

Vitodens 222-F

Type B2TH, 1.9 to 32 kW

Gas condensing storage combi boiler with 7 inch colour touchscreen

Natural gas and LPG version



VITODENS 222-F



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 lead to burns or scalding.

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

**Please note**

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

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

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

For installation and replacements, use only original parts from the manufacturer or components approved by the manufacturer.

Repair work**Please note**

Repairing components that fulfil a safety function can compromise the safe operation of the system. Faulty components must be replaced with original spare parts from the manufacturer.

Safety instructions for operating the system

If you smell gas



Danger

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

- Do not smoke. Prevent naked flames and sparks. Never switch lights or electrical appliances on or off.
- Close the gas shut-off valve.
- Open windows and doors.
- Evacuate any people from the danger zone.
- Notify your gas or electricity supply utility from outside the building.
- Have the power supply to the building shut off from a safe place (outside the building).

If you smell flue gas



Danger

Flue gas can lead to life threatening poisoning.

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

What to do if water escapes from the appliance



Danger

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



Danger

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

Condensate



Danger

Contact with condensate can be harmful to health.

Never let condensate touch your skin or eyes and do not swallow it.

Flue systems and combustion air

Ensure that flue systems are clear and cannot be sealed, for instance due to accumulation of condensate or other external causes.

Ensure an adequate supply of combustion air.

Inform system users that subsequent modifications to the building characteristics are not permissible (e.g. cable/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) can create negative pressure. If the boiler is operated at the same time, this can lead to a reverse flow of flue gas.

Safety instructions (cont.)**Danger**

The simultaneous operation of the boiler and appliances that exhausts air to the outside can result in life threatening poisoning due to a reverse flow of flue gas.

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

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Disposal of packaging

Please dispose of packaging waste in line with statutory regulations.

Symbols

Symbol	Meaning
	Reference to other document containing further information
	Step in a diagram: The numbers correspond to the order in which the steps are carried out.
	Warning of personal injury
	Warning of material losses and environmental pollution
	Live electrical area
	Pay particular attention.
	<ul style="list-style-type: none"> Component must audibly click into place. or Acoustic signal
	<ul style="list-style-type: none"> Fit new component. or In conjunction with a tool: Clean the surface.
	Dispose of component correctly.
	Dispose of component at a suitable collection point. Do not dispose of component in domestic waste.

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

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

Intended use

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

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

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

Intended use (cont.)

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

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

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

Product information

Vitodens 222-F, type B2TH

Gas condensing storage combi boiler with Inox-Radial heat exchanger and the following integrated components:

- Modulating MatriX-Plus burner for natural gas and LPG
- DHW loading cylinder, 100 l capacity
- Hydraulics with 3-way diverter valve and variable speed high efficiency circulation pump
- Weather-compensated control unit
- Diaphragm expansion vessel (18 l capacity)

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

The Vitodens 222-F can only be delivered to the countries specified 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.

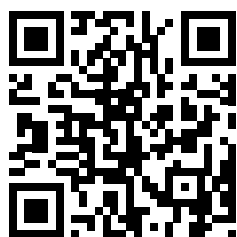
Detailed information regarding system examples: www.viessmann-schemes.com

Maintenance parts and spare parts

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

Viessmann Partnership

Login:
shop.viessmann-climatesolutions.com



Maintenance parts and spare parts (cont.)**Viessmann spare part app****Web application**

www.viessmann.com/etapp

**ViParts app**

Manoeuvring

- ! Please note**
Prevent damage to the appliance during handling.
Never set the appliance down on its front or sides, or apply any load to these surfaces. If possible, leave the boiler on the pallet while manoeuvring it.

Siting in recesses

In the delivered condition, the ON/OFF switch and the electrical connections are located on the left-hand side of the appliance. The condensate drain can be routed out of either the right-hand or left-hand side of the appliance.

When installing in recesses, ensure that accessibility is guaranteed (recommended wall clearance 100 mm). Otherwise relocate the ON/OFF switch and electrical connections. The ON/OFF switch can be relocated to the right-hand side or the top. The electrical connections can be relocated to the right-hand side.

Moving the ON/OFF switch (if necessary)

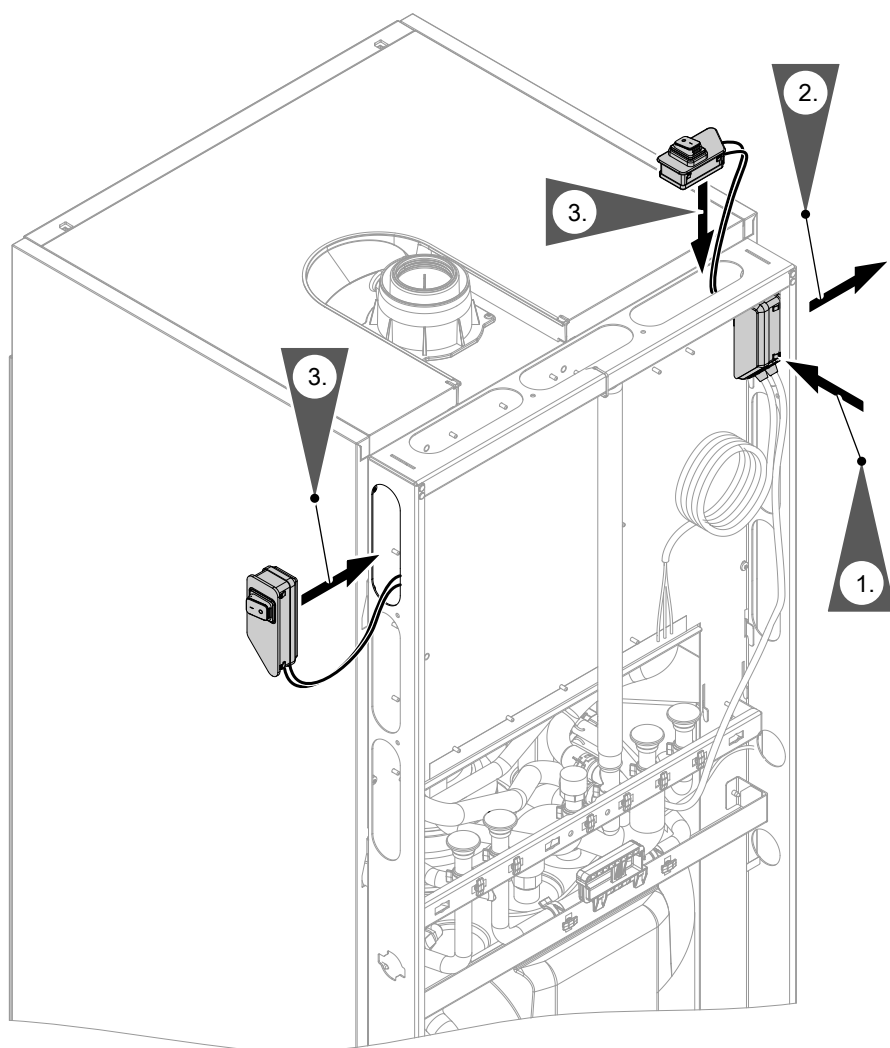


Fig. 1

Moving the ON/OFF switch (if necessary) (cont.)

Open the electrical wiring chamber of the HMU. Disconnect the cable of the ON/OFF switch and remove. See electrical connections.

1. Unclip the ON/OFF switch from the frame.
2. Remove the ON/OFF switch with the cable.

3. Clip the ON/OFF switch into the corresponding opening at the top or on the right-hand side. Reconnect the cable in the HMU wiring chamber and apply strain relief.

Preparing for boiler installation

Use a connection set – available as an accessory – to make the connections on the gas and water sides. The following overview shows sample connection sets for surface mounting, with connection to the top or side.

Attaching accessories

Before final siting, attach all of the accessories that are to be mounted from the back of the boiler (e.g. connection set). First fit the connection set for the DHW circulation pump.



Please note

To prevent appliance damage, connect all pipework free of load and torque stress.

Preparing connections on site:



Connection set installation instructions

Note

Fit safety equipment in accordance with the national regulations.

Preparing for boiler installation (cont.)

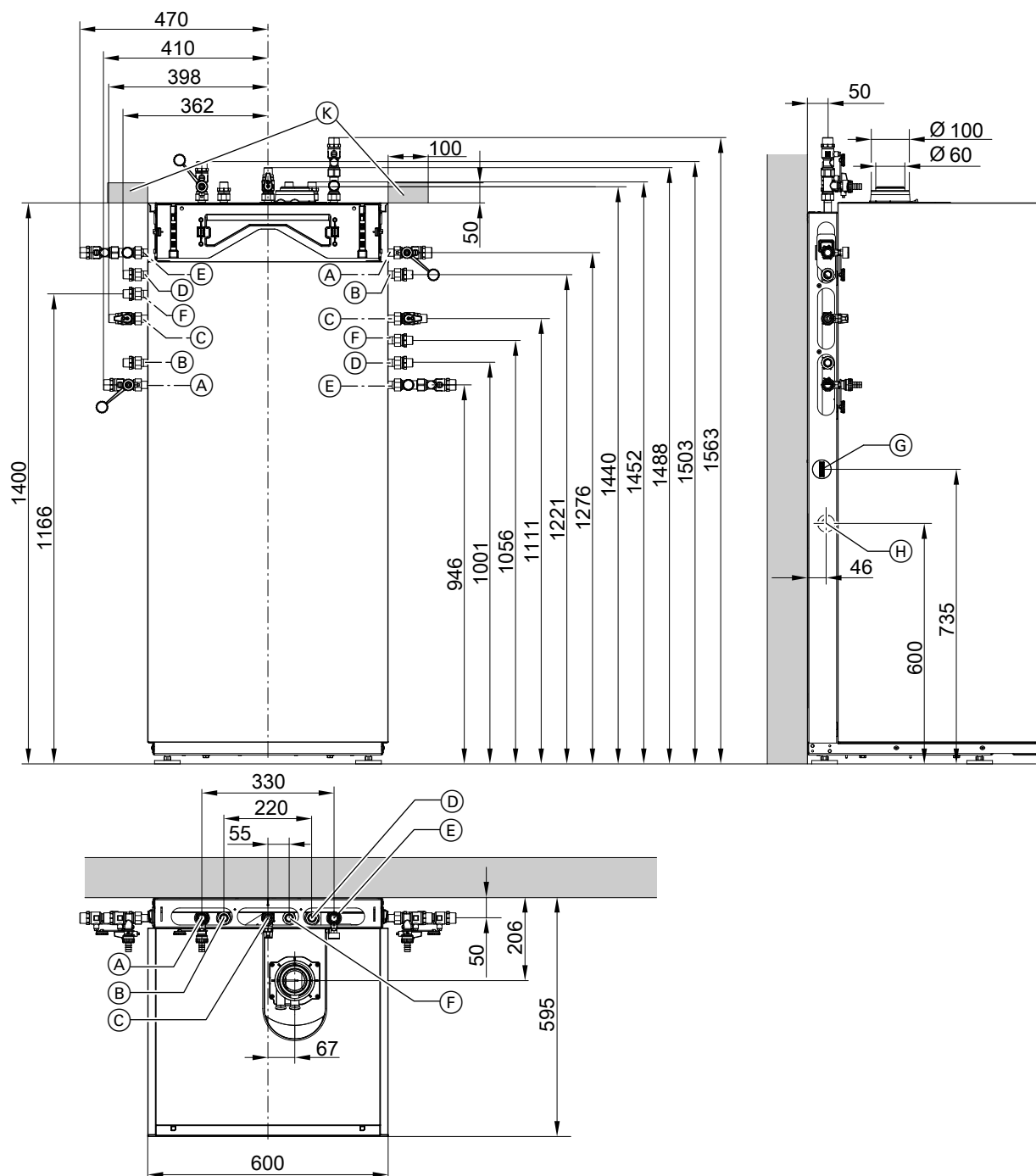


Fig. 2

- (A) Heating flow R $\frac{3}{4}$
- (B) DHW R $\frac{1}{2}$
- (C) Gas connection R $\frac{1}{2}$
- (D) Cold water R $\frac{1}{2}$
- (E) Heating return R $\frac{3}{4}$
- (F) DHW circulation R $\frac{1}{2}$ (separate accessories)
- (G) Plug for electrical accessories

Note

Depending on the version, the plug is inside the appliance.

- (H) Condensate drain to the side
- (K) Area for electrical cables (on-site junction box)

Note

All height dimensions have a tolerance of +15 mm on account of the adjustable feet.

Preparing for boiler installation (cont.)

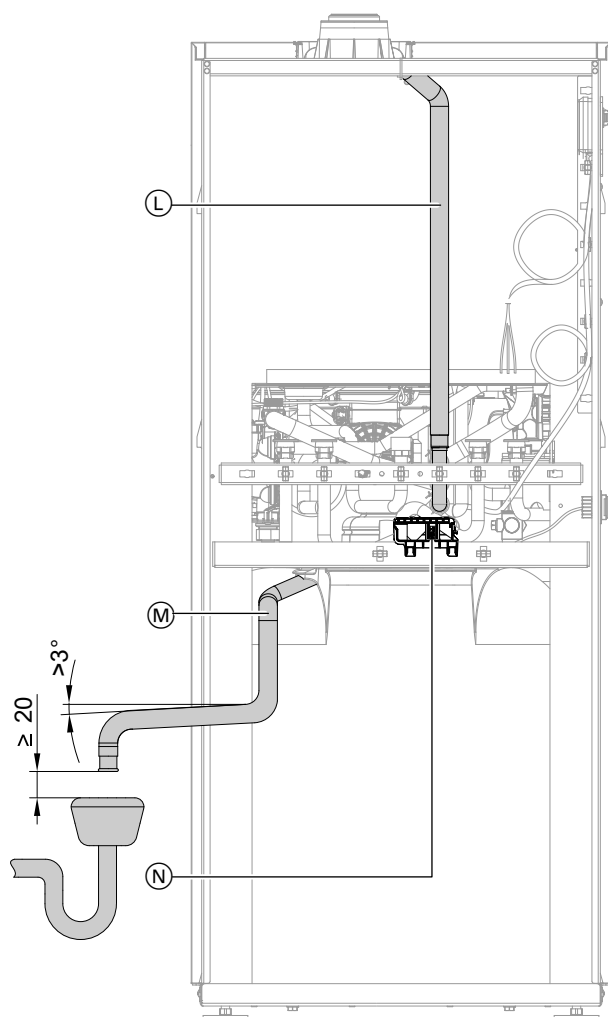


Fig. 3

1. Prepare the connections on the heating water side. Thoroughly flush the heating system.

Note

Should an additional expansion vessel be required on site, connect this vessel in the heating return.

2. Prepare the connections on the DHW side. Install the safety assembly (accessories or on-site provision) in accordance with EN 806 [or local regulations] in the cold water supply. See the following chapter.

Recommendation:

Install the safety valve above the DHW cylinder to protect it against contamination, scaling and high temperatures.

Ⓢ: According to W3 "Principles for creating potable water installations", safety valves must be drained directly via a visible unrestricted drain or via a short outlet line to the drain network.

Note

Do not connect the DHW cylinder safety valve to hose L. Do not change the position of hose L (used for ventilation).

3. Route condensate hose M to side opening H (see diagram on page 18). Connect condensate hose with a fall to the on-site waste water pipe or trap.

Note

- The on-site waste water pipe must have min. Ø 40 mm to allow inflow with no risk of backing up.
- Keep the drainage route from the appliance as short as possible.
- Do not connect the drain hose directly to the on-site waste water pipe. To prevent bacterial contamination from the drain network, observe a minimum clearance of 20 mm (see diagram).

**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

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.

4. Prepare gas connection to TRGI [or local regulations].
5. Prepare the electrical connections.
 - The appliance is delivered fitted with a power cable (approx. 1.5 m long).
 - Power supply: 230 V, 50 Hz, fuse rating max. 16 A

Note

Connect the power cable to the electricity supply using a fixed connection.

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

Note

Route external pipes through guide (N).

Safety assembly to DIN 1988 and EN 806

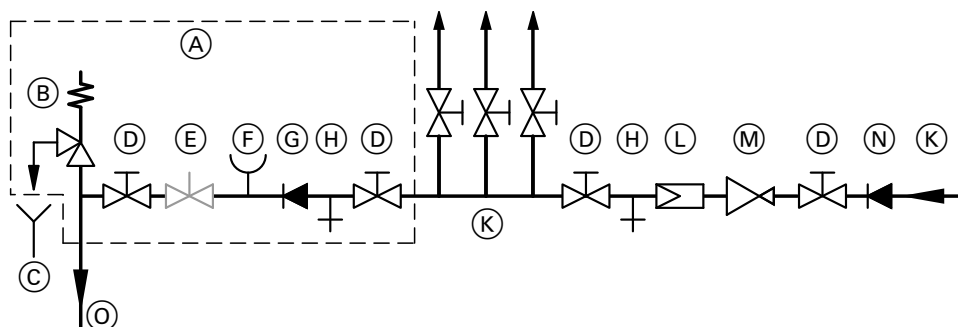


Fig. 4

- | | |
|--|--|
| <ul style="list-style-type: none"> (A) Safety assembly to DIN 1988 and EN 806 (accessories for connection sets for flush mounting) (B) Safety valve (C) Visible discharge pipe outlet point (D) Shut-off valve (E) Flow regulating valve (installation recommended) (F) Pressure gauge connector (G) Non-return valve | <ul style="list-style-type: none"> (H) Drain outlet (K) Cold water (L) Drinking water filter (M) Pressure reducer to DIN 1988-2, Dec. 1988 issue (N) Non-return valve/pipe separator (O) Cold water connection at connection set (accessories) |
|--|--|

Siting the boiler

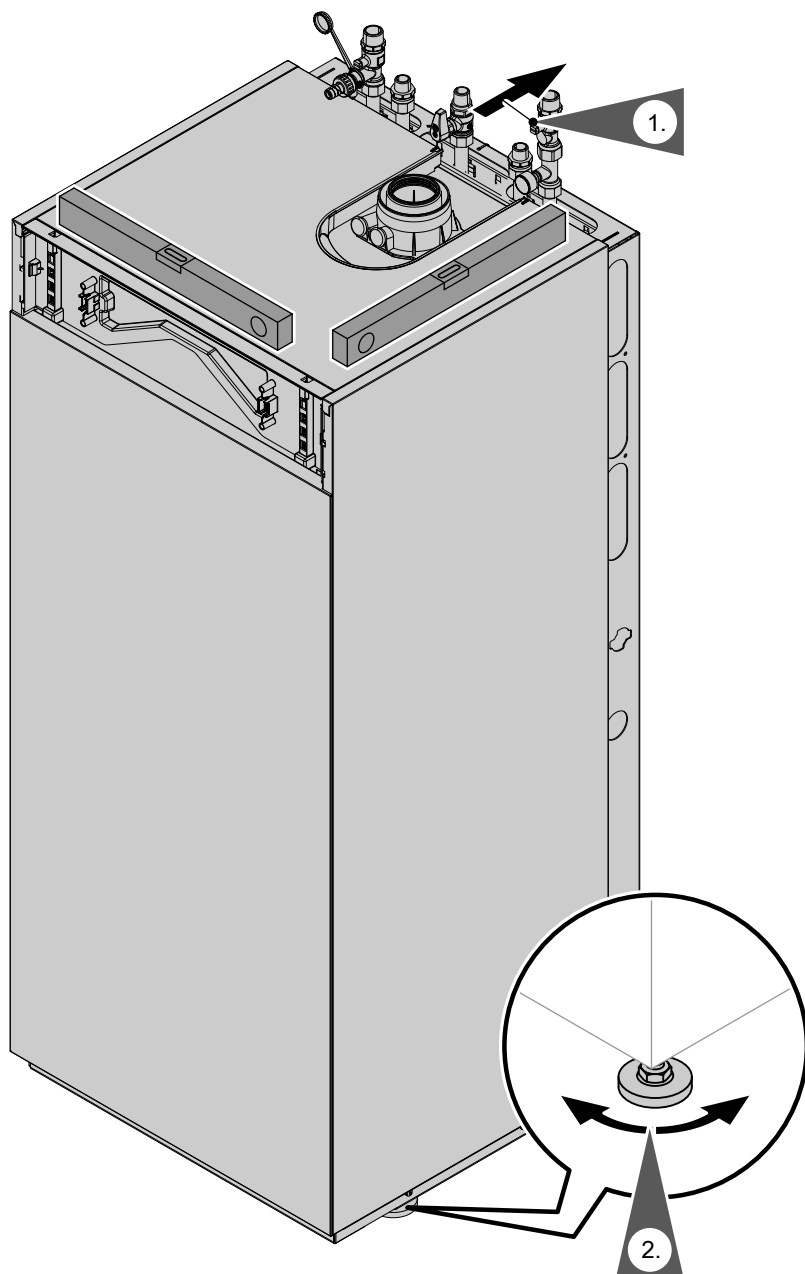


Fig. 5

Type plate

Note

The type plate is attached to cover panel (A) in the appliance. See page 48.

Additional type plate with access code (QR code) marked with "i"

The type plate of the heat generator contains extensive product information and an appliance-specific QR code marked with "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.

Attaching the additional type plate

1. Take the additional type plate from the documentation supplied with the boiler.

Note

The documentation with the additional type plate and QR code marked with "i" can be found on top of the appliance.

Siting the boiler (cont.)

2. In consultation with the system user, affix the additional type plate to the outside of the appliance. The additional type plate must be visible to the flue gas inspector. Affix another QR code to the installation and service instructions.

Removing the front panel

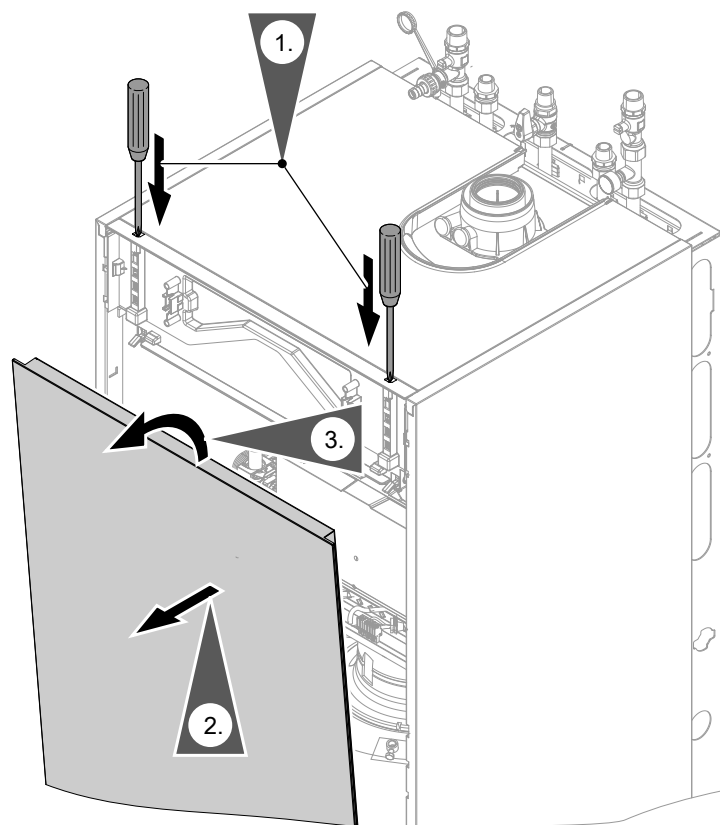


Fig. 6

Connections on the heating water and DHW sides

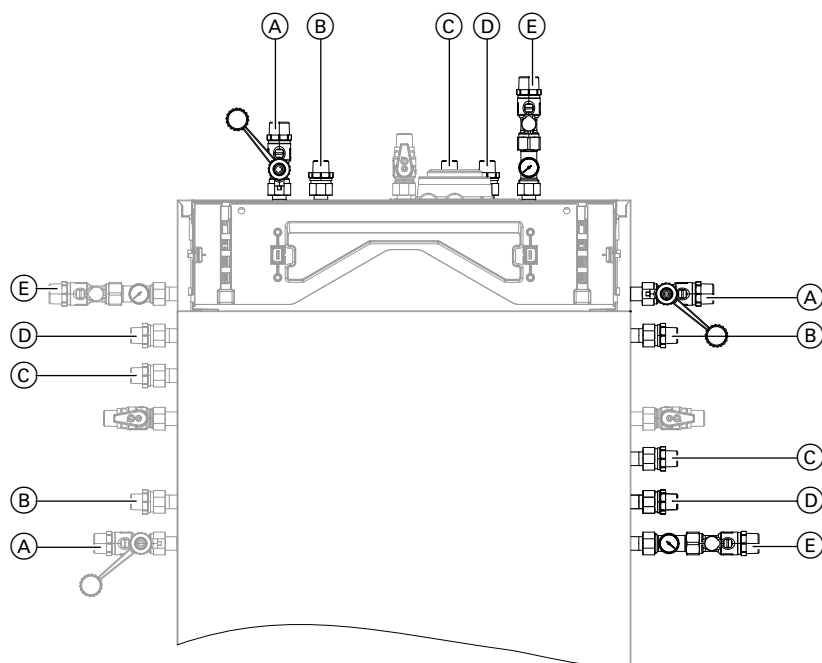


Fig. 7 Shown with connection sets for surface mounting (accessories)

- | | |
|--|------------------------------------|
| (A) Heating flow R $\frac{3}{4}$ | (D) Cold water R $\frac{1}{2}$ |
| (B) DHW R $\frac{1}{2}$ | (E) Heating return R $\frac{3}{4}$ |
| (C) DHW circulation R $\frac{1}{2}$ (separate accessory) | |

DHW circulation connection (potable water)

DHW circulation connection with DHW circulation pump connection set (accessories)

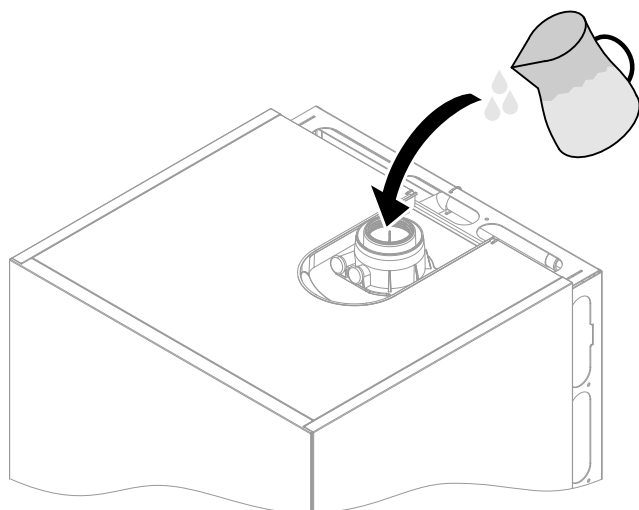


Separate installation instructions

Filling the trap with water

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.



Danger

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

Fig. 8

Flue gas connection

Connect the balanced flue pipe.



Installation instructions for the flue system

Connecting several Vitodens to a shared flue system

If connecting multiple Vitodens to a common flue system at positive pressure using routing types C₁₀, C₁₁, C₁₃, C₁₄: Install a back draught safety device (accessories) in the flue gas connection and the mixing shaft of the burner on each boiler.

Installing the back draught safety devices:

Do not carry out **commissioning** until the following conditions are met:

- Free passage through the flue gas pipes.
- Flue system with positive pressure is gas-tight.
- Inspection port covers checked for secure and tight seating.
- Apertures for ensuring sufficient combustion air supply are open and cannot be closed off.

Note

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

- Applicable regulations on installing and commissioning flue systems have been followed.
- Visual inspection of the flue gas connection.

Note

The use of lubricant prevents the gasket from shifting when the flue pipe is installed.

When using a straight flue pipe, check that the inner ventilation air pipe is correctly fitted.

Note

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



Installation instructions for back draught safety device

Converting the control unit for use with a shared flue system:

- In the commissioning assistant, select the **"Multiple connections"** setting under **"Flue system type"**.



Danger

Leaking or blocked flue systems or an insufficient supply of combustion air cause life threatening poisoning due to carbon monoxide in the flue gas.

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

Gas connection

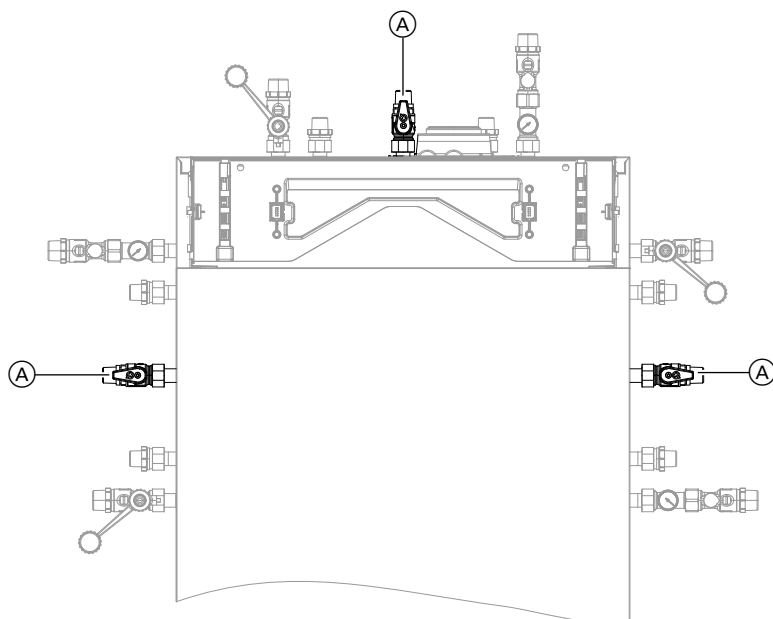


Fig. 9

1. If the gas connection has not been fitted previously, seal gas shut-off valve (A) to the gas connection.
3. Purge the gas line.

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

Information on operation with LPG

Install an external safety solenoid valve if the boiler is installed below ground level.

An EM-EA1 extension (accessories) is required to connect the safety solenoid valve.

2. Check for leaks.



Danger

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

Note

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

Remove residues of the leak detection agent after testing.



Please note

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

Electrical connections

Opening the HMU wiring chamber

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

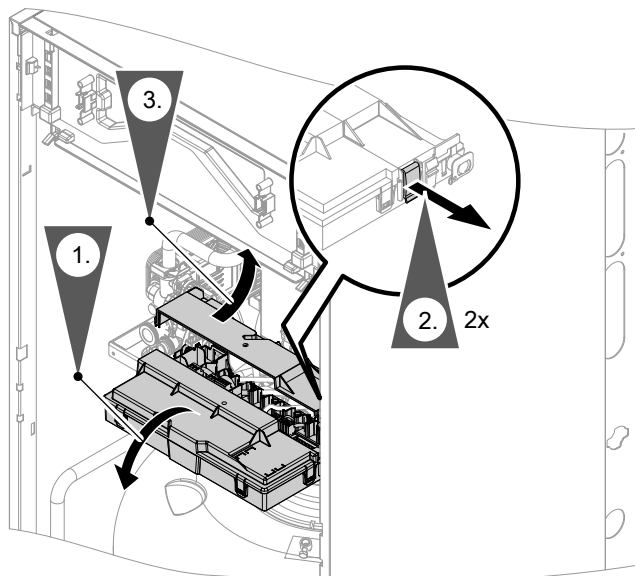


Fig. 10

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

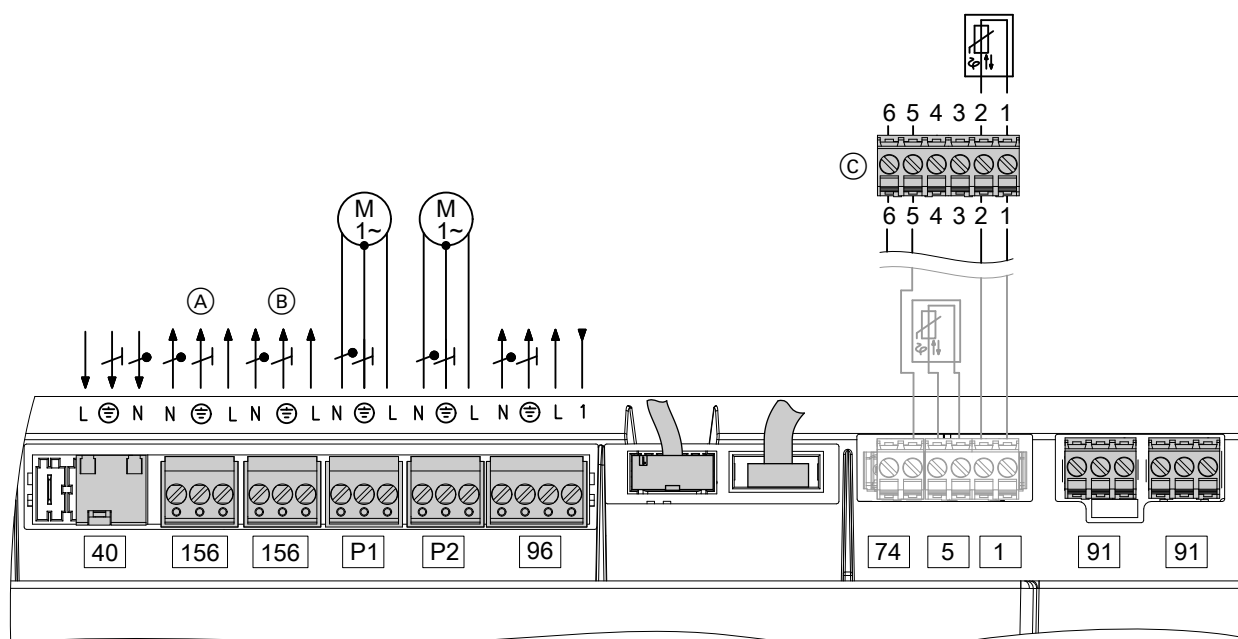


Fig. 11

Connections to 230 V~ plugs

- 40** Power supply
- 96** 230 V input, floating
230 V output
- 156** Switched power outlet

P1 Cylinder loading pump (connected in the delivered condition)

Electrical connections (cont.)

P2 230 V parametrisable output:
DHW circulation pump or heating circuit pump for heating circuit without mixer (for a system with low loss header) or heating circuit pump for heating circuit without mixer A1, without low loss header and with no other heating circuits (max. 1 heating circuit in the system).

- (A) BCU burner control unit power supply (connected in the delivered condition)
- (B) Power supply for accessories
- (C) Plug located externally on the right or left-hand side of the appliance (see also following diagram)

Note

Depending on the version, the plug is inside the appliance.

Connections to extra low voltage (ELV) plugs

- [1] Outside temperature sensor
Terminals 1 and 2 on plug (C)
- [5] Cylinder temperature sensor (connected in the delivered condition)
- [74] PlusBus
Terminals 5 and 6 on plug (C)
- [91] CAN bus

**Note on connecting accessories**

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

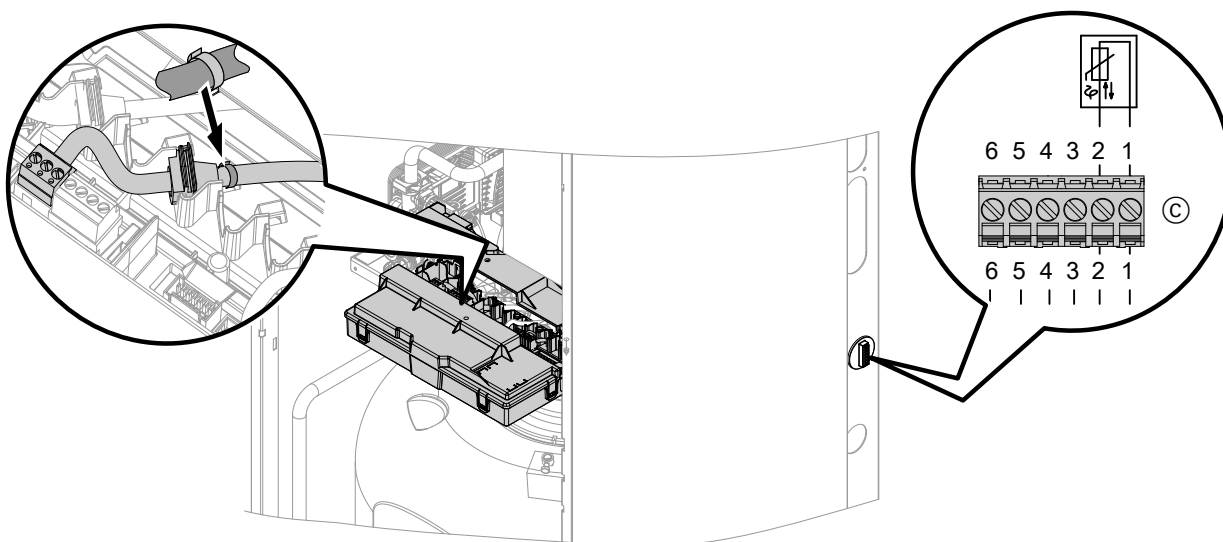
On-site connections on the heat management unit

Fig. 12

- (C) Plug located externally on the right or left-hand side of the appliance (supplied separately)

Required plugs are supplied in separate packaging.
Provide strain relief for cables in the wiring chamber of the HMU heat management unit using cable ties.

Electrical connections (cont.)

Plugs for the electrical connections in the appliance

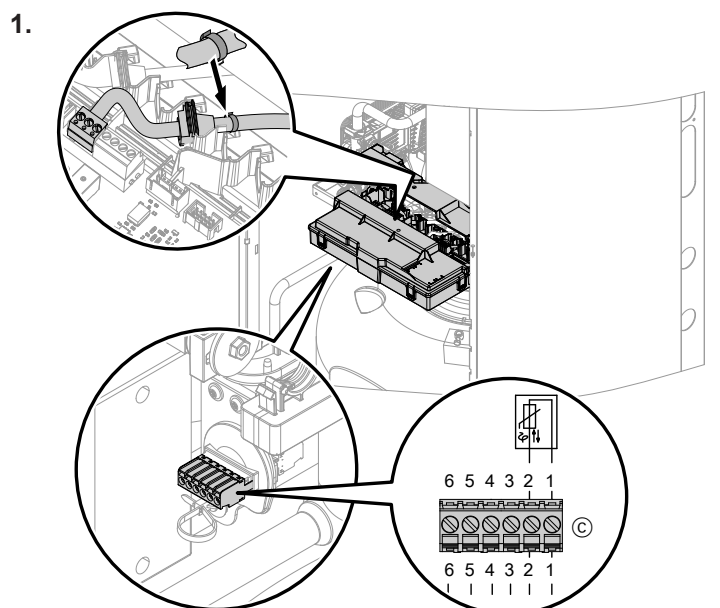


Fig. 13

Route the plug with power cable (required plugs are supplied in separate packaging) through the cable guide on the back of the appliance.

2.

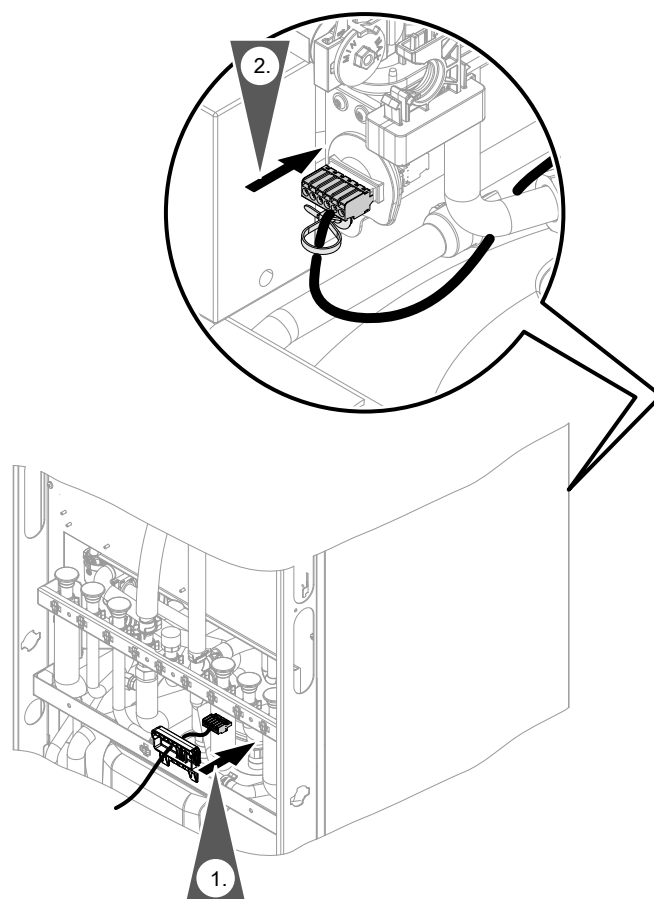


Fig. 14

Use cable ties to apply strain relief to cables in the heat management unit wiring chamber.

Note

Insert the cable ties with body-bound rivet (packaged separately) into the mounting plate on the plug.

Outside temperature sensor 1

Fitting location for outside temperature sensor

- North or north-westerly wall, 2 to 2.5 m above ground level; in multi storey buildings, in the upper half of the second floor
- Not above windows, doors or vents

- Not immediately below balconies or gutters
- Never render over

Outside temperature sensor connection

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

Connecting low loss header sensor 9

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



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

Electrical connections (cont.)

Connecting the circulation pump to P2

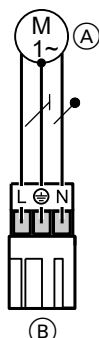


Fig. 15

- (A) Circulation pump
(B) Plug P2 on HMU heat management unit

Possible functions:

- Heating circuit pump (plug [20]) for heating circuit without mixer A1 in connection with low loss header and heating circuits with mixer
- Heating circuit pump (plug [20]) for heating circuit without mixer A1, without low loss header and with no other heating circuits (max. 1 heating circuit in the system).
- DHW circulation pump (plug [28])
Connect DHW circulation pumps with standalone functions directly to the 230 V~ supply.

Information on priority of connection options:

- If heating circuit pump for heating circuit without mixer A1 is installed:
Then connect DHW circulation pump to an EM-P1 extension (accessories).
- If **no** heating circuit pump for heating circuit without mixer A1 is connected:
Connect DHW circulation pump to output P2.

The function is selected in the commissioning assistant by selecting the connected component.

Specification

Rated current	1A
Rated voltage	230 V ~

Floating switching contact connection

Connection at plug [96]

One of the following functions can be connected:

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

Note

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

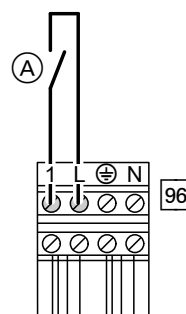


Fig. 16

- (A) Floating contact

Assigning functions in the commissioning assistant

See commissioning assistant in "Commissioning".

Information on connecting PlusBus subscribers

Only the following PlusBus subscribers can be connected to the control:

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

The max. total length of the PlusBus lead is 50 m.

With an unscreened lead, 2-core, 0.34 mm².

Terminator for external CAN bus system

When integrating into an external CAN bus system, a distinction is made as to whether a CAN bus subscriber is the first, last or central subscriber. In order to avoid communication interferences, only 1 terminator with 120 Ω may be present at the first and last subscriber for the termination of the external CAN bus system.

If the gas condensing system boiler is connected as the central subscriber, the factory-connected terminator must be removed: See the following chapters. To check this, the resistance at one of the CAN bus connections between CAN L and CAN H can be measured after all CAN bus connections have been completed: Target value 60 Ω ± 10 %.

Note

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

The gas boiler is the first or last subscriber

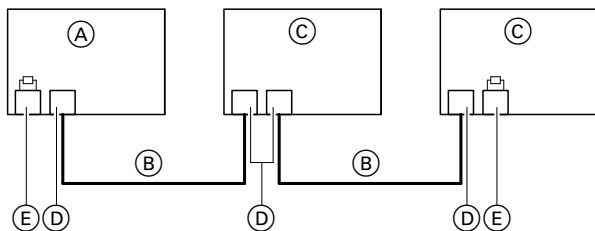


Fig. 17

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

In this case, 1 connection is required at the external plug, connection 91 on the gas boiler in the HMU electronics module:

- Do not remove the factory-fitted plug 91 from the HMU electronics module; this plug contains the terminator.

- (B) CAN bus cable

- (C) Other CAN bus subscribers
(D) Connection of external CAN bus without terminator
(E) Connection of external CAN bus with terminator

The gas boiler is the central subscriber

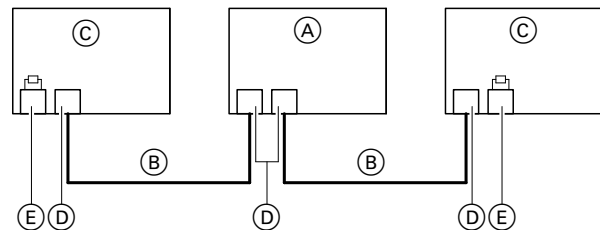


Fig. 18

- (A) Gas boiler as the central CAN bus subscriber

In this case, 2 connections are required at the gas boiler in the HMU electronics module:

- 1 connection in the HMU electronics module: Remove factory-fitted plug 91. Insert the BUS cable (accessories) into the same slot.
- 1 connection at the external plug, connection 91.

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

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

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

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

Electrical connections (cont.)

Power supply and PlusBus connection of accessories

Power supply of all accessories at the HMU heat management unit

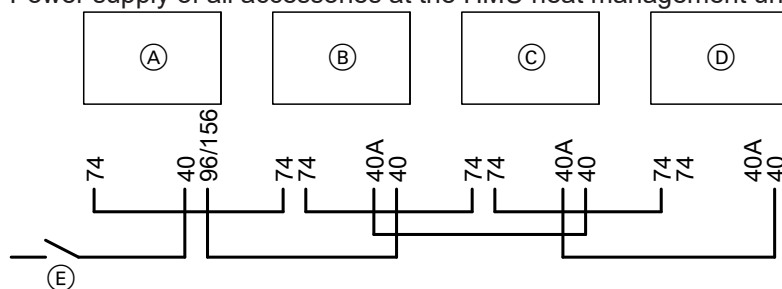


Fig. 19

Some accessories with direct power supply

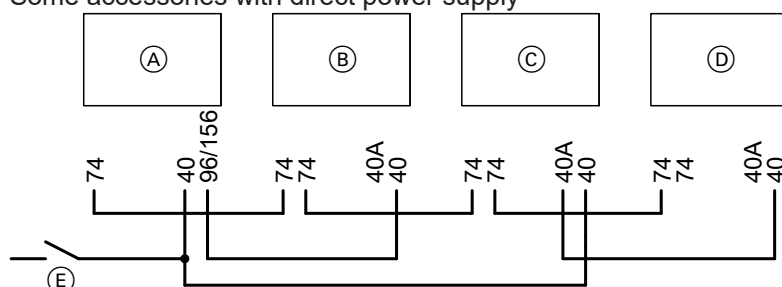


Fig. 20

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

PlusBus system length max. 50 m for 0.34 mm² cable cross-section and unshielded cable.

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

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



Danger

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

- Route extra low voltage (ELV) leads < 42 V separately from cables > 42 V/230 V~.
- Only strip the minimum of insulation from cables as close as possible to the terminals and bundle tightly to the corresponding terminals.
- Secure cables with cable ties.

Power supply 40



Danger

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

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

- IEC 60364-4-41
- IEEE Wiring Regulation; BS 7671:2018
- Connection conditions of the local grid operator

- Install an isolator in the power cable to provide omnipolar separation from the mains for all active conductors, corresponding to overvoltage category III (3 mm) for complete isolation. The isolator must be fitted in the permanent electrical installation, in line with installation requirements.
We also recommend installing a pulse current-sensitive RCD (RCD class A).
- Connect the power cable to the electricity supply using a fixed connection.

- If the power supply to the appliance is connected with a flexible power cable, ensure that the live conductors are pulled taut before the earth conductor in the event of strain relief failure. The length of the earth conductor wire will depend on the design.
- Max. fuse rating 16 A.



Danger

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

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

WiFi operational reliability and system requirements

WiFi router system requirement

- WiFi router with activated WiFi:
The WiFi router must be protected by a sufficiently secure WPA2 password.
Note
 - The WPA2 password is a sequence of 8 to 63 characters.
 - Upper and lower case letters, numbers and special characters in ASCII are permitted.
The WiFi router must always have the latest firmware update.
Do not use unencrypted connections between the heat generator and the WiFi router.
- Internet connection with high availability:
"Flat rate" (flat rate tariff without restriction on time or data volume)
- Set the WiFi frequency to 2.4 GHz.

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

Note

Length of password and permitted special characters depend on the respective router.

Enable the following ports for direct outgoing connections:

- Port 80
- Port 123
- Port 443
- Port 8883

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

Wireless signal range of WiFi connection

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

- On their way between transmitter and receiver, wireless signals are **damped**, e.g. by air or when penetrating walls.
- Wireless signals are **reflected** by metallic objects, e.g. reinforcements embedded in walls, metal foil of thermal insulation and thermal glazing with metalised thermal vapour deposit.

Electrical connections (cont.)

- Wireless signals are **isolated** by service ducts and lift shafts.
- Wireless signals are **disrupted** by devices that also operate with high frequency signals. Distance to such appliances: **Min. 2 m**.
Examples of devices with high frequency signals:
 - Computers
 - Audio and video systems
 - Devices with active WiFi connection
 - Electronic transformers
 - Pre-ballasts

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

Note

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

Angle of penetration

The reception quality remains best if radio signals hit the walls vertically.

Depending on the angle of penetration, the effective wall thickness changes and so does the extent to which the electromagnetic waves are damped.

Flat (unfavourable) angle of penetration

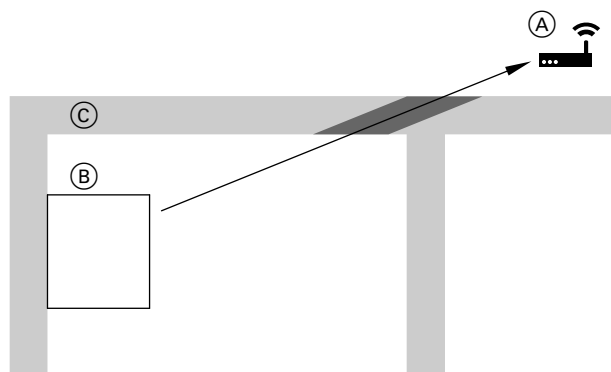


Fig. 21

- (A) WiFi router
- (B) Heat generator
- (C) Wall

Ideal angle of penetration

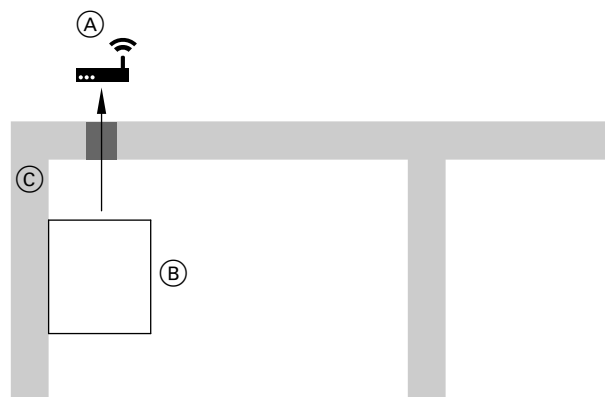


Fig. 22

- (A) WiFi router
- (B) Heat generator
- (C) Wall

Routing connecting cables



Please note

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

Closing the wiring chamber

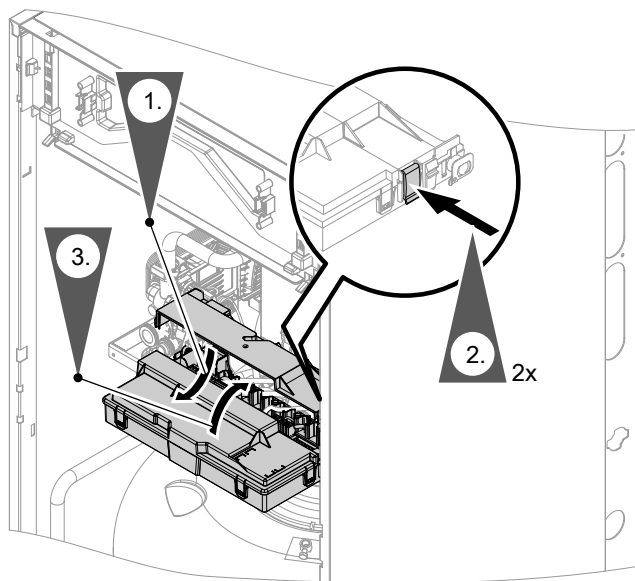


Fig. 23

Fitting the front panel and programming unit

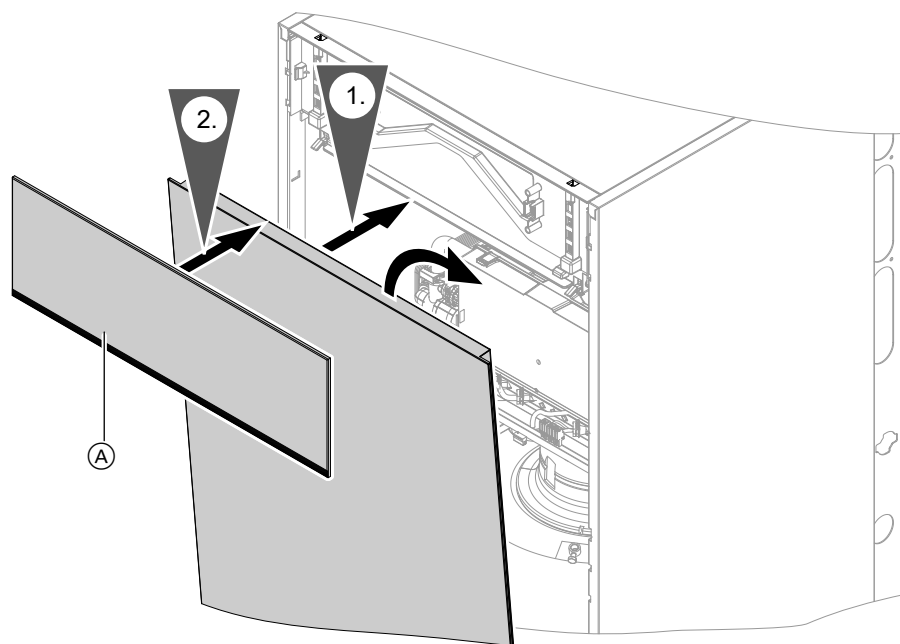


Fig. 24

Lightguide (A) at the bottom



Steps - commissioning, inspection and maintenance

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Filling the trap with water

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

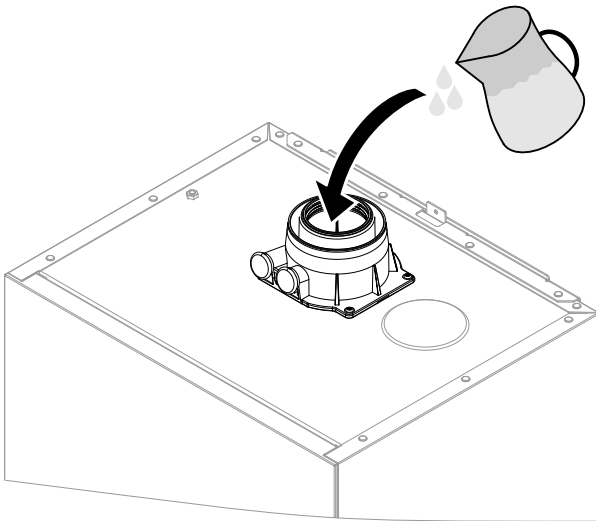


Fig. 25

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.



Removing the front panels

See page 22, steps 1 to 5



Moving the programming unit to the maintenance position

To carry out various maintenance jobs, move the programming unit downwards.



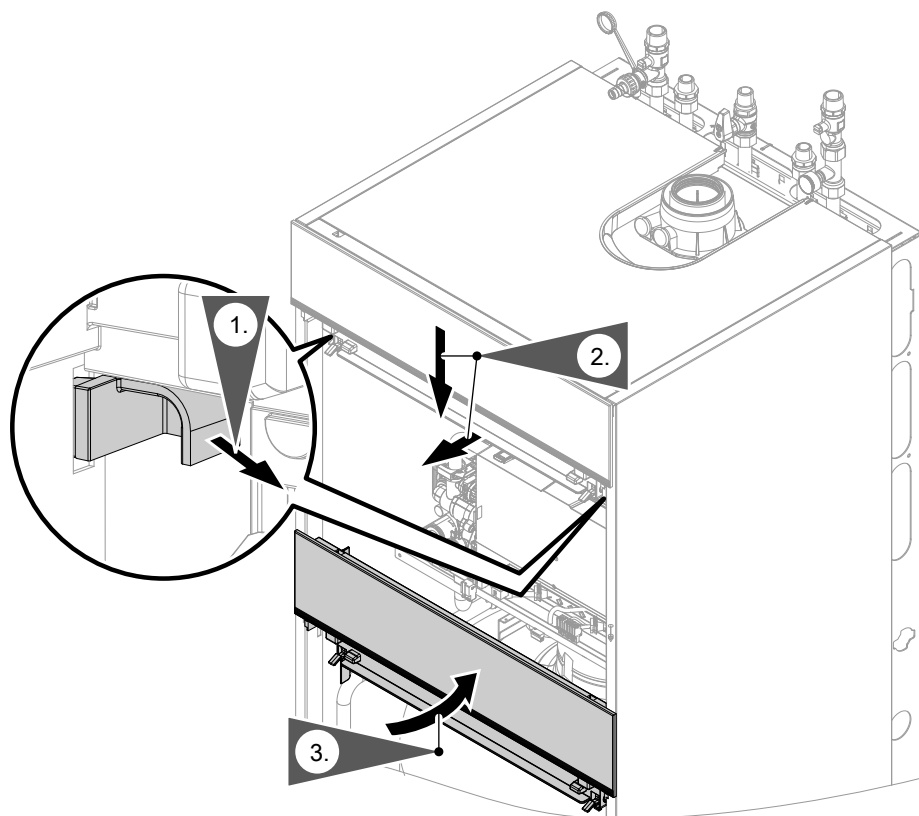


Fig. 26



Commissioning the system with the commissioning assistant

Commissioning assistant

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

Note

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

Note

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

Commissioning via software tool

Note

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



The appliance automatically switches on the WiFi access point.

1. Open the gas shut-off valve.
2. ≡ should then be pressed.
3. " "Use ➤ to call up "Service".
4. " "Press "Service".
5. Enter password.
6. Use ➤ to call up "Commissioning".
7. Press "With software tool".




Commissioning the system with the commissioning... (cont.)

8. Follow the instructions in the app.

Commissioning assistant sequence		Explanations and references
Commissioning		
Language		
With programming unit		If commissioning is to be carried out at the programming unit of the heat generator.
With software tool		The appliance automatically switches on the WiFi access point. Further commissioning steps according to the instructions of the software tool used
Demo operation		Only for demonstration purposes. Do not select for normal heating operation.
Units of measurement		
Date and time		
Operating mode		<ul style="list-style-type: none"> Weather-compensated mode The outside temperature sensor must be connected. Constant mode Operation with constant flow temperature Room temperature-dependent operation (available only for family houses) A room temperature controller/room thermostat (accessories) must be connected to plug 96. Only one heating circuit without mixer in the system.
Building type		<ul style="list-style-type: none"> Family house One shared holiday program and time program for DHW heating Apartment building (room temperature-dependent mode not available) A separate holiday program can be set for each heating circuit
Gas type		If operating with LPG, switch to "LPG"
Flue system type (only Vitodens 2xx)		<ul style="list-style-type: none"> Single connection Only one heat generator is connected to the flue system (factory setting). Multiple connections Several heat generators are connected to the flue system at positive pressure (only suitable for systems that run on natural gas).
System pressure:		
<ul style="list-style-type: none"> Set value Range 		Select the set system pressure, e.g. 1.5 bar. Select the range within which the system pressure can fluctuate around the set value, e.g. +/-0.5 bar. If the value falls below the set range for a certain period of time (set value [1.5 bar] - range [0.5 bar] = 1.0 bar), a fault message/warning message A.11 is displayed.
Filling Air vent valve		Filling: See chapters "Filling the heating system" and "Venting the heating system".
After confirmation with ✓, an automatic test of the flue gas temperature sensor is carried out. See the following chapter.		
If no further settings are to be performed, the commissioning assistant can now be closed.		
System scheme		
Heating circuit 1		Heating circuit without mixer or heating circuit without mixer with external hook-up Heating circuit without mixer with pump (without low loss header and without further heating circuits, max. 1 heating circuit in the system) for e.g. fixed value control station.
Heating circuit 2, 3 ...		Heating circuits with mixer or heating circuit with mixer with external hook-up





Commissioning assistant sequence	Explanations and references
DHW	Settings for DHW heating according to the system components
<ul style="list-style-type: none"> Not available Cylinder with one sensor Cylinder with one sensor and DHW circulation pump Loading cylinder with two sensors Loading cylinder with two sensors and DHW circulation pump 	<p>System without DHW heating</p> <p>System with DHW cylinder with 1 cylinder temperature sensor</p> <p>System with DHW cylinder with 1 DHW cylinder temperature sensor and DHW circulation pump</p> <p>Gas condensing storage combi boiler or gas/solar condensing storage combi boiler with integral loading cylinder</p> <p>Gas condensing storage combi boiler or gas/solar condensing storage combi boiler with integral loading cylinder with DHW circulation pump (DHW circulation pump not possible with Vitodens 222-W).</p>
<ul style="list-style-type: none"> CAN bus appliance with DHW heating 	<ul style="list-style-type: none"> Only for system networks consisting of heat pump and gas condensing system boiler, type B2HH or type B3HH. With hybrid extension set (accessories): Gas condensing system boiler, types B2HE, B2HF or types B3HF, B3HG. The DHW cylinder is hydraulically connected to the gas condensing system boiler and heat pump.
Low loss header/buffer cylinder	Settings for the consumer circuits according to the system components
<ul style="list-style-type: none"> Not available Low loss header, heating only DHW heating upstream of low loss header DHW heating downstream of low loss header Buffer cylinder, heating only DHW heating upstream of buffer cylinder DHW heating downstream of buffer cylinder 	<p>There is no low loss header or heating water buffer cylinder in the system.</p> <p>System with low loss header, without DHW heating</p> <p>DHW heating with e.g. separate DHW cylinder connected upstream of the low loss header</p> <p>DHW heating with e.g. separate DHW cylinder connected downstream of the low loss header</p> <p>System with heating water buffer cylinder, without DHW heating</p> <p>DHW heating with e.g. separate DHW cylinder connected upstream of the heating water buffer cylinder</p> <p>DHW heating with e.g. separate DHW cylinder connected downstream of the heating water buffer cylinder</p>
Solar (if installed)	<p>Solar thermal system connected to heat generator via EM-S1 extension (ADIO, SDIO/SM1A electronics module)</p> <p>Setting subject to the design of the solar thermal system</p> <p> EM-S1 extension installation and service instructions</p>
<ul style="list-style-type: none"> No solar function Solar function DHW heating Solar function for central heating backup Solar function with pre-heating, 2nd cylinder Solar function with thermostat function 	<p>Only adjustable on SDIO/SM1A electronics module</p> <p>Only adjustable on SDIO/SM1A electronics module</p> <p>Only adjustable on SDIO/SM1A electronics module</p>



Commissioning assistant sequence		Explanations and references
Floating contact: Function selection plug 96		If a contact has been connected to plug 96 of the HMU heat management unit.
	<ul style="list-style-type: none"> ▪ No function ▪ External demand, DHW circulation pump ▪ External demand ▪ External blocking 	<p>Pushbutton function, DHW circulation pump runs for 5 min.</p> <p>Heat generator demand with adjustable set flow temperature (parameter 528.0) and set primary pump speed (parameter 1100.2)</p>
EM-EA1 (DIO): Function selection		If an EM-EA1 extension (DIO electronics module) is connected as a function extension.
	Functions	Selection of the connected function according to the table in the EM-EA1 extension installation instructions.
Remote control units		
		Set the type of remote control and subscriber no. as assignment to the respective heating circuit. Up to 3 heating circuits can be assigned to one remote control unit. It is not possible for several remote controls to act on one heating circuit.
Maintenance		
	Interval in burner hours run until next maintenance	Interval adjustable in steps of 100 h.
	Interval until the next maintenance	Interval adjustable to 3, 6, 12, 18 or 24 months.

Automatic flue gas temperature sensor check

The display shows: **"Testing, flue gas temperature sensor"** and **"Active"**.

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

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

Note

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

Note

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

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

Confirm the commissioning assistant with ✓.

Switching WiFi on/off

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

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

The access details required for establishing a connection are recorded in the form of an access code with **"WiFi symbol"**. Three copies of this code are located on the front of the programming unit.

Remove the access code label and for commissioning, affix one label to the space marked out on the type plate.

Switch on the WiFi connection and establish a connection to the router; see also page 32.

Activating the internet connection:



Operating instructions

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



Commissioning the system with the commissioning... (cont.)



Fig. 27

Affix a label in the operating instructions.

Calling up the commissioning assistant at a later point

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

Tap the following buttons:

- 1.
2. "Service"
3. Enter password "viservice".
4. Use to confirm.
5. "Commissioning"

Entering contact details

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

1. and **OK** simultaneously for approx. 4 s, then release.
2. Use / to select "Connect with software tool".
3. Follow the instructions on the programming unit display.



Commissioning the system in a system network

Commissioning Vitodens and the heat pump with Viessmann One Base

All Viessmann appliances with One Base in a system network (gas condensing system boiler + OneBase heat pump) are commissioned using the ViGuide app via the access point of the heat pump (main appliance).

See chapter "Commissioning the system" in the installation and service instructions for the heat pump.

Note

Where one or more of the Vitodens boilers have already been operational as a standalone unit, first restore the factory settings on these appliances. In the system configuration (parameters) of the respective Viessmann appliance, run parameter 575.0 "Delivered condition". See page 72.

Commissioning the heat pump in a system network

In a system network of one heat pump and one of the following external heat generators, commissioning is carried out via the HMI programming unit of the heat pump:

- Vitodens 200-W, type B2HH
And
Vitodens 300-W, type B3HH
- With hybrid extension set (Vitodens accessories):
Vitodens 200-W, types B2HE and B2HF
And
Vitodens 300-W, types B3HF and B3HG

When commissioning the hybrid system network via the programming unit, commissioning must first be started and carried out on the main appliance (heat pump). Once the main appliance has been successfully commissioned, the slave appliance – the gas condensing system boiler – is commissioned.

The other connected appliances detect the connection to the main appliance.

In conjunction with a heat pump with OneBase control platform, the heat pump is always the main appliance.



Commissioning the system in a system network (cont.)

Note

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



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



Installation and service instructions of the relevant Viessmann appliance

2. Switch on the Viessmann appliances:

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

3. Start commissioning on the heat pump (main appliance):

Launch the commissioning process on the heat pump via the commissioning assistant:



Heat pump installation and service instructions.

Note

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

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

For commissioning via the ViGuide app, select **"Commissioning with software tool"**:

- The heat pump automatically activates the access point. A direct WiFi connection to a mobile device is established via the access point. This WiFi connection is independent of the home WiFi network.
- The other connected Viessmann appliances detect the connection to the heat pump (main appliance). Some Viessmann appliances indicate on the HMI programming unit display that connection was successful.

For commissioning via the HMI programming unit:

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

4. Commission and set up the system network:

For commissioning via the ViGuide app: Launch the ViGuide app on the mobile device. Follow the instructions.

- Scan the QR code on the label.
- Or
- Enter the name of the access point "Viessmann-xxxx" and the password ("WPA2").

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





5. Further settings via the ViCare app:

The heat pump must be connected to the Viessmann server via the internet in order to perform settings via the ViCare app. This internet connection is established via the home WiFi.

To set up the internet connection:



Operating instructions



Filling the heating system

Fill water

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

! Please note

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

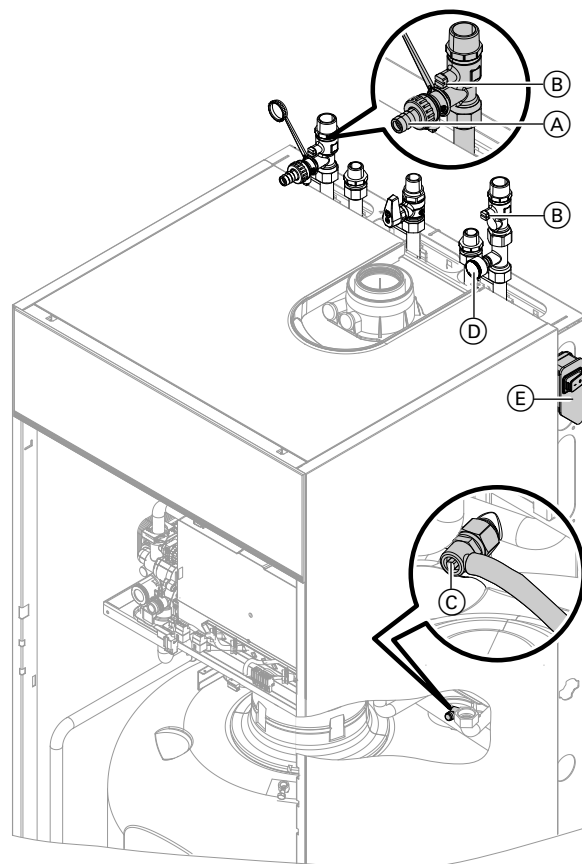


Fig. 28 Shown with the connections at the top

1. Check the pre-charge pressure of the expansion vessel.
2. Close the gas shut-off valve.
3. Connect the fill hose to boiler drain & fill valve (A) in the heating flow. Either on the side or top of the boiler depending on the connection set.
4. Open shut-off valves (B) on the heating water side.
5. Fit hose to air vent valve (C). Route the hose into a suitable container or drain outlet.
6. Activate the filling function (see commissioning assistant or following chapter).
7. Fill the heating system via boiler drain & fill valve (A). Minimum system pressure > 1.0 bar (0.1 MPa). Check the system pressure at pressure gauge (D). Indicator must be in the green band.

Note

Close air vent valve (C) and adjust system pressure at boiler drain & fill valve (A).

8. Close boiler drain & fill valve (A).



Filling the heating system (cont.)

Activating the filling function

Tap the following buttons:

- 1.
2. "Service"
3. Enter password "viservice".
4. Use to confirm.
5. "Service functions"
6. "Filling"
7. Activate the filling function with .
The display shows the system pressure.
The filling function ends automatically after 20 min or when you tap .



Venting the boiler



Please note

To prevent appliance damage,
Do not vent the boiler via the safety valve on the
heating water side.

1. Close shut-off valves (B) on the heating water side.
2. Open air vent valve (C) and fill valve (A) in the heating flow. Vent (flush) under mains pressure until no more air noise is audible.
3. Close air vent valve (C) and fill valve (A). At the same time, adjust operating pressure > 1.0 bar (0.1 MPa).
4. Open shut-off valves (B) on the heating water side.

Note

Call up the pressure indicator in the "**System overview**" menu point. See operating instructions.





Venting the boiler (cont.)

5. Remove drain hose from air vent valve ③ and keep safe.



Venting the heating system

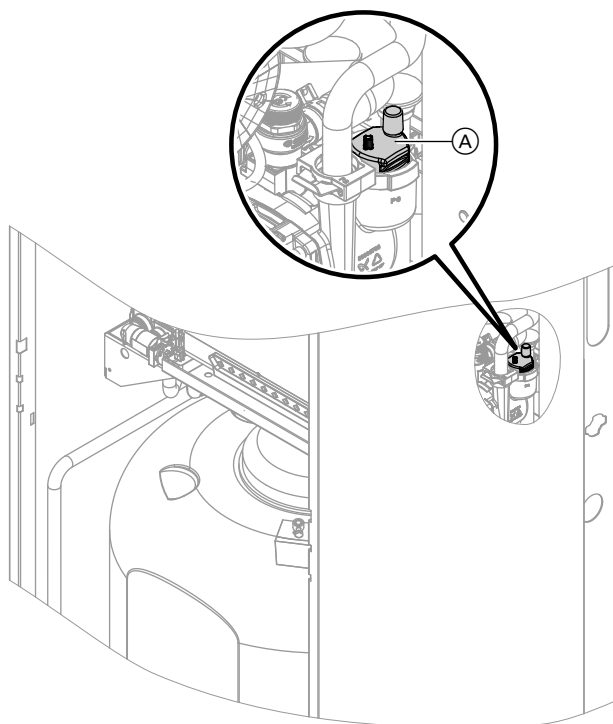


Fig. 29

1. Check whether the air vent screw in quick-action air vent valve ① of the heating circuit pump is open.
2. Close the gas shut-off valve. Switch the appliance on.
3. Activate venting function (see following steps).
4. Call up the pressure display with **"System overview"**.
Check the system pressure.

Activating the venting function

Tap the following buttons:

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



Filling the DHW cylinder on the DHW side

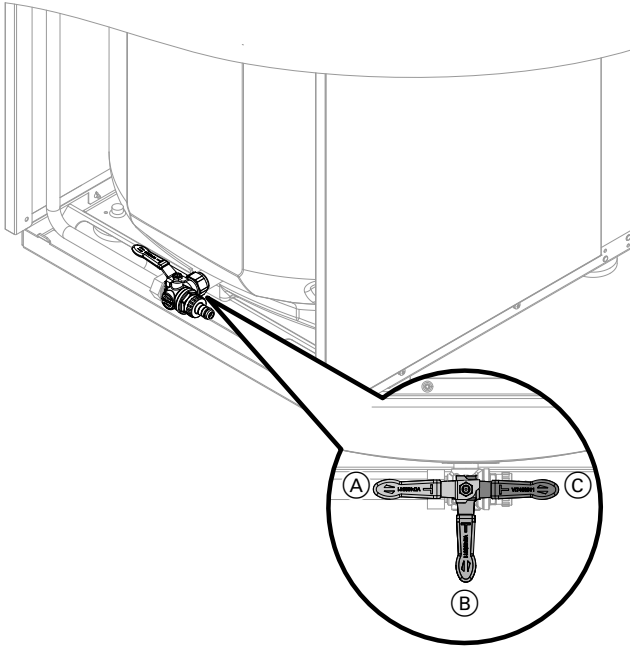


Fig. 30

1. The lever on the valve must be in position (A).
2. Open the on-site DHW supply and a DHW draw-off point.
3. Once air stops coming out of the DHW draw-off point, the DHW cylinder is completely filled.
4. If there is still air in the cylinder loading circuit, it can be released via air vent screw (D) on the cylinder loading pump.

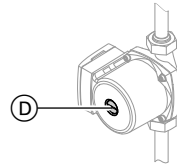


Fig. 31



Checking the connections on the heating water and DHW sides



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.



Naming the heating circuits

In the delivered condition, the heating circuits are designated "Heating circuit 1", "Heating circuit 2", "Heating circuit 3" and "Heating circuit 4".

If the system user prefers, the heating circuits can be renamed to suit the specific system.

To enter names for heating circuits:



Operating instructions



Checking the gas type

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

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



Checking the gas type (cont.)

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



Converting the gas type (only for operation with LPG)

1. To change the gas type on the control unit, see "Commissioning the system with the commissioning assistant"
2. Affix label "G31" (supplied with the technical documentation) adjacent to the type plate on the outside of the appliance.

Note

No mechanical adjustments are made to the gas solenoid valve.



Checking the static pressure and supply pressure

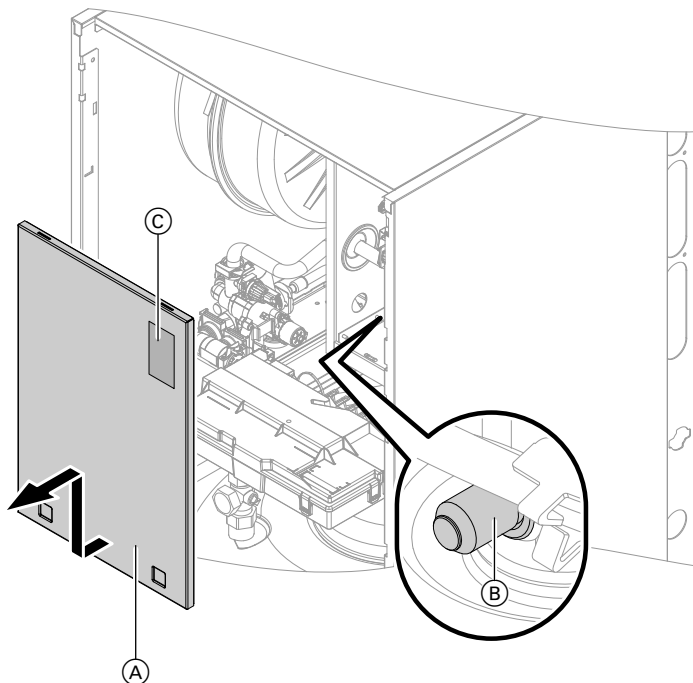


Fig. 32

- (A) Cover panel
- (B) Test connector
- (C) Type plate



Danger

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

Operation with LPG

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

1. Close the gas shut-off valve.

2. Undo clips and remove cover panel (A).
3. Undo screw in test connector (B) on the gas train, but do not remove it. Connect the pressure gauge.
4. Open the gas shut-off valve.
5. Test the static pressure and record it in the report. Max. 57.5 mbar (5.75 kPa).



Checking the static pressure and supply pressure (cont.)

6. Start the boiler.

Note

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

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

Note

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

8. Record the actual value in the report. Implement measures as indicated in the table below.

9. Shut down the boiler. Close the gas shut-off valve.

10. Remove the pressure gauge. Tighten the screw in test connector (B).

11. Open the gas shut-off valve and start the appliance.



Danger

Gas escaping from the test connector leads to a risk of explosion.

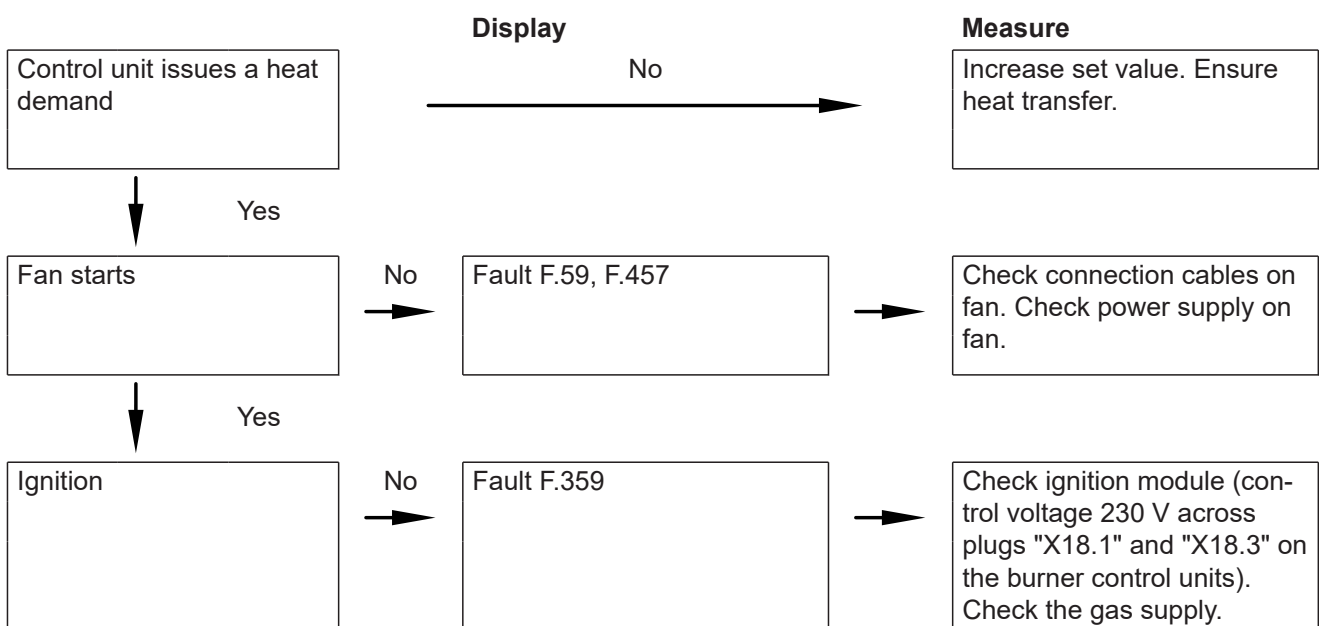
Check gas tightness at test connector (B).

12. Fit cover panel (A).

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

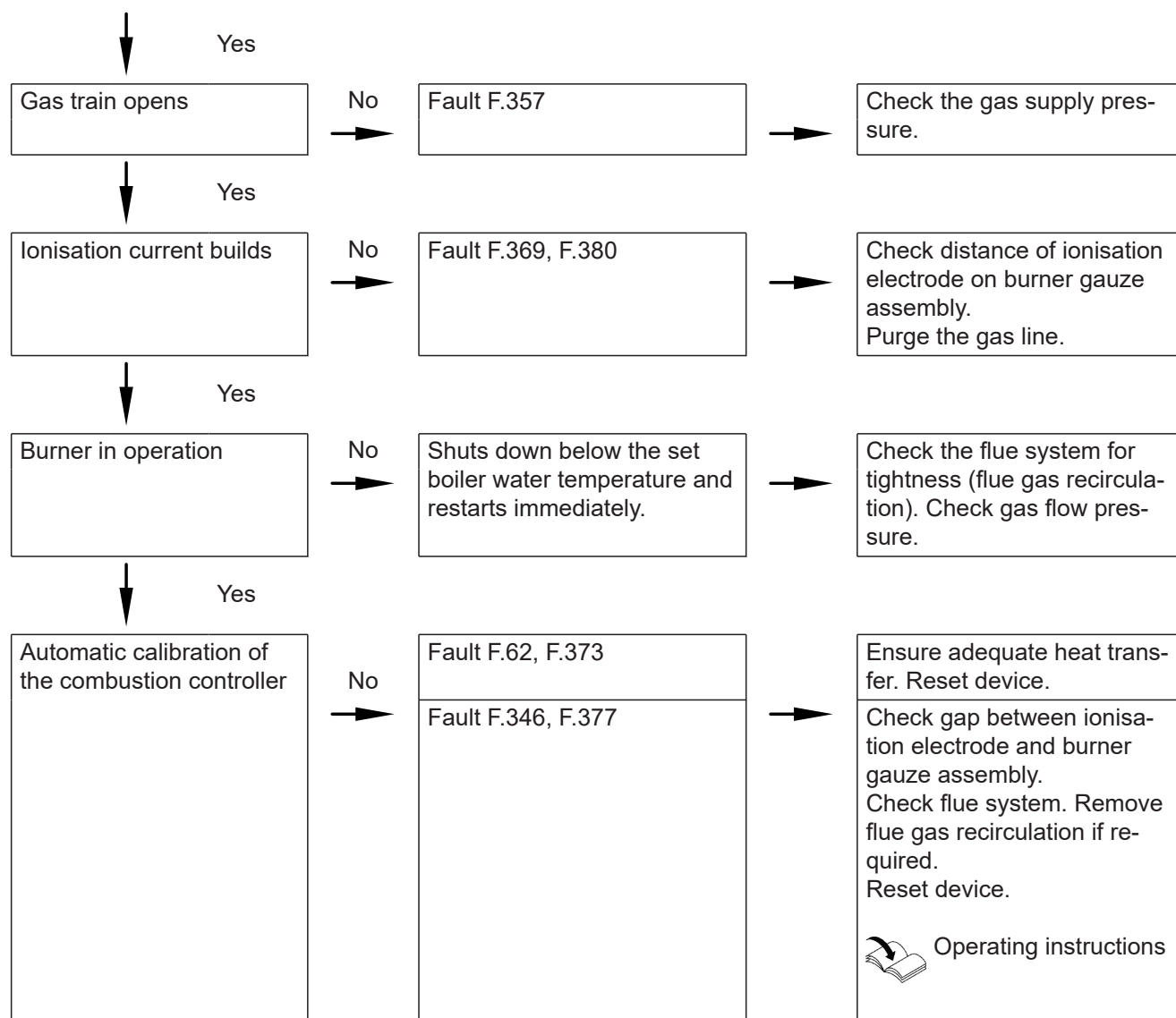


Function sequence and possible faults





Function sequence and possible faults (cont.)



For further details regarding faults, see "Troubleshooting".







Setting the max. heating output

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

Note

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

1. Tap .
2. Select "**Service**".
3. Enter password "**viservice**".
4. Use  to confirm.
5. Select "**System configuration**".
6. Select "**Boiler**".
7. Parameter **596.0 "Maximum heating output"**
8. Check that a sufficient flow rate is ensured. If necessary, increase the heat transfer. Confirm the message with ".
9. .



Setting the max. heating output (cont.)

10. Set required value as a % of the rated heating output and confirm with . Factory setting 100 %.
11. End service functions.



Activating screed drying

Screed drying

6 different temperature profiles can be set for screed drying:

Preset temperature profiles can be adjusted via parameter **897.0 "Screed drying"** in the General group.

For further details, see "Function description".

Note

Screed drying applies to all connected heating circuits simultaneously.

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



Adjusting pump rate of integral circulation pump

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

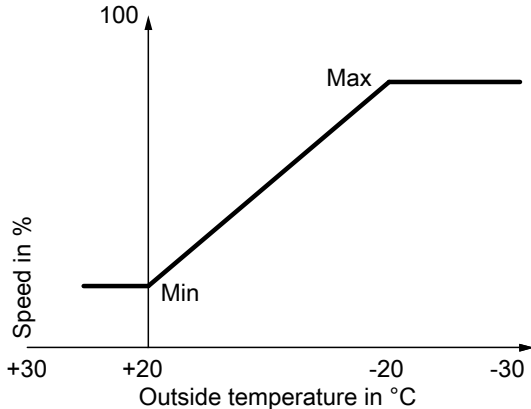


Fig. 33

Setting (%) in the heating circuit 1 group:

- Min. speed: Parameter 1102.0
- Max. speed: Parameter 1102.1

- In the delivered condition, the minimum pump rate and the maximum pump rate are set to the following values:

Note

The minimum speed of 60 % is not undershot, in order to ensure the required flow rate via the internal overflow valve. Having the minimum pump rate set to 40 % ensures that the pump works more energy efficiently in weather-compensated mode.

Rated heating output in kW	Speed settings in the delivered condition in %	
	Min. pump rate	Max. pump rate
11	40	60
19	40	70
25	40	85
32	40	100

- In conjunction with a low loss header, heating water buffer cylinder and heating circuits with mixer, the internal circulation pump runs at a constant speed. Speed setting (%): Parameter 1100.2 in the Boiler group



Residual head of integral circulation pump

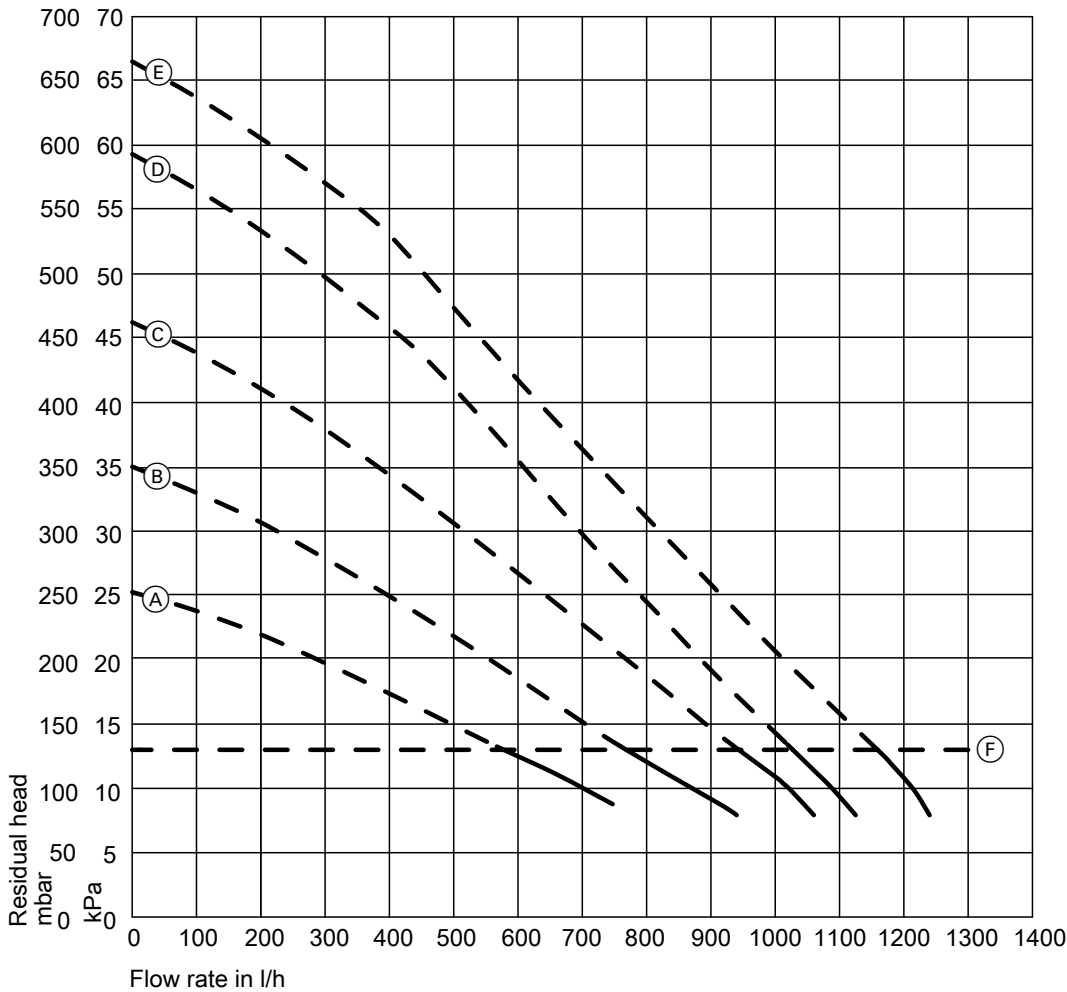


Fig. 34

Ⓕ Upper operational limit (integral bypass opens)

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



Checking the balanced flue system for leaks (annular gap check)

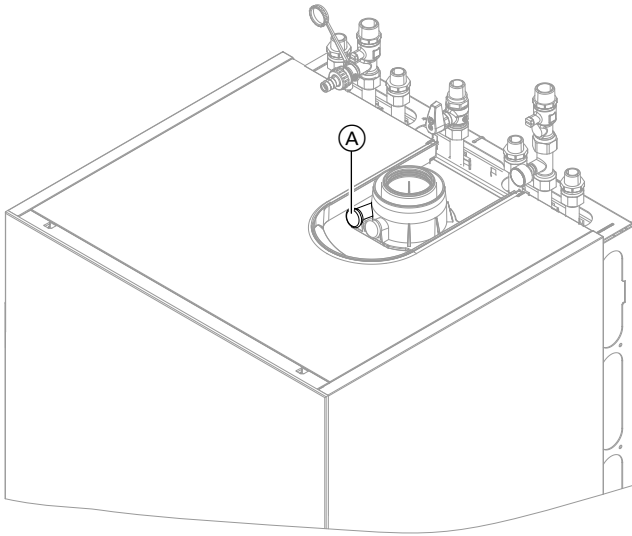


Fig. 35

Ⓐ Combustion air aperture (ventilation air)

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

In this case, we recommend that a simple tightness test is carried out during system commissioning. For this, check the CO_2 or O_2 concentration in the combustion air at the annular gap of the balanced flue pipe. If the CO_2 concentration is less than 0.2 % or the O_2 concentration is greater than 20.6 %, the flue pipe is deemed to be sufficiently gas-tight.

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



Please note

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





Removing the burner

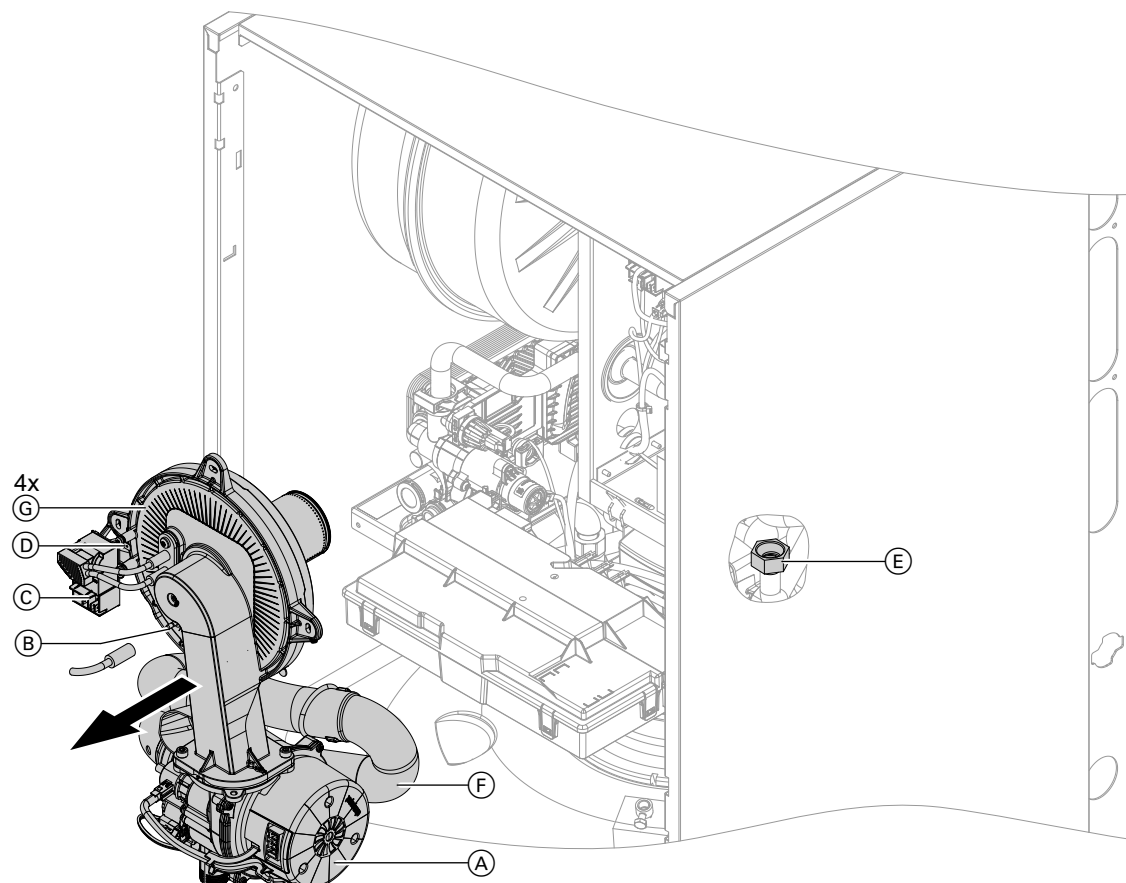


Fig. 36

1. Turn off the ON/OFF switch.
2. Close the gas shut-off valve and safeguard against reopening.
3. Release the clips and remove the cover panel.
4. Disconnect cables and leads from:
 - Fan motor (A)
 - Adaptor, CAN bus fan
 - Ionisation electrode (B)
 - Ignition unit (C)
 - Earth (D)
5. Undo gas supply pipe fitting (E).
6. Detach Venturi extension (F) from fan unit.
7. Undo 4 screws (G) 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

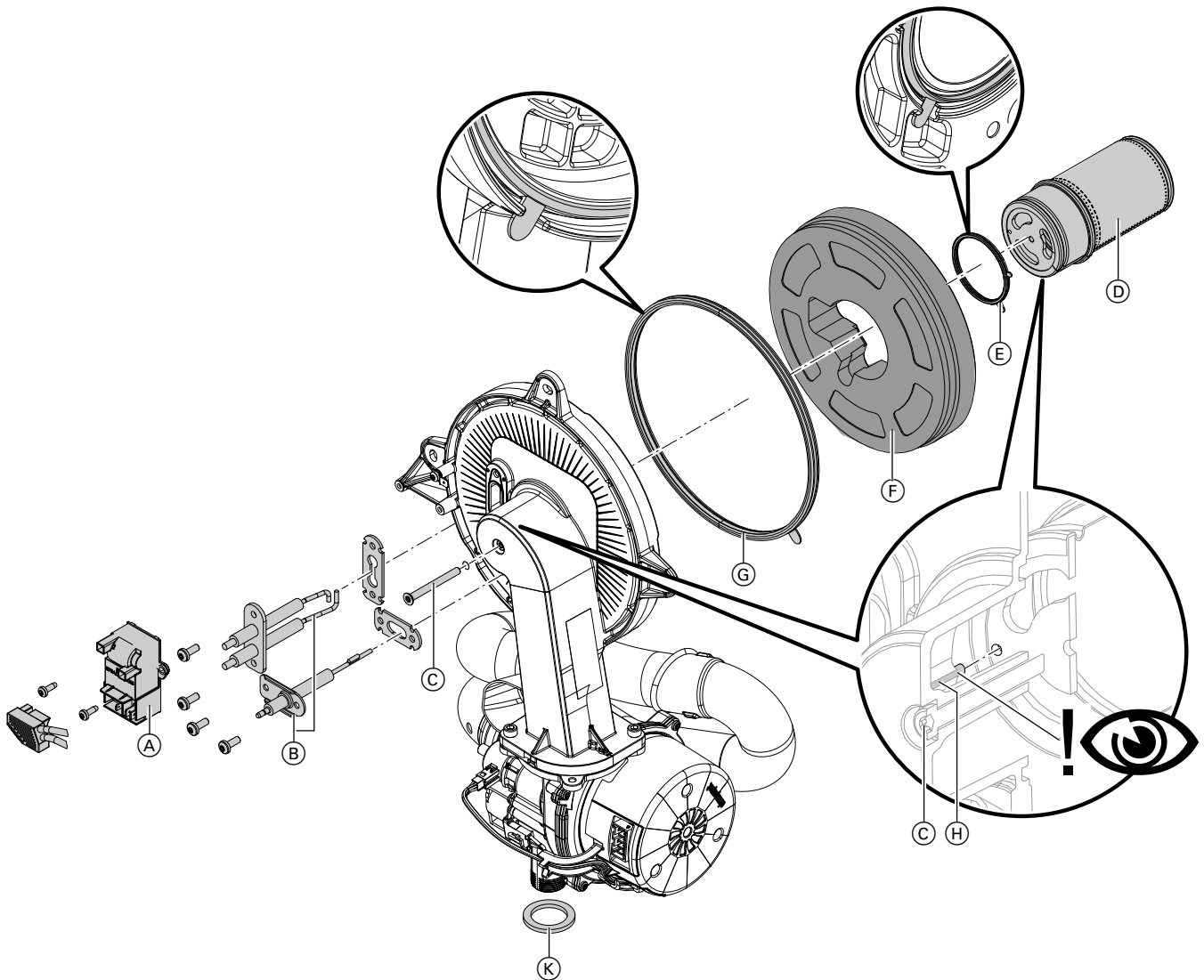


Fig. 37

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.



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

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. Insert the burner door pin into the hole in the burner gauze assembly. See chapter "Installing the burner", page 56.

Secure burner gauze assembly (D) and gasket (E) with Torx screw (C).

Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life. Observe torque settings if a torque wrench is available.

Torque: 3.0 Nm.

8. Check thermal insulation ring (F) for firm seating.

9. Fit electrodes (B). Check clearances, see following chapter.

Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life. Observe torque settings if a torque wrench is available.

Torque: 4.5 Nm.

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

Installing the burner gauze assembly

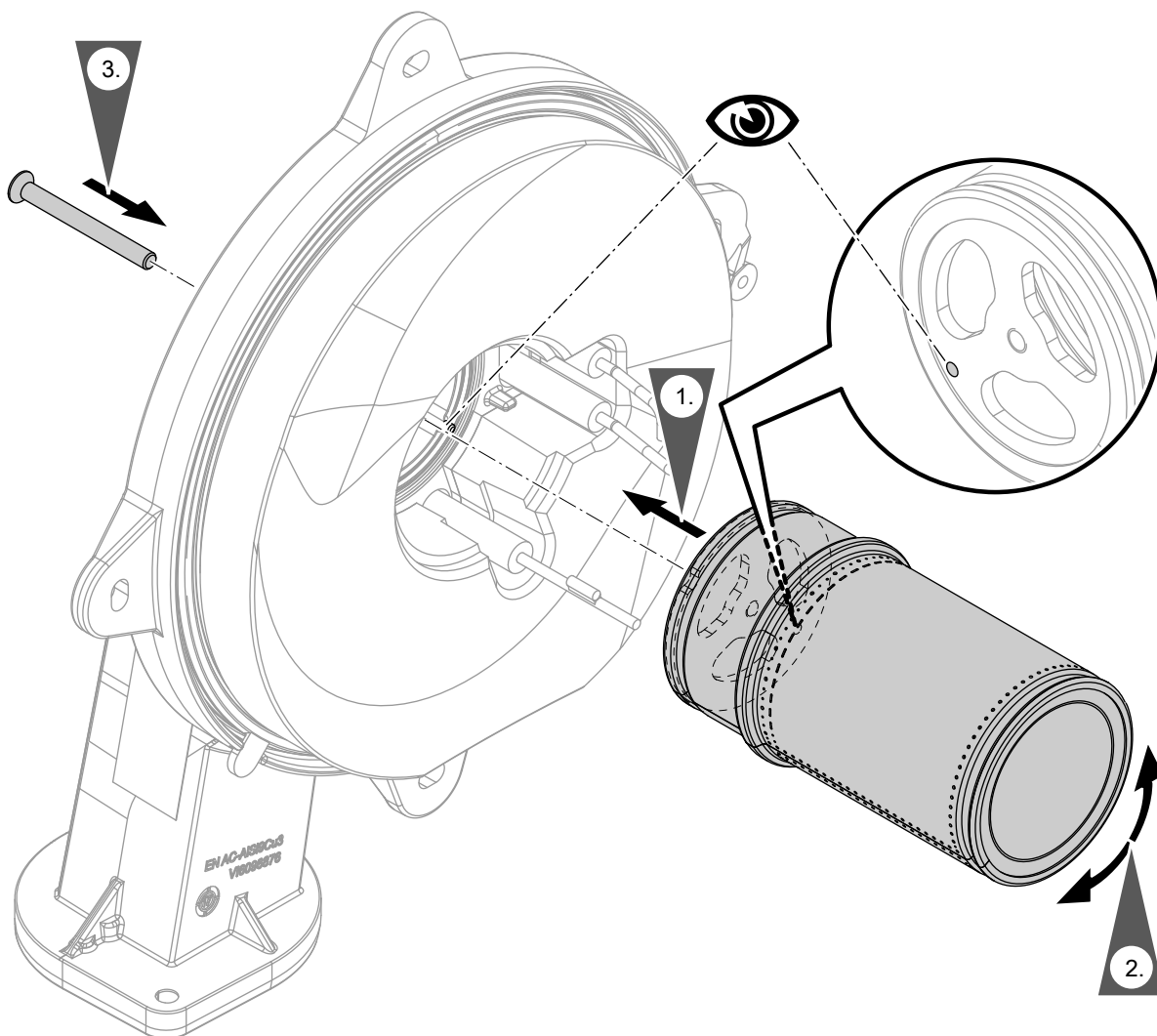
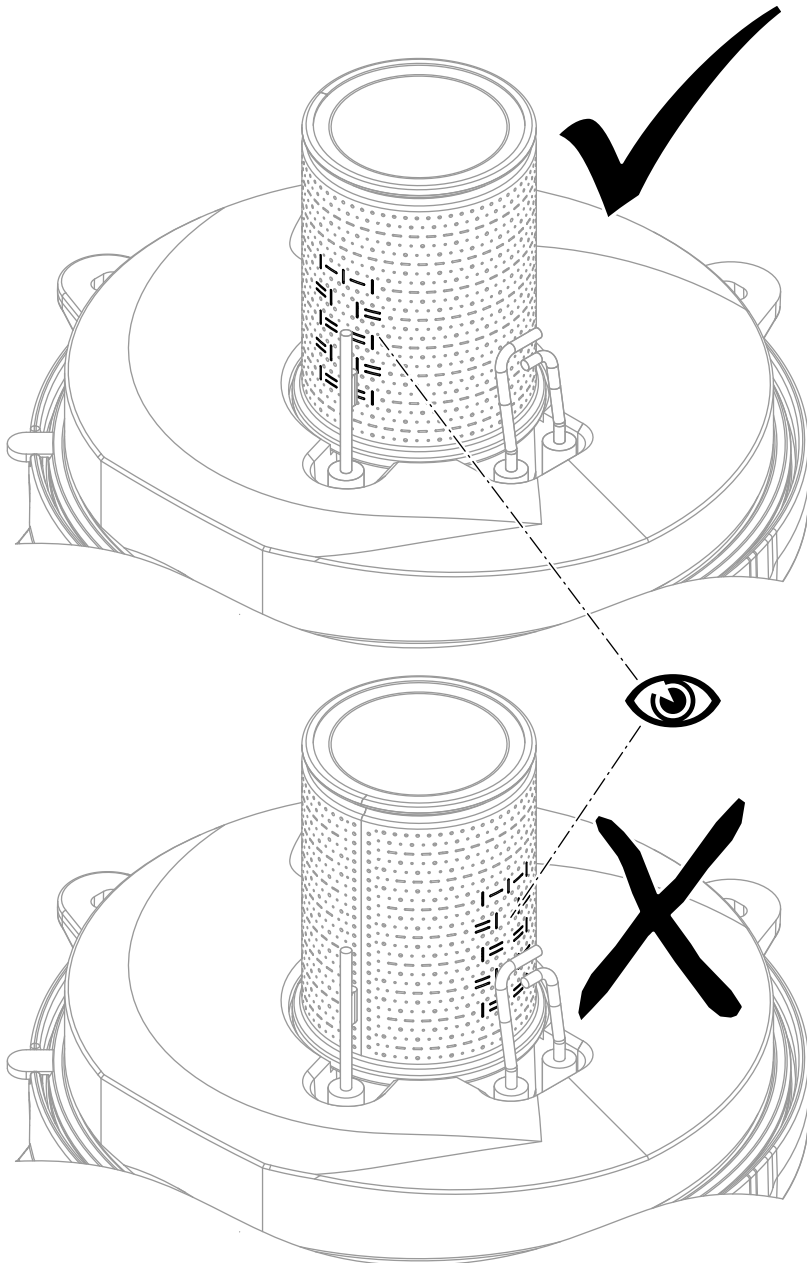


Fig. 38

**Checking the burner gasket and burner gauze... (cont.)***Fig. 39*



Checking and adjusting the ignition and ionisation electrodes

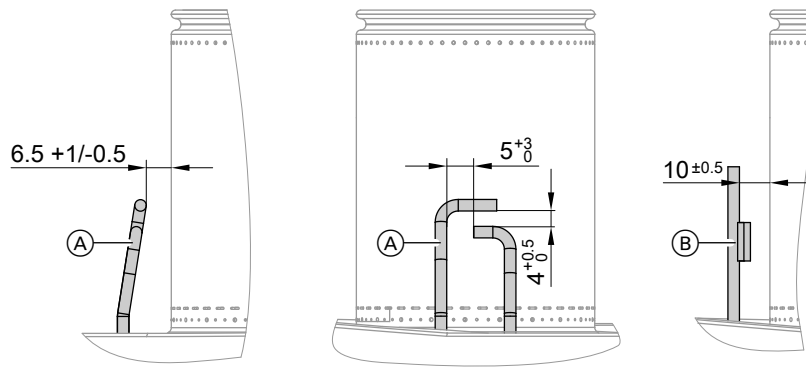


Fig. 40

- (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 outside the tolerance range or the electrodes are damaged, replace and realign the electrodes together with new gaskets. Tighten screws as tightly as necessary and ensure that the components are undamaged and are functioning correctly throughout service life. Observe torque settings if a torque wrench is available. Tighten the electrode fixing screws to a torque of 4.5 Nm.



Checking the back draught safety devices

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

Back draught safety device in the mixing shaft of the burner

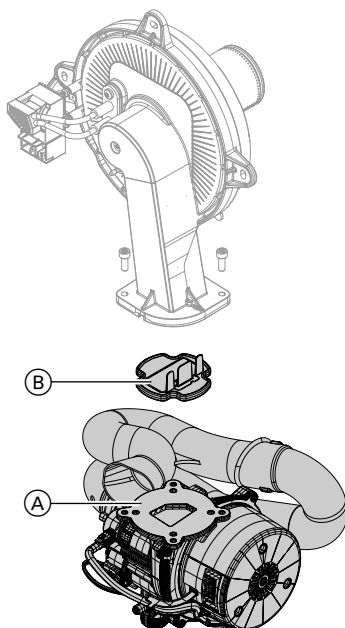


Fig. 41

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 necessary.
4. Refit back draught safety device (B).

Note

Observe correct installation position.

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



Checking the back draught safety devices (cont.)

Back draught safety device in the flue gas connection

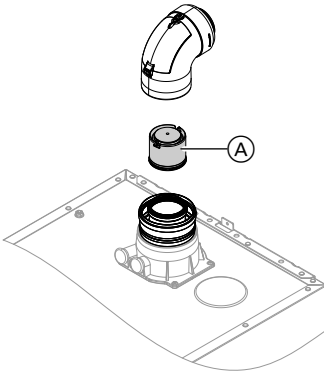


Fig. 42

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 surface of the heat exchanger that comes into contact with hot gas can result in corrosion damage. Brushing can cause deposits to become lodged in the gaps between the coils.

Never use brushes to clean the heating surfaces.



Please note

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

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 necessary.

Note

Discolouration on the heat exchanger surface is a normal sign of use. It has no bearing on the function and service life of the heat exchanger.

The use of chemical cleaning agents is not required.

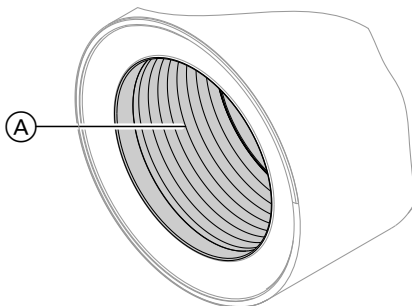


Fig. 43



Checking the condensate drain and cleaning the trap



Please note

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

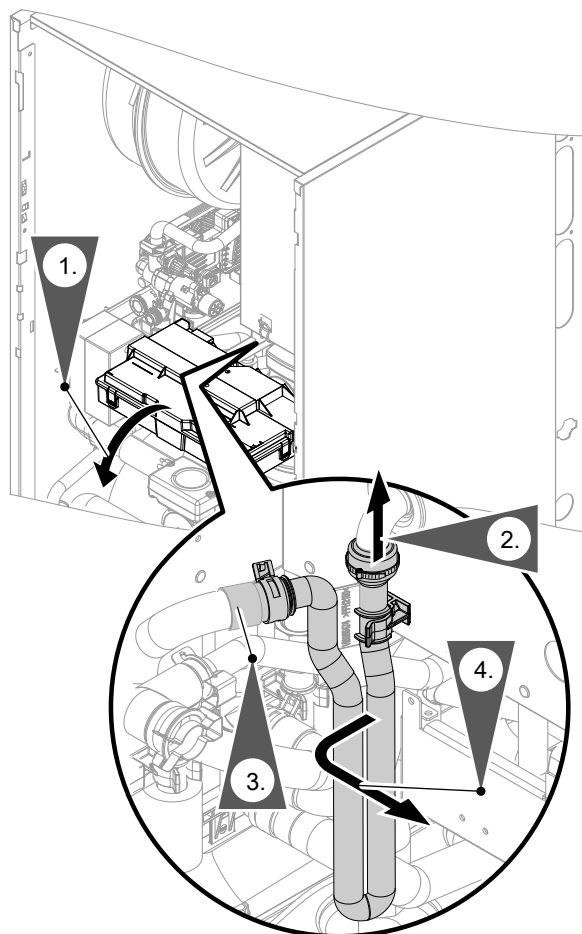


Fig. 44

1. Pivot the HMU heat management unit forwards.
2. Undo the hose retainer. Remove the supply hose.



Please note

Do not undo using a sharp object. This can damage the condensate hose.
The hose retainer is detachable.

3. Undo hose clip and pull off drain hose.
4. Release trap from retaining clip.
Hold trap as straight as possible and remove.
Ensure that no condensate runs out.
5. Clean the trap.
6. Refit the trap.
7. Refit the hoses. Secure the drain hose with the hose clip and attach the supply hose with the retainer.

8. Check that connections on the trap and the heat exchanger are seated correctly.

Note

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

9. Flush the heating surface again with min. 0.3 l of water. This will also fill the trap with water.



Please note

If the trap is not filled with water, flue gas can escape.
Only start the appliance when the trap has been filled.



Danger

Risk of electric shock from escaping condensate and risk of poisoning from escaping flue gas.
Check the connections for leaks and check that the trap is seated correctly.



Installing the burner

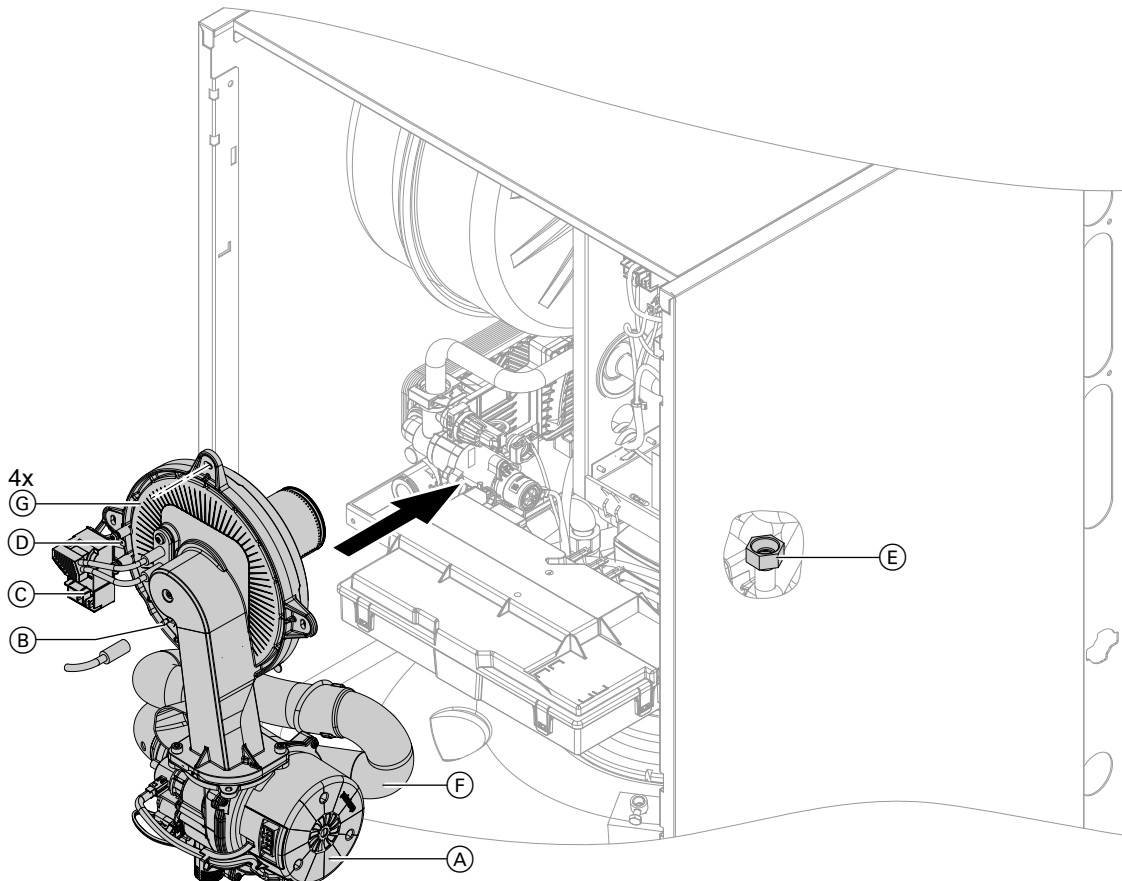


Fig. 45

1. If necessary, move the programming unit.
2. Insert the burner and tighten screws (G) diagonally. Tighten the screws as much as necessary to ensure that the components are not damaged and function correctly throughout their service life. Observe torque settings if a torque wrench is available.
Torque: **6.5 Nm**
3. Attach Venturi extension (F) to fan unit.
4. Fit gas supply pipe (E) with a new gasket. Tighten the screws as much as necessary to ensure that the components are not damaged and function correctly throughout their service life. Observe torque settings if a torque wrench is available.
Torque: 30 Nm
5. Check the gas connections for leaks.
6. Connect the cables/leads:
 - Fan motor (A)
Connect CAN bus fan to adaptor.
 - Ionisation electrode (B)
 - Ignition unit (C)
 - Earth (D)
7. Fit cover panel.



Danger

Escaping gas leads to a risk of explosion.
Check the fitting for gas tightness.



Checking the neutralising system (if installed)



Checking anode connection and anode earth current with anode tester

Check that the earth cable is connected to the protective magnesium anode.

Note

We recommend checking the function of the protective magnesium anode annually. This function test can be carried out without interrupting operation, by measuring the earth current with an anode tester.

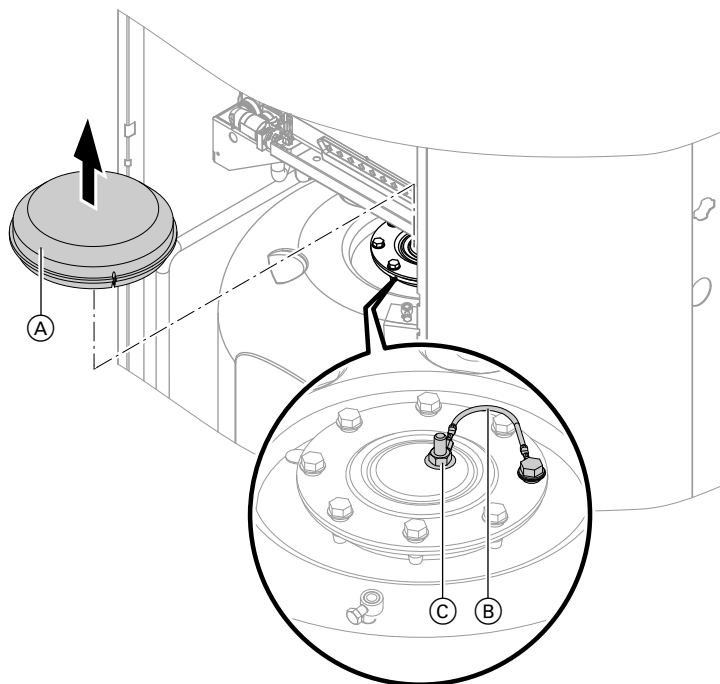


Fig. 46

1. Remove cover (A) (two-part design up to 26 kW).
2. Remove earth cable (B) from tab (C).
3. Connect tester (up to 5 mA) in series between tab (C) and earth cable (B).
 - If the current measures > 0.3 mA the protective magnesium anode is OK.
 - If the current measures < 0.3 mA or if there is no current at all, inspect the protective magnesium anode visually (see page 64).



Draining the boiler on the DHW side

1. Shut off the DHW supply upstream of the appliance.



Draining the boiler on the DHW side (cont.)

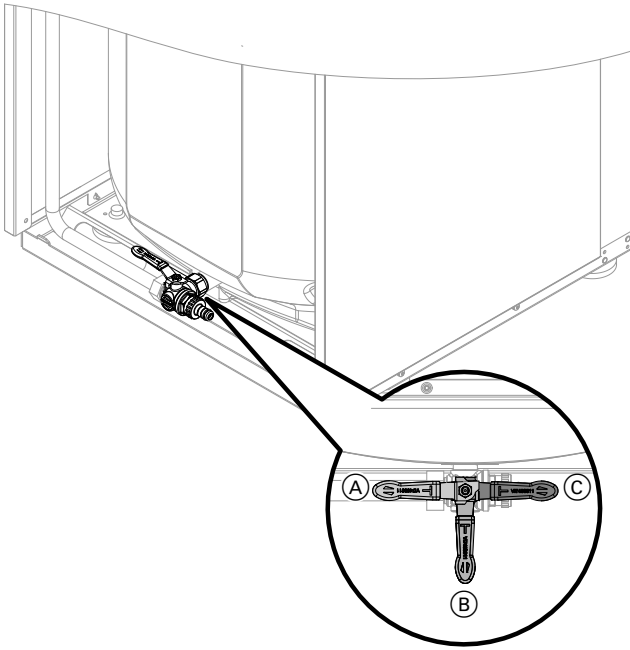


Fig. 47

2. Connect the hose to the drain valve and route it into a suitable container or drain outlet.

Note

Ensure adequate ventilation in the DHW pipework.

3. Turn the drain valve from lever position (A) (operational) to lever position (B) or (C) as required.
 - Lever position (B): The DHW circuit in the appliance **excluding** the DHW cylinder is drained via the cold water connection.
 - Lever position (C): The DHW circuit in the appliance **and** the DHW cylinder are drained via the hot water connection.
The cold water connection remains filled.



Cleaning the loading cylinder

Note

According to EN 806, a visual inspection and (if necessary) cleaning must be carried out no later than 2 years after commissioning, and as required thereafter.



Cleaning the loading cylinder (cont.)

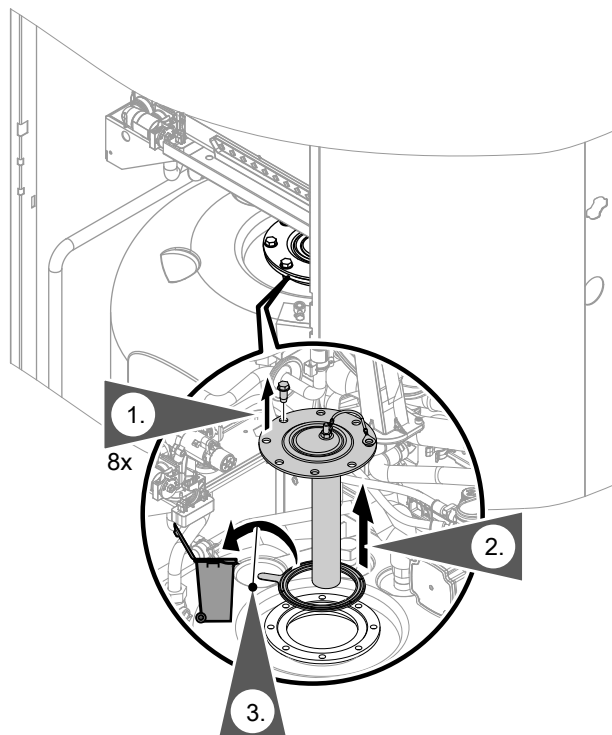


Fig. 48

1. Drain the loading cylinder.
2. Remove flange cover (A).
3. Disconnect the loading cylinder from the pipework to prevent contamination from entering the pipework.
4. Remove loose deposits with a pressure cleaner. Use a chemical cleaning agent to remove hard deposits that cannot be removed with a pressure cleaner.
5. Thoroughly flush the loading cylinder after cleaning.



Please note

Do not damage the cylinder:

- Only use plastic cleaning equipment to clean the inside.
- Never use cleaning agents containing hydrochloric acid.



Checking and replacing the protective magnesium anode (if necessary)

Visual inspection of protective magnesium anode. If the anode has degraded to between 10 and 15 mm Ø, we recommend replacing the magnesium protective anode.



Re-assembling and filling the loading cylinder

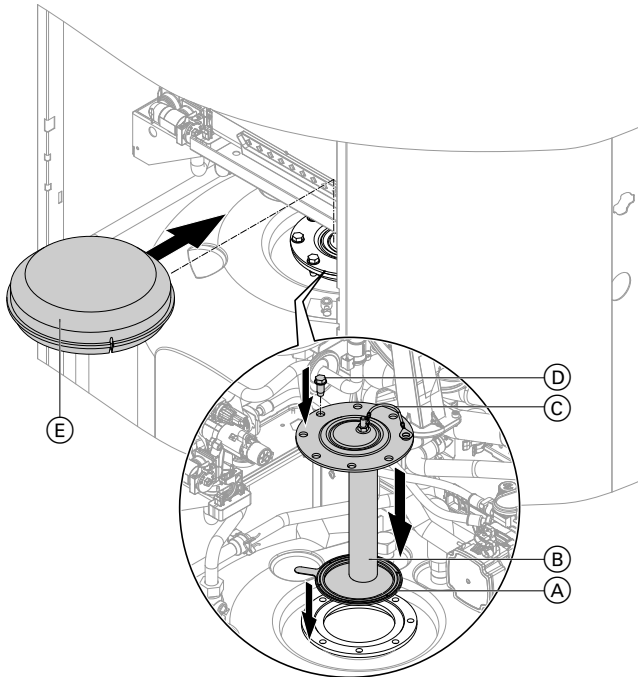


Fig. 49

1. Reconnect the loading cylinder to the pipework.
2. Insert a new gasket (A) underneath the flange cover (B).
3. Mount the flange cover (B) and tighten the 8 screws (D) with a maximum torque of 25 Nm.
4. Push earth cable (C) onto the tab.
5. Fit the cover (E) (two-part design up to 26 kW).
6. Fill the loading cylinder with potable water.



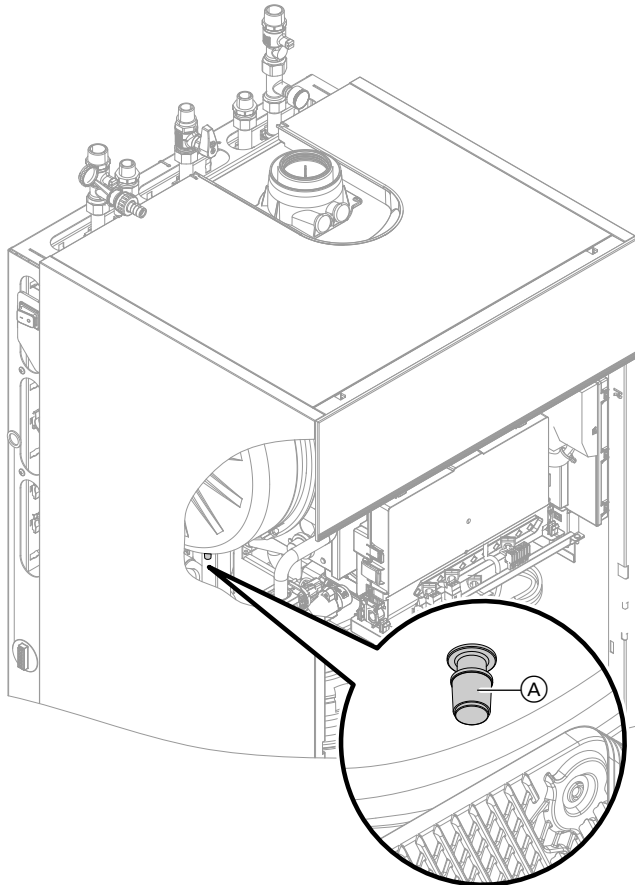


Fig. 50

Ⓐ Diaphragm expansion vessel valve

Note

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

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

1. Drain the system until "0" is shown on the pressure indicator.
2. If the pre-charge pressure of the expansion vessel is lower than the static system pressure: Top up with nitrogen at the valve of the diaphragm expansion vessel until the pre-charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) higher than the static system pressure.

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

Note

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

Top up with water until the charge pressure is 0.1 to 0.2 bar (10 to 20 kPa) above the pre-charge pressure.



Checking pre-charge pressure and DHW expansion vessel (if installed)

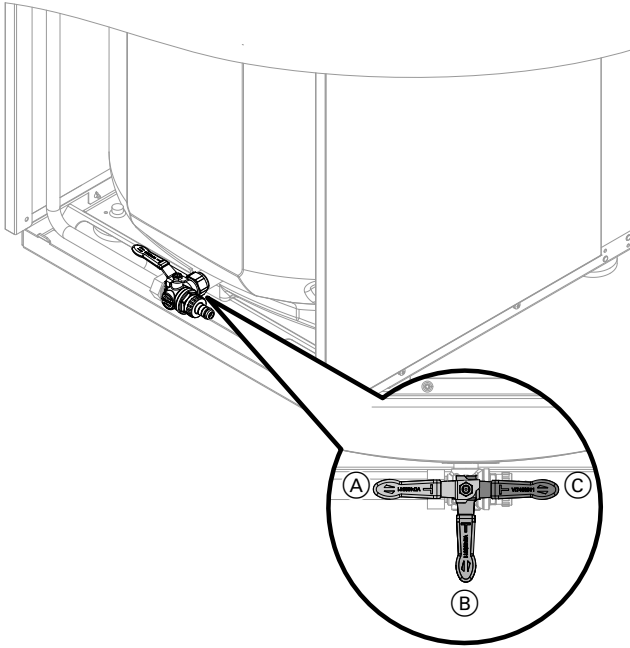


Fig. 51

1. Check the static pressure of the DHW line downstream of the pressure reducer and adjust if required. Set value: Max. 3.0 bar (0.3 MPa)
2. Close the on-site shut-off valve in the cold water line.
Relieve the water pressure.
3. Turn lever on valve to position (B).
4. Check the pre-charge pressure of the DHW expansion vessel and adjust if required. Set value: Static pressure minus 0.2 bar (20 kPa).
5. Turn lever on valve back to position (A). Open the on-site shut-off valve in the cold water line.



Checking the safety valve function



Checking the electrical connections for firm seating



Checking 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.



Checking the combustion quality

The electronic combustion controller automatically ensures optimum combustion quality. During commissioning/maintenance, only the combustion values need to be checked. For this, measure the CO content and the CO₂ or O₂ content.

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	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6
19	7.3 to 10.5	7.5 to 10.5	2.1 to 7.6	2.1 to 7.6
25	7.3 to 10.5	7.5 to 10.5	2.1 to 7.6	2.1 to 7.6
32	7.3 to 10.0	7.5 to 10.5	2.1 to 7.9	2.1 to 7.6

Operation with LPG

- CO₂ content: 8.4 to 11.8 %
- O₂ content: 3.1 to 8.1 %

If the actual CO, CO₂ or O₂ content is outside the respective range:

- Carry out a balanced flue system leak test.
- Check ionisation electrode and connecting cable.

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

- Check the balanced flue system for leaks; see page 53.
- Check ionisation electrode and connecting cable.

Note

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

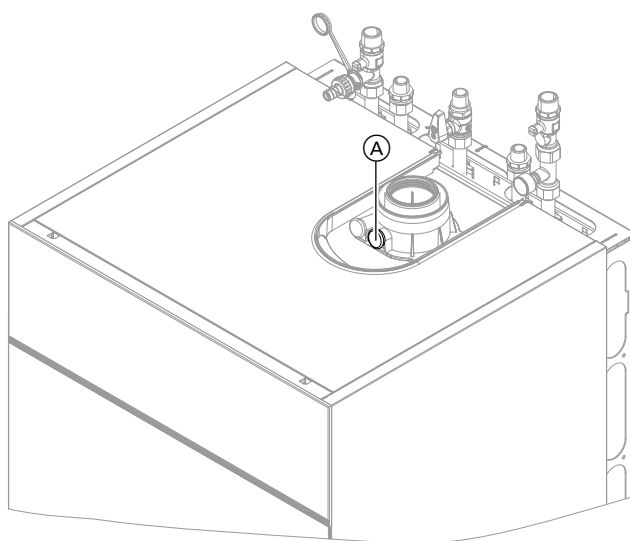


Fig. 52

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 actual 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 actual value into the report.
9. Re-seal test port (A).



Danger

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

Selecting the upper/lower heating output

Note

Ensure adequate heat transfer.

Tap the following buttons:

1.

2. "Service"

3. Enter password "viservice".

4. Confirm with

5. "Actuator test"

6. Confirm with



Checking the combustion quality (cont.)

7. Select **"Burner modulation, set value"**.
The boiler circuit pump operates automatically at 100 %.
8. Set the lower heating output:
Select **"Minimum heating output"**.
The burner now operates at the lower heating output.
9. Set the upper heating output:
Select **"Maximum heating output"**.
The burner now operates at the upper heating output.
10. End output selection:
↩ or ⚙



Checking the flue system for unrestricted flow and leaks



Checking the external LPG safety valve (if installed)



Matching the control unit to the heating system

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



Accessory installation instructions



Adjusting the heating curves

Tap the following buttons:

1. ≡
2. **"Heating"**
3. Select **"Heating circuit 1"** or **"Heating circuit ..."** for the required heating circuit.
4. **"Heating curve"**
5. Set the heating curve according to the requirements of the system using **"Slope" +/–** or **"Level" +/–**.
6. ✓ to confirm



Calling up and resetting the maintenance display

In the following cases, will be displayed (red indicator flashes):

- The specified limits have been reached.
- There is cause for a warning.

Checking maintenance messages

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

Acknowledging a service

1. ⚙ to acknowledge the maintenance messages
2. ✓ to confirm

Note

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

After maintenance has been carried out (Reset service)

1. **"≡"**
2. **"Service"**
3. Enter password **"viservice"**.
4. Confirm with ✓.
5. **"System configuration"**
6. **"Boiler"**



Calling up and resetting the maintenance display (cont.)

7. Select parameter **1411.0 "Clear maintenance messages"** and **"ON"**.

Note

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



Fitting the front panel

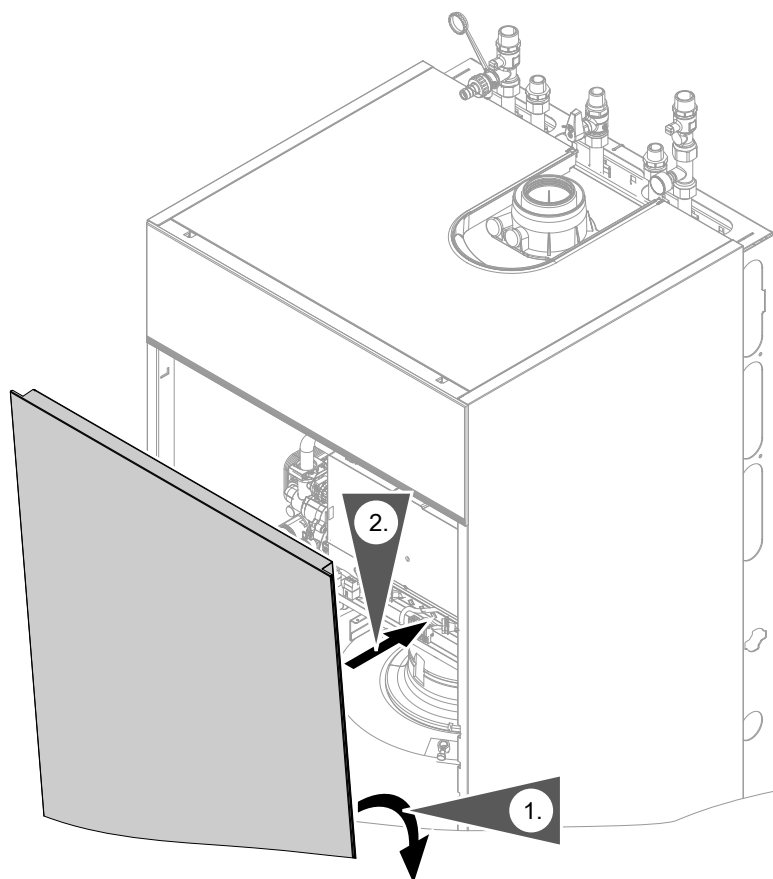


Fig. 53



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.

DHW hygiene

For optimum DHW hygiene, avoid DHW temperatures that are $< 50\text{ }^{\circ}\text{C}$. For larger systems and systems with low water exchange, the temperature should not drop below $< 60\text{ }^{\circ}\text{C}$.

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

Hygiene function

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

Calling up parameters

- Parameters are split into the following groups:
 - "General"
 - "Boiler"
 - "DHW"
 - "Heating circuit ..."
 - "Solar"
- Heating systems with one heating circuit without mixer and one or 2 heating circuits with mixer: In the following, the heating circuit without mixer is designated **"Heating circuit 1"** and the heating circuits with mixer **"Heating circuit 2"** ... (if installed). If the heating circuits have been given individual names, the chosen name appears.

Note









The display and setting of some parameters is dependent on:

- *Heat generator*
- *Connected accessories and the functions associated with them*
- *"Solar" parameter group only for heat generators with solar function*

Note

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

Tap the following buttons:

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

Parameter value**Note**

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

508.0 UTC time zone

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

Note

Only active if 1504.0 has been set to 2.

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

528.0 Set flow temperature for external demand

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

575.0 Reset to the "Delivered condition"

This parameter resets all parameters and commissioning settings of the appliance to the "**Delivered condition**".

Please follow the instructions on the display!

Note

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

896.0 Display correction for outside temperature

To compensate for systematic measuring errors, a correction value (offset) can be set for the outside temperature sensor.

The correction value can be positive or negative. The correction value is added to the current outside temperature measurement.

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

897.0 Screed drying

Screed drying can be set in accordance with selectable temperature/time profiles.

For individual profile curves, see chapter "Function description".

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

912.0 Automatic summer/wintertime changeover

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

912.1 Earliest day of changeover from winter to summertime

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

912.2 Month of changeover from winter to summertime

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

912.3 Earliest day of changeover from summer to wintertime

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

912.4 Month of changeover from summer to wintertime

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

1098.4 Gas volume correction factor

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

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

1098.5 Condensing

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

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

1139.0 Outside temperature limit for cancelling reduced set room temperature

Temperature limit for cancelling set reduced room temperature

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

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

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

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

1504.0 Source for date and time

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

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

Parameter value

Note

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

521.0 Interval in burner hours run until next maintenance

Number of burner hours to run until next service

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

522.3 Interval until next maintenance

Interval until the next maintenance

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

596.0 Maximum heating output

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

Note

The setting range and minimum value depend on the appliance.

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

597.0 Limit, max. heating output for DHW heating

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

Note

The setting range and minimum value depend on the appliance.

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

1100.2 Set speed of the primary circuit pump in heating mode

Set speed of primary circuit pump

- In heating mode
- With external demand
- With demand in conjunction with a low loss header

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

1240.0 Operating mode of the primary circuit pump

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

1411.0 Clear maintenance messages

Clear maintenance messages if maintenance has been performed.

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

1432.1 Residual head control of the primary circuit pump

Residual head limit value for reducing pump speed of the internal circulation pump, in mbar

Value	Meaning
0	Internal circulation pump is controlled in line with the outside temperature
1 to 255	Internal circulation pump is operated with constant residual head. Recommended setting: 120 mbar 1 step \triangleq 1 mbar

1432.2 Operating mode of the primary circuit pump

Value	Explanations
0	Internal circulation pump is operated with constant differential pressure.
1 to 20	Internal circulation pump is operated with rising differential pressure. Adjustable from 1 to 20 mbar

1503.0 Minimum heating output

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

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

1606.0 Minimum burner pause time

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

1606.0 Minimum burner pause time (cont.)

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

1606.4 Burner integral threshold

Only effective if parameter 1606.0 is set to 1.

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

Parameter value

Note

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

497.0 Operating mode of DHW circulation pump

DHW circulation pump

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

497.1 DHW circulation pump for hygiene function

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

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

Note

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



Danger

There is a risk of scalding at DHW temperatures **above 60 °C**.

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

497.2 DHW circulation pump for DHW heating

The DHW circulation pump is operated during cylinder heating.

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

Note

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

Example:

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

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

497.3 Number of cycles DHW circulation pump

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

497.3 Number of cycles DHW circulation pump (cont.)

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

503.0 Scald protection

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

Note

Even with the scald protection switched on, higher outlet temperatures may occur at the draw-off points in the following cases:

- *With active hygiene function*
- *While the appliance is being calibrated*

**Danger**

With scald protection switched off, a set DHW temperature higher than 60 °C can be selected. Consequently there is an increased risk of scalding!

Where possible, do **not** switch off scald protection.

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

1101.2 Set speed of the primary circuit pump for DHW heating

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

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

1394.0 Set DHW temperature for reheating suppression

Set cylinder temperature for reheating suppression

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

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

Parameter value

Note

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

424.3 Set flow temperature increase, heating circuit 1

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

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

424.4 Duration for set flow temperature increase of heating circuit 1

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

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

426.3 Set flow temperature increase, heating circuit 2

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

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

426.4 Duration for set flow temperature increase of heating circuit 2

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

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

428.3 Set flow temperature increase, heating circuit 3

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

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

428.4 Duration for set flow temperature increase of heating circuit 3

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

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

430.3 Set flow temperature increase, heating circuit 4

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

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

430.4 Duration for set flow temperature increase of heating circuit 4

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

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

933.6 Operating mode of heating circuit 1

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

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

933.7 Room influence factor, heating circuit 1

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

Necessary conditions for room temperature influence:

- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **933.6** set to **7**.

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

934.5 Differential temperature, heating circuit 2

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

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

934.6 Operating mode, heating circuit 2

In conjunction with room temperature sensor

934.6 Operating mode, heating circuit 2 (cont.)

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

934.7 Room influence factor, heating circuit 2

With room temperature influence, the set flow temperature determined from the heating curve is adjusted according to the room temperature.

The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Only change the value for the heating circuit with mixer.

For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:

- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **934.6** set to **7**.

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

935.5 Differential temperature, heating circuit 3

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

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

935.6 Operating mode, heating circuit 3

In conjunction with room temperature sensor

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

935.7 Room influence factor, heating circuit 3

With room temperature influence, the set flow temperature determined from the heating curve is adjusted according to the room temperature.

The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Only change the value for the heating circuit with mixer.

935.7 Room influence factor, heating circuit 3 (cont.)

For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:

- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **935.6** set to **7**.

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

936.5 Differential temperature, heating circuit 4

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

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

936.6 Operating mode, heating circuit 4

In conjunction with room temperature sensor

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

936.7 Room influence factor, heating circuit 4

With room temperature influence, the set flow temperature determined from the heating curve is adjusted according to the room temperature.

The higher the room temperature influence is set, the greater the adjustment of the set flow temperature will be. Only change the value for the heating circuit with mixer.

For a sample calculation, see chapter "Heating curve" in the "Function description"

Necessary conditions for room temperature influence:

- Room temperature sensor is connected.
- Weather-compensated mode is set.
- Parameter **936.6** set to **7**.

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

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

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

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

Parameter group for heating circuit 1, heating circuit 2, heating circuit 3, heating circuit 4

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

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

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

1192.0 Minimum flow temperature limit, heating circuit 1

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

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

1192.1 Maximum flow temperature limit, heating circuit 1

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

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

1193.0 Minimum flow temperature limit, heating circuit 2

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

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

1193.1 Maximum flow temperature limit, heating circuit 2

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

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

1194.0 Minimum flow temperature limit, heating circuit 3

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

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

1194.1 Maximum flow temperature limit, heating circuit 3

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

1194.1 Maximum flow temperature limit, heating... (cont.)

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

1195.0 Minimum flow temperature limit, heating circuit 4

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

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

1195.1 Maximum flow temperature limit, heating circuit 4

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

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

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

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)

- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

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

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

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)

- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

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

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

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)

- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

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

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

The heating limit influences the start and stop behaviour of the heating circuit pump (economy control)

- If the outside temperature is 1 K greater than the selected value, the heating circuit pump switches off.
- If the outside temperature is 1 K smaller than the selected value, the heating circuit pump switches on.

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

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

Operating mode, heating circuit pump 1:

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

Note

Setting only via software tool

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

Operating mode, heating circuit pump 2:

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

Note

Setting only via software tool

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

Operating mode, heating circuit pump 3:

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

Note

Setting only via software tool

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

Operating mode, heating circuit pump 4:

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

Note

Setting only via software tool

1791.0 3-way valve target position

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

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

2426.0 Enable economy function, outside temperature, heating circuit 1

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

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

Energy saving function on:

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

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

Value	Meaning
Setting range -9 to +5 K	<ul style="list-style-type: none"> ■ If the adjusted outside temperature exceeds the set room temperature plus the value in parameter 2426.1, the circulation pump switches off. ■ If the adjusted outside temperature falls 1 K below the set room temperature plus the value in parameter 2426.1, the circulation pump switches back on.

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

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

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

Value	Meaning
0	Off
1	On

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

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

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

Value	Meaning
Setting range -2 to +5 K	<ul style="list-style-type: none"> ■ If the actual room temperature exceeds the set room temperature plus the value in parameter 2426.3, the circulation pump switches off. ■ If the actual room temperature falls 1 K below the set room temperature plus the value in parameter 2426.3, the circulation pump switches back on.

2427.0 Enable economy function, outside temperature, heating circuit 2

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

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

Energy saving function on:

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

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

Value	Meaning
Setting range -9 to +5 K	<ul style="list-style-type: none"> ■ If the adjusted outside temperature exceeds the set room temperature plus the value in parameter 2427.1, the circulation pump switches off. ■ If the adjusted outside temperature falls 1 K below the set room temperature plus the value in parameter 2427.1, the circulation pump switches back on.

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

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

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

Value	Meaning
0	Off
1	On

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

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

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

Value	Meaning
Setting range -2 to +5 K	<ul style="list-style-type: none"> ■ If the actual room temperature exceeds the set room temperature plus the value in parameter 2427.3, the circulation pump switches off. ■ If the actual room temperature falls 1 K below the set room temperature plus the value in parameter 2427.3, the circulation pump switches back on.

2428.0 Enable economy function, outside temperature, heating circuit 3

Energy saving function on:

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

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

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

Value	Meaning
Setting range -9 to +5 K	<ul style="list-style-type: none"> ▪ If the adjusted outside temperature exceeds the set room temperature plus the value in parameter 2428.1, the circulation pump switches off. ▪ If the adjusted outside temperature falls 1 K below the set room temperature plus the value in parameter 2428.1, the circulation pump switches back on.

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

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

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

Value	Meaning
0	Off
1	On

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

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

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

Value	Meaning
Setting range -2 to +5 K	<ul style="list-style-type: none"> ▪ If the actual room temperature exceeds the set room temperature plus the value in parameter 2428.3, the circulation pump switches off. ▪ If the actual room temperature falls 1 K below the set room temperature plus the value in parameter 2428.3, the circulation pump switches back on.

2429.0 Enable economy function, outside temperature, heating circuit 4

Energy saving function on:

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

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

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

Value	Meaning
Setting range -9 to +5 K	<ul style="list-style-type: none"> ▪ If the adjusted outside temperature exceeds the set room temperature plus the value in parameter 2429.1, the circulation pump switches off. ▪ If the adjusted outside temperature falls 1 K below the set room temperature plus the value in parameter 2429.1, the circulation pump switches back on.

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

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

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

Value	Meaning
0	Off
1	On

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

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

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

Value	Meaning
Setting range -2 to +5 K	<ul style="list-style-type: none"> ▪ If the actual room temperature exceeds the set room temperature plus the value in parameter 2429.3, the circulation pump switches off. ▪ If the actual room temperature falls 1 K below the set room temperature plus the value in parameter 2429.3, the circulation pump switches back on.

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

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

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

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

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

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

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

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

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

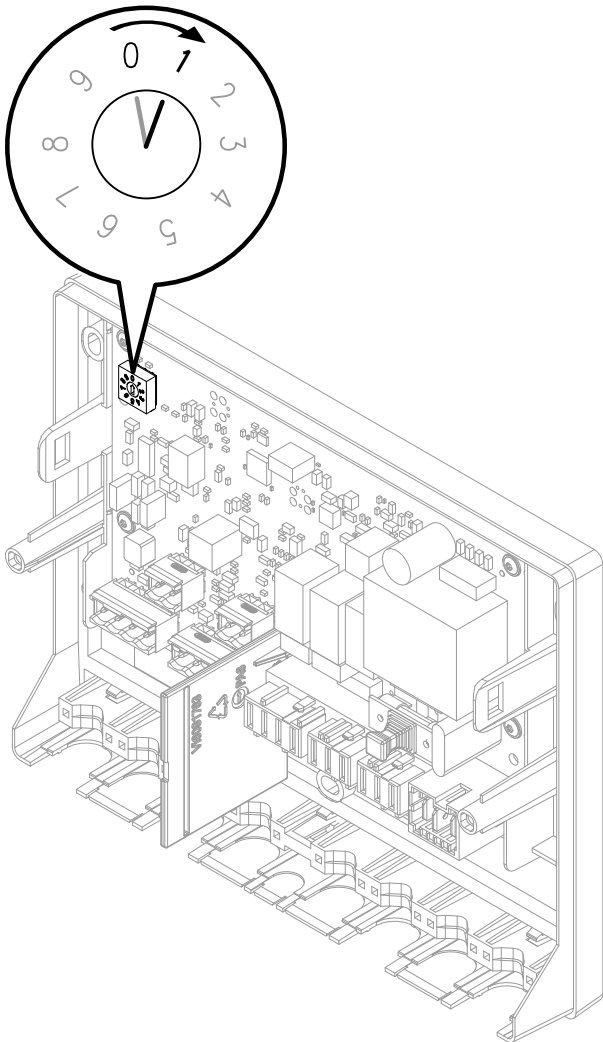
2858.1 Additional (passive) frost protection configuration, heating circuit 4

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

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

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.



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

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

Fig. 54

Function	Electronics module	Extension	Setting Rotary switch S1
System with solar collectors	ADIO	EM-S1	0
Heating circuit 2 with mixer	ADIO	EM-M1/EM-MX	1
Heating circuit 3 with mixer	ADIO	EM-M1/EM-MX	2
Heating circuit 4 with mixer	ADIO	EM-M1/EM-MX	3
Heating circuit 1 without mixer (circulation pump downstream of low loss header)	ADIO	EM-P1	4
Function extensions (e.g.): <ul style="list-style-type: none">▪ Fault message input▪ Fault message output▪ Operating mode changeover	DIO	EM-EA1	1
	DIO	EM-EA1	2
	DIO	EM-EA1	3

Service menu

Service menu

Calling up the service menu

Tap the following buttons:

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


Note

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

Service menu overview

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

Note

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

Changing the service password

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

Tap the following buttons:

1. "≡"
2. "Service"
3. Enter password **"viservice"**.
4. Confirm with ✓.
5. **"Change passwords"**.
6. **"Service menu"**
7. Enter current password.

Changing the service password (cont.)

8. Confirm with ✓.
9. Enter new password.
10. Confirm twice with ✓.

Resetting all passwords to delivered condition

Tap the following buttons:

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

Diagnosis

Checking operating data

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

Note

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

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

Calling up operating data

Tap the following buttons:

1. "≡"

Calling up messages (message history)

The messages are sorted by date.

Tap the following buttons:

1. "≡"
2. "Service"
3. Enter password "viservice".
4. Confirm with ✓.

Calling up messages (message history) (cont.)

5. "Message history"

The following is displayed in the message lists:

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

- 6. ■ **"Faults"** to call up saved fault messages. For further details, see the following chapter "Fault messages".
 - **"Service messages"** to call up saved service messages.
 - **"Status"**, to call up the saved status messages.
 - **"Warnings"** to call up saved warning messages.
 - **"Information"**, to call up saved service information.
- For messages, see chapter "Further messages".

- 7. If you wish to delete messages, tap .


- 8. ✓ to confirm

Checking outputs (actuator test)

Note



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

Tap the following buttons:

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

Note

If an actuator function is not possible due to the running process, the function is interrupted. A message appears.

7. Use  to select the required group. See the table below.
8. Tap the required actuator function. Several functions can be activated simultaneously.
9. If necessary, tap ✓ to confirm. The functions are active for 30 s.
10. Use  to end the Actuator test.

Checking outputs (actuator test) (cont.)


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

Display		Explanation
Gas condensing boiler group		
Fan speed	Set value	Burner fan speed in rpm (rotations/minute)
Burner modulation, set value	<ul style="list-style-type: none"> ▪ Off ▪ Minimum heating output ▪ Maximum heating output ▪ Maximum DHW output 	Modulation level (in accordance with specific heat generator settings)
3-way valve target position	Heating	3-way diverter valve set to heating mode
	Middle	3-way diverter valve in central position (filling/draining)
	DHW	3-way diverter valve set to DHW heating
Heating group		
Primary circuit pump speed	Set value	Internal circulation pump speed in %
3-way valve target position	Heating	3-way diverter valve set to heating mode
	Middle	3-way diverter valve in central position (filling/draining)
	DHW	3-way diverter valve set to DHW heating
Heating circuit 1 pump speed	Set value	Speed, heating circuit pump, heating circuit 1 without mixer in %
Heating circuit 2 pump speed	Set value	Speed, heating circuit pump, heating circuit 2 with mixer in %
Heating circuit 3 pump speed	Set value	Speed, heating circuit pump, heating circuit 3 with mixer in %
Heating circuit 4 pump speed	Set value	Speed, heating circuit pump, heating circuit 4 with mixer in %
Mixer HC2	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
Mixer HC3	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
Mixer HC4	Open	Output for "Mixer open" enabled (mixer extension kit)
	Stop	Current position is maintained
	Close	Output for "Mixer close" enabled
DHW group		
Primary circuit pump, set speed	Set value	Internal circulation pump in %
3-way valve target position	Heating	3-way diverter valve set to heating mode
	Middle	3-way diverter valve in central position (filling/draining)
	DHW	3-way diverter valve set to DHW heating
Circulation pump for cylinder heating	On Off	
DHW circulation pump	On	
	Off	
Group Solar (not for Vitodens 222-W)		

Checking outputs (actuator test) (cont.)



Display		Explanation
Solar circuit pump, set speed	Set value	Speed, solar circuit pump in %
Circulation pump hygiene function	On	
	Off	
Circulation pump, solar	On	
	Off	
3-way valve, solar	Open	
Target position	Close	
	Stop	


Fault display on the programming unit

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

Note

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

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

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

Acknowledging the fault display

Tap .


Note

Any connected central fault message facility is switched off.

If an acknowledged fault is not remedied, the fault message will be redisplayed the following day at 07:00, and the fault message facility restarts.

Calling up acknowledged fault messages

Tap the following buttons:

1. 
2. Tap "Message lists".
The fault messages appear in chronological order.

Note

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

Note

See also page 94.





The following is displayed:

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

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

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

Tap the following buttons:

1. 
2. "Service"
3. Enter password "viservice".
4. Use  to confirm.
5. "Message history"
6. "Faults" to call up saved fault messages.
7. If you wish to delete the list, tap .
8.  to confirm.

Overview of electronics modules

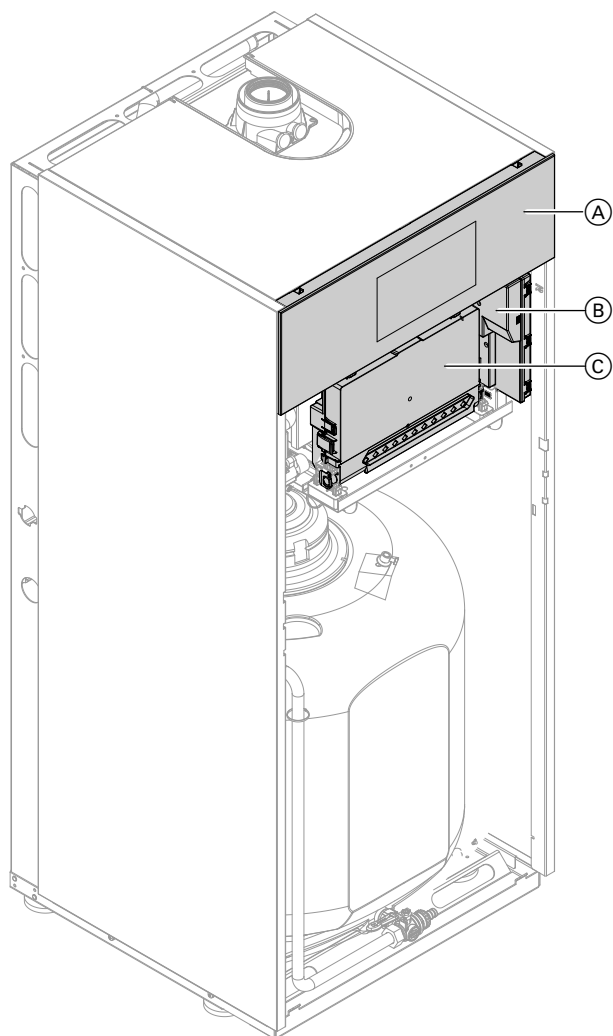


Fig. 55

- Ⓐ HMI programming unit
- Ⓑ BCU burner control unit
- Ⓒ HMU heat management unit

Fault messages

Note

Diagnostics and troubleshooting: See chapter "Repairs".

Fault messages dependent on appliance equipment level

F.5

System characteristics

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

Cause

Lead break or short circuit, flow sensor.

Measures

Check plug 33/X6 and cable between BCU burner control unit and flow sensor:

- Check voltage level, to see if 5 V present at plug 33, pins 1 and 2.
- Turn the gas condensing boiler ON/OFF switch off and back on again.

F.7

System characteristics

No DHW heating.

Cause

Lead break, cylinder temperature sensor.

Measures

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

F.8

System characteristics

No DHW heating.

Cause

Short circuit, cylinder temperature sensor.

Measures

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

F.11

System characteristics

No solar DHW heating or central heating backup.

Cause

Lead break, collector temperature sensor.

Measures

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

F.12

System characteristics

No solar DHW heating or central heating backup.

Cause

Short circuit, collector temperature sensor.

Measures

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

F.13

System characteristics

Regulates as if the outside temperature were 0 °C.

Cause

Lead break, outside temperature sensor.

Measures

- Check the operating mode setting in the commissioning assistant. Correct if necessary.
- Check outside temperature sensor and connection to sensor (external plug, contacts 1 and 2).

Note

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

- Measure voltage at sensor input on electronics module. Set value: 3.3 V \approx with sensor disconnected. Replace faulty component if necessary.

Fault messages (cont.)

F.14

System characteristics

Regulates as if the outside temperature were 0 °C.

Cause

Short circuit, outside temperature sensor.

Measures

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

Note

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

F.15

System characteristics

No solar DHW heating or central heating backup.

Cause

Lead break, cylinder temperature sensor.

Measures

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

F.16

System characteristics

No solar DHW heating or central heating backup.

Cause

Short circuit, cylinder temperature sensor.

Measures

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

F.19

System characteristics

No DHW heating.

Cause

Lead break, bottom cylinder temperature sensor.

Measures

Check bottom cylinder temperature sensor.

F.29

System characteristics

Regulates without flow temperature sensor for low loss header.

Cause

Lead break, low loss header sensor.

Measures

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

F.30

System characteristics

Regulates without flow temperature sensor for low loss header.

Cause

Short circuit, low loss header sensor.

Measures

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

F.49

System characteristics

Burner in a fault state.

Cause

Lead break, flue gas temperature sensor.

Measures

Check flue gas temperature sensor. Reset the appliance.

F.50

System characteristics

Burner in a fault state.

Cause

Short circuit, flue gas temperature sensor.

Measures

Check flue gas temperature sensor. Reset the appliance.

F.57

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor.

Measures

- Check on the Vitotrol whether settings have been made for an external sensor. If necessary, carry out commissioning with the Vitotrol 200-E again.
- Check whether an external room sensor is connected to the Vitotrol 200-E: Terminals 3 and 4
- If no external room temperature sensor has been connected: Replace the Vitotrol 200-E.

- If an external room temperature sensor has been connected: Check the connection and plug-in connection of the sensor to terminal 13c / 9 and to terminal 3 / 4 of the Vitotrol 200-E for correct fit, contact corrosion and mechanical damage (temperature sensor connection on Vitodens with external plug: Terminals 6 and 5 on Vitotrol 200-E). Replace power cable if necessary.
- Check the external room temperature sensor for NTC 10 k Ω resistance at the disconnected terminal 13c / 9. Replace sensor if necessary.
- Replace the Vitotrol 200-E wall mounting base. If the fault persists, replace the Vitotrol 200-E programming unit.

F.58

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor.

Fault messages (cont.)

Measures

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

F.59

System characteristics

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

Cause

Undervoltage, power supply

Measures

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

F.62

System characteristics

Burner in a fault state.

Cause

High limit safety cut-out has responded.

Measures

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

Fault messages (cont.)

Reset the appliance.

F.63

System characteristics

Burner in a fault state.

Cause

Flue gas temperature limiter has responded.

Measures

- Check heating system fill level.
- Check pre-charge pressure in diaphragm expansion vessel. Adjust to required system pressure.

- Check whether flow rate is sufficient (flow sensor and circulation pump).
 - Check 3-way diverter valve function in actuator test. Vent the system.
- Reset the appliance once the flue system has cooled down.

F.64

System characteristics

Normal operation
Burner restarts.

Cause

Flame loss during stabilisation or operating phase

Measures

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

F.65

System characteristics

Burner in a fault state.

Cause

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

Measures

- Check gas supply (gas pressure and gas flow switch).
- Check gas solenoid valve.

- Check system for condensate backup. Check condensate drain.

Note

Prevent water damage.

Detach fan unit before removing the burner.

- Check ionisation electrode and connecting cable.
- Check ignition:
Connecting cables to ignition module and ignition electrode.
- Check distance from ignition electrode to burner gauze assembly.
- Check electrode/burner gauze assembly for dirt.
- Check ignition electrode for broken insulation.

F.67

System characteristics

Burner in a fault state.

Cause

Ionisation current outside the permissible range.

Measures

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

Check ionisation electrode for the following:

- Distance to burner gauze assembly
- Check electrode/burner gauze assembly for dirt.

Fault messages (cont.)

If specified measures do not help, replace fan unit.

Reset the appliance.

F.68

System characteristics

Burner in a fault state.

Cause

Flame signal is already present at burner start.

Measures

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

F.69

System characteristics

Normal operation
Fault is entered in fault history.

Cause

Ionisation current outside the permissible range.

Measures

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

F.70

System characteristics

Burner in a fault state.

Cause

Internal error, burner control unit.

Measures

Replace the BCU burner control unit.

F.71

System characteristics

Burner in a fault state.

Cause

Fan speed too low.

Measures

- Isolate the appliance from the power supply. Wait at least 2 min. Switch on voltage again.
- Check the connections and plug-in connection, plug 100 on the BCU burner control unit and fan for correct seating, contact corrosion and mechanical damage. Replace the connecting cable if necessary

- If the fault recurs, replace the fan.
- If a communication error is shown, rectify this error first.
- Replace the affected component.

Fault messages (cont.)

F.72

System characteristics

Burner in a fault state.

Cause

Fan idle state not reached.

Measures

Reset the appliance.

If the fault recurs, replace the fan unit.

F.73

System characteristics

Burner in a fault state.

Cause

Internal communication error.

Measures

Reset the appliance.

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

F.74

System characteristics

Burner locked out.

Internal circulation pump off. No room heating and no DHW heating.

Cause

System pressure too low

Vent the system.

If the fault occurs repeatedly:

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

Measures

Top up with water.

F.75

System characteristics

Burner in a fault state.

Internal circulation pump off. No room heating and no DHW heating.

Cause

No flow rate

Measures

Open BDF valves.

Top up with water.

If the fault occurs repeatedly:

- Replace the flow sensor (if installed).
- Check pump. Replace if necessary.

F.77

System characteristics

Burner in a fault state.

Cause

Data memory burner control unit.

Measures

Reset the appliance. Reset the parameters of the BCU burner control unit.

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

Fault messages (cont.)

F.78

System characteristics

Normal operation

Cause

Communication between heat management unit and programming unit faulty.

Measures

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

F.80

System characteristics

Normal operation

Cause

Short circuit, analogue sensor input 2 on ADIO.

Measures

Check/replace sensor.

F.87

System characteristics

Burner in a fault state.

Cause

Water pressure too high.

Measures

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

F.89

System characteristics

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

Cause

Internal circulation pump blocked.

Measures

Check circulation pump. Replace if necessary.

F.91

System characteristics

Function of affected extension in emergency mode.

Cause

DIO electronics module communication error.

Measures

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

F.92

System characteristics

Function of the relevant electronics module in emergency mode.

Cause

ADIO electronics module communication error.

Measures

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

F.93

System characteristics

Function of affected extension in emergency mode.

Cause

M2IO electronics module communication error.

Measures

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

F.94

System characteristics

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

Cause

SDIO electronics module communication error.

Measures

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

F.100

System characteristics

Electronics modules connected to PlusBus not working.

Cause

Voltage error PlusBus.

Measures

- Turn off the ON/OFF switch. Wait at least 2 min. Turn on the ON/OFF switch.
- Check that there aren't more than 2 Vitotrol 200-E connected to the PlusBus.

- Check that the length of the PlusBus cable is < 50 m
- Check all connections and plug-in connections for damage, short circuit, contact corrosion and correct cable routing:
 - If the voltage is 24 V, no fault at the HMU electronics module.
 - If the voltage is 0 V, replace the HMU electronics module.
- Disconnect all subscribers from the PlusBus: Reconnect all subscribers one after the other at intervals of 25 s until you find the subscriber with the fault. Replace the faulty subscriber if applicable.

F.104

System characteristics

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

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

Fault messages (cont.)

Cause

External fault message input active.

Measures

Check connected external appliance.

F.142

System characteristics

Burner in a fault state.

Cause

Communication error, fan unit, internal CAN bus.

Measures

- If F.342 is also present, rectify this first.
- Isolate the appliance from the power supply. Wait at least 2 min. Switch on voltage again. Reset the appliance if necessary.

- If fault F.142 is still present, check the CAN bus cable (internal CAN bus) and plug-in connection between HMU X4 and BCU X4 as well as BCU X1 (100A) and fan unit 100A for correct seating, contact corrosion, mechanical damage and correct cable routing. Replace the affected CAN bus cable if applicable. Reset the appliance.
- Replace the faulty fan unit. Reset the appliance.

F.160

System characteristics

Burner in a fault state.

Cause

Communication error CAN bus.

Measures

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

F.161

System characteristics

Burner in a fault state.

Cause

Dta memory access error BCU.

Measures

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

F.163

System characteristics

Burner in a fault state.

Cause

Memory access checksum error BCU.

Measures

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

F.180

System characteristics

Burner in a fault state.

Cause

Gas pressure too low.

Measures

Check gas pressure. Inform the gas supplier if necessary.

If the fault recurs: Replace the gas pressure switch. Replace the gas solenoid valve if necessary.

Direct replacement of the gas pressure switch is not permissible!

F.182

System characteristics

No DHW heating.

Cause

Short circuit, outlet temperature sensor (if installed).

Measures

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

F.183

System characteristics

No DHW heating.

Cause

Lead break, outlet temperature sensor (if installed).

Measures

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

F.184

System characteristics

Burner in a fault state.

Cause

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

Measures

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

- Replace the BCU electronics module.
- Reset the appliance.

Fault messages (cont.)

F.185

System characteristics

Burner in a fault state.

Cause

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

Measures

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

- Replace the BCU electronics module.
- Reset the appliance.

F.299

System characteristics

Time/date incorrect.

Cause

Real time clock setting incorrect.

Measures

Set the time and date.

F.342

System characteristics

No room heating, no DHW heating.

Cause

Communication error, burner control unit BCU.

Measures

- If F.142 is present, isolate the Vitodens from the power supply. Wait at least 2 min. Switch on voltage again.
- If F.342 is still present, check the CAN bus cable (internal CAN) and plug-in connection between HMU X4 and BCU X4 for correct seating, contact corrosion, mechanical damage and correct cable routing. Replace the CAN cable if necessary. Reset the appliance.

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

F.345

System characteristics

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

Cause

Temperature limiter has responded.
See heat generator specification.

Measures

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

F.346

System characteristics

Burner in a fault state.

Cause

Ionisation current calibration error.

Measures

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

F.348

System characteristics

Burner in a fault state.

Cause

Gas modulation valve calibration failed.

Measures

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

Fault messages (cont.)

F.349

System characteristics

Burner in a fault state.

Cause

Air mass rate flow not detected correctly in fan unit.

Measures

- Check whether the fresh air supply is restricted by increased soiling. If necessary, clean the fresh air channel to remove any dirt.
- Check the flue system/chimney for flue gas back pressure.

- Check whether the function of the heat exchanger is restricted by increased soiling. If necessary, clean the heat exchanger to remove any dirt.
- Check whether the burner gauze assembly is restricted by increased soiling. Clean the burner gauze assembly if necessary.
- Reset the appliance. If the fault occurs repeatedly, replace the gas fan unit.

F.350

System characteristics

Burner in a fault state.

Cause

Ionisation current outside the permissible range.

Measures

Replace the BCU burner control unit.

F.351

System characteristics

Burner in a fault state.

Cause

Ionisation current outside the permissible range.

Measures

Replace the BCU burner control unit.

F.353

System characteristics

Burner shutdown with restart if demand exists.

Cause

Insufficient gas supply, burner output reduced.

Measures

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

F.354

System characteristics

Burner in a fault state.

Cause

Gas modulation valve tolerance outside permissible range.

Measures

Replace gas fan unit.

F.355

System characteristics

Burner in a fault state.

Cause

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

Measures

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

Note

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

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

F.357

System characteristics

Burner in a fault state.

Cause

Insufficient gas supply.

Measures

- Check that all installed gas shut-off valves are open.
- Visually check the inlet strainer in the gas solenoid valve for soiling and clean it. Replace the fan unit if necessary.
- Measure static gas pressure and gas flow pressure.

- If the static gas pressure does not drop, check the cable to the fan unit.
- Check that on-site gas line and gas flow switch are correctly sized and are working.
- Check the ignition electrode for wear, burnout and deformation. Check the electrode gap. Replace the ignition electrode if necessary.
- Replace the fan unit if necessary.
- Reset the appliance.

Note

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

F.359

System characteristics

Burner in a fault state.

Cause

No ignition spark.

Measures

- Check whether the ignition electrode insulation is damaged.
- Check whether 230 V~ is present at the ignition module during the ignition phase. If not, replace the BCU burner control unit.

- If 230 V~ is present at the ignition module input but there is still a fault, replace the ignition module.
- Check connecting cables from ignition module and ignition electrode. Reset the appliance.

Fault messages (cont.)

F.361

System characteristics

Burner in a fault state.

Cause

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

Measures

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

Note

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

Reset the appliance.

F.364

System characteristics

Burner in a fault state.

Cause

Internal system error

Measures

Fault F.364 always occurs in conjunction with one of the following faults:

- F.67
- F.348
- F.349

If fault F.364 persists, replace the BCU.

F.365

System characteristics

Burner in a fault state.

Cause

Gas valve power supply does not turn off.

Measures

Replace the BCU burner control unit.

F.366

System characteristics

Burner in a fault state.

Cause

Gas valve power supply does not turn off.

Measures

Replace the BCU burner control unit.

F.367

System characteristics

Burner in a fault state.

Cause

Gas valve power supply does not turn off.

Measures

Replace the BCU burner control unit.

Fault messages (cont.)

F.368

System characteristics

Burner in a fault state.

Cause

Gas pressure switch fault. Forced ventilation time expired.

Measures

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

F.369

System characteristics

Burner in a fault state.

Cause

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

Check balanced flue system for flue gas recirculation.

Check ionisation electrode for the following:

- Distance to burner gauze assembly.
- Contamination on electrode.

Reset the appliance.

Measures

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

F.370

System characteristics

Burner in a fault state.

Cause

Fuel valve or modulation valve will not close.

Measures

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

F.371

System characteristics

Burner in a fault state.

Cause

Fan speed too low.

Measures

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

F.372

System characteristics

Burner in a fault state.

Cause

Repeated flame loss during calibration.

Measures

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

Fault messages (cont.)

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

Note

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

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

F.373

System characteristics

Burner in a fault state.

Cause

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

Measures

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

F.375

System characteristics

Burner in a fault state.

Cause

Ionisation current calibration error.

Measures

- Check gas flow pressure.
- Check gas solenoid valve inlet strainer for contamination.

- Check ionisation electrode for contamination.
 - Check the flue system. Remove flue gas recirculation if necessary.
- Reset the appliance.

F.377

System characteristics

Burner in a fault state.

Cause

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

Measures

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

F.378

System characteristics

Burner in a fault state.

Cause

Flame loss during the stabilisation phase.

Measures

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

Fault messages (cont.)

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

F.379

System characteristics

Burner in a fault state.

Cause

Flame signal not present or insufficient.

Measures

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

F.380

System characteristics

Burner in a fault state.

Cause

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

Measures

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

F.381

System characteristics

Burner in a fault state.

Cause

Flame loss during operating phase.

Measures

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

Fault messages (cont.)

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

F.382

System characteristics

Burner in a fault state.

Cause

Error counter has exceeded limit.

Measures

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

F.383

System characteristics

Burner in a fault state.

Cause

Possible contamination of gas line.

Measures

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

F.384

System characteristics

Burner in a fault state.

Cause

Possible contamination of gas line.

Measures

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

F.385

System characteristics

Burner in a fault state.

Cause

Short circuit, signal 1, ionisation current.

BCU burner control unit faulty.

Measures

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

F.386

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

Fault messages (cont.)

F.387

System characteristics

Burner in a fault state.

Cause

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

Measures

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

F.388

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit. Reset the appliance.

F.395

System characteristics

Burner in a fault state.

Cause

IO electrode earth fault, BCU burner control unit faulty.

Measures

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

F.396

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit. Reset the appliance.

F.399

System characteristics

Burner in a fault state.

Cause

IO electrode earth fault, BCU burner control unit faulty.

Measures

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

F.400

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Fault messages (cont.)

Measures

Reset the appliance.

Replace the BCU burner control unit.

F.401

System characteristics

Burner in a fault state.

Cause

IO electrode earth fault, BCU burner control unit faulty.

Measures

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

F.402

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.403

System characteristics

Burner in a fault state.

Cause

Ionisation electrode earth fault, BCU burner control unit faulty.

Measures

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

F.404

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.405

System characteristics

Burner in a fault state.

Cause

Ionisation electrode earth fault, BCU burner control unit faulty.

Measures

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

Fault messages (cont.)

F.406

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.408

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.410

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.416

System characteristics

Burner locked out.

Cause

Flue gas temperature sensor incorrectly positioned.

Measures

- Turn the ON/OFF switch off and back on again.
- Reset the appliance.

Note

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

Note

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

- Check whether the flue gas temperature sensor is correctly installed (bayonet fitting).
If required, correct the position of the flue gas temperature sensor.
- Check the flue gas temperature sensor resistance.
Replace faulty flue gas temperature sensor if required.

Fault messages (cont.)

F.417

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.418

System characteristics

Burner in a fault state.

Cause

BCU burner control unit faulty.

Measures

Replace the BCU burner control unit.
Reset the appliance.

F.425

System characteristics

System in normal operation, calculation out of operation.

Cause

Time synchronisation failed.

Measures

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

F.430

System characteristics

Normal operation in line with set values of heat generator.

Cause

Communication error gateway.

Measures

Check gateway module connecting cable and power supply.

F.431

System characteristics

Normal operation in line with set values of heat generator.

Cause

Communication error KNX gateway.

Measures

Check gateway module connecting cable and power supply.

Fault messages (cont.)

F.436

System characteristics

Normal operation

Measures

Check flow sensor.

Cause

Short circuit, flow sensor.

F.446

System characteristics

Burner in a fault state.

- Check the flow temperature sensor; see chapter "Flow temperature sensor".
- If the fault message recurs, replace the sensor.
- Reset the appliance.

Cause

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

Measures

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

F.447

System characteristics

Burner in a fault state.

Measures

Replace the BCU burner control unit.
Reset the appliance.

Cause

Deviation, ionisation voltage signal.

F.448

System characteristics

Burner in a fault state.

Measures

Replace the BCU burner control unit.
Reset the appliance.

Cause

Deviation, ionisation voltage signal.

F.449

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Fault messages (cont.)

Measures

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

F.450

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

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

F.451

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

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

F.452

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

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

F.453

System characteristics

Burner in a fault state.

Cause

Synchronisation error, sequence.

Measures

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

F.454

System characteristics

Burner in a fault state.

Cause

Incorrect parameters set for BCU burner control unit

Measures

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

Fault messages (cont.)

F.455

System characteristics

Burner in a fault state.

Cause

Error in program run monitoring.

Measures

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

F.456

System characteristics

Burner in a fault state.

Cause

Error in program run monitoring.

Measures

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

F.457

System characteristics

Burner in a fault state.

Cause

Fan sluggish or blocked.

Measures

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

F.458

System characteristics

Burner in a fault state.

Cause

Incorrect reset sequence.

Measures

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

F.463

System characteristics

Burner in a fault state.

Cause

Contaminated combustion air, flue gas recirculation.

Measures

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

Reset the burner.

Note

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

Fault messages (cont.)

F.464

System characteristics

Burner in a fault state.

Cause

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

Measures

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

Reset the appliance.

Note

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

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

Note

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

F.467

System characteristics

Burner in a fault state.

Cause

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

Measures

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

Reset the appliance.

Note

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

F.468

System characteristics

Burner in a fault state.

Cause

Ionisation current too high during calibration.

Measures

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

Reset the appliance.

Note

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

Fault messages (cont.)

F.471

System characteristics

No heat demand.

Cause

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

Measures

- Check system pressure sensor (plug 163).
- Check lead and plug-in connection.
- Check whether the supply voltage to the sensor is 5 V_{DC}.

F.473

System characteristics

No heat demand.

Cause

HMU heat management unit communication error.

Measures

- Resetting the appliance
- Perform a network reset.

- Check connecting cable between burner control unit and HMU heat management unit.
- Replace the connecting cables.
- Replace the HMU heat management unit.
- Replace the BCU burner control unit.

F.474

System characteristics

Burner in a fault state.

Cause

Error in scheduled program run monitoring.

Measures

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

F.477

System characteristics

Limited solar thermal system functionality.
No solar yield.

Cause

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

Fault messages (cont.)

Measures

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

Note

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

F.517

System characteristics

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

Cause

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

Measures

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

F.527

System characteristics

Burner in a fault state.

Cause

Parameter update could not be fully executed

Measures

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

F.528

System characteristics

Burner in a fault state.

Cause

Basic programming incorrect or incomplete.

Measures

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

Fault messages (cont.)

F.530

System characteristics

Solar function limited.

Cause

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

Measures

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

F.538

System characteristics

No solar central heating backup with SDIO.

Cause

Lead break, temperature sensor in system return.

Measures

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

F.539

System characteristics

No solar central heating backup with SDIO.

Cause

Short circuit, temperature sensor in system return.

Measures

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

F.540

System characteristics

Burner in a fault state.

Cause

Condensate backup in the heat cell.

Note

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

Reset the appliance.

Measures

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

F.544

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

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

Fault messages (cont.)

Measures

- Check flow temperature sensor, mixer 2.
- Measure voltage at sensor input on electronics module. Set value: 3.3 V_{DC} with sensor disconnected

- Check commissioning assistant setting.
- Check setting of ADIO rotary switch.

F.545

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

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

Measures

Check flow temperature sensor, mixer 2.
Measure voltage at sensor input on electronics module. Set value: 3.3 V_{DC} with sensor disconnected

F.546

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

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

Measures

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

F.547

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

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

Measures

Check flow temperature sensor, mixer 3.
Measure voltage at sensor input on electronics module. Set value: 3.3 V_{DC} with sensor disconnected

F.548

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

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

Measures

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

F.549

System characteristics

Mixer closes. Heating circuit pump is operational.

Cause

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

Fault messages (cont.)

Measures

Check flow temperature sensor, mixer 4.

Measure voltage at sensor input on electronics module. Set value: 3.3 V_{DC} with sensor disconnected

F.574

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor in heating circuit 1 not available.

Measures

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

Check setting of parameter 933.6.

F.575

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor, heating circuit 1.

Measures

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

F.576

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor, heating circuit 1.

Measures

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

F.577

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor in heating circuit 2 not available.

Measures

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

Check setting of parameter 934.6.

F.578

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor, heating circuit 2.

Fault messages (cont.)

Measures

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

F.579

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor, heating circuit 2.

Measures

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

F.580

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor, heating circuit 3 not available.

Measures

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

F.581

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor in heating circuit 3.

Measures

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

F.582

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor in heating circuit 3.

Measures

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

F.583

System characteristics

Normal operation without room influence.

Cause

Room temperature sensor in heating circuit 4 not available.

Fault messages (cont.)

Measures

Check setting of parameter 936.6.

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

F.584

System characteristics

Normal operation without room influence.

Cause

Lead break, room temperature sensor, heating circuit 4.

Measures

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

F.585

System characteristics

Normal operation without room influence.

Cause

Short circuit, room temperature sensor, heating circuit 4.

Measures

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

F.666

System characteristics

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

Cause

Lead break, DHW preheating sensor TS3.

Measures

Check temperature sensor TS3.

F.667

System characteristics

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

Cause

Short circuit, sensor for DHW preheating TS3.

Measures

Check temperature sensor TS3.

F.668

System characteristics

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

Cause

Lead break, DHW reheating sensor TS4.

Fault messages (cont.)

Measures

Check temperature sensor TS4.

F.669

System characteristics

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

Cause

Short circuit, DHW preheating sensor TS4.

Measures

Check temperature sensor TS4.

F.670

System characteristics

No solar central heating backup.

Cause

Lead break, buffer temperature sensor TS3.

Measures

Check temperature sensor TS3.

F.671

System characteristics

No solar central heating backup.

Cause

Short circuit, buffer temperature sensor TS3.

Measures

Check temperature sensor TS3.

F.672

System characteristics

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

Cause

Lead break, thermostat function temperature sensor TS3.

Measures

Check temperature sensor TS3.

F.673

System characteristics

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

Cause

Short circuit, thermostat function temperature sensor TS3.

Measures

Check temperature sensor TS3.

Fault messages (cont.)

F.682

System characteristics

Burner in a fault state.

Cause

Air mass flow rate sensor not available.

Measures

Check air mass flow rate sensor.

F.683

System characteristics

Burner in a fault state.

Cause

Air mass flow rate sensor faulty.

Measures

Check air mass flow rate sensor.

F.684

System characteristics

Burner in a fault state.

Cause

Back draught safety device faulty.

Measures

Check back draught safety device.

F.688

System characteristics

MZIO electronics module in emergency mode.

Cause

MZIO electronics module communication error.

Measures

Check setting in the commissioning assistant and correct if required.

Check connections and leads to the MZIO electronics module.

Check PlusBus voltage level (24 to 28 V).

F.694

System characteristics

Burner in a fault state.

Cause

Signal comparison, deviation, flue gas high limit safety cut-out.

Measures

- Check plug-in connection and sensor lead.
- Check sensor. Replace sensor if necessary.
- Reset the appliance.

F.762

System characteristics

System in a fault state.

Cause

System pressure too low.

Fault messages (cont.)

Measures

Top up with water. Vent the system.

If the fault occurs repeatedly: Check the diaphragm expansion vessel.

F.764

System characteristics

System in a fault state.

Cause

Auxiliary appliance reports a fault.

Measures

- As there is a fault code in the auxiliary appliance, this must be read out from the fault memory of the auxiliary appliance.
- The measures for the stored fault code can be found in the installation and service instructions.

F.765

System characteristics

System in a fault state.

Cause

No communication between main appliance and auxiliary appliance.

Measures

- Check the external CAN bus connection between the main appliance and the auxiliary appliance (cable, connection, plug-in connection).
- Check that the cable type is correct (only use one cable type within a CAN bus).

- Check the connection of the bus cable between the control units for crushing, kinking or chafing. Check for contact corrosion or other damage. Replace the bus cable if necessary
- Check that the connection length between the appliances is correct.
- CAN terminator as described in chapter "Checking the CAN bus terminator switch setting".
- If necessary, replace the affected component of the auxiliary appliance.

F.797

System characteristics

No DHW heating, no heating operation.

Cause

Mechanical fault, heating circuit pump.

Measures

Check pump, replace if required.
Reset the appliance.

F.799

System characteristics

No DHW heating, no heating operation.

Cause

Central heating circuit pump reports an electrical fault. Heating system cannot be operated as no flow is available.

Measures

Switch the appliance off and on again at the appliance switch. If this occurs repeatedly, replace the heating circuit pump.

F.875

System characteristics

Limited operation of the appliance cascade

Cause

Communication error with the (master) main appliance.

Measures

Check the following CAN bus connections:

- Connection at plug 91 on the HMU electronics module.
- Connections to the other CAN bus subscribers.

- Check wires and plugs for correct seating.
- Check connections for contact corrosion.
- Check cables for mechanical damage, e.g. crushing, kinking, chafing or breakage.
- Check CAN L/CAN H assignment.
- CAN Ground (GND) must not be connected.
- Check cable type: Li2YCYv, twisted pair, shielded or 2-core CAT5, shielded. Check the cable length.
- Check the position and number of terminators.

F.980

System characteristics

No DHW heating.

Note

*DHW heating is blocked for the period of time set in parameter 1087.0.
Heating operation remains available during this period.
Once the period of time set in parameter 1087.0 has elapsed, DHW heating is enabled again.
The DHW heating blocking time can be terminated by carrying out a mains reset.
Turn the appliance off and on again. For further information, see chapter "Function description".*

Cause

Minimum flow rate before the start of DHW heating is too low. Possible causes:

- Shut-off or too much constriction
- Scaling, sludge

- Incorrect hydraulic configuration
- Faulty circulation pump, air in the heating circuit
- Unstable or excessively low system pressure.

Measures

- Check that all cylinder shut-off devices are fully open.
- Check the set hydraulic scheme and correct if necessary.
- Ensure that the system is fully vented. If necessary, restart the venting program of the heating circuit.
- Ensure that all quick-action air vent valves on the appliance side are permanently open.
- Check the quick-action air vent valves for leaks and replace if necessary.
- Check the set system pressure (this fault is more likely if the system pressure is too low).
- Check the circulation pump and replace if necessary.

F.981

System characteristics

No DHW heating.

Note

*DHW heating is blocked for the period of time set in parameter 1087.0.
Heating operation remains available during this period.
Once the period of time set in parameter 1087.0 has elapsed, DHW heating is enabled again.
The DHW heating blocking time can be terminated by carrying out a mains reset.
Turn the appliance off and on again. For further information, see chapter "Function description".*

Cause

Minimum flow rate is too low during DHW heating. Possible causes:

- Shut-off or too much constriction
- Scaling, sludge
- Incorrect hydraulic configuration
- Faulty circulation pump, air in the heating circuit
- Unstable or excessively low system pressure

Measures

- Check that all cylinder shut-off devices are fully open.
- Check the set hydraulic scheme and correct if necessary.

Fault messages (cont.)

- Ensure that the system is fully vented. If necessary, restart the venting program of the heating circuit (select via service menu).
- Ensure that all quick-action air vent valves on the appliance side are permanently open.
- Check the quick-action air vent valves for leaks and replace if necessary.
- Check the set system pressure (this fault is more likely if the system pressure is too low).
- Check the circulation pump and replace if necessary.

F.982

System characteristics

No DHW heating, no heating operation.

Cause

Heating circuit pump, heating circuit 1 running dry.

Measures

Check pump and diaphragm expansion vessel.
Check water pressure.

F.1312

System characteristics

No current time zone set. Possible loss of comfort.

Cause

The UTC time offset is not set.

Measures

Set the time zone.

Note

*If subscriber faults occur, "**Fault, subscriber ...**" is displayed.*

Further fault without F.xxx; no communication with TCU.

System characteristics

No connection to ViCare app or accessories.

Cause

If the TCU communication module is not functional, the cause may lie in the security mechanism.

Measures

Restart or restore the factory settings.

Note

Some faults are not directly related to a fault message (F.xxx).

For example:

- *Red screen with the text "Connection error": Communication problem between the programming unit and the heat management unit. Check the connection between the components.*
- *Red screen with the text "Application error": Incorrect programming unit installed. Install the correct component.*

Further messages

Maintenance messages

Message on the display	Meaning
P.1	Maintenance due according to time interval.
P.4	Top up heating water.
P.8	Maintenance due according to burner hours run.
P.37	Vitodens displays a maintenance message: <ul style="list-style-type: none"> ■ Read out the maintenance message from the Vitodens message list. ■ See the installation and service instructions.

Further messages (cont.)

Status messages

Message on the display	Meaning
S.9	Fan pre-purge for heating mode
S.29	Standard mode for heating
S.36	Comfort mode for DHW draw-off
S.59	Flue gas temperature sensor test active
S.60	Summer mode active (outside temperature economy function)
S.74	Heating suppression, heating
S.75	DHW circulation pump active
S.94	No demand, external hook-up, heating circuit 1
S.95	No demand, external hook-up, heating circuit 2
S.96	No demand, external hook-up, heating circuit 3
S.154	Due to insufficient heat transfer in heating system, burner operation not required

Warning messages

Messages on the display	Meaning	Measure
A.11	System pressure has fallen below normal limit.	Top up with water or notify heating contractor.
A.12	Real time clock battery flat.	Replace the HMU heat management unit.
A.18	Possible condensate backup in the heat cell	Check combustion chamber and condensate drain. Condensate may escape when the burner door is removed. Take appropriate precautions to protect the electronic components. If there is condensate backup as far as the combustion chamber, replace the insulation ring, insulation block, insulation mats, ionisation electrode, ignition electrode, burner gauze assembly and burner gauze assembly gasket.
A.19	Temperature limiter has responded	
A.20	Service interval could not be activated.	Check the time and date settings.
A.104	Refrigerant circuit controller faulty	<ul style="list-style-type: none"> Read out the warning message from the Vitodens fault memory. Measures: See installation and service instructions.

Information

Message on the display	Meaning
I.56	External demand active
I.57	External blocking active
I.59	Parameters were restored (parameter set was flashed to BCU electronics module).

Further messages (cont.)

Message on the display	Meaning
I.93	Can occur along with fault messages F.89, F.797, F.799, F.982, see chapter "Fault messages"
I.137	No control restriction: <ul style="list-style-type: none"> ▪ Read out the information message from the Vitodens fault memory. ▪ Measures: See installation and service instructions.

Repairs



Please note

Residual water will escape when the boiler or one of the following components is fitted or removed:

- Water-filled pipework
- Heat exchanger
- Circulation pumps
- Plate heat exchanger
- Components fitted in the heating water or DHW circuit.

Water ingress can result in damage to other components.

Protect the following components against ingress of water:

- Control unit components (especially in the service position)
- Electrical components
- Plug-in connections
- Cables and leads

Shutting down the boiler

1. Turn off the power supply at the ON/OFF switch.
2. Shut off the gas supply.
3. If the boiler needs to be removed:
 - Isolate the system from the power supply, e.g. by removing the separate fuse or by means of a mains isolator, and check that it is no longer live.
 - Safeguard the system against reconnection.
 - Disconnect the balanced flue system.
 - Drain the boiler on the heating water and DHW sides.
 - Disconnect the on-site cables/leads.

Draining the boiler on the heating water side

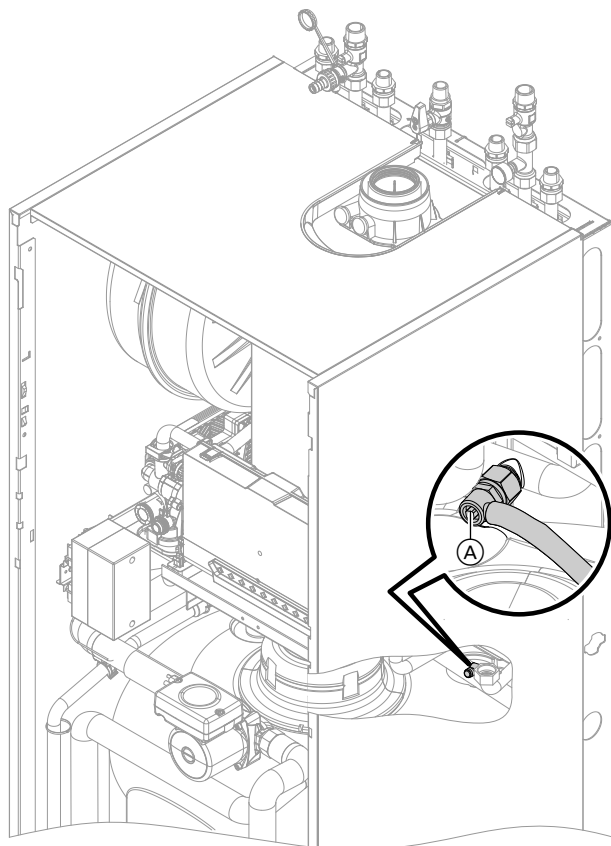


Fig. 56

1. Close the shut-off valves on the heating water side.
2. Connect hose to air vent valve (A) and route it into a suitable container or drain outlet.
3. By means of an actuator test, move the 3-way valve to its centre position.
4. Open air vent valve (A) and drain the boiler as much as required.

Status/checking/diagnosing the internal circulation pump

The internal circulation pump is fitted with two status LEDs.

Repairs (cont.)

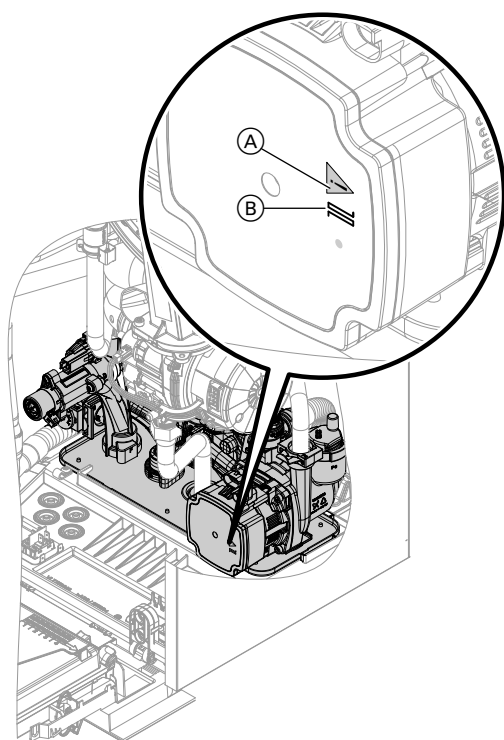


Fig. 57

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

Note

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

Checking the temperature sensors

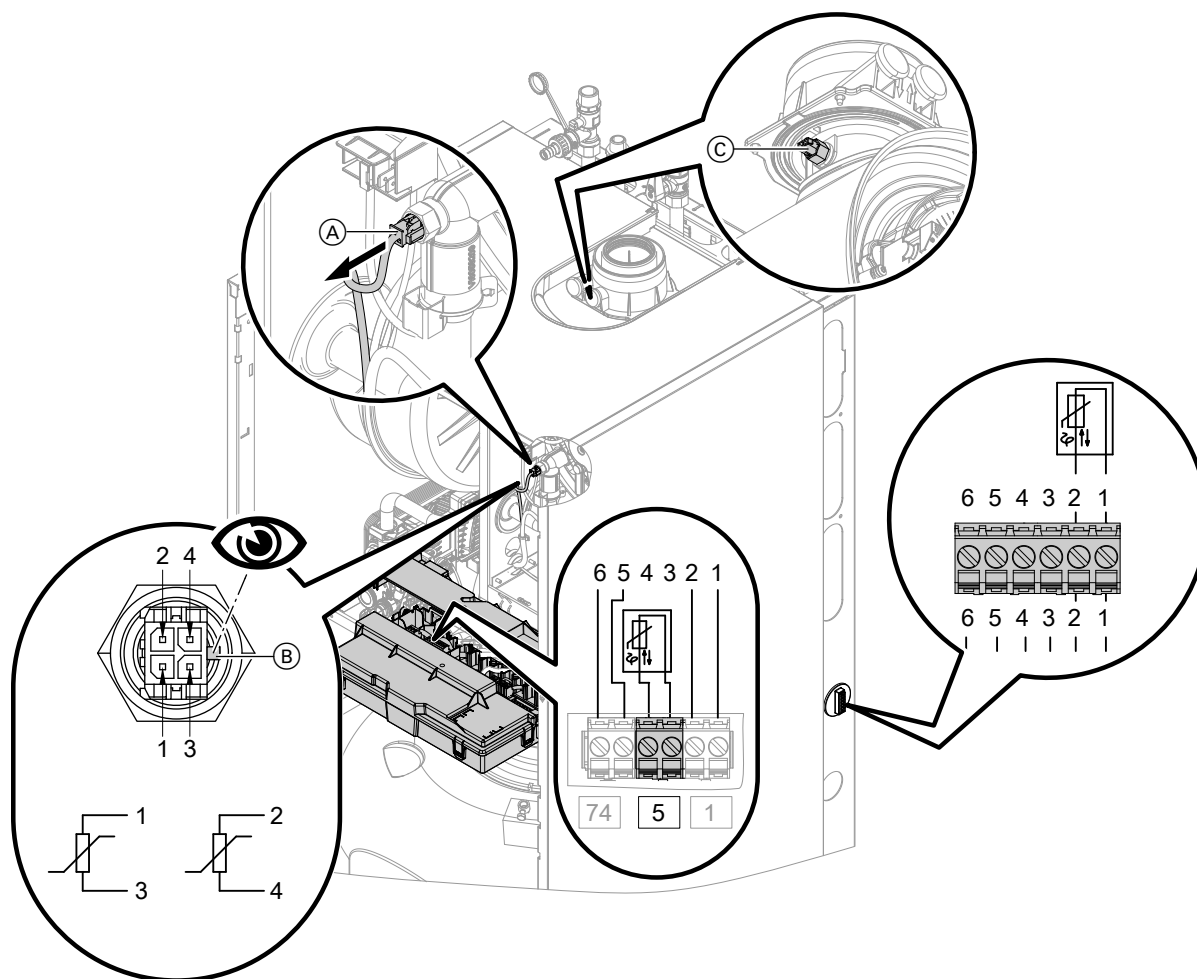


Fig. 58

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 from the following diagram. In the event of severe deviation (> 10 %), replace the dual sensor.



Danger

The dual sensor is directly immersed in the heating water (risk of scalding). Drain the boiler on the heating water side before replacing the sensor.



Danger

Risk of electric shock from escaping heating water. Check the dual sensor for leaks.

Repairs (cont.)

Cylinder temperature sensor/outlet temperature sensor

1. Check lead and plug of cylinder temperature sensor [5] or outlet temperature sensor [4].
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
In the event of severe deviation (> 10 %), replace the sensor.

Low loss header sensor

1. Check lead and plug of temperature sensor [9] on the ADIO electronics module (mixer extension kit).
2. Disconnect wires of sensor plug.
3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
In the event of severe deviation (> 10 %), replace the sensor.

Outside temperature sensor

1. Check the lead and plug of the outside temperature sensor.
2. Disconnect wires 1 and 2 from the external plug.

Note

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

3. Check the sensor resistance. Compare the resistance with the value for the current temperature from the following diagram.
If the results are very different from the curve (> 10 %), disconnect the wires from the sensor.
Repeat the test directly on the sensor.
Check the on-site lead. 2-core lead, length up to 35 m with a cross-section of 1.5 mm²
Depending on the test result, replace the lead or the outside temperature sensor.

Flue gas temperature sensor

1. Check the lead and plug of flue gas temperature sensor ©.
2. Disconnect leads, flue gas temperature sensor ©.
3. Rotate sensor (anti-clockwise) by ¼ turn to remove it (bayonet fitting).
4. Check the sensor resistance. Compare the resistance with the value for the currently recorded temperature from the following diagram.
In the event of severe deviation (> 10 %), replace the sensor.
5. Rotate sensor (clockwise) by ¼ turn to install it.



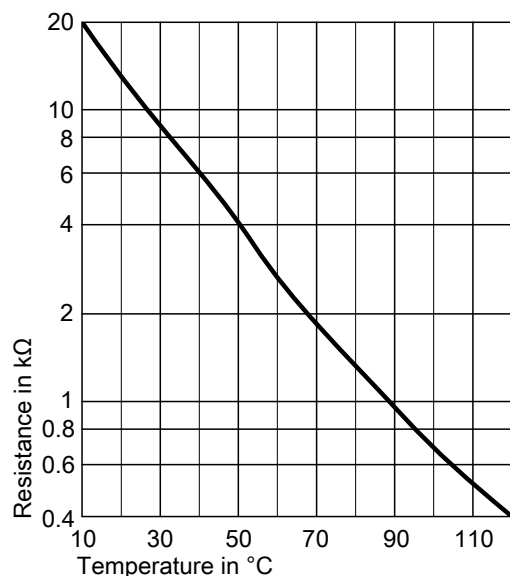
Danger

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

6. Reconnect leads, flue gas temperature sensor ©.
7. If the permissible flue gas temperature has been exceeded, the flue gas temperature sensor locks out the appliance. Reset the burner on the programming unit once the flue system has cooled down.

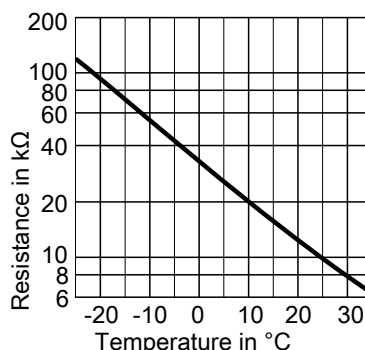
Repairs (cont.)

- Flue gas temperature sensor
- Flow temperature sensor
- Cylinder temperature sensor
- Outlet temperature sensor
- Temperature sensor, low loss header



Sensor type: NTC 10 kΩ

- Outside temperature sensor



Sensor type: NTC 10 kΩ

Fault during commissioning (fault message F.416)

During commissioning, the control unit checks for correct placement of the flue gas temperature sensor. If fault message F.416 is displayed:

1. Check whether the flue gas temperature sensor is correctly installed (bayonet fitting). See previous diagram.
2. If required, correct the position of the flue gas temperature sensor.
3. Check the flue gas temperature sensor resistance. See previous chapter. Replace faulty flue gas temperature sensor if required.

4. Turn off the ON/OFF switch.
5. Turn the ON/OFF switch back on. Restart the commissioning assistant.
6. Check for leaks on the flue gas side.

Note

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

Information on replacing the HMU heat management unit and BCU burner control unit

If the BCU burner control unit and/or HMU heat management unit are replaced, the replacement must be carried out with the help of "ViGuide".



See spare part installation instructions and internet address: www.viguide.info

Repairs (cont.)

Checking the plate heat exchanger

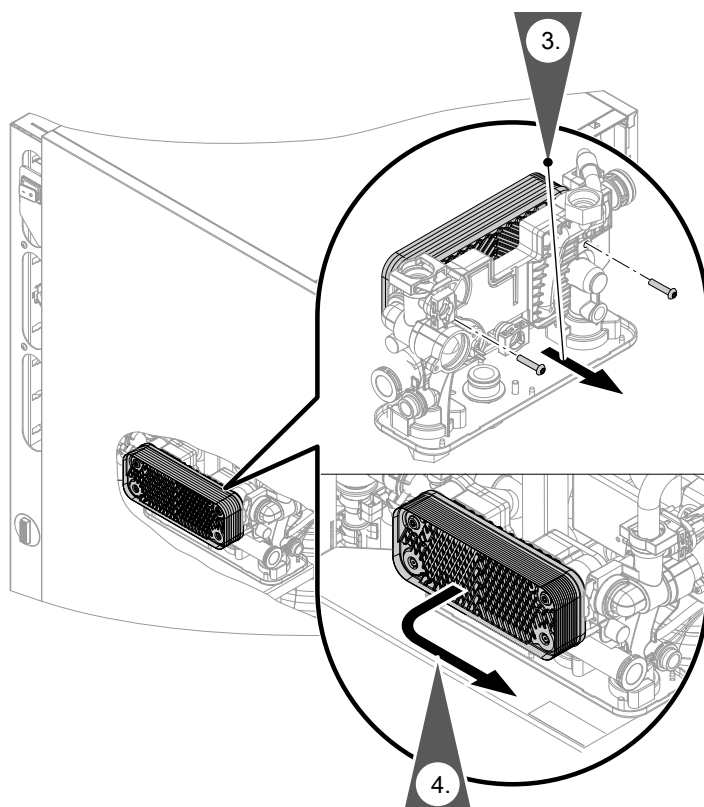


Fig. 59

1. Drain the boiler:
 - On the heating water side, see page 142
 - On the DHW side, see page 62
2. Move the programming unit to the maintenance position (see page 37).
3. Undo the fixing screws.
4. Detach the plate heat exchanger and remove towards the front.
5. Check the connections on the heating water and DHW sides for contamination and scaling; replace the plate heat exchanger if necessary.
6. Install in reverse order using new gaskets. Torque for fixing screws 3.2 Nm

Removing the hydraulic unit and return pipe

If components of the hydraulic unit have to be replaced.

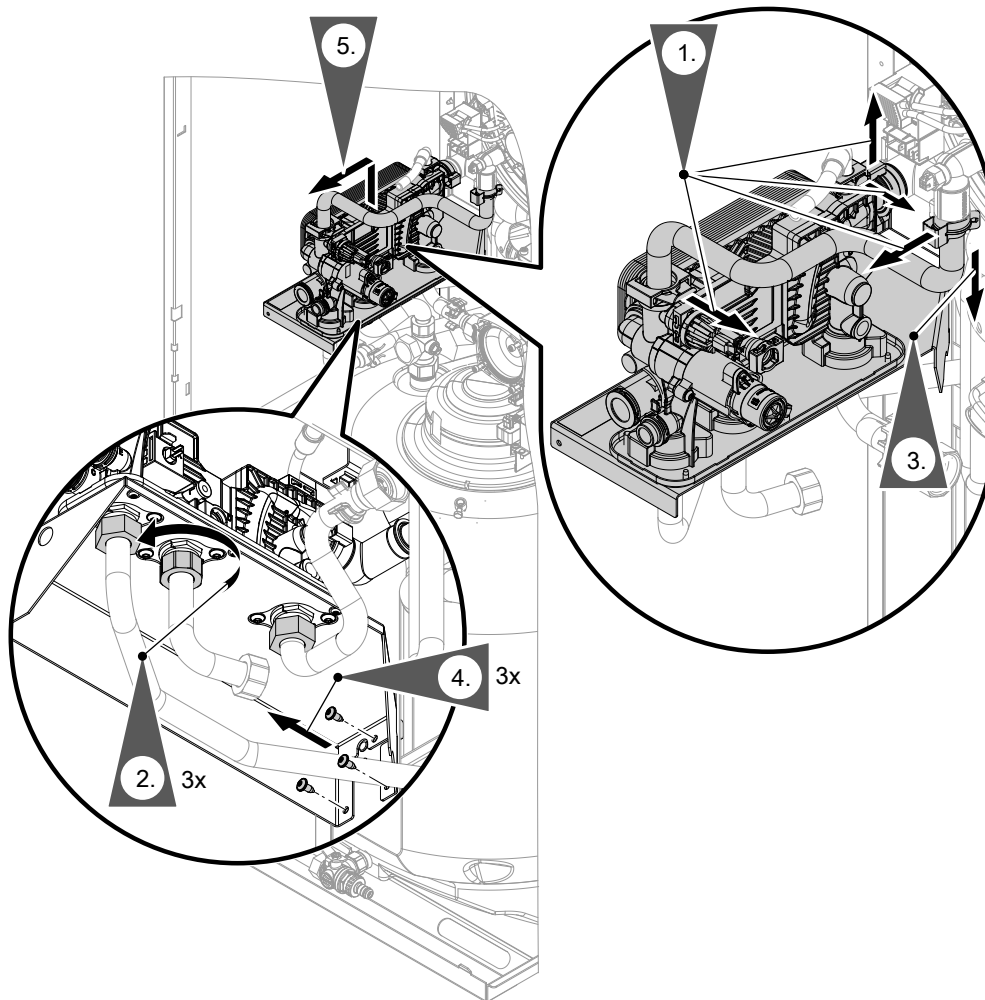


Fig. 60

Repairs (cont.)

Remove the return pipe:

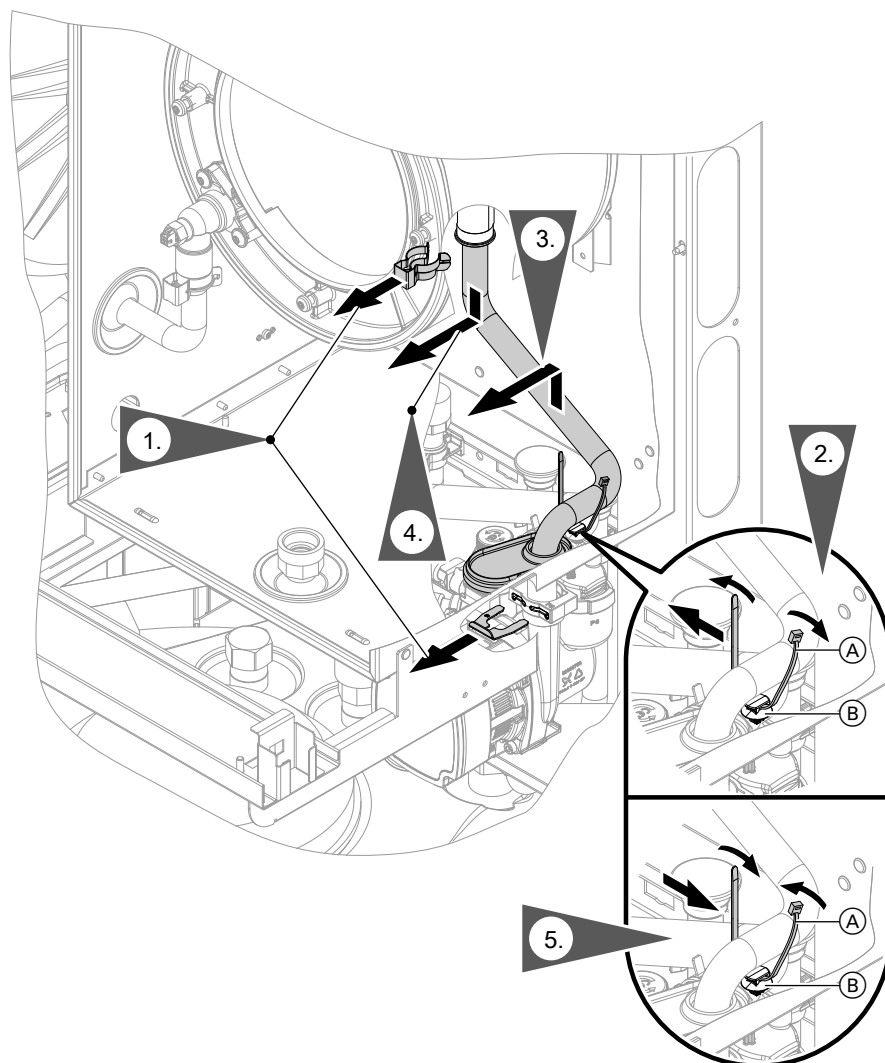


Fig. 61

Note

After replacing the return pipe, use a new cable tie.

Replacing the power cable

When replacing the power cable, only use the power cable available as a spare part from Viessmann.

Checking the fuse

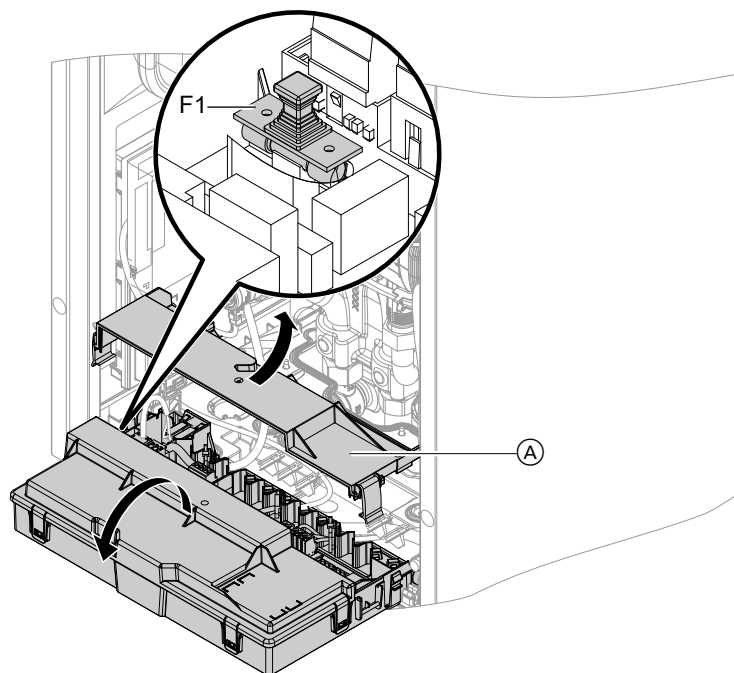


Fig. 62

1. Turn off the ON/OFF switch.
2. Depending on the configuration: Move programming unit together with bracket to service position.
3. Pivot the HMU heat management unit down.
4. Remove cover (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.

Control functions

Heating mode

The control unit determines a set flow temperature for the heat generator, subject to the outside temperature or the room temperature and the slope/level of the heating curve.

The determined set flow temperature is transferred to the burner control unit. The burner control unit calculates the modulation level from the set and actual flow temperatures and regulates the burner accordingly. The electronic temperature limiter inside the burner control unit limits the flow temperature.

Heating circuit pump connection for heating circuit without mixer

Only for systems with several heating circuits.

If a heating circuit without mixer is connected downstream of the low loss header, the circulation pump can be connected to output P2. The function of the output is set in the commissioning assistant.



To start the commissioning assistant: See "Commissioning, inspection and maintenance".

If output P2 is being used for another function, the circulation pump can be connected to an EM-P1 extension (accessories).

Venting program

During the venting program, the circulation pump will be alternately switched on and off for 30 s over a period of 20 min.

The 3-way diverter valve alternates between central heating and DHW heating for a certain period of time. The burner is switched off during the venting program.



Activate venting program: See chapter "Commissioning, inspection and maintenance".

Filling program

In the delivered condition, the 3-way diverter valve is set to its central position, so the system can be filled completely. After the control unit has been switched on, the 3-way diverter valve no longer goes into its central position.

If the system is to be filled with the control unit switched on, the 3-way diverter valve is moved to its central position in the filling program and the pump is started.



Activate filling program: See chapter "Commissioning, inspection and maintenance".

In this position, the control unit can be switched off and the system can be filled completely. When the function is enabled, the burner shuts down. The program automatically becomes inactive after 20 min.

Heating curve

The heating curves represent the relationship between the outside temperature and the flow temperature. Simplified: The lower the outside temperature, the higher the flow temperature must be in order to reach the room temperature set point.

Factory settings:

- Slope = 1.4
- Level = 0

Note

If heating circuits with mixer are present in the heating system: The flow temperature of the heat generator is one differential temperature higher than the flow temperature for the heating circuits with mixer. Differential temperature in delivered condition set to 8 K.

The differential temperature is adjustable using the following parameters:

- Heating circuit 2: Parameter 934.5
- Heating circuit 3: Parameter 935.5
- Heating circuit 4: Parameter 936.5

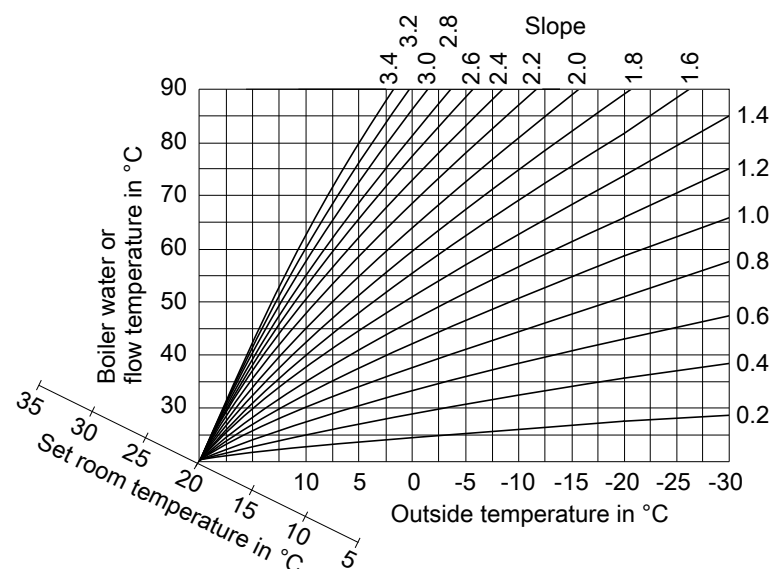


Fig. 63

Slope setting ranges:

- Underfloor heating systems: 0.2 to 0.8
- Low temperature heating systems: 0.8 to 1.6

Set room temperature

Standard room temperature or comfort room temperature

Individually adjustable for each heating circuit.
The heating curve is offset along the set room temperature axis. The start and stop points of the heating circuit pumps depend on the Heating limit... outside temperature, heating circuit... setting.

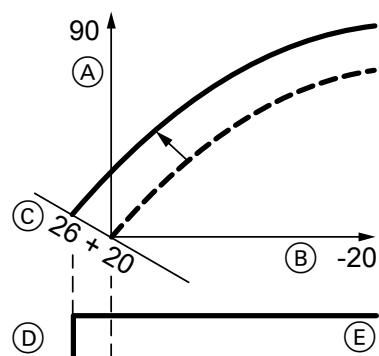
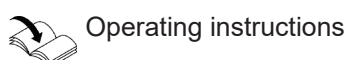


Fig. 64 Example 1: Adjusting the set room temperature from 20 to 26 °C

- (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

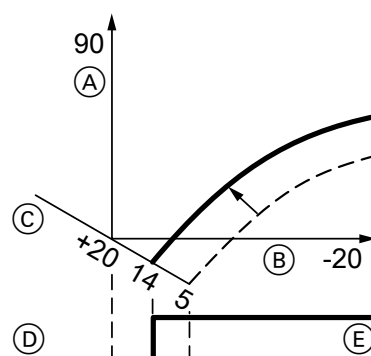


Fig. 65 Example 2: Adjusting the reduced set room temperature from 5 °C to 14 °C

- (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.

Control functions (cont.)

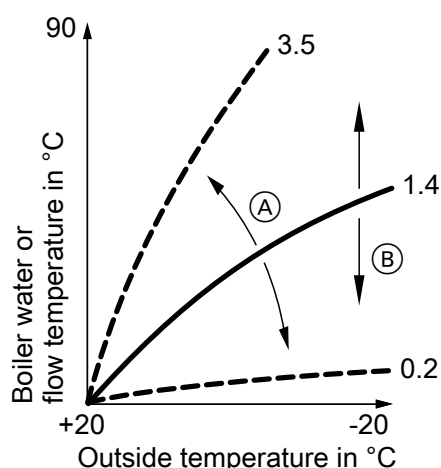


Fig. 66

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

Raising the flow temperature of the heating circuits during operation with room temperature hook-up

The higher the value, the greater the influence of the room temperature on the flow temperature of the heating circuit.

Room influence factor parameter

Heating circuit	Parameter
1 (without mixer)	933.7 (only set if just one heating circuit is installed)
2 (with mixer)	934.7
3 (with mixer)	935.7
4 (with mixer)	936.7

Example for determining the increase in the flow temperature using the value of the heating curve when the actual room temperature deviates from the set room temperature:

- Set room temperature = 20.0 °C (RT set)
- Actual room temperature = 18.0 °C (RT actual)
- Heating curve slope = 1.4
- Room influence factor = 8 (delivered condition)

Determining the increase in flow temperature

$(RT \text{ set} - RT \text{ actual}) \times (1 + \text{slope}) \times \text{room influence factor} / 4 = \text{raising the flow temperature via heating curve value}$

$$(20 - 18) \times (1 + 1.4) \times 8 / 4 = 9.6$$

Increase in flow temperature via heating curve value = 9.6 K

Screed drying

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

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

Note

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

Observe EN 1264. The report to be provided by the heating contractor must contain the following details regarding heat-up:

- Heat-up data with the relevant set flow temperatures
- Max. flow temperature achieved.
- Operating state and outside temperature at handover

Different temperature profiles can be set via parameter 897.0.

Note

Temperature profile 6 ends after 21 days.

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

Control functions (cont.)

Parameter 897.0 "Screed drying":

Temperature profile A (EN 1264-4)

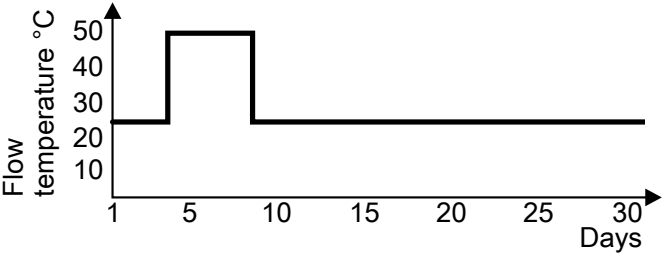


Fig. 67

Temperature profile B (ZV parquet and flooring technology)

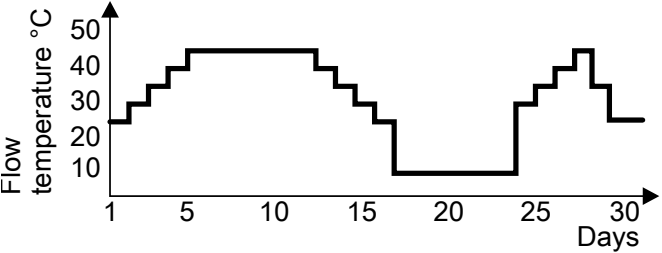


Fig. 68

Temperature profile C

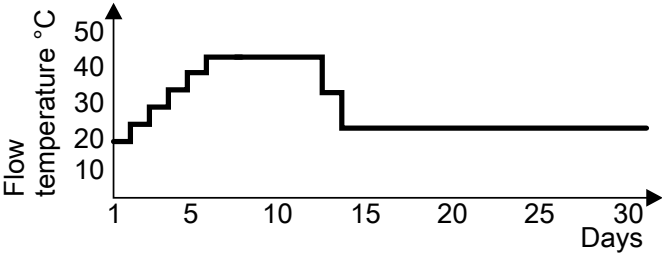


Fig. 69

Temperature profile D

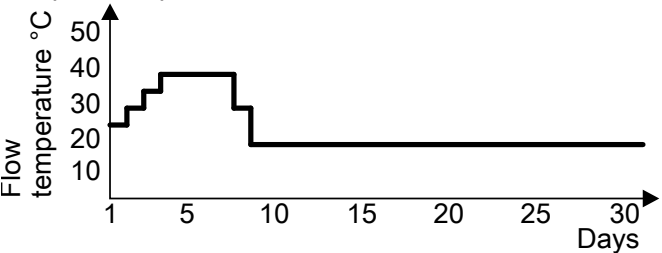


Fig. 70

Temperature profile E

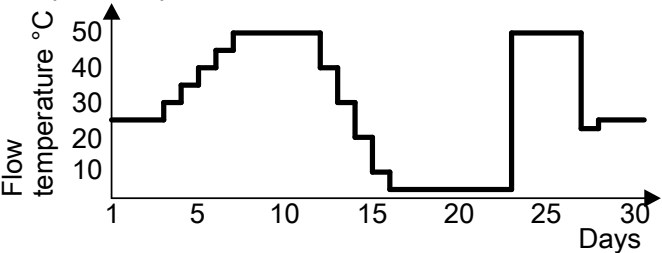


Fig. 71

Control functions (cont.)

Temperature profile F

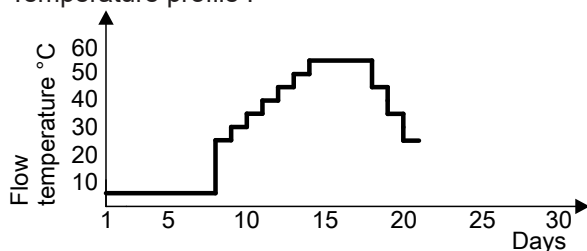


Fig. 72 Ends after 21 days.

Raising the reduced room temperature

During operation at reduced room temperature, the reduced set room temperature can be automatically raised subject to the outside temperature. The temperature is raised in accordance with the selected heating curve, and no higher than the standard set room temperature or comfort room temperature. Depending on which set room temperature will become active in the next time phase.

The outside temperature limits for the start and end of temperature raising can be set in parameters 1139.0 and 1139.1.

Example using the settings in the delivered condition

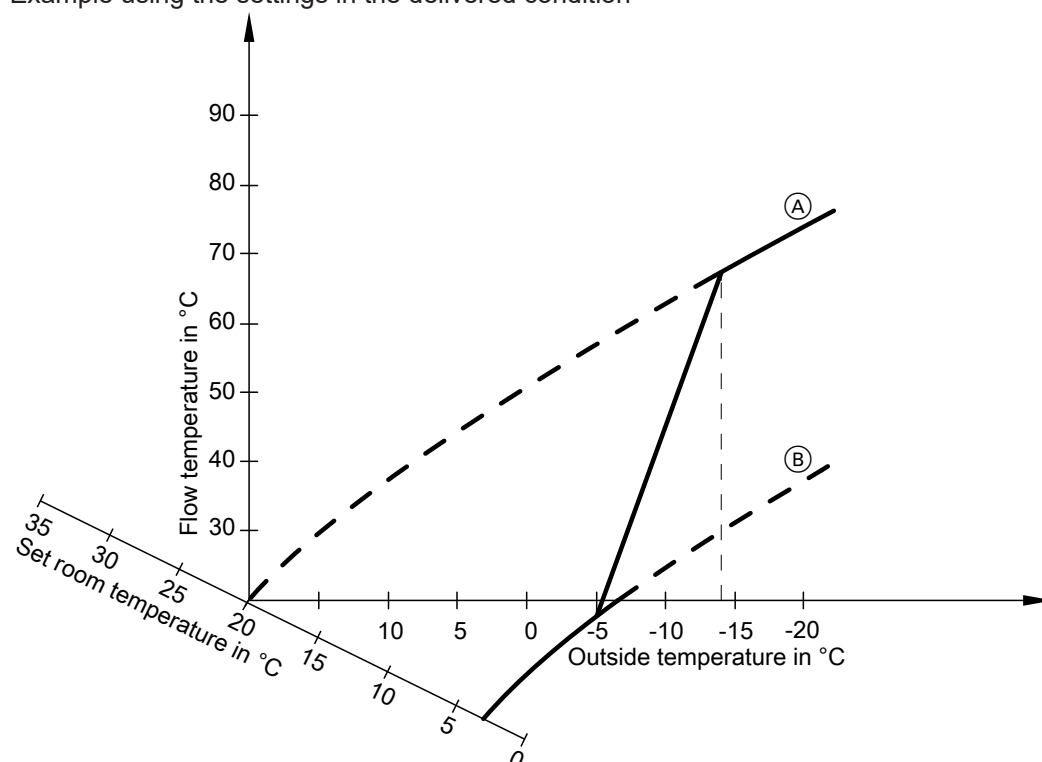


Fig. 73

- Ⓐ Heating curve for operation at standard room temperature or comfort room temperature
- Ⓑ Heating curve for operation at reduced room temperature

Reducing the heat-up time

During the transition from operation at reduced room temperature to operation at standard room temperature or comfort room temperature, the flow temperature will be raised in accordance with the selected heating curve.

The value and duration of the additional increase in the set flow temperature is adjusted in parameters 424.3 and 424.4.

Example

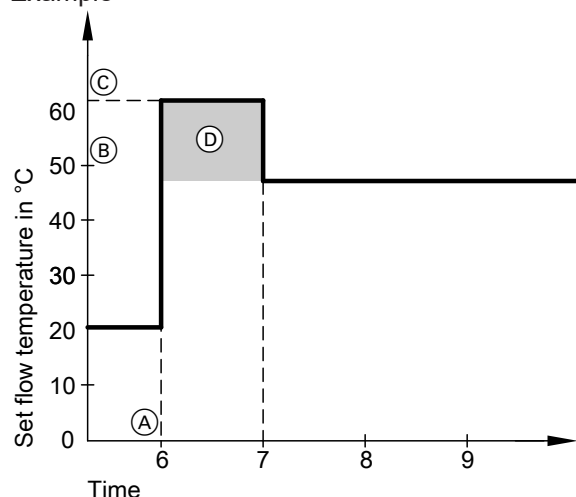


Fig. 74

- (A) Start of operation at standard room temperature or comfort room temperature
- (B) Set flow temperature in accordance with the set heating curve
- (C) Set flow temperature in accordance with parameter 424.3
- (D) Duration of operation with higher set flow temperature in accordance with parameter 424.4: 60 min

DHW heating

Heating the DHW loading cylinder from cold

The heating circuit pump is switched ON and the 3-way diverter valve will be changed over, if the cylinder temperature sensor captures a temperature lower than the defaulted set value.

- The cylinder loading pump is switched ON if the boiler water temperature \geq set cylinder temperature.
- The burner is switched ON if the boiler water temperature \leq set cylinder temperature, and the cylinder loading pump is switched ON when the required boiler water temperature is reached.

The loading cylinder is heated up to the set cylinder temperature. Heating stops when the specified temperature has been reached at the cylinder temperature sensor.

Reheating when DHW is drawn off

When DHW is drawn off, cold water enters the lower section of the loading cylinder.

The heating circuit pump is switched ON and the 3-way diverter valve is changed over, if the cylinder temperature sensor captures a temperature lower than the defaulted set value.

- The cylinder loading pump is switched ON if the boiler water temperature \geq set cylinder temperature.
- The burner is switched ON if the boiler water temperature \leq set cylinder temperature, and the cylinder loading pump is switched ON when the required boiler water temperature is reached.

DHW is regulated to the set temperature via the outlet temperature sensor.

DHW heating (cont.)

After the draw-off process has ended, the loading cylinder continues to be heated up until the set DHW temperature is reached at the cylinder temperature sensor.

Increased DHW hygiene

The DHW can be heated to a specified (higher) set DHW temperature (approx. 65 °C) for a period of one hour.



Danger

Risk of injury due to increased DHW temperature.

Inform the system user of the risk from the raised outlet temperature at the draw-off points. If required, provide on-site scald protection measures.

External heating circuit hook-up (if installed)

Note

Only in conjunction with weather-compensated operation.

■ Function:

- If the external demand is active (plug 96 or digital input on DIO electronics module closed), the heating circuit is supplied with heat.
- If the external demand is inactive (contact open), heat supply to the heating circuit ends (regardless of the current set room temperature or the switching time).

The following status messages are shown on the display of the control unit:

- S.94 (heating circuit 1)
- S.95 (heating circuit 2)
- S.96 (heating circuit 3)



Please note

There is no frost protection for the connected heating circuits.

■ Connection:

- If just one heating circuit is hooked up, use connection at plug 96: See page 29.
- If several heating circuits (max. 3) are hooked up, connect all contacts at EM-EA1 extension (DIO electronics module) to subscriber no. 1 (rotary switch = 1).



See EM-EA1 extension installation instructions

Valve and pump kick

To prevent circulation pumps and valves from getting stuck or jammed (e.g. inactive heating system in summer), all pumps and valves connected to the control unit are automatically switched on or switched over for 10 seconds after **90 hours** of idle time:

- Mixer pumps
- Internal pumps / boiler circuit pumps
- DHW circulation pumps
- Loading pumps

- Solar circuit pumps
- Mixer valves
- Diverter valves

Note

On appliances with a 3/2-way diverter valve, the valve is automatically moved to the centre position and back to the original position after 25 hours of standstill.

HMU heat management unit

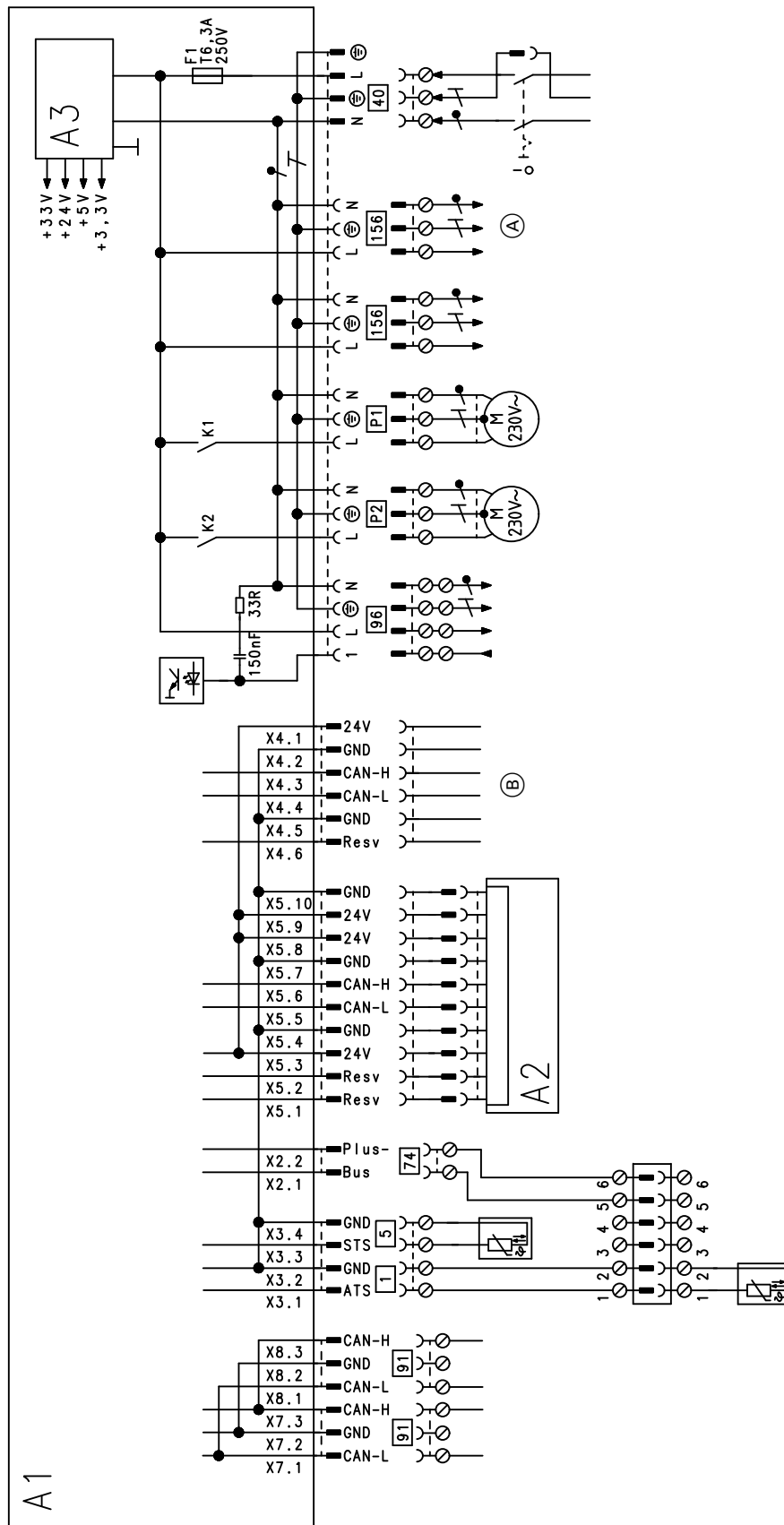


Fig. 75

- A1 HMU heat management unit
- A2 HMI programming unit with communication module (TCU 200)
- A3 Power supply unit
- X... Electrical interfaces

- 1 Outside temperature sensor
- 5 Cylinder temperature sensor
- 40 Power supply
- 74 PlusBus
- 91 CAN bus

HMU heat management unit (cont.)

- | | |
|--|---|
| <p>96 230 V floating input, 230 V output. For connecting a floating switching contact, see page 29</p> <p>156 Mains voltage output</p> <p>P1 230 V output: Circulation pump for cylinder heating (plug 21)</p> <p>P2 230 V parametrisable output for:</p> <ul style="list-style-type: none"> ■ DHW circulation pump (plug 28) or ■ Circulation pump for heating circuit without mixer (plug 20) | <p>Ⓐ To BCU burner control unit</p> <p>Ⓑ To BCU burner control unit</p> |
|--|---|

BCU burner control unit

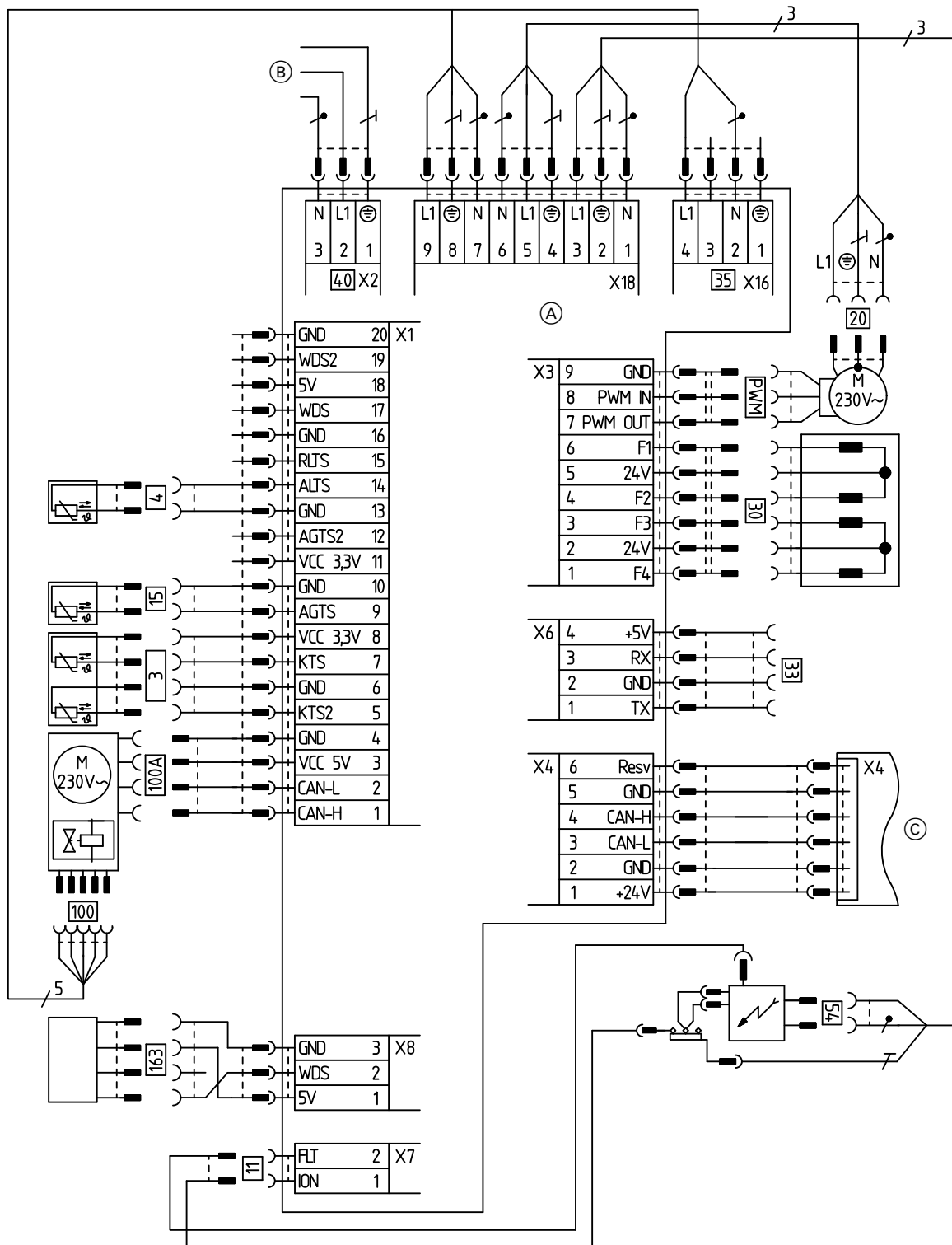


Fig. 76

- PWM Control signal
- X... Electrical interfaces
- [3] A/B Flow temperature sensors 1 and 2
- [4] Outlet temperature sensor
- [11] Ionisation electrode
- [15] Flue gas temperature sensor
- [20] Internal circulation pump (primary pump)
- [30] 3-way diverter valve
- [35] Gas solenoid valve

- [40] Power supply
- [54] Ignition unit
- [100] Fan motor
- [100] A Fan motor control
- [163] Water pressure sensor
- [163] A Water pressure sensor
- (A) BCU burner control unit
- (B) HMU heat management unit (plug [156])
- (C) HMU heat management unit (plug X4)

Commissioning/service reports

Report

Settings and test values	Set value	Commissioning	Maintenance/service	Maintenance/service
Date				
Signature				
Static pressure mbar kPa	≤ 57.5 ≤ 5.75			
Supply pressure (flow pressure)				
<input type="checkbox"/> For natural gas mbar kPa	See table "Supply pressure" (Commissioning ...)			
<input type="checkbox"/> For LPG mbar kPa				
<input type="checkbox"/> Enter gas type				
Carbon dioxide content CO₂ With natural gas				
▪ At lower heating output % by vol.	See "Check- ing the com- bustion qual- ity" (Commis- sioning ...)			
▪ At upper heating output % by vol.				
For LPG				
▪ At lower heating output % by vol.				
▪ 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 storage combi boiler

Use with single connection

Gas boiler, type B and C, category II _{2N3P}				
Type		B2TH		
Rated heating output range (to EN 15502) $T_F/T_R = 50/30\text{ °C}$ (P(50/30))				
Natural gas	kW	1.9 to 19	1.9 to 25	1.9 to 32
LPG	kW	2.5 to 19	2.5 to 25	2.5 to 32
$T_F/T_R = 80/60\text{ °C}$ (Pn(80/60))				
Natural gas	kW	1.7 to 17.5	1.7 to 23	1.7 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 23	2.2 to 29.3
Rated heating output for DHW heating				
Natural gas	kW	1.7 to 22	1.7 to 28.6	1.7 to 33.9
LPG	kW	2.2 to 22	2.2 to 28.6	2.2 to 33.9
Rated heat input (Q _n)				
Natural gas	kW	1.8 to 17.8	1.8 to 23.4	1.8 to 29.9
LPG	kW	2.3 to 17.8	2.3 to 23.4	2.3 to 29.9
Rated heat input for DHW heating (Q _{nw})		kW	22.7	29.5
Product ID		CE-0085CT0017		
IP rating to EN 60529		IP X4		
▪ In conjunction with assembly kit (accessories)		IP X1		
Protection class		I		
NO _x		Class	6	
Gas supply pressure				
Natural gas	mbar	20	20	20
	kPa	2	2	2
LPG	mbar	50	50	50
	kPa	5	5	5
Max. permiss. gas supply pressure ^{*1}				
Natural gas	mbar	25.0	25.0	25.0
	kPa	2.5	2.5	2.5
LPG	mbar	57.5	57.5	57.5
	kPa	5.75	5.75	5.75
Sound power level (to EN ISO 15036-1)				
– At partial load	dB(A)	38.8	38.8	38.8
– At rated heating output (DHW heating)	dB(A)	49.2	50.7	52.6
Power consumption in the delivered condition (incl. circulation pump)		W	53	79
Rated voltage		V	230	
Rated frequency		Hz	50	
Appliance fuse protection		A	6.3	
Backup fuse (power supply)		A	16	
Communication module (integral)				
WiFi frequency band		MHz	2400 to 2483.5	
Max. transmission power		dBm	17	

^{*1} 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, type B and C, category II _{2N3P}				
Type		B2TH		
Rated heating output range (to EN 15502) $T_F/T_R = 50/30\text{ °C}$ (P(50/30))				
Natural gas	kW	1.9 to 19	1.9 to 25	1.9 to 32
LPG	kW	2.5 to 19	2.5 to 25	2.5 to 32
$T_F/T_R = 80/60\text{ °C}$ (Pn(80/60))				
Natural gas	kW	1.7 to 17.5	1.7 to 23	1.7 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 23	2.2 to 29.3
Low power radio frequency band	MHz	2400 to 2483.5		
Max. transmission power	dBm	6		
Supply voltage	V DC	24		
Power consumption	W	4		
Permissible ambient temperature				
▪ During operation	°C	+5 to +35		
▪ During storage and transport	°C	-5 to +60		
Electronic temperature limiter setting (TN)		91		
Electronic temperature cut-out setting		110		
Weight excl. heating water		111.5		
Permiss. operating pressure, heating water side (PMS)		3 0.3		
Water capacity (excl. diaphragm expansion vessel)		3.0	3.0	3.0
Max. flow temperature		82	82	82
Max. flow rate (limit for the use of hydraulic separation)		See residual head graphs		
Nominal circulating water volume At $T_F/T_R = 80/60\text{ °C}$		818	1076	1374
Expansion vessel				
Capacity	l	18	18	18
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	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$
Cold water and DHW	R	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
DHW circulation	R	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Dimensions				
Length	mm	595	595	595
Width	mm	600	600	600
Height	mm	1400	1400	1400
Gas connection (with connection accessories)		$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$

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

Gas boiler, type B and C, category II _{2N3P}				
Type		B2TH		
Rated heating output range (to EN 15502) T _F /T _R = 50/30 °C (P(50/30))				
Natural gas	kW	1.9 to 19	1.9 to 25	1.9 to 32
LPG	kW	2.5 to 19	2.5 to 25	2.5 to 32
T _F /T _R = 80/60 °C (Pn(80/60))				
Natural gas	kW	1.7 to 17.5	1.7 to 23	1.7 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 23	2.2 to 29.3
DHW loading cylinder				
Capacity	l	100	100	100
Permiss. operating pressure (DHW side)	bar	10	10	10
	MPa	1	1	1
Continuous DHW output	kW	19.74	26.53	32.50
for DHW heating from 10 to 45 °C	l/h	484.80	648.80	793.80
Performance factor N _L *2		1.4	2.1	2.6
Initial DHW output	l/10 min	163.70	196.20	215.50
for DHW heating from 10 to 45 °C				
Supply values				
Relative to the max. load and 1013 mbar/15 °C				
Natural gas E	m³/h	2.40	3.12	3.69
Natural gas LL	m³/h	2.79	3.63	4.29
LPG	kg/h	1.76	2.29	2.71

^{*2} At 70 °C average boiler water temperature and cylinder storage temperature T_{cyl} = 60 °C.

DHW performance factor N_L depends on cylinder storage temperature T_{cyl}.

Standard values: T_{cyl} = 60 °C → 1.0 × N_L T_{cyl} = 55 °C → 0.75 × N_L T_{cyl} = 50 °C → 0.55 × N_L T_{cyl} = 45 °C → 0.3 × N_L.

Specification (cont.)

Use with single connection

Gas boiler, type B and C, category II _{2N3P}				
Type		B2TH		
Rated heating output range (to EN 15502)				
T _F /T _R = 50/30 °C (P(50/30))				
Natural gas	kW	1.9 to 19	1.9 to 25	1.9 to 32
LPG	kW	2.5 to 19	2.5 to 25	2.5 to 32
T _F /T _R = 80/60 °C (Pn(80/60))				
Natural gas	kW	1.7 to 17.5	1.7 to 23	1.7 to 29.3
LPG	kW	2.2 to 17.5	2.2 to 23	2.2 to 29.3
Flue gas parameters				
Temperature (at a return temperature of 30 °C)				
– At max. heating output	°C	41	46	59
– At partial load	°C	38	38	38
Temperature (at a return temperature of 60 °C)	°C	65	67	72
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	31.7	41.6	54.9
– At partial load (single connection)	kg/h	3.3	3.3	3.3
LPG				
– At rated heating output	kg/h	30.1	41.0	53.9
– At partial load	kg/h	3.9	3.9	3.9
Available draught (single connection, heating)* ³	Pa	200	341	600
	mbar	2.0	3.41	6.0
Available draught (single connection, DHW heating)* ⁴	Pa	341	600	387
	mbar	3.41	6.0	3.87
Max. amount of condensate To DWA-A 251	l/h	3.2	4.1	4.9
Condensate connection (hose nozzle)	Ø mm	20 - 24	20 - 24	20 - 24
Flue gas connection	Ø mm	60	60	60
Ventilation air connection	Ø mm	100	100	100
Standard seasonal efficiency [to DIN] at T _F /T _R = 40/30 °C		Up to 98 (H _s) [gross cv]		
Energy efficiency class to Commission Regulation (EU) No 813/2013				
– Heating (G to A+++)		A	A	A
– DHW heating, draw-off profile XL (F to A+)		A	A	A
Seasonal space heating energy efficiency η _s	%	93	93	94

Note

With appliances for use in multiple connection (vertical) and cascades (horizontal), the specifications in the table "Use with single connection" apply, with the exception of the specifications in the table below "Use with multiple connection".

³ CH: Available draught 200 Pa; 2.0 mbar

⁴ CH: Available draught 200 Pa; 2.0 mbar

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

Gas boiler, type B and C, category II _{2N3P}				
Type		B2TH		
Rated heating output range (to EN 15502) T _F /T _R = 50/30 °C (P(50/30))				
Natural gas	kW	5.6 to 19	5.6 to 25	5.6 to 32
T _F /T _R = 80/60 °C (Pn(80/60))				
Natural gas	kW	5.1 to 17.5	5.1 to 23	5.1 to 29.3
Rated heating output for DHW heating				
Natural gas	kW	5.1 to 22	5.1 to 28.6	5.1 to 33.9
Rated heat input (Q _n)				
Natural gas	kW	5.3 to 17.8	5.3 to 23.4	5.3 to 29.9
Rated heat input for DHW heating (Q _{nw})				
	kW	17.8	23.4	29.9
Mass flow rate (for DHW heating)				
Natural gas				
– At max. heating output	kg/h	31.7	41.6	54.9
–Partial load multiple connection overpres- sure		9.7	9.7	9.7
Available draught C ₁₀ (at header system in- terface)				
	Pa	25	25	25
	mbar	0.25	0.25	0.25
Minimal permissible differential pressure between flue gas outlet and air inlet for flue system to C ₁₀		-200 ^{*5}	-200 ^{*5}	-200 ^{*5}

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, AZ, BA, BG, BY, CH, CY, CZ, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, KG, KZ, LI, LT, LV, MD, ME, MT, NL, NO, PL, PT, RO, RS, RU, SE, SK, TR, UA, UZ	B ₂₃ , B _{23P} , B ₃₃ , C ₁₃ , C ₃₃ , C ₄₃ , C ₅₃ , C ₆₃ , C ₈₃ , C _{83P} , C ₉₃
BE	B ₂₃ , B _{23P} , B ₃₃ , C ₁₃ , C ₃₃ , C ₄₃ , C ₅₃ , C ₈₃ , C _{83P} , C ₉₃
DE, LU, SI	B ₂₃ , B _{23P} , B ₃₃ , C _{13X} , C _{33X} , C _{43X} , C _{53X} , C _{63X} , C _{83X} , C _{83P} , C _{93X}

Gas categories

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

^{*5} -100 Pa reserved for wind pressure

(cont.)

Available in the following countries	Gas categories
CY	I _{3P}
NL	II _{2EK3P}
PL	II _{2N3P} /II _{2ELW3P}

The gas condensing boiler is suitable for operation with natural gas containing a hydrogen blend of up to 20 % by volume.

Electronic combustion control unit

The electronic combustion controller utilises the physical correlation between the level of the ionisation current and the air ratio λ . The maximum ionisation current is achieved at an air ratio of 1 for all gas qualities. The ionisation signal is evaluated by the combustion controller. The air ratio is regulated to a value that is between $\lambda = 1.2$ and 1.5 . This range provides for an optimum combustion quality. Thereafter, the electronic gas train regulates the required gas volume subject to the prevailing gas quality.

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

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

Disposal

Final decommissioning and disposal

This product can be recycled. Components and fluids from the system do not belong in ordinary domestic waste.

For decommissioning, isolate the system from the power supply, secure against reconnection and allow components to cool down where appropriate. All components must be disposed of correctly.

Ordering individual parts for accessories

Please affix accessory labels with part numbers here.
Please specify the relevant part no. when ordering individual parts.

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Certificates

Declaration of conformity

We, Viessmann Climate Solutions GmbH & Co. KG, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, as legal successor of Viessmann Climate Solutions SE, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, declare as sole responsible body that the named product complies with the European directives and supplementary national requirements in terms of its design and operational characteristics. Viessmann Climate Solutions GmbH & Co. KG, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, as legal successor of Viessmann Climate Solutions SE, Viessmannstrasse 1, 35108 Allendorf (Eder), Germany, hereby declares that the radio equipment type of the named product complies with directive 2014/53/EU.

Using the serial number, the full Declaration of Conformity can be found on the following website:
www.viessmann.co.uk/eu-conformity

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

We, Viessmann Climate Solutions SE, D-35108 Allendorf, confirm that the product **Vitodens 222-F** complies with the NO_x limits specified by the 1st BImSchV § paragraph 6.

Allendorf, 1 March 2021

Viessmann Climate Solutions SE



Authorised signatory Uwe Engel
Senior Vice President Engineering & Technology

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