following buttons:

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✔.
5. Select the required menu section.

   Note
   Not all menu areas will be available, depending on the system equipment level.

Note
Tap 🔧 to return to the ***"Service main menu"***

Service menu overview

Service	
Diagnosis	
	General
	Burner
	Heating circuit 1
	Heating circuit 2
	Heating circuit 3
	Heating circuit 4
	DHW
	Solar energy
	TCU communication module
Actuator test	
System configuration	
Message history	
Service functions	
	System pressure setting
	Reset service
	Filling
	Air vent valve
	System log
	WLAN Information
Energy statement reset	
Change passwords	
Commissioning	
Appliances detected	
Exit service	
Access point ON/OFF	

Exiting the service menu

Tap the following buttons:

"Exit service" or ⮌.

Note
The system exits the service menu automatically after 30 min.

Changing the service password

In the delivered condition, **"viservice"** is preset as the password for accessing the **"Service menu"**.

Tap the following buttons:

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✔.
5. **"Change passwords"**.
6. **"Service menu"**
7. Enter current password.
8. Confirm with ✔.
9. Enter new password.
10. Confirm twice with ✔.

Resetting all passwords to delivered condition

Tap the following buttons:

1. Request the master password from Viessmann Technical Service.
2. "☰"
3. **"Service"**
4. Enter password **"viservice"**.
5. Confirm with ✔.
6. **"Change passwords"**
7. **"Reset all passwords"**
8. Enter master password.
9. Confirm twice with ✔.

Diagnosis

Checking operating data

Operating data can be called up in various areas. See **"Diagnosis"** in the service menu overview.
Operating data on heating circuits with mixer can only be called up if such components are installed in the system.

Note
*If a called up sensor is faulty, **"- - -"** appears on the display.*

Calling up operating data

Tap the following buttons:

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Use ✔ to confirm.
5. **"Diagnosis"**
6. Select required group, e.g. **"General"**.

Calling up messages (message history)

The messages are sorted by date.

Tap the following buttons:

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✔.
5. **"Message history"**

   The following is displayed in the message lists:
   - Date and time of the occurrence of the notification
   - Notification number
   - Description of the notification
   - Subscriber number of the component on which the message has occurred:
     PlusBus subscriber components
     0 EM-S1 extension (ADIO electronics module)
     1 - 15 EM-M1, EM-MX and EM-P1 extensions (ADIO electronics module)
     17 - 31 EM-EA1 extension (DIO electronics module)
     32 - 47 Cylinder module (electronics module M2IO)
     49 - 63 Vitotrol 200-E
     64 SDIO/SM1A electronics module
     CAN BUS subscriber components
     1 HMU heat management unit
     50 BCU burner control unit
     58 Communication module TCU 200
     59 HMI programming unit
     60 Fan unit
     90 Gateway
     Low power radio subscriber components
     49 - 63 Vitotrol 300-E
6. - **"Faults"** to call up saved fault messages. For further details, see the following chapter "Fault messages".
   - **"Service messages"** to call up saved service messages.
   - **"Status"**, to call up the saved status messages.
   - **"Warnings"** to call up saved warning messages.
   - **"Information"**, to call up saved service information.

   For messages, see chapter "Further messages".
7. If you wish to delete messages, tap 🗑.
8. ✔ to confirm

Checking outputs (actuator test)

Note
When the actuator test is started, all actuators are initially disabled and valves moved to their central position.

Tap the following buttons:

1. "☰"
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✔.
5. **"Actuator test"**
6. ✔ to confirm the security prompt.

   Note
   If an actuator function is not possible due to the running process, the function is interrupted. A message appears.
7. Use ◀/▶ to select the required group. See the table below.
8. Tap the required actuator function. Several functions can be activated simultaneously.

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Checking outputs (actuator test) (cont.)

9. If necessary, tap ✔ to confirm. The functions are active for 30 s.
10. Use ↩ to end the Actuator test.

The following actuator functions can be controlled subject to the system equipment level:

Display		Explanation
Gas condensing boiler group		
Fan speed	Set value	Burner fan speed in rpm (rotations/minute)
Burner modulation, set value	▪ Off ▪ Minimum heating output ▪ Maximum heating output ▪ Maximum DHW output	Modulation level (in accordance with specific heat generator settings)
3-way valve target position	Heating	3-way diverter valve set to heating mode
	Middle	3-way diverter valve in central position (filling/draining)
	DHW	3-way diverter valve set to DHW heating
Heating group		
Primary circuit pump speed	Set value	Internal circulation pump speed in %
3-way valve target position	Heating	3-way diverter valve set to heating mode
	Middle	3-way diverter valve in central position (filling/draining)
	DHW	3-way diverter valve set to DHW heating
Heating circuit 1 pump speed	Set value	Speed, heating circuit pump, heating circuit 1 without mixer in %
Heating circuit 2 pump speed	Set value	Speed, heating circuit pump, heating circuit 2 with mixer in %
Heating circuit 3 pump speed	Set value	Speed, heating circuit pump, heating circuit 3 with mixer in %
Heating circuit 4 pump speed	Set value	Speed, heating circuit pump, heating circuit 4 with mixer in %
Mixer HC2	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
Mixer HC3	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
Mixer HC4	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
DHW group		
Primary circuit pump, set speed	Set value	Internal circulation pump in %
3-way valve target position	Heating	3-way diverter valve set to heating mode
	Middle	3-way diverter valve in central position (filling/draining)
	DHW	3-way diverter valve set to DHW heating
Circulation pump for cylinder heating	On	
	Off	

Checking outputs (actuator test) (cont.)

Display		Explanation
DHW circulation pump	On Off	
Group Solar (not for Vitodens 222-W)		
Solar circuit pump, set speed	Set value	Speed, solar circuit pump in %
Circulation pump hygiene function	On Off	
Circulation pump, solar	On Off	
3-way valve, solar	Open	
Target position	Close Stop	

Fault display on the programming unit

If there is a fault, the display shows the fault message plus ⚠.

Note
If a central fault message facility is connected, this is switched on.

1. Tap ⚠ in the footer to call up the fault messages. For an explanation of the fault codes, see the following table.

2. Tap ✔ to hide the fault messages. For an explanation of the fault codes, see the following table.

If "Connection error" and ⚠ appear on the display:
Check connecting cable and plug between HMU heat management unit and HMI programming unit.

Acknowledging the fault display

Tap ✍.

Note
Any connected central fault message facility is switched off.
If an acknowledged fault is not remedied, the fault message will be redisplayed the following day at 07:00, and the fault message facility restarts.

Calling up acknowledged fault messages

Tap the following buttons:

1. "☰"

2. Tap **"Message lists"**.
   The fault messages appear in chronological order.

   Note
   When troubleshooting, always observe the subscriber number of the component.
   Check the component displayed, rectify the fault if required. The subscriber number of the component depends on the position of rotary switch S1 on the corresponding extension module. The rotary switch position was set during installation.
   To identify the affected module, check the position of rotary switch S1 on the module if required.

   Note
   See also page 98.

The following is displayed:
- Date and time of the occurrence of the fault
- Fault code
- Description of the fault
- Subscriber number of the component on which the fault has occurred:
  PlusBus subscriber components
  0 EM-S1 extension (ADIO electronics module)
  1 - 15 EM-M1, EM-MX and EM-P1 extensions (ADIO electronics module)
  17 - 31 EM-EA1 extension (DIO electronics module)
  32 - 47 Cylinder module (electronics module M2IO)
  48 - 63 Vitotrol 200-E
  64 SDIO/SM1A electronics module
  CAN BUS subscriber components
  1 HMU heat management unit
  50 BCU burner control unit
  58 Communication module (TCU 200)
  59 HMI programming unit
  60 Fan unit
  90 Gateway
  Low power radio subscriber components
  49 - 63 Vitotrol 300-E

Reading out fault messages from the fault memory (message history)

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

Tap the following buttons:

1. "☰"

2. **"Service"**

3. Enter password **"viservice"**.

4. Use ✔ to confirm.

5. **"Message history"**

6. **"Faults"** to call up saved fault messages.

7. If you wish to delete the list, tap 🗑.

8. ✔ to confirm.

Overview of electronics modules

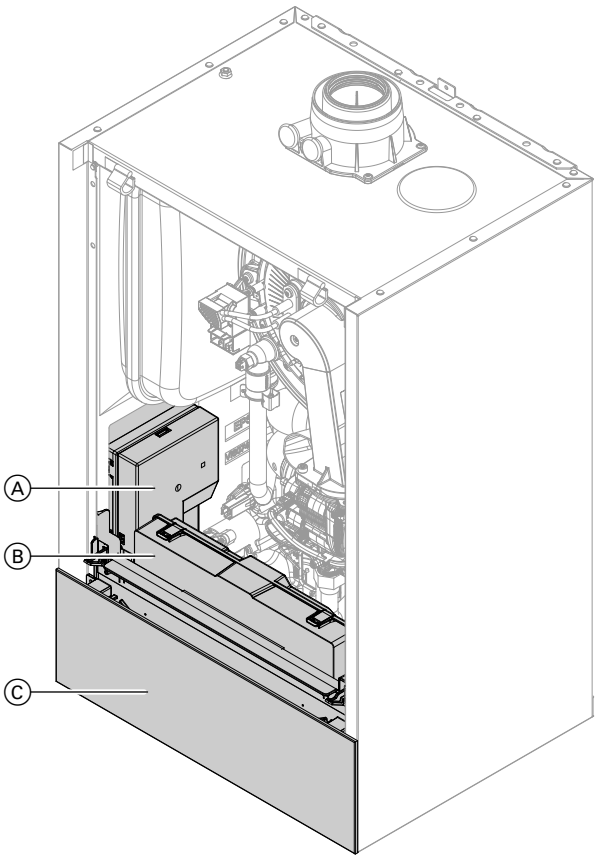

Fig. 53

Ⓐ BCU burner control unit
Ⓑ HMU heat management unit
Ⓒ HMI programming unit with TCU communication module

Fault messages

Note
Diagnostics and troubleshooting: See chapter "Repairs".
Fault messages dependent on appliance equipment level

F.5

System characteristics

Flow rate not being monitored. System continues operating in normal mode with replacement value.

Cause

Lead break or short circuit, flow sensor.

Measures

Check plug 33/X6 and cable between BCU burner control unit and flow sensor:
- Check voltage level, to see if 5 V present at plug 33, pins 1 and 2.
- Turn the gas condensing boiler ON/OFF switch off and back on again.

Fault messages (cont.)

F.7

System characteristics

No DHW heating.

Cause

Lead break, cylinder temperature sensor.

Measures

- Check DHW setting in the commissioning assistant and correct if necessary.
- Check cylinder temperature sensor (plug 5, wires 3 and 4).
- Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected

Replace faulty component if necessary.

F.8

System characteristics

No DHW heating.

Cause

Short circuit, cylinder temperature sensor.

Measures

Check cylinder temperature sensor (plug 5, wires 3 and 4).
Replace faulty component if necessary.

F.11

System characteristics

No solar DHW heating or central heating backup.

Cause

Lead break, collector temperature sensor.

Measures

- Check collector temperature sensor.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

F.12

System characteristics

No solar DHW heating or central heating backup.

Cause

Short circuit, collector temperature sensor.

Measures

- Check collector temperature sensor.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

F.13

System characteristics

Regulates as if the outside temperature were 0 °C.

Cause

Lead break, outside temperature sensor.

Measures

- Check the operating mode setting in the commissioning assistant. Correct if necessary.
- Check outside temperature sensor and connection to sensor (external plug, contacts 1 and 2).
  Note
  Depending on appliance version, on floorstanding compact appliances the plug is located inside the appliance.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

Replace faulty component if necessary.

Fault messages (cont.)

F.14

System characteristics

Regulates as if the outside temperature were 0 °C.

Cause

Short circuit, outside temperature sensor.

Measures

Check outside temperature sensor and connection to sensor (external plug and contacts 1 and 2). Replace faulty components if necessary.

Note
Depending on appliance version, on floorstanding compact appliances the plug is located inside the appliance.

F.15

System characteristics

No solar DHW heating or central heating backup.

Cause

Lead break, cylinder temperature sensor.

Measures

Check cylinder temperature sensor.
Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

F.16

System characteristics

No solar DHW heating or central heating backup.

Cause

Short circuit, cylinder temperature sensor.

Measures

Check cylinder temperature sensor.
Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

F.19

System characteristics

No DHW heating.

Cause

Lead break, bottom cylinder temperature sensor.

Measures

Check bottom cylinder temperature sensor.

F.29

System characteristics

Regulates without flow temperature sensor for low loss header.

Cause

Lead break, low loss header sensor.

Measures

- Check commissioning assistant setting, low loss header.
- Check flow temperature sensor, low loss header.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

Fault messages (cont.)

F.30

System characteristics

Regulates without flow temperature sensor for low loss header.

Cause

Short circuit, low loss header sensor.

Measures

Check flow temperature sensor, low loss header.
Measure voltage at sensor input on electronics module. Set value: 3.3 V ⎓ with sensor disconnected

F.49

System characteristics

Burner in a fault state.

Cause

Lead break, flue gas temperature sensor.

Measures

Check flue gas temperature sensor.
Reset the appliance.

F.50

System characteristics

Burner in a fault state.

Cause

Short circuit, flue gas temperature sensor.

Measures

Check flue gas temperature sensor.
Reset the appliance.

F.57

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor.

Measures

- Check on the Vitotrol whether settings have been made for an external sensor. If necessary, carry out commissioning with the Vitotrol 200-E again.
- Check whether an external room sensor is connected to the Vitotrol 200-E: Terminals 3 and 4
- If no external room temperature sensor has been connected: Replace the Vitotrol 200-E.
- If an external room temperature sensor has been connected: Check the connection and plug-in connection of the sensor to terminal 13c / 9 and to terminal 3 / 4 of the Vitotrol 200-E for correct fit, contact corrosion and mechanical damage (temperature sensor connection on Vitodens with external plug: Terminals 6 and 5 on Vitotrol 200-E). Replace power cable if necessary.
- Check the external room temperature sensor for NTC 10 kΩ resistance at the disconnected terminal 13c / 9. Replace sensor if necessary.
- Replace the Vitotrol 200-E wall mounting base. If the fault persists, replace the Vitotrol 200-E programming unit.

F.58

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor.

Fault messages (cont.)

Measures

- Check on the Vitotrol whether a setting has been made for an external sensor. If necessary, carry out commissioning with the Vitotrol 200-E again.
- Check whether an external room sensor is connected to the Vitotrol 200-E: Terminals 3 and 4
- If no external room temperature sensor has been connected: Replace the Vitotrol 200-E.
- If an external room temperature sensor has been connected: Check the connection and plug-in connection of the sensor to terminal 13c / 9 and to terminal 3 / 4 of the Vitotrol 200-E for correct fit, contact corrosion and mechanical damage (temperature sensor connection on Vitodens with external plug: Terminals 6 and 5 on Vitotrol 200-E). Replace power cable if necessary.
- Check the external room temperature sensor for NTC 10 kΩ resistance at the disconnected terminal 13c / 9. Replace sensor if necessary.
- Replace the Vitotrol 200-E wall mounting base. If the fault persists, replace the Vitotrol 200-E programming unit.

F.59

System characteristics

Burner locked out.
Internal circulation pump off.
No room heating, no DHW heating.

Cause

Undervoltage, power supply

Measures

Check mains voltage.
If voltage is correct and the fault occurs repeatedly, replace the fan unit.

F.62

System characteristics

Burner in a fault state.

Cause

High limit safety cut-out has responded.

Measures

- Check the hydraulics of the system with the specified scheme settings. Check the settings of the switching times and the temperature level of the system.
- Check that all internal and external shut-off devices are open.
- Vent the primary circuit of the system and check the system pressure.
- Check whether the internal diverter valve is working during the actuator test. Check that the cable set has been routed and plugged in correctly between the diverter valve and plug X3 of the BCU and that the plug contacts are not damaged. If necessary, replace the cable set. If fault persists, replace the diverter valve.
- Check whether the primary circuit pump is running. Disconnect the PWM plug from the pump. Pump is running at full load (with Vitodens 3xx, the flow rate can be checked via the flow sensor). Check that the cable set has been routed and plugged in correctly between the pump and the BCU and that there are no damaged plug contacts. If necessary, replace the primary circuit pump. If the fault persists, replace the BCU.
- Check the connections and plug-in connection of the cylinder temperature sensor or, if present, the low loss header/buffer temperature sensor on the HMU for correct seating, contact corrosion and mechanical damage as well as correct installation of the sensor. Check the resistance of the sensor (NTC 10 kΩ) at the disconnected plug. Replace sensor if necessary.
- Check the resistance of the flow temperature sensor (NTC 10 kΩ) at the disconnected plug. If necessary, replace the temperature sensor.
- Check internal components for dirt and defects (internal pipework, connection to the heat exchanger, pump, overflow valve, pump casing, etc.). If necessary, check the water quality of the fill water and fresh water.
- Check on-site components in the hydraulic circuit for deposits or defects (dirt trap, sludge and magnetite separator).

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Fault messages (cont.)

Reset the appliance.

F.63

System characteristics

Burner in a fault state.

Cause

Flue gas temperature limiter has responded.

Measures

- Check heating system fill level.
- Check pre-charge pressure in diaphragm expansion vessel. Adjust to required system pressure.
- Check whether flow rate is sufficient (flow sensor and circulation pump).
- Check 3-way diverter valve function in actuator test.

Vent the system.
Reset the appliance once the flue system has cooled down.

F.64

System characteristics

Normal operation
Burner restarts.

Cause

Flame loss during stabilisation or operating phase

Measures

- Check gas supply (gas pressure and gas flow switch).
- Check balanced flue system for flue gas recirculation.
- Check ionisation electrode.
- Check distance to burner gauze assembly.
- Check electrode/burner gauze assembly for dirt.

F.65

System characteristics

Burner in a fault state.

Cause

Flame signal is not present, or insufficient at burner start.

Measures

- Check gas supply (gas pressure and gas flow switch).
- Check gas solenoid valve.
- Check system for condensate backup. Check condensate drain.
  Note
  Prevent water damage.
  Detach fan unit before removing the burner.
- Check ionisation electrode and connecting cable.
- Check ignition:
  Connecting cables to ignition module and ignition electrode.
- Check distance from ignition electrode to burner gauze assembly.
- Check electrode/burner gauze assembly for dirt.
- Check ignition electrode for broken insulation.

F.67

System characteristics

Burner in a fault state.

Cause

Ionisation current outside the permissible range.

Measures

Check gas supply (gas pressure and gas flow switch), check gas solenoid valve and inlet strainer.

Check ionisation electrode for the following:
- Distance to burner gauze assembly
- Check electrode/burner gauze assembly for dirt.

Fault messages (cont.)

If specified measures do not help, replace fan unit.

Reset the appliance.

F.68

System characteristics

Burner in a fault state.

Cause

Flame signal is already present at burner start.

Measures

Close the gas shut-off valve. Remove connecting cable of the ionisation electrode. Reset the appliance. If the fault persists, replace the BCU burner control unit.

F.69

System characteristics

Normal operation
Fault is entered in fault history.

Cause

Ionisation current outside the permissible range.

Measures

Check ionisation electrode for the following:
- Check whether insulation block is touching electrode ceramic.
- Check gas solenoid valve: Activate **"Minimum heating output"** for approx. 4 min in actuator test. If this causes a fault to occur, replace BCU burner control unit.
- In the actuator test, switch from **"Minimum heating output"** to **"Maximum heating output"**. If this fault occurs during modulation, check the inlet strainer for contamination. Replace the fan unit if necessary.

F.70

System characteristics

Burner in a fault state.

Cause

Internal error, burner control unit.

Measures

Replace the BCU burner control unit.

F.71

System characteristics

Burner in a fault state.

Cause

Fan speed too low.

Measures

- Isolate the appliance from the power supply. Wait at least 2 min. Switch on voltage again.
- Check the connections and plug-in connection, plug 100 on the BCU burner control unit and fan for correct seating, contact corrosion and mechanical damage. Replace the connecting cable if necessary
- If the fault recurs, replace the fan.
- If a communication error is shown, rectify this error first.
- Replace the affected component.

Fault messages (cont.)

F.72

System characteristics

Burner in a fault state.

Cause

Fan idle state not reached.

Measures

Reset the appliance.
If the fault recurs, replace the fan unit.

F.73

System characteristics

Burner in a fault state.

Cause

Internal communication error.

Measures

Reset the appliance.
If the fault recurs, replace the BCU burner control unit.

F.74

System characteristics

Burner locked out.
Internal circulation pump off. No room heating and no DHW heating.

Cause

System pressure too low

Measures

Top up with water.

Vent the system.

If the fault occurs repeatedly:
- Check the system pressure sensor with an external pressure gauge.
- Check the pre-charge pressure of the diaphragm expansion vessel.
- Check settings for set system pressure and range.

F.75

System characteristics

Burner in a fault state.
Internal circulation pump off. No room heating and no DHW heating.

Cause

No flow rate

Measures

Open BDF valves.
Top up with water.

If the fault occurs repeatedly:
- Replace the flow sensor (if installed).
- Check pump. Replace if necessary.

F.77

System characteristics

Burner in a fault state.

Cause

Data memory burner control unit.

Measures

Reset the appliance. Reset the parameters of the BCU burner control unit.
If the fault recurs, replace the BCU burner control unit.

Fault messages (cont.)

F.78

System characteristics

Normal operation

Cause

Communication between heat management unit and programming unit faulty.

Measures

Check cables and plug-in connections between heat management unit and programming unit. Check cables for correct routing and positioning.

F.80

System characteristics

Normal operation

Cause

Short circuit, analogue sensor input 2 on ADIO.

Measures

Check/replace sensor.

F.87

System characteristics

Burner in a fault state.

Cause

Water pressure too high.

Measures

Open BDF valves.
Check expansion vessel function.
Correct the amount of water in the system.
Replace water pressure sensor.
Replace safety assembly.

F.89

System characteristics

No room heating and no DHW heating.
Internal pump not functioning.

Cause

Internal circulation pump blocked.

Measures

Check circulation pump. Replace if necessary.

F.91

System characteristics

Function of affected extension in emergency mode.

Cause

DIO electronics module communication error.

Measures

Check connections on DIO electronics module and connection to heat management unit.

Fault messages (cont.)

F.92

System characteristics

Function of the relevant electronics module in emergency mode.

Cause

ADIO electronics module communication error.

Measures

- Check setting in the commissioning assistant and correct if required.
- Check connections and leads to the ADIO electronics module.
- Check PlusBus voltage level (24 to 28 V).
- Check subscriber number on rotary switch S1 and correct if required.

F.93

System characteristics

Function of affected extension in emergency mode.

Cause

M2IO electronics module communication error.

Measures

Check connections on M2IO electronics module and connection to HMU heat management unit.

F.94

System characteristics

Function of the relevant electronics module in emergency mode. No solar central heating backup.

Cause

SDIO electronics module communication error.

Measures

- Check setting in the commissioning assistant and correct if required.
- Check connections and leads to the SDIO electronics module.
- Check PlusBus voltage level (24 to 28 V).

F.100

System characteristics

Electronics modules connected to PlusBus not working.

Cause

Voltage error PlusBus.

Measures

- Turn off the ON/OFF switch. Wait at least 2 min. Turn on the ON/OFF switch.
- Check that there aren't more than 2 Vitotrol 200-E connected to the PlusBus.
- Check that the length of the PlusBus cable is < 50 m
- Check all connections and plug-in connections for damage, short circuit, contact corrosion and correct cable routing:
  - If the voltage is 24 V, no fault at the HMU electronics module.
  - If the voltage is 0 V, replace the HMU electronics module.
- Disconnect all subscribers from the PlusBus: Reconnect all subscribers one after the other at intervals of 25 s until you find the subscriber with the fault. Replace the faulty subscriber if applicable.

F.104

System characteristics

Depending on configuration of EM-EA1 extension (DIO electronics module).

If "block system" is configured, the burner switches/ remains off.
If "fault message output" is configured, the fault message output is switched on.

Fault messages (cont.)

Cause

External fault message input active.

Measures

Check connected external appliance.

F.142

System characteristics

Burner in a fault state.

Cause

Communication error, fan unit, internal CAN bus.

Measures

- If F.342 is also present, rectify this first.
- Isolate the appliance from the power supply. Wait at least 2 min. Switch on voltage again. Reset the appliance if necessary.
- If fault F.142 is still present, check the CAN bus cable (internal CAN bus) and plug-in connection between HMU X4 and BCU X4 as well as BCU X1 (100A) and fan unit 100A for correct seating, contact corrosion, mechanical damage and correct cable routing. Replace the affected CAN bus cable if applicable. Reset the appliance.
- Replace the faulty fan unit. Reset the appliance.

F.160

System characteristics

Burner in a fault state.

Cause

Communication error CAN bus.

Measures

- If **"Connection error"** is displayed, check the internal CAN bus subscriber connections.
- If only F.160 is displayed, check the connections of the external CAN bus subscribers.
- Check the connecting cables for secure seating and corrosion.

Reset the appliance.

F.161

System characteristics

Burner in a fault state.

Cause

Dta memory access error BCU.

Measures

Reset the appliance.
If the fault recurs, replace the BCU burner control unit.

F.163

System characteristics

Burner in a fault state.

Cause

Memory access checksum error BCU.

Measures

Reset the appliance.
If the fault recurs, replace the BCU burner control unit.

Fault messages (cont.)

F.180

System characteristics

Burner in a fault state.

Cause

Gas pressure too low.

Measures

Check gas pressure. Inform the gas supplier if necessary.
If the fault recurs: Replace the gas pressure switch.
Replace the gas solenoid valve if necessary.
Direct replacement of the gas pressure switch is not permissible!

F.182

System characteristics

No DHW heating.

Cause

Short circuit, outlet temperature sensor (if installed).

Measures

Check outlet temperature sensor (plug X1, wires 13 and 14). Measure sensor input on electronics module.
Set value: 3.3 V ⎓ with sensor disconnected.

F.183

System characteristics

No DHW heating.

Cause

Lead break, outlet temperature sensor (if installed).

Measures

Check outlet temperature sensor (plug X1, wires 13 and 14).

F.184

System characteristics

Burner in a fault state.

Cause

Short circuit, flow temperature sensor/high limit safety cut-out.

Measures

- Check the connections and plug-in connection X1 (plugs 3 and 3A) on the BCU electronics module for correct seating, contact corrosion and mechanical damage. Replace connecting cable if necessary.
- Check the resistance R for NTC 10 kΩ on each flow temperature sensor (dual sensor) at the disconnected plug. In the event of severe deviation (< 500 Ω), replace the sensor.
- Replace the BCU electronics module.
- Reset the appliance.

Fault messages (cont.)

F.185

System characteristics

Burner in a fault state.

Cause

Lead break, flow temperature sensor/high limit safety cut-out.

Measures

- Check the connections and plug-in connection X1 (plugs 3 and 3A) on the BCU electronics module for correct seating, contact corrosion and mechanical damage. Replace connecting cable if necessary.
- Check the resistance R for NTC 10 kΩ on each flow temperature sensor (dual sensor) at the disconnected plug. In the event of severe deviation (> 300 kΩ), replace the sensor.
- Replace the BCU electronics module.
- Reset the appliance.

F.299

System characteristics

Time/date incorrect.

Cause

Real time clock setting incorrect.

Measures

Set the time and date.

F.342

System characteristics

No room heating, no DHW heating.

Cause

Communication error, burner control unit BCU.

Measures

- If F.142 is present, isolate the Vitodens from the power supply. Wait at least 2 min. Switch on voltage again.
- If F.342 is still present, check the CAN bus cable (internal CAN) and plug-in connection between HMU X4 and BCU X4 for correct seating, contact corrosion, mechanical damage and correct cable routing. Replace the CAN cable if necessary. Reset the appliance.
- Replace the HMU if necessary. Reset the appliance.
- If F.142 is not present and F.342 is displayed, isolate the Vitodens from the power supply. Wait at least 2 min. Switch on voltage again. If the fault persists, disconnect all plugs except [X2], [X4], [X16] and [X18] from the BCU. Ignore any further messages that occur as a result.
- If F.342 still persists, replace the BCU. Reset the appliance.
- If F.342 is no longer present, find the faulty CAN bus component by reconnecting the disconnected plugs one at a time.
- Replace the faulty connecting cable or CAN bus component if applicable.

Reset the appliance.

Fault messages (cont.)

F.345

System characteristics

Burner locked out, automatic enabling after appliance cooldown. Independent restart.

Cause

Temperature limiter has responded.
See heat generator specification.

Measures

- Check the hydraulics of the system with the specified scheme settings. Check the settings of the switching times and the temperature level of the system.
- Check that all internal and external shut-off devices are open.
- Vent the primary circuit of the system and check the system pressure.
- Check whether the internal diverter valve is working during the actuator test. Check that the cable set has been routed and plugged in correctly between the diverter valve and plug X3 of the BCU and that the plug contacts are not damaged. If necessary, replace the cable set. If fault still persists, replace the diverter valve.
- Check whether the primary pump is running. Disconnect the PWM plug from the pump. Pump is running at full load (with Vitodens 3xx, the flow rate can be checked via the flow sensor). Check that the cable set has been routed and plugged in correctly between the pump and the BCU and that there are no damaged plug contacts. Replace primary pump if required. If the fault persists, replace the BCU.
- Check the connections and plug-in connection of the cylinder temperature sensor or, if present, the low loss header/buffer temperature sensor on the HMU for correct seating, contact corrosion and mechanical damage as well as correct installation of the sensor. Check the resistance of the sensor (NTC 10 kΩ) at the disconnected plug. Replace sensor if necessary.
- Check the resistance of the flow temperature sensor (NTC 10 kΩ) at the disconnected plug. If necessary, replace the temperature sensor.
- Check internal components for dirt and defects (internal pipework, connection to the heat exchanger, pump, overflow valve, pump casing, etc.). If necessary, check the water quality of the fill and top-up water.
- Check on-site components in the hydraulic circuit for deposits or defects (dirt trap, sludge and magnetite separator).

F.346

System characteristics

Burner in a fault state.

Cause

Ionisation current calibration error.

Measures

- Check the gas supply pressure.
- Check gas solenoid valve inlet strainer for contamination.
- Check ionisation electrode for contamination.
- Check the flue system. Remove flue gas recirculation if necessary.
- Check the connecting cable to the fan unit.
- Check impeller for ease of operation.

Reset the appliance.

F.348

System characteristics

Burner in a fault state.

Cause

Gas modulation valve calibration failed.

Measures

If several heat generators are connected to a common flue system: Check whether **"Multiple connections"** is set in the commissioning assistant.
Check the flue system for unrestricted flow.
If fault remains, replace gas fan unit.

Fault messages (cont.)

F.349

System characteristics

Burner in a fault state.

Cause

Air mass rate flow not detected correctly in fan unit.

Measures

- Check whether the fresh air supply is restricted by increased soiling. If necessary, clean the fresh air channel to remove any dirt.
- Check the flue system/chimney for flue gas back pressure.
- Check whether the function of the heat exchanger is restricted by increased soiling. If necessary, clean the heat exchanger to remove any dirt.
- Check whether the burner gauze assembly is restricted by increased soiling. Clean the burner gauze assembly if necessary.
- Reset the appliance. If the fault occurs repeatedly, replace the gas fan unit.

F.350

System characteristics

Burner in a fault state.

Cause

Ionisation current outside the permissible range.

Measures

Replace the BCU burner control unit.

F.351

System characteristics

Burner in a fault state.

Cause

Ionisation current outside the permissible range.

Measures

Replace the BCU burner control unit.

F.353

System characteristics

Burner shutdown with restart if demand exists.

Cause

Insufficient gas supply, burner output reduced.

Measures

Check the gas supply.
Visually inspect gas solenoid valve inlet strainer for contamination.
Reset the appliance.

F.354

System characteristics

Burner in a fault state.

Cause

Gas modulation valve tolerance outside permissible range.

Fault messages (cont.)

Measures

Replace gas fan unit.

F.355

System characteristics

Burner in a fault state.

Cause

Condensate backed up or analogue signal reference check: Flame signal is already present at burner start. Function of ignition transformer.

Measures

If condensate is backed up: Replace insulation blocks, electrodes and burner gauze assembly.

Note
Remove the fan unit before opening the burner. Protect the PCB from water damage.

Replace the BCU burner control unit.
Check ignition transformer and ignition cable. Replace if necessary.

F.357

System characteristics

Burner in a fault state.

Cause

Insufficient gas supply.

Measures

- Check that all installed gas shut-off valves are open.
- Visually check the inlet strainer in the gas solenoid valve for soiling and clean it. Replace the fan unit if necessary.
- Measure static gas pressure and gas flow pressure.
- If the static gas pressure does not drop, check the cable to the fan unit.
- Check that on-site gas line and gas flow switch are correctly sized and are working.
- Check the ignition electrode for wear, burnout and deformation. Check the electrode gap. Replace the ignition electrode if necessary.
- Replace the fan unit if necessary.
- Reset the appliance.

Note
If the building pressure regulator has a leak, you may notice rising pressure when the burner is idle. When the system is restarted, the gas flow switch may respond.

F.359

System characteristics

Burner in a fault state.

Cause

No ignition spark.

Measures

- Check whether the ignition electrode insulation is damaged.
- Check whether 230 V~ is present at the ignition module during the ignition phase. If not, replace the BCU burner control unit.
- If 230 V~ is present at the ignition module input but there is still a fault, replace the ignition module.
- Check connecting cables from ignition module and ignition electrode.

Reset the appliance.

Fault messages (cont.)

F.361

System characteristics

Burner in a fault state.

Cause

Flame signal is not present, or insufficient at burner start.

Measures

Check ionisation electrode and connecting cable.
Check plug-in connections for loose contacts.

Note
Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example, laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).

Reset the appliance.

F.364

System characteristics

Burner in a fault state.

Cause

Internal system error

Measures

Fault F.364 always occurs in conjunction with one of the following faults:
- F.67
- F.348
- F.349

If fault F.364 persists, replace the BCU.

F.365

System characteristics

Burner in a fault state.

Cause

Gas valve power supply does not turn off.

Measures

Replace the BCU burner control unit.

F.366

System characteristics

Burner in a fault state.

Cause

Gas valve power supply does not turn off.

Measures

Replace the BCU burner control unit.

F.367

System characteristics

Burner in a fault state.

Cause

Gas valve power supply does not turn off.

Measures

Replace the BCU burner control unit.

Fault messages (cont.)

F.368

System characteristics

Burner in a fault state.

Cause

Gas pressure switch fault. Forced ventilation time expired.

Measures

Check gas supply (gas pressure).
Check gas pressure switch (if installed). If necessary, disconnect the gas pressure switch connector and check whether the burner starts.
Reset the appliance.

F.369

System characteristics

Burner in a fault state.

Cause

Flame loss immediately after flame formation (during safety time).

Measures

Check gas supply (gas pressure and gas flow switch).

Check balanced flue system for flue gas recirculation.

Check ionisation electrode for the following:
- Distance to burner gauze assembly.
- Contamination on electrode.

Reset the appliance.

F.370

System characteristics

Burner in a fault state.

Cause

Fuel valve or modulation valve will not close.

Measures

Reset the appliance.
If the fault recurs, replace the BCU burner control unit.

F.371

System characteristics

Burner in a fault state.

Cause

Fan speed too low.

Measures

- If a communication error is shown, rectify this first.
- If the error recurs after a short time (approx. 2-3 minutes) without a communication error being present, replace the iNR77 fan.
- Isolate the Vitodens from the power supply. Wait at least 2 min. Switch the power supply back on

F.372

System characteristics

Burner in a fault state.

Cause

Repeated flame loss during calibration.

Measures

- Check ionisation electrode and connecting cable.
- Check plug-in connections for loose contacts.
- Check the flue system. Remove flue gas recirculation if necessary.

Fault messages (cont.)

- Check system for condensate backup.
- Visually check gas solenoid valve inlet and inlet strainer for contamination.

Note
To prevent water damage, detach fan unit before removing the burner. Deposits on the electrodes indicate foreign bodies in the combustion air.

Check the installation room and flue system for causes of the deposits. For example, laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney). If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.
Reset the appliance.

F.373

System characteristics

Burner in a fault state.

Cause

Heat transfer too low during calibration.
Temperature limiter has shut down.

Measures

- Ensure adequate heat transfer.
- Check circulation pump for faults, scale or blockages.
- Check 3-way diverter valve function in actuator test. Vent the system.
- Check function of flow sensor.

Reset the appliance if necessary.

F.375

System characteristics

Burner in a fault state.

Cause

Ionisation current calibration error.

Measures

- Check gas flow pressure.
- Check gas solenoid valve inlet strainer for contamination.
- Check ionisation electrode for contamination.
- Check the flue system. Remove flue gas recirculation if necessary.

Reset the appliance.

F.377

System characteristics

Burner in a fault state.

Cause

Post-processing of ionisation current calibration: Stabilisation conditions for post-calibration not met.

Measures

Check gas type setting. If the fault recurs, replace the BCU burner control unit.
Reset the appliance.

F.378

System characteristics

Burner in a fault state.

Cause

Flame loss during the stabilisation phase.

Measures

- Check the gas supply (gas pressure, gas flow switch, gas shut-off valves).
- Check that the ionisation electrode is correctly installed and whether the gasket is damaged.
  If necessary, replace the ionisation electrode and gasket.

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Fault messages (cont.)

- Check the ionisation electrode and burner gauze assembly for soiling.
- Check that the ignition electrode is correctly installed and whether the gasket is damaged.
  If necessary, replace the ignition electrode and gasket.
- Check the burner gauze assembly, thermal insulation ring/block and flue gas heat exchanger for damage.
- Check balanced flue system for flue gas recirculation.
- Check the condensate drain and trap for damage, possible blockages and deformation.
- Reset the appliance.

F.379

System characteristics

Burner in a fault state.

Cause

Flame signal not present or insufficient.

Measures

- Check that all installed gas shut-off valves are fully open.
- Check the static pressure and supply pressure (flow pressure).
- Check that on-site gas line and gas flow switch are correctly sized and are working.
- Visually check the ionisation electrode for wear, burnout, deformation and damage. Replace the ionisation electrode if necessary.
- Check the connecting cable and plug of the ionisation electrode for damage and firm seating.
- Check the ignition electrode for wear, burnout and deformation. Check the electrode gap. Replace the ignition electrode if necessary.
- Check the burner gauze assembly for soiling and damage.
- Reset the appliance.

F.380

System characteristics

Burner in a fault state.

Cause

Flame loss immediately after flame formation (during safety time).

Measures

- Check the gas supply (gas pressure, gas flow switch, gas shut-off valves).
- Check that the ionisation electrode is correctly installed and whether the gasket is damaged.
  Replace the ionisation electrode or gasket if necessary.
- Check the ionisation electrode and burner gauze assembly for soiling.
- Check that the ignition electrode is correctly installed and whether the gasket is damaged.
  If necessary, replace the ignition electrode and gasket.
- Check the burner gauze assembly, thermal insulation ring/block and flue gas heat exchanger for damage.
- Check balanced flue system for flue gas recirculation.
- Check the condensate drain and trap for damage, possible blockages and deformation.
- Reset the appliance.

F.381

System characteristics

Burner in a fault state.

Cause

Flame loss during operating phase.

Measures

- Check the gas supply (gas pressure, gas flow switch, gas shut-off valves).
- Check that the ionisation electrode is correctly installed and whether the gasket is damaged.
  Replace the ionisation electrode or gasket if necessary.
- Check the ionisation electrode and burner gauze assembly for soiling.

Fault messages (cont.)

- Check that the ignition electrode is correctly installed and whether the gasket is damaged.
  If necessary, replace the ignition electrode and gasket.
- Check the burner gauze assembly, thermal insulation ring/block and flue gas heat exchanger for damage.
- Check balanced flue system for flue gas recirculation.
- Check the condensate drain and trap for damage, possible blockages and deformation.
- Reset the appliance.

F.382

System characteristics

Burner in a fault state.

Cause

Error counter has exceeded limit.

Measures

Reset the appliance. Work through fault analysis using fault history.

F.383

System characteristics

Burner in a fault state.

Cause

Possible contamination of gas line.

Measures

- Check gas line for contamination.
- Check the gas supply pressure.
- Replace gas fan if necessary.

Reset the appliance.

F.384

System characteristics

Burner in a fault state.

Cause

Possible contamination of gas line.

Measures

- Check gas line for contamination.
- Check the gas supply pressure.
- Replace gas fan if necessary.

Reset the appliance.

F.385

System characteristics

Burner in a fault state.

Cause

Short circuit, signal 1, ionisation current.

BCU burner control unit faulty.

Measures

Check IO electrode for earth fault. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

F.386

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

Fault messages (cont.)

F.387

System characteristics

Burner in a fault state.

Cause

Earth fault, ionisation current. BCU burner control unit faulty.

Measures

Check ionisation electrode and connecting cable. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

F.388

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.395

System characteristics

Burner in a fault state.

Cause

IO electrode earth fault, BCU burner control unit faulty.

Measures

Check ignition electrode for earth fault. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

F.396

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.399

System characteristics

Burner in a fault state.

Cause

IO electrode earth fault, BCU burner control unit faulty.

Measures

Check IO electrode for earth fault. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

F.400

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Fault messages (cont.)

Measures

Reset the appliance.

Replace the BCU burner control unit.

F.401

System characteristics

Burner in a fault state.

Cause

IO electrode earth fault, BCU burner control unit faulty.

Measures

Check IO electrode for earth fault. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

F.402

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.403

System characteristics

Burner in a fault state.

Cause

Ionisation electrode earth fault, BCU burner control unit faulty.

Measures

Check IO electrode for earth fault. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

F.404

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.405

System characteristics

Burner in a fault state.

Cause

Ionisation electrode earth fault, BCU burner control unit faulty.

Measures

Check IO electrode for earth fault. If the fault persists, replace the BCU burner control unit.
Reset the appliance.

Fault messages (cont.)

F.406

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.408

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.410

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.416

System characteristics

Burner locked out.

Cause

Flue gas temperature sensor incorrectly positioned.

Measures

Note
Check whether there are any other fault messages in the fault memory. Rectify these first.

- Check whether the flue gas temperature sensor is correctly installed (bayonet fitting).
  If required, correct the position of the flue gas temperature sensor.
- Check the flue gas temperature sensor resistance.
  Replace faulty flue gas temperature sensor if required.
- Turn the ON/OFF switch off and back on again.
- Reset the appliance.

Note
If fault message F.416 continues to be displayed although the flue gas temperature sensor is correctly positioned: Initial commissioning may result in burner faults e.g. caused by air in the gas line. Eliminate the cause. Reset the appliance.

Fault messages (cont.)

F.417

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.418

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.425

System characteristics

System in normal operation, calculation out of operation.

Cause

Time synchronisation failed.

Measures

Set the time. If external time is used, check parameters 1504 and 508.

F.430

System characteristics

Normal operation in line with set values of heat generator.

Cause

Communication error gateway.

Measures

Check gateway module connecting cable and power supply.

F.431

System characteristics

Normal operation in line with set values of heat generator.

Cause

Communication error KNX gateway.

Measures

Check gateway module connecting cable and power supply.

Fault messages (cont.)

F.436

System characteristics

Normal operation

Cause

Short circuit, flow sensor.

Measures

Check flow sensor.

F.446

System characteristics

Burner in a fault state.

Cause

Deviation, heat generator flow temperature sensor/ high limit safety cut-out.

Measures

- If fault messages F.184 or F.185 are displayed at the same time, rectify them first.
- If fault message F.446 is present, check the connections and plug-in connection X1 (plugs 3 and 3A) on the BCU burner control unit for correct seating, contact corrosion and mechanical damage. Replace connecting cable if necessary.
- Check the flow temperature sensor; see chapter "Flow temperature sensor".
- If the fault message recurs, replace the sensor.
- Reset the appliance.

F.447

System characteristics

Burner in a fault state.

Cause

Deviation, ionisation voltage signal.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.448

System characteristics

Burner in a fault state.

Cause

Deviation, ionisation voltage signal.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.449

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Fault messages (cont.)

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.450

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.451

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.452

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.453

System characteristics

Burner in a fault state.

Cause

Synchronisation error, sequence.

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.454

System characteristics

Burner in a fault state.

Cause

Incorrect parameters set for BCU burner control unit

Measures

- Reset the parameters for the BCU burner control unit (subscriber number 50).
- Reset the appliance.
- If the fault code persists, replace the BCU burner control unit.
- Reset the appliance.

Fault messages (cont.)

F.455

System characteristics

Burner in a fault state.

Cause

Error in program run monitoring.

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.456

System characteristics

Burner in a fault state.

Cause

Error in program run monitoring.

Measures

Reset the appliance. If the fault recurs, replace the BCU burner control unit.

F.457

System characteristics

Burner in a fault state.

Cause

Fan sluggish or blocked.

Measures

Reset the appliance.
Check fan for sluggishness. In the case of severe contamination or grinding noises, replace fan unit.

F.458

System characteristics

Burner in a fault state.

Cause

Incorrect reset sequence.

Measures

Check connections between HMU heat management unit and HMI programming unit.
Reset the appliance.

F.463

System characteristics

Burner in a fault state.

Cause

Contaminated combustion air, flue gas recirculation.

Measures

Check flue system for contamination and flue gas recirculation. Clean flue system if necessary.

Reset the burner.

Note
Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example, laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).
If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.
Reset the appliance.

Fault messages (cont.)

F.464

System characteristics

Burner in a fault state.

Cause

Ionisation current too low during calibration. Differential compared to previous value not plausible.

Measures

- Check ionisation electrode and connecting cable. Check plug-in connections for loose contacts.
- Check whether there is a lot of dust in the ventilation air (e.g. from construction work).
- Check the flue system. Remove flue gas recirculation if necessary.
- Check system for condensate backup.

Reset the appliance.

Note
To prevent water damage, detach fan unit before removing the burner.

If the fault is permanently present, replace the BCU burner control unit.

Note
Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits. For example, laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).
If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.

F.467

System characteristics

Burner in a fault state.

Cause

Gas supply insufficient during calibration. Contaminated or insufficiently sized gas line.

Measures

- Test static gas pressure and gas flow pressure.
- Check that on-site gas line and gas flow switch are correctly sized.
- Visually check gas solenoid valve inlet and inlet strainer for contamination.

Reset the appliance.

Note
Contamination, for example from a brazed gas line, can block up the inlet strainer of the gas solenoid valve.

F.468

System characteristics

Burner in a fault state.

Cause

Ionisation current too high during calibration.

Measures

Check gap between ionisation electrode and burner gauze assembly.
Check whether there is a lot of dust in the ventilation air (e.g. from construction work).

Reset the appliance.

Note
Deposits on the electrodes indicate foreign bodies in the ventilation air. Check the installation room and flue system for causes of the deposits. For example, laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).
If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.

Fault messages (cont.)

F.471

System characteristics

No heat demand.

Cause

System pressure sensor not available, lead break or short circuit.

Measures

- Check system pressure sensor (plug 163).
- Check lead and plug-in connection.
- Check whether the supply voltage to the sensor is 5 V⎓.

F.473

System characteristics

No heat demand.

Cause

HMU heat management unit communication error.

Measures

- Resetting the appliance
- Perform a network reset.
- Check connecting cable between burner control unit and HMU heat management unit.
- Replace the connecting cables.
- Replace the HMU heat management unit.
- Replace the BCU burner control unit.

F.474

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

Reset the appliance.
If the fault recurs, replace the BCU burner control unit.

F.477

System characteristics

Limited solar thermal system functionality.
No solar yield.

Cause

Fault, differential temperature monitoring, solar, collector/cylinder, difference outside tolerance.
Air in the solar circuit. Sensor not positioned correctly.
Pump faulty.

Fault messages (cont.)

Measures

- Check the following:
  - No flow or low flow rate in the solar circuit.
  - There may be air in the solar circuit.
  - Dirt in the system.
  - Check whether the flow rates are set correctly.
  - Check the system pressure.
  - Check the function of any check valves installed.
  - Check the function and nominal speed of the circulation pump and check it for dirt. Check any high limit safety cut-out limiter (STB) that may be installed.
  - Check the connections and plug-in connection of the TS1 cylinder temperature sensor [5] and TS2 collector temperature sensor [6] on the ADIO (EM-S1) for correct seating, contact corrosion and mechanical damage.
  - Check the resistance R of both sensors (TS1 NTC 10 kΩ / TS2 NTC 20 kΩ) at the disconnected plug. If necessary, replace the temperature sensors.

Note

To measure the collector temperature more accurately, the solar circuit pump can be periodically started for a short duration. If necessary, activate the interval function of the solar circuit pump.

F.517

System characteristics

Remote control not functioning.
Weather-compensated mode: Normal operation.
Constant mode: Weather-compensated mode.

Cause

Lead break, PlusBus cable, incorrect appliance address set, remote control faulty.

Measures

- Check commissioning assistant setting.
- Check remote control cable.
- Check remote control subscriber number. Replace faulty remote control if necessary.

F.527

System characteristics

Burner in a fault state.

Cause

Parameter update could not be fully executed

Measures

- Set the parameters of the affected subscribers. Use the ViGuide app to perform the service for the affected subscriber.
- Reset the appliance.
- If the fault recurs, replace the affected subscriber.

F.528

System characteristics

Burner in a fault state.

Cause

Basic programming incorrect or incomplete.

Measures

- Replace the BCU burner control unit.
- Resetting the appliance

Fault messages (cont.)

F.530

System characteristics

Solar function limited.

Cause

Sensor value not available or lead break of one or more sensors/missing sensor(s).

Measures

Check sensor(s), or connect missing sensor(s) to SDIO electronics module.

F.538

System characteristics

No solar central heating backup with SDIO.

Cause

Lead break, temperature sensor in system return.

Measures

Check sensor or connect missing sensor on the SDIO electronics module.

F.539

System characteristics

No solar central heating backup with SDIO.

Cause

Short circuit, temperature sensor in system return.

Measures

Check sensor or connect missing sensor on the SDIO electronics module.

F.540

System characteristics

Burner in a fault state.

Cause

Condensate backup in the heat cell.

Measures

- Check system for condensate backup.
- Check the condensate drain and trap.
- Replace insulation blocks, electrodes and burner gauze assembly if necessary.

Note
To prevent water damage, detach fan unit before removing the burner.

Reset the appliance.

F.544

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

Lead break, flow temperature sensor, heating circuit 2 with mixer.
Incorrect setting during commissioning.

Fault messages (cont.)

Measures

- Check flow temperature sensor, mixer 2.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected
- Check commissioning assistant setting.
- Check setting of ADIO rotary switch.

F.545

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

Short circuit, flow temperature sensor, heating circuit 2 with mixer.

Measures

Check flow temperature sensor, mixer 2.
Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected

F.546

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

Lead break, flow temperature sensor, heating circuit 3 with mixer

Measures

- Check flow temperature sensor, mixer 3.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected
- Check commissioning assistant setting.
- Check setting of ADIO rotary switch.

F.547

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

Short circuit, flow temperature sensor, heating circuit 3 with mixer.

Measures

Check flow temperature sensor, mixer 3.
Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected

F.548

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

Short circuit, flow temperature sensor, heating circuit 4 with mixer

Measures

- Check flow temperature sensor, mixer 4.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected
- Check commissioning assistant setting.
- Check setting of ADIO rotary switch.

F.549

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

Short circuit, flow temperature sensor, heating circuit 4 with mixer.

Fault messages (cont.)

Measures

Check flow temperature sensor, mixer 4.

Measure voltage at sensor input on electronics module. Set value: 3.3 V⎓ with sensor disconnected

F.574

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor in heating circuit 1 not available.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.
Check setting of parameter 933.6.

F.575

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor, heating circuit 1.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.576

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor, heating circuit 1.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.577

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor in heating circuit 2 not available.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.
Check setting of parameter 934.6.

F.578

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor, heating circuit 2.

Fault messages (cont.)

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.579

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor, heating circuit 2.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.580

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor, heating circuit 3 not available.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.
Check setting of parameter 935.6.

F.581

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor in heating circuit 3.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.582

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor in heating circuit 3.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.583

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor in heating circuit 4 not available.

Fault messages (cont.)

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

Check setting of parameter 936.6.

F.584

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor, heating circuit 4.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.585

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor, heating circuit 4.

Measures

Check external room temperature sensor in heating circuit or room temperature sensor for remote control unit.

F.666

System characteristics

No solar function with preheating active. 2nd cylinder and solar transfer pump not working.

Cause

Lead break, DHW preheating sensor TS3.

Measures

Check temperature sensor TS3.

F.667

System characteristics

No solar function with preheating active. 2nd DHW cylinder and solar transfer pump not working.

Cause

Short circuit, sensor for DHW preheating TS3.

Measures

Check temperature sensor TS3.

F.668

System characteristics

No solar function with preheating active. 2nd DHW cylinder and solar transfer pump not working.

Cause

Lead break, DHW reheating sensor TS4.

Fault messages (cont.)

Measures

Check temperature sensor TS4.

F.669

System characteristics

No solar function with preheating active. 2nd cylinder and solar transfer pump not working.

Cause

Short circuit, DHW preheating sensor TS4.

Measures

Check temperature sensor TS4.

F.670

System characteristics

No solar central heating backup.

Cause

Lead break, buffer temperature sensor TS3.

Measures

Check temperature sensor TS3.

F.671

System characteristics

No solar central heating backup.

Cause

Short circuit, buffer temperature sensor TS3.

Measures

Check temperature sensor TS3.

F.672

System characteristics

No solar function with thermostat function and solar transfer pump not working.

Cause

Lead break, thermostat function temperature sensor TS3.

Measures

Check temperature sensor TS3.

F.673

System characteristics

No solar function with thermostat function and solar transfer pump not working.

Cause

Short circuit, thermostat function temperature sensor TS3.

Measures

Check temperature sensor TS3.

Fault messages (cont.)

F.682

System characteristics

Burner in a fault state.

Cause

Air mass flow rate sensor not available.

Measures

Check air mass flow rate sensor.

F.683

System characteristics

Burner in a fault state.

Cause

Air mass flow rate sensor faulty.

Measures

Check air mass flow rate sensor.

F.684

System characteristics

Burner in a fault state.

Cause

Back draught safety device faulty.

Measures

Check back draught safety device.

F.688

System characteristics

MZIO electronics module in emergency mode.

Cause

MZIO electronics module communication error.

Measures

Check setting in the commissioning assistant and correct if required.
Check connections and leads to the MZIO electronics module.
Check PlusBus voltage level (24 to 28 V).

F.694

System characteristics

Burner in a fault state.

Cause

Signal comparison, deviation, flue gas high limit safety cut-out.

Measures

- Check plug-in connection and sensor lead.
- Check sensor. Replace sensor if necessary.
- Reset the appliance.

F.762

System characteristics

System in a fault state.

Cause

System pressure too low.

Fault messages (cont.)

Measures

Top up with water. Vent the system.

If the fault occurs repeatedly: Check the diaphragm expansion vessel.

F.764

System characteristics

System in a fault state.

Cause

Auxiliary appliance reports a fault.

Measures

- As there is a fault code in the auxiliary appliance, this must be read out from the fault memory of the auxiliary appliance.
- The measures for the stored fault code can be found in the installation and service instructions.

F.765

System characteristics

System in a fault state.

Cause

No communication between main appliance and auxiliary appliance.

Measures

- Check the external CAN bus connection between the main appliance and the auxiliary appliance (cable, connection, plug-in connection).
- Check that the cable type is correct (only use one cable type within a CAN bus).
- Check the connection of the bus cable between the control units for crushing, kinking or chafing. Check for contact corrosion or other damage. Replace the bus cable if necessary
- Check that the connection length between the appliances is correct.
- CAN terminator as described in chapter "Checking the CAN bus terminator switch setting".
- If necessary, replace the affected component of the auxiliary appliance.

F.797

System characteristics

No DHW heating, no heating operation.

Cause

Mechanical fault, heating circuit pump.

Measures

Check pump, replace if required.
Reset the appliance.

F.799

System characteristics

No DHW heating, no heating operation.

Cause

Central heating circuit pump reports an electrical fault. Heating system cannot be operated as no flow is available.

Measures

Switch the appliance off and on again at the appliance switch. If this occurs repeatedly, replace the heating circuit pump.

Fault messages (cont.)

F.875

System characteristics

Limited operation of the appliance cascade

Cause

Communication error with the (master) main appliance.

Measures

Check the following CAN bus connections:
- Connection at plug 91 on the HMU electronics module.
- Connections to the other CAN bus subscribers.
- Check wires and plugs for correct seating.
- Check connections for contact corrosion.
- Check cables for mechanical damage, e.g. crushing, kinking, chafing or breakage.
- Check CAN L/CAN H assignment.
- CAN Ground (GND) must not be connected.
- Check cable type: Li2YCYv, twisted pair, shielded or 2-core CAT5, shielded. Check the cable length.
- Check the position and number of terminators.

F.980

System characteristics

No DHW heating.

Note
DHW heating is blocked for the period of time set in parameter 1087.0.
Heating operation remains available during this period. Once the period of time set in parameter 1087.0 has elapsed, DHW heating is enabled again.
The DHW heating blocking time can be terminated by carrying out a mains reset.
Turn the appliance off and on again. For further information, see chapter "Function description".

Cause

Minimum flow rate before the start of DHW heating is too low. Possible causes:
- Shut-off or too much constriction
- Scaling, sludge
- Incorrect hydraulic configuration
- Faulty circulation pump, air in the heating circuit
- Unstable or excessively low system pressure.

Measures

- Check that all cylinder shut-off devices are fully open.
- Check the set hydraulic scheme and correct if necessary.
- Ensure that the system is fully vented. If necessary, restart the venting program of the heating circuit.
- Ensure that all quick-action air vent valves on the appliance side are permanently open.
- Check the quick-action air vent valves for leaks and replace if necessary.
- Check the set system pressure (this fault is more likely if the system pressure is too low).
- Check the circulation pump and replace if necessary.

F.981

System characteristics

No DHW heating.

Note
DHW heating is blocked for the period of time set in parameter 1087.0.
Heating operation remains available during this period. Once the period of time set in parameter 1087.0 has elapsed, DHW heating is enabled again.
The DHW heating blocking time can be terminated by carrying out a mains reset.
Turn the appliance off and on again. For further information, see chapter "Function description".

Cause

Minimum flow rate is too low during DHW heating.
Possible causes:
- Shut-off or too much constriction
- Scaling, sludge
- Incorrect hydraulic configuration
- Faulty circulation pump, air in the heating circuit
- Unstable or excessively low system pressure

Measures

- Check that all cylinder shut-off devices are fully open.
- Check the set hydraulic scheme and correct if necessary.

Fault messages (cont.)

- Ensure that the system is fully vented. If necessary, restart the venting program of the heating circuit (select via service menu).
- Ensure that all quick-action air vent valves on the appliance side are permanently open.
- Check the quick-action air vent valves for leaks and replace if necessary.
- Check the set system pressure (this fault is more likely if the system pressure is too low).
- Check the circulation pump and replace if necessary.

F.982

System characteristics

No DHW heating, no heating operation.

Cause

Heating circuit pump, heating circuit 1 running dry.

Measures

Check pump and diaphragm expansion vessel.
Check water pressure.

F.1312

System characteristics

No current time zone set. Possible loss of comfort.

Cause

The UTC time offset is not set.

Measures

Set the time zone.

Note
If subscriber faults occur, ***"Fault, subscriber ..."*** *is displayed.*

Further fault without F.xxx; no communication with TCU.

System characteristics

No connection to ViCare app or accessories.

Cause

If the TCU communication module is not functional, the cause may lie in the security mechanism.

Measures

Restart or restore the factory settings.

Note
Some faults are not directly related to a fault message (F.xxx).
For example:
- *Red screen with the text "Connection error": Communication problem between the programming unit and the heat management unit. Check the connection between the components.*
- *Red screen with the text "Application error": Incorrect programming unit installed. Install the correct component.*

Further messages

Maintenance messages

Message on the display	Meaning
P.1	Maintenance due according to time interval.
P.4	Top up heating water.
P.8	Maintenance due according to burner hours run.
P.37	Vitodens displays a maintenance message: ▪ Read out the maintenance message from the Vitodens message list. ▪ See the installation and service instructions.

Further messages (cont.)

Status messages

Message on the display	Meaning
S.9	Fan pre-purge for heating mode
S.29	Standard mode for heating
S.36	Comfort mode for DHW draw-off
S.59	Flue gas temperature sensor test active
S.60	Summer mode active (outside temperature economy function)
S.74	Heating suppression, heating
S.75	DHW circulation pump active
S.94	No demand, external hook-up, heating circuit 1
S.95	No demand, external hook-up, heating circuit 2
S.96	No demand, external hook-up, heating circuit 3
S.154	Due to insufficient heat transfer in heating system, burner operation not required

Warning messages

Messages on the display	Meaning	Measure
A.11	System pressure has fallen below normal limit.	Top up with water or notify heating contractor.
A.12	Real time clock battery flat.	Replace the HMU heat management unit.
A.18	Possible condensate backup in the heat cell	Check combustion chamber and condensate drain. Condensate may escape when the burner door is removed. Take appropriate precautions to protect the electronic components. If there is condensate backup as far as the combustion chamber, replace the insulation ring, insulation block, insulation mats, ionisation electrode, ignition electrode, burner gauze assembly and burner gauze assembly gasket.
A.19	Temperature limiter has responded	
A.20	Service interval could not be activated.	Check the time and date settings.
A.104	Refrigerant circuit controller faulty	▪ Read out the warning message from the Vitodens fault memory. ▪ Measures: See installation and service instructions.

Information

Message on the display	Meaning
I.56	External demand active
I.57	External blocking active
I.59	Parameters were restored (parameter set was flashed to BCU electronics module).

Further messages (cont.)

Message on the display	Meaning
I.93	Can occur along with fault messages F.89, F.797, F.799. F.982, see chapter "Fault messages"
I.137	No control restriction: ▪ Read out the information message from the Vitodens fault memory. ▪ Measures: See installation and service instructions.

Repairs

Please note
Residual water will escape when the boiler or one of the following components is fitted or removed:
- Water-filled pipework
- Heat exchanger
- Circulation pumps
- Plate heat exchanger
- Components fitted in the heating water or DHW circuit.

Water ingress can result in damage to other components.

Protect the following components against ingress of water:
- Control unit components (especially in the service position)
- Electrical components
- Plug-in connections
- Cables and leads

Shutting down the boiler

1. Turn off the power supply at the ON/OFF switch.
2. Shut off the gas supply.
3. If the boiler needs to be removed:
   - 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.
   - Disconnect the balanced flue system.
   - Drain the boiler on the heating water and DHW sides.
   - Disconnect the on-site cables/leads.

Repairs (cont.)

Removing the boiler from the pre-plumbing jig or mounting frame

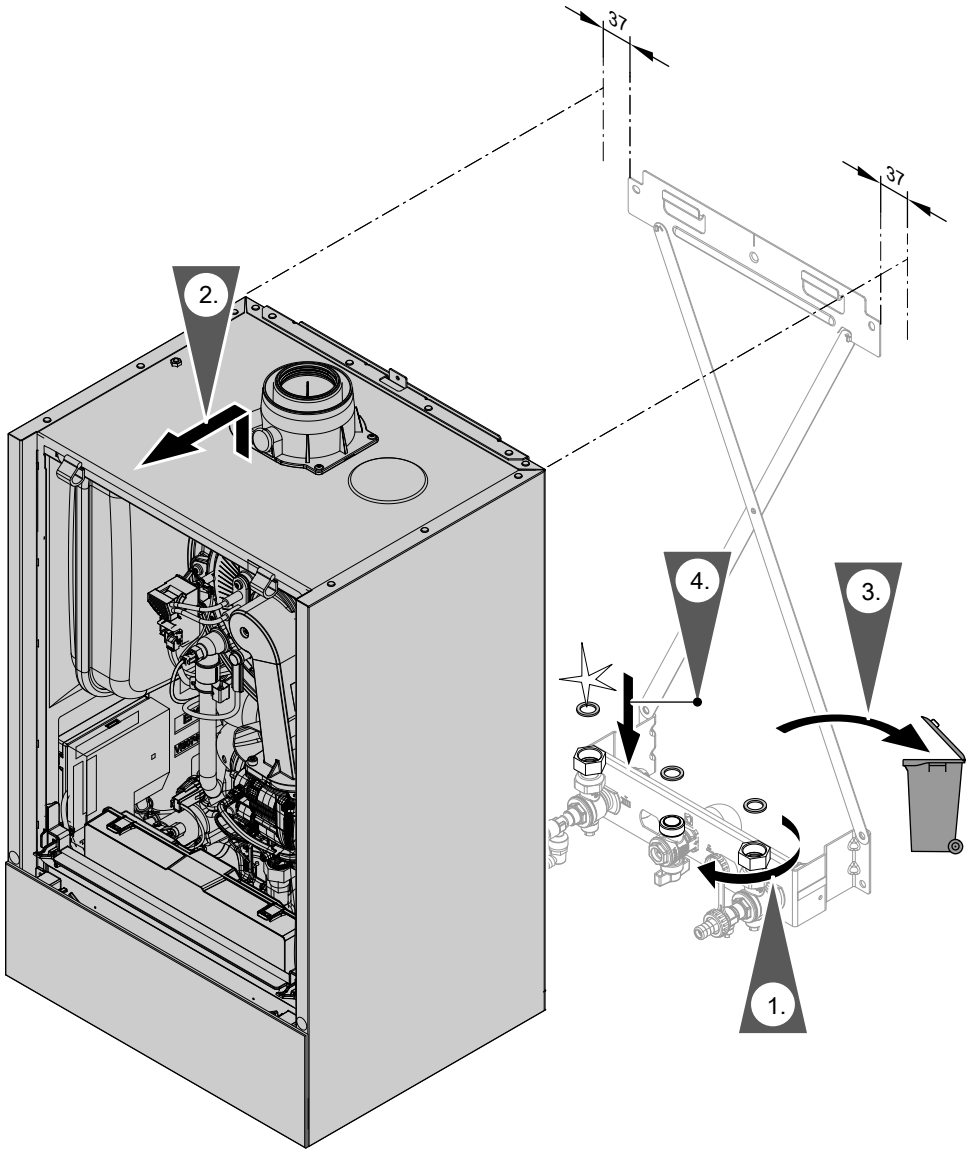


Fig. 54

Note
Use new gaskets and, if required, new locking ring connections when assembling.

Internal gasket diameter:
- *Gas connection Ø 18.5 mm*
- *Connections on the heating water side Ø 17.0 mm*

Gaskets and locking ring connections are available as spare parts (if required).

Note
When carrying out any work on gas connection fittings, counterhold with a suitable tool. Never transfer any forces to the internal components.

⚠ **Danger**
Escaping gas leads to a risk of explosion.
Check all connections on the gas side (also inside the appliance) for tightness.

Status/checking/diagnosing the internal circulation pump

The internal circulation pump is fitted with two status LEDs.

Repairs (cont.)

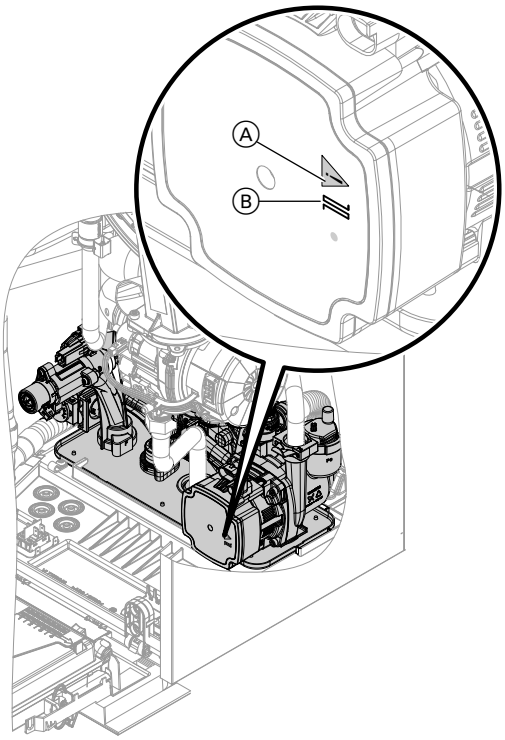


Fig. 55

- Ⓑ LED constant green:
  No communication (pump is running without external control from the boiler controller).
- Ⓑ LED flashing green:
  Pump is running with external control (PWM signal) from the boiler controller
- Ⓐ LED constant red:
  Pump failure

Note

The pump is controlled by a PWM signal. A lead break in the data line will not generate a fault message.
The pump is operating at 100 % of its maximum output.

Repairs (cont.)

Checking the temperature sensors

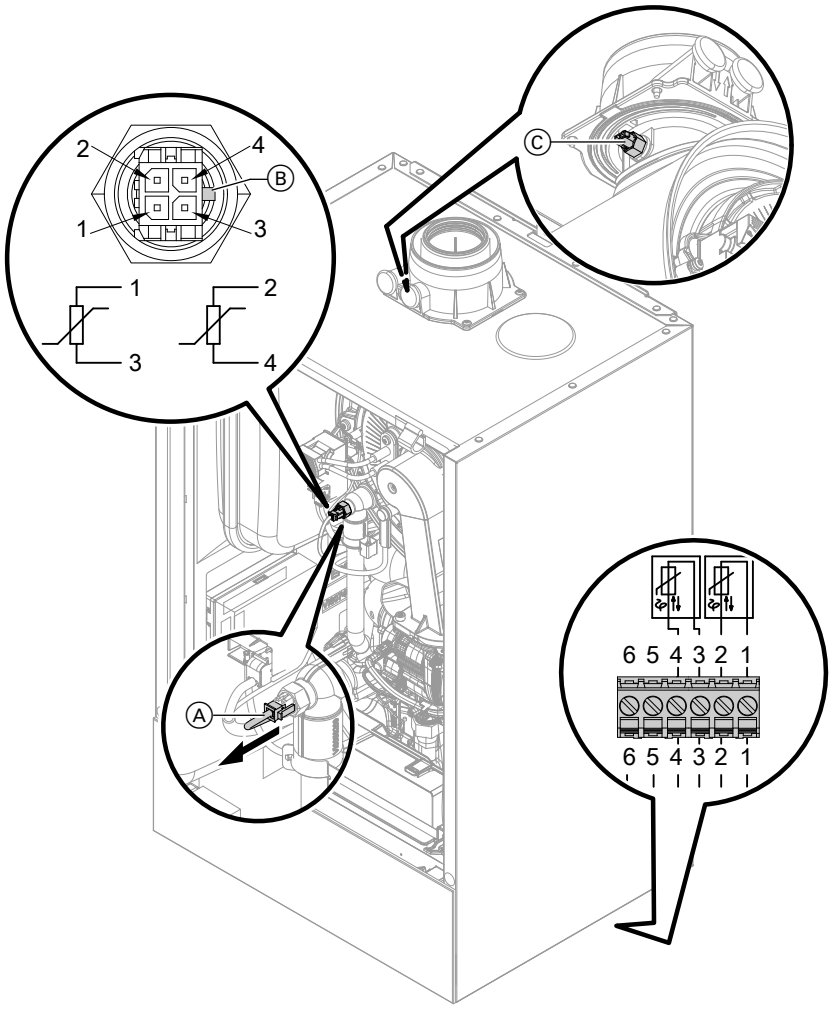


Fig. 56

Heat generator circuit flow temperature sensor (dual sensor)

1. Check the leads and plugs of flow temperature sensors Ⓐ.
2. Disconnect the leads from flow temperature sensors Ⓐ.
3. Check the sensor resistance. Note position of guide lug Ⓑ.
   - Sensor 1: Connections 1 and 3
   - Sensor 2: Connections 2 and 4

   Compare the resistances with the value for the current temperature from the following diagram. In the event of severe deviation (> 10 %), replace the dual sensor.

Danger
The dual sensor is directly immersed in the heating water (risk of scalding).
Drain the boiler on the heating water side before replacing the sensor.

Danger
Risk of electric shock from escaping heating water.
Check the dual sensor for leaks.

Repairs (cont.)

Cylinder temperature sensor/outlet temperature sensor

1. Check lead and plug of cylinder temperature sensor [5] or outlet temperature sensor [4].
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
   In the event of severe deviation (> 10 %), replace the sensor.

Low loss header sensor

1. Check lead and plug of temperature sensor [9] on the ADIO electronics module (mixer extension kit).
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
   In the event of severe deviation (> 10 %), replace the sensor.

Outside temperature sensor

1. Check the lead and plug of the outside temperature sensor.
2. Disconnect wires 1 and 2 from the external plug.

   Note
   Depending on appliance version, on floorstanding compact appliances the plug is located inside the appliance.

3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
   If the results are very different from the curve (> 10 %), disconnect the wires from the sensor. Repeat the test directly on the sensor.
   Check the on-site lead. 2-core lead, length up to 35 m with a cross-section of 1.5 mm^2
   Depending on the test result, replace the lead or the outside temperature sensor.

Flue gas temperature sensor

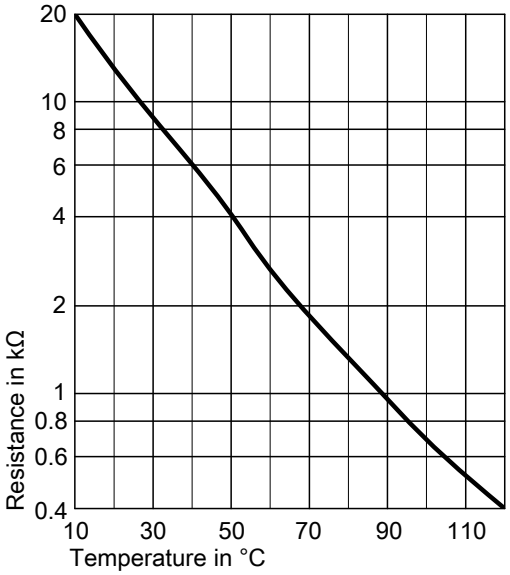
1. Check the lead and plug of flue gas temperature sensor Ⓒ.
2. Disconnect leads, flue gas temperature sensor Ⓒ.
3. Rotate sensor (anti-clockwise) by ¼ turn to remove it (bayonet fitting).
4. Check the sensor resistance. Compare the resistance with the value for the currently recorded temperature from the following diagram.
   In the event of severe deviation (> 10 %), replace the sensor.
5. Rotate sensor (clockwise) by ¼ turn to install it.

   ⚠ **Danger**
   Escaping flue gas can cause poisoning.
   When restarting, check for leaks on the flue gas side.

6. Reconnect leads, flue gas temperature sensor Ⓒ.
7. If the permissible flue gas temperature has been exceeded, the flue gas temperature sensor locks out the appliance. Reset the burner on the programming unit once the flue system has cooled down.

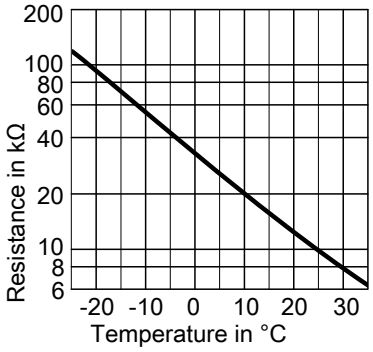
Repairs (cont.)

- Flue gas temperature sensor
- Flow temperature sensor
- Cylinder temperature sensor
- Outlet temperature sensor
- Temperature sensor, low loss header



Sensor type: NTC 10 kΩ

- Outside temperature sensor



Sensor type: NTC 10 kΩ

Fault during commissioning (fault message F.416)

During commissioning, the control unit checks for correct placement of the flue gas temperature sensor. If fault message F.416 is displayed:

1. Check whether the flue gas temperature sensor is correctly installed (bayonet fitting). See previous diagram.
2. If required, correct the position of the flue gas temperature sensor.
3. Check the flue gas temperature sensor resistance. See previous chapter. Replace faulty flue gas temperature sensor if required.
4. Turn off the ON/OFF switch.
5. Turn the ON/OFF switch back on. Restart the commissioning assistant.
6. Check for leaks on the flue gas side.

Note

If fault message F.416 continues to be displayed although the flue gas temperature sensor has been correctly positioned: Initial commissioning may result in burner faults e.g. caused by air in the gas line. Eliminate the fault and unlock the device.

Check temperature sensors at EM-S1 extension (ADIO electronics module) or at SDIO/SM1A electronics module

Check temperature sensors: Installation and service instructions of relevant accessory.

Repairs (cont.)

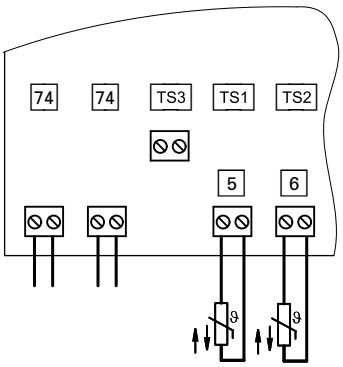


Fig. 57

Check cylinder temperature sensor

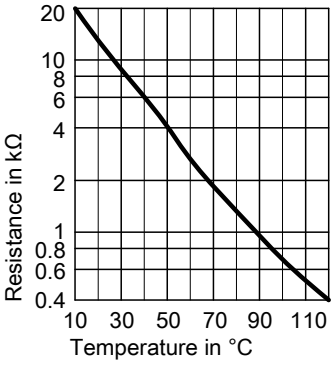


Fig. 58 Sensor type: NTC 10 kΩ

1. Disconnect plug TS1 [5] from the electronics module. Measure the resistance.
2. Compare the sensor resistance to the curve.
3. In the event of severe deviation (> 10 %), replace the sensor.

Check collector temperature sensor

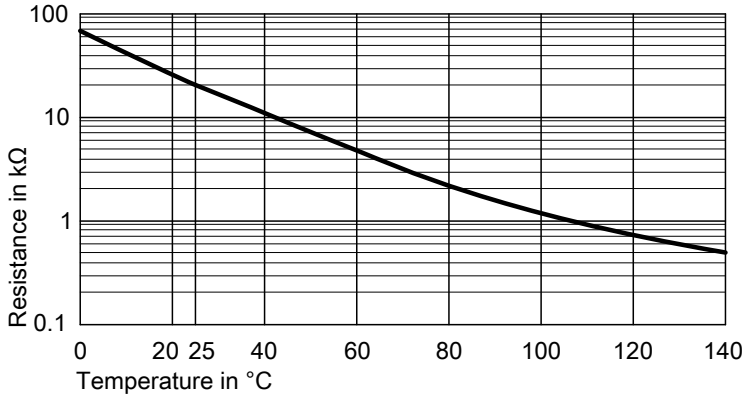


Fig. 59 Sensor type: NTC 20 kΩ

1. Disconnect plug TS2 [6] from the electronics module. Measure the resistance.
2. Compare the sensor resistance to the curve.
3. In the event of severe deviation (> 10 %), replace the sensor.

Repairs (cont.)

Information on replacing the HMU heat management unit and BCU burner control unit

If the BCU burner control unit and/or HMU heat management unit are replaced, the replacement must be carried out with the help of "ViGuide".

See spare part installation instructions and internet address: www.viguide.info

Replacing the power cable

When replacing the power cable, only use the power cable available as a spare part from Viessmann.

Replacing the HMI connecting cable

Please note
Incorrect routing of the cable can lead to heat damage and impairment of the EMC properties. For positioning and securing of the cable (fixing point of the cable tie), see the connecting cable installation instructions.

Checking the plate heat exchanger

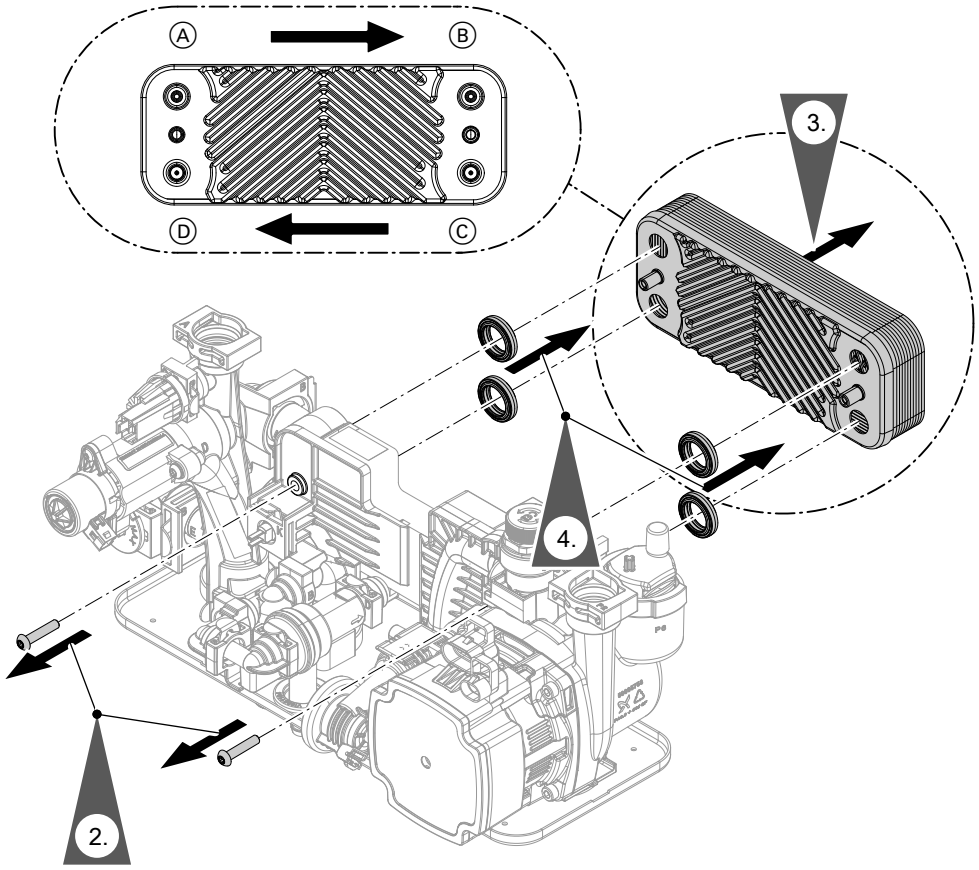


Fig. 60

Ⓐ Heating water flow
Ⓑ Heating water return
Ⓒ Cold water
Ⓓ DHW

1. Shut off and drain the boiler on the heating water and DHW sides.
2. Undo screws.

Repairs (cont.)

3. Remove plate heat exchanger.

   Note
   During and after removal, small amounts of water may trickle from the plate heat exchanger.

4. Remove gaskets and dispose of them.

5. Check connections on the DHW side for scaling. Clean or replace the plate heat exchanger as required.

6. Check connections on the heating water side for contamination. Clean or replace the plate heat exchanger as required.

7. Install plate heat exchanger in reverse order using new gaskets.
   Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life.
   Observe torque settings if a torque wrench is available.
   Torque for screws 3.2 Nm ± 0.2

   Note
   During installation, ensure the connections are positioned and the gaskets seated correctly.

   ⚠ **Danger**
   Risk of electric shock from escaping heating water or DHW.
   Check all water side connections for tightness.

Removing the hydraulic unit

If components of the hydraulic unit have to be replaced.

⚠ **Danger**
Risk of electric shock from escaping heating water or DHW.
After installation, check all connections on the water side for leaks.

Repairs (cont.)

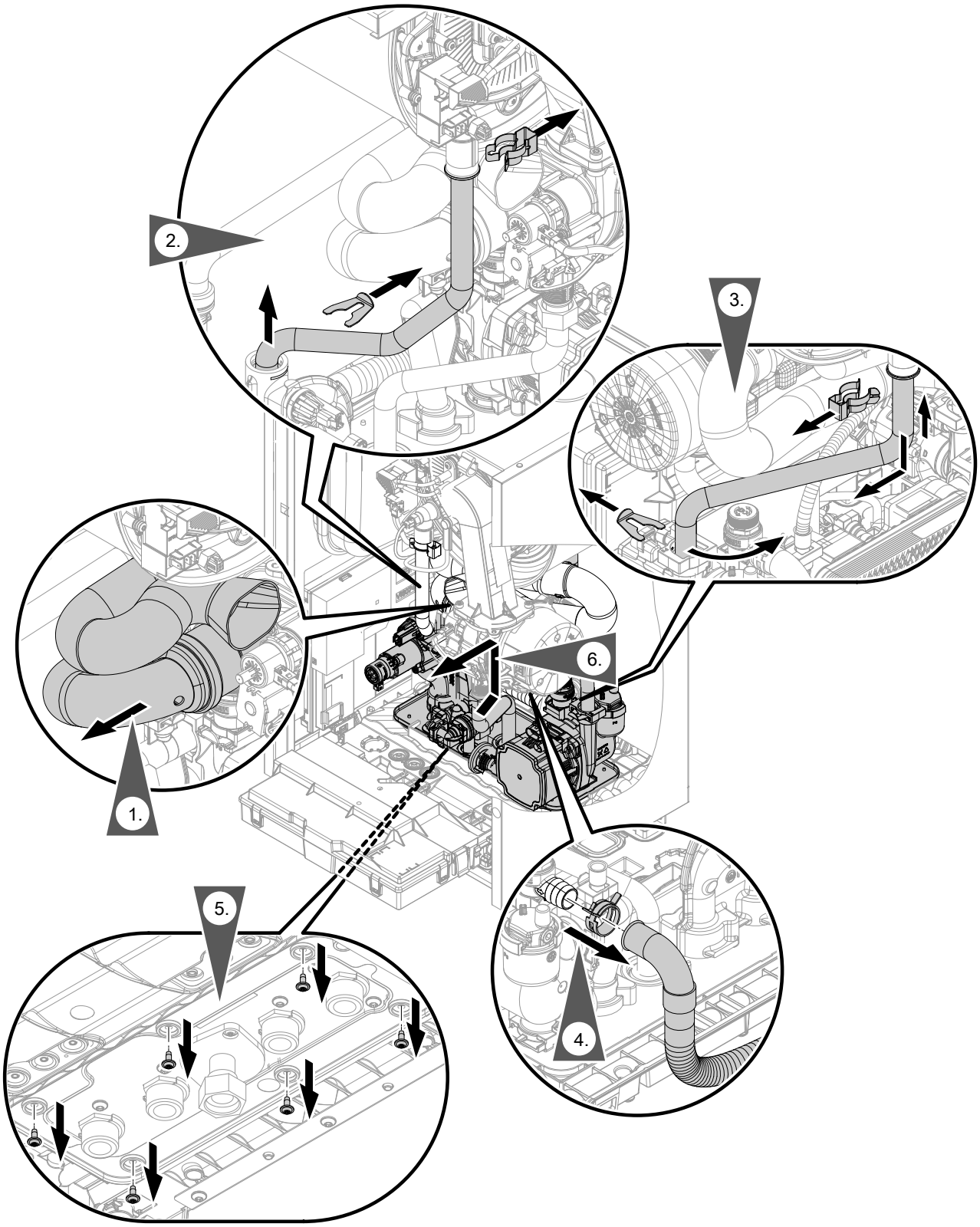


Fig. 61

Repairs (cont.)

Checking the fuse

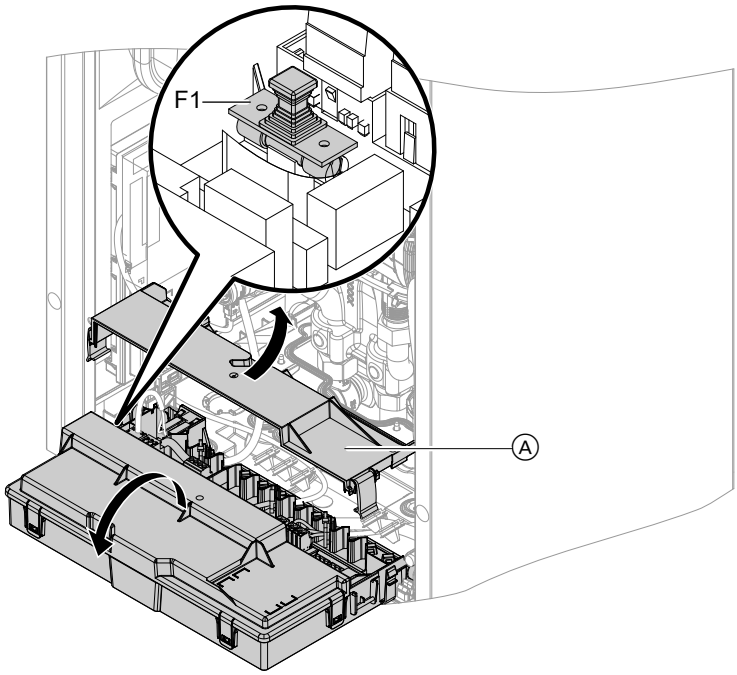


Fig. 62

1. Turn off the ON/OFF switch.
2. Depending on the configuration: Move programming unit together with bracket to service position.
3. Pivot the HMU heat management unit down.
4. Remove cover Ⓐ.
5. Check fuse F1 (see connection and wiring diagram).

Danger
Incorrect or improperly fitted fuses can lead to an increased risk of fire.
- Insert fuses without using any force. Position fuses correctly.
- Only use structurally identical types with the specified response characteristics.

6219526

Appliance functions

Heating mode

- **Weather-compensated operation:**
  The rooms are heated in accordance with the room temperature and time program settings.
  The control unit determines a set flow temperature for the heat generator, subject to the outside temperature, the room temperature and the slope/level of the heating curve.
- **Room temperature-dependent operation:**
  System with one heating circuit without mixer. The rooms are heated in accordance with the settings of the room temperature controller/room thermostat (accessories).
  If the room temperature controller/room thermostat issues a demand, the standard set flow temperature is maintained. If there is no demand present, the reduced set flow temperature is maintained.
- **Continuous operation without room thermostat:**
  The rooms are heated according to the time program settings.
  In the time phases at standard room temperature, the standard set flow temperature or the set comfort flow temperature is maintained. Outside the set time phases, the reduced set flow temperature is maintained.

Heating circuit pump connection for heating circuit without mixer

Only for systems with several heating circuits.
If a heating circuit without mixer is connected downstream of the low loss header, the circulation pump is connected to output P2. The function of the output is set in the commissioning assistant.

To start the commissioning assistant: See "Commissioning, inspection and maintenance".

If output P2 is being used for another function, the circulation pump can be connected to output P1 or an EM-P1 extension (accessories).

Venting program

During the venting program, the circulation pump will be alternately switched on and off for 30 s over a period of 20 min.
The 3-way diverter valve alternates between central heating and DHW heating for a certain period of time.
The burner is switched off during the venting program.

Activate venting program: See chapter "Commissioning, inspection and maintenance".

Filling program

In the delivered condition, the 3-way diverter valve is set to its central position, so the system can be filled completely. After the control unit has been switched on, the 3-way diverter valve no longer goes into its central position.
If the system is to be filled with the control unit switched on, the 3-way diverter valve is moved to its central position in the filling program and the pump is started.

Activate filling program: See chapter "Commissioning, inspection and maintenance".

In this position, the control unit can be switched off and the system can be filled completely. When the function is enabled, the burner shuts down. The program automatically becomes inactive after 20 min.

Heating curve

The heating curves represent the relationship between the outside temperature and the flow temperature.
Simplified: The lower the outside temperature, the higher the flow temperature must be in order to reach the room temperature set point.

Factory settings:
- Slope = 1.4
- Level = 0

Appliance functions (cont.)

Note
If heating circuits with mixer are present in the heating system: The flow temperature of the heat generator is one differential temperature higher than the flow temperature for the heating circuits with mixer. Differential temperature in delivered condition set to 8 K.

The differential temperature is adjustable using the following parameters:
- *Heating circuit 2: Parameter 934.5*
- *Heating circuit 3: Parameter 935.5*
- *Heating circuit 4: Parameter 936.5*

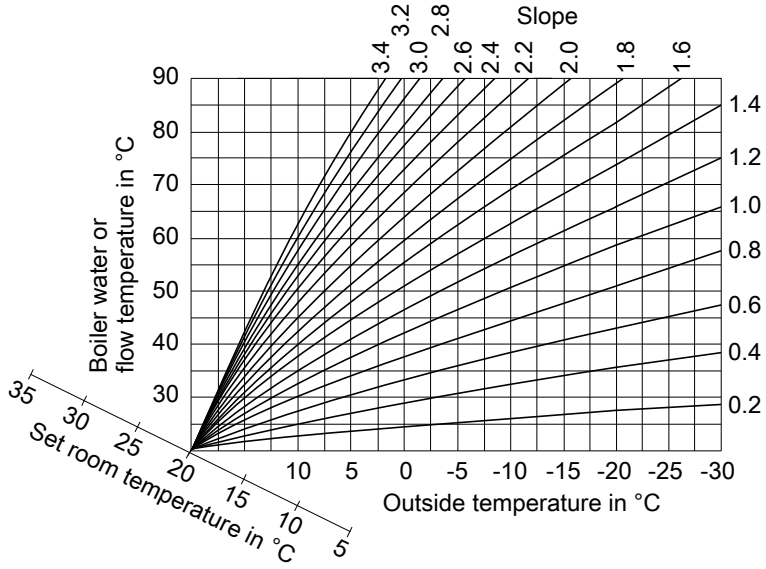


Fig. 63

Slope setting ranges:
- Underfloor heating systems: 0.2 to 0.8
- Low temperature heating systems: 0.8 to 1.6

Set room temperature

Standard room temperature or comfort room temperature

Individually adjustable for each heating circuit.
The heating curve is offset along the set room temperature axis. The start and stop points of the heating circuit pumps depend on the Heating limit... outside temperature, heating circuit... setting.

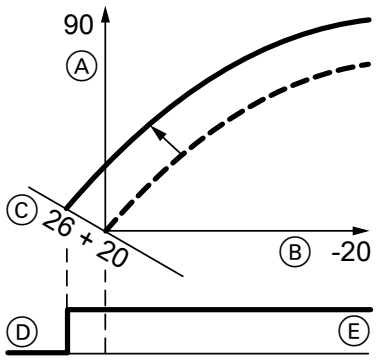


Fig. 64 Example 1: Adjusting the set room temperature from 20 to 26 °C

Ⓐ Flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Changing the set room temperature

Operating instructions

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Appliance functions (cont.)

Reduced room temperature

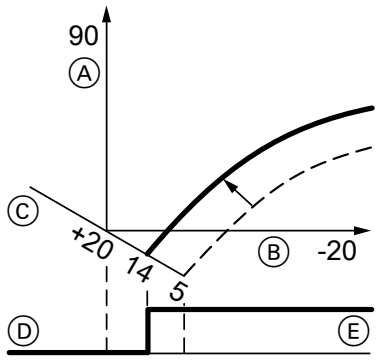

Fig. 65 Example 2: Adjusting the reduced set room temperature from 5 °C to 14 °C

Ⓐ Flow temperature in °C
Ⓑ Outside temperature in °C
Ⓒ Set room temperature in °C
Ⓓ Heating circuit pump "OFF"
Ⓔ Heating circuit pump "ON"

Changing the reduced set room temperature

Operating instructions

Changing the slope and level

Individually adjustable for each heating circuit.

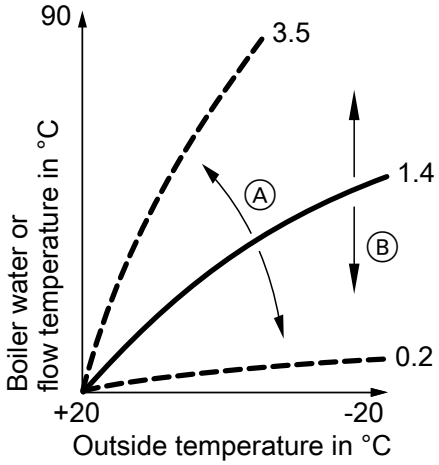

Fig. 66

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

Raising the flow temperature of the heating circuits during operation with room temperature hook-up

The higher the value, the greater the influence of the room temperature on the flow temperature of the heating circuit.

Room influence factor parameter

Heating circuit	Parameter
1 (without mixer)	933.7 (only set if just one heating circuit is installed)
2 (with mixer)	934.7
3 (with mixer)	935.7
4 (with mixer)	936.7

Example for determining the increase in the flow temperature using the value of the heating curve when the actual room temperature deviates from the set room temperature:
- Set room temperature = 20.0 °C (RT set)
- Actual room temperature = 18.0 °C (RT actual)
- Heating curve slope =1.4
- Room influence factor = 8 (delivered condition)

Determining the increase in flow temperature

(RT set - RT actual) x (1 + slope) x room influence factor/4 = raising the flow temperature via heating curve value
(20 - 18) x (1 + 1.4) x 8/4 = 9.6
Increase in flow temperature via heating curve value = 9.6 K

Screed drying

When enabling screed drying, observe the information provided by the screed manufacturer.

When screed drying is activated, the heating circuit pumps of **all** heating circuits are switched on and the flow temperature is maintained at the set profile. After completion (30 days), the heating circuits with mixer are automatically controlled with the set parameters.

Appliance functions (cont.)

Note
With a combi boiler, DHW heating is not possible during screed drying. With a system boiler or storage combi boiler, after 30 minutes DHW heating is suspended for an hour (parameter 1087.1) in order to run the screed drying program.

Observe EN 1264. The report to be provided by the heating contractor must contain the following details regarding heat-up:
- Heat-up data with the relevant set flow temperatures
- Max. flow temperature achieved.
- Operating state and outside temperature at handover

Parameter 897.0 "Screed drying":

Temperature profile A (EN 1264-4)

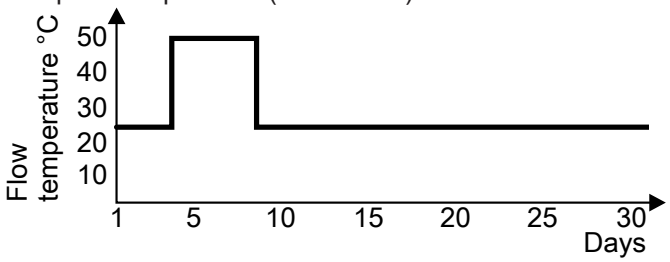

Fig. 67

Temperature profile B (ZV parquet and flooring technology)

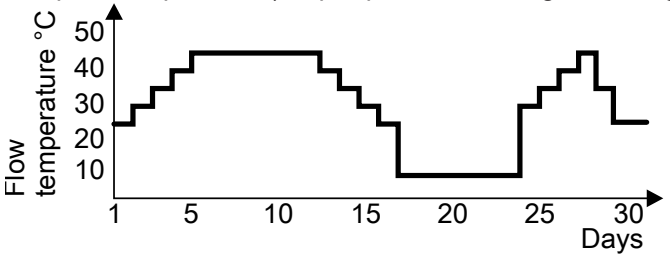

Fig. 68

Temperature profile C

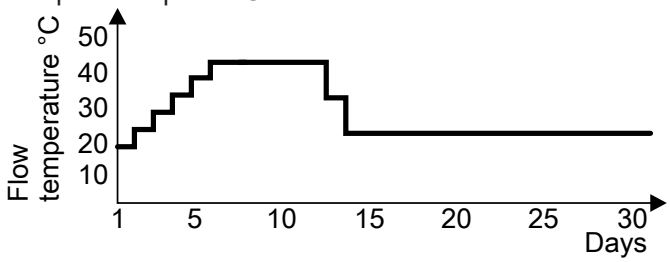

Fig. 69

Temperature profile D

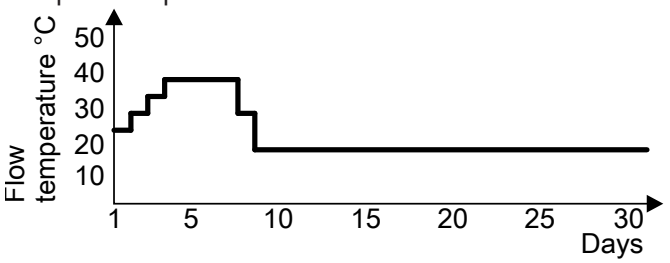

Fig. 70

Different temperature profiles can be set via parameter 897.0.

Note
Temperature profile 6 ends after 21 days.

The function continues after a power failure or after the control unit has been switched off. When screed drying has completed or been manually switched off, the system is regulated in accordance with the selected parameters.

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Appliance functions (cont.)

Temperature profile E

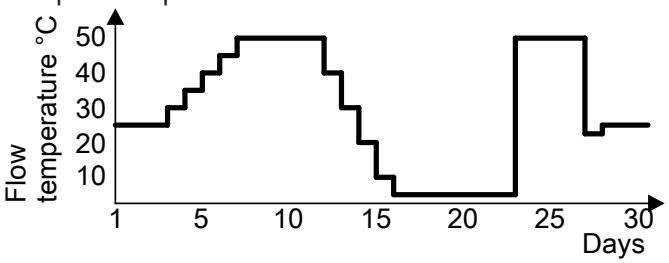

Fig. 71

Temperature profile F

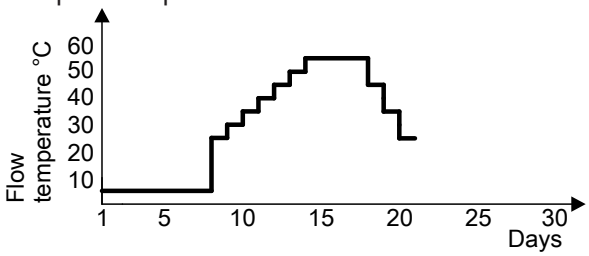

Fig. 72 Ends after 21 days.

Raising the reduced room temperature

During operation at 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, and no higher than the standard set room temperature or comfort room temperature. Depending on which set room temperature will become active in the next time phase.

The outside temperature limits for the start and end of temperature raising can be set in parameters 1139.0 and 1139.1.

Appliance functions (cont.)

Example using the settings in the delivered condition

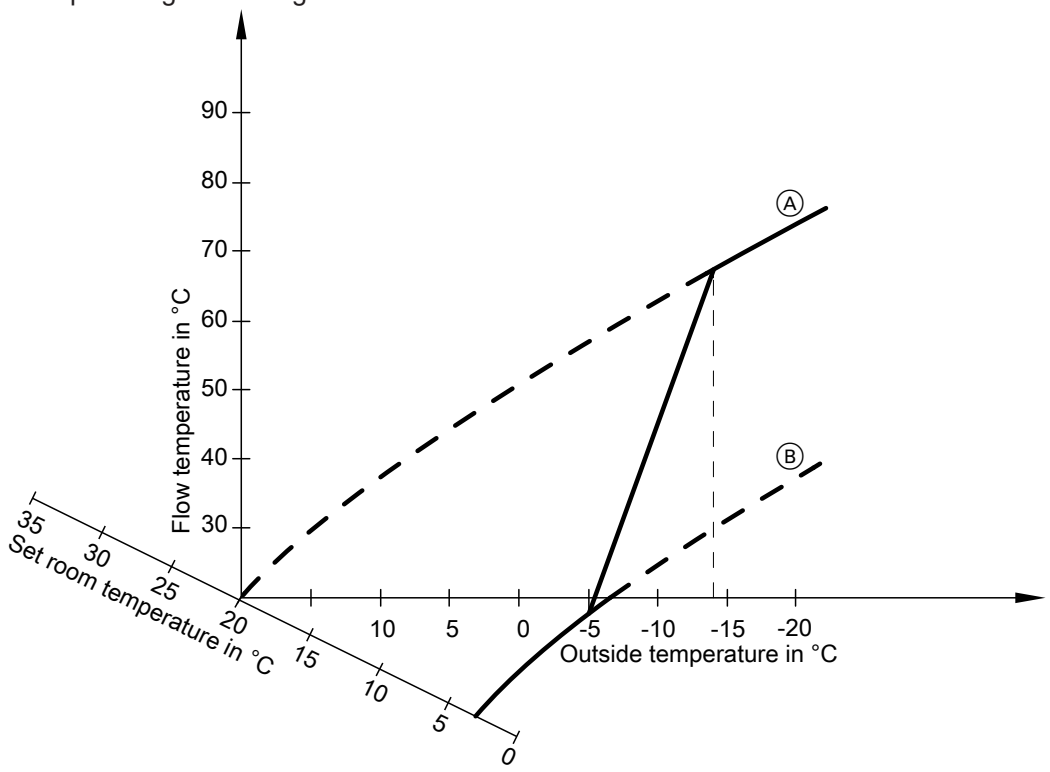

Fig. 73

Ⓐ Heating curve for operation at standard room temperature or comfort room temperature
Ⓑ Heating curve for operation at reduced room temperature

Reducing the heat-up time

During the transition from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, the flow temperature will be raised in accordance with the selected heating curve.

The value and duration of the additional increase in the set flow temperature is adjusted in parameters 424.3 and 424.4.

Appliance functions (cont.)

Example

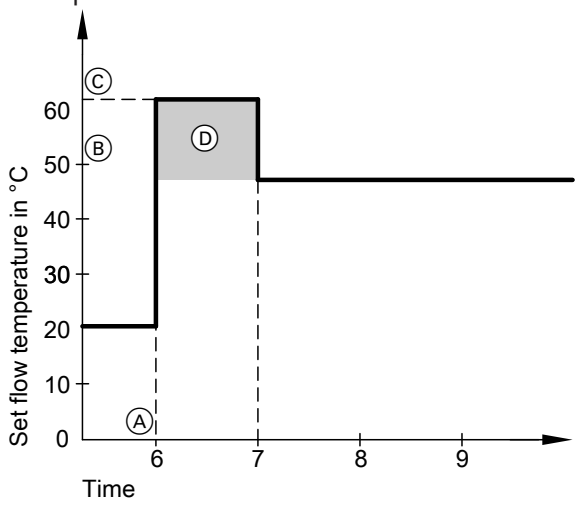

Fig. 74

Ⓐ Start of operation at standard room temperature or comfort room temperature
Ⓑ Set flow temperature in accordance with the set heating curve
Ⓒ Set flow temperature in accordance with parameter 424.3
Ⓓ Duration of operation with higher set flow temperature in accordance with parameter 424.4: 60 min

DHW heating (system boilers only)

The burner, the circulation pump and the 3-way diverter valve are started or changed over if the cylinder temperature lies 2.5 K below the set cylinder temperature.
In the delivered condition, the set boiler water temperature is 20 K higher than the set cylinder temperature.
If the actual cylinder temperature exceeds the set cylinder temperature by 2.5 K, the burner shuts down and circulation pump run-on begins (only with separate DHW cylinder).

⚠ **Danger**
Risk of injury due to increased DHW temperature.

Inform the system user of the risk from the raised outlet temperature at the draw-off points.
- Gas condensing system boiler:
  If the set DHW temperature is set to over 60 °C
- Gas condensing combi boiler:
  If there are several draw-off events in quick succession or several appliance calibration processes

Increased DHW hygiene

The DHW can be heated to a specified (higher) set DHW temperature (approx. 65 °C) for a period of one hour.

⚠ **Danger**
Risk of injury due to increased DHW temperature.
Inform the system user of the risk from the raised outlet temperature at the draw-off points.
If required, provide on-site scald protection measures.

Interval function, solar circuit pump

For correct capture of the collector temperature, the interval function cyclically switches on the collector circuit pump briefly.

See parameter 1719.0

External heating circuit hook-up (if installed)

Note
Only in conjunction with weather-compensated operation.

- Function:
  - If the external demand is active (plug 96 or digital input on DIO electronics module closed), the heating circuit is supplied with heat.
  - If the external demand is inactive (contact open), heat supply to the heating circuit ends (regardless of the current set room temperature or the switching time).
    The following status messages are shown on the display of the control unit:
    - S.94 (heating circuit 1)
    - S.95 (heating circuit 2)
    - S.96 (heating circuit 3)

    Please note

    There is no frost protection for the connected heating circuits.
- Connection:
  - If just one heating circuit is hooked up, use connection at plug 96: See page 31.
  - If several heating circuits (max. 3) are hooked up, connect all contacts at EM-EA1 extension (DIO electronics module) to subscriber no. 1 (rotary switch = 1).

    See EM-EA1 extension installation instructions

Valve and pump kick

To prevent circulation pumps and valves from getting stuck or jammed (e.g. inactive heating system in summer), all pumps and valves connected to the control unit are automatically switched on or switched over for 10 seconds after **90 hours** of idle time:

- Mixer pumps
- Internal pumps / boiler circuit pumps
- DHW circulation pumps
- Loading pumps
- Solar circuit pumps
- Mixer valves
- Diverter valves

Note
On appliances with a 3/2-way diverter valve, the valve is automatically moved to the centre position and back to the original position after 25 hours of standstill.

HMU heat management unit

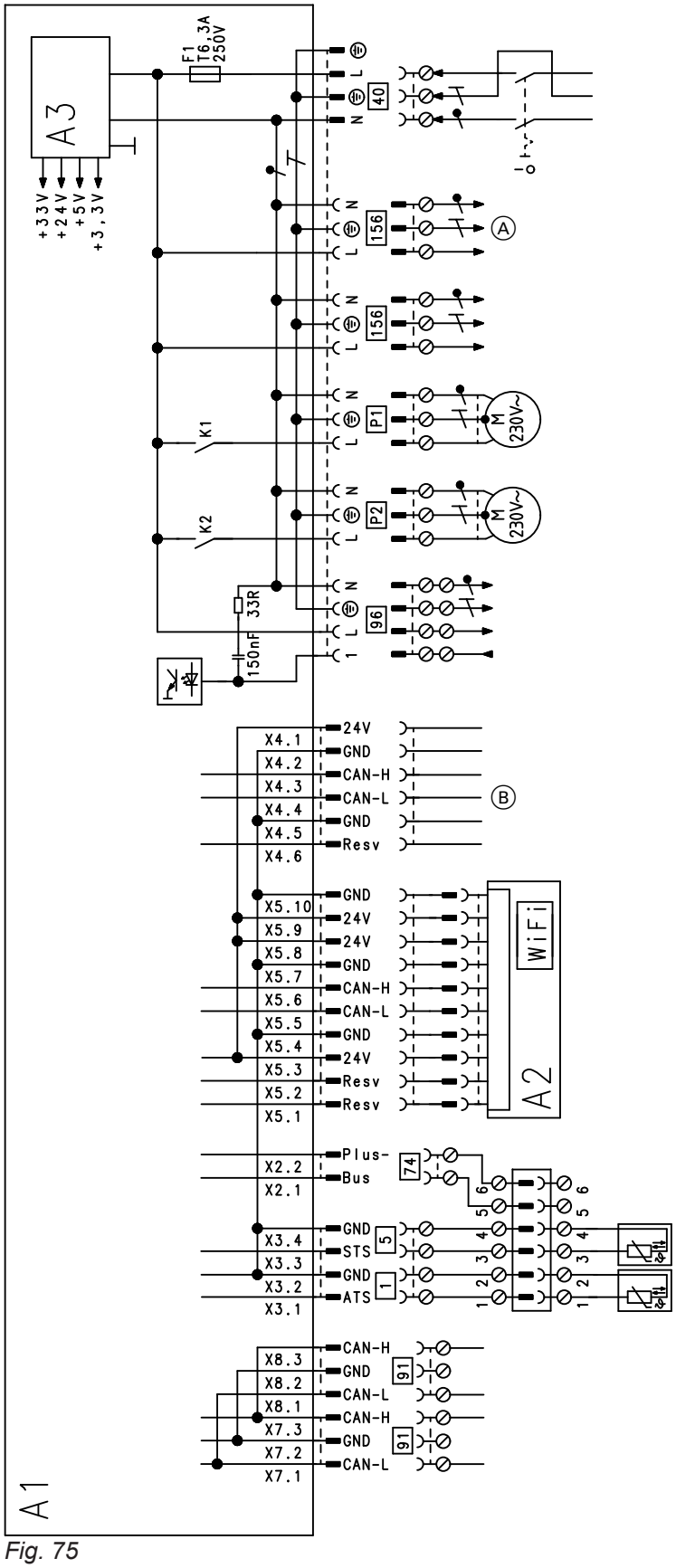

Fig. 75

A1 HMU heat management unit
A2 HMI programming unit with communication module (TCU 200)
A3 Power supply unit
X... Electrical interfaces

1 Outside temperature sensor (for weather-compensated mode)
5 Cylinder temperature sensor (gas condensing system boiler)
40 Power supply

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HMU heat management unit (cont.)

74 PlusBus
91 CAN bus
96 230 V floating input, 230 V output. For connecting a floating switching contact, see page 31
156 Mains voltage output
P1 Output 230 V for:
- Circulation pump for heating circuit without mixer
- Circulation pump for cylinder heating

P2 Output 230 V for:
- Circulation pump for heating circuit without mixer
- DHW circulation pump

Ⓐ To BCU burner control unit
Ⓑ To BCU burner control unit

BCU burner control unit

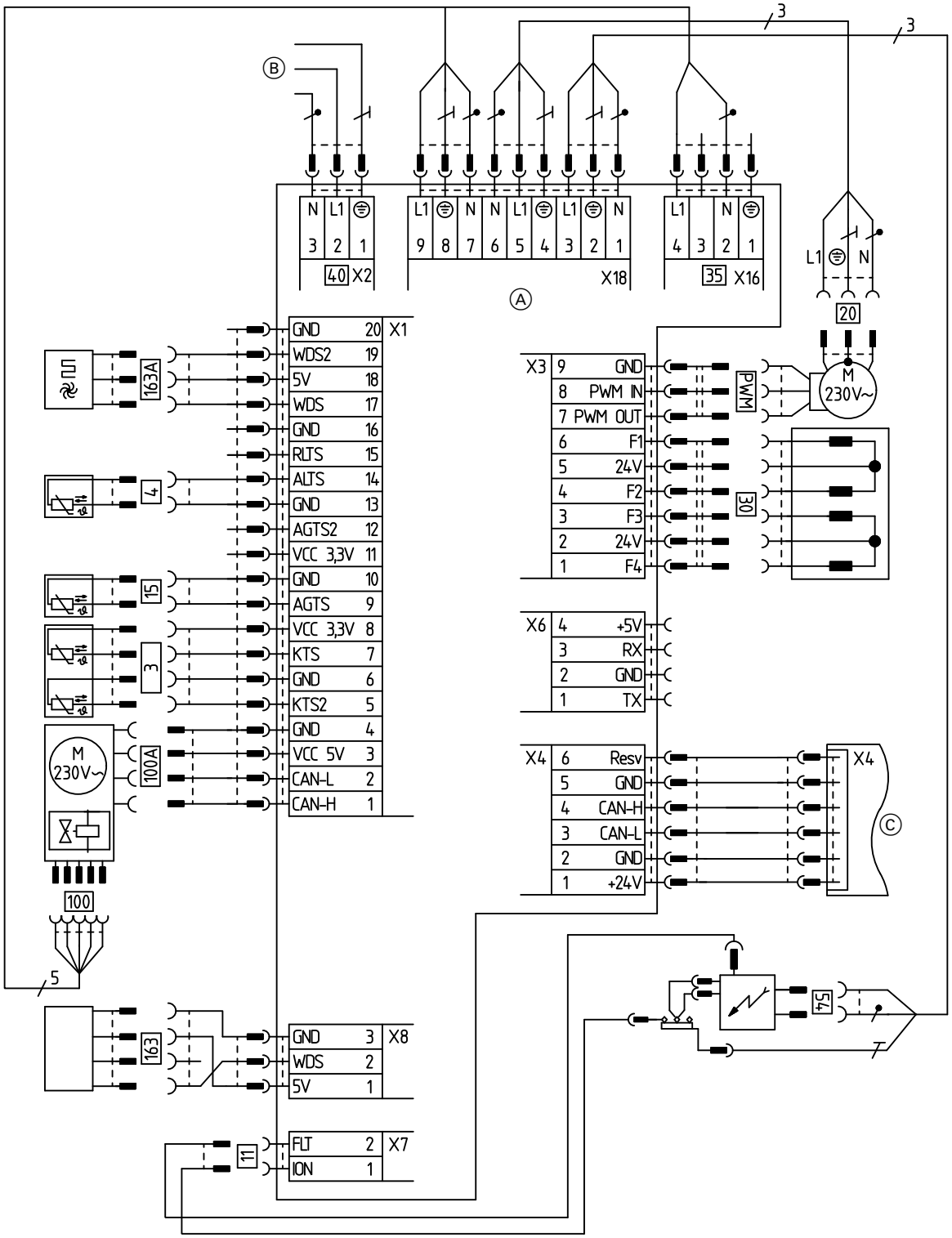

Fig. 76

PWM	Control signal	40	Power supply
X...	Electrical interfaces	54	Ignition unit
3 A/B	Flow temperature sensors 1 and 2	100	Fan motor
4	Outlet temperature sensor (gas condensing combi boiler)	100 A	Fan motor control
11	Ionisation electrode	163	Water pressure sensor
15	Flue gas temperature sensor	163 A	DHW flow sensor
20	Internal circulation pump (primary circuit pump)	Ⓐ	BCU burner control unit
30	3-way diverter valve	Ⓑ	HMU heat management unit (plug 156)
35	Gas solenoid valve	Ⓒ	HMU heat management unit (plug X4)

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Commissioning/service reports

Report

Settings and test values		Set value	Commissioning	Maintenance/ service	Maintenance/ service
Date					
Signature					
Static pressure	mbar kPa	≤ 57.5 ≤ 5.75			
Supply pressure (flow pressure)					
☐ For natural gas	mbar kPa	See table "Supply pressure" (Commissioning ...)			
☐ For LPG	mbar kPa				
☐ *Enter gas type*					
Carbon dioxide content CO_2 With natural gas					
▪ At lower heating output	% by vol.	See "Checking the combustion quality" (Commissioning ...)			
▪ At upper heating output	% by vol.				
For LPG					
▪ At lower heating output	% by vol.				
▪ At upper heating output	% by vol.				
Oxygen content O_2					
▪ At lower heating output	% by vol.				
▪ At upper heating output	% by vol.				
Carbon monoxide content CO					
▪ At lower heating output	ppm	< 1000			
▪ At upper heating output	ppm	< 1000			

Specification

Gas condensing system boiler
Use with single connection

		Type B2HH			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**1.9 to 11**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 11**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**1.7 to 10.1**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Rated heating output for DHW heating					
Natural gas	kW	1.7 to 17.5	1.7 to 17.5	1.7 to 23	1.7 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 17.5	2.2 to 23	2.2 to 29.3
Rated heat input (Qn)					
Natural gas	kW	1.8 to 10.3	1.8 to 17.8	1.8 to 23.4	1.8 to 29.9
LPG	kW	2.3 to 10.3	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
Rated heat input for DHW heating (Qnw)	kW	17.8	17.8	23.4	29.9
Product ID		CE-0085CT0017			
IP rating		IP X4 to EN 60529			
NO_X	Class	6	6	6	6
Gas supply pressure					
Natural gas	mbar	20	20	20	20
	kPa	2	2	2	2
LPG	mbar	50	50	50	50
	kPa	5	5	5	5
Max. permiss. gas supply pressure[*1]					
Natural gas	mbar	25.0	25.0	25.0	25.0
	kPa	2.5	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5	57.5
	kPa	5.75	5.75	5.75	5.75
Sound power level (to EN ISO 15036-1)					
At partial load	dB(A)	32.8	32.8	32.8	32.8
At rated heating output (DHW heating)	dB(A)	42.3	42.3	46.1	48.4
Rated voltage	V	230			
Rated frequency	Hz	50			
Appliance fuse protection	A	6.3			
Backup fuse (power supply)	A	16			
Communication module (integral)					
WiFi frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	17			
Low power radio frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	6			
Supply voltage	V ⎓	24			
Power consumption	W	4			
Power consumption (delivered condition)	W	40	48	67	113

[*1] *If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.*

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Specification (cont.)

Use with single connection

		Type B2HH			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**1.9 to 11**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 11**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**1.7 to 10.1**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Permissible ambient temperature					
▪ During operation	°C	+5 to +35			
▪ During storage and transport	°C	-5 to +60			
Electronic temperature limiter setting (TN)	°C	91			
Electronic temperature cut-out setting	°C	110			
Electronic flue gas temperature limiter setting	°C	110			
Weight					
▪ Excl. heating water	kg	33.0	33.0	33.0	33.0
▪ Incl. heating water	kg	38.6	38.6	38.6	38.6
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82	82
Max. flow rate (limit for the use of hydraulic separation)	l/h	See residual head graph			
Nominal circulating water volume At T_F/T_R = 80/60 °C	l/h	434	752	988	1259
Diaphragm expansion vessel					
Capacity	l	10	10	10	10
Pre-charge pressure	bar kPa	0.75 75	0.75 75	0.75 75	0.75 75
Permiss. operating pressure (PMS)	bar MPa	3 0.3	3 0.3	3 0.3	3 0.3
Max. DHW temperature	°C	70	70	70	70
Dimensions					
Length	mm	360	360	360	360
Width	mm	450	450	450	450
Height	mm	700	700	700	700
Gas connection		R ¾	R ¾	R ¾	R ¾
Flue gas connection	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100
Supply values Relative to the max. load					
With gas					
Natural gas E	m^3/h	1.88	1.88	2.48	3.16
Natural gas LL	m^3/h	2.19	2.19	2.88	3.68
LPG	kg/h	1.38	1.38	1.82	2.32

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Specification (cont.)

Use with single connection

		Type B2HH			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**1.9 to 11**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 11**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**1.7 to 10.1**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 10.1**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Flue gas parameters					
Temperature (at a return temperature of 30 °C)					
– At rated heating output	°C	39	41	46	59
– At partial load	°C	38	38	38	38
Temperature (at a return temperature of 60 °C, for DHW heating)	°C	64	65	67	72
Flue gas superheating temperature	°C	120	120	120	120
Mass flow rate (for DHW heating)					
Natural gas					
– At max. heating output	kg/h	31.7	31.7	41.6	54.9
– At partial load (single connection)	kg/h	3.3	3.3	3.3	3.3
LPG					
– At max. heating output	kg/h	30.1	30.1	41.0	53.9
– At partial load (single connection)	kg/h	3.9	3.9	3.9	3.9
Available draught (single connection, heating)[*2]	Pa	77	200	341	600
	mbar	0.77	2.0	3.41	6.0
Available draught (single connection, DHW heating)[*3]	Pa	200	200	341	600
	mbar	2.0	2.0	3.41	6.0
Max. amount of condensate To DWA-A 251	l/h	2.5	2.5	3.3	4.2
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60	60	60
Ventilation air connection	Ø mm	100	100	100	100
Standard seasonal efficiency [to DIN] at					
T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]			
Energy efficiency class		A	A	A	A
Seasonal space heating energy efficiency η_s	%	92	93	94	94

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specifications in the table "Use with single connection" apply, with the exception of the specifications in the table below "Use with multiple connection".

[*2] *CH: Available draught 200 Pa; 2.0 mbar*

[*3] *CH: Available draught 200 Pa; 2.0 mbar*

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Specification (cont.)

Gas condensing system boiler
Use with multiple connection

		Type B2HH			
Rated heating output range (to EN 15502)					
T_F/T_R = 50/30 °C (P(50/30))					
Natural gas	**kW**	**5.6 to 11**	**5.6 to 19**	**5.6 to 25**	**5.6 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))					
Natural gas	**kW**	**5.1 to 10.1**	**5.1 to 17.5**	**5.1 to 23**	**5.1 to 29.3**
Rated heating output for DHW heating					
Natural gas	kW	5.1 to 17.5	5.1 to 17.5	5.1 to 23	5.1 to 29.3
Rated heat input (Qn)					
Natural gas	kW	5.3 to 10.3	5.3 to 17.8	5.3 to 23.4	5.3 to 29.9
Mass flow rate (for DHW heating)					
Natural gas					
– At max. heating output	kg/h	31.7	31.7	41.6	54.9
– At partial load (single connection)	kg/h	3.3	3.3	3.3	3.3
Available draught C_{10} (at header system interface)	Pa	25	25	25	25
	mbar	0.25	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200[*4]	-200[*4]	-200[*4]	-200[*4]

Note
The supply values are only for reference (e.g. in the gas contract application) or for a supplementary, rough estimate to check the volumetric settings. Due to factory settings, the gas pressure must not be altered from these values. Reference: 15 °C, 1013 mbar (101.3 kPa).

Gas condensing combi boiler
Use with single connection

		Type B2KH		
Rated heating output range (to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Rated heating output for DHW heating				
Natural gas	kW	1.7 to 26.2	1.7 to 30.4	1.7 to 33.5
LPG	kW	2.2 to 26.2	2.2 to 30.4	2.2 to 33.5
Rated heat input (Qn)				
Natural gas	kW	1.8 to 17.8	1.8 to 23.4	1.8 to 29.9
LPG	kW	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
Rated heat input for DHW heating (Qnw)	kW	27.3	31.7	34.9
Product ID		CE-0085CT0017		

*[*4] -100 Pa reserved for wind pressure*

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Specification (cont.)

Use with single connection

		Type B2KH		
Rated heating output range (to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
IP rating		IP X4 to EN 60529		
NO_X	Class	6	6	6
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permiss. gas supply pressure[*5]				
Natural gas	mbar	25.0	25.0	25.0
	kPa	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5
	kPa	5.75	5.75	5.75
Sound power level (to EN ISO 15036-1)				
At partial load	dB(A)	32.8	32.8	32.8
At rated heating output (DHW heating)	dB(A)	49.1	50	50.4
Rated voltage	V	230		
Rated frequency	Hz	50		
Appliance fuse protection	A	6.3		
Backup fuse (power supply)	A	16		
Communication module (integral)				
WiFi frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	17		
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	6		
Supply voltage	V ⎓	24		
Power consumption	W	4		
Power consumption (in the delivered condition)	W	48	67	113
Permissible ambient temperature				
▪ During operation	°C	+5 to +35		
▪ During storage and transport	°C	-5 to +60		
Electronic temperature limiter setting (TN)	°C	91		
Electronic temperature cut-out setting	°C	110		
Electronic flue gas temperature limiter setting	°C	110		
Weight				
▪ Excl. heating water	kg	34.5	34.5	34.5
▪ Incl. heating water	kg	40.6	40.6	40.6

[*5] *If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.*

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Specification (cont.)

Use with single connection

		Type B2KH		
Rated heating output range (to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Permiss. operating pressure (PMS)	bar MPa	3 0.3	3 0.3	3 0.3
Water capacity (excl. diaphragm expansion vessel)	l	3.0	3.0	3.0
Max. flow temperature	°C	82	82	82
Max. flow rate (limit for the use of hydraulic separation)	l/h	See residual head graph		
Nominal circulating water volume At T_F/T_R = 80/60 °C	l/h	752	988	1259
Diaphragm expansion vessel				
Capacity	l	10	10	10
Pre-charge pressure	bar kPa	0.75 75	0.75 75	0.75 75
Permiss. operating pressure	bar MPa	3 0.3	3 0.3	3 0.3
Specific water flow rate	l/min	14.45	15.69	17
Max. DHW temperature	°C	60	60	60
Comfort factor	Stars	3	3	3
Dimensions				
Length	mm	360	360	360
Width	mm	450	450	450
Height	mm	700	700	700
Gas connection		R ¾	R ¾	R ¾
Standby instantaneous water heater				
DHW and cold water connections		G ½	G ½	G ½
Permiss. operating pressure (DHW side)	bar MPa	10 1	10 1	10 1
Minimum pressure, cold water connection	bar MPa	1.0 0.1	1.0 0.1	1.0 0.1
Outlet temperature, adjustable	°C	30 to 60	30 to 60	30 to 60
Continuous DHW output	kW	26.2	30.4	33.5
Spec. flow rate at ΔT = 30 K (as per EN 13203-1)	l/min	14.45	15.59	17.04
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Supply values Relative to the max. load and 1013 mbar/15 °C				
With gas				
Natural gas E	m^3/h	2.89	3.35	3.69
Natural gas LL	m^3/h	3.36	3.90	4.29
LPG	kg/h	2.12	2.46	2.71

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Specification (cont.)

Use with single connection

		Type B2KH		
Rated heating output range (to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**1.9 to 19**	**1.9 to 25**	**1.9 to 32**
LPG	**kW**	**2.5 to 19**	**2.5 to 25**	**2.5 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**1.7 to 17.5**	**1.7 to 23**	**1.7 to 29.3**
LPG	**kW**	**2.2 to 17.5**	**2.2 to 23**	**2.2 to 29.3**
Flue gas parameters				
Temperature (at a return temperature of 30 °C)				
– At rated heating output	°C	41	46	59
– At partial load	°C	38	38	38
Temperature (at a return temperature of 60 °C, for DHW heating)	°C	70	74	77
Flue gas superheating temperature	°C	120	120	120
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	49.3	57.3	62.1
– At partial load (single connection)	kg/h	3.3	3.3	3.3
LPG				
– At max. heating output	kg/h	49.2	57.1	61.1
– At partial load (single connection)	kg/h	3.9	3.9	3.9
Available draught (single connection, heating)[*6]	Pa	200	341	387
	mbar	2.0	3.41	3.87
Available draught (single connection, DHW heating)[*7]	Pa	600	604	387
	mbar	6.0	6.04	3.87
Temperature (for DHW heating)	°C	70	74	77
Max. temperature	°C	120	120	120
Max. amount of condensate To DWA-A 251	l/h	2.5	3.3	4.2
Condensate connection (hose nozzle)	Ø mm	20 to 24	20 to 24	20 to 24
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Standard seasonal efficiency [to DIN] at				
T_F/T_R = 40/30 °C	%	Up to 98 (H_s) [gross cv]		
Energy efficiency class to Commission Regulation (EU) No 813/2013 (G to A+++)		A	A	A
Seasonal space heating energy efficiency η_s	ηs (%)	93	93	94

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specifications in the table "Use with single connection" apply, with the exception of the specifications in the table below "Use with multiple connection".

[*6] *CH: Available draught 200 Pa; 2.0 mbar*

[*7] *CH: Available draught 200 Pa; 2.0 mbar*

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Specification (cont.)

Gas condensing combi boiler
Use with multiple connection

		Type B2KH		
Rated heating output range (to EN 15502)				
T_F/T_R = 50/30 °C (P(50/30))				
Natural gas	**kW**	**5.6 to 19**	**5.6 to 25**	**5.6 to 32**
T_F/T_R = 80/60 °C (Pn(80/60))				
Natural gas	**kW**	**5.1 to 17.5**	**5.1 to 23**	**5.1 to 29.3**
Rated heating output for DHW heating				
Natural gas	kW	5.1 to 26.2	5.1 to 30.4	5.1 to 33.5
Rated heat input (Qn)				
Natural gas	kW	5.3 to 17.8	5.3 to 23.4	5.3 to 29.9
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	49.3	57.3	62.1
–Partial load multiple connection overpressure	kg/h	9.7	9.7	9.7
Available draught C_{10} (at header system interface)	Pa	25	25	25
	mbar	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C_{10}	Pa	-200[*4]	-200[*4]	-200[*4]

Flue system types

Available in the following countries	Flue system types
AE, AM, AZ, BA, BG, BY, CH, CY, CZ, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, KG, KZ, LI, LT, LV, MD, ME, MT, NL, NO, PL, PT, RO, RS, RU, SE, SK, TR, UA, UZ	B_{23}, B_{23P}, B_{33}, C_{13}, C_{33}, C_{43}, C_{53}, C_{63}, C_{83}, C_{83P}, C_{93}
BE	B_{23}, B_{23P}, B_{33}, C_{13}, C_{33}, C_{43} C_{53}, C_{83}, C_{83P}, C_{93}
DE, LU, SI	B_{23}, B_{23P}, B_{33}, C_{13X}, C_{33X}, C_{43X}, C_{53X}, C_{63X}, C_{83X}, C_{83P}, C_{93X}

Gas categories

Available in the following countries	Gas categories
AM, AZ, BY, KG, KZ, MD, RU, UA, UZ	I_{2N}/I_{2H}
AE, AM, AZ, BA, BG, BY, CZ, DK, EE, ES, FI, GB, GR, HR, HU, IE, IS, IT, KG, KZ, LI, LT, LV, LU, MD, ME, MT, NO, PT, RO, RS, RU, SE, SI, SK, TR, UA, UZ	II_{2N3P}/II_{2H3P}
BE	I_{2N}
DE, FR	II_{2N3P}
CY	I_{3P}
NL	II_{2EK3P}
PL	II_{2N3P}/II_{2ELw3P}

The gas condensing boiler is suitable for operation with natural gas containing a hydrogen blend of up to 20 % by volume.

*[*4] -100 Pa reserved for wind pressure*

Electronic combustion control unit

The electronic combustion controller utilises the physical correlation between the level of the ionisation current and the air ratio λ. The maximum ionisation current is achieved at an air ratio of 1 for all gas qualities. The ionisation signal is evaluated by the combustion controller. The air ratio is regulated to a value that is between λ= 1.2 and 1.5. This range provides for an optimum combustion quality. Thereafter, the electronic gas train regulates the required gas volume subject to the prevailing gas quality.
To check the combustion quality, the CO_2 content or the O_2 content of the flue gas is measured. The prevailing air ratio is determined using the actual values.

To achieve optimum combustion control, the system regularly carries out an automatic self-calibration; also after power failures (shutdown). For this, the combustion is briefly regulated to maximum ionisation current (corresponding to air ratio λ=1). Self-calibration takes place shortly after the burner starts. The process lasts approx. 20 s during which higher than normal CO emissions may occur briefly.

Final decommissioning and disposal

This product can be recycled. Components and fluids from the system do not belong in ordinary domestic waste.

For decommissioning, isolate the system from the power supply, secure against reconnection and allow components to cool down where appropriate.
All components must be disposed of correctly.

Ordering individual parts for accessories

Please affix accessory labels with part numbers here.
Please specify the relevant part no. when ordering individual parts.

Declaration of conformity

We, Viessmann Climate Solutions GmbH & Co. KG, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, as legal successor of Viessmann Climate Solutions SE, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, declare as sole responsible body that the named product complies with the European directives and supplementary national requirements in terms of its design and operational characteristics.
Viessmann Climate Solutions GmbH & Co. KG, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, as legal successor of Viessmann Climate Solutions SE, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, hereby declares that the radio equipment type of the named product complies with directive 2014/53/EU.

Using the serial number, the full Declaration of Conformity can be found on the following website:
www.viessmann.co.uk/eu-conformity

Manufacturer's certificate according to the 1st BImSchV [Germany]

We, Viessmann Climate Solutions SE, D-35108 Allendorf, confirm that the product **Vitodens 200-W** complies with the NO_x limits specified by the 1st BImSchV § paragraph 6.

Allendorf, 01 March 2021

Viessmann Climate Solutions SE

Prokura holder (ppa.) Uwe Engel
Senior Vice President Engineering & Technology

Keyword index

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