

Vitodens 100-W

Type B1HF, B1KF, 3.2 to 32 kW

Type B1HF-M, B1KF-M (for multiple connection), 5.7 to 32 kW

Wall mounted gas condensing boiler

Natural gas and universal LPG version



VITODENS 100-W



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.

Note

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



Please note

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

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 result in 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 pipe-work.

**Please note**

Electronic assemblies can be damaged by electrostatic discharge. Before beginning work, touch earthed objects, such as heating or water pipes, to discharge any static.

Auxiliary components, spare and wearing parts**Please note**

Spare and wearing parts that have not been tested together with the system can compromise its function. Installing non-authorised components and making non-approved modifications or conversions can compromise safety and may invalidate our warranty.

For replacements, use only original spare parts supplied or approved by Viessmann.

Repair work**Please note**

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

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 the doors to living spaces to prevent flue gases from spreading.

If water escapes from the appliance



Danger

If water escapes from the appliance there is a risk of electric shock. 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.

Instruct system users that subsequent modifications to the building characteristics are not permissible (e.g. cable/pipe-work 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, etc.) 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 extract 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.

1. Warning notices		8
2. Information	Disposal of packaging	9
	Symbols	9
	Intended use	9
	Product information	10
	■ Vitodens 100-W, type B1HF, B1KF	10
	System examples	10
	Maintenance parts and spare parts	10
	■ Viessmann Partnership	11
	■ Viessmann spare part app	11
3. Preparing for installation		12
4. Installation sequence	Removing the boiler from the packaging	15
	Mounting the boiler and making connections	16
	■ Removing the front panel	16
	■ Mounting the boiler on the pre-plumbing jig or mounting frame	16
	■ Fitting the boiler to the wall mounting bracket	18
	■ Connections on the heating water and the DHW side	20
	Connecting the condensate drain	21
	■ Filling the trap with water	21
	Connecting the balanced flue pipe	22
	Connecting the gas line	23
	Making the electrical connections	24
	■ Opening the wiring chamber	24
	■ Overview of electrical connections	24
	■ On-site connections on the HBMU heat management unit	25
	■ Connecting the outside temperature sensor	25
	■ Connecting low loss header sensor [9]	25
	■ Connecting the cylinder temperature sensor	26
	■ Connecting the DHW circulation pump circuit (only type B1HF)	26
	■ Connecting the floating switching contact	26
	■ Power supply [40]	28
	■ Routing connecting cables/leads	28
	WiFi operational reliability and system requirements	29
	■ Wireless signal range of WiFi connection	29
	■ Angle of penetration	29
	Closing the wiring chamber	30
	Fitting the front panel	31
5. Commissioning, inspection, maintenance	Steps - commissioning, inspection and maintenance	32
6. System configuration (parameters)	Calling up parameters	56
	Parameter	56
	■ Further settings	59
	Subscriber numbers of connected extensions	60
7. Diagnostics and service checks	Service menu	62
	■ Calling up the service menu	62
	■ Exiting the service menu	62
	Diagnostics	63
	■ Checking operating data	63
	■ Calling up operating data	63
	■ b.7: Configure maintenance interval	63
	■ b.8: Reset maintenance interval	63
8. Troubleshooting	Fault display on the programming unit	64
	Overview of electronics modules	65

Index (cont.)

	Resetting the burner 	65
	Fault messages	66
	Repairs	88
	■ Shutting down the boiler	88
	■ Removing the boiler from the pre-plumbing jig or mounting frame	89
	■ Status/testing/diagnosis of internal circulation pump	89
	■ Checking the temperature sensors	91
	■ Replacing the HBMU heat management unit	95
	■ Replacing the power cable	95
	■ Replacing the HMI connecting cable	95
	■ Checking the plate heat exchanger	95
	■ Removing the hydraulic unit	96
	■ Checking the fuse	98
9. Function description	Appliance functions	99
	■ Heating mode	99
	■ Venting program	99
	■ Filling program	99
	■ Heating curve	99
	■ Screed drying	101
	DHW heating (system boilers only)	102
	External heating circuit hook-up (if installed)	103
10. Connection and wiring diagram	HBMU heat management unit	104
11. Commissioning/service reports		108
12. Specification	Specification	109
	■ Gas condensing system boiler	109
	■ Gas condensing combi boiler	113
	Electronic combustion controller	118
13. Disposal	Final decommissioning and disposal	119
14. Ordering individual parts	Ordering individual parts for accessories	120
15. Certificates	Declaration of conformity	121
	Manufacturer's certificate according to the 1st BImSchV [Germany]	121
	COMPLIANCE	121
16. Keyword index		122

Warning notices

DO NOT SPRAY AEROSOLS IN THE VICINITY OF THIS APPLIANCE WHILE IT IS IN OPERATION.
DO NOT USE OR STORE FLAMMABLE MATERIALS IN OR NEAR THIS APPLIANCE.
DO NOT PLACE ARTICLES ON OR AGAINST THIS APPLIANCE.
DO NOT MODIFY THIS APPLIANCE.

FOR CONTINUED SAFETY OF THIS APPLIANCE IT MUST BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. THIS APPLIANCE MAY DELIVER WATER AT HIGH TEMPERATURE. REFER TO THE PLUMBING CODE OF AUSTRALIA (PCA), LOCAL REQUIREMENTS AND INSTALLATION INSTRUCTIONS TO DETERMINE IF ADDITIONAL DELIVERY TEMPERATURE CONTROL IS REQUIRED.

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 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 sequences of steps for commissioning, inspection and maintenance are summarised in the section "Commissioning, inspection and maintenance" and are 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 CECS215-2017 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.

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.

Intended use (cont.)

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 100-W, type B1HF, B1KF

Wall mounted gas condensing boiler with Inox-Radial heat exchanger and the following integrated components:

- Modulating MatriX-Plus burner for natural gas
- Hydraulics with 3-way diverter valve and variable speed high efficiency circulation pump
- Type B1KF: Plate heat exchanger for DHW heating
- Weather-compensated or constant temperature control unit
- Integral diaphragm expansion vessel (8 l capacity)

Type plate

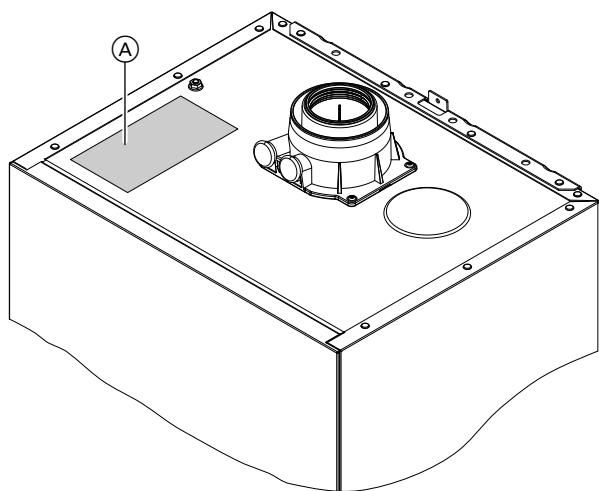


Fig. 1

- Ⓐ Type plate with QR code for appliance registration

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 100-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.

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.

Maintenance parts and spare parts (cont.)**Viessmann Partnershop**

Login:

<https://shop.viessmann.com/>**Viessmann spare part app**www.viessmann.com/etapp

- (A) Condensate drain
- (B) Heating flow
- (C) DHW (gas condensing combi boiler)
Cylinder flow (gas condensing system boiler)
- (D) Gas connection
- (E) Cold water (gas condensing combi boiler)
Cylinder return (gas condensing system boiler)

- Ⓕ Heating return
- Ⓖ Filling/draining
- Ⓗ Dimension for siting with DHW cylinder below the boiler
- Ⓚ Dimension: 161 mm

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.



Pre-plumbing jig or mounting frame installation instructions

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 expansion plugs 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 so that it is free of load and torque stress.

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 type B1KF

Note

An additional ball valve can be fitted in the DHW line when installing a combi boiler in the cellar. This makes maintenance work easier.

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 protection max. 16 A
- Accessory cables: 0.75 mm² flexible PVC cable with required number of cores for external connections

Connection on the DHW side for gas condensing combi boiler

Cold water installation

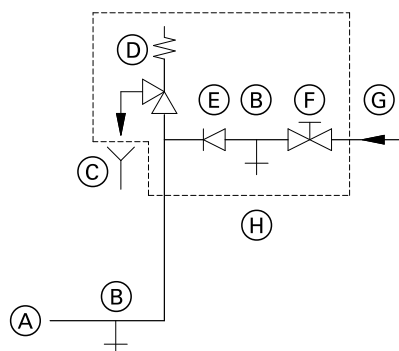


Fig. 3

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

Safety assembly (H) to DIN 1988 and EN 806 is required if it is possible that the mains water supply pressure will exceed 10 bar (1.0 MPa), and no DHW pressure reducing valve is installed (to DIN 4753). 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, do not shut off the cold water shut-off valve on the boiler. 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 DHW network (e.g. flush valves, washing machines, dishwashers): Shock arrestors should be installed close to the cause of the water hammer.

Removing the boiler from the packaging

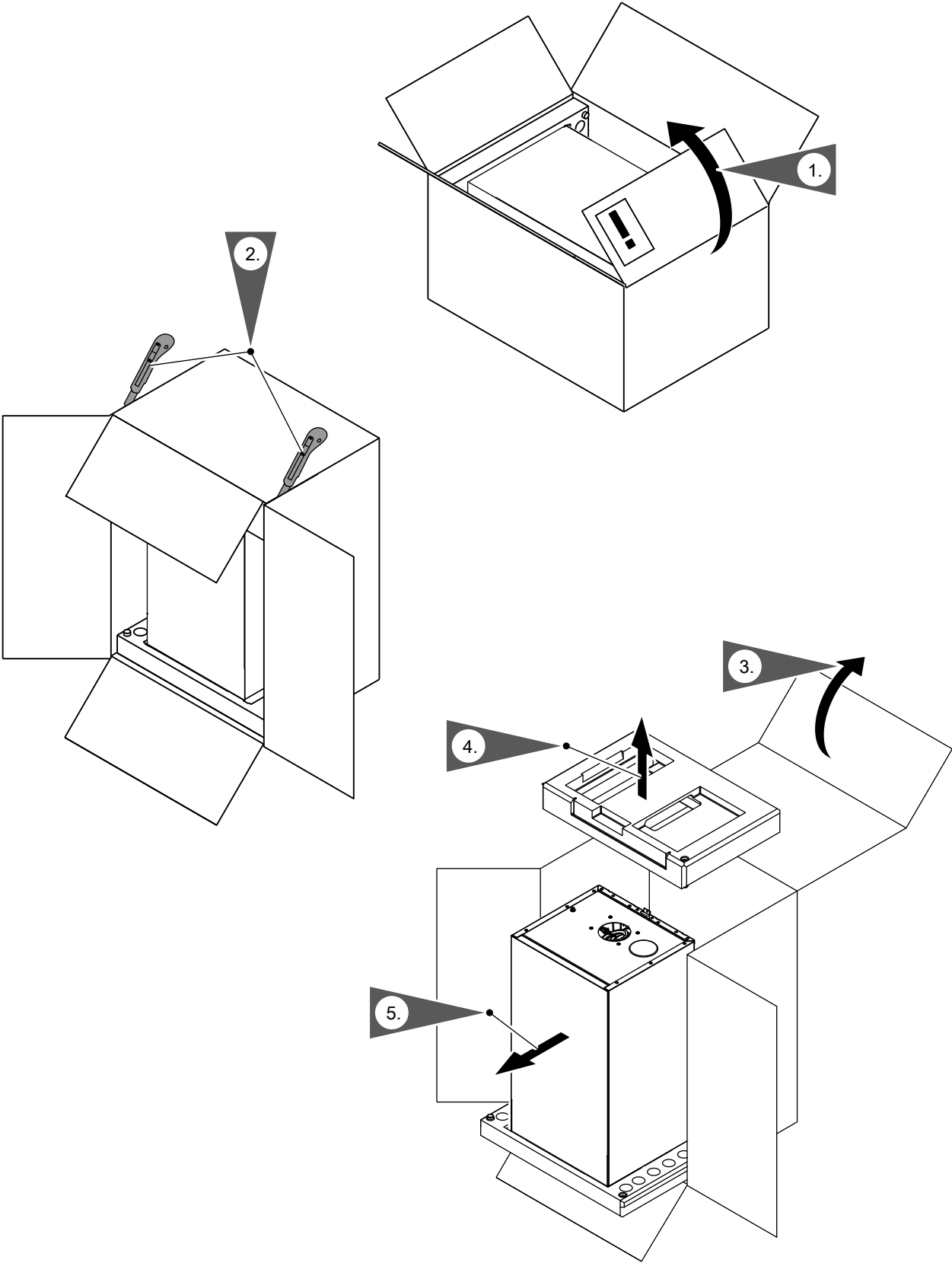


Fig. 4

Mounting the boiler and making connections

Removing the front panel

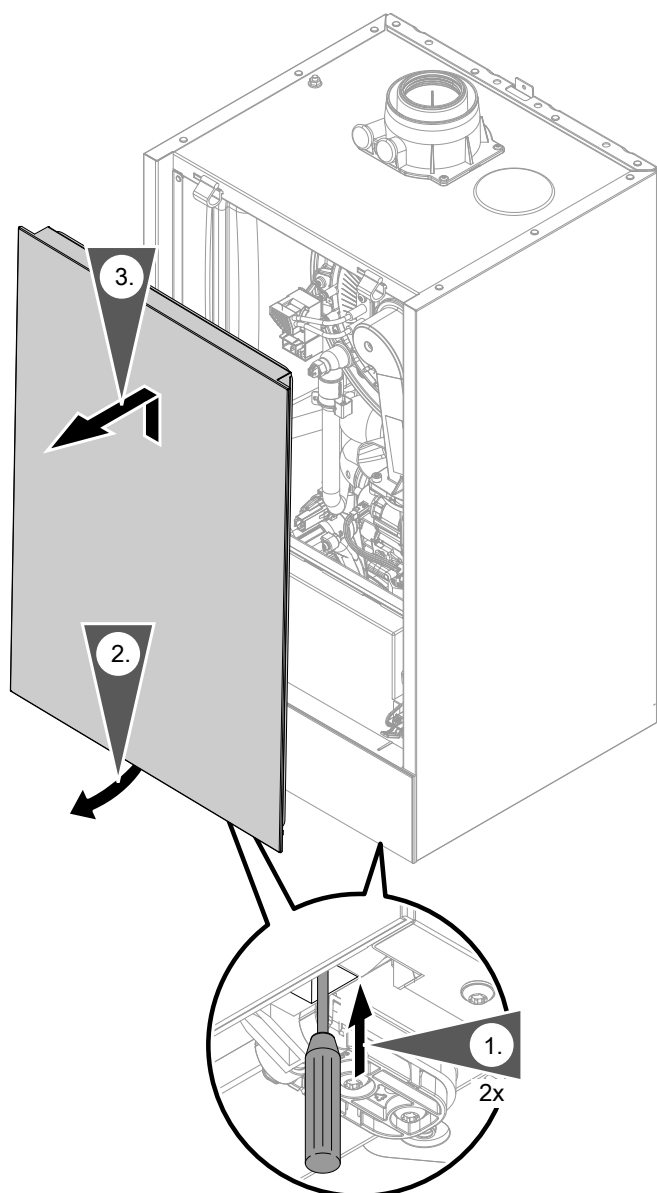


Fig. 5

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.

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.)

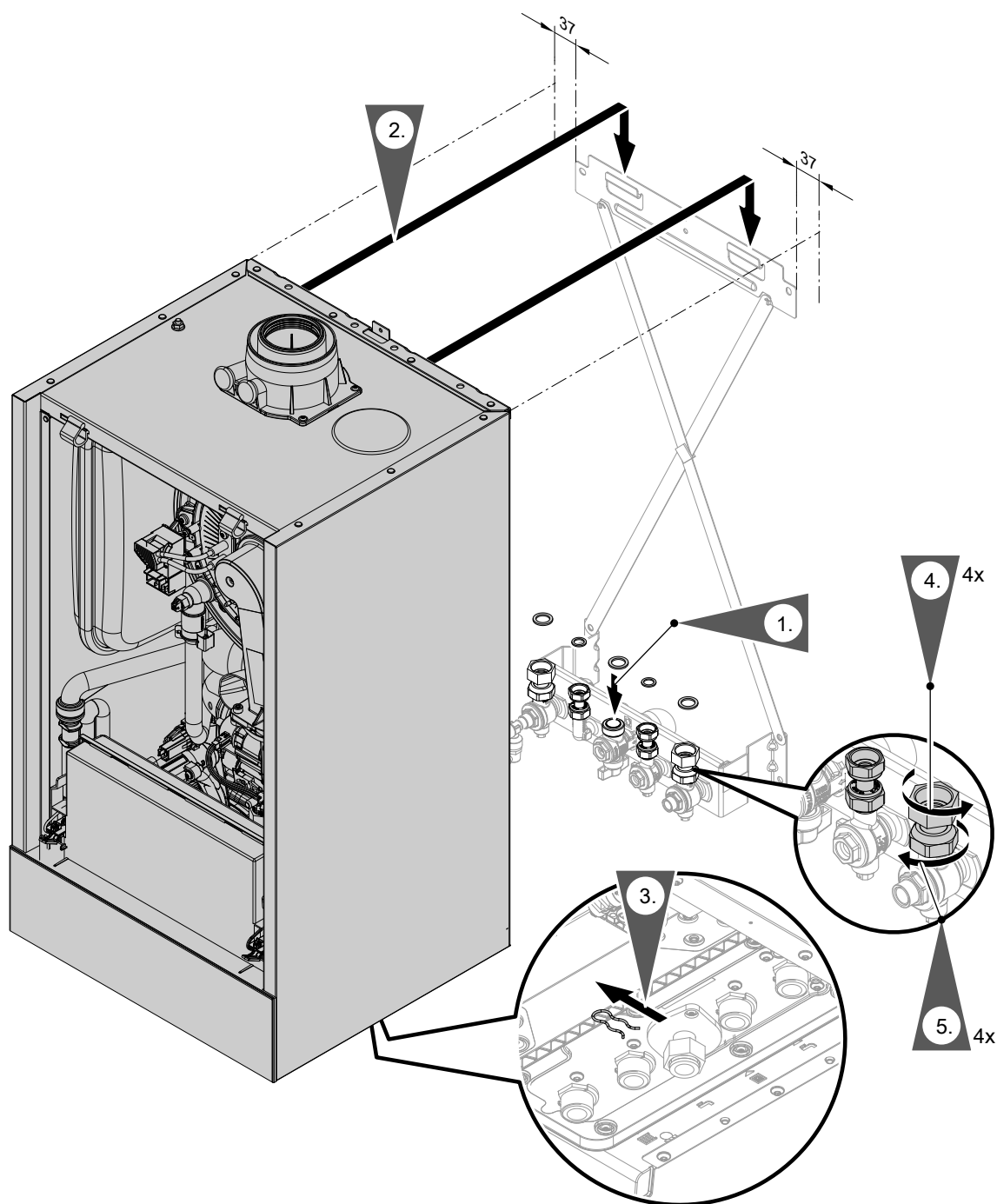


Fig. 6

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
- Mounting frame
- Plumbing wall mounting frame

1. Use 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.

Mounting the boiler and making connections (cont.)

2. Suspend the Vitodens from the wall mounting bracket.

Note

After mounting, check correct seating.

3. **Note**

Only remove the locking clip under the gas pipe union nut once the appliance has been installed. Locking clip is no longer required.

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

Torque settings:

- Union nuts G $\frac{3}{4}$: 30 Nm
- Union nuts G $\frac{1}{2}$: 24 Nm

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

5. Tighten locking ring fittings so that they form a tight seal:
1 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.)

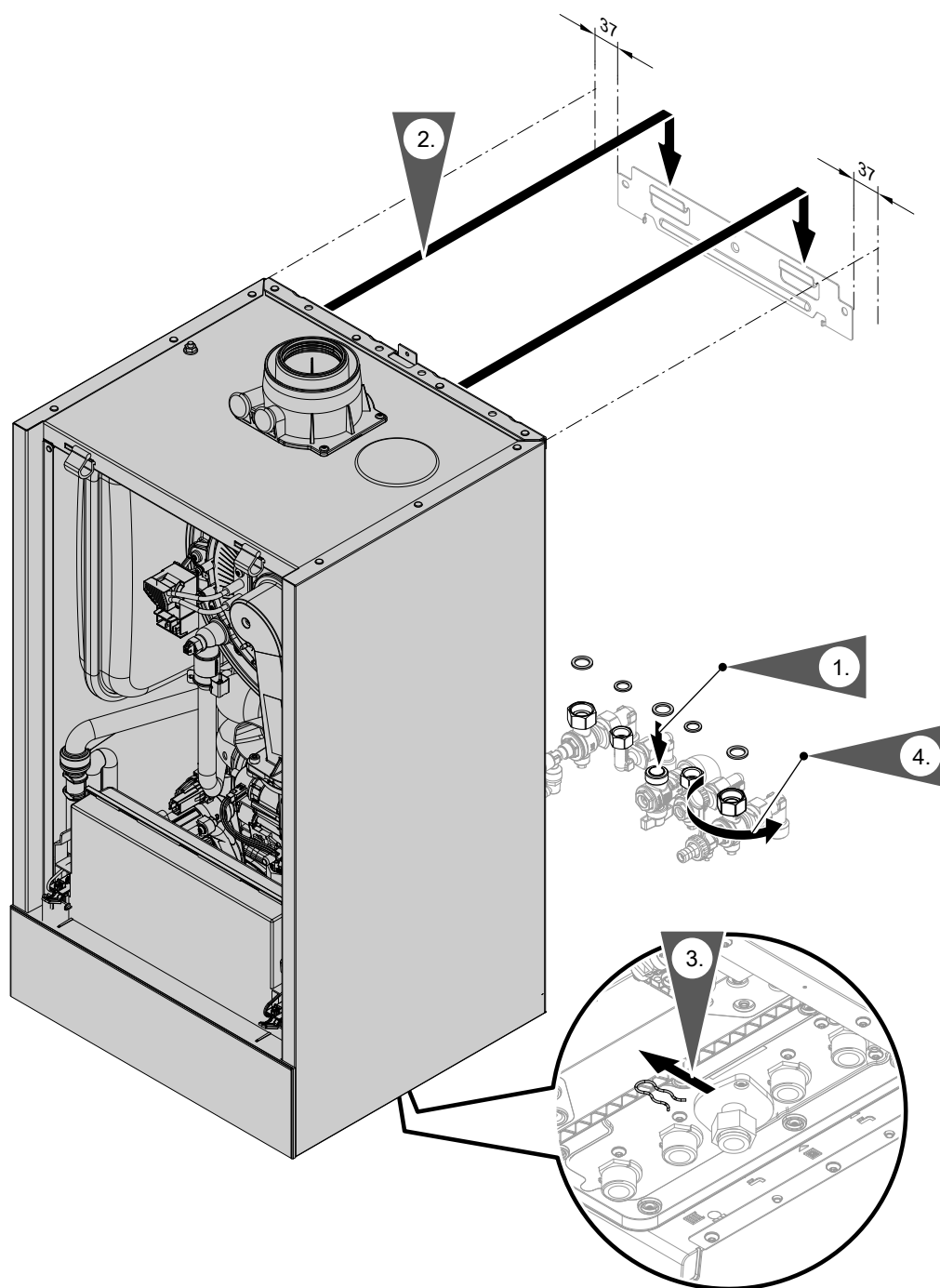


Fig. 7

1. Use 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.

2. Suspend the Vitodens from the wall mounting bracket.

3. **Note**

Only remove the locking clip under the gas pipe union nut once the appliance has been installed. Locking clip is no longer required.

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

Torque settings:

- Union nuts G $\frac{3}{4}$: 30 Nm
- Union nuts G $\frac{1}{2}$: 24 Nm

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

Mounting the boiler and making connections (cont.)

Connections on the heating water and the DHW side

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

Gas condensing system boiler

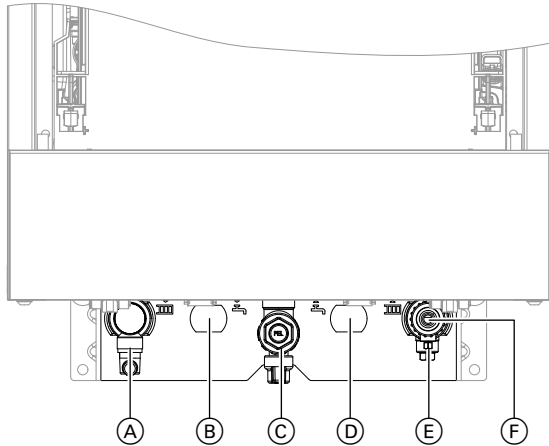


Fig. 8 Specifications for threads in conjunction with connection accessories

- (A) Heating flow **R ¾ (male thread)**
- (B) Cylinder flow **G ¾ (male thread)**
- (C) Gas connection **R ¾ (male thread)**
- (D) Cylinder return **G ¾ (male thread)**
- (E) Heating return **R ¾ (male thread)**
- (F) 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

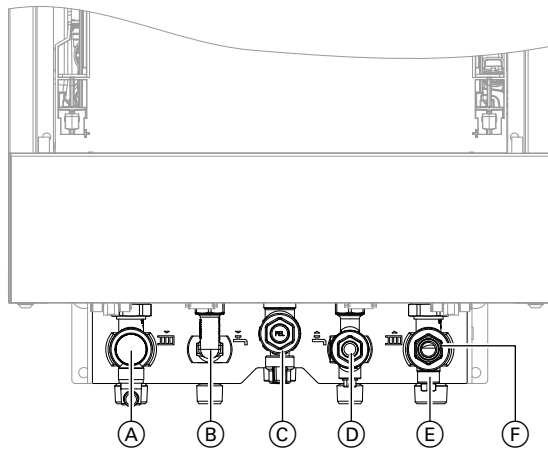


Fig. 9 Specifications for threads in conjunction with connection accessories

- (A) Heating flow **R ¾ (male thread)**
- (B) DHW **R ½ (male thread)**
- (C) Gas connection **R ¾ (male thread)**
- (D) Cold water **R ½ (male thread)**
- (E) Heating return **R ¾ (male thread)**
- (F) 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.

Connecting the condensate drain

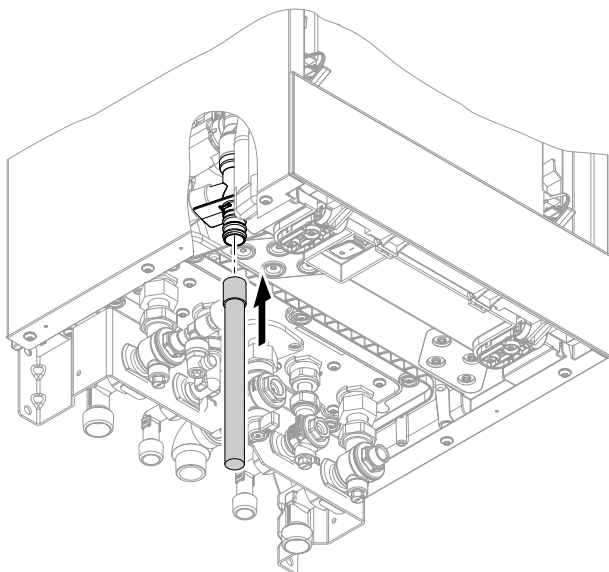


Fig. 10

1. Push the supplied drain hose onto the drain connector.
Drain hose: Ø 19 x 800 mm
2. Connect the drain hose with a constant fall and a pipe vent to the drain network or 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

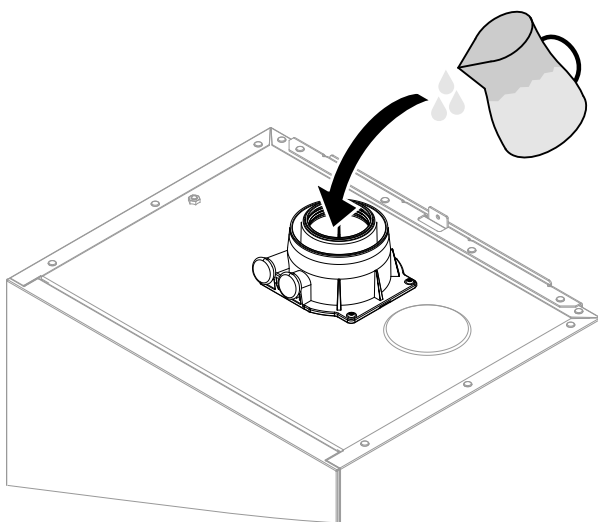


Fig. 11

Note

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

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.

Connecting the balanced flue pipe

Note

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



Connecting the balanced flue pipe

Flue system installation instructions

Connecting several Vitodens to a shared flue system

If several Vitodens are connected to a shared flue system at positive pressure using routing type C₁₀, C₁₁, C₁₃ or C₁₄:

For each boiler, install one back draught safety device (accessories) in the flue gas connection and one in the mixing shaft of the burner.

Note

Not all appliance types are approved for "multiple connection".

Please order Vitodens appliances that are suitable for this; see pricelist.

Note

In appliances for "multiple connection", a special back draught safety device is installed in the mixing shaft of the burner, downstream of the fan.

A further back draught safety device is installed in the flue system.

Installing the back draught safety devices:



Installation instructions for back draught safety device

Only carry out **commissioning** when the following conditions have been met:

- Unrestricted flow in the flue gas routes.
- Positive pressure flue system is gas-tight.
- Inspection port covers checked for secure and tight seating.
- Apertures for supplying sufficient combustion air are open and cannot be closed.

Note

In open flue operation, install a rodent guard grille on the ventilation air aperture.

- All current regulations on installing and commissioning flue systems have been observed.
- 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 inadequate supply of combustion air can cause life threatening poisoning from carbon monoxide in the flue gas.

Ensure the flue system is in good working order. Apertures for combustion air supply must be non-closable in open flue operation. Prevent condensate drainage via a wind protector.

Connecting the gas line

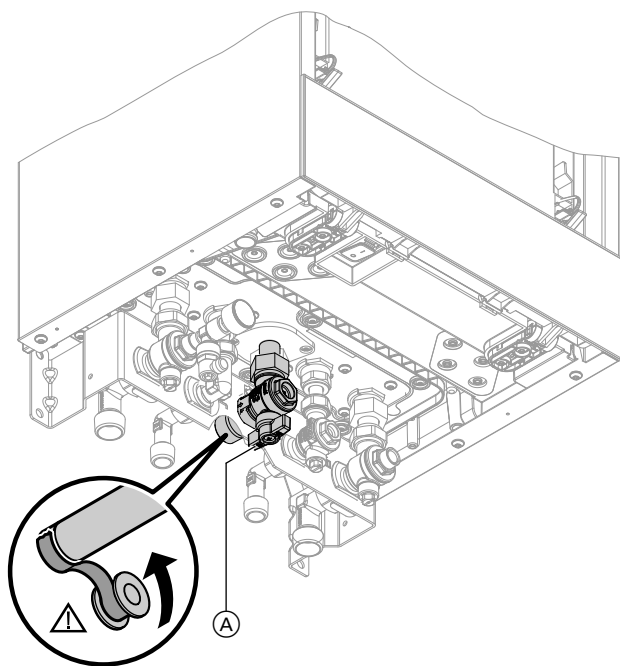


Fig. 12

1. If the gas connection has not been fitted previously, seal gas shut-off valve (A) to the gas connection.
When carrying out any work on gas connection fittings, hold with a suitable tool. Never transfer any forces to the internal components.
2. Check for leaks.
3. Purge the gas line.



Danger

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

Note

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

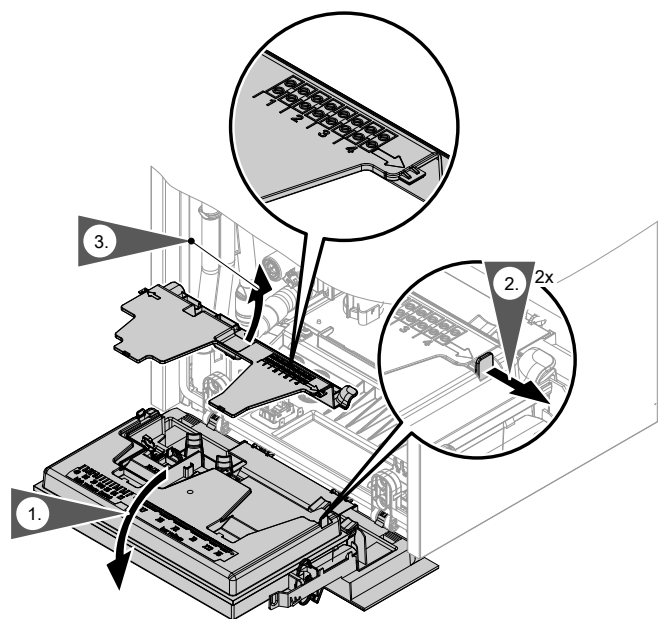


Please note

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).

Making the electrical connections

Opening the wiring chamber



Please note

Electronic assemblies can be damaged by electrostatic discharge.

Before beginning work, touch earthed objects, such as heating or water pipes, to discharge any static.

Fig. 13

Overview of electrical connections

Note

For further information on the connections, see the following chapter.

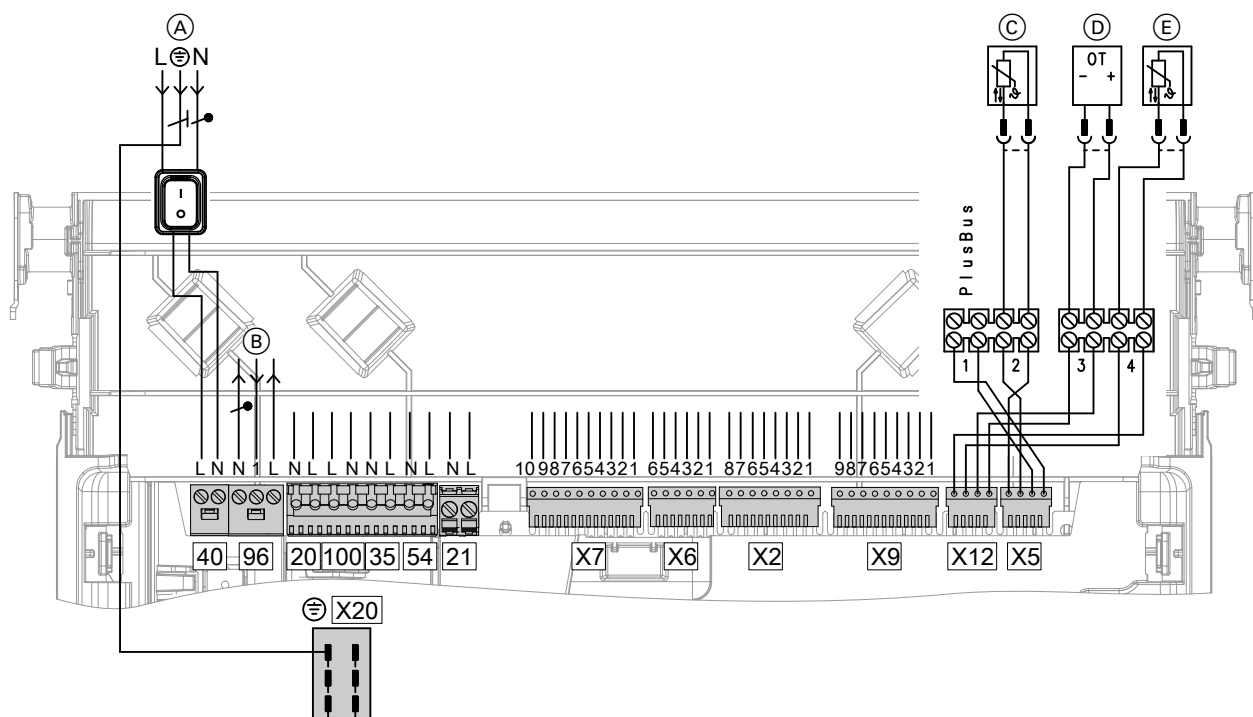


Fig. 14

Making the electrical connections (cont.)

Connections at plug 230 V~

- Ⓐ Power supply 40
- Ⓑ Configurable floating input 96, 230 V
Output 230 V
230 V room thermostat connection
- 20 Heating circuit pump
- 100 Fan motor
- 35 Gas solenoid valve
- 54 Ignition unit/ionisation
- 21 No function assigned

- Ⓒ Cylinder temperature sensor (system boiler)
- Ⓓ Remote control (OpenTherm device)
- Ⓔ Outside temperature sensor
- X20 Equipotential bonding (earth conductor)



Note on connecting accessories

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

On-site connections on the HBMU heat management unit

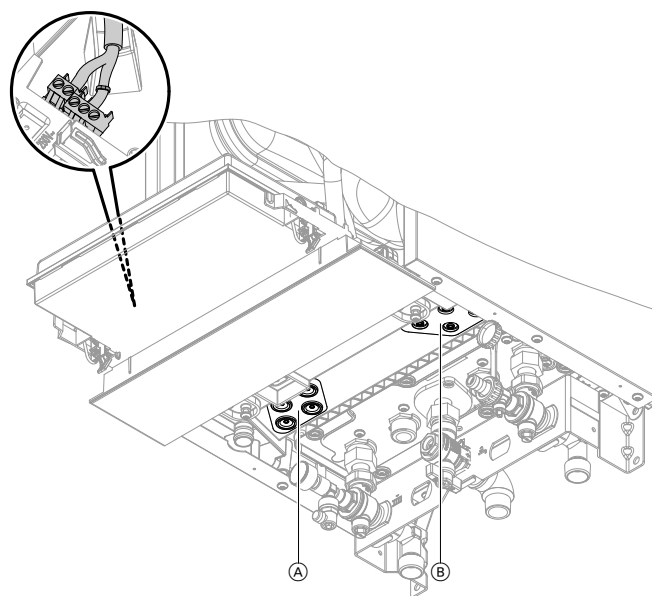


Fig. 15

- Ⓐ Diaphragm grommets, 230 V cables
- Ⓑ Diaphragm grommets, extra low voltage (ELV)

- 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, refit the plug with wire ferrules.
- For cables without strain relief grommets, provide strain relief in the wiring chamber in the form of cable ties.

Connecting the outside temperature sensor

Fitting location for outside temperature sensor

- North or north-westerly wall, 2 to 2.5 m above ground level; in multi storey buildings, in the upper half of the second floor
- Not above windows, doors or vents
- Not immediately below balconies or gutters
- Do not render over.

Connecting the outside temperature sensor

See page 24

2-core lead, up to 35 m long with 1.5 mm² cross-section

Connecting low loss header sensor 9

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



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

Making the electrical connections (cont.)

Connecting the cylinder temperature sensor

Connect the cylinder temperature sensor to terminals
 Ⓒ. See page 24.

Connecting the DHW circulation pump circuit (only type B1HF)

Note

Connect the DHW circulation pumps to the EM-P1 extension (ADIO). Configuration via software tool. Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.

Specification

Rated current	1 A
Rated voltage	230 V~

Connecting the floating switching contact

Connection at plug 96

One of the following functions can be connected:

- "0" No function or room thermostat
- "2" DHW circulation pump external demand (push-button function, pump runs for 5 min). Not for Vitodens 111-W
- "4" External demand
- "5" External blocking or alternatively connection for external heating circuit hook-up (if no more than one heating circuit hook-up is configured on commissioning. If more than one heating circuit hook-up is required, connect to EM-EA1 accessory).

Assigning functions in the commissioning assistant

See commissioning assistant in "Commissioning".

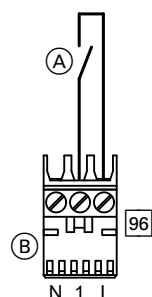


Fig. 16

- Ⓐ Potential-free switching contact
- Ⓑ Plug 96

Information on connecting PlusBus subscribers

As a maximum, the following PlusBus subscribers can be connected to the control unit (terminal 1):

- 1 EM-M1 or EM-MX extension (ADIO electronics module)
- 1 Vitotrol 200-E
- 1 EM-EA1 extension (DIO electronics module)
- 1 EM-S1 extension (ADIO or SDIO/SM1A electronics module)
- 1 EM-P1 extension (ADIO electronics module)

Note

The number of PlusBus subscribers is limited: Max. one Vitotrol 200-E plus a maximum of 3 additional extensions, e.g. EM-M1 or EM-EA1.

Example: 1 x Vitotrol 200-E + 1 x EM-M1 + 1 x EM-EA1

If no Vitotrol 200-E is connected, 4 extensions can be connected.

The max. total length of the PlusBus lead is 50 m. With an unscreened lead, 2-core, 0.34 mm².

Making the electrical connections (cont.)

Accessories mains connection, connect plug to external power supply

! Please note

Connect extensions via an ON/OFF switch (E) directly to the mains supply (see next chapter).

Accessories with direct mains connection

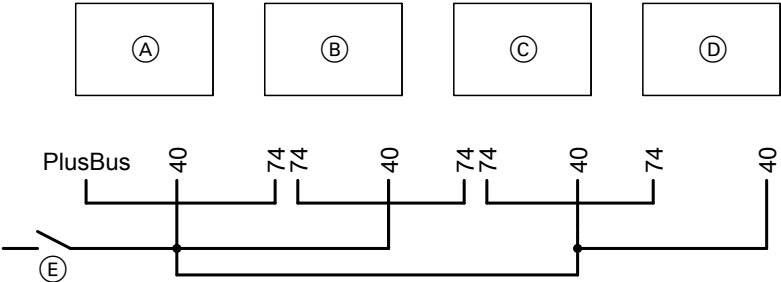


Fig. 17

- (A) HBMU heat management unit, heat generator
- (B) Mixer extension kit (ADIO electronics module)
- (C) EM-EA1 extension (DIO electronics module) and/or EM-S1 extension (ADIO or SDIO/SM1A electronics module)

- (D) EM-P1 extension (ADIO electronics module)
- (E) External ON/OFF switch
- 40 Mains input
- 74 PlusBus

Note

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.

Note

Use addressing for rotary selector S1. See also the note in chapter "Information on connecting PlusBus subscribers".



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~.
- Strip as little of the insulation as possible, directly before the terminals, and bundle close to the corresponding terminals.
- Secure the cables with cable ties.

Accessories	Internal fuse protection
EM-M1, EM-MX mixer extension kit	2 A
EM-EA1 extension	2 A
EM-S1 extension (not for Vitodens 111)	2 A

Making the electrical connections (cont.)

Power supply 40



Danger

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

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

- IEC 60364-4-41
 - VDE regulations
 - 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 full isolation. The isolator must be fitted in the permanent electrical installation, in line with installation requirements.
We additionally recommend installing an AC/DC-sensitive RCD (RCD class B ) for DC (fault) currents that can occur with energy efficient equipment.
 - Connect the power cable to the electricity supply using a fixed connection.

- If 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.

Routing connecting cables/leads



Please note

If closures or diaphragm grommets are damaged, splashproofing is no longer ensured. Do not open or damage closures or unused diaphragm grommets on the underside of the appliance. Seal cable entries with the fitted diaphragm grommets.

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/leads over sharp edges or against the casing (sound transmission).



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.

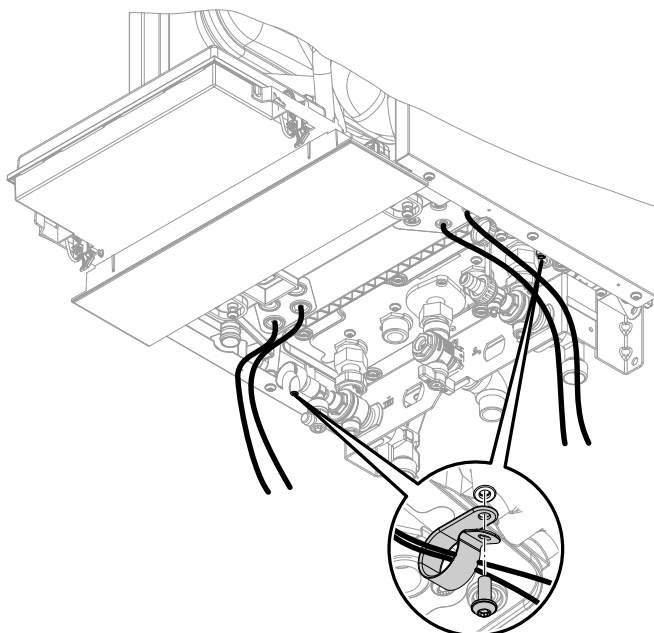


Fig. 18

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.
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)
- Dynamic IP addressing (DHCP, delivered condition) in the network (WiFi):
Have this checked on site by an IT expert **prior** to commissioning. Arrange for setup if necessary.
- Set routing and security parameters in the IP network (LAN).
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 necessary.

Wireless signal range of WiFi connection

The range of wireless signals may be reduced by walls, ceilings and interior fixtures. These weaken the wireless signal, causing poor reception due to the following circumstances.

- 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, the metal foil in thermal insulation, and thermal glazing with metalised 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. Maintain a distance of **at least 2 m** from these devices:
 - 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 wireless 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.

Flat (unfavourable) angle of penetration

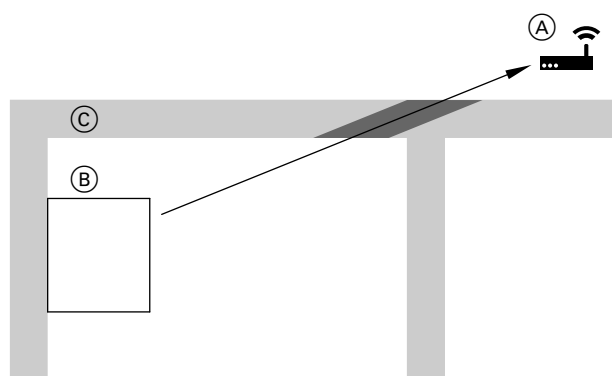


Fig. 19

- Ⓐ WiFi router
- Ⓑ Heat generator
- Ⓒ Wall

Ideal angle of penetration

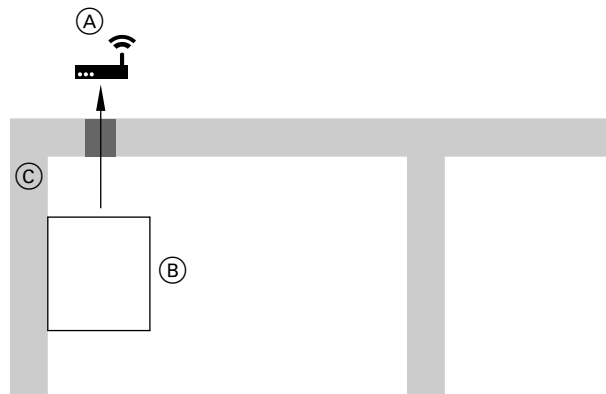


Fig. 20

- Ⓐ WiFi router
- Ⓑ Heat generator
- Ⓒ Wall

Closing the wiring chamber

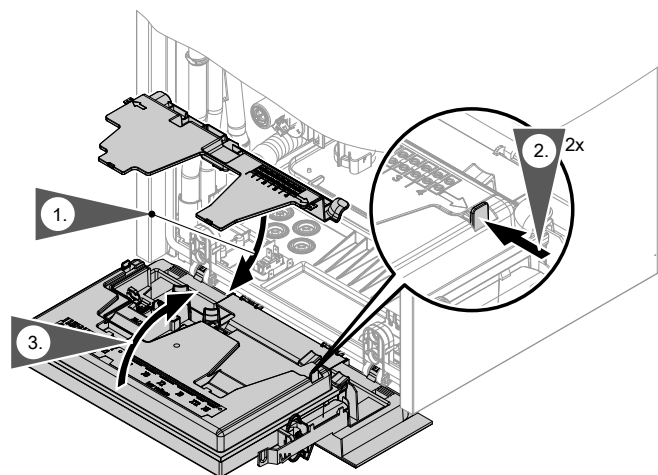


Fig. 21

Fitting the front panel

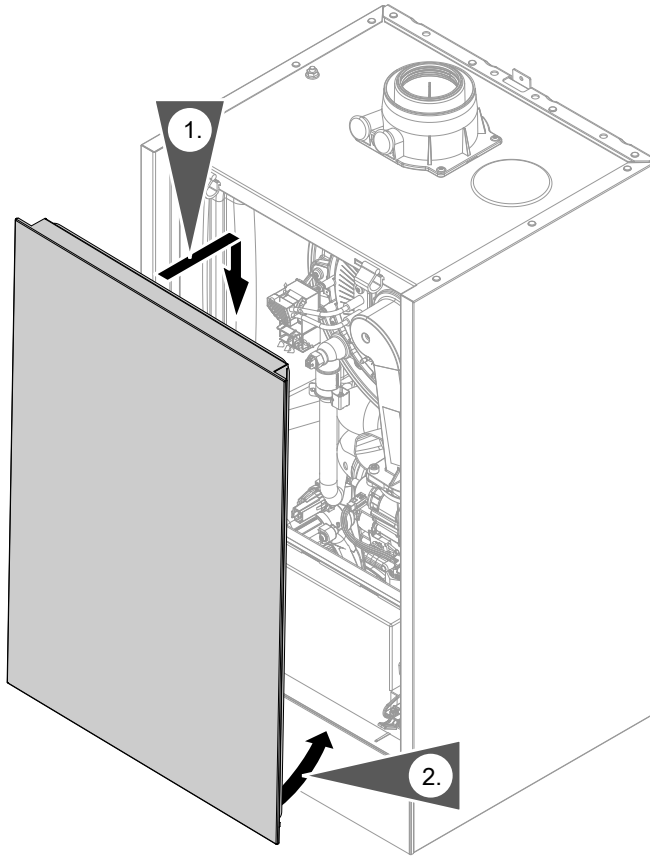


Fig. 22



Steps - commissioning, inspection and maintenance

	Commissioning steps	Inspection steps	Maintenance steps		Page
•				1. Commissioning the system.....	33
•	•			2. Filling the heating system.....	37
•	•	•		3. Checking all connections on the heating water and DHW sides for leaks.....	39
•				4. Venting the heating system.....	39
•				5. Checking the gas type.....	40
•	•	•		6. Removing the front panel.....	41
•	•	•		7. Checking the static pressure and supply pressure.....	42
•				8. Function sequence and possible faults.....	42
•				9. Setting the maximum heating output.....	43
•				10. Adjusting the pump rate of the integral circulation pump.....	43
•				11. Activating screed drying.....	45
•				12. Leak test on balanced flue system (annular gap check).....	45
•				13. Burner adjustment when connecting multiple flues to a shared flue system.....	45
		•		14. Removing the burner.....	46
		•	•	15. Checking the burner gasket and burner gauze assembly.....	47
		•	•	16. Checking and adjusting the ignition and ionisation electrodes.....	48
		•	•	17. Checking the back draught safety devices.....	48
		•	•	18. Cleaning the heating surfaces.....	49
		•	•	19. Checking the condensate drain and cleaning the trap.....	49
		•	•	20. Installing the burner.....	51
		•	•	21. Checking the neutralising system (if installed)	
		•	•	22. Checking the flow limiter (only for gas condensing combi boilers).....	52
•	•	•		23. Checking the expansion vessel and system pressure.....	52
•	•	•		24. Checking the safety valve function	
•	•	•		25. Checking the electrical connections for firm seating.....	53
•	•	•		26. Checking all gas equipment for leaks at operating pressure.....	53
•	•	•		27. Fitting the front panel.....	53
•		•		28. Checking the combustion quality.....	54
•	•	•		29. Checking the flue system for unrestricted flow and leaks	
•				30. Matching the control unit to the heating system.....	55
•				31. Adjusting the heating curves.....	55
•				32. Instructing the system user.....	55



Commissioning the system

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

Commissioning via commissioning assistant

1. Open the gas shut-off valve.
2. If the appliance has not been switched on yet:
 1. Turn ON the ON/OFF switch.
 2. **AP** and appear on the display.
 3. Press menu button for 4 s to start the commissioning assistant.

If the appliance has already been switched on, call up the commissioning assistant as follows:

 1. and **OK** simultaneously for approx. 4 s.
 2. Use / to select "**b.5**" and confirm with "**OK**".

Note
*AP and appear on the display. Confirm with **OK** to start the connection with the software tool: See chapter "Commissioning via software tool".*

- 3. for 4 s to start the commissioning assistant.

3. For further steps, see the following overview of the commissioning assistant sequence.

Commissioning via software tool

Note

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



1. Open the gas shut-off valve.
2. **AP** and appear on the display.
Press **OK** and enter the password for the heat generator to carry out commissioning with the software tool.
3. Select **ON** and confirm with **OK**.
4. Follow the instructions in the software tool.





Commissioning assistant sequence	Explanations and references
Commissioning	
"C.1" Filling program	ON = on OFF = off Note <i>It is possible to interrupt or end the process while a rotating rectangle alternating with the current system pressure is displayed; to do so, press  for 3 s.</i>
"C.2" Venting program	ON = on OFF = off Note <i>It is possible to interrupt or end the process while a rotating rectangle alternating with the current system pressure is displayed; to do so, press  for 3 s.</i>
"C.3" ^{*1} Gas type	2 - Natural gas 3 - Liquid gas LPG and ULPG
"C.5" ^{*1} Flue system	1 - Open flue 60 mm, rigid 2 - Room sealed 60/100 mm, rigid 3 - Open flue 80 mm, rigid 4 - Room sealed 80/125 mm, rigid 5 - Flexible 60 mm (room sealed or open flue) max. 10 m 6 - Flexible 80 mm (room sealed or open flue) max. 20 m
"C.6" ^{*1} Flue length	Given in full metres (round up if required) Note <i>An additional length of 1 m must be factored in for every flue bend.</i>
"C.7" Operating mode	1 - Constant operation with time program 4 - Weather-compensated 13 - Constant operation with optional room thermostat 14 - OpenTherm 15 - Individual room control 16 - Individual room control with modulation Note <i>Operating modes 15 and 16 can only be set via the software tool. Low power radio cannot be switched off when operating mode 15 or 16 is selected!</i>

^{*1} This setting is not required for appliances with multiple connection "M".

The gas type is preset to natural gas; the flue system and flue pipe length are automatically set correctly via the integral mass flow correction.



Commissioning the system (cont.)

Commissioning assistant sequence	Explanations and references
"C.8" System scheme (depending on appliance type, not all schemes possible)	1 - 1 direct heating circuit without low loss header 2 - 1 direct heating circuit with low loss header 3 - 1 direct heating circuit without low loss header with DHW cylinder 4 - 1 direct heating circuit with low loss header and DHW cylinder upstream of low loss header 5 - 1 direct heating circuit + 1 heating circuit with mixer and low loss header + DHW cylinder 6 - 1 direct heating circuit with low loss header + DHW cylinder upstream of low loss header + solar DHW cylinder 7 - 1 direct heating circuit + 1 heating circuit with mixer and low loss header + DHW cylinder upstream of low loss header + solar DHW cylinder 8 - 1 direct heating circuit + 1 heating circuit with mixer and low loss header 9 - 1 heating circuit with mixer and low loss header + DHW cylinder upstream of low loss header 10 - 1 direct heating circuit without low loss header + DHW cylinder + solar DHW cylinder Note <i>System schemes 11 - 18 and the DHW circulation pump can be set via the software tool.</i> 11 - 1 heating circuit with mixer without low loss header 12 - 1 heating circuit with mixer with low loss header 13 - 1 heating circuit with mixer without low loss header + DHW cylinder 14 - 1 direct heating circuit + 1 heating circuit with mixer without low loss header + DHW cylinder 15 - 1 heating circuit with mixer with low loss header + DHW cylinder + solar DHW cylinder 16 - 1 heating circuit with mixer without low loss header + DHW cylinder + solar DHW cylinder 17 - 1 direct heating circuit + 1 heating circuit with mixer without low loss header + DHW cylinder + solar DHW cylinder 18 - 1 direct heating circuit + 1 heating circuit with mixer without low loss header Note <i>If a DHW circulation pump has been configured via the software tool, it is shown with a "C" after the system scheme number.</i>
"C.9" External heating circuit hook-up	Note <i>Only valid for weather-compensated operation.</i> 0 - No external heating circuit hook-up 1 - External heating circuit hook-up HC1 2 - External heating circuit hook-up HC2 3 - External heating circuit hook-up HC1 and HC2 (EM-EA1 extension (DIO) required)



Commissioning assistant sequence	Explanations and references
"C.10" EM-EA1 (DIO) function Note <i>If "C.9" is set to 3, no settings are required at "C.10".</i>	0 - No function 4 - External set flow temperature 0-10 V 5 - External default output 8 - 230 V fault message input and fault message output (without system blocking) 10 - External extractor (e.g. cooker hood) 11 - Operating mode changeover 14 - Fault message input 24 V and system blocking (e.g. condensate lift pump) 17 - 230 V fault message input and system blocking 18 - External demand (digital) 19 - External blocking
"C.11" Date (day, month, year)	
"C.12" Time (hours, minutes)	
"C.13" Autom. summer/winter-time changeover	ON = on OFF = off
"C.14" Plug 96 function	0 - No function 2 - External demand DHW circulation pump 4 - External demand 5 - External blocking If only one HC was configured with external hook-up, the plug 96 setting is automatically applied for this. No selection or other function is then possible.
"C.15" Remote control	Off - Not installed ON - Vitotrol 200-E with subscriber number 1 installed (all installed heating circuits can be controlled via the Vitotrol 200-E)
	When the last setting (C.15) has been made, the display shows "End" . Confirm with "OK" . When commissioning starts, the flue gas temperature sensor test begins and "Fst" is shown on the display.
Maintenance	
Interval in burner hours run until next maintenance	Can be adjusted via software tool (notification also via software tool)
Interval until next maintenance	Can be adjusted via software tool (notification also via software tool)
The system carries out a restart.	

Automatic flue gas temperature sensor check

The display shows: **"Err"**

If the flue gas temperature sensor is not positioned correctly, fault message 416 appears.

For further details regarding the flue gas temperature sensor test, see "Repairs".

If fault message 416 appears, reposition the flue gas temperature sensor in the flue gas connection. Check for leaks on the flue gas side.

Note

The burner remains locked out until the test has been passed.

When the fault has been remedied, turn the ON/OFF switch off and back on again.



Commissioning the system (cont.)

Switching WiFi ON/OFF

The appliance is equipped with an integrated WiFi communication module (2.4 GHz) with extended type plate.

This WiFi communication module supports commissioning, maintenance and servicing with the "ViGuide"/"ViGuide app" as well as operation via the "ViCare app".

Three labels with the access details required for establishing the connection are attached at the factory to the front of the programming unit. The access code is marked with a "WiFi symbol".

Remove these 3 labels. Apply the labels in the following positions:

- For commissioning, affix a label to the place marked on the type plate.
- For later use, apply a label here:



Fig. 23

- Affix label in the field provided for the purpose in the operating instructions.

Switch on the WiFi connection. Establish a connection to the router:

- Information on WiFi: See chapter "WiFi operational reliability and system requirements".

-  **Establishing an internet connection**
Operating instructions

Note

If "E10" is displayed, the connection to the home network could not be established. Check the router and the network password.

If "E12" is displayed, the connection to the server could not be established. Re-establish the connection at a later time.

Note

*If the communication module is to be switched on or off, press  and **OK** simultaneously for 4 s.*



Filling the heating system

Fill water

According to EN 1717 with DIN 1988-100, 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.



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 in excess of the following values must be softened, e.g. with a small softening system for heating water.

**Total permissible hardness of the fill and top-up water**

Total heating output	Specific system volume		
	≤ 20 l/kW	> 20 l/kW to ≤ 40 l/kW	> 40 l/kW
≤ 50 kW Lowest specific water capacity of heat generator ≥ 0.3 l/kW	None	≤ 3.0 mol/m ³ (16.8 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)
≤ 50 kW Lowest specific water capacity of heat generator < 0.3 l/kW	≤ 3.0 mol/m ³ (16.8 °dH)	≤ 1.5 mol/m ³ (8.4 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)
> 50 to ≤ 200 kW	≤ 2.0 mol/m ³ (11.2 °dH)	≤ 1.0 mol/m ³ (5.6 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)
> 200 to ≤ 600 kW	≤ 1.5 mol/m ³ (8.4 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)
> 600 kW	≤ 0.05 mol/m ³ (0.3 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)	≤ 0.05 mol/m ³ (0.3 °dH)

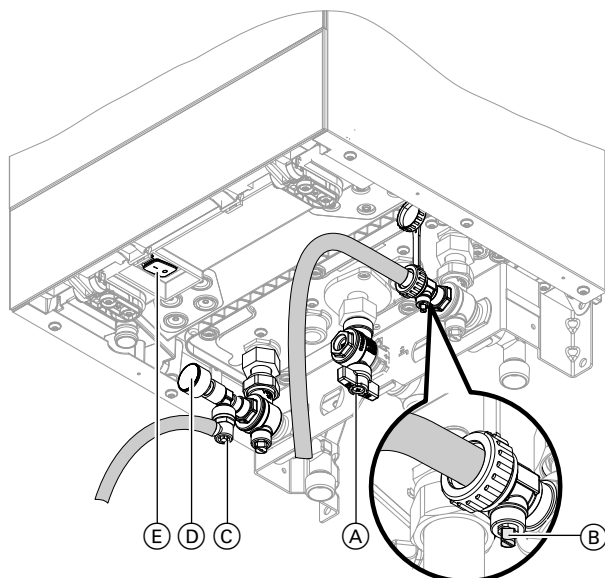


Fig. 24

Ⓔ 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.
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.

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.



Filling the heating system (cont.)

Activating the filling function

If the filling function is to be activated after commissioning.

Tap the following buttons:

1. and **OK** simultaneously for approx. 4 s, then release.
2. Use to select "**b.5**" for the commissioning assistant.
3. **OK**
4. The display shows "**AP**".
Press for 4 s.
5. Use to select "**C.1**" for the filling function.
6. **OK**
7. to select "**ON**" for filling.
8. **OK**
The filling function is activated. The display shows a rotating rectangle.
The filling function ends automatically after 20 min or press for 4 s.



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.



Venting the heating system

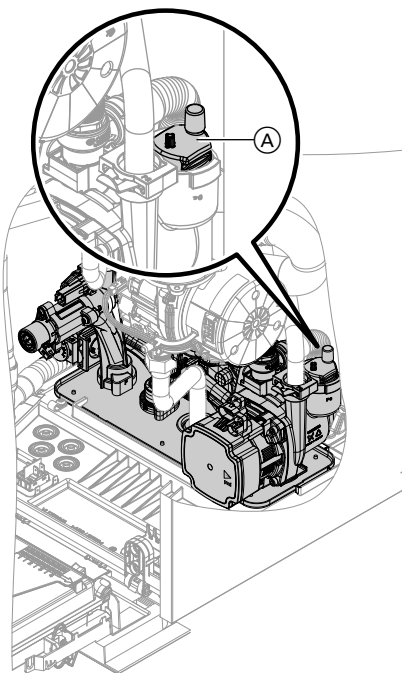


Fig. 25



Venting the heating system (cont.)

1. Check whether the air vent screw in quick-action air vent valve (A) 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

If the venting function is to be activated after commissioning.

Tap the following buttons:

1. and **OK** simultaneously for approx. 4 s, then release.
2. Use to select "**b.5**" for the commissioning assistant.
3. **OK**
4. The display shows "**AP**".
Press for 4 s.

5. Use to select "**C.2**" for venting.

6. **OK**

7. to select "**ON**" to switch on venting.

8. **OK**

The venting function is activated. The display shows a rotating rectangle.

The venting function ends automatically after 20 min or press for 4 s.



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.

- Operation with natural gas therefore requires no adjustment 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).

1. Check with your gas supply utility regarding the gas type and Wobbe index.

2. Record the gas type in the report.



Removing the front panel



Danger

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

- **Do not touch** the wiring chambers (control unit and mains connections).
- When working on the appliance, isolate the system from the power supply, e.g. at a separate fuse or a mains isolator. Check the system is no longer live and safeguard against reconnection.
- Prior to working on the appliance, wait at least 4 min until the voltage has completely dropped out.

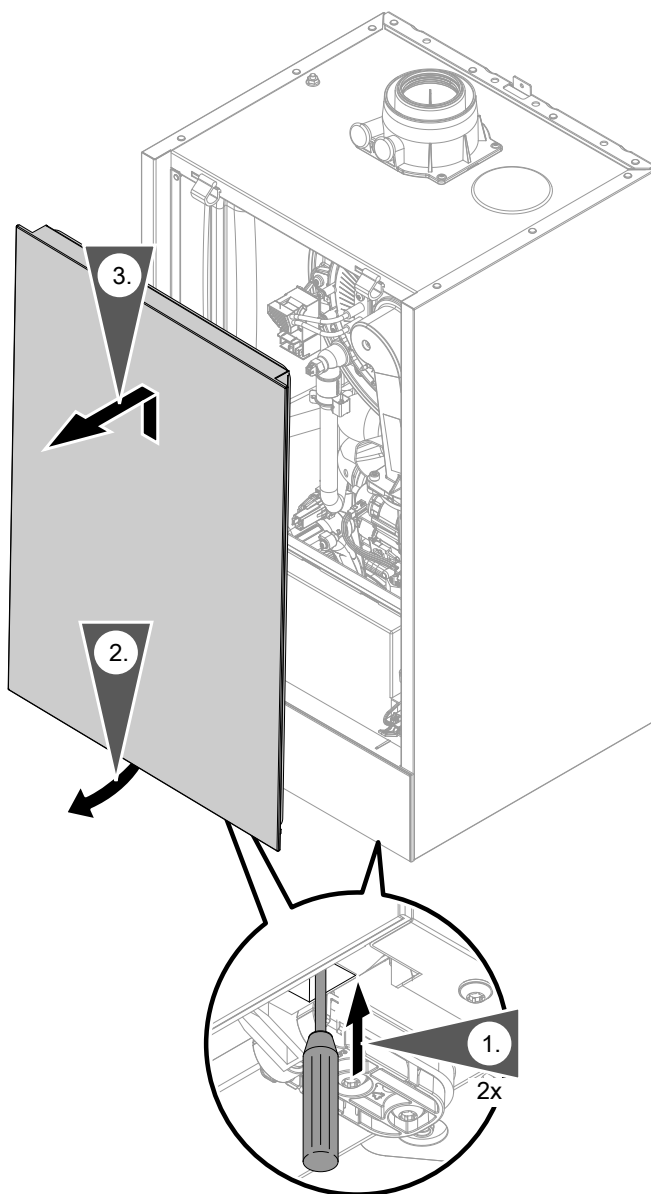


Fig. 26





Checking the static pressure and supply pressure



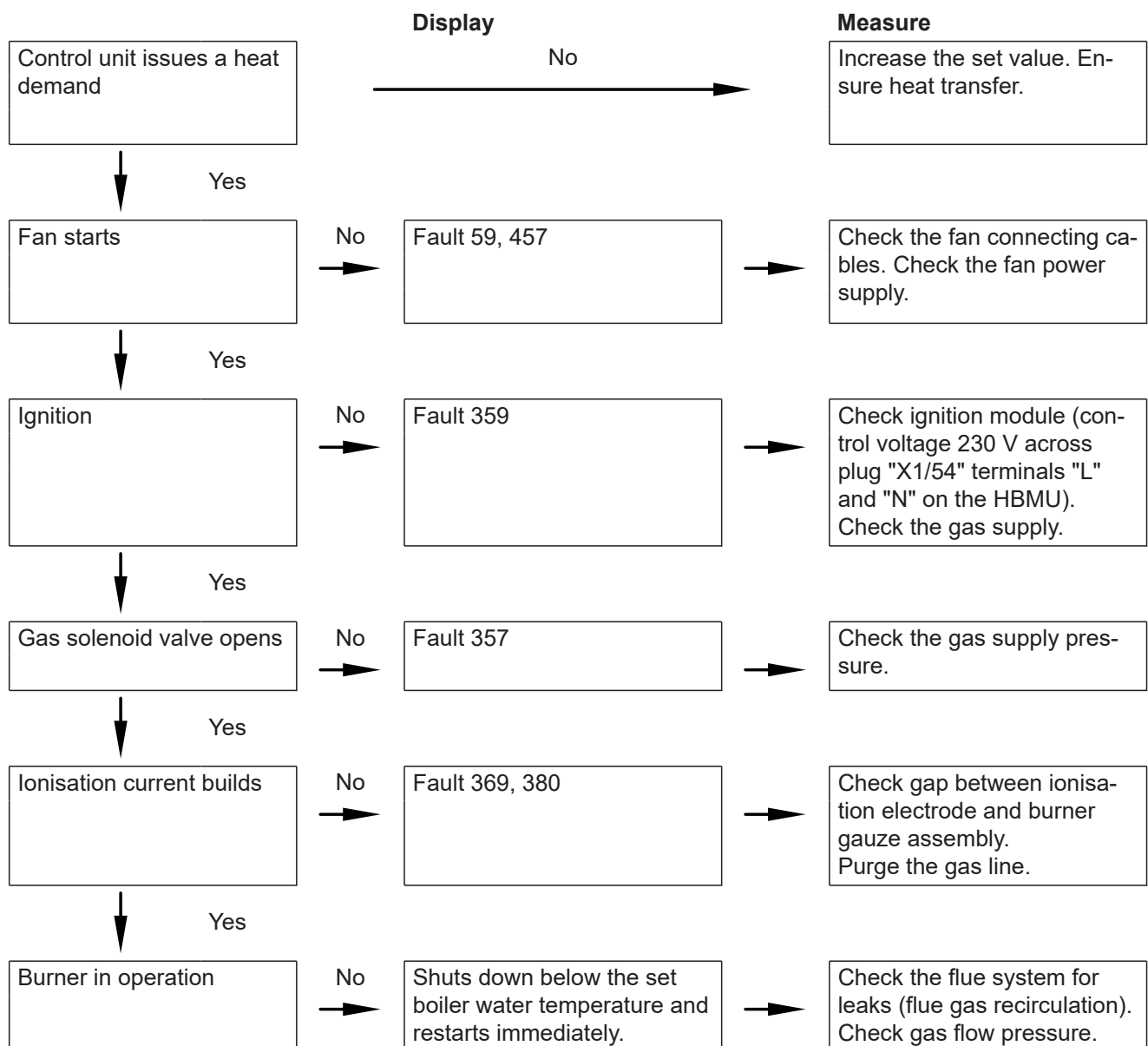
Danger

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.

Supply pressure (flow pressure)	Measures
Natural gas	
< 13 mbar (1.3 kPa)	Do not start the boiler. Notify the gas supply utility.
13 to 25 mbar (1.3 to 2.5 kPa)	Start the boiler.
> 25 mbar (2.5 kPa)	Connect a separate gas pressure governor upstream of the system. Set the pre-charge pressure to 20 mbar (2.0 kPa). Notify the gas supply utility.

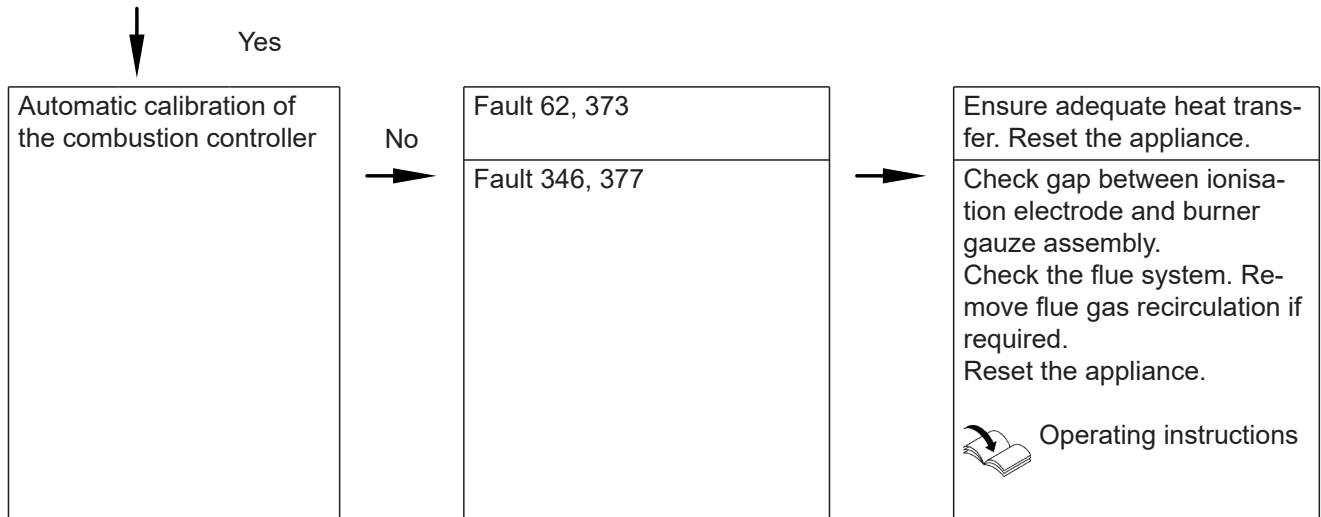


Function sequence and possible faults





Function sequence and possible faults (cont.)



For further details regarding faults, see "Troubleshooting".



Setting the maximum heating output

The maximum output for **heating operation** can be limited. The limit is set via the modulation range.

B1HF-11, B1KF-11

The max. heating output is **not** adjustable.

Tap the following buttons:

1. and **OK** simultaneously for approx. 4 s, then release.
2. Use to select "**b.2**" for system configuration.

3. **OK**

4. Use to select "**7**" for max. heating output.

5. **OK**

6. Use to set the required value in % of rated heating output. Factory setting 100 %.

7. **OK**



Adjusting the pump rate of the 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 max. speed for heating mode can be matched to the existing heating system at the control unit.

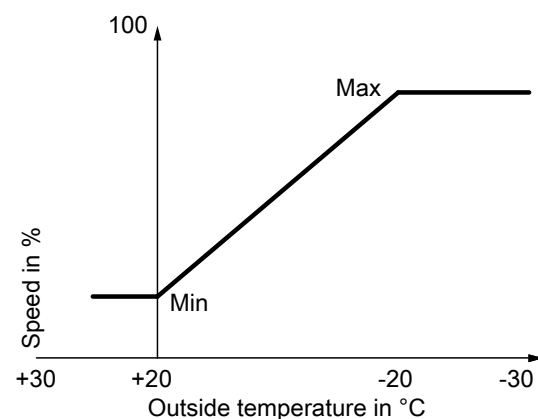


Fig. 27



Setting (%) in system configuration. See page 56.

- The minimum pump rate and the maximum pump rate are factory-set to the following values:

Rated heating output in kW	Factory-set speed set- tings 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
 - Constant operation

Residual heads of integral circulation pump

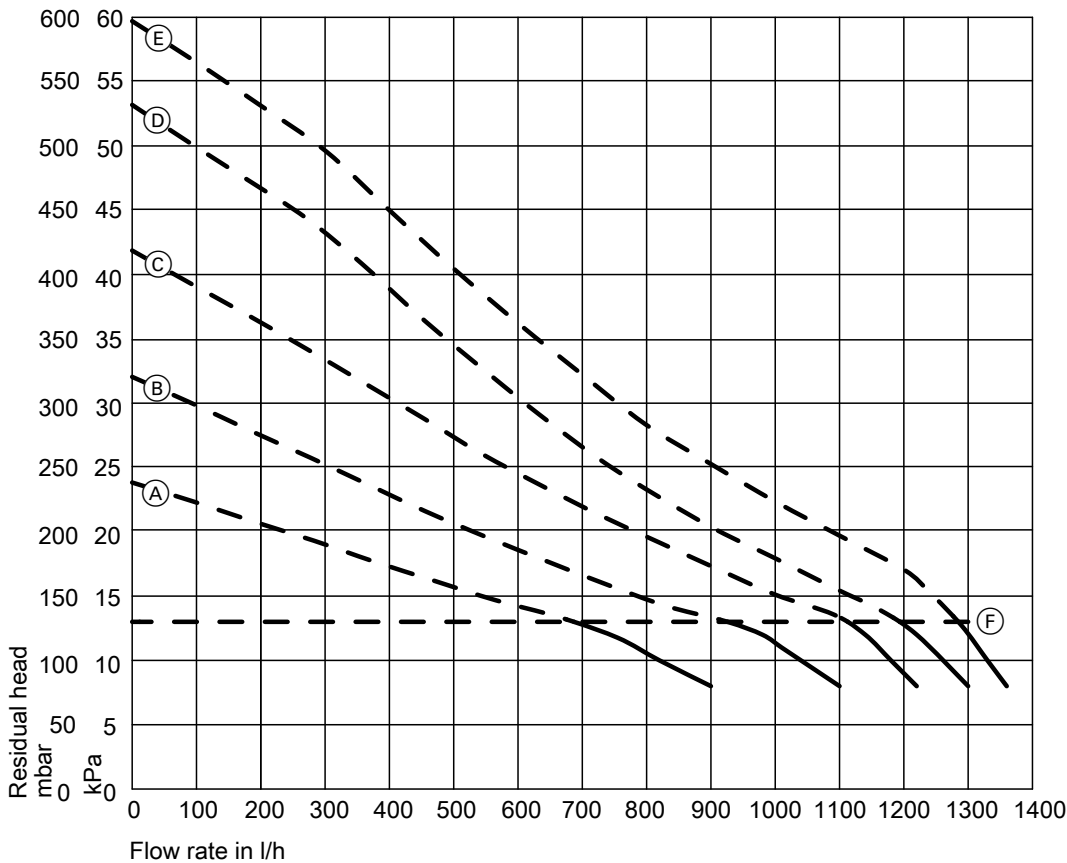


Fig. 28

Ⓕ Upper operational limit

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



Activating screed drying

Screed drying

Six different temperature profiles can be set for screed drying:

Default temperature profiles can be set in **"System configuration"**.

For further details, see "Function description".

Note

Screed drying applies to all connected heating circuits simultaneously. DHW heating is not possible during screed drying.



Leak test on balanced flue system (annular gap check)

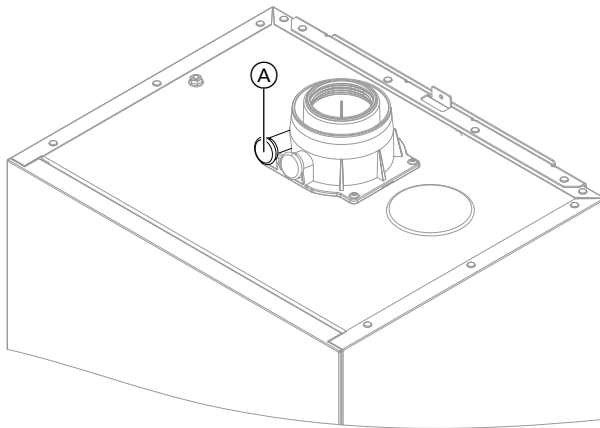


Fig. 29

(A) Combustion air aperture

For balanced flue systems tested together with the heat generator, there is no requirement for a leak test (overpressure test) during commissioning by the flue gas inspector.

In this case, we recommend that a simple leak test is carried out during system commissioning. For this, check the CO₂ or O₂ concentration in the combustion air at the annular gap of the balanced flue pipe. If the CO₂ concentration is less than 0.2% or the O₂ concentration is greater than 20.6%, the flue pipe is deemed to be sufficiently gas-tight.

If actual CO₂ values are greater or O₂ 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 leak test, re-seal the test port with the plug.



Burner adjustment when connecting multiple flues to a shared flue system

Note

Only make this adjustment on appliances suitable for multiple connection.

For suitable Vitodens appliances, see pricelist.

When connecting several Vitodens 100-W to a common flue system:

For multiple connection, use **"C.4"**, **"C.5"** and **"C.6"** in the **commissioning assistant** to match the burner setting to the flue system. See page 33.

System conditions:

- Shared flue in shaft $\varnothing$ 100 mm
- Balanced flue connection pipe from boiler to shaft, $\varnothing$ 80/125 mm
- Minimum shaft cross-section
 - Square: 175 x 175 mm
 - Round: $\varnothing$ 195 mm
- Height between floors min. 2.5 m
- Max. 6 boilers with the same rated heating output connected to the flue system



Removing the burner



Danger

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

- **Do not touch** the wiring chambers (control unit and mains connections).
- When working on the appliance, isolate the system from the power supply, e.g. at a separate fuse or a mains isolator. Check the system is no longer live and safeguard against reconnection.
- Prior to working on the appliance, wait at least 4 min until the voltage has completely dropped out.

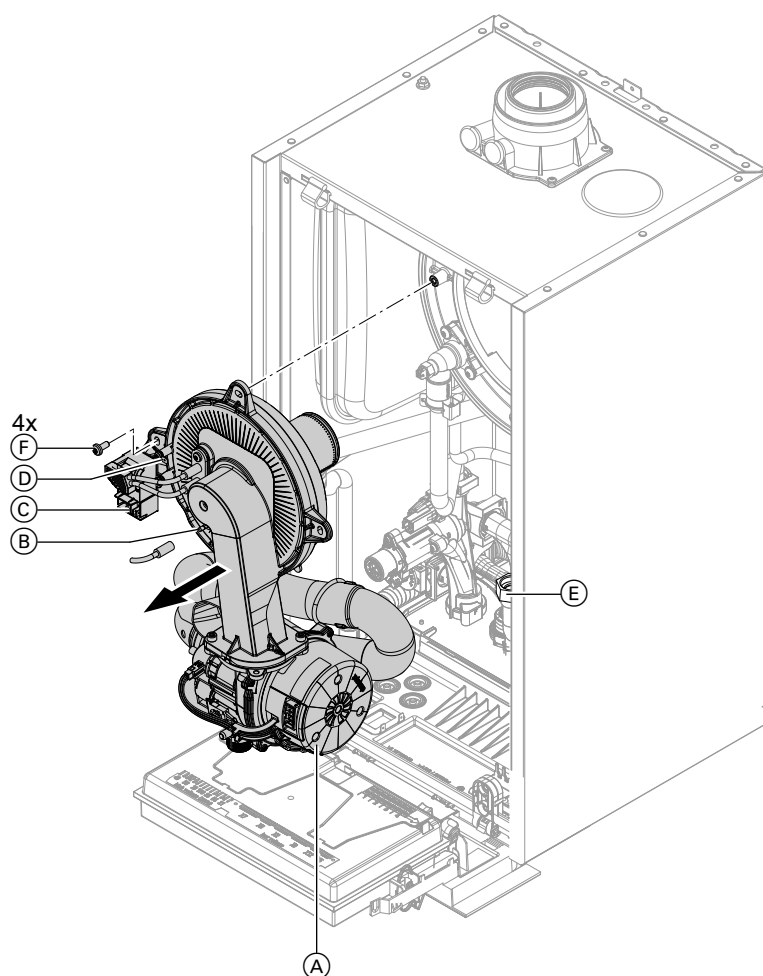


Fig. 30

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 (A) (2 plugs)
 - Ionisation electrode (B)
 - Ignition unit (C)
 - Earth (D)
4. Undo gas supply pipe fitting (E).
5. Undo 4 screws (F) and remove the burner.

Note

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



Checking the burner gasket and burner gauze assembly

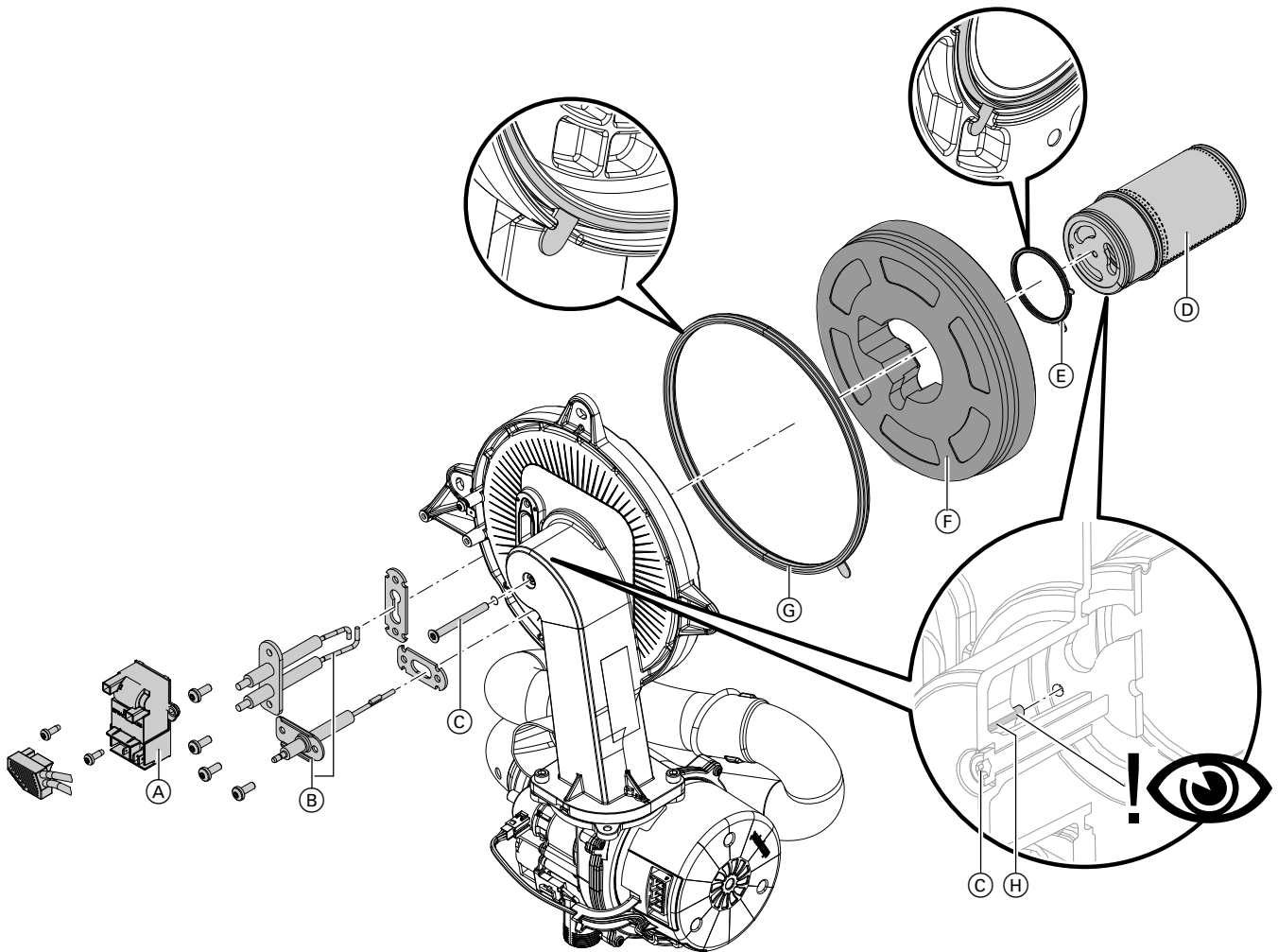


Fig. 31

Check burner gauze assembly (D), electrodes (B), thermal insulation ring (F) and gasket (G) 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 (A).
2. Remove electrodes (B).
3. Undo Torx screw (C). Hold onto burner gauze assembly (D) when undoing the screw.
4. Remove burner gauze assembly (D) with gasket (E) and thermal insulation ring (F). Check components for damage.
5. Install new burner gasket (G). Observe correct installation position. Align the tab as per the diagram.

6. Insert thermal insulation ring (F) and burner gauze assembly (D) with gasket (E). Observe correct installation position. Align the tab as per the diagram.
7. Align the hole in burner gauze assembly (D) with burner door pin (H).



Please note

Incorrect positioning of the burner gauze assembly on the burner door will cause damage to the burner door. Guide the burner door pin into the hole in the burner gauze assembly.

Secure burner gauze assembly (D) and gasket (E) with Torx screw (C).
Torque: 3.0 Nm.

8. Check thermal insulation ring (F) for firm seating.
9. Fit electrodes (B). Check clearances, see following chapter.
Torque: 4.5 Nm.



Checking and adjusting the ignition and ionisation electrodes

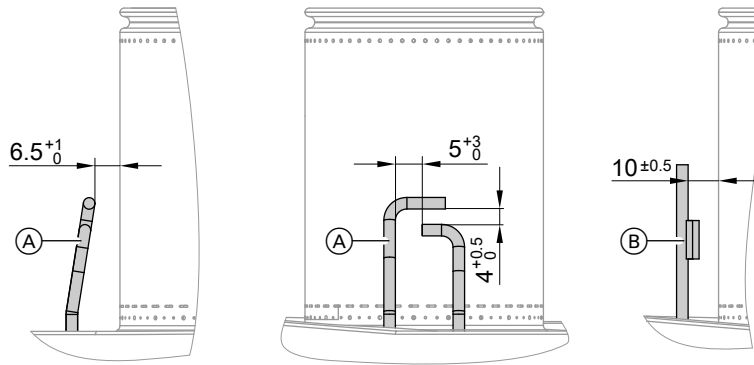


Fig. 32

- (A) Ignition electrodes
- (B) 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 not as specified or the electrodes are damaged, replace the electrodes and gaskets and adjust them as required.
Tighten the electrode fixing screws to a torque of 4.5 Nm.



Checking the back draught safety devices

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

Back draught safety device in the mixing shaft of the burner

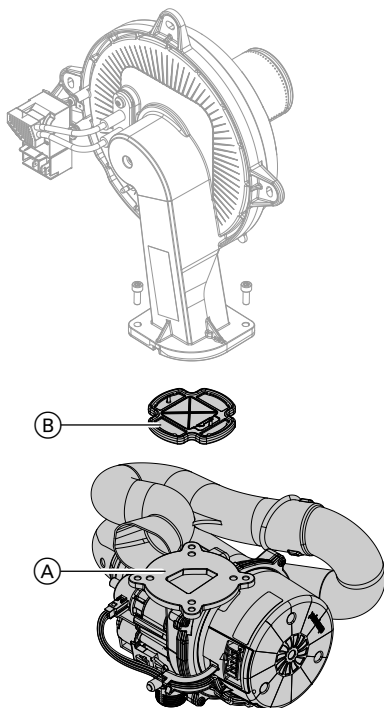


Fig. 33

1. Undo 2 screws and remove fan (A).

2. Remove back draught safety device (B).
3. Check the damper and gasket for dirt and damage. Replace if required.
4. Refit back draught safety device (B).

Note

Observe correct installation position.

5. Refit fan (A) and secure with 2 screws.
Torque: 4.0 Nm

Back draught safety device in the flue gas connection

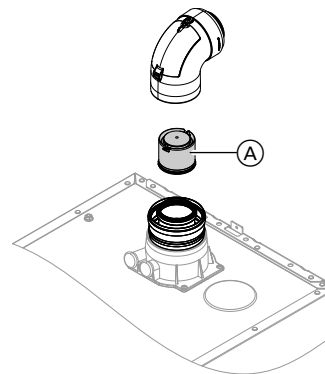


Fig. 34



Checking the back draught safety devices (cont.)

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 (A) 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 surfaces of the heat exchanger that come into contact with hot gas can result in corrosion damage. Brushing can cause deposits to become lodged in the gaps between the coils. **Do not use brushes to clean the heating surfaces.**



Please note

Prevent damage due to cleaning water. Cover electronic components with suitable watertight material.

1. Use a vacuum cleaner to remove combustion residues from heating surface (A) of the heat exchanger.
2. Flush heating surface (A) 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 required.

Note

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

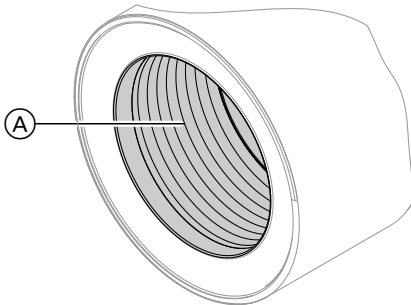


Fig. 35



Checking the condensate drain and cleaning the trap



Please note

Prevent damage due to condensate. Cover electronic components with suitable watertight material.

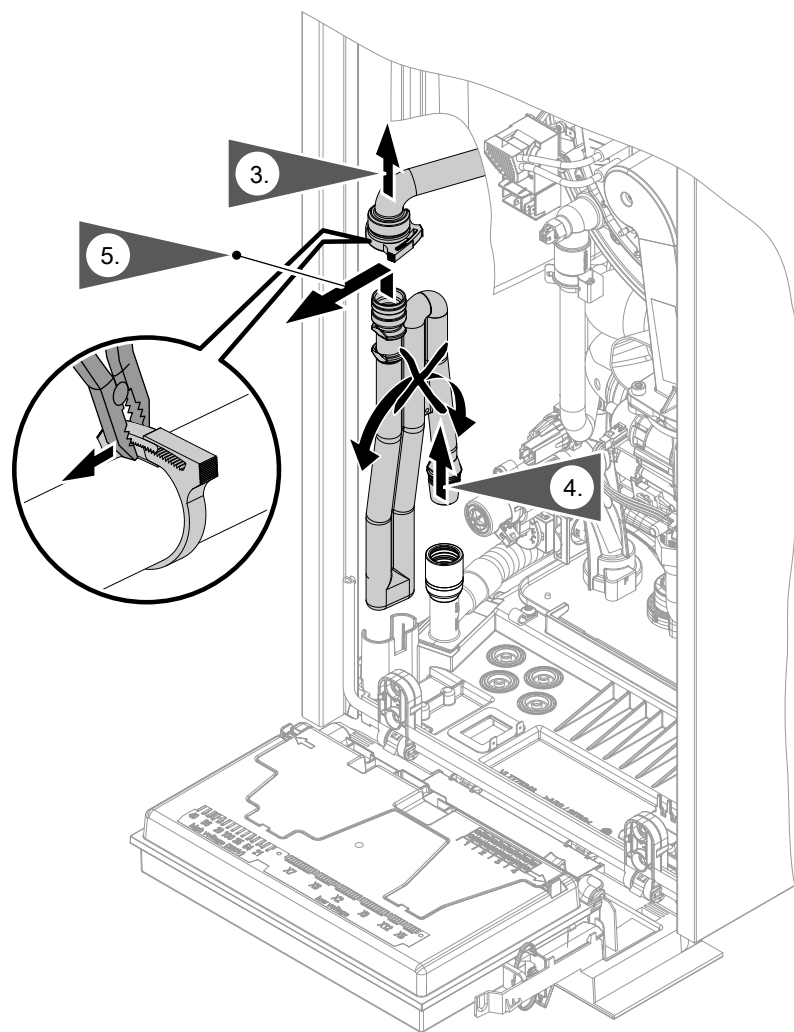


Fig. 36

1. Pivot the HBMU heat management unit forwards.
2. Cover electronic components with suitable water-tight material.
3. Undo the hose clip. 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.

8. Reconnect the supply hose and secure in place with the hose clip.

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.

Multi boiler system:

Clean the trap in the flue gas collector as well.



Installing the burner

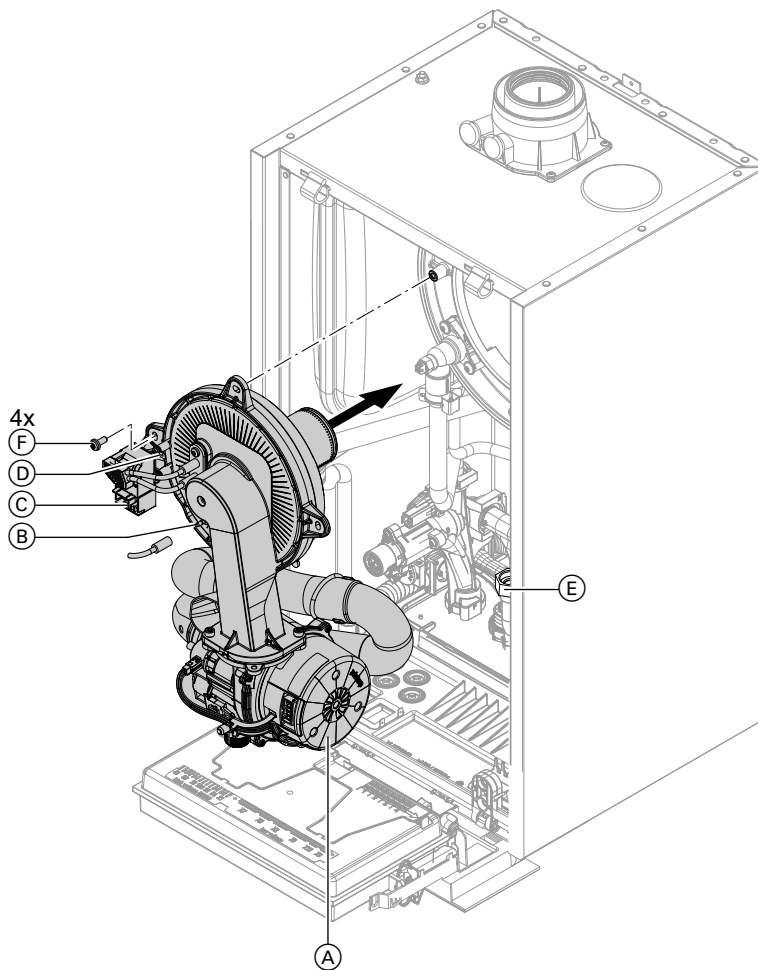


Fig. 37

1. Insert the burner. Tighten screws (F) diagonally.
Torque: 6.5 Nm
2. Fit gas connection pipe (E) with a new gasket.
Torque: 30 Nm
3. Check the gas connections for leaks.
4. Connect the cables/leads:
 - Fan motor (A) (2 plugs)
 - Ionisation electrode (B)
 - Ignition unit (C)
 - Earth (D)



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 under-side.



Checking the neutralising system (if installed)



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

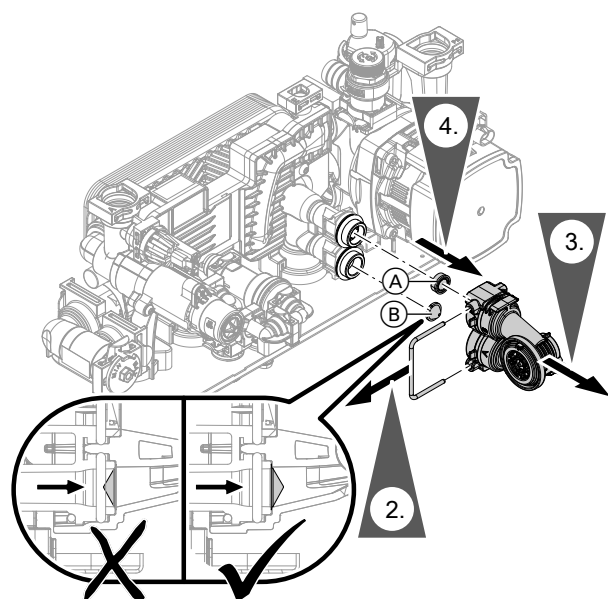


Fig. 38

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

Note

The taper of filter strainer (B) must be installed in the direction of flow.

Note

Filter strainer (B) is only installed in appliances as shown in the diagram on the right:

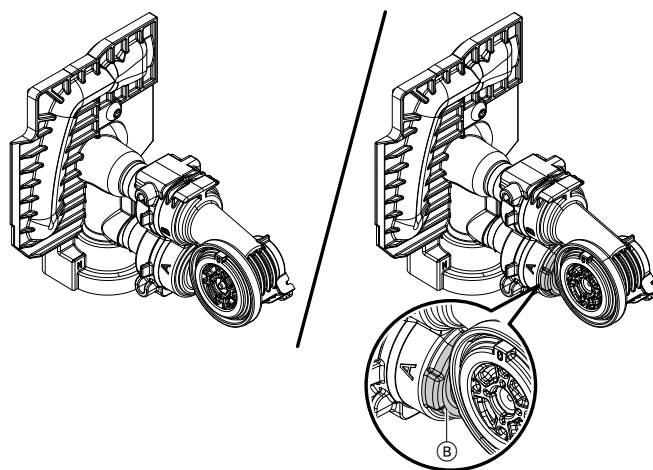


Fig. 39

5. Mount DHW flow sensor with new gaskets.



Danger

Risk of electric shock from escaping heating water or DHW

Check all water side connections for leaks.

Flow limiter

Appliance type	Flow rate l/min	Colour
B1KF-19	12	Red
B1KF-25	14	Pink
B1KF-32	16	Blue



Checking the expansion vessel and system pressure

Carry out this test on a cold system.



Checking the expansion vessel and system... (cont.)

1. Drain the system until "0" is shown on the display.

Note

For pressure indicator on home screen, press repeatedly until the pressure gauge symbol appears.

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.

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 above the pre-charge pressure.



Checking the safety valve function



Checking the electrical connections for firm seating



Danger

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

- **Do not touch** the wiring chambers (control unit and mains connections).
- When working on the appliance, isolate the system from the power supply, e.g. at a separate fuse or a mains isolator. Check the system is no longer live and safeguard against reconnection.
- Prior to working on the appliance, wait at least 4 min until the voltage has completely dropped out.



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 gas leaks.

Note

Only use suitable and approved leak detection agents (EN 14291) and devices for the leak 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 31.



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, measure the CO content and CO₂ or O₂ content, and record these in the report on page 108.

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 CO₂ or O₂ 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	7.3 to 10.5	2.1 to 7.9	2.1 to 7.9
19	7.5 to 10.5	7.5 to 10.5	2.1 to 7.6	2.1 to 7.6
25	7.5 to 10.5	7.5 to 10.5	2.1 to 7.6	2.1 to 7.6
32	7.3 to 10.0	7.3 to 10.5	3.1 to 7.9	2.1 to 7.9

If the actual CO, CO₂ or O₂ values lie outside their respective ranges, proceed as follows:

- Carry out a leak test on the balanced flue system; see page 45.
- Check the ionisation electrode and connecting cable; see page 48.

Note

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

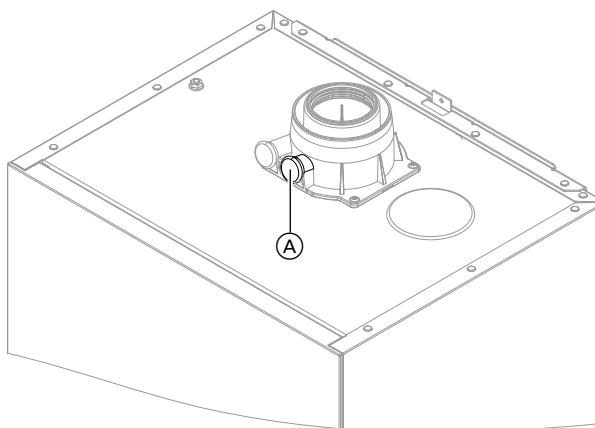


Fig. 40

1. Connect a flue gas analyser at flue gas port (A) 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 CO₂ content. If the actual value deviates from the permissible ranges, implement steps listed above.
5. Enter the value into the report.
6. Adjust the upper heating output. See the following chapter.
7. Check the CO₂ content. If the actual value deviates from the permissible ranges by more than 1%, implement steps listed above.
8. Enter the value into the report.
9. Re-seal test port (A).



Danger

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



Checking the combustion quality (cont.)

Regulating to the upper/lower heating output

Note

Ensure adequate heat transfer.

Tap the following buttons:

1. and **OK** simultaneously for approx. 4 s, then release.
2. Use to select **"b.6"** for the upper/lower heating output.

3. **OK**

4. Use to set the value.
"OF" - off
"1" - Min. heating output
"2" - Max. heating output

5. **OK**

Burner is operating with correspondingly adjusted heating output.



Checking the flue system for unrestricted flow and leaks



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. Use to select **"P.3"** for heating curve.
3. **OK**
4. Use to select **"HC1"** for "heating circuit 1" or **"HC2"** for "heating circuit 2".

5. **OK**

6. Use to adjust the slope.

7. **OK**

8. Use to adjust the level.

9. **OK** to confirm



Instructing the system user

The system installer should hand the operating instructions to the system user and explain to the user how to operate the system.

This also includes all components added as accessories, such as remote controls. The system installer should also provide information on the required maintenance.

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.

Inform the system user what DHW temperatures should be set and the risks associated with having a higher outlet temperature at the draw-off points.

Calling up parameters

Note
The display and setting of some parameters is dependent on:

- Heat generator
- Connected accessories and the functions associated with them

Tap the following buttons:

1. and **OK** simultaneously for approx. 4 s, then release.
2. Use to select "**b.2**" for system configuration.

3. **OK**
4. Use to select the parameter for adjustment. See tables below.
5. **OK**
6. for the required value.

7. **OK**

Note
Further parameters can be called up via the software tool.

Parameter

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

1 Set flow temperature for external demand

Setting		Explanations
	70 20 to 82	Set flow temperature for external demand Set flow temperature in the delivered condition 70°C Set flow temperature adjustable from 20 to 82 °C in 1 °C increments

2 Primary pump operating mode

Setting		Explanations
	1 7	"Automatic" Switched on regardless of current temperature level Switched off in reduced mode (in conjunction with constant operation with time program) or if there is no demand via the room thermostat.

Parameter

Parameter (cont.)**3 Scald protection**

Setting		Explanations
OFF	0	The adjustable DHW temperature is limited to a maximum value. Scald protection OFF  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.
ON	1	Scald protection on (max. DHW temperature 60 °C) Note <i>Even with the scald protection switched on, higher outlet temperatures may occur at the draw-off points in the following cases:</i> ▪ While the appliance is being calibrated

4 Max. speed of speed-controlled primary/heating circuit pump in standard mode, heating circuit 1

Setting		Explanations
	...	Maximum speed of the internal circulation pump in heating mode with standard room temperature Delivered condition specified by settings specific to the heat generator
	0 to 100	Maximum speed adjustable from 0 to 100%

5 Screed drying

Setting		Explanations
Not active	0	Screed drying can be set in accordance with selectable temperature/time profiles. For individual profile curves, see chapter "Function description".
Temperature profile A	2	
Temperature profile B	3	
Temperature profile C	4	
Temperature profile D	5	
Temperature profile E	6	
Temperature profile F	7	

6 Minimum heating output

Setting		Explanations
	...	A limit can be set on the minimum heating output for heating mode. Delivered condition specified by settings specific to the appliance
	0 to 100	Adjustable from 0 to 100 %

System configuration (parameters)

Parameter (cont.)

7 Maximum heating output

Setting		Explanations
	100 0 to 100	A limit can be set on the maximum heating output for heating mode. Heating output in the delivered condition 100% Adjustable from 0 to 100 %

8 Maximum flow temperature limit, heating circuit 1

Setting		Explanations
74°C	74 10 to 100	Maximum flow temperature limit for the heating circuit Maximum limit in the delivered condition 74°C Setting range limited by heat generator-specific parameters

9 Operating mode, heating circuit 1

Setting		Explanations
	4 7	Only adjust on one heating circuit in the system. Weather-compensated without room temperature influence Weather-compensated with room temperature influence: See also parameter 10.

10 "Room influence factor, heating circuit 1"

Setting		Explanations
8	8 0 to 64	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. Only change the value for systems with one heating circuit. For a sample calculation, see chapter "Heating curve" under "Function description" Maximum limit in the delivered condition Setting range

11 Maximum flow temperature limit, heating circuit 2

Setting		Explanations
74°C	74 10 to 100	Maximum flow temperature limit for the heating circuit Maximum limit in the delivered condition 74°C Setting range limited by heat generator-specific parameters

12 Operating mode, heating circuit 2

Setting		Explanations
Weather-compensated without room temperature hook-up	4	Heating mode: Weather-compensated without room temperature influence
Weather-compensated with room temperature hook-up	7	Weather-compensated with room temperature influence See parameter 13.

Parameter (cont.)**13 Room influence factor, heating circuit 2**

Setting		Explanations
		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. Only change the value for the heating circuit with mixer. For a sample calculation, see chapter "Heating curve" under "Function description"
	8	Note <i>With the combi boiler (B1KF), DHW heating is not possible during screed drying. With the system boiler (B1HF with diverter valve) or storage combi boiler (B1LF, B1TF, B1SF and B1UF), DHW heating is suspended after 30 minutes for an hour (parameter 1087.1) in order to run the screed drying program.</i>
	0 to 64	Maximum limit in the delivered condition Setting range

Further settings

Only possible via ViGuide.

1667.0 Pump activation, heating circuit pump 1 in standby mode

Setting		Explanations
	0	Operating mode, heating circuit pump 1 In "standby mode" = permanently switched off
	1 to 24	In "standby mode" = on 1-24 times a day (in constant mode for 10 minutes each time; in weather-compensated mode for 50 minutes each time)

1668.0 Pump activation, heating circuit pump 2 in standby mode

Setting		Explanations
	0	Operating mode, heating circuit pump 2 In "standby mode" = permanently switched off
	1 to 24	In "standby mode" = on 1-24 times a day (in constant mode for 10 minutes each time; in weather-compensated mode for 50 minutes each time)

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

Setting		Explanations
		If the outside temperature is above the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump is switched off. If the outside temperature is below the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump is switched on.

System configuration (parameters)

Parameter (cont.)

2426.3 Room temperature-dependent heating circuit pump logic for heating circuit 1 (only for weather-compensated control units with room temperature hook-up).

Setting	Explanations
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.	If the actual room temperature is above the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump stops. If the actual room temperature is below the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump is switched on.

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

Setting	Explanations
	If the outside temperature is above the threshold value (the selected set room temperature plus the hysteresis in K), the heating circuit pump is switched off. If the outside temperature is below the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump is switched on.

2427.3 Room temperature-dependent heating circuit pump logic for heating circuit 2 (only for weather-compensated control units with room temperature hook-up).

Setting	Explanations
Only activate this function for the heating circuit with mixer or if there is only one direct heating circuit in the system.	If the actual room temperature is above the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump is switched off. If the actual room temperature is below the threshold value (selected set room temperature plus hysteresis in K), the heating circuit pump is switched on.

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.

Observe maximum number of PlusBus subscribers, see note in chapter "Connection".

Subscriber numbers of connected extensions (cont.)

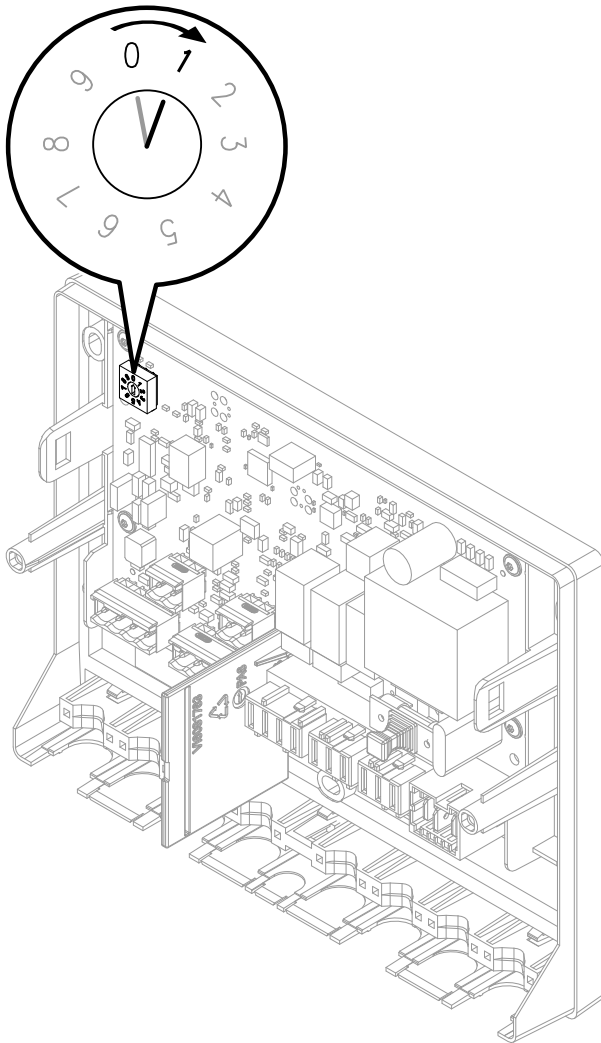


Fig. 41

Rotary switch S1 settings:

- EM-S1 extension (system with solar collectors): **0**
- EM-EA1 extension (max. 1 extensions in one system)

Note

On the EM-EA1 extension, select 1 if the function "external heating circuit hook-up" is being set for more than one heating circuit.

- 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

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 1 without mixer or DHW circulation pump (circulation pump downstream of low loss header)	ADIO	EM-P1	2
Function extensions (e.g.): ■ Fault message input ■ Fault message output ■ Operating mode changeover ■ External heating circuit hook-up (for more than one heating circuit)	DIO	EM-EA1	1

Note

A maximum of one Vitotrol 200-E can be connected
Solar module not compatible with all appliance versions.

Service menu

Calling up the service menu

Tap the following buttons:

1.  and **OK** simultaneously for approx. 4 s, then release.
2. Select the required menu section (e.g. **"b.1"** Connect with software tool).

Note

Tap "" to return to the service menu.

Note

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

Service menu overview

Service	
Er Active messages	
b.1 Connect with software tool	
b.2 System configuration	
b.3 Diagnostics	
	d.1 Outside temperature
	d.2 Heat generator flow temperature
	d.3 Primary circuit pump speed %
	d.4 Flue gas temperature
	d.5 Burner operating hours
	d.6 Burner output
	d.7 3-way valve position
	0 = Heating
	1 = Middle position (if installed)
	2 = DHW
	d.8 Serial number of heat generator
	d.9 Heating circuit 1 flow temperature
	d.10 Heating circuit 2 flow temperature
	d.11 DHW temperature
b.4 Message history	
b.5 Commissioning assistant	
b.6 Start upper/lower heating output for test mode	
b.7 Configure maintenance interval	
b.8 Reset maintenance interval	

Exiting the service menu

Tap the following buttons:

 and **"OK"** simultaneously for 4 s.

Note

The system exits the service menu automatically after 30 min.

Diagnostics

Checking operating data

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

Note

If a sensor that you want to check is faulty, "- - -" appears on the display.

Calling up operating data

Tap the following buttons:

1.  and **OK** simultaneously for approx. 4 s, then release.
2. Use  to select **"b.3"** for diagnostics.
3. **OK**

4. Use  to select the required entry.

Note

Use  to view "d.8" serial number of heat generator in sections.

5. **OK**

b.7: Configure maintenance interval

Tap the following buttons:

1.  and **OK** simultaneously for approx. 4 s, then release.
2. Use  to select **"b.7"** for configuring the maintenance interval.
3. **OK**

4. Use  to set the required value:
 - 0 = maintenance interval off
 - 1 = maintenance interval 3 months
 - 2 = maintenance interval 6 months
 - 3 = maintenance interval 12 months
 - 4 = maintenance interval 18 months
 - 5 = maintenance interval 24 months

5. **OK**

b.8: Reset maintenance interval

Tap the following buttons:

1.  and **OK** simultaneously for approx. 4 s, then release.
2. Use  to select **"b.8"** for resetting the maintenance interval.

3. **OK**

4. Use  to set the required value:
 - NO
 - YES

5. **OK**

Fault display on the programming unit

The display shows "△" in the event of a fault.

Note

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

Calling up fault messages

Tap the following buttons:

1.  and **OK** simultaneously for approx. 4 s, then release.
2.  for "Er" message list
3. **OK**
4.  to select fault entry "E.1, E.2...".
5. **OK**
6. Fault code is displayed.

Acknowledging the fault display

Calling up the fault in the "Er" menu automatically acknowledges the fault display.

Calling up acknowledged fault messages

Tap the following buttons:

1. 
2.  to select "Er".

3. **OK**

4.  to call up fault entry "E.1 to E.5".

5. **OK**

6.  to display the fault code.

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

The 5 most recent faults (including those remedied) are saved and can be called up. Faults are sorted by date.

Tap the following buttons:

1.  and **OK** simultaneously for approx. 4 s, then release.
2.  for "b.4" message history
3. **OK**
4. Use  to select fault entry "E.1, E.2... or E.5".
For messages, see chapter "Further messages".
5. **OK**
6.  for the required message
7. **OK**

Overview of electronics modules

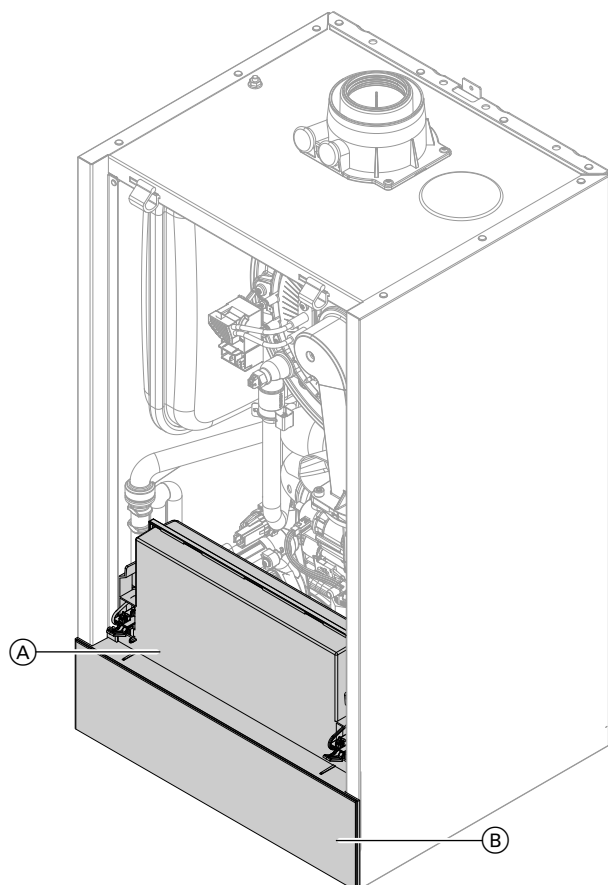


Fig. 42

- (A) HBMU heat management unit
- (B) HMI programming unit with TCU communication module

Resetting the burner 🔒

The display shows  and  flashes.
The burner is locked due to a fault.
Reset the burner:

Note

*The burner fault display can be closed by pressing  for 4 s. The fault can be opened later by tapping   simultaneously.
A reset is only possible after the burner has cooled down.*

Tap the following buttons:

1.  /  to display the fault number.
2.  and  simultaneously for approx. 4 s.
A rotating bar appears on the display. The reset process has started.
If the fault no longer exists, the home screen will appear.

Fault messages

Note

For diagnostics and troubleshooting, see chapter "Repairs".

Fault messages dependent on appliance equipment level

Displayed fault code	System characteristics	Cause	Measures
7	No DHW heating	Lead break, cylinder temperature sensor	- Check DHW setting in the commissioning assistant and correct if required. - Check the cylinder temperature sensor (terminal 2). - Measure voltage at sensor input on HBMU heat management unit. Set value: 3.3 V_{DC} with sensor disconnected. Replace faulty component if necessary.
8	No DHW heating	Short circuit, cylinder temperature sensor	Check the cylinder temperature sensor (terminal 2). Replace faulty component if required.
11	No solar DHW heating or central heating backup	Lead break, collector temperature sensor	- Check collector temperature sensor. - Measure voltage at sensor input on electronics module (ADIO). Set value: 3.3 V_{DC} with sensor disconnected.
12	No solar DHW heating	Short circuit, collector temperature sensor	- Check collector temperature sensor. - Measure voltage at sensor input on electronics module (ADIO). Set value: 3.3 V_{DC} with sensor disconnected.
13	Controls as if the outside temperature were 0 °C	Lead break, outside temperature sensor	- Check operating mode setting in commissioning assistant and remedy if required. - Check outside temperature sensor and connection to sensor (terminal 4). - Measure voltage at sensor input on HBMU heat management unit. Set value: 3.3 V_{DC} with sensor disconnected. Replace faulty component if required.
14	Regulates as if the outside temperature were 0 °C.	Short circuit, outside temperature sensor	Check outside temperature sensor and connection to sensor (terminal 4). Replace faulty components if required.
15	No solar DHW heating	Lead break, solar cylinder temperature sensor (bottom)	Check cylinder temperature sensor. Measure voltage at sensor input on ADIO electronics module. Set value: 3.3 V _{DC} with sensor disconnected.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
16	No solar DHW heating	Short circuit, solar cylinder temperature sensor (bottom)	Check cylinder temperature sensor. Measure voltage at sensor input on ADIO electronics module. Set value: 3.3 V _{DC} with sensor disconnected.
29	Regulates without flow temperature sensor for low loss header.	Lead break, low loss header sensor	- 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_{DC} with sensor disconnected.
30	Regulates without flow temperature sensor for low loss header.	Short circuit, low loss header sensor	Check flow temperature sensor, low loss header. Measure voltage at sensor input on electronics module. Set value: 3.3 V _{DC} with sensor disconnected
49	Burner in a fault state	Lead break, flue gas temperature sensor	Check flue gas temperature sensor. Reset the appliance.
50	Burner in a fault state	Short circuit, flue gas temperature sensor	Check flue gas temperature sensor. Reset the appliance.
57	Normal operation without room influence	Lead break, room temperature sensor	- Check commissioning setting of remote control. - Check plug and cable of external room temperature sensor, heating circuit. - If no external room temperature sensor installed, replace Vitotrol programming unit.
58	Normal operation without room influence	Short circuit, room temperature sensor	Check plug and cable of external room temperature sensor, heating circuit. If no external room temperature sensor installed, replace Vitotrol programming unit.
59	Burner locked out, boiler circuit pump off. No central heating, no DHW heating.	Power supply, undervoltage	Check mains voltage. If voltage is correct and the fault occurs repeatedly, replace the fan unit.
62	Burner in a fault state	High limit safety cut-out has responded.	- Check heating system fill level. - Check pre-charge pressure in diaphragm expansion vessel. Adjust to required system pressure. - Check whether flow rate is sufficient (circulation pump). - Check function of 3-way diverter valve. Vent the system. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
63	Burner in a fault state	Flue gas temperature limiter has responded.	- Check heating system fill level. - Check pre-charge pressure in diaphragm expansion vessel. Adjust to required system pressure. - Check whether flow rate is sufficient (circulation pump). - Check function of 3-way diverter valve. Vent the system. Reset the appliance once the flue system has cooled down.
64	Normal operation; burner re-starts.	Flame loss during stabilisation or operating phase	- Check gas supply (gas pressure and gas flow switch). - Check balanced flue system for flue gas recirculation. - Check ionisation electrode (replace if necessary). - Check the electrode for distance to the burner gauze assembly and contamination.
65	Burner in a fault state	Flame signal not present or insufficient at burner start	- Check gas supply (gas pressure and gas flow switch). - Check gas solenoid valve. - Check the system for condensate backup; check the condensate drain. Note <i>Prevent water damage.</i> - Detach fan unit before removing the burner. Check ionisation electrode and connecting cable. Check the ignition. Connecting cables to ignition module and ignition electrode. Ignition electrode for distance and contamination: See also chapter "Checking and adjusting the ignition and ionisation electrodes". Check ignition electrode for broken insulation. Reset the appliance.
67	Burner in a fault state	Ionisation current lies outside the permissible range	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 contamination. If specified measures don't help, replace fan unit. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
68	Burner in a fault state	Flame signal is already present at burner start.	Close the gas shut-off valve. Remove connecting cable of the ionisation electrode. Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
69	Burner in a fault state	Ionisation current lies outside the permissible range	Check ionisation electrode for the following: ▪ Check whether insulation block is touching electrode ceramic. ▪ Check gas solenoid valve: In the service menu under "b.6", set the burner output to the lower heating output for approx. 4 min. If the fault occurs, replace the HBMU heat management unit. See chapter "Replacing the HBMU heat management unit". ▪ Change the burner output from lower to upper heating output in the service menu under "b.6". If this fault occurs during modulation, check the intake screen for contamination. Replace the fan unit if required.
70	Burner in a fault state	HBMU heat management unit internal fault	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
71	Burner in a fault state	Fan speed too low	▪ Check fan for blockage. ▪ Check setting for gas type and flue system. Reset the appliance.
72	Burner in a fault state	Fan not in idle state	▪ Reset the appliance. ▪ If the fault occurs repeatedly, replace the fan unit.
73	Burner in a fault state	Internal communication error	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
74	Burner locked out. Internal circulation pump off. No central heating and no DHW heating.	System pressure too low	Top up with water. Vent the system. If the fault occurs repeatedly: ▪ Check system pressure sensor with external pressure gauge. ▪ Check diaphragm expansion vessel pre-charge pressure. ▪ Check settings for set system pressure and range.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
75	System in a fault state	No flow rate	Top up with water. Vent the system. If the fault occurs repeatedly: ▪ Check/open the BDF valves. ▪ Check/replace the flow sensor (if installed). ▪ Check/replace the circulation pump.
77	Burner in a fault state	HBMU heat management unit data memory	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
78	Normal operation	No communication between heat management unit and programming unit	Check cables and plug-in connections between central control unit and programming unit. Check that the cables are correctly routed and positioned.
87	Burner locked out. Internal pump off. No central heating and no DHW heating.	System pressure too high	Check the system pressure and correct if required. Check diaphragm expansion vessel pre-charge pressure. Check whether BDF valves are open. Check the system pressure sensor with an external pressure gauge.
89	No central heating and no DHW heating	Internal circulation pump blocked.	Check circulation pump. Replace if required.
91	Function of affected extension in emergency mode	DIO electronics module communication error	Check connections to DIO electronics module and connection to HBMU heat management unit.
92	Function of the relevant electronics module in emergency mode	ADIO electronics module communication error	▪ 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.
95	Burner not operational	OpenTherm remote control not connected	▪ Check connection to OpenTherm remote control. ▪ If OpenTherm is not required, set C.7 in the commissioning assistant to a value not equal to 14.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
100	Electronics modules connected to PlusBus not functioning	PlusBus voltage error	Check whether the PlusBus power supply on the HBMU heat management unit is OK: Remove all connected PlusBus components and reconnect one by one. Check that there is not more than 1 Vitotrol 200-E connected to the HBMU. Check whether there is a short circuit at the PlusBus cable.
102	No internet connection	Error with communication module	Check cables and plug-in connections between heat management unit and communication module.
103	Normal operation	Internal communication error, programming unit	Check cables and plug-in connections between heat management unit and HMI programming unit.
104	Depending on configuration of EM-EA1 extension (DIO electronics module)	External fault message input active	Check connected external device.
142	Burner in a fault state	Communication restriction on CAN bus. INR.	Check the fan unit for correct function. For this, check the stepper motor of the fan unit (reference run with mains ON). If the fault still persists, check the plug-in connections and cables of the CAN bus. Check further CAN bus subscribers. If fault occurs repeatedly, replace fan unit.
161	Burner in a fault state	HBMU heat management unit data memory access fault	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
162	Burner in a fault state	Processor, undervoltage	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
163	Burner in a fault state	Checksum error, data memory access, HBMU heat management unit	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
176	Burner in a fault state	Condensate backup in the heat cell	Remove condensate backup. Replace insulation blocks, electrodes and burner gauze assembly. Note <i>Remove the fan unit before opening the burner. Protect the PCB from water damage.</i>

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
182	No DHW heating	Short circuit, outlet temperature sensor (if installed)	Check outlet temperature sensor (plug X7, cores 3 and 4). Measure sensor input on HBMU heat management unit. Set value: 3.3 V _{DC} with sensor disconnected.
183	No DHW heating	Lead break, outlet temperature sensor (if installed)	Check outlet temperature sensor (plug X7, cores 3 and 4).
184	Burner in a fault state	Short circuit, flow temperature sensor/high limit safety cut-out	Check the flow temperature sensor/high limit safety cut-out. Check sensor lead. Replace faulty component if required. Reset the appliance.
185	Burner in a fault state	Lead break, flow temperature sensor/high limit safety cut-out	Check the flow temperature sensor/high limit safety cut-out. Replace faulty component if required. Reset the appliance.
299	Date/time wrong	Real-time clock fault	Check the date and time; amend if required.
345	Burner locked out, automatic enabling after appliance cool-down. Independent restart	Temperature limiter has responded.	▪ Ensure adequate heat transfer. ▪ Check heating system fill level. ▪ Check pre-charge pressure in diaphragm expansion vessel. Adjust to required system pressure. ▪ Check whether flow rate is sufficient (pump). ▪ Check function of 3-way diverter valve. Vent the system. If the fault occurs during DHW heating: Check DHW cylinder or plate heat exchanger for contamination and scaling.
346	Burner in a fault state	Ionisation current calibration error	▪ Check the gas supply pressure. ▪ Check gas solenoid valve strainer on the inlet side for contamination. ▪ Check ionisation electrode for contamination. ▪ Check flue system. Remove flue gas recirculation if required. ▪ Check the condensate drain (condensate backup). Reset the appliance.
347	Burner in a fault state	Flue gas recirculation	▪ Check the flue system for leaks; rectify if required. ▪ Check the flue system for flue gas back pressure, e.g. caused by an insufficient fall in the flue system, constrictions or blockages. Rectify if necessary. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
348	Burner in a fault state	Gas modulation valve	If several heat generators are connected to a common flue system: Check whether "Multiple connection" is set in the commissioning assistant. Check the flue system for unrestricted flow. If fault remains, replace gas fan unit.
349	Burner in a fault state	Air mass rate flow not detected correctly in fan unit.	- Check for dust contamination in the supply air. - Check burner gauze assembly for contamination. Reset the appliance. If the fault occurs repeatedly, replace the gas fan unit.
350, 351	Burner in a fault state	Ionisation current lies outside the permissible range	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
352	Burner in a fault state	Combustion CO limit exceeded	Check entire flue gas path for the following: - Leaks - Flue gas back pressure caused by water pocket (if flue system fall is insufficient). - Constrictions - Blockages Repair flue system if required. Reset the appliance.
353	Shutdown with restart if demand exists	Insufficient gas supply, burner output reduced	Check the gas supply. Optically check input-side screen in the gas solenoid valve for contamination. Reset the appliance.
354	Burner in a fault state	Gas modulation valve tolerance outside permissible range	Replace gas fan unit.
355	Burner in a fault state	Analogue signal reference check: Flame signal is already present at burner start	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
357	Burner in a fault state	Insufficient gas supply	- Check that the main gas valve and the gas shut-off valve are open. - Test static gas pressure and gas flow pressure. - Check that on-site gas line and gas flow switch are correctly sized. 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 trip. - If the static pressure does not drop, check the cable to the fan unit. Check that the coil resistance at the fuel valve is approx. 4 kΩ. - Check the ignition electrode for damaged insulation. Reset the appliance.
359	Burner in a fault state	No ignition spark	- Check whether the ignition electrode insulation is damaged. - Check for a voltage of 230 V~ at the ignition module during the ignition phase. If not, replace the HBMU heat management unit. - If 230 V~ is present at the ignition module but there is still a fault, replace the ignition module. - Check connecting cables and leads from ignition module and ignition electrode. Reset the appliance.
361	Burner in a fault state	Flame signal is not present or insufficient at burner start.	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, e.g. laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney). Reset the appliance.
364	Burner in a fault state	Internal fault	Replace the HBMU heat management unit.
365	Burner in a fault state	Feedback from gas valve relay contact implausible (relay contact is "welded up").	Replace the HBMU heat management unit.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
366, 367	Burner in a fault state	Gas valve electricity supply does not turn off.	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
368	Burner locked out	Gas pressure switch fault. Forced ventilation time expired.	▪ Check gas supply (gas pressure). ▪ If installed: Check gas pressure switch for correct function. If required, disconnect the gas pressure switch connector and check whether the burner starts.
369	Burner in a fault state	Flame is lost immediately after flame formation (during safety time)	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode for the following: ▪ Clearance to burner gauze assembly. ▪ Contamination on electrode. Reset the appliance.
370	Burner in a fault state	Gas valve or modulation valve will not close.	Reset the appliance. If fault occurs repeatedly, replace fan unit.
371	Burner in a fault state	Fan speed too low	Check the fan. Check the fan connecting cables. Check the fan power supply. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
372	Burner in a fault state	Repeated flame loss during calibration	▪ Check ionisation electrode and connecting cable. ▪ Check plug-in connections for loose contacts. ▪ Check flue system. Remove flue gas recirculation if required. ▪ Check system for condensate backup. ▪ Visually inspect gas solenoid valve inlet and strainer on the inlet side for contamination. Note <i>To prevent water damage, detach fan unit before removing the burner. Deposits on the electrodes indicate foreign bodies in the combustion air.</i> Check the installation room and flue system for causes of the deposits, e.g. 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.
373	Burner in a fault state	Heat transfer too low during calibration Temperature limiter has shut down.	▪ Ensure adequate heat transfer. ▪ Check circulation pump for faults, scale or blockages. ▪ Check function of 3-way diverter valve. Vent the system. ▪ Check function of flow sensor. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
374	Burner restarts.	Preparation for calibration of ionisation current: Stabilisation conditions for pre-calibration not met.	▪ Check ionisation electrode and connecting cable. ▪ Check plug-in connections for loose contacts. ▪ Check flue system; remove flue gas recirculation if necessary. ▪ Check system for condensate backup. ▪ Visually inspect gas solenoid valve inlet and inlet strainer for contamination. Note <i>To prevent water damage, detach fan unit before removing the burner.</i> <i>Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits, e.g. 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.</i> Reset the appliance.



Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
375	Burner restarts.	Performing ionisation current calibration: Calibration not performed. Minimum value or termination criterion not reached.	▪ Check ionisation electrode and connecting cable. ▪ Check plug-in connections for loose contacts. ▪ Check flue system; remove flue gas recirculation if necessary. ▪ Check system for condensate backup. ▪ Visually inspect gas solenoid valve inlet and inlet strainer for contamination. Note <i>To prevent water damage, detach fan unit before removing the burner.</i> <i>Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits, e.g. 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.</i> Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
376	Burner restarts.	Ionisation current differential compared to previous value not plausible	▪ Check ionisation electrode and connecting cable. ▪ Check plug-in connections for loose contacts. ▪ Check flue system; remove flue gas recirculation if necessary. ▪ Check system for condensate backup. ▪ Visually inspect gas solenoid valve inlet and inlet strainer for contamination. Note <i>To prevent water damage, detach fan unit before removing the burner.</i> <i>Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits, e.g. 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.</i> Reset the appliance.
377	Burner in a fault state	Post-processing of ionisation current calibration: Stabilisation conditions for post-calibration not met.	Check gas type setting. If the fault occurs repeatedly, replace the HBMU heat management unit. See chapter "Replacing the HBMU heat management unit". Reset the appliance.
378	Burner in a fault state	Flame loss during stabilisation or operating phase	▪ Check gas supply (gas pressure and gas flow switch). ▪ Check flue gas recirculation. ▪ Check for contamination of ionisation electrode and burner gauze assembly. Reset the appliance.
379	Burner in a fault state	Flame signal not present or insufficient	▪ Check ionisation electrode connecting cable for damage and firm seating. ▪ Check ionisation electrode; replace if required. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
380	Burner in a fault state	Flame is lost immediately after flame formation (during safety time)	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode and burner gauze assembly: - Distance to burner gauze assembly. - Contamination on electrode. Reset the appliance.
381	Burner in a fault state	Flame loss during operating phase	Check gas supply (gas pressure and gas flow switch). Check balanced flue system for flue gas recirculation. Check ionisation electrode and burner gauze assembly: - Clearance to burner gauze assembly. - Contamination on electrode. Reset the appliance.
382	Burner in a fault state	Fault counter has exceeded limit.	Reset the appliance. Work through fault analysis using fault history.
383, 384	Burner in a fault state	Possible contamination of gas line	- Check gas line for contamination. - Check the gas supply pressure. - Replace gas fan if required. Reset the appliance.
385	Burner in a fault state	Short circuit, signal 1, ionisation current HBMU heat management unit faulty.	Check IO electrode for earth fault. If the fault persists, replace the HBMU heat management unit. Reset the appliance.
386	Burner in a fault state	HBMU heat management unit faulty.	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
387	Burner in a fault state	Earth fault, ionisation current. HBMU heat management unit faulty.	Check ionisation electrode and connecting cable. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
388	Burner in a fault state	HBMU heat management unit faulty.	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
393	Burner in a fault state	Short circuit, second flue gas temperature sensor.	Check sensor and leads to sensor. Replace the sensor if required. Reset the appliance.
394	Burner in a fault state	Lead break, second flue gas temperature sensor.	Check sensor and leads to sensor. Replace the sensor if required. Reset the appliance.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
395	Burner in a fault state	IO electrode earth fault, HBMU heat management unit faulty.	Check ignition electrode for earth fault. If the fault persists, replace the HBMU heat management unit. Reset the appliance.
396	Burner in a fault state	HBMU heat management unit faulty.	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
399	Burner in a fault state	IO electrode earth fault, HBMU heat management unit faulty.	Check IO electrode for earth fault. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
400	Burner in a fault state	HBMU heat management unit faulty.	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
401	Burner in a fault state	IO electrode earth fault, HBMU heat management unit faulty	Check IO electrode for earth fault. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
402	Burner in a fault state	HBMU heat management unit faulty	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
403	Burner in a fault state	Ionisation electrode earth fault, HBMU heat management unit faulty	Check IO electrode for earth fault. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
404	Burner in a fault state	HBMU heat management unit faulty	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
405	Burner in a fault state	Ionisation electrode earth fault, HBMU heat management unit faulty	Check IO electrode for earth fault. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
406, 408, 410	Burner in a fault state	HBMU heat management unit faulty	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
416	Burner locked out	Flue gas temperature sensor incorrectly positioned	Fit flue gas temperature sensor correctly. See "Repairs". Carry out mains reset after fault has been remedied.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
417, 418	Burner in a fault state	HBMU heat management unit faulty	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
425	System in control mode, calculation out of operation. Calculation values can be viewed via software tool.	Time synchronisation failed.	Set the time.
446	Burner in a fault state	Deviation, heat generator flow temperature sensor/ high limit safety cut-out	Check the flow temperature sensor/high limit safety cut-out. Check plug-in connection and lead to sensor. Reset the appliance.
447, 448	Burner in a fault state	Deviation, ionisation voltage/ionisation current signal.	Replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Reset the appliance.
449, 451, 452	Burner in a fault state	Error in scheduled program run monitoring	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
453	Burner in a fault state	Synchronisation error, sequence	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
454	Burner in a fault state	Incorrect parameter set of HBMU heat management unit.	Flash correct HBMU heat management unit parameter set.
455, 456	Burner in a fault state	Error in program run monitoring	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
457	Burner in a fault state	Fan sluggish or blocked.	Reset the appliance. Check fan for sluggishness. In the case of severe contamination or grinding noises, replace fan unit.
458	Burner in a fault state	Incorrect reset sequence	Check connecting cable between HBMU heat management unit and HMI programming unit. Reset the appliance.
461	Burner in a fault state	Flue gas damper fault	Check flue gas damper.
462	Burner in a fault state	Feedback input from the external gas safety valve will cause burner start to terminate.	Check external gas safety valve and connection

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
463	Burner in a fault state	Contaminated combustion air, flue gas recirculation	Check flue system for contamination and flue gas recirculation. Clean flue system if required. Reset the burner. Note <i>Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits, e.g. laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).</i> <i>If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension. Reset the appliance.</i>
464	Burner in a fault state	Ionisation current too low during calibration. Differential compared to previous value not plausible.	▪ 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 flue system. Remove flue gas recirculation if required. ▪ Check system for condensate backup. Reset the appliance. Note <i>To prevent water damage, detach fan unit before removing the burner.</i> If the fault is persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit". Note <i>Deposits on the electrodes indicate foreign bodies in the combustion air. Check the installation room and flue system for causes of the deposits, e.g. laundry detergents, cleaning agents, toiletries, deposits in the ventilation air supply (chimney).</i> <i>If burner gauze assembly and ionisation electrode have been replaced, also clean fan unit, gas/air channel and Venturi extension.</i>

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
467	Burner in a fault state	Gas supply insufficient during calibration. Contaminated or insufficiently sized gas line.	- Test static gas pressure and gas flow pressure. - Check that on-site gas line and gas flow switch are correctly sized. - Visually inspect gas solenoid valve inlet and strainer on the inlet side for contamination. Reset the appliance. Note <i>Contamination from a brazed gas line, for example, can block up the gas solenoid valve strainer on the inlet side.</i>
468	Burner in a fault state	Ionisation current too high during calibration	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 <i>Deposits on the electrodes indicate foreign bodies in the ventilation air. Check the installation room and flue system for causes of the deposits, e.g. 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.</i>
471	No heat demand.	System pressure sensor not available, lead break or short circuit.	- Check system pressure sensor (plug 163). - Check lead and plug-in connection. - Check whether the supply voltage to the sensor is 5 V_{DC}.
474	Burner in a fault state	Error in scheduled program run monitoring	Reset the appliance. If the fault persists, replace the HBMU heat management unit: See chapter "Replacing the HBMU heat management unit".
517	Normal operation, remote control not functioning	Lead break, PlusBus cable, incorrect appliance address set, remote control faulty	- Check setting in commissioning assistant and correct if required. - Check remote control cable. - Check remote control subscriber number. Replace faulty remote control if required.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
527, 528	Burner in a fault state	Incorrect HBMU heat management unit parameter set	Overwrite (flash) the HBMU heat management unit with the correct parameter set.
540	Burner in a fault state	Condensate backup in the heat cell	- Check system for condensate backup. - Check the condensate drain and trap. - Replace insulation blocks, electrodes and burner gauze assembly if required. Note To prevent water damage, detach fan unit before removing the burner. Reset the appliance.
544	Emergency function operating mode is activated for heating circuit 2: Mixer closes. Heating circuit pump is operational.	Lead break, flow temperature sensor, heating circuit 2 with mixer. Incorrect setting during commissioning.	Check flow temperature sensor, mixer 2. Measure voltage at sensor input on electronics module. Set value: 3.3 V _{DC} with sensor disconnected. Check setting in commissioning assistant and correct if required. Checking setting of ADIO rotary switch.
545	Emergency function operating mode is activated for heating circuit 2: Mixer closes. Heating circuit pump is operational.	Short circuit, flow temperature sensor, heating circuit 2 with mixer.	Check flow temperature sensor, mixer 2. Measure voltage at sensor input on electronics module. Set value: 3.3 V _{DC} with sensor disconnected
574	Normal operation without room influence.	Room temperature sensor, heating circuit 1 not available.	Check external room temperature sensor for heating circuit or room temperature sensor on remote control unit.
575	Normal operation without room influence	Lead break, room temperature sensor, heating circuit 1.	Check external room temperature sensor for heating circuit or room temperature sensor on remote control unit.
576	Normal operation without room influence	Short circuit, room temperature sensor, heating circuit 1.	Check external room temperature sensor for heating circuit or room temperature sensor on remote control unit.
577	Normal operation without room influence	Room temperature sensor for heating circuit 2 not available	Check external room temperature sensor for heating circuit or room temperature sensor on remote control unit.
578	Normal operation without room influence	Lead break, room temperature sensor, heating circuit 2.	Check external room temperature sensor for heating circuit or room temperature sensor on remote control unit.
579	Normal operation without room influence	Short circuit, room temperature sensor, heating circuit 1.	Check external room temperature sensor for heating circuit or room temperature sensor on remote control unit.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
682	Burner in a fault state	Air mass flow rate sensor not available	Check air mass flow rate sensor.
683	Burner in a fault state	Air mass flow rate sensor faulty	Check air mass flow rate sensor.
684	Burner in a fault state	Back draught safety device faulty	Check back draught safety device.
694	Burner in a fault state	Signal comparison, deviation, flue gas high limit safety cut-out	Check plug-in connection and lead to sensor. Check sensor. Replace sensor if necessary. Reset the appliance.
738	Control mode	OpenTherm remote control unit connected but not configured	Set C.7 in the commissioning assistant to 14.
799	No DHW heating, no central heating	Central heating circuit pump reports an electrical fault. No flow rate.	Perform a power reset. If this occurs repeatedly, replace the heating circuit pump.
979	Constant heat demand. Set room temperature is exceeded.	Both inputs – plug 96 and OpenTherm – are occupied and reporting a heat demand.	Note <i>Only one input can be used. Either plug 96 or OpenTherm.</i> Remove external devices or wire jumper from one of the inputs.
980	No DHW heating	Minimum system pressure before the start of DHW heating is too low. Possible causes: ▪ Shut-off valve ▪ Too restricted ▪ Limescale build-up ▪ Sludge ▪ Incorrect hydraulic configuration ▪ Circulation pump faulty ▪ Air in heating circuit ▪ System pressure unstable or too low	▪ Check that the cylinder flow and return are open. ▪ Ensure that all quick-action air vent valves on the appliance side are permanently open. ▪ Run the entire venting program of the heating circuit again (select via service menu). Important: The quick-action air vent valve in the boiler circuit must be permanently open! ▪ Check the set hydraulic scheme and correct if necessary. ▪ Check the size and pre-charge pressure of the external diaphragm expansion vessel. ▪ Check the set system pressure (this fault is more likely if the system pressure is too low). ▪ Check the quick-action air vent valves for leaks and replace if necessary. ▪ Check the circulation pump and replace if necessary. ▪ The pause time for DHW heating can be terminated by a mains reset of the HMU heat management unit. Switch the appliance off and on again at the appliance switch.

Fault messages (cont.)

Displayed fault code	System characteristics	Cause	Measures
981	No DHW heating	Minimum system pressure is too low during DHW heating. Possible causes: ▪ Shut-off valve ▪ Too restricted ▪ Limescale build-up ▪ Sludge ▪ Incorrect hydraulic configuration ▪ Circulation pump faulty ▪ Air in heating circuit ▪ System pressure unstable or too low	▪ Check that the cylinder flow and return are open. ▪ Ensure that all quick-action air vent valves on the appliance side are permanently open. ▪ Run the entire venting program of the heating circuit again (select via service menu). Important: The quick-action air vent valve in the boiler circuit must be permanently open! ▪ Check the set hydraulic scheme and correct if necessary. ▪ Check the size and pre-charge pressure of the external diaphragm expansion vessel. ▪ Check the set system pressure (this fault is more likely if the system pressure is too low). ▪ Check the quick-action air vent valves for leaks and replace if necessary. ▪ Check the circulation pump and replace if necessary. ▪ The pause time for DHW heating can be terminated by a mains reset of the HMU heat management unit. Switch the appliance off and on again at the appliance switch.
982	No central heating, no DHW heating	Circulation pump heating circuit 1 running dry.	Check the diaphragm expansion vessel; check the circulation pump.

Status messages

The following messages can be displayed using the "ViGuide" software tool:

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.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

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 (in particular in the service position)
- Electrical components
- Plug-in connections
- Electrical cables/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

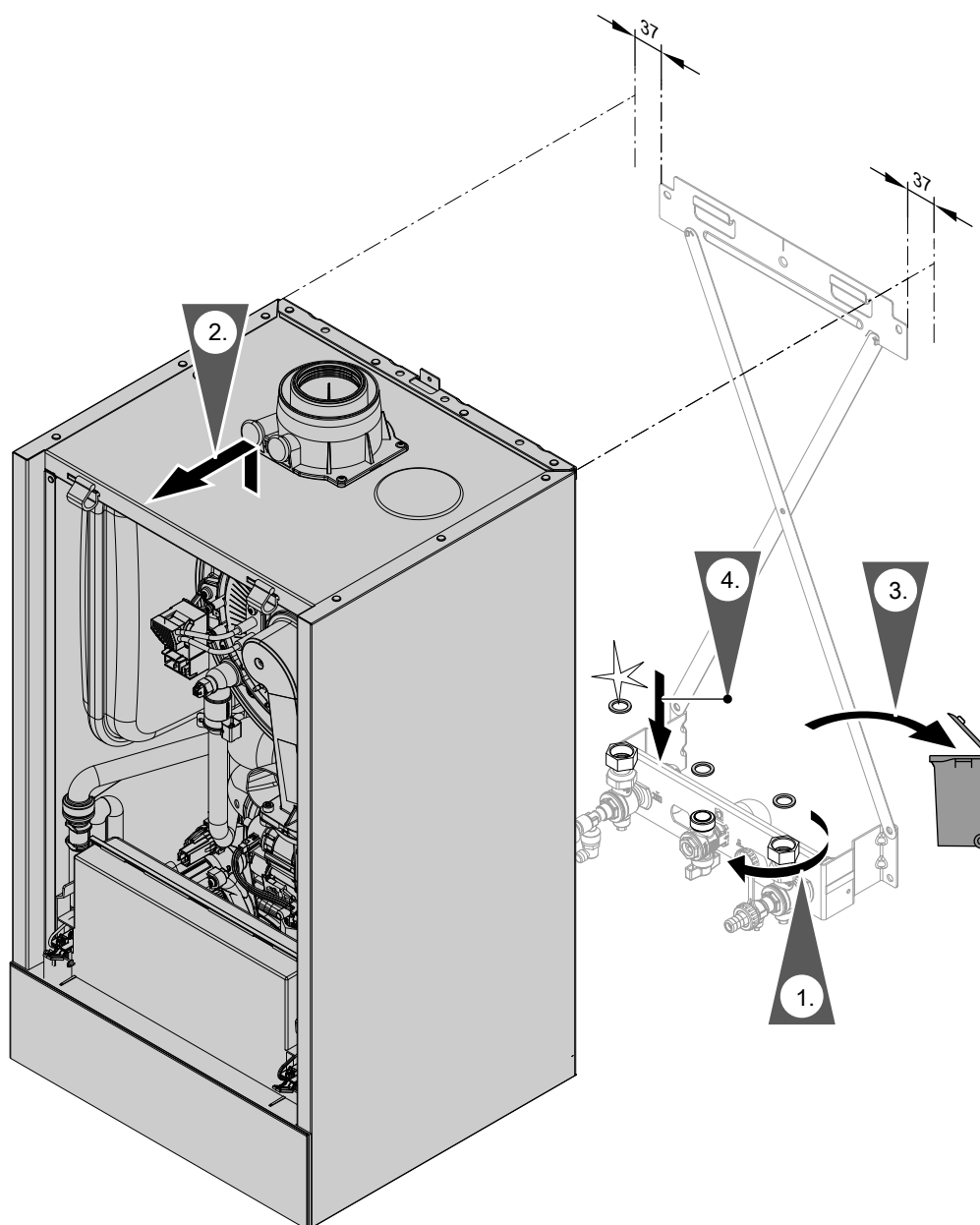


Fig. 43

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, hold 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 leaks.

Status/testing/diagnosis of internal circulation pump

The internal circulation pump is fitted with 2 status LEDs.

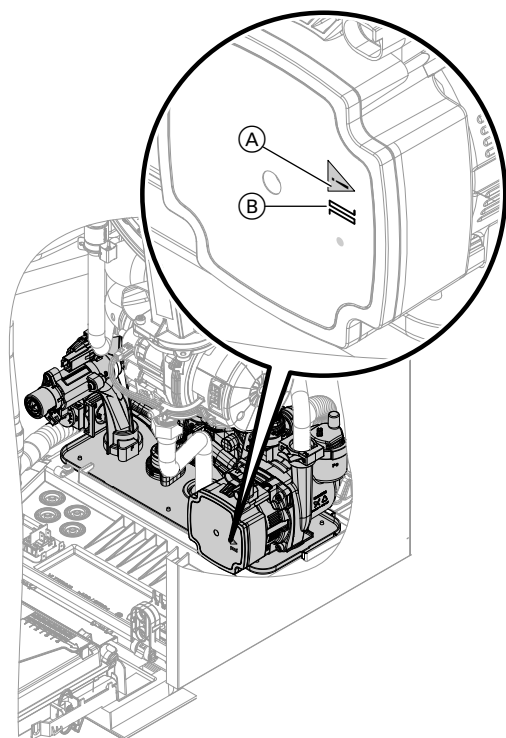


Fig. 44

- LED (B) constant green:
No communication (pump running without external control by the boiler controller).
- LED (B) flashing green:
Pump running with external control (PWM signal) by the boiler controller
- LED (A) constant red:
Pump failure

Note

The pump is controlled with a PWM signal. A lead break in the data line will not result in a fault message. The pump is operating at 100 % of its maximum output.

Repairs (cont.)

Checking the temperature sensors

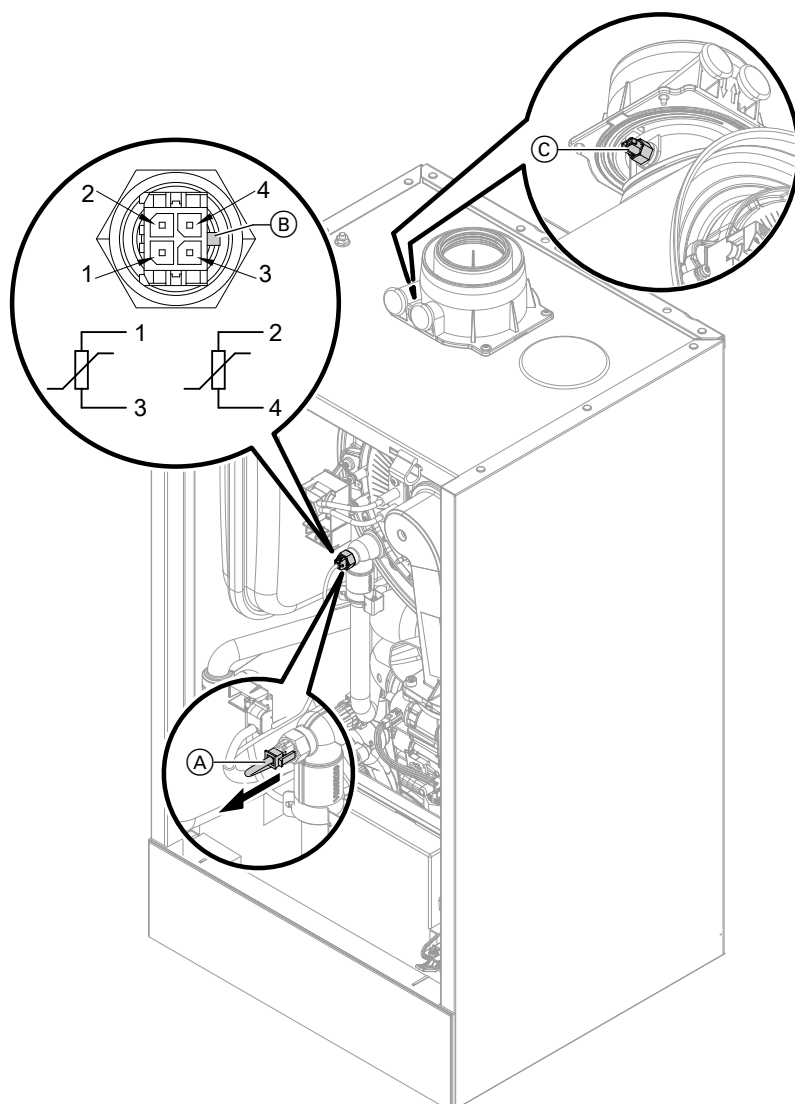


Fig. 45

Heat generator circuit flow temperature sensor (dual sensor)

1. Check the leads and plugs of flow temperature sensors (A).
2. Disconnect the leads from flow temperature sensors (A).

3. Check the sensor resistance. Note position of guide lug (B).

- Sensor 1: Connections 1 and 3
- Sensor 2: Connections 2 and 4

Compare the resistances with the value for the current temperature on the chart below. 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.

Cylinder temperature sensor/outlet temperature sensor

1. Check lead and plug of the cylinder temperature sensor or outlet temperature sensor.
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature on the chart below.
In the event of severe deviation (> 10 %), replace the sensor.

Low loss header sensor

1. Check lead and plug of temperature sensor  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 on the chart below.
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 7 and 8 from terminal 4.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature on the chart below.
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, up to 35 m long with 1.5 mm² cross-section
Depending on the 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 from 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 on the chart below.
In the event of severe deviation (> 10 %), replace the sensor.
5. Rotate sensor (clockwise) by ¼ turn to install it.



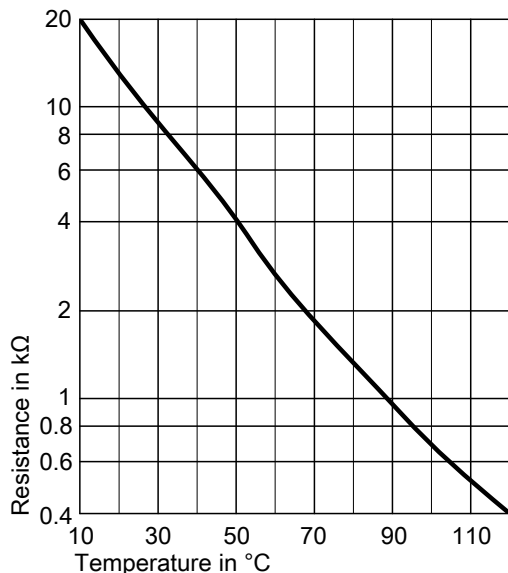
Danger

Escaping flue gas can cause poisoning.
When restarting, check for leaks on the flue gas side.

6. Reconnect leads to 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.

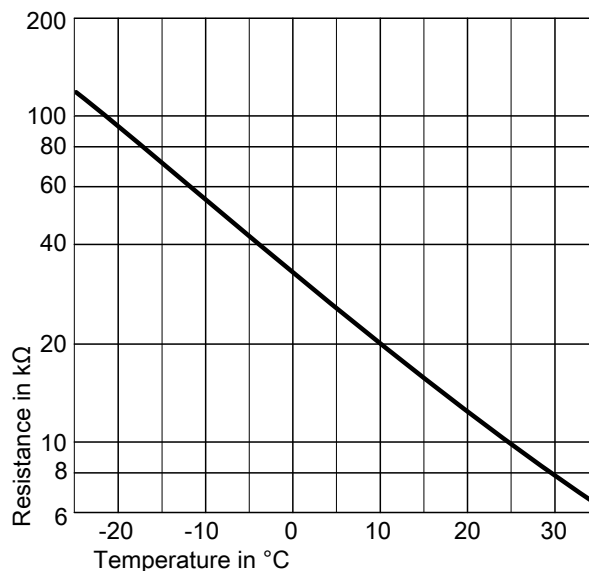
Repairs (cont.)

- 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 416)

During commissioning, the control unit checks for correct placement of the flue gas temperature sensor. If fault message 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 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.

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.

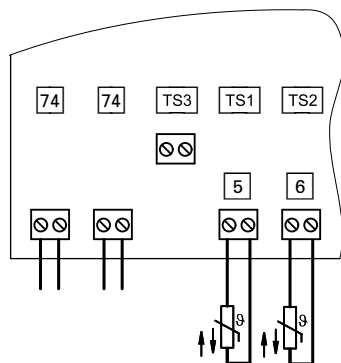


Fig. 46

Check cylinder temperature sensor

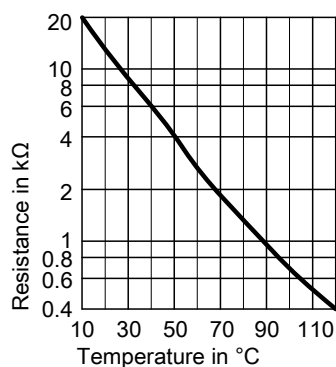


Fig. 47 Sensor type: NTC 10 kΩ

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

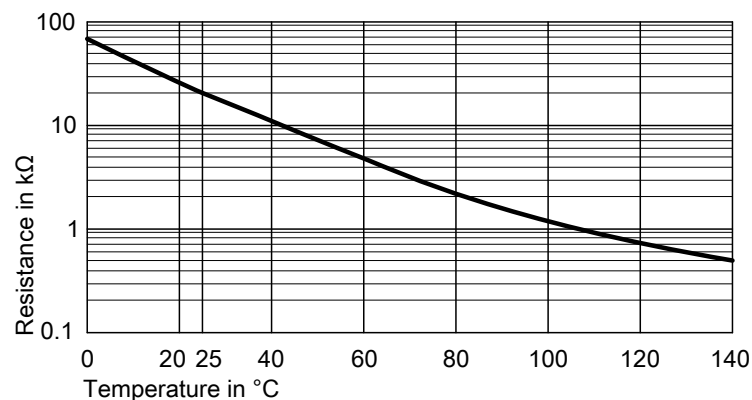


Fig. 48 Sensor type: NTC 20 kΩ

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.)

Replacing the HBMU heat management unit

Note

If replacing the HBMU heat management unit, "ViGuide" must be used.



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 connecting cable installation instructions.

Checking the plate heat exchanger

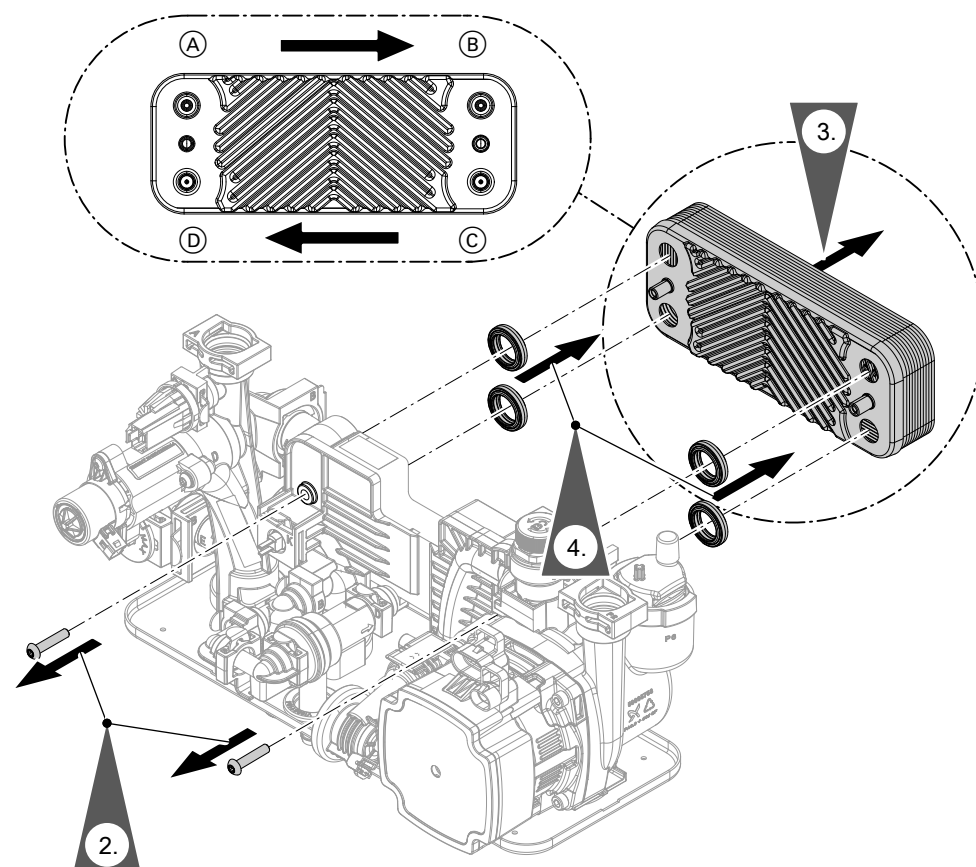


Fig. 49

- (A) Heating water flow
- (B) Heating water return

- (C) Cold water
- (D) 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.

Screw torque: $3.2 \text{ Nm} \pm 0.2$

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.)

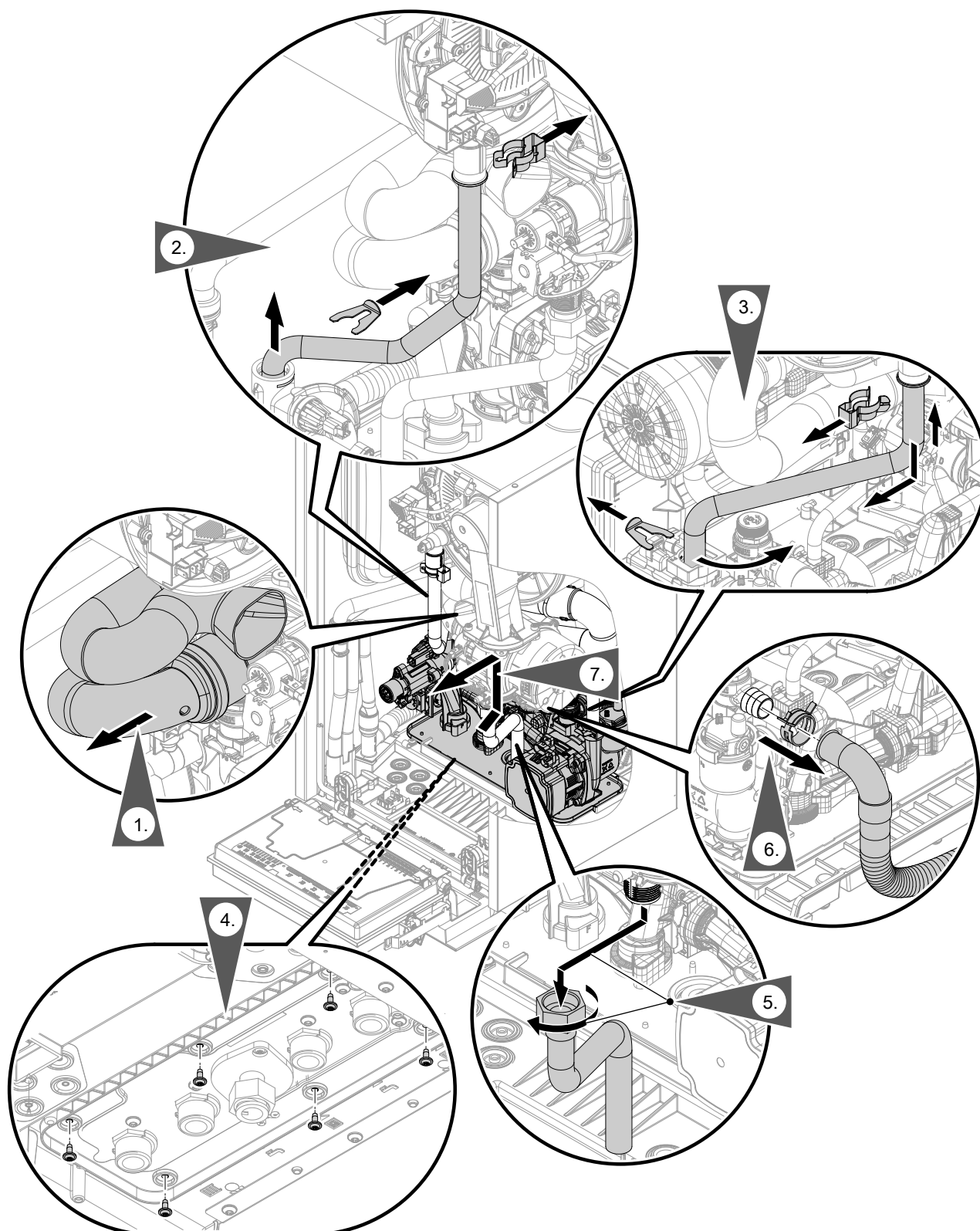


Fig. 50

Checking the fuse

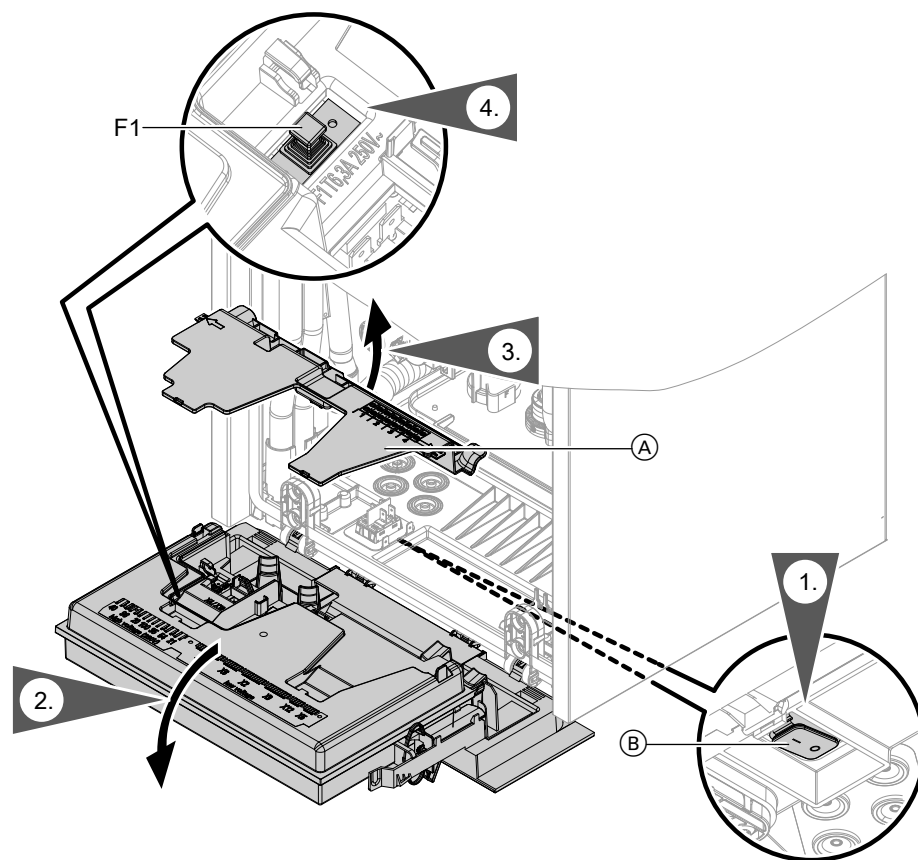


Fig. 51

1. Switch ON/OFF switch (B) OFF.
2. Remove the programming unit.
3. Pivot the HBMU heat management unit down.
4. Remove cover (A).
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.

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 (constant operation with room thermostat):

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.

■ Constant 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.

■ OpenTherm:

Rooms are heated in accordance with the settings of the room temperature controller/room thermostat (accessories). The OpenTherm controller specifies the flow temperature for the heat generator.

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 set room temperature.

Factory settings:

- Slope = 1
- Level = 3

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 factory setting 8 K.

Appliance functions (cont.)

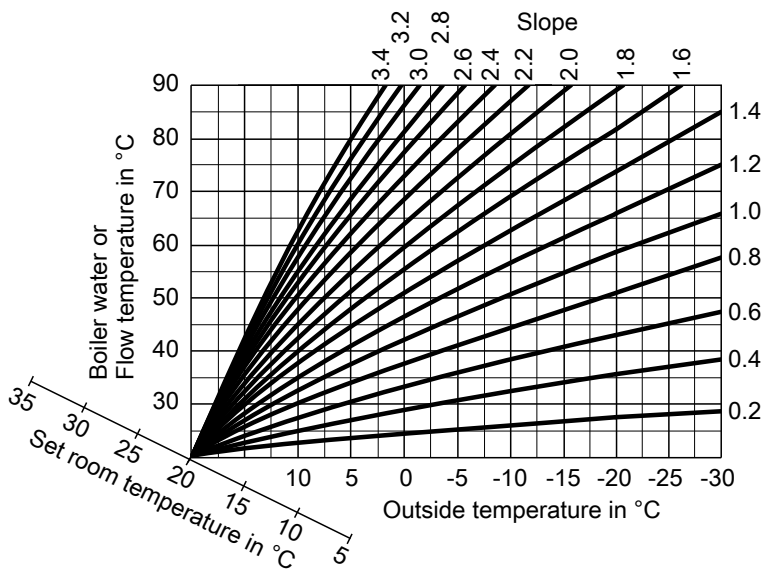


Fig. 52

- 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 for heating circuit... setting.

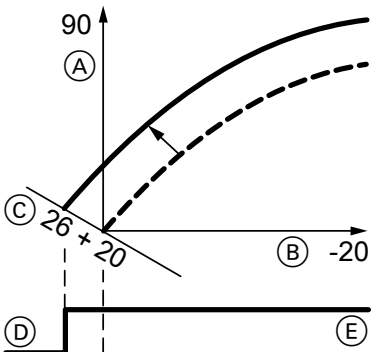


Fig. 53 Example 1: Adjusting the set room temperature from 20 to 26 °C

- (A) Flow temperature in °C
- (B) Outside temperature in °C
- (C) Set room temperature in °C
- (D) Heating circuit pump "Off"
- (E) Heating circuit pump "On"

Changing the set room temperature

 Operating instructions

Reduced room temperature

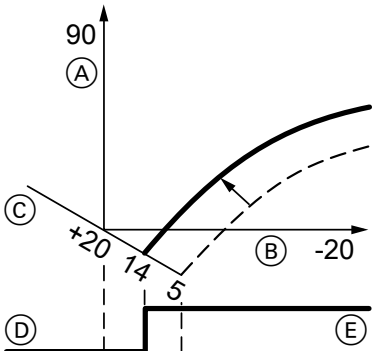


Fig. 54 Example 2: Adjusting the reduced set room temperature from 5 °C to 14 °C

- (A) Flow temperature in °C
- (B) Outside temperature in °C
- (C) Set room temperature in °C
- (D) Heating circuit pump "Off"
- (E) Heating circuit pump "On"

Changing the reduced set room temperature

 Operating instructions

Changing the slope and level

Individually adjustable for each heating circuit

Appliance functions (cont.)

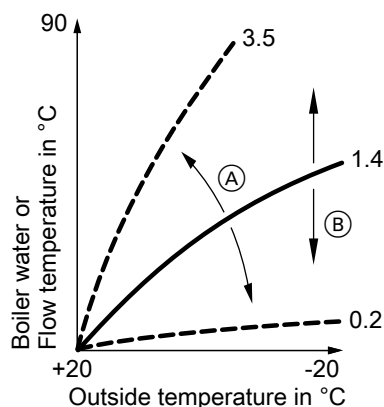


Fig. 55

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

Screed drying

When activating screed drying, observe the information provided by the screed manufacturer.

When the screed drying function is activated, the heating circuit pumps of **all** heating circuits are switched on and the flow temperature is maintained in accordance with the selected profile. After completion (30 days), the heating circuits with mixer are automatically controlled with the set parameters.

Screed drying is adjusted in the system configuration:

- 0 = OFF
- 2 = Temperature profile A
- 3 = Temperature profile B
- ...
- 7 = Temperature profile F

Note

During screed drying, DHW heating is not available.

Parameter "Screed drying":

Temperature profile A (EN 1264-4)

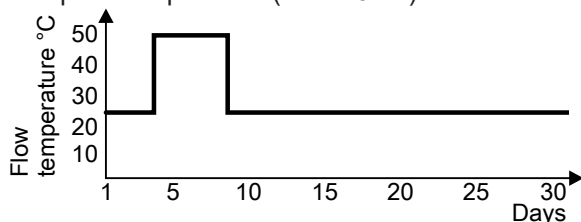


Fig. 56

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

Note

Temperature profile 6 ends after 21 days.

The function continues after power failure or after the control unit has been switched off. If screed drying has completed or been manually switched off, the system is controlled in accordance with the selected parameters.

Appliance functions (cont.)

Temperature profile B (ZV parquet and flooring technology)

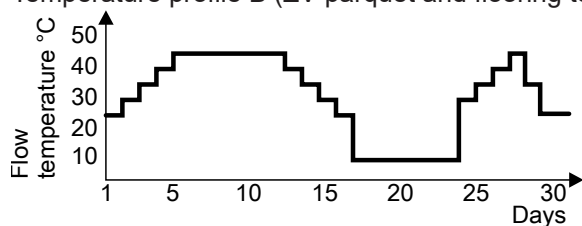


Fig. 57

Temperature profile C

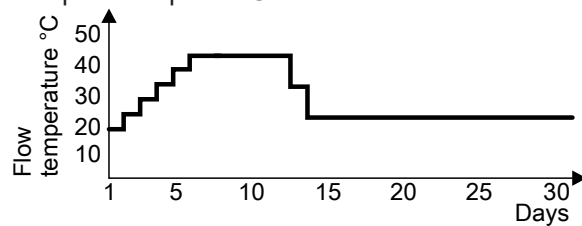


Fig. 58

Temperature profile D

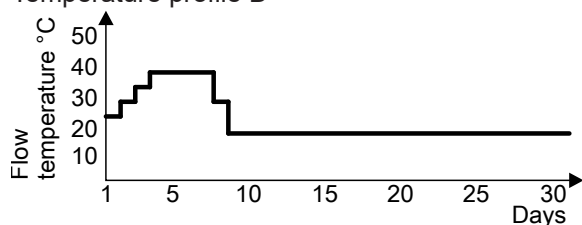


Fig. 59

Temperature profile E

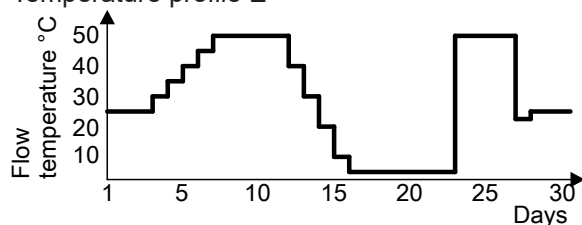


Fig. 60

Temperature profile F

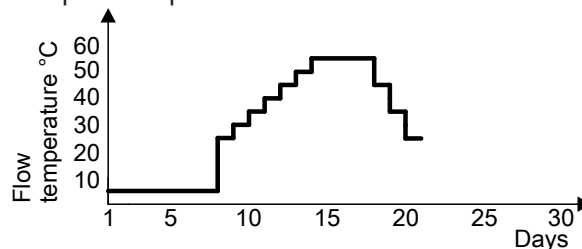


Fig. 61 Ends after 21 days.

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.

DHW heating (system boilers only) (cont.)

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

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 EM-EA1 (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).



Please note

There is no frost protection for the connected heating circuits.

- Connection:
 - If only one heating circuit is hooked up, use connection at plug 96: See page 26.
 - If multiple heating circuits are hooked up, connect all contacts to EM-EA1 extension (DIO electronics module) with the subscriber number. 1 (rotary switch = 1).



See EM-EA1 extension installation instructions

Note

Perform the hook-up with subscriber number "1".

HBMU heat management unit

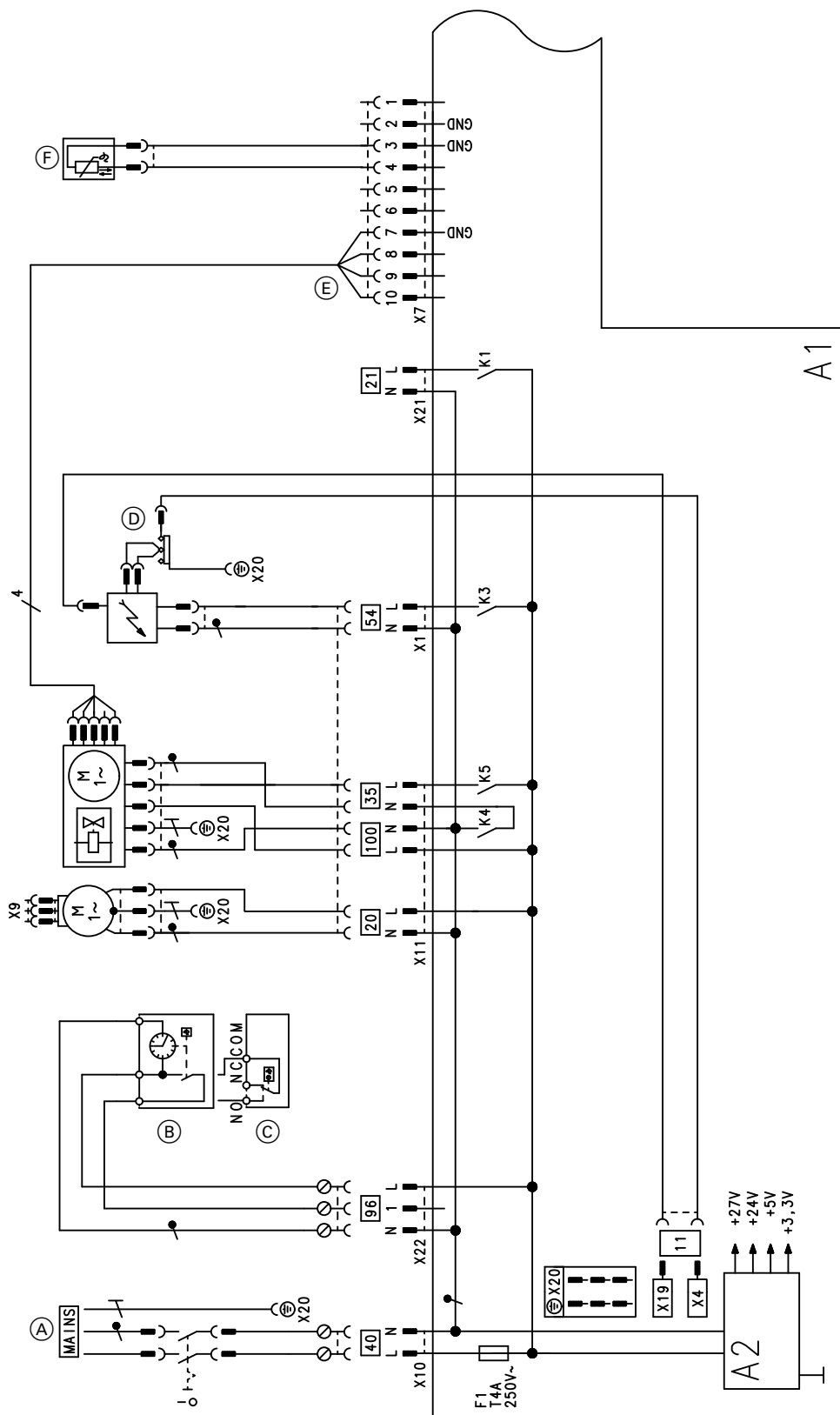


Fig. 62

- | | | | |
|------|-------------------------------|-------|---|
| A1 | HBMU heat management unit | (F) | Outlet temperature sensor (combi boiler only) |
| X... | Electrical interfaces | [35] | Gas solenoid valve |
| A2 | Power supply unit | [100] | Fan motor |
| (A) | Power supply [40] | (E) | Fan motor control |
| (B) | Vitotrol 100, type UTA | [96] | Floating switching contact, 230 V connection |
| (C) | Vitotrol 100, type UTDB | | accessories, see page 26 |
| (D) | Ignition unit/ionisation [54] | | |

HBMU heat management unit (cont.)

- 20

 Heating circuit pump
- 21

 No function

HBMU heat management unit (cont.)

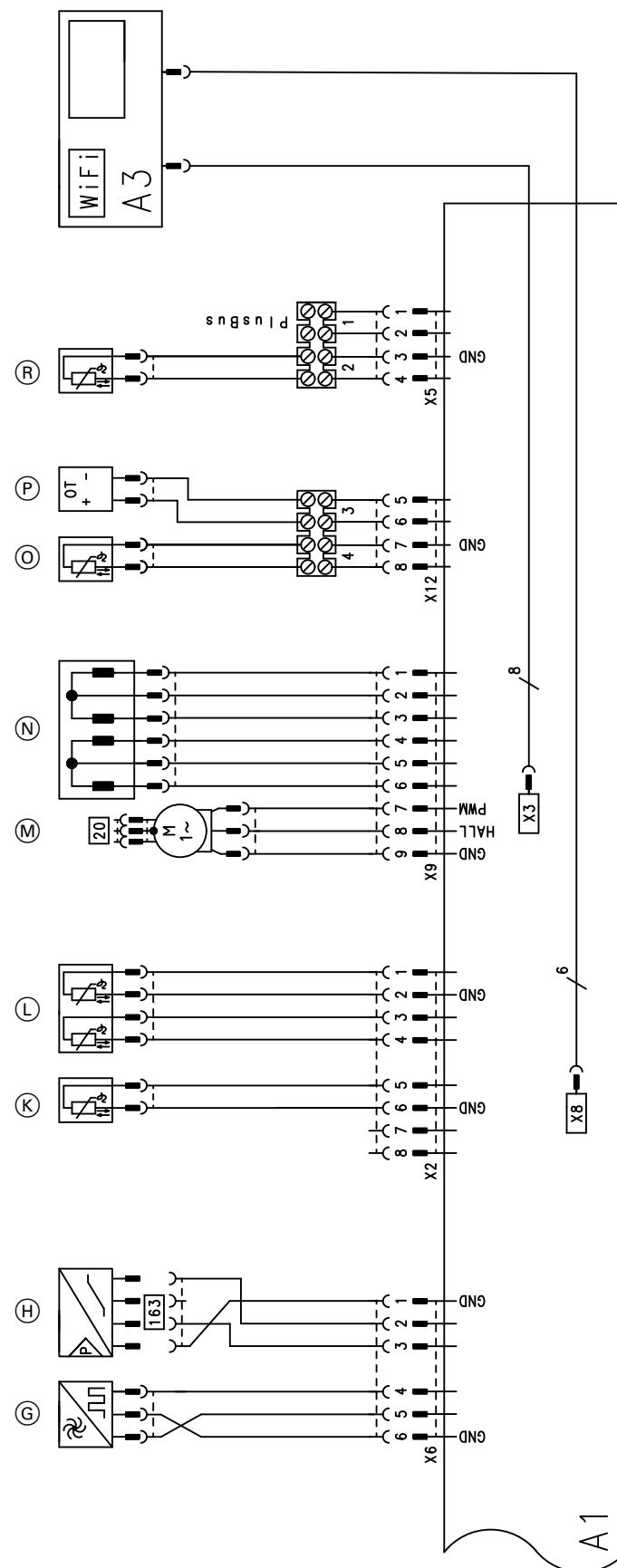


Fig. 63

- A1 HBMU heat management unit
- A3 Programming unit with communication module
- X... Electrical interfaces
- G Flow sensor (combi boiler only)

- H Water pressure sensor
- K Flue gas temperature sensor
- L Boiler water temperature sensor
- M Circulation pump (PWM)

HBMU heat management unit (cont.)

- | | | | |
|---|------------------------------|---|--|
| Ⓝ | Diverter valve stepper motor | Ⓟ | Remote control (OpenTherm device) |
| Ⓞ | Outside temperature sensor | Ⓡ | Cylinder temperature sensor (system boiler only) |

Commissioning/service reports

(cont.)

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)				
☐ With natural gas mbar kPa	See table "Supply pressure" (Commissioning ...)			
☐ Enter gas type				
Carbon dioxide content CO₂ For natural gas				
▪ At lower heating output % by vol.	See "Check- ing the com- bustion qual- ity" (Com- mission- ing ...)			
▪ At upper heating output % by vol.				
Oxygen content O₂				
▪ 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

Appliances for single connection

Gas boiler, types B and C, category NG, ULPG, I_{2H}

Type		B1HF			
Rated heating output range T _F /T _R = 50/30 °C					
Natural gas	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
T _F /T _R = 80/60 °C					
Natural gas	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Rated heating output for DHW heating					
Natural gas	kW	2.9 to 17.5	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 17.5	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Rated heat input (Q _n)					
Natural gas	MJ/h	10.8 to 64.1	10.8 to 64.1	10.8 to 84.2	10.8 to 107.6
Universal LP Gas (ULPG)	MJ/h	10.8 to 64.1	10.8 to 64.1	10.8 to 84.2	10.8 to 107.6
Rated heat input for DHW heating (Q _{nw})					
Natural gas	MJ/h	10.8 to 64.1	10.8 to 64.1	10.8 to 84.2	10.8 to 107.6
Universal LP Gas (ULPG)	MJ/h	10.8 to 64.1	10.8 to 64.1	10.8 to 84.2	10.8 to 107.6
Product ID		CE-0085DL0217			
IP rating to EN 60529		IP X4 to EN 60529			
NO _x		6	6	6	6
Gas supply pressure					
Natural gas	mbar	11.3	11.3	11.3	11.3
	kPa	1.13	1.13	1.13	1.13
Universal LP Gas (ULPG)	mbar	27.5	27.5	27.5	27.5
	kPa	2.75	2.75	2.75	2.75
Max. permiss. gas supply pressure ^{*2}					
Natural gas	mbar	13 to 25.0	13 to 25.0	13 to 25.0	13 to 25.0
	kPa	1.3 to 2.5	1.3 to 2.5	1.3 to 2.5	1.3 to 2.5
Universal LP Gas (ULPG)	mbar	25 to 57.5	25 to 57.5	25 to 57.5	25 to 57.5
	kPa	2.5 to 5.75	2.5 to 5.75	2.5 to 5.75	2.5 to 5.75
Sound power level (to EN ISO 15036-1)					
▪ At partial load	dB(A)	31.9	31.9	31.9	31.9
▪ At rated heating output (DHW heating)	dB(A)	42.3	42.3	46.1	48.4
Power consumption (in the delivered condition)	W	40	48	67	113

^{*2} If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

Specification (cont.)**Appliances for single connection****Gas boiler, types B and C, category NG, ULPG, I_{2H}**

Type		B1HF			
Rated heating output range T_F/T_R = 50/30 °C					
Natural gas	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
T_F/T_R = 80/60 °C					
Natural gas	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Rated voltage	V	230			
Rated frequency	Hz	50			
Appliance fuse protection	A	4.0			
Backup fuse (power supply)	A	16			
Communication module (integral)					
WiFi frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	20			
Low power radio frequency band	MHz	2400 to 2483.5			
Max. transmission power	dBm	10			
Supply voltage	V =	24			
Power consumption	W	4			
Electronic temperature limiter setting (TN)	°C	91			
Electronic temperature limiter setting	°C	110			
Electronic flue gas temperature limiter setting	°C	110			
Permissible ambient temperature					
▪ During operation		Frost-free, dry and heated rooms			
▪ During storage and transport		-5 to +60			
Weight					
▪ Excl. heating water and packaging	kg	32	32	32	32
▪ Incl. heating water	kg	37.6	37.6	37.6	37.6
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

Specification (cont.)

Appliances for single connection

Gas boiler, types B and C, category NG, ULPG, I_{2H}

Type		B1HF			
Rated heating output range $T_F/T_R = 50/30\text{ °C}$					
Natural gas	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
$T_F/T_R = 80/60\text{ °C}$					
Natural gas	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Diaphragm expansion vessel					
Capacity	l	8	8	8	8
Pre-charge pressure	bar	0.75	0.75	0.75	0.75
	kPa	75	75	75	75
Permiss. operating pressure	bar	3	3	3	3
	MPa	0.3	0.3	0.3	0.3
Connections (with connection accessories)					
Boiler flow and return	R	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Cold water and DHW	G	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Dimensions					
Length	mm	360	360	360	360
Width	mm	400	400	400	400
Height	mm	700	700	700	700
Gas connection	R	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Gas consumption at rated heat input					
Natural gas	MJ/h	64.1	64.1	84.2	107.6
Universal LP Gas	MJ/h	64.1	64.1	84.2	107.6
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)		64	65	67	72
Flue gas superheating temperature	°C	120	120	120	120
Mass flow rate (for DHW heating)					
Natural gas					
▪ At rated heating output	kg/h	31.7	31.7	41.6	54.9
▪ At partial load	kg/h	5.6	5.6	5.6	5.6
LPG					
▪ At rated heating output	kg/h	30.1	30.1	41.0	53.9
▪ At partial load	kg/h	5.1	5.1	5.1	5.1

Specification (cont.)**Appliances for single connection**Gas boiler, types B and C, category NG, ULPG, I_{2H}

Type		B1HF			
Rated heating output range $T_F/T_R = 50/30\text{ °C}$					
Natural gas	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 11.0	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
$T_F/T_R = 80/60\text{ °C}$					
Natural gas	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 10.1	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Available draught	Pa	116	116	168	323
	mbar	1.16	1.16	1.68	3.23
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 $T_F/T_R = 40/30\text{ °C}$		Up to 98 (H _s) [gross cv]			
Energy efficiency class		A	A	A	A
Seasonal central heating energy efficiency	η _s (%)	93	93	94	94

Note

In the case of appliances for multiple connection (vertical) and cascade (horizontal) applications, the specifications in the table **above** apply, with the exception of the following data, see table "Appliances for multiple connection", page 112:

Appliances for multiple connectionGas boiler, types B and C, category NG, ULPG, I_{2H}

Type		B1HF-M		
Rated heating output range $T_F/T_R = 50/30\text{ °C}$				
Natural gas	kW	5.7 to 19.0	5.7 to 25.0	5.7 to 32.0
$T_F/T_R = 80/60\text{ °C}$				
Natural gas	kW	5.2 to 17.5	5.2 to 23.0	5.2 to 29.3
Rated heating output for DHW heating				
Natural gas	kW	5.2 to 17.5	5.2 to 23.0	5.2 to 29.3
Rated heat input (Q_n)				
Natural gas	MJ/h	19.1 to 64.1	19.1 to 84.2	19.1 to 107.6
Rated heat input for DHW heating (Q_{nw})				
Natural gas	MJ/h	19.1 to 64.1	19.1 to 84.2	19.1 to 107.6

Specification (cont.)

Appliances for multiple connection

Gas boiler, types B and C, category NG, ULPG, I_{2H}

Type	B1HF-M			
Rated heating output range				
T_F/T_R = 50/30 °C				
Natural gas	kW	5.7 to 19.0	5.7 to 25.0	5.7 to 32.0
T_F/T_R = 80/60 °C				
Natural gas	kW	5.2 to 17.5	5.2 to 23.0	5.2 to 29.3
Mass flow rate (for DHW heating)				
Natural gas				
▪ At rated heating output	kg/h	31.7	41.6	54.9
▪ At partial load	kg/h	9.8	9.8	9.8
Available draught	Pa	25	25	25
for type C ₍₁₀₎ (at header system inter- face)				
Maximum permissible pressure dif- ferential	Pa	−200	−200	−200
between flue gas outlet and air inlet for C ₍₁₀₎				

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

Gas boiler, types B and C, category NG, ULPG, I_{2H}

Type	B1KF			
Rated heating output range T_F/T_R = 50/30 °C				
Natural gas	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
T_F/T_R = 80/60 °C				
Natural gas	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Rated heating output for DHW heating				
Natural gas	kW	2.9 to 26.8	2.9 to 31.1	2.9 to 34.2
Universal LP Gas (ULPG)	kW	2.9 to 26.8	2.9 to 31.1	2.9 to 34.2
Rated heat input (Q_n)				
Natural gas	MJ/h	10.8 to 64.1	10.8 to 84.2	10.8 to 107.6
Universal LP Gas (ULPG)	MJ/h	10.8 to 64.1	10.8 to 84.2	10.8 to 107.6

Specification (cont.)**Use with single connection**

Gas boiler, types B and C, category NG, ULPG, I _{2H}				
Type		B1KF		
Rated heating output range $T_F/T_R = 50/30\text{ °C}$				
Natural gas	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
$T_F/T_R = 80/60\text{ °C}$				
Natural gas	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Rated heat input for DHW heating (Q_{nw})				
Natural gas	MJ/h	10.8 to 98.3	10.8 to 114.1	10.8 to 125.6
Universal LP Gas (ULPG)	MJ/h	10.8 to 98.3	10.8 to 114.1	10.8 to 125.6
Product ID		CE-0085DL0217		
IP rating to EN 60529		IP X4 to EN 60529		
NO _x		6	6	6
Gas supply pressure				
Natural gas	mbar	11.3	11.3	11.3
	kPa	1.13	1.13	1.13
Universal LP Gas (ULPG)	mbar	27.5	27.5	27.5
	kPa	2.75	2.75	2.75
Max. permiss. gas supply pressure^{*3}				
Natural gas	mbar	13 to 25.0	13 to 25.0	13 to 25.0
	kPa	1.3 to 2.5	1.3 to 2.5	1.3 to 2.5
Universal LP Gas (ULPG)	mbar	25 to 57.5	25 to 57.5	25 to 57.5
	kPa	2.5 to 5.75	2.5 to 5.75	2.5 to 5.75
Sound power level (to EN ISO 15036-1)				
▪ At partial load	dB(A)	31.9	31.9	31.9
▪ At rated heating output (DHW heating)	dB(A)	49.1	50	50.4
Power consumption (in the delivered condition)		48	67	113
Rated voltage		230		
Rated frequency		50		
Appliance fuse protection		4		
Backup fuse (power supply)		16		
Communication module (integral)				
WiFi frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	20		
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	10		
Supply voltage	V =	24		
Power consumption	W	4		
Electronic temperature limiter setting (TN)		91		
Electronic temperature limiter setting		110		
Electronic flue gas temperature limiter setting		110		

^{*3} If the gas supply pressure is higher than the maximum permissible value, install a separate gas pressure governor upstream of the system.

Specification (cont.)

Use with single connection

Gas boiler, types B and C, category NG, ULPG, I _{2H}				
Type		B1KF		
Rated heating output range				
T _F /T _R = 50/30 °C				
Natural gas	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
T _F /T _R = 80/60 °C				
Natural gas	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Permissible ambient temperature				
▪ During operation		Frost-free, dry and heated room		
▪ During storage and transport		–5 to +60		
Weight				
▪ Excl. heating water and packaging	kg	35	35	35
▪ Incl. heating water	kg	41	41	41
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 graphs		
Nominal circulating water volume At T _F /T _R = 80/60 °C	l/h	752	988	1259
Diaphragm expansion vessel				
Capacity	l	8	8	8
Pre-charge pressure	bar	0.75	0.75	0.75
	kPa	75	75	75
Permiss. operating pressure	bar	3	3	3
	MPa	0.3	0.3	0.3
Connections (with connection accessories)				
Boiler flow and return	R	¾	¾	¾
Cold water and DHW	G	½	½	½
Dimensions				
Length	mm	360	360	360
Width	mm	400	400	400
Height	mm	700	700	700
Gas connection	R	¾	¾	¾
Standby instantaneous water heater				
DHW and cold water connections	G	½	½	½
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Minimum pressure, cold water connection	bar	1.0	1.0	1.0
	MPa	0.1	0.1	0.1
Outlet temperature, adjustable	°C	30 to 60	30 to 60	30 to 60
Continuous DHW output	kW	27.1	31.1	34.4
Spec. water flow rate (D)	l/min	13.3	15.59	17.04
At ΔT = 30 K (to EN 13203-1)				
Gas consumption at rated heat input				

Specification (cont.)**Use with single connection**

Gas boiler, types B and C, category NG, ULPG, I _{2H}				
Type		B1KF		
Rated heating output range $T_F/T_R = 50/30\text{ °C}$				
Natural gas	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
Universal LP Gas (ULPG)	kW	3.2 to 19.0	3.2 to 25.0	3.2 to 32.0
$T_F/T_R = 80/60\text{ °C}$				
Natural gas	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Universal LP Gas (ULPG)	kW	2.9 to 17.5	2.9 to 23.0	2.9 to 29.3
Natural gas	MJ/h	64.1	84.2	107.6
Universal LP Gas	MJ/h	98.3	114.1	125.6
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	65	67	72
Flue gas superheating temperature	°C	120	120	120
Mass flow rate (for DHW heating)				
Natural gas				
▪ At maximum heating output	kg/h	49.3	57.3	62.1
▪ At partial load	kg/h	5.6	5.6	5.6
LPG				
▪ At maximum heating output	kg/h	30.1	41	53.9
▪ At partial load	kg/h	3.9	3.9	3.9
Available draught				
	Pa	334	340	474
	mbar	3.34	3.40	4.74
Max. amount of condensate to DWA-A 251	l/h	3.8	4.4	4.9
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 $T_F/T_R = 40/30\text{ °C}$		Up to 98 (H _s) [gross cv]		
Energy efficiency class		A	A	A
Seasonal central heating energy efficiency	η _s (%)	93	94	94

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specification in the table above apply, with the exception of the following data – see table on appliances for multiple connection on page 117:

Specification (cont.)

Use with multiple connection			
Gas boiler, types B and C, category NG, ULPG, I _{2H}			
Type		B1KF-M	
Rated heating output range			
T _F /T _R = 50/30 °C			
Natural gas	kW	5.7 to 25.0	5.7 to 32.0
T _F /T _R = 80/60 °C			
Natural gas	kW	5.2 to 23.0	5.2 to 29.3
Rated heating output for DHW heating			
Natural gas	kW	5.2 to 31.1	5.2 to 34.2
Rated heat input (Q _n)			
Natural gas	MJ/h	19.1 to 84.2	19.1 to 107.6
Rated heat input for DHW heating (Q _{nw})			
Natural gas	MJ/h	19.1 to 114.1	19.1 to 125.6
Mass flow rate (for DHW heating)			
Natural gas			
▪ At maximum heating output	kg/h	57.3	62.1
▪ At partial load	kg/h	9.8	9.8
Available draught			
for type C ₍₁₀₎ (at header system interface)	Pa	25	25
Maximum permissible pressure differential between flue gas outlet and air inlet for C ₍₁₀₎		-200	-200

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).

Flue system types

Available in the following countries	Flue system types
AE, AM, AT, AZ, BA, BG, BY, CH, CY, CZ, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, KG, KZ, 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 ₅₃ , C ₆₃ , C ₈₃ , C _{83P} , C ₉₃ (C ₄₃ , C _{43P} , C ₍₁₀₎₃ , C ₍₁₁₎₃ , C ₍₁₃₎₃ , C ₍₁₄₎₃ ^{*4})
AU, BE, NZ	B ₂₃ , B _{23P} , B ₃₃ , C ₁₃ , C ₃₃ , C ₅₃ , C ₈₃ , C _{83P} , C ₉₃ (C ₄₃ , C _{43P} , C ₍₁₀₎₃ , C ₍₁₁₎₃ , C ₍₁₃₎₃ , C ₍₁₄₎₃ ^{*4})
DE, LU, SI	B ₂₃ , B _{23P} , B ₃₃ , C _{13X} , C _{33X} , C _{53X} , C _{63X} , C _{83X} , C _{93X} (C ₄₃ , C _{43P} , C ₍₁₀₎₃ , C ₍₁₁₎₃ , C ₍₁₃₎₃ , C ₍₁₄₎₃ ^{*4})
CN	C13

Gas categories

Available in the following countries	Gas categories
AE, AM, AT, DK, EE, KG, LV, LU, LT, RO, RU, SE, AZ, BA, BG, BY, CH, CZ, ES, FI, GB, GR, HR, IE, IS, KZ, IT, MD, ME, NO, PT, RS, SI, SK, TR, UZ, HU, MT, UA	II _{2N3P} /II _{2H3P}
BE	I _{2N}

^{*4} Only for specifically designated appliances.

Specification

(cont.)

Available in the following countries	Gas categories
DE, FR	II _{2N3P}
CY	I _{3P}
NL	II _{2EK3P}
PL	II _{2N3P} /II _{2ELW3P}
CN	12T
AU, NZ	NG/ULPG/I _{2H}

The gas condensing appliance is suitable for operation with a hydrogen blend of up to 20 % by vol.

Electronic combustion controller

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 $\lambda = 1.2$ and 1.5. This range provides for optimum combustion quality. Thereafter, the electronic gas solenoid valve regulates the required gas volume subject to the prevailing gas quality.

To check the combustion quality, the CO₂ content or the O₂ content of the flue gas is measured. The prevailing air ratio is determined using the measured values.

To achieve optimum combustion control, the system regularly carries out an automatic self-calibration; also after a power outage (shutdown). For this, the combustion is briefly regulated to maximum ionisation current (corresponding to air ratio $\lambda = 1$). 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

Viessmann products can be recycled. Components and substances from the system are not part of ordinary domestic waste.

For decommissioning, isolate the system from the power supply 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 state the relevant part no. when ordering individual parts.

Appendix

					
---	---	---	---	---	---

					
---	---	---	---	---	---

					
--	--	--	--	--	--

					
---	---	---	---	---	---

					
---	---	---	---	---	---

Declaration of conformity

We, Viessmann Climate Solutions SE, D-35108 Allendorf, 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 SE, D-35108 Allendorf, hereby declares that the radio equipment type of the named product is in compliance with Directive 2014/53/EU.

Manufacturer's certificate according to the 1st BImSchV [Germany]

We, Viessmann Climate Solutions SE, D-35108 Allendorf, confirm that the product **Vitodens 100-W** complies with the NO_x limits specified by the 1st BImSchV, paragraph 6 [Germany].

Allendorf, 1 November 2021

Viessmann Climate Solutions SE



Authorised signatory Uwe Engel
Senior Vice President Engineering & Technology

COMPLIANCE

- AS/NZS 5263.0
- AS/NZS 5263.1.2
- License Number: GSC 750413

- AS 3498
- AS/NZS 4020
- License Number: WM-032142 (Only for B1KF series)

Allendorf, 1 May 2022

Viessmann Climate Solutions SE



Authorised signatory Uwe Engel
Senior Vice President Engineering & Technology

Keyword index

A		Heating surface cleaning.....	49
Angle of penetration.....	29	Heating system, venting.....	39
B		Higher DHW temperature.....	55
Back draught safety device.....	48	I	
Boiler water temperature sensor.....	91	Ignition.....	48
Burner gasket.....	47	Ignition electrodes.....	48
Burner gauze assembly.....	47	Intended use.....	9
Burner installation.....	51	Internet, connecting.....	37
Burner removal.....	46	Ionisation electrode.....	48
Burner reset.....	65	IP addressing.....	29
C		L	
Combustion chamber cleaning.....	49	Language selection.....	33
Combustion controller.....	118	Leak test, balanced flue system.....	45
Combustion quality, checking.....	54	M	
Commissioning.....	37	Mains isolator.....	41, 46, 53
Commissioning assistant.....	33	Manufacturer's certificate	121
Condensate drain.....	49	Message history.....	64
Connection schemes.....	104	Multiple connection to shared flue system.....	45
Control unit.....	104	O	
Control unit functions.....	99	Operating conditions, checking.....	63
Cylinder temperature sensor.....	91	Operating data, calling up.....	63
D		Operating data, checking.....	63
DHCP.....	29	Operational reliability.....	29
DHW heating.....	102	Output adjustment with multiple connection.....	45
DHW hygiene.....	55	Outside temperature sensor.....	25, 91
Diaphragm expansion vessel.....	38	P	
Dynamic IP addressing.....	29	Parameters.....	56, 58
E		– Adjusting.....	56
Electronic combustion controller.....	118	– Calling up.....	56
Expansion vessel.....	52	– Energy saving functions, heating circuit.....	59, 60
F		– Max. flow temperature, heating circuit.....	58, 59
Fault codes.....	66	– Max. speed, heating circuit pump.....	57
Fault message, calling up.....	64	– Maximum heating output.....	58
Fault messages.....	64	– Minimum heating output.....	57
Faults.....	64	– Primary pump operating mode.....	56
– Commissioning.....	42	– Room temperature hook-up, heating circuit.....	58
Filling function.....	39, 99	– Scald protection activation.....	57
Fill water.....	37	– Screed drying.....	57
Flow limiter.....	52	– Set flow temperature for external demand.....	56
Flow pressure.....	42	Parameters for commissioning.....	55
Flow temperature sensor.....	91	Plate heat exchanger.....	95
Flue gas temperature sensor.....	92	PlusBus subscribers.....	26
Front panel removal.....	16	Port 123.....	29
Function descriptions.....	99	Port 443.....	29
Function sequence.....	42	Port 80.....	29
Fuse.....	98	Port 8883.....	29
G		R	
Gas type.....	40	Range of WiFi connections.....	29
H		Reduced set room temperature.....	100
Heating curve.....	55, 99	Repairs.....	88
Heating curve level.....	100	Report.....	108
Heating curve slope.....	100	Requirements.....	29
Heating output setting.....	43		

Keyword index (cont.)**S**

Screed drying.....	101
Screed drying, activating.....	45
Seal rings, replacing.....	39
Security parameters.....	29
Service menu.....	62
– Exiting.....	62
Set room temperature.....	100
Subscriber number of connected component.....	64
Subscriber numbers, extensions.....	60
Subscriber numbers, setting.....	60
Supply pressure.....	42
Switch S1.....	60
Symbols.....	9
System configuration.....	33, 56
System filling.....	38
System pressure.....	38
System requirements.....	29
System schemes.....	55

T

Tightness test.....	39
Trap.....	21, 49
Type plate.....	10

V

Venting function.....	40
Venting program.....	99

W

WiFi connection.....	37
WiFi connection range.....	29
WiFi network.....	37
WiFi router.....	29
Wiring diagram.....	104



Viessmann Australia
Local Office
Address: PO Box 497,
Brighton Vic 3186
Email address: info.australia@viessmann.com
Contact Number: +61 1300 734 170
Website: www.viessmann.com.au

6135817 Subject to technical modifications.