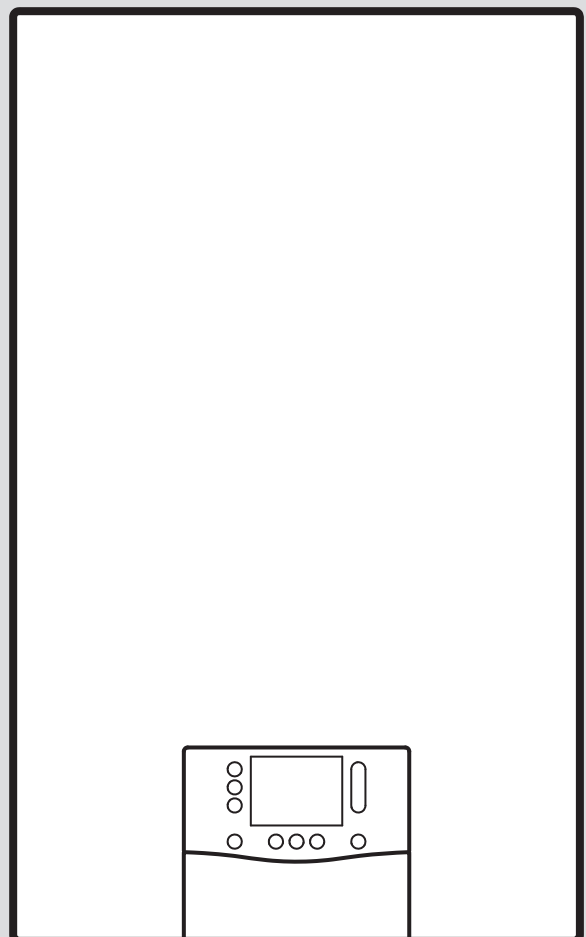




ecoTEC plus

VU../VUW..



Installation and maintenance instructions

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1 Safety

1.1 Intended use

The product is intended as a heat generator for sealed heating installations and for domestic hot water generation.

Improper use of any kind is prohibited.

Intended use also includes the following:

- Installing and operating the product only in conjunction with accessories for the air/flue pipe which are listed in the other applicable documents and comply with the type of unit
- Using the product while observing the accompanying operating, installation and maintenance instructions for the product along with all other components of the installation
- Installing and setting up the product while observing the product and system approval
- Installing the product for multiple-flue systems in excess pressure mode or cascades while using the necessary conversion set (air intake pipe with integrated non-return valve and mass air flow sensor)
- Observing all inspection and maintenance conditions listed in the instructions
- Installing while observing the IP code

The following is classed as improper use:

- Using the product in vehicles, such as non-residential mobile homes or caravans. Units that are not classed as vehicles are those that are installed in a fixed and permanent location (known as "fixed installation").
- Using the product in combination with the **actoSTOR** module, whether in the case of a replacement or for a new installation
- Using the product for multiple-flue systems in excess pressure mode or in cascades, if the product is not approved for multiple-flue systems in excess pressure mode or cascades
- Using the product for multiple-flue systems in negative pressure mode (unit types B33 and C43) with the conversion set for excess pressure mode (air intake pipe with integrated non-return valve and mass air flow sensor)

- Any direct use in industrial or commercial processes
- Any use other than those described in these instructions and any use that goes beyond what is described here

1.2 Qualification

The person carrying out the work described here must have completed professional training. The competent person must demonstrably have all of the knowledge, skills and capabilities that are required in order to carry out the work mentioned below.

The following work must only be carried out by competent persons who are sufficiently qualified to do so:

- Set-up
- Dismantling
- Installation
- Start-up
- Inspection and maintenance
- Repair
- Decommissioning
- ▶ Proceed in accordance with current technology.
- ▶ Use the correct tool.

The above-mentioned work must always only be carried out by persons with sufficient qualifications.

This product can be used by children aged from 8 years and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the product in a safe way and understand the hazards involved. Children must not play with the product. Cleaning and user maintenance work must not be carried out by children unless they are supervised.

1.3 General safety information

The following sections convey important safety information. It is essential to read and observe this information in order to prevent risk of death, risk of injury, material damage or environmental damage.

1.3.1 Gas

If you smell gas:

- ▶ Avoid rooms that smell of gas.





- ▶ If possible, open doors and windows fully and ensure adequate ventilation.
- ▶ Do not use naked flames (e.g. lighters, matches).
- ▶ Do not smoke.
- ▶ Do not use any electrical switches, mains plugs, doorbells, telephones or other communication systems in the building.
- ▶ Close the emergency control valve or the main isolator.
- ▶ If possible, close the gas stopcock on the product.
- ▶ Warn other occupants in the building by yelling or banging on doors or walls.
- ▶ Leave the building immediately and ensure that others do not enter the building.
- ▶ Alert the police and fire brigade, and inform the emergency service department of the gas supply company as soon as you are outside the building.

1.3.2 Liquefied petroleum gas

There is a risk that liquefied petroleum gas may collect in the lower part of multi-configuration air/flue systems at floor level.

If the product is installed below ground level, liquefied petroleum gas may accumulate at floor level if there are any leaks.

To prevent explosions and fire:

- ▶ Do not use liquefied petroleum gas to operate the heat generator for a multi-configuration air/flue system under excess pressure.
- ▶ Make sure that liquefied petroleum gas cannot escape from the product or the gas pipe under any circumstances.

To prevent ignition problems when the liquefied petroleum gas tank is poorly ventilated:

- ▶ Ensure that the liquid gas tank has been purged properly before installing the product.
- ▶ If required, contact the filler or the liquid gas supplier.

1.3.3 Flue gas

Flue gases may cause poisoning, while hot flue gases may also cause burns. Flue gases must therefore never be allowed to escape uncontrollably.

What to do if you smell flue gas in the property:

- ▶ Open all accessible doors and windows fully to provide ventilation.
- ▶ Switch off the product.
- ▶ Check the flue gas routes in the product and the flue gas diversions.

To prevent flue gas exit:

- ▶ Only operate the product if the air/flue pipe has been completely installed.
- ▶ With the exception of short periods for testing purposes, only operate the product when the front casing is installed and closed.
- ▶ In order to operate the product, ensure that the condensate siphon is always full.
 - Water seal level for units with condensate siphon (third-party accessory):
≥ 200 mm

To ensure that the seals are not damaged:

- ▶ Instead of grease, use only water or commercially available soft soap to aid installation.

1.3.4 Air supply

Unsuitable or insufficient combustion and room air may lead to material damage, but also to life-threatening situations.

To ensure that the combustion air supply is sufficient during open-flued operation:

- ▶ Ensure that the air supply to the product's installation room is permanently unobstructed and sufficient in accordance with the relevant ventilation requirements. This also applies, in particular, for cupboard installations.

To prevent corrosion on the product and in the flue system:

- ▶ Ensure that the combustion air supply is free from sprays, solvents, chlorinated cleaning agents, paint, adhesives, ammonia compounds, dust or similar substances.
- ▶ Ensure that no chemical substances are stored at the installation site.
- ▶ If you are installing the product in hairdressing salons, painter's or joiner's workshops, cleaning businesses or similar locations, choose a separate installation





room in which the room air is technically free of chemical substances.

- ▶ Ensure that the combustion air is not routed through chimneys which have previously been used with oil-fired floor-standing boilers, or with other boilers, which could cause soot to build up in the chimney.

1.3.5 Air/flue pipe

The heat generators are system-certified together with the original air/flue pipes.

- ▶ Only use original air/flue pipes from the manufacturer.

1.3.6 Electricity

The power supply terminals L and N remain live even if the unit main switch is switched off.

To prevent electric shocks, proceed as follows before working on the product:

- ▶ Disconnect the product from the power supply by switching off all power supplies at all poles (electrical partition with a contact gap of at least 3 mm, e.g. fuse or circuit breaker) or remove the mains plug (if present).
- ▶ Secure against being switched back on again.
- ▶ Wait at least three minutes until the condensers have discharged.
- ▶ Check that there is no voltage.

1.3.7 Weight

To prevent injuries when transporting the product:

- ▶ Make sure that the product is transported by at least two people.

To prevent material damage to the flexible gas pipe:

- ▶ Never suspend the compact thermal module on the flexible gas pipe.

1.3.8 Explosive and flammable substances

To prevent explosions and fire:

- ▶ Do not use the product in rooms that contain explosive or flammable substances (such as petrol, paper or paint).

1.3.9 High temperatures

To prevent burns:

- ▶ Only carry out work on components once they have cooled down.

To prevent material damage that is caused by heat transfer:

- ▶ Only solder connectors if the connectors are not yet screwed to the service valves.

1.3.10 Heating water

Both unsuitable heating water and air in the heating water may cause material damage to the product and in the heat generator circuit.

- ▶ Check the quality of the heating water. (→ Section 7.1)
- ▶ If you use non-diffusion-tight plastic pipes in the heating installation, ensure that no air gets into the heat generator circuit.

1.3.11 Neutralisation device

To prevent contamination of the waste water:

- ▶ Check whether a neutralising unit must be installed in accordance with national regulations.
- ▶ Observe local regulations on neutralising condensate.

1.3.12 Frost

To prevent material damage:

- ▶ Do not install the product in rooms prone to frost.

1.3.13 Safety devices

- ▶ Install the necessary safety devices in the installation.

1.4 Regulations (directives, laws, standards)

- ▶ Observe the national regulations, standards, directives, ordinances and laws.

2 Notes on the documentation

- ▶ Always observe all the operating and installation instructions included with the system components.
- ▶ Pass these instructions and all other applicable documents on to the end user.

These instructions apply for the following products only:

Product article number

VU 15CS/1-5 (N-INT3)	– 0010024655 – 0010043972
VU 25CS/1-5 (N-INT3)	– 0010024656 – 0010043974
VU 30CS/1-5 (N-INT3)	– 0010024653 – 0010043975
VUW 36CS/1-5 (N-INT3)	– 0010024660

The following products can be converted to liquefied petroleum gas operation:

Product article number

VU 15CS/1-5 (N-INT3)	– 0010024655 – 0010043972
VU 25CS/1-5 (N-INT3)	– 0010024656 – 0010043974
VU 30CS/1-5 (N-INT3)	– 0010024653 – 0010043975
VUW 36CS/1-5 (N-INT3)	– 0010024660



Note

If a product is converted for multiple-flue systems in excess pressure mode or cascades, while using the required conversion set (air intake pipe with integrated non-return valve and mass air flow sensor), a refit is no longer permitted.



Note

After the conversion to a multiple-flue system, these products must only be operated with the natural gas type (no liquefied petroleum gas).

The following products can be converted for multiple-flue systems in excess pressure mode or cascades while using the necessary conversion set (air intake pipe with integrated non-return valve and mass air flow sensor):

Product article number

VU 15CS/1-5 (N-INT3)	– 0010043972
VU 25CS/1-5 (N-INT3)	– 0010043974
VU 30CS/1-5 (N-INT3)	– 0010043975

These instructions apply only to:

- New Zealand

3 Product description

3.1 Sitherm Pro™ technology

The intelligent combustion regulation is based on the adaptive Siemens Sitherm Pro™ combustion optimisation.

This makes setting the gas-air ratio (O₂ value or CO₂ value) within one gas family superfluous and this can no longer be performed. However, observe the required measures when changing the gas family, e.g. from natural gas to liquefied petroleum gas or vice versa, if this is permitted for your unit.

3.2 Display of the energy consumption, energy yields and efficiencies



Note

When replacing the PCB, the values recorded up to that point are completely reset in the product and system control.

The product, the system control and the app show approximate values for energy consumption, energy yields and efficiencies, which are extrapolated based on calculation algorithms.

The values that are displayed in the app may differ from the other display options due to staggered transfer intervals.

The determined values depend on:

- Installation and system of the heating installation
- User behaviour
- Seasonal weather effects
- Various tolerances of unit-internal components

The values can be read in the following time forms:

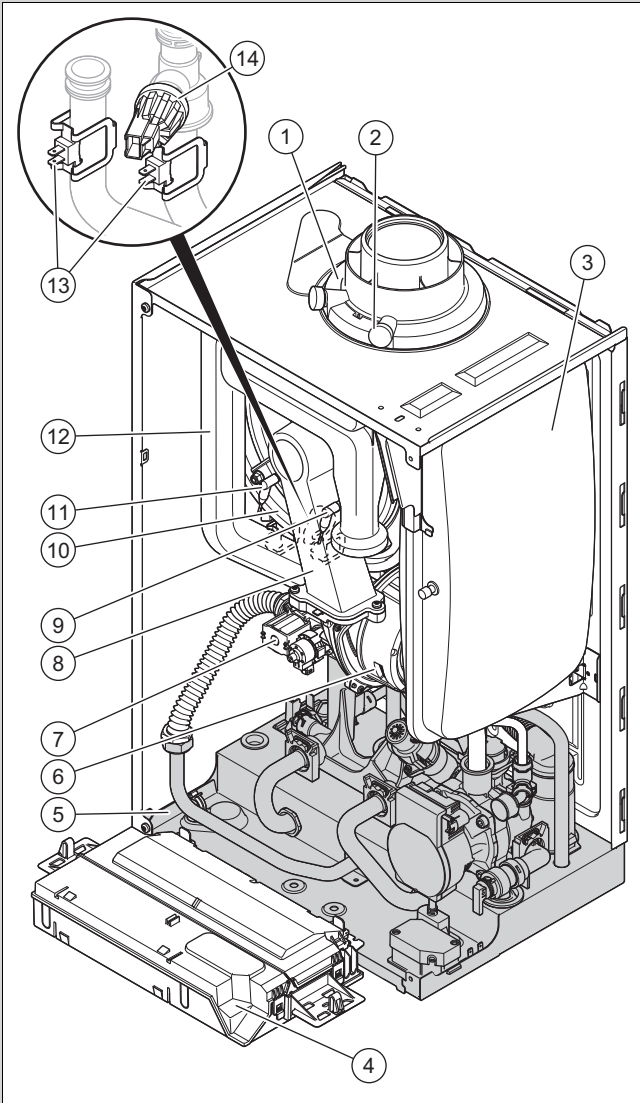
- Today
- Yesterday
- Last month
- Last year
- Total

The recording of the values only includes the product in the factory-delivered condition. Supplementary accessories, even if they are installed on the product, as well as any other components in the heating system and other external consumers, are not part of the data recording.

Deviations between the determined values and the actual values may be significant. The determined values are therefore not suitable for creating or comparing energy billing, for example.

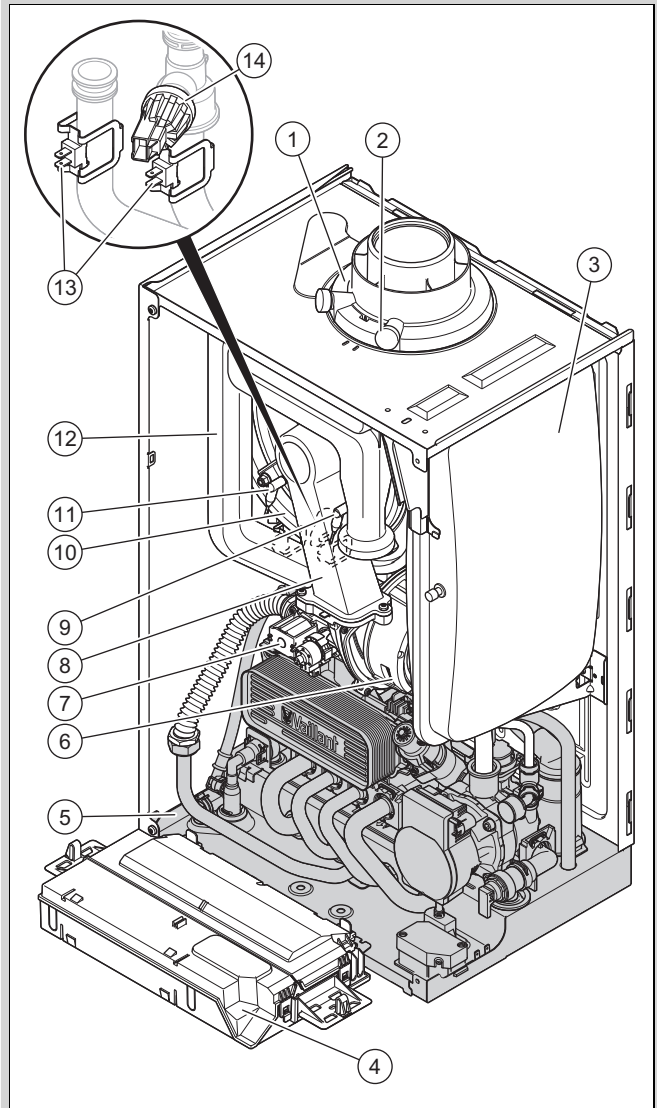
3.3 Product design

Validity: VU 15CS/1-5 (N-INT3) OR VU 25CS/1-5 (N-INT3) OR VU 30CS/1-5 (N-INT3)



- | | |
|------------------------------------|--------------------------|
| 1 Connection for the air/flue pipe | 8 Compact thermal module |
| 2 Flue gas analysis point | 9 Control electrode |
| 3 Expansion vessel | 10 Heat exchanger |
| 4 Electronics box | 11 Ignition electrode |
| 5 Hydraulic block | 12 Air intake pipe |
| 6 Fan | 13 Temperature sensor |
| 7 Gas valve assembly | 14 Water pressure sensor |

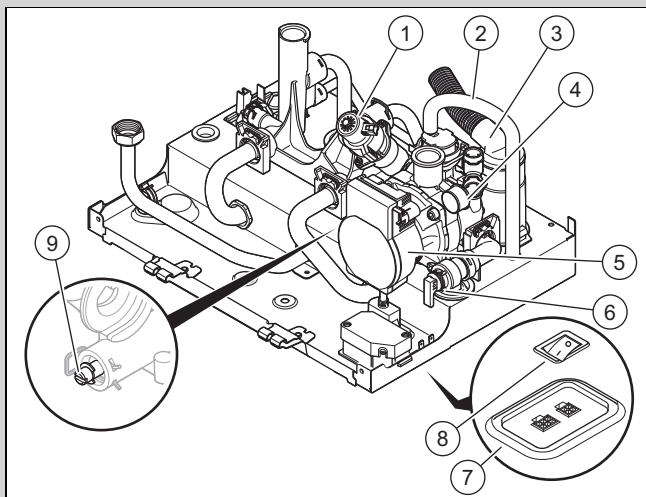
Validity: VUW 36CS/1-5 (N-INT3)



- | | |
|------------------------------------|--------------------------|
| 1 Connection for the air/flue pipe | 8 Compact thermal module |
| 2 Flue gas analysis point | 9 Control electrode |
| 3 Expansion vessel | 10 Heat exchanger |
| 4 Electronics box | 11 Ignition electrode |
| 5 Hydraulic block | 12 Air intake pipe |
| 6 Fan | 13 Temperature sensor |
| 7 Gas valve assembly | 14 Water pressure sensor |

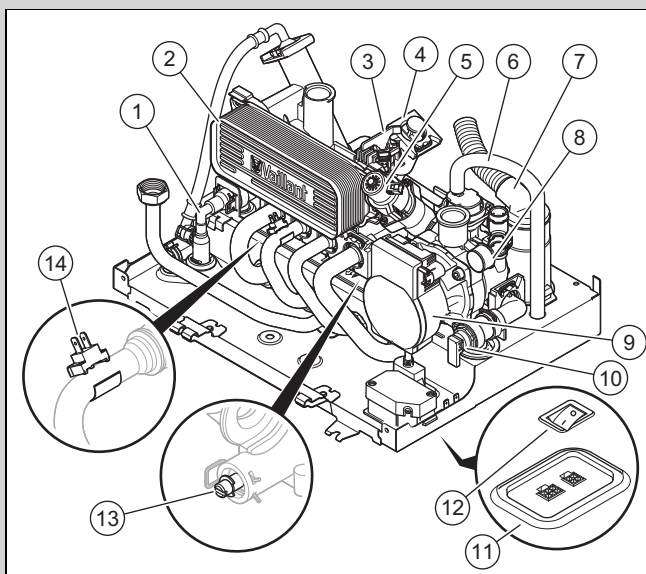
3.4 Design of the product's hydraulic block

Validity: VU 15CS/1-5 (N-INT3) OR VU 25CS/1-5 (N-INT3) OR VU 30CS/1-5 (N-INT3)



- | | | | |
|---|-----------------------------|---|------------------------|
| 1 | Prioritising diverter valve | 5 | High-efficiency pump |
| 2 | Purging hose | 6 | Expansion relief valve |
| 3 | Condensate discharge | 7 | Socket |
| 4 | Manometer | 8 | Unit main switch |
| | | 9 | Bypass valve |

Validity: VUW 36CS/1-5 (N-INT3)



- | | | | |
|---|-----------------------------|----|---------------------------|
| 1 | Filling device | 8 | Manometer |
| 2 | Secondary heat exchanger | 9 | High-efficiency pump |
| 3 | Impeller water flow sensor | 10 | Expansion relief valve |
| 4 | Flow rate limiter | 11 | Socket |
| 5 | Prioritising diverter valve | 12 | Unit main switch |
| 6 | Purging hose | 13 | Bypass valve |
| 7 | Condensate discharge | 14 | Outlet temperature sensor |

3.5 Serial number

The serial numbers are located on the underside of the front panel and on the data plate.

3.6 Data plate

At the factory, the data plate is mounted on the upper side of the unit and on the rear of the electronics box. Any information that is not listed here can be found in separate sections.

Information	Meaning
	Read the instructions.
E.g. VC, VU, VM, VHR S	Product without integrated domestic hot water generation (boiler)
E.g. VCW, VUW, VMW, VHR	Product with integrated domestic hot water generation (combi boiler)
10 - 43	Nominal heat output
C	Condensing boiler
S	Stainless steel heat exchanger
F	ExtraCondense, stainless steel heat exchanger
/1	Product generation
-5	Product equipment
E.g. N, E	Gas group
Rx	Product revision R1: - Product can also be operated with the liquefied petroleum gas type, but not in a multiple-flue system, in excess pressure mode or in a cascade. R2: - Product must only be operated using natural gas. - Product can be converted for multiple-flue systems in excess pressure mode or cascades while using the necessary conversion set (air intake pipe with integrated non-return valve and mass air flow sensor). R3: - Product can be operated in single-configuration air/flue systems with the natural gas or liquefied petroleum gas type. - Product can be converted for multiple-flue systems in excess pressure mode or cascades while using the necessary conversion set (air intake pipe with integrated non-return valve and mass air flow sensor), using only natural gas.
E.g. AL, BA, HR, XK, LT, ME, HU, RO, RS, SI, SK	Designated country
ecoTEC plus	Marketing name
E.g. I2N, G20/G25 – 20 mbar (2.0 kPa) E.g. I2H, 2H, I2HS G20/G25.1 – 20 mbar (2.0 kPa) E.g. I3P, G31 – 37 mbar (3.7 kPa)	Gas group and gas connection pressure as set at the factory

Information	Meaning
Kat.	Gas boiler category
Type	Unit types
PMS	Maximum operating pressure in heating mode
P _{nw} (For boiler only)	Maximum output power
PMW (For combi boiler only)	Maximum operating pressure in domestic hot water mode
D (For combi boiler only)	Specific domestic hot water flow rate value
DSN	Device specific number
NO _x -cl.	NO _x class (nitrogen oxide emissions)
T _{max}	Maximum flow temperature
V	Mains voltage
Hz	Mains frequency
W	Maximum electrical power consumption
IP	IP rating
	Heating mode
	Potable water
P _n	Nominal heat output range (80/60 °C)
P _{nc}	Condensing nominal heat output range (50/30 °C)
Q _n	Heat input range
Q _{nw}	Heat input range for domestic hot water generation
	Barcode with serial number 3rd to 6th digits = production date (year/week) 7th to 16th digit = product article number

3.7 CE marking



The CE marking shows that the products comply with the basic requirements of the applicable directives as stated on the declaration of conformity.

The declaration of conformity can be viewed at the manufacturer's site.

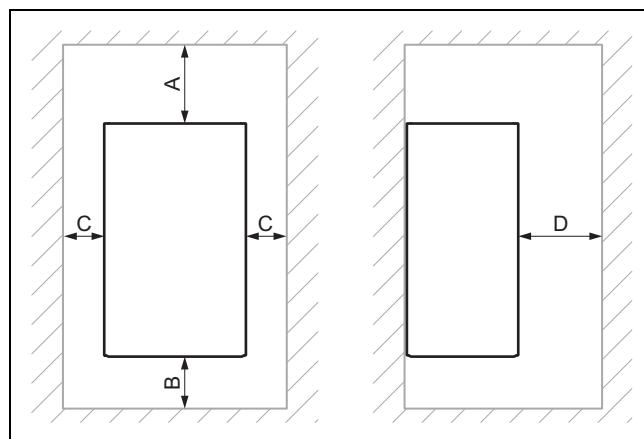
4 Set-up

4.1 Checking the scope of delivery

- Check that the scope of delivery is complete and intact.

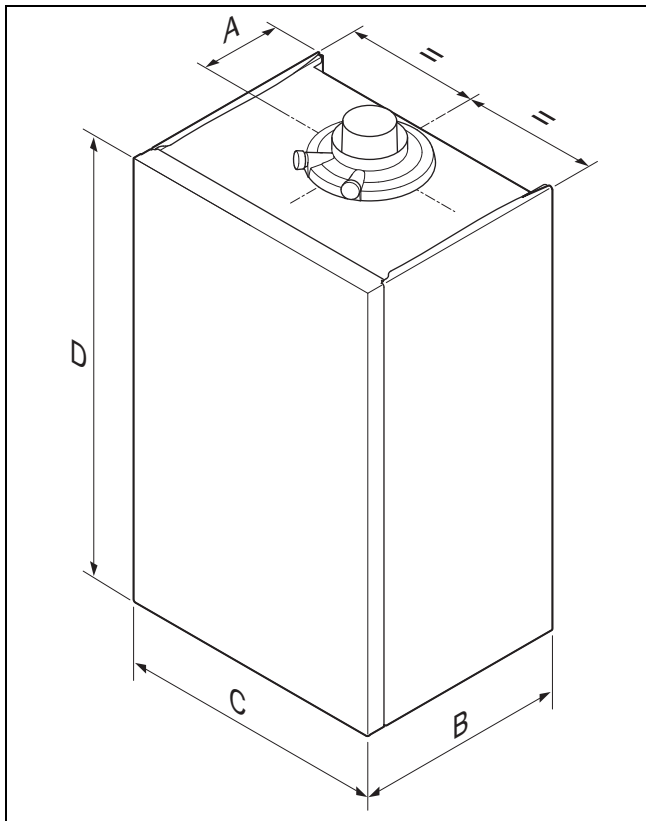
Quantity	Designation
1	Condensing boiler
1	Unit mounting bracket
1	Bag with drain pipe and screwed connection for the expansion relief valve
2	Bag with small parts
1	Condensate discharge hose with aeration opening, accessory
1	Enclosed documentation

4.2 Minimum clearances



	Minimum clearance
A	60/100 mm diameter air/flue pipe: 165 or 248 mm; see mounting template. 80/125 mm diameter air/flue pipe: 276 mm
B	180 mm
C	5 mm
D	500 mm

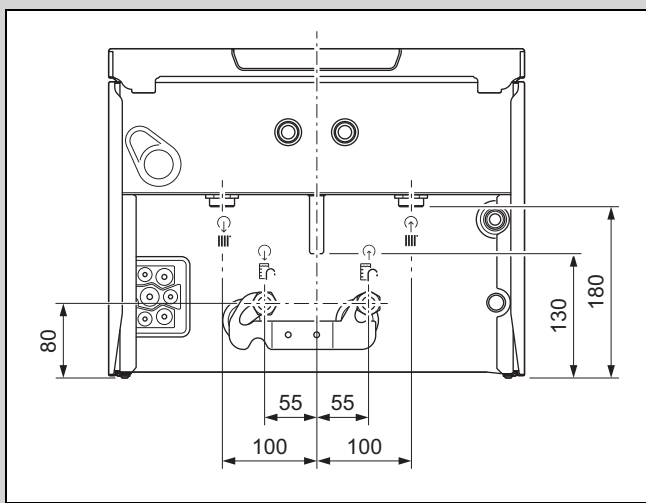
4.3 Product dimensions



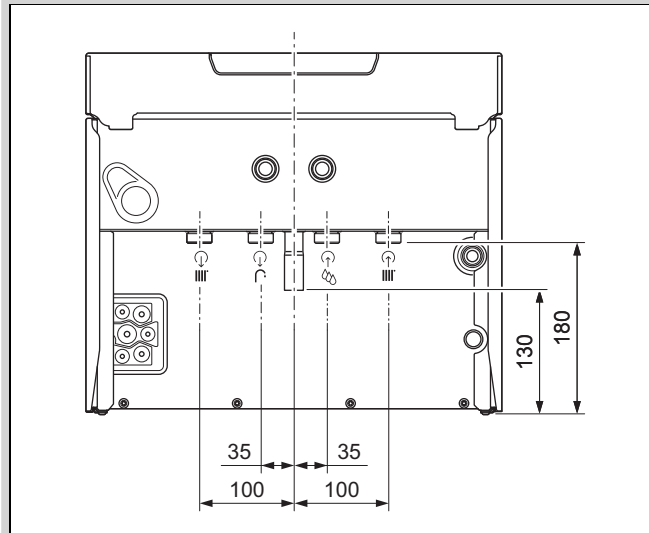
Dimensions

	A	B	C	D
VU 15	125 mm	348 mm	440 mm	720 mm
VU 25	125 mm	348 mm	440 mm	720 mm
VU 30	125 mm	348 mm	440 mm	720 mm
VUW 36	125 mm	348 mm	440 mm	720 mm

Validity: Product without integrated hot water generation



Validity: Product with integrated hot water generation



4.4 Using the mounting template

1. Use the mounting template to set the positions of the drill holes, wall penetrations and to read all of the required clearances.
2. When installing the boiler at the same time with a domestic hot water cylinder (VIH Q 75/2 B or VIH QL 75/2 B) and a spacer frame, use the mounting template for the spacer frame.

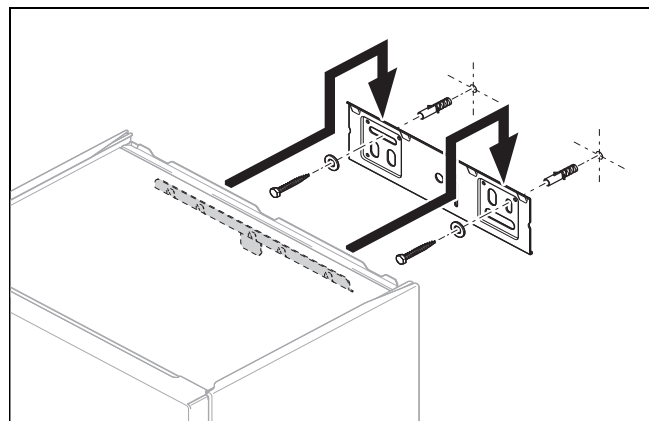
4.5 Wall-mounting the product

1. Ensure that the wall or wall-mounting apparatus (e.g. individual stands) has a sufficient load-bearing capacity.
2. Use approved fixing material to secure the unit mounting bracket.



Note

Use suitable fixing material, in accordance with the structure of the wall on-site, for a load-bearing capacity of 100 kg.
The supplied fixing material is suitable only for walls made from concrete and solid bricks.



3. Wall-mount the product on the unit mounting bracket.

5 Installation



Danger!

Risk of scalding and/or risk of material damage due to incorrect installation leading to escaping water.

Mechanical stresses in connection pipes can cause leaks.

- ▶ Install the connection pipes such that they are free from mechanical stress.



Caution.

Risk of material damage due to the gas leak-tightness test.

At a test pressure of >11 kPa (110 mbar), gas leak-tightness tests may cause damage to the gas valve assembly.

- ▶ If, during gas leak-tightness tests, you also place the gas pipes and the gas valve assembly in the product under pressure, use a max. test pressure of ≤ 11 kPa (110 mbar).
- ▶ If you cannot limit the test pressure to 11 kPa (110 mbar), close any gas stopcocks that are installed upstream from the product before you carry out the gas leak-tightness test.
- ▶ If, during gas leak-tightness tests, you have closed the gas stopcock that is installed upstream of the product, relieve the gas line pressure before you open this gas stopcock.



Caution.

Risk of material damage caused by changes to the pipes that have already been connected.

- ▶ Only bend connection pipes if they have not yet been connected to the product.



Caution.

Risk of material damage caused by residues in the pipelines.

Welding remnants, sealing residues, dirt or other residues in the pipelines may damage the product.

- ▶ Flush the heating installation thoroughly before installing the product.

5.1 Prerequisites

5.1.1 Using the correct gas group

Using the incorrect gas group may cause fault shutdowns in the product. Ignition and combustion noise may occur in the product.

- ▶ Only use the gas groups specified on the data plate.

5.1.2 Information about the gas group

In its as-supplied condition, the product is preset for operation with the gas group specified on the data plate.

If you want to operate the product with a different gas group to the preset gas group, convert the product accordingly.

To do this, follow these instructions. (→ Section 7.16)

5.1.3 Carrying out basic preparation for the installation

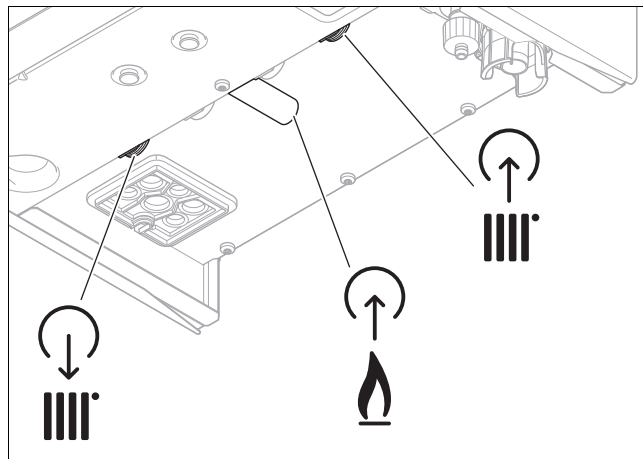
1. Install a gas stopcock on the gas supply.
2. Make sure that the existing gas meter is capable of passing the rate of gas supply required.
3. In accordance with the recognised rules of technology, calculate whether the volumetric capacity of the expansion vessel that is installed is sufficient for the system volume.

Result:

Insufficient volumetric capacity

- ▶ Install an additional expansion vessel as close to the product as possible.
4. Install a tundish with a siphon for the condensate discharge and the exhaust pipe on the expansion relief valve. Route drain pipework that is as short as possible, at a continuous downward gradient away to the tundish.
 5. Insulate bare pipes exposed to environmental influences to protect them from frost using suitable insulation material.
 6. Flush out the supply pipes thoroughly prior to installation.
 7. Install a filling device between the cold water pipe and the heating flow.

5.2 Installing pipes for gas and the heating flow/return

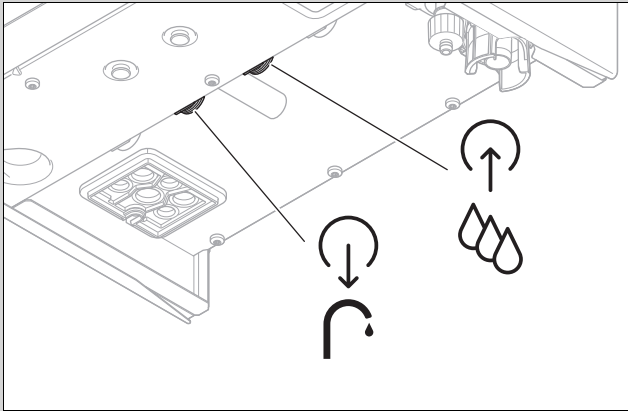


1. Install the gas pipe on the gas connection such that it is free from mechanical stress.

2. Purge the gas pipe before starting up.
3. Install the pipe for the heating flow and the heating return in accordance with the relevant standards.
4. Check the entire gas pipe for tightness.

5.3 Installing pipes for domestic hot/cold water

Validity: Product with integrated hot water generation



- Install the pipes for domestic hot/cold water in accordance with the relevant standards.

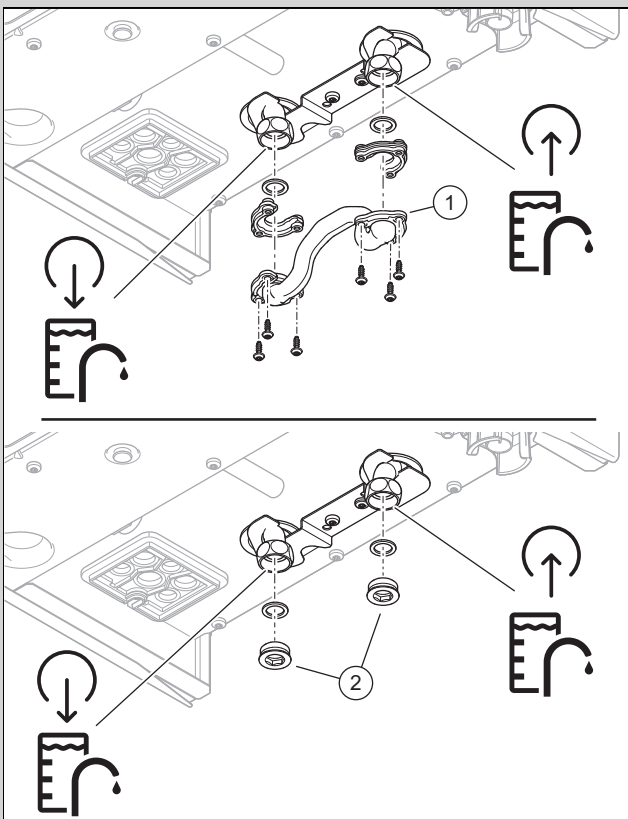
5.4 Installing the domestic hot water cylinder

Validity: Product with connected domestic hot water cylinder



Note

Only remove the cylinder bypass when you install a domestic hot water cylinder at these connections.



1. Remove the cylinder bypass (1) or the plugs (2) from the cylinder flow and cylinder return.

2. Install the cylinder flow and the cylinder return in accordance with the relevant standards.

5.5 Connecting the condensate discharge hose

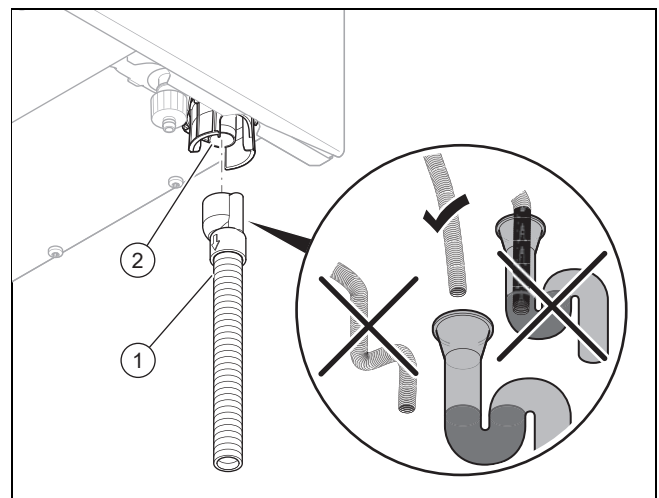


Danger!

Risk of death from escaping flue gases!

The condensate discharge hose for the condensate siphon must not be tightly connected to the waste-water pipework because, otherwise, the function of the internal condensate siphon may be adversely affected.

- Have the condensate discharge hose end outside of the waste-water pipework.
- Do not immerse the condensate discharge hose below the water level of the waste-water pipework inlet.



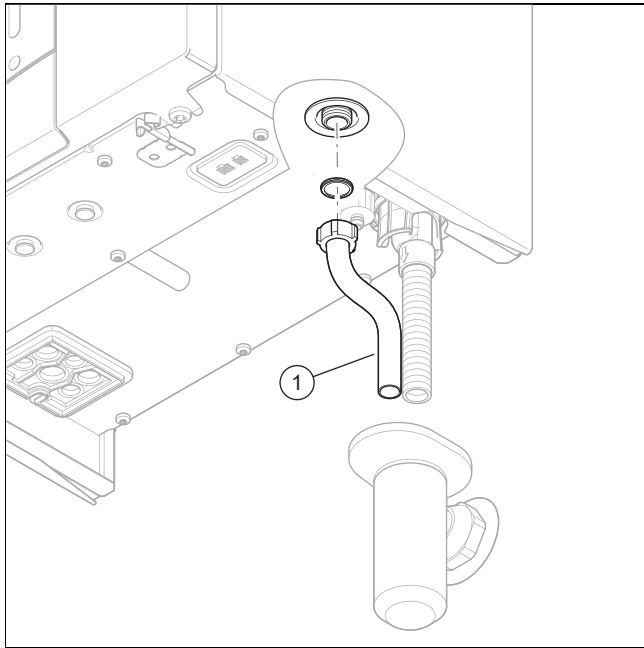
1. Fill the condensate siphon. (→ Section 7.10)
2. Install the supplied condensate discharge hose (1) on the siphon (2).



Note

If you do not install the supplied condensate discharge hose, only use hoses/pipes made of acid-resistant material (e.g. acid-resistant polypropylene, PP) for the condensate discharge pipe.

5.6 Installing the drain pipe on the expansion relief valve



1. Install the drain pipe (1) for the expansion relief valve in such a way that it does not interfere with the removal and fitting of the lower section of the siphon.
2. Ensure that you can view the end of the pipe and that discharged water or steam cannot cause injury to persons or damage to electronic components.

5.7 Air/flue system

5.7.1 Installing and connecting the air/flue pipe

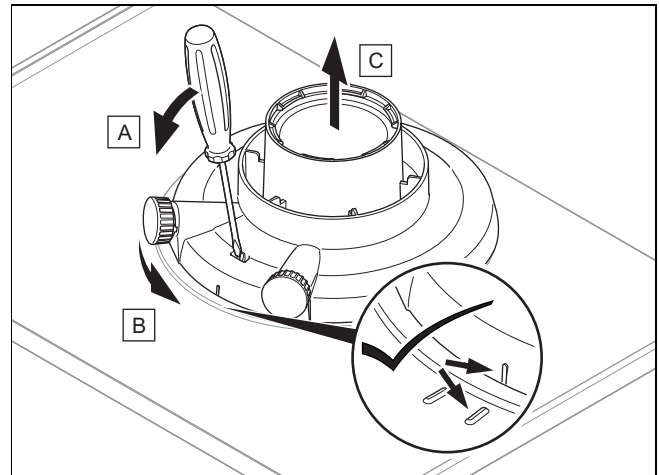
1. You can find out which air/flue pipes may be used for the system-certified air/flue pipework by consulting the enclosed set-up instructions for the air/flue system.

Condition: Installation in damp rooms

- ▶ You must connect the product to a room-sealed air/flue system. The combustion air must not be taken from the installation site.
- ▶ Install the air/flue pipe in accordance with the enclosed set-up instructions.

5.7.2 Replacing the standard connector for the air/flue pipe, where required

5.7.2.1 Removing the standard connector for the air/flue pipe



5.7.2.2 Installing the connector for the air/flue pipe, 60/100 mm or 80/125 mm diameter

1. Remove the standard connector for the air/flue pipe. (→ Section 5.7.2.1)
2. Insert the alternative connector. In doing so, pay attention to the latching lugs.
3. Turn the standard connector clockwise until it clicks into position.

5.8 Electrical installation

Only qualified electricians may carry out the electrical installation.

The product must be earthed.



Danger!

Risk of death from electric shock!

The power supply terminals L and N remain live even if the unit main switch is switched off:

- ▶ Disconnect the product from the power supply by switching off all power supplies at all poles (electrical partition with a contact gap of at least 3 mm, e.g. fuse or circuit breaker).
- ▶ Secure against being switched back on again.
- ▶ Wait for at least 3 minutes until the capacitors have discharged.
- ▶ Check that there is no voltage.

5.8.1 General information about connecting cables



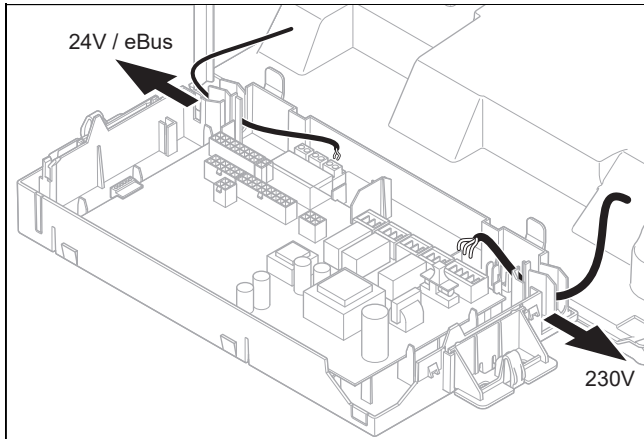
Caution.

Risk of material damage caused by incorrect installation.

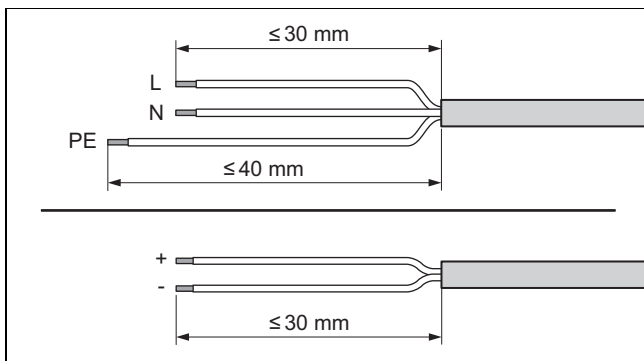
Mains voltage at incorrect terminals and plug terminals may destroy the electronics.

- ▶ Do not connect any mains voltage to the eBUS terminals (+/-).
- ▶ Only connect the connection cable to the terminals marked for the purpose.

1. Route the connection cables of the components to be connected through the grommet provided on the underside of the product on the left.
2. Ensure that the grommet is plugged in correctly and that the cables have been routed correctly.
3. Ensure that the grommets envelop the connection cables tightly and with no visible gaps.
4. Use strain reliefs.
5. If required, shorten the connection cables.



6. Correctly route the connection cables for the components that are to be connected in the electronics box.



7. Strip the flexible cables as shown in the figure. In doing so, ensure that the insulation on the individual conductors is not damaged.
8. Only strip inner conductors just enough to establish stable connections.
9. To avoid short circuits resulting from loose individual wires, fit conductor end sleeves on the stripped ends of the conductors.
10. Screw the respective plug to the connection cable.
11. Check whether all conductors are inserted mechanically securely in the terminals of the plug. Remedy this if necessary.
12. Plug the plug into the associated PCB slot. (→ Appendix J)

5.8.2 Requirements for the eBUS line

Observe the following rules when routing the eBUS lines:

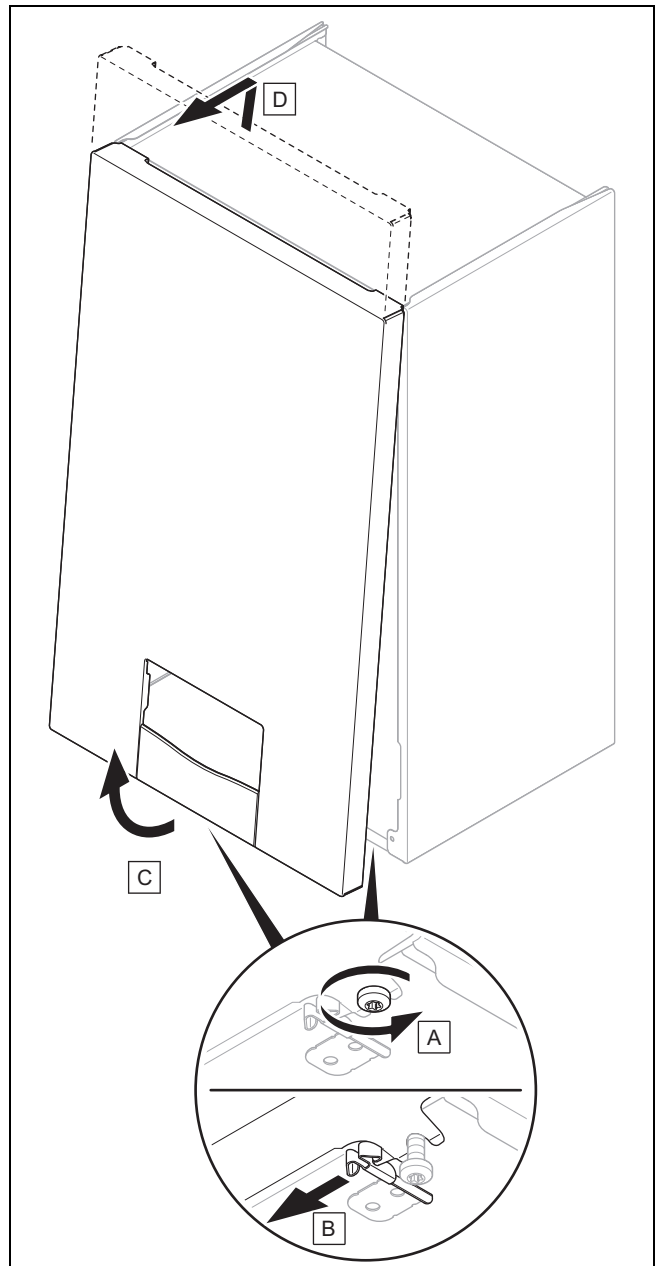
- ▶ Use twin-core cables.
- ▶ Never use shielded or twisted cables.

- ▶ Use only appropriate cables, e.g. NYM or H05VV (-F/-U).
- ▶ Observe the permissible total length of 125 m. For a total length of up to 50 m, a conductor cross-section of ≥ 0.75 mm² applies; from 50 m upwards, a conductor cross-section of 1.5 mm² applies.

In order to prevent faults in the eBUS signals (e.g. due to interferences):

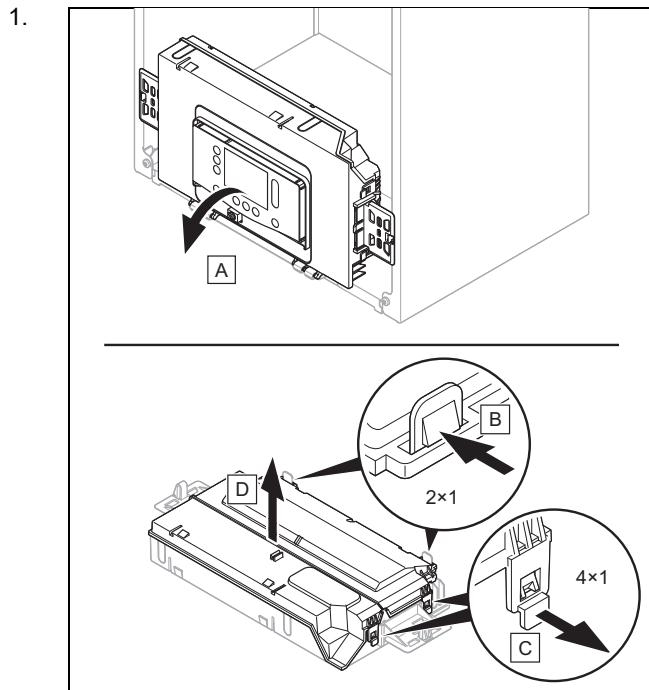
- ▶ Maintain a minimum clearance of 120 mm to power supply cables or other electromagnetic sources of interference.
- ▶ For parallel routing to mains connection lines, guide the cables in accordance with the applicable regulations, e.g. on cable trays.
- ▶ **Exceptions:** For wall breaks and in the electronics box, it is acceptable to not reach the minimum clearance.

5.8.3 Removing the front casing



1. Loosen the two screws on the left and right on the underside of the product, but do not unscrew them completely.
2. Remove the front casing as shown in the illustration.

5.8.4 Opening the electronics box



2. Ensure that you do not load the electronics box.

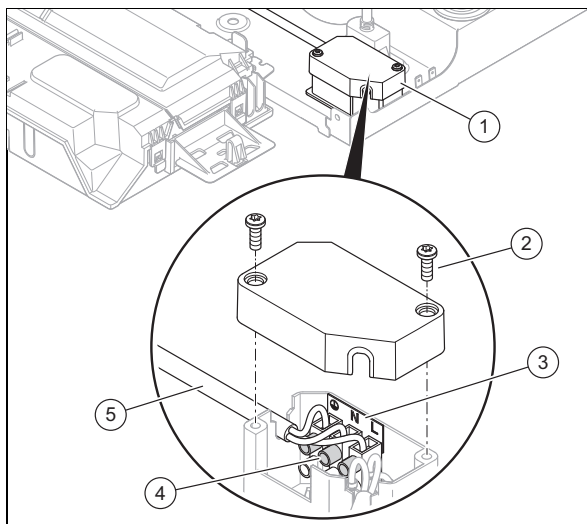
5.8.5 Establishing the power supply

5.8.5.1 Connecting the product with mains plug

1. Ensure that the mains voltage is 230 V.
2. Install a suitable earthed plug on the power supply cable.
3. Connect the product via the mains plug.
4. Ensure that the mains plug is always accessible after the installation.

5.8.5.2 Connecting the product with a fixed connection

1. Check that there is no voltage.
- 2.



Unscrew the two screws (2) from the unit main switch (1).

3. Remove the cover.
4. Undo the upper three screws on the terminal (4) and remove the power supply cable (5).
5. Route the house installation cable for the fixed connection. (→ Section 11.7.14)

6. For the cable for the house installation, use a flexible three-core cable that complies with the relevant standards, which is routed through the grommet into the product.
7. Only connect the cable for the house installation to the terminals marked for the purpose (3) in phase.
8. Ensure that the cable for the house installation is connected to an electrical partition with a contact gap of at least 3 mm (e.g. fuse or power switch).
9. Install the cover on the unit main switch.
10. Tighten the two screws.
 - Tightening torque: 1.3 Nm

5.8.5.3 Connecting the product in the wet room



Danger!

Risk of death from electric shock!

If you install the product in a room with high levels of moisture, e.g. a bathroom, observe the nationally recognised technical standards for electrical installations. If you use the factory-installed connection cable, if installed, with an earthed plug, there is a risk of death from electric shock.

- ▶ Never use the factory-installed connection cable with earthed plug when installing the product in a moist environment.
- ▶ Connect the product using a fixed connection and an electrical partition with a contact gap of at least 3 mm (e.g. fuses or power switches) (→ Section 5.8.5.2).

- ▶ Observe the flue-gas connection that is required on a room-sealed air/flue system.

5.8.6 Connecting the control

1. Connect the cables. (→ Section 5.8.1)
2. Observe the wiring diagram. (→ Appendix J)

Condition: Control to eBUS

- ▶ First, set the target domestic hot water temperature on the heat generator's control panel to the maximum value before you connect the system control (eBUS).
- ▶ Connect the control to the *BUS* connection.
- ▶ Bridge the 24 V = RT (X100) connection, if no bridge is present.

Condition: Low-voltage control (24 V)

- ▶ Remove the bridge and connect the control to the 24 V = RT (X100) connection.

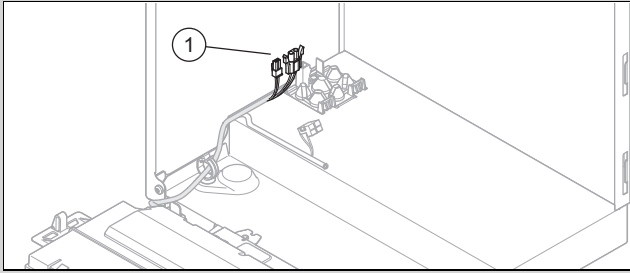
Condition: Limit thermostat for underfloor heating

- ▶ Remove the bridge and connect the limit thermostat to the *Burner off* connection.

3. For multi-circuit controls, change **D.018** from **Eco** (intermittently operating pump) to **Permanent** (continuously operating pump). (→ Section 8.1)

5.8.7 Connecting the domestic hot water cylinder

Validity: Product with connected domestic hot water cylinder



- ▶ Connect the domestic hot water cylinder to the plugs (1).

5.8.8 Installing the module box, multi-functional module and additional components

1. Install the module box for the multi-functional module (optional PCB) in the product (→ Installation instructions for the module box).
2. Connect the multi-functional module to the product's PCB (→ Installation instructions for the module box).
3. Connect additional components to the multi-functional module (→ Module box installation instructions).
4. Use the diagnostics codes to configure the required function in each case. (→ Section 8.2)

5.8.9 Installing the communication unit (optional)

- ▶ Install the communication unit (→ Communication unit installation instructions).

5.8.10 Using the additional relay



Note

The *Opt.* connection (grey plug) on the PCB is not available for every product.

1. Connect an additional component directly to the integrated additional relay using the *Opt.* connection (grey plug) on the PCB.
2. Connect the cables. (→ Section 5.8.1)
3. To start up the connected component, select the component in diagnostics code **D.026**. (→ Section 6.3)

5.8.11 Installing the circulation pump

Validity: Product with integrated hot water generation OR Product with connected domestic hot water cylinder

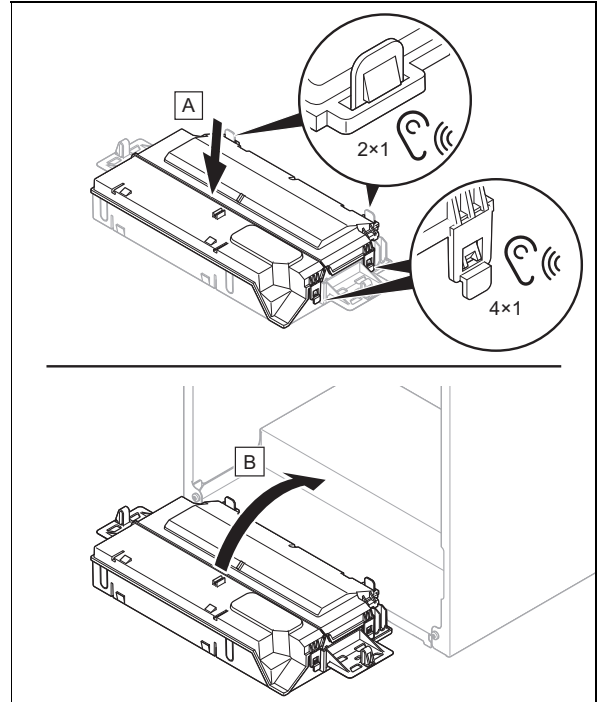
Condition: Control connected

- ▶ Connect the cables. (→ Section 5.8.1)
- ▶ If slot **X13** is present, connect the 230 V connection cable to the plug from slot **X13** and plug the plug into the slot.
- ▶ If slot **X13** is present and is already occupied, connect the circulation pump to **X16**.
- ▶ If slots **X13** (if present) and **X16** are already occupied, connect the circulation pump to the multi-functional module (optional PCB). (→ Section 5.8.8)
- ▶ Connect the connection cable for the external button to the terminals **1 (OT)** and **6 (FB)** on the **X41** edge connector, which is included with the control.

- ▶ Plug the edge connector into the PCB slot **X41**.

5.8.12 Closing the electronics box

1.



2. Ensure that the retainers on the right- and left-hand side of the electronics box have been installed correctly.

6 Operation

6.1 Operating concept

The operating concept, the operation of the product and the read-out and setting options in the end user level are described in the operating instructions.

An overview of the read-out and setting options for the installer level is included in the "Installer level" table in the appendix.

Installer level (→ Appendix A)

6.2 Calling up the installer level

1. Navigate to **MENU** → **SETTINGS** → **Installer level** and confirm by pressing .
2. Set the code for the installer level and confirm by pressing .
- Code for Installer level: 17

6.2.1 Exiting the installer level

- ▶ Press .
- ◁ The basic display is shown.

6.3 Calling up/setting diagnostics codes

1. Call up the installer level. (→ Section 6.2)
2. Navigate to the **Diagnostics codes** menu item.
3. Use the scrollbar to select the required diagnostics code.
4. Confirm by pressing .
5. Use the scrollbar to select the required value for the diagnostics code.
Diagnostics codes (→ Appendix B)
6. Confirm by pressing .
7. If required, repeat work steps 2 to 6 to set additional diagnostics codes.

6.3.1 Exiting the diagnostics codes

- Press .
- ◁ The basic display is shown.

6.4 Calling up a check programme

1. Call up the installer level. (→ Section 6.2)
2. Navigate to the **Test modes** → **Check programmes** menu item.
3. Use the scrollbar to select the required check programme.
Check programmes (→ Appendix E)
4. Confirm by pressing .
- ◁ The check programme starts and runs through checks.
- ◁ If you have selected check programme **P.001**, set the desired load and then confirm by pressing .
5. While the check programme is running, press , if required, to display the **Data overview**.
6. If required, select another check programme.

6.4.1 Exiting a check programme

- Press .
- ◁ The basic display is shown.

6.5 Carrying out the actuator test

1. Call up the installer level. (→ Section 6.2)
2. Navigate to the **Test modes** → **Actuator test** menu item.
3. Use the scrollbar to select the required actuator test.
Actuator test (→ Appendix F)
4. Confirm by pressing .
- ◁ The actuator test starts and runs through.
5. While the actuator test is running, press , if required, to display the following: **Data overview**.
6. If required, select another actuator test.

6.5.1 Exiting the actuator test

- Press .
- ◁ The basic display is shown.

6.6 Calling up the data overview

1. Call up the installer level. (→ Section 6.2)
2. Navigate to the **Data overview** menu item.
◁ The current operating mode is shown in the display.

6.7 Calling up status codes

- Navigate to **MENU** → **INFORMATION** → **Status code**.
Status codes (→ Appendix C)
- ◁ The current operating mode (status code) is shown on the display.

6.7.1 Exiting the status codes

- Press .
- ◁ The basic display is shown.

6.8 Exiting the menu level

- Press .
- ◁ The basic display is shown.

6.9 Running the chimney sweep mode (combustion analysis)

1. Press .
2. Press  or navigate to **MENU** → **SETTINGS** → **Chimney sweep mode**.
3. To carry out the combustion analysis, select one of the following heat loads:
 - **Adjustable heat load**
 - **Max. DHW heat input**
 - **Min. heat input**
4. Confirm by pressing .
- ◁ If you have selected **Adjustable heat load**, set the desired heat load and confirm by pressing .
- ◁ If status code **S.093** is displayed, calibration is being carried out.
- ◁ If status code **S.059** is displayed, the minimum circulation of heating water for the selected heat load has not been reached. Increase the flow in the heating system.
5. Only start a measurement once the product enables the measurement.



Note

The chimney sweep mode runs for 15 minutes and can be cancelled at any time by pressing .

6. If required, press  to display the operating mode.

7 Start-up

7.1 Checking and treating the heating water/filling and supplementary water



Caution.

Risk of material damage due to poor-quality heating water

- Ensure that the heating water is of sufficient quality.

- Before filling or topping up the installation, check the quality of the heating water.

Checking the quality of the heating water

- Remove a little water from the heating circuit.
- Check the appearance of the heating water.
- If you ascertain that it contains sedimentary materials, you must desludge the installation.
- Use a magnetic rod to check whether it contains magnetite (iron oxide).
- If you ascertain that it contains magnetite, clean the installation and apply suitable corrosion-inhibition measures (e.g. fit a magnetite separator).
- Check the pH value of the removed water at 25 °C.
- If the value is below 8.2 or above 10.0, clean the installation and treat the heating water.
- Ensure that oxygen cannot get into the heating water.

Checking the filling and supplementary water

- Before filling the installation, measure the hardness of the filling and supplementary water.

Treating the filling and supplementary water

- Observe all applicable national regulations and technical rules when treating the filling and supplementary water.

Provided the national regulations and technical rules do not stipulate more stringent requirements, the following applies:

You must treat the filling and supplementary water in the following cases

- If the entire filling and supplementary water quantity during the operating life of the system exceeds three times the nominal volume of the heating installation, or
- If the pH value of the heating water is lower than 8.2 or higher than 10.0, or
- The guideline values listed in the following table are not met.

Total heat output	Water hardness at specific system volume ¹⁾					
	≤ 20 l/kW		> 20 l/kW ≤ 40 l/kW		> 40 l/kW	
kW	°dH	mol/m ³	°dH	mol/m ³	°dH	mol/m ³
≤ 50 ²⁾	None	None	≤ 16.8	≤ 3.0	< 0.3	< 0.05
≤ 50 ³⁾	≤ 16.8	≤ 3	≤ 8.4	≤ 1.5	< 0.3	< 0.05
> 50 to ≤ 200	≤ 11.2	≤ 2	≤ 5.6	≤ 1.0	< 0.3	< 0.05
> 200 to ≤ 600	≤ 8.4	≤ 1.5	< 0.3	< 0.05	< 0.3	< 0.05
> 600	< 0.3	< 0.05	< 0.3	< 0.05	< 0.3	< 0.05

Total heat output	Water hardness at specific system volume ¹⁾					
	≤ 20 l/kW		> 20 l/kW ≤ 40 l/kW		> 40 l/kW	
kW	°dH	mol/m ³	°dH	mol/m ³	°dH	mol/m ³
1) Nominal capacity in litres/heat output; in the case of multi-boiler systems, the smallest single heat output is to be used. 2) Specific water capacity of the heat generator ≥ 0.3 l per kW. 3) Specific water capacity of the heat generator < 0.3 l per kW (e.g. circulation water heater) and installations with electrical heating elements.						



Caution.

Risk of material damage if the heating water is treated with unsuitable additives.

Unsuitable additives may cause changes in the components, noises in heating mode and possibly subsequent damage.

- Do not use any unsuitable antifreeze and corrosion inhibitors, biocides or sealants.

No incompatibility with our products has been detected to date with proper use of the following additives.

- When using additives, follow the manufacturer's instructions without exception.

We accept no liability for the compatibility of any additive or its effectiveness in the rest of the heating system.

Additives for cleaning measures (subsequent flushing required)

- Adey MC3+
- Adey MC5
- Fernox F3
- Sentinel X 300
- Sentinel X 400

Additives intended to remain permanently in the installation

- Adey MC1+
- Fernox F1
- Fernox F2
- Sentinel X 100
- Sentinel X 200

Additives for frost protection intended to remain permanently in the installation

- Adey MC ZERO
- Fernox Antifreeze Alpha 11
- Sentinel X 500

- If you have used the above-mentioned additives, inform the end user about the measures that are required.
- Inform the end user about the measures required for frost protection.

7.2 Filling and purging when the heating installation is de-energised

Condition: Product is not switched on

- ▶ Flush the heating installation before filling it.
- ▶ Connect the heating installation's draining cock to a drain in accordance with the standards.
- ▶ Depending on the equipment, connect the service valve for the heating installation to a heating water supply, if possible with the cold water tap, in accordance with the relevant standards, or actuate the filling device.
- ▶ Open all of the thermostatic radiator valves and, if required, the service valves.
- ▶ Purge the highest radiator until water flows out of the purging valve without bubbles.
- ▶ Purge all other radiators until the entire heating installation has been completely filled with heating water.
- ▶ Fill with heating water until the required filling pressure is reached.
 - Observe the manometer.
- ▶ Once the required filling pressure has been reached, shut off the service valve and the cold water tap or the filling device.

7.3 Switching on the product



Note

During initial start-up, the fan is actuated at maximum speed for checking for a potential flue gas blockage. The burner operation is then blocked for two minutes. This check is repeated automatically when the unit is switched on again, provided that the product's burner was not operating for 10 minutes.

- ▶ Press the unit main switch on the underside of the product.
 - ◀ The display shows the basic display.

7.4 Running through the installation assistant

The installation assistant is launched when the product is switched on for the first time or can be started again at any time via the installer level.

Installer level (→ Appendix A)

- ▶ Close the gas stopcock before running the installation assistant.
- ▶ Ensure that the gas stopcock remains closed until the installation assistant has finished running.

After converting the gas family, the two supplied stickers for the new gas family must be affixed onto the large data plate (electronics box) and onto the small data plate (on the top of the product). (→ Section 7.16)

- ▶ Once the installation assistant has ended, open the gas stopcock and switch on the heat demand.

7.4.1 Restarting the installation assistant

1. Navigate to **MENU** → **SETTINGS** → **Installer level** → **Installation assistant**.
2. Confirm by pressing

7.5 Check programmes and actuator tests

MENU → **SETTINGS** → **Installer level** → **Test modes**

In addition to the installation assistant, you can also call up the following functions for start-up, maintenance and troubleshooting:

Check programmes (→ Appendix E)

Actuator test (→ Appendix F)

7.6 Guaranteeing the permissible system pressure

If the heating installation covers multiple storeys, higher values than the permissible operating filling pressure may be necessary for the filling pressure in order to prevent air from getting into the heating installation.

- Permissible operating filling pressure: 0.1 to 0.2 MPa (1.0 to 2.0 bar)

If the filling pressure drops into the minimum range, the product signals that the pressure is low using a flashing value in the display.

- Filling pressure minimum range: 0.05 to 0.08 MPa (0.50 to 0.80 bar)

If the filling pressure is below the minimum range, the product is temporarily decommissioned and the display shows a corresponding message.

- ▶ Top up the heating water to start the product up again.

7.7 Filling and purging the heating installation

Validity: Product with connected domestic hot water cylinder OR Product with heating mode only

Condition: Product is switched on

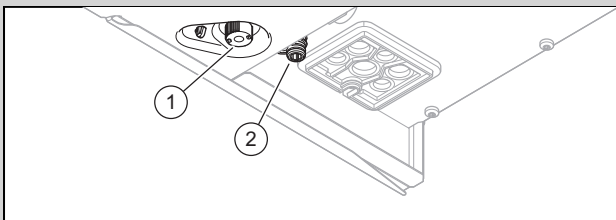
- ▶ Flush the heating installation before filling it.
- ▶ Start check programme **P.008**. (→ Section 6.4)
 - ◀ The prioritising diverter valve moves to the mid-position, the pumps do not run and the product does not switch to heating mode.
- ▶ Connect the filling/draining cock in the heating installation to a heating water supply in accordance with the relevant standards.
- ▶ Open the heating water supply.
- ▶ Open all of the thermostatic radiator valves and, if required, the service valves.
- ▶ Slowly open the filling/draining cock so that the heating water flows into the heating system.
- ▶ Purge the highest radiator until water flows out of the purging valve without bubbles.
- ▶ Purge all radiators on all levels until the entire heating installation has been completely filled with heating water.
- ▶ Close all purging valves.
- ▶ Fill with heating water until the required filling pressure is reached.
- ▶ Close the filling/draining cock for the heating installation.

- Check all of the connections and the entire heating system for leaks.

Validity: Product with integrated hot water generation

Condition: Product is switched on

- Flush the heating installation before filling it.
- Start check programme **P.008**. (→ Section 6.4)
 - ◁ The prioritising diverter valve moves to the mid-position, the pumps do not run and the product does not switch to heating mode.



- Ensure that the outlet for the system separator (2) is connected to waste-water pipework in accordance with the relevant standards.
- Connect the filling/draining cock in the heating installation to a heating water supply in accordance with the relevant standards.
- Open the heating water supply.
- Open all of the thermostatic radiator valves and, if required, the service valves.
- Slowly open the filling device (1), the filling/draining cock, so that the heating water flows into the heating system.
- Purge the highest radiator until water flows out of the purging valve without bubbles.
- Purge all radiators on all levels until the entire heating installation has been completely filled with heating water.
- Close all purging valves.
- Fill with heating water until the required filling pressure is reached.
- Close the filling device (1), the filling/draining cock, for the heating installation.
- Check all of the connections and the entire heating system for leaks.

7.8 Purging the product

- When you top up the heating water, start check programme **P.000**. (→ Section 6.4) If fault code **F.022** was present for longer than 30 seconds, it is sufficient to start the purge programme in order to reset the fault code. It is not necessary to press the reset button.
 - ◁ The product does not start up, the internal pump operates intermittently and automatically purges the heating circuit or the domestic hot water circuit.
 - ◁ The display shows the filling pressure of the heating installation.
- Make sure that the filling pressure of the heating installation does not fall below the minimum filling pressure.
 - $\geq 0.08 \text{ MPa}$ ($\geq 0.80 \text{ bar}$)
- Check whether the filling pressure of the heating installation is at least 0.02 MPa (0.2 bar) above the diaphragm expansion vessel's counter-pressure ($P_{\text{system}} \geq P_{\text{diaphragm expansion vessel}} + 0.02 \text{ MPa}$ (0.2 bar)).

Result:

Filling pressure of the heating installation is too low

- Fill and purge the heating installation. (→ Section 7.7)



Note

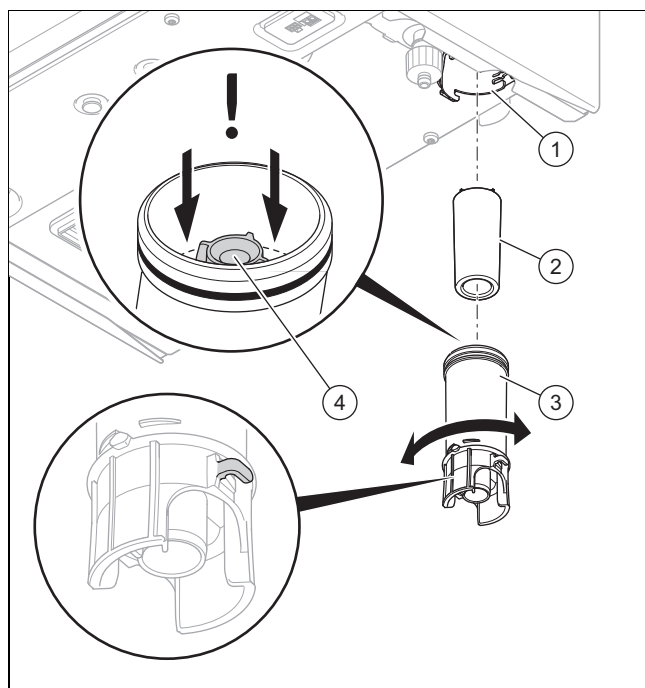
If there is still too much air in the heating installation at the end of check programme **P.000**, restart the check programme.

7.9 Filling and purging the domestic hot water system

Validity: Product with integrated hot water generation

- Open the cold-water isolation valve on the product.
- Fill the domestic hot water system by opening all the domestic hot water draw-off valves until water escapes.

7.10 Filling the condensate siphon



- Loosen the lower section of the siphon (3) from the upper section of the siphon (1).
- Remove the float (2).
- Fill the lower section with water up to a filling level 10 mm below the condensate discharge pipe (4).
- Re-insert the float.
- Secure the lower section of the siphon to the upper section of the siphon.

7.11 Checking the gas settings

7.11.1 Checking the factory-set gas setting

- ▶ Check the information about the gas group indicated on the data plate and compare this with the gas group available at the installation site.

Result 1:

The product's preset gas group is not compatible with the local gas group.

- ▶ Convert the product to the correct gas group. (→ Section 7.16)

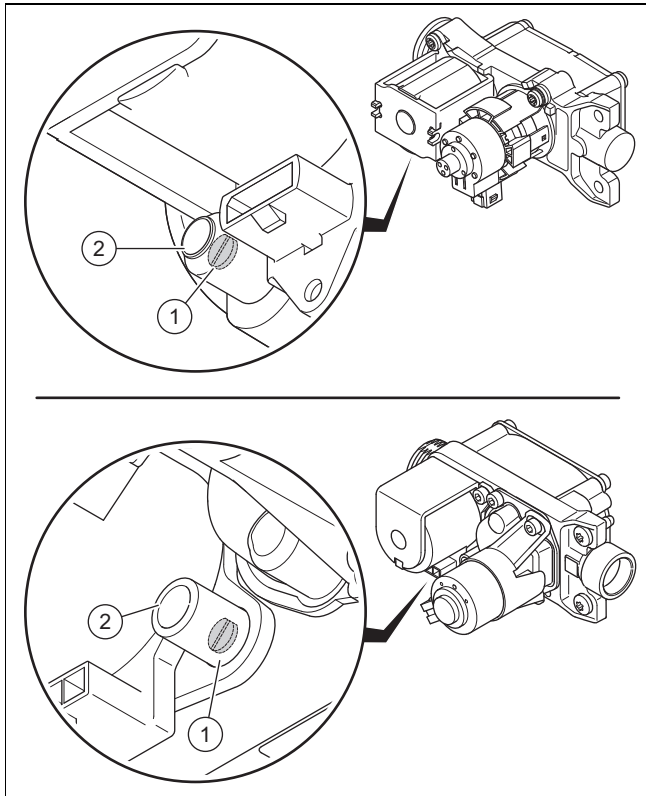
Result 2:

The product's preset gas group is compatible with the local gas group.

- ▶ Check the gas connection pressure/gas flow pressure. (→ Section 7.11.2)
- ▶ Check the CO₂ and O₂ content. (→ Section 7.11.4)

7.11.2 Checking the gas connection pressure/gas flow pressure

1. Temporarily decommission the product. (→ Section 12.1)
2. Hinge the electronics box downwards.



3. Undo the check screw (1).
 - Turning anti-clockwise: 2
4. Connect a manometer to the test nipple (2).
 - Working materials: U tube manometer
 - Working materials: Digital pressure gauge
5. Hinge the electronics box upwards.
6. Open the gas stopcock.
7. Start up the product.
8. Measure the gas connection pressure/gas flow pressure against the atmospheric pressure.

Permissible gas flow pressure

New Zealand	Natural gas	H	1.7 to 2.5 kPa (17.0 to 25.0 mbar)
	Liquid gas	P	2.5 to 3.5 kPa (25.0 to 35.0 mbar)

- Gas connection pressure: Without the aid of **P.001**
- Gas flow pressure: With the aid of **P.001** (→ Section 6.4)

Result 1:

Gas connection pressure/gas flow pressure in the permissible range

- ▶ Temporarily decommission the product. (→ Section 12.1)
- ▶ Hinge the electronics box downwards.
- ▶ Remove the manometer.
- ▶ Tighten the screw on the test nipple.
- ▶ Open the gas stopcock.
- ▶ Check the test nipple for gas tightness.
- ▶ Hinge the electronics box upwards.
- ▶ Install the front casing. (→ Section 7.11.3)
- ▶ Start up the product.

Result 2:

Gas connection pressure/gas flow pressure not in the permissible range



Caution.

Risk of material damage and operating faults caused by incorrect gas connection pressure/gas flow pressure.

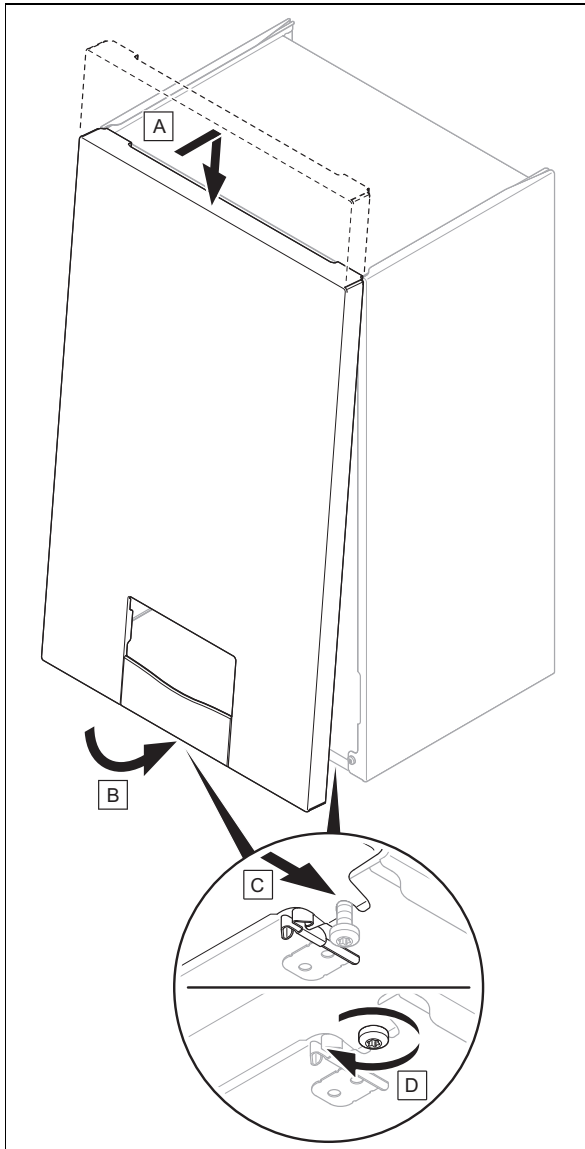
If the gas connection pressure/gas flow pressure lies outside the permissible range, this can cause operating faults in and damage to the product.

- ▶ Do not make any adjustments to the product.
- ▶ Do not start up the product.

- ▶ If you are unable to eliminate the fault, contact the gas supply company.
- ▶ Temporarily decommission the product. (→ Section 12.1)
- ▶ Hinge the electronics box downwards.
- ▶ Remove the manometer.
- ▶ Tighten the screw on the test nipple.
- ▶ Open the gas stopcock.
- ▶ Check the test nipple for gas tightness.
- ▶ Hinge the electronics box upwards.
- ▶ Install the front casing. (→ Section 7.11.3)
- ▶ Close the gas stopcock.

7.11.3 Installing the front casing

1.



2. Tighten the two screws on the left and right on the underside of the product.

7.11.4 Checking the CO₂ and O₂ content

1. Open the test opening at the flue gas analysis point and fit the measuring probe for the flue gas analyser.
2. Start chimney sweep mode (→ Section 6.9).

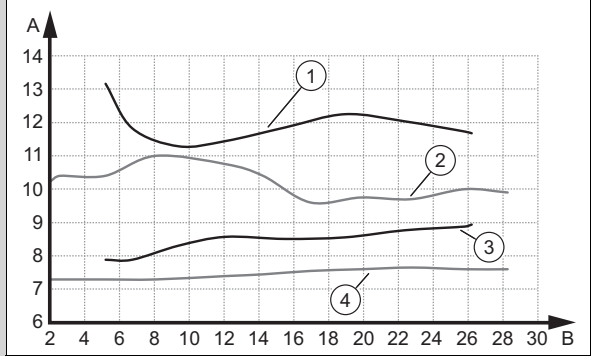


Note

Carry out the measurements only when the front casing is installed.

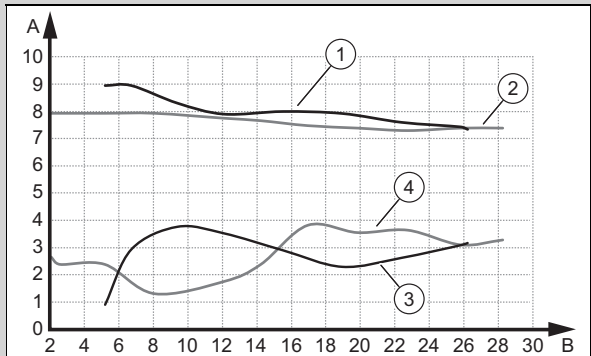
3. Ensure that the heat load is correct.
 - **Max. DHW heat input** (standard selection)
 - **Adjustable heat load** (for some installations, this deviates from the standard selection)
4. Wait until the product has completed the calibration via **S.093** and the status changes to **S.004**, **S.014** or **S.024**.
5. Position the measuring probe for the flue gas analyser in the centre of the flue gas core current.
6. Wait until the measured value has stabilised and log the measured value reading.
7. Compare the measured value reading with the permissible ranges from the diagrams.

Validity: VU 15CS/1-5 (N-INT3) OR VU 25CS/1-5 (N-INT3)



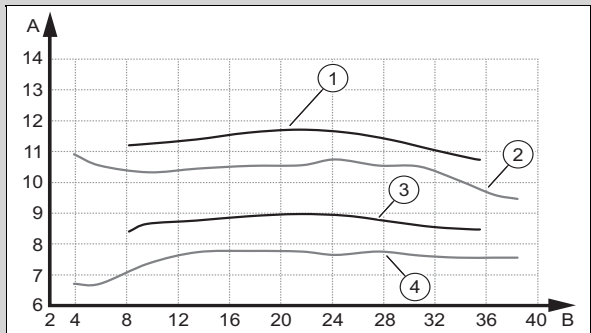
A	CO ₂ content [vol%]	B	Heat input [kW]
1	Max. CO ₂ content, liquefied petroleum gas	3	Min. CO ₂ content, liquefied petroleum gas
2	Max. CO ₂ content, natural gas	4	Min. CO ₂ content, natural gas

Validity: VU 15CS/1-5 (N-INT3) OR VU 25CS/1-5 (N-INT3)



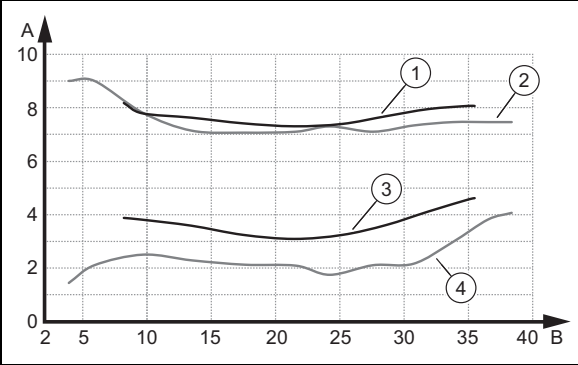
A	O ₂ content [vol%]	B	Heat input [kW]
1	Max. O ₂ content, liquefied petroleum gas	3	Min. O ₂ content, liquefied petroleum gas
2	Max. O ₂ content, natural gas	4	Min. O ₂ content, natural gas

Validity: VU 30CS/1-5 (N-INT3) OR VUW 36CS/1-5 (N-INT3)



A	CO ₂ content [vol%]	B	Heat input [kW]
1	Max. CO ₂ content, liquefied petroleum gas	3	Min. CO ₂ content, liquefied petroleum gas
2	Max. CO ₂ content, natural gas	4	Min. CO ₂ content, natural gas

Validity: VU 30CS/1-5 (N-INT3) OR VUW 36CS/1-5 (N-INT3)



A	O ₂ content [vol%]	B	Heat input [kW]
1	Max. O ₂ content, liquefied petroleum gas	3	Min. O ₂ content, liquefied petroleum gas
2	Max. O ₂ content, natural gas	4	Min. O ₂ content, natural gas

Result:

The value lies outside of the permitted range

- ▶ Check the total pipe length of the air/flue system.
- ▶ Check the air/flue system for recirculation and blockages.
- ▶ Measure the CO₂ and O₂ content at the flue gas analysis point again and log the measured value.
- ▶ If the CO₂ or O₂ content remains outside of the permissible range, correct the gas-air ratio via **D.158** and measure the CO₂ and O₂ content again at the flue gas analysis point.
- ▶ If the CO₂ or O₂ content remains outside of the permissible range, replace the control electrode (→ Section 11.7.13) and reset **D.158** to the factory setting.
- ▶ Measure the CO₂ and O₂ content at the flue gas analysis point again and log the measured value.
- ▶ If the value is still outside of the permissible range, do not start up the product and, instead, report this to customer service.

8. Remove the flue gas analyser and close the test opening at the flue gas analysis point.

7.12 Checking the heating mode

1. Ensure that there is a heat demand.
2. Navigate to **MENU** → **SETTINGS** → **Installer level** → **Data overview**.
 - ◁ If the product is working correctly, the display shows **S.004**.

7.13 Descaling the water

Scale deposition increases as the water temperature increases.

- ▶ Descale the water as required.

Condition: Water hardness: $\geq 3.57 \text{ mol/m}^3$

- ▶ Reduce the target value for the domestic hot water temperature.

– Domestic hot water temperature: $\leq 50^\circ\text{C}$

7.14 Checking the domestic hot water generation

1. Make sure that there is a domestic hot water demand.

Validity: Product with connected domestic hot water cylinder

- ▶ Navigate to **MENU** → **SETTINGS** → **Installer level** → **Data overview**.
 - ◁ If the domestic hot water cylinder is charged correctly, **S.024** appears in the display.
 - ◁ If the cylinder has a temperature sensor, check the temperature in the cylinder **DHW cylinder outlet temp**.

Validity: Product with integrated hot water generation

- ▶ Navigate to **MENU** → **SETTINGS** → **Installer level** → **Data overview**.
 - ◁ If domestic hot water is drawn off at a water tap, **S.014** appears in the display.
 - ◁ Check the domestic hot water temperature **Actual DHW temperature**

Condition: Control connected

- ▶ Set the target temperature for the connected domestic hot water cylinder on the control (→ Operating and installation instructions for the control).
 - ◁ The boiler adopts the target temperature which is set on the control.

7.15 Checking leak-tightness

- ▶ Check the gas-carrying components, the inner air/flue tightness, the heating circuit and the domestic hot water circuit for tightness.
- ▶ Check that the air/flue pipe has been installed correctly.
- ▶ Check whether the front panel is fitted.

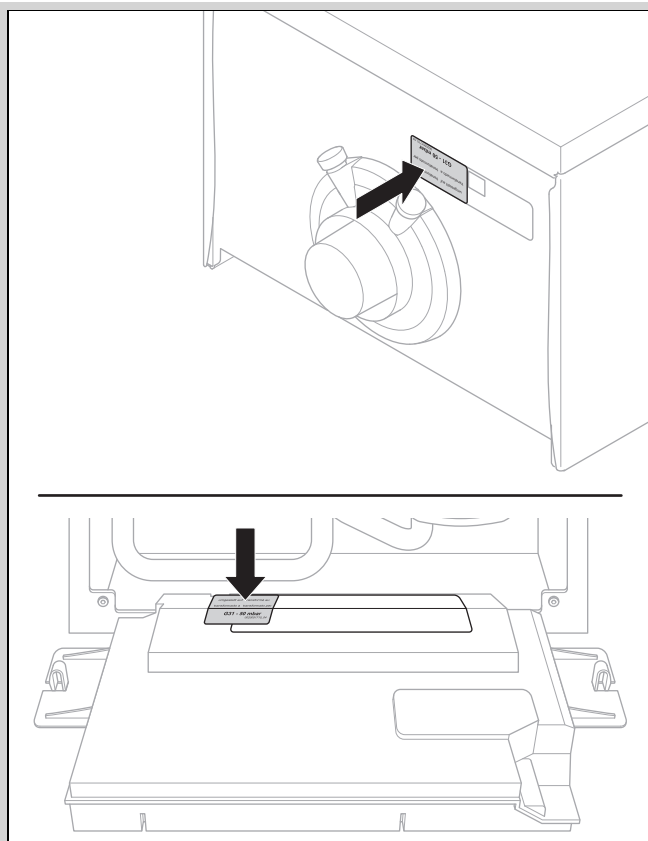
Condition: Room-sealed operation

- ▶ Ensure that the front casing and the grommets have been closed tightly.

7.16 Converting the product to a different gas group

Condition: Initial start-up

For initial start-up, the desired gas group is defined when carrying out the installation assistant. If liquefied petroleum gas is selected, the supplied sticker must be affixed.



- When selecting liquefied petroleum gas (deviation from the as-supplied condition), you must attach the supplied sticker to the data plates.

Condition: Gas family conversion at a later time

If you convert to a different gas family (natural gas to liquefied petroleum gas and vice-versa) at a later time, a conversion set is required (control electrode replacement).

- Follow the instructions in the manual that is included with the conversion set.

Condition: Conversion of the gas group within the set gas family at a later time

If you have to convert to another gas group within the set gas family of natural gas at a later time, proceed as follows.

- Ensure that there is no heat demand.
- Enable the gas conversion by switching on **D.156** and pressing the entry **Yes** to confirm. (→ Section 6.3)
- Use **D.157** to set the correct gas group and confirm by pressing .
- Block gas conversion by switching on **D.156** and pressing **No** to confirm.
- Ensure that there is a heat demand.
- Check the CO₂ and O₂ content. (→ Section 7.11.4)
- Check the gas connection pressure/gas flow pressure. (→ Section 7.11.2)

7.17 Adjustment to the maximum length of the air/flue pipe

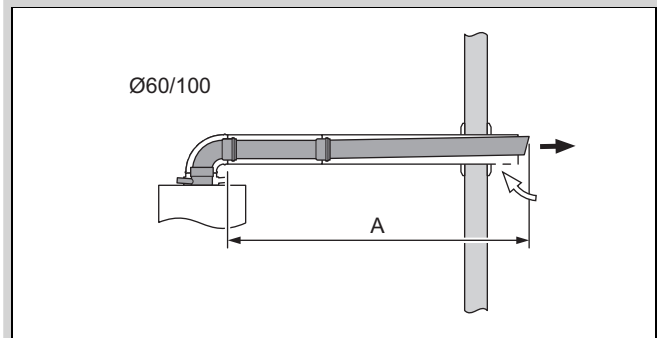
Validity: C13, horizontal wall/roof duct, air/flue pipe, 60/100 mm diameter, system-certified flue system

To compensate for the pressure losses through the air/flue pipe, a setting is required in the installation assistant (country-specific) or for diagnostics code **D.164**.

This section applies for the following products only:

Product article number

VU 15CS/1-5 (N-INT3)	– 0010024655 – 0010043972
VU 25CS/1-5 (N-INT3)	– 0010024656 – 0010043974
VU 30CS/1-5 (N-INT3)	– 0010024653 – 0010043975
VUW 36CS/1-5 (N-INT3)	– 0010024660



- Set diagnostics code **D.164**. (→ Section 6.3)

Length (A) [m] + corresponding length for the diversion ¹⁾	Setting
< 5	No adjustment required – the standard value is applied.
≥ 5 ²⁾	5

¹⁾ The maximum pipe length is reduced as each additional diversion is added, as follows: By 1 m for each 87° elbow, by 0.5 m for each 45° elbow.

²⁾ Maximum pipe length, see set-up instructions for the air/flue system.

8 Adapting the unit to the installation

8.1 Setting parameters

- Navigate to the **Start inst. assistant** menu and restart the installation assistant.
- Navigate to the **Diagnostics menu** menu and set additional system parameters.

Diagnostics codes (→ Appendix B)

8.2 Activating an additional component for the multi-functional module

Condition: Components connected to relay 1

- Select the parameter **D.027** to assign a function to relay 1. (→ Section 6.3)

Condition: Components connected to relay 2

- Select the parameter **D.028** to assign a function to relay 2. (→ Section 6.3)

8.3 Adapting the heating settings

8.3.1 Heat input

During operation, the heat input is continuously adjusted to the required heat output for the heating system.

8.3.1.1 Minimum heat input

You can use **D.085** to raise the lowest heat input in the range between the minimum value and the limit value for the ignition output that is technically required. The heat cell modulates up to the set value and the modulation range is restricted.

The cycling mode is made more likely by raising the lower modulation limit.

This setting applies for heating and domestic hot water mode.

8.3.1.2 Setting the maximum heat input

The maximum heat input can be adjusted to the installation's determined output requirement via **D.000**.

If the **Auto** setting is activated in parameter **D.000**, the product automatically adjusts the maximum heat input to the installation's current requirements.

8.3.2 Setting the hydraulic operating mode



Note

Different hydraulic operating modes are available depending on the product variant.

The heating water volume flow that is established by the internal circulation pump in the heating installation is used to transfer heat. To build up the volume flow, different hydraulic operating modes are available, which you can select via **D.170**.

Depending on the setting for parameter **D.170**, fine adjustments are possible via parameters **D.171** to **D.175**.

D.170					
	0	•	•	•	
	1	•	•	•	
	2	•	•	•	
	3		•		
	4				•

D.171-175		D.171	D.172	D.173	D.174	D.175
	0	•				
	1	•			•	
	2	•				
	3		•	•	•	
	4					•

D.170 setting	Description
	0: Without bypass, Δp-const. With this operating mode, the pump is operated at a constant pressure.
	1: W/o bypass, Δp-const.,kick With this operating mode, the pump is operated at a constant pressure. If the circulation water volume for starting heating mode is not present and there is a heat demand, this pump mode can be used to generate the circulation water volume with the automatic pressure increase.
	2: Bypass, Δp-const. Constant pressure pump control type The internal heating pump works in constant pressure in the heating installation. The pressure level can be selected between 100 and 400 mbar via D.171 . The internal circulation valve is only opened according to requirements in order to maintain minimum circulation. If required, a maximum opening pressure can be set via D.174 .
	3: Spread ΔT Spread pump control type The internal heating pump works at a temperature spread between the flow and return temperature. The target is the spread level of the heating system and not the pressure supply. The target value for the spread is specified via D.172 . The work area of the heating pump for the spread regulation can be set via D.173 and D.174 .
	4: Fixed pump stage Pump curve pump control The internal pump works on a selected pump curve. The volume flow and the pressure for the heating system result via the pump curve and the system resistance that is present. The target value for the pump curve is specified via D.175 . There is no control system for pressure or temperature; the pump works on a fixed pump curve. This pump mode is preferred for homogeneous heat transfer if a low loss header, decoupling module, hydraulic cascading and a buffer cylinder is installed.

	Heating system with radiators
	Underfloor heating systems
	Heating system with radiators and decentralised underfloor heating
	Decoupling of the heat generator from the heating system (low loss header, plate heat exchanger, buffer cylinder)

- Select parameter **D.170** and, if required, **D.171** to **D.175** in order to adjust the hydraulic operating mode of the heat generator to the heating installation. (→ Section 6.3)

8.3.3 Setting the flow temperature/desired temperature

You can use the system control to set the desired temperature (→ Operating and installation instructions for the system control).

If no system control is connected, the target flow temperature can be set via the heat generator's control. The maximum target flow temperature is set via **D.071**.

- From the basic display, press .
 - ◁ The flow temperature that has already been set is shown in the display.
 - ◁ If a control module is connected, the desired temperature is shown on the display.

8.3.4 Burner anti-cycling time

To prevent frequent switching on and off of the burner and thus prevent energy losses, an electronic restart lockout is activated for a specific period each time the burner is switched off. The burner anti-cycling time is only active for the heating mode. Hot water handling during a burner anti-cycling time does not affect the time function element (default setting: 20 mins).

8.3.5 Setting the burner anti-cycling time



Note

The values in the table below only apply if diagnostics code **D.071** is set to 75 °C.

- Set diagnostics code **D.002**. (→ Section 6.3)

T _{Flow} (target) [°C]	Set maximum burner anti-cycling time [min]						
	2	5	10	15	20	25	30
30	2.0	4.5	8.5	12.6	16.7	20.8	24.9
35	2.0	4.2	7.8	11.5	15.1	18.7	22.4
40	2.0	3.9	7.1	10.3	13.5	16.6	19.8
45	2.0	3.6	6.4	9.1	11.8	14.5	17.3
50	2.0	3.4	5.6	7.9	10.2	12.5	14.7
55	2.0	3.1	4.9	6.7	8.5	10.4	12.2
60	2.0	2.8	4.2	5.5	6.9	8.3	9.6

T _{Flow} (target) [°C]	Set maximum burner anti-cycling time [min]						
	2	5	10	15	20	25	30
65	2.0	2.5	3.5	4.4	5.3	6.2	7.1
70	2.0	2.3	2.7	3.2	3.6	4.1	4.5
75	2.0	2.0	2.0	2.0	2.0	2.0	2.0

T _{Flow} (target) [°C]	Set maximum burner anti-cycling time [min]					
	35	40	45	50	55	60
30	29.0	33.1	37.2	41.3	45.4	49.5
35	26.0	29.6	33.3	36.9	40.5	44.2
40	23.0	26.2	29.4	32.5	35.7	38.9
45	20.0	22.7	25.5	28.2	30.9	33.6
50	17.0	19.3	21.5	23.8	26.1	28.4
55	14.0	15.8	17.6	19.5	21.3	23.1
60	11.0	12.4	13.7	15.1	16.5	17.8
65	8.0	8.9	9.8	10.7	11.6	12.5
70	5.0	5.5	5.9	6.4	6.8	7.3
75	2.0	2.0	2.0	2.0	2.0	2.0

- Exit the diagnostics codes. (→ Section 6.3.1)
- Exit the installer level. (→ Section 6.2.1)

8.3.6 Setting the pump overrun

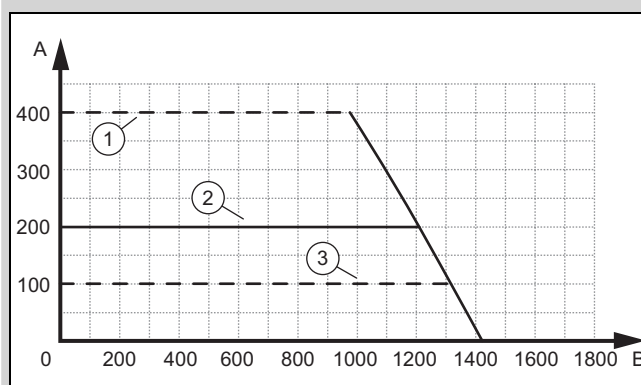
You can set the pump overrun via **D.001**. This can be used to optimise the detection of the heat demand.

8.3.7 Setting the heating pump operating mode

You can set the operating mode for the heating pump via **D.018**. This can be used to optimise the detection of the heat demand.

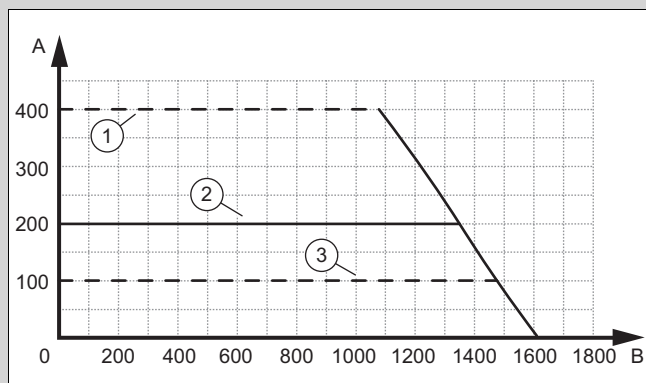
8.3.8 Pump curve

Validity: VU 15CS/1-5 (N-INT3) OR VU 25CS/1-5 (N-INT3)



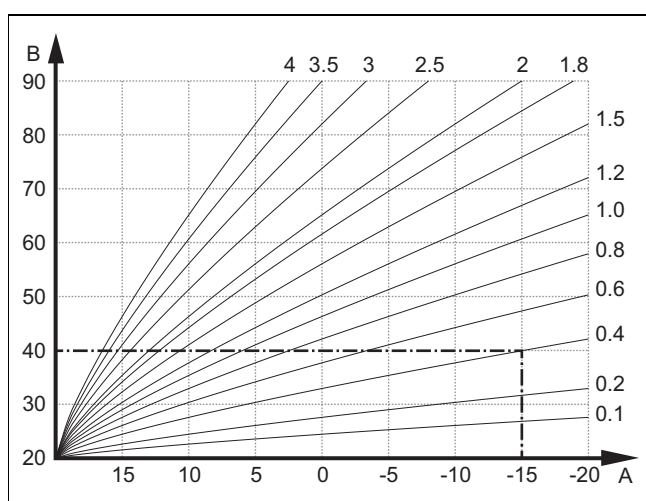
A	Pressure [mbar]	B	Flow rate [l/h]
1	Maximum pressure	3	Minimum pressure
2	Factory setting		

Validity: VU 30CS/1-5 (N-INT3) OR VUW 36CS/1-5 (N-INT3)



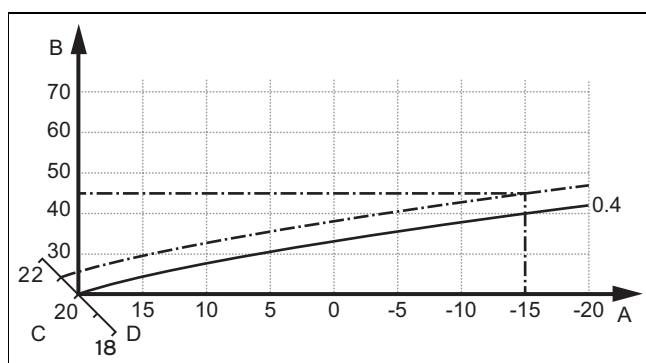
A	Pressure [mbar]	B	Flow rate [l/h]
1	Maximum pressure	3	Minimum pressure
2	Factory setting		

8.3.9 Setting the heat curve



A	Outdoor temperature °C	B	Target flow temperature °C
---	------------------------	---	----------------------------

The figure shows the possible heat curves of 0.1 to 4.0 for a target room temperature of 20 °C. If, for example, heat curve 0.4 is selected, a flow temperature of 40 °C is maintained at an outdoor temperature of -15 °C.



A	Outdoor temperature °C	C	Target room temperature °C
B	Target flow temperature °C	D	Axis a

If the heat curve 0.4 is selected and 21 °C is specified for the target room temperature, the heat curve is then translated, as shown in the figure. The heat curve is displaced according to the value of the target room temperature along axis a

which is angled at 45°. At an outdoor temperature of -15 °C, the control system provides a flow temperature of 45 °C.

- ▶ Navigate to **MENU** → **SETTINGS** → **Installer level** → **Installation configuration** → **Heating** → **Heat curve**.
- ▶ Use the scroll bar to select the required value.
- ▶ Exit the menu level. (→ Section 6.8)

8.3.10 Setting the pressure

1. Set diagnostics code **D.171**. (→ Section 6.3)
2. Set the pressure to the required value.
3. Exit the menu level. (→ Section 6.8)

8.3.11 Setting the bypass valve



Note

Parameter **D.170** must be set to **Bypass, Δp-const.**

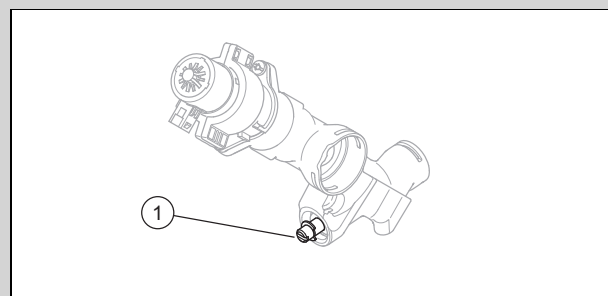
Parameters **D.173** and **D.174** must be set to the factory setting.

Condition: Bypass valve installed

1. Set the pressure level via **D.171**. (→ Section 6.3)

Condition: The required heat supply does not occur

- ▶ If **D.171** is set to 400 mbar and the heat supply is still not sufficient, readjust the pressure via the bypass valve.
- ▶ Remove the front casing. (→ Section 5.8.3)
- ▶ Hinge the electronics box downwards.



Regulate the pressure at the bypass valve (1) in a clockwise direction.

Position of the adjusting screw	Pressure	Comment
Right-hand stop (turned all the way down)	0.035 MPa (0.350 bar)	If the radiators do not heat up sufficiently at the factory setting.

- ▶ Hinge the electronics box upwards.
- ▶ Install the front casing. (→ Section 7.11.3)

8.4 Adapting the domestic hot water settings

8.4.1 Setting the domestic hot water temperature

Validity: Product with integrated hot water generation OR Product with connected domestic hot water cylinder



Danger!

Risk of death from legionella.

Legionella multiply at temperatures below 60 °C.

- ▶ Ensure that the end user is familiar with all of the Anti-legionella measures in order to comply with the applicable regulations regarding legionella prevention.

1. Observe the applicable regulations regarding legionella prevention.
2. From the basic display, press .
3. Set the required domestic hot water temperature.

Validity: Product with system control

- ▶ First, set the target domestic hot water temperature on the heat generator's control panel to the maximum value before you connect the system control (eBUS).
- ▶ Set the required domestic hot water temperature on the system control (→ Operating instructions/installation instructions for the system control).

Condition: System control connected

- ▶ Check the domestic hot water generation. (→ Section 7.14)

8.4.2 Setting solar post-heating

Validity: Product with integrated hot water generation



Note

Ensure that the heat generator remains switched on over the summer months.

Condition: Solar connection set installed, inlet temperature sensor available

- ▶ Set diagnostics code **D.058**. (→ Section 6.3)
- ▶ Ensure that the temperature at the product's cold water connection does not exceed 70 °C.

9 Handing over to the end user

- ▶ When you have finished the installation, affix the enclosed sticker (which requests that the user reads the instructions) to the front of the product in the end user's language.
- ▶ Explain to the end user how the safety devices work and where they are located.
- ▶ Inform the end user how to handle the product.
- ▶ In particular, draw attention to the safety warnings that the end user must follow.
- ▶ Inform the end user that they must have the product maintained in accordance with the specified intervals.
- ▶ Pass all of the instructions and documentation for the product to the end user for safe-keeping.
- ▶ Inform the end user about measures taken to ensure the combustion air supply and flue system, and instruct the end user that he must not make any changes.
- ▶ Inform the end user that they must not store or use explosive or highly flammable substances (such as petrol or paint) in the product's installation room.

10 Inspection and maintenance

- ▶ Adhere to the minimum inspection and maintenance intervals.
- ▶ Carry out maintenance work on the product at an earlier point if the results of the inspection that was carried out during previous maintenance make this necessary.

10.1 Using original seals

If you replace components, use only the enclosed new original seals; additional sealing materials are not required.

10.2 Maintenance interval

A service interval can be defined in two ways.

Use **D.084** to establish the link to the countdown of operating hours.

Use **D.161** to establish the link to a date.

If you only set one of the two diagnostics codes (**D.084** or **D.161**), the other diagnostics code in each case is automatically reset to the factory setting.

If you select **Not set** for **D.084**, the service message regarding the operating hours is deactivated. The service message for the date remains active and cannot be deactivated.

The service message regarding the event that occurs earlier appears (the hours have elapsed or the date is reached).

Once the service work is complete, you must set the maintenance intervals again. (→ Section 10.2.1)

10.2.1 Setting/resetting the maintenance interval

1. Set diagnostics code **D.084** or **D.161**. (→ Section 6.3)



Note

The operating hours until the next inspection/maintenance must be set individually (depending on the type of unit and the heat output).

Operating mode	Guideline value for the operating hours (in relation to one year)
Heating mode	4000 h
Heating and domestic hot water mode	5000 h

- Exit the diagnostics codes. (→ Section 6.3.1)
- Exit the installer level. (→ Section 6.2.1)

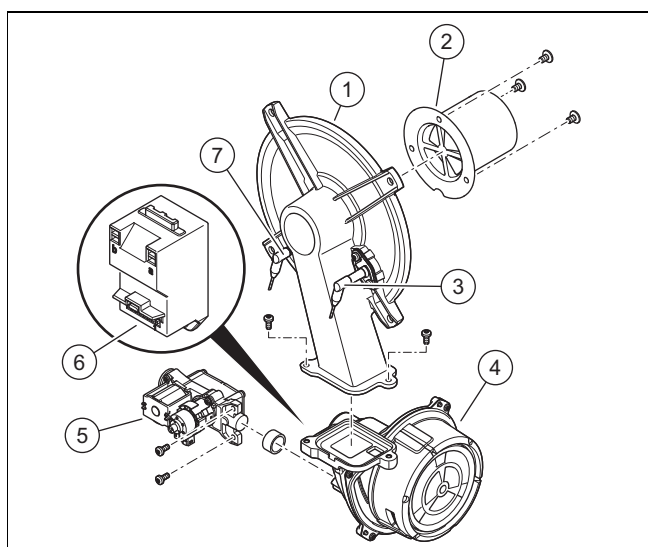
10.3 Actuator test

MENU → SETTINGS → Installer level → Test modes → Actuator test

The actuator test allows you to actuate and test individual components in the heating installation.

Actuator test (→ Appendix F)

10.4 Removing/installing the compact thermal module



- | | |
|-----------------------|------------------------|
| 1 Burner flange | 5 Gas valve assembly |
| 2 Premix burner | 6 Ignition transformer |
| 3 Control electrode | 7 Ignition electrode |
| 4 Speed-regulated fan | |



Note

Only touch the control electrode at the ceramic section. Cleaning the control electrode is prohibited.

10.4.1 Removing the compact thermal module



Danger!

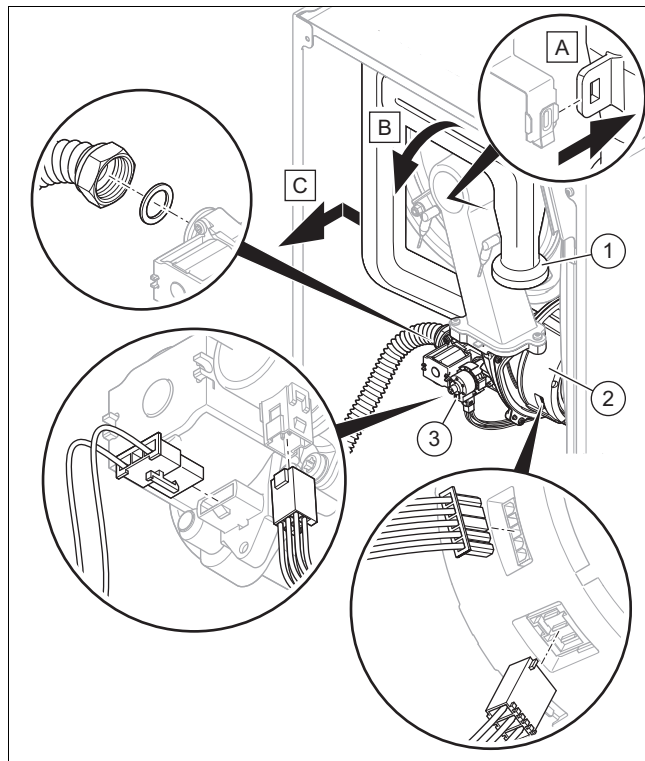
Risk of death and risk of material damage caused by hot flue gas.

The seal, insulating mat and self-locking nuts on the burner flange must not be damaged. Otherwise, hot flue gases may escape and cause personal injury and material damage.

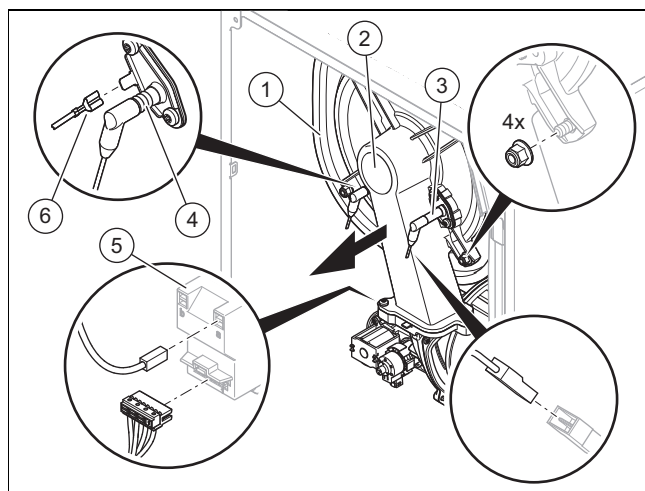
- ▶ Replace the seal each time you open the burner flange.
- ▶ Replace the self-locking nuts on the burner flange each time you open the burner flange.

- ▶ If the insulating mat on the burner flange or on the back wall of the heat exchanger shows signs of damage, replace the insulating mat.

- Disconnect the product from the power supply.
- Close the gas stopcock.
- Remove the front casing. (→ Section 5.8.3)
- Hinge the electronics box downwards.



- Unscrew the air intake pipe (1) from the upper retainer and remove the air intake pipe from the intake stub, as shown in the figure.
- Unscrew the union nut from the gas valve assembly (3).
- Remove the two plugs from the gas valve assembly.
- Remove the plug or, if necessary, the two plugs from the fan motor (2) by pushing in the latching lug.



- Remove the earth cable (6) from the ignition electrode (4), the two plugs from the ignition transformer (5) and the plug for the control electrode's cable (3).
- Remove the four nuts from the burner flange (2).

11. Remove the entire compact thermal module from the heat exchanger (1).
12. Check the burner and burner insulating mat for damage. (→ Section 10.5.3)
13. Check the heat exchanger for damage.

Result:

Heat exchanger damaged

- Replace the heat exchanger. (→ Section 11.7.7)

14. Check the heat exchanger for dirt.

Result:

Heat exchanger dirty

- Clean the heat exchanger. (→ Section 10.5.2)

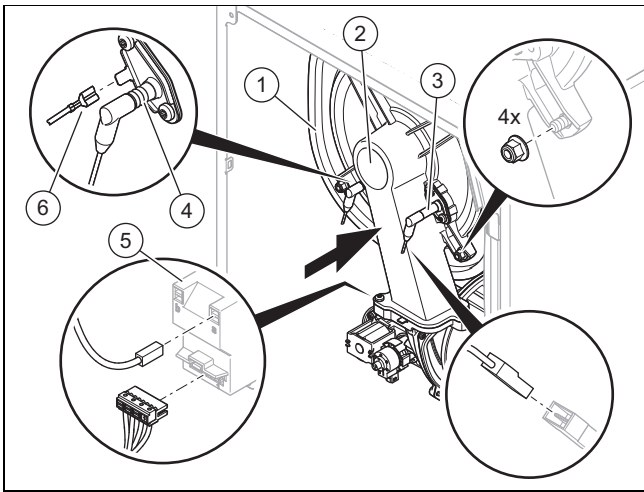
15. Check the insulating mat on the heat exchanger for damage.

Result:

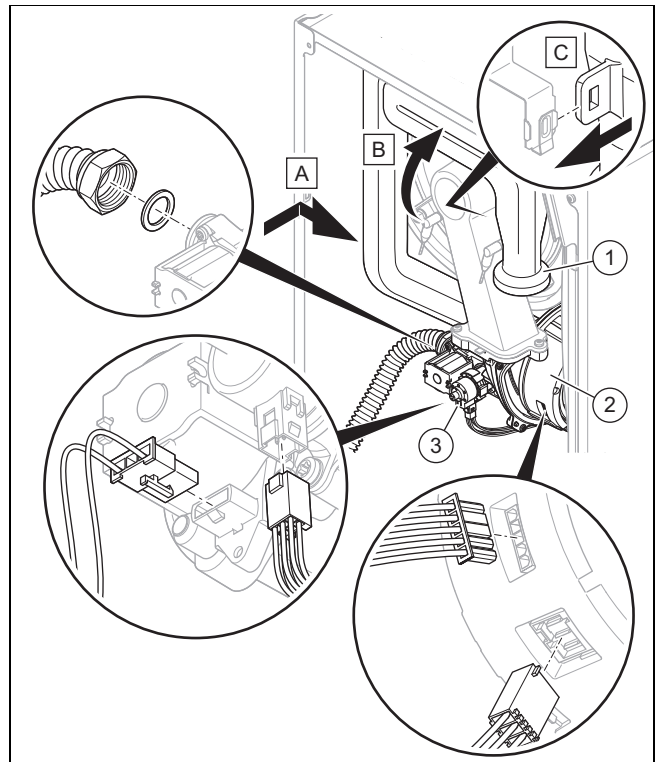
Insulating mat damaged

- Replace the insulating mat (→ Spare parts instructions for the heat exchanger insulating mat).

10.4.2 Installing the compact thermal module



1. Connect the compact thermal module to the heat exchanger (1).
2. Tighten the four new nuts in a cross-wise pattern until the burner flange fits closely and uniformly onto the mating surfaces.
 - Tightening torque: 6 Nm
3. Reconnect the plug for the earth cable (6) from the ignition electrode (4), the two plugs from the ignition transformer (5) and the plug for the control electrode's cable (3).

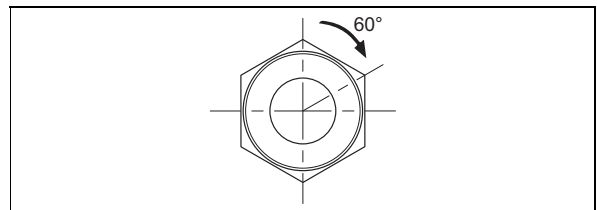


4. Reconnect the plug or, if required, the two plugs to the fan motor (2).
5. Reconnect the two plugs to the gas valve assembly (3).

6. Alternatives 1:

- Screw the union nut onto the gas valve assembly with a new seal. In the process, secure the gas pipe against twisting.
 - Tightening torque: 40 Nm

6. Alternatives 2:



- Screw the union nut onto the gas valve assembly with a new seal. In the process, secure the gas pipe against twisting.
 - Tightening torque: 15 Nm + 60°

7. Open the gas stopcock.
8. Check the product for tightness. (→ Section 7.15)
9. Check whether the sealing ring is positioned correctly in the air intake pipe.
10. Plug the air intake pipe (1) onto the intake stub and push the air intake pipe into the upper retainer, as shown in the figure.
11. Check the gas connection pressure/gas flow pressure. (→ Section 7.11.2)

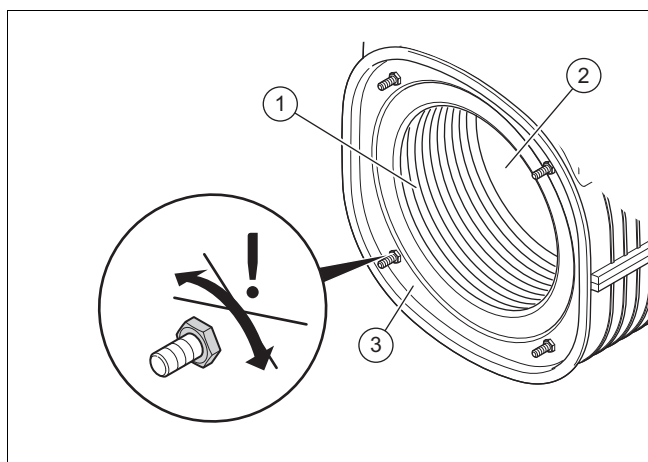
10.5 Cleaning/checking the components

1. Carry out the preparatory work before cleaning/checking any of the components. (→ Section 10.5.1)
2. Carry out the work required to finish the task after cleaning/checking any of the components. (→ Section 10.5.7)

10.5.1 Preparing the cleaning and inspection work

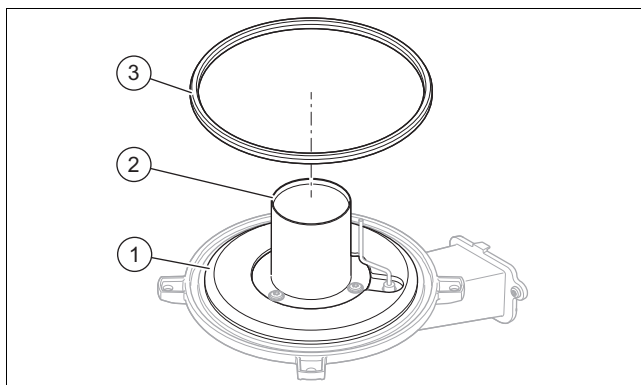
1. Temporarily decommission the product. (→ Section 12.1)
2. If required, remove the installed modules from below the product (→ Module installation instructions).
3. Remove the front casing. (→ Section 5.8.3)
4. Hinge the electronics box downwards.
5. Protect the electronics box against spraying water.
6. Remove the compact thermal module. (→ Section 10.4.1)

10.5.2 Cleaning the heat exchanger



1. Clean the spiral immersion heater (1) of the heat exchanger (3) using water or, if required, vinegar (to a maximum of 5% acid).
 - Cleaning agent reaction time: 20 min
2. Rinse away any loose dirt with a sharp jet of water or use a plastic brush. Do not point the jet of water directly at the insulating mat (2) on the rear of the heat exchanger.
 - ⚠ The water flows out of the heat exchanger through the condensate siphon.
3. Check the insulating mat on the heat exchanger for damage.
Result:
Insulating mat damaged
 - Replace the insulating mat (→ Spare parts instructions for the heat exchanger insulating mat).
4. Clean the condensate siphon. (→ Section 10.5.5)

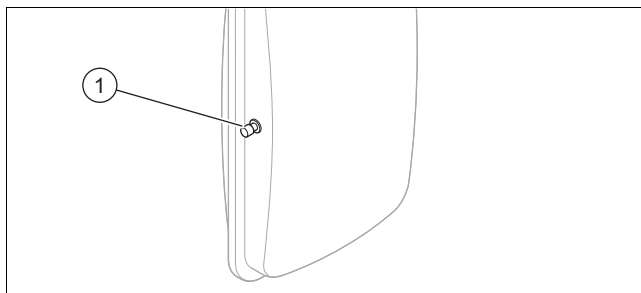
10.5.3 Checking the burner and burner insulating mat for damage



1. Check the surface of the burner (2) for damage.
Result:
Burner damaged
 - Replace the burner flange. (→ Section 11.7.4)
2. Fit a new burner flange seal (3).
3. Check the insulating mat (1) on the burner flange for damage.
Result:
Insulating mat damaged
 - Replace the burner flange. (→ Section 11.7.4)

10.5.4 Checking the pre-charge pressure of the expansion vessel

1. Drain the product. (→ Section 10.6)



2. Check the pre-charge pressure of the expansion vessel at the expansion vessel valve (1).
 - Working materials: U tube manometer
 - Working materials: Digital pressure gauge**Result 1:**
 $\geq 0.075 \text{ MPa}$ ($\geq 0.750 \text{ bar}$)
The pre-charge pressure is in the permissible range.
Result 2:
 $< 0.075 \text{ MPa}$ ($< 0.750 \text{ bar}$)
 - Top up the expansion vessel in accordance with the static height of the heating installation, ideally with nitrogen, otherwise with air. Ensure that the drain valve is open when topping up.
3. If water escapes from the valve of the expansion vessel, you must replace the expansion vessel. (→ Section 11.7.8)
4. Fill and purge the heating installation. (→ Section 7.7)
5. Purge the product. (→ Section 7.8)

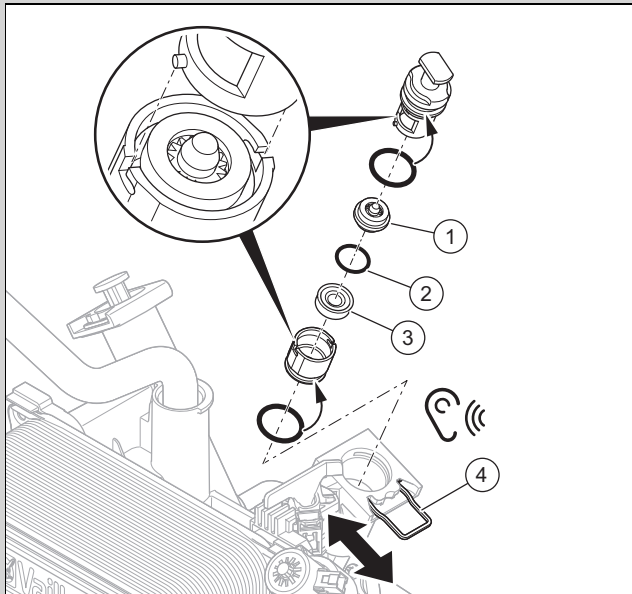
10.5.5 Cleaning the condensate siphon

1. Disconnect the condensate discharge hose from the lower section of the siphon.
2. Remove the lower section of the siphon.
3. Remove the float.
4. Flush out the lower section of the siphon with water.
5. Fill the lower section of the siphon with water up to a filling level 10 mm below the condensate discharge pipe.
6. Insert the float.
7. Secure the lower section of the siphon to the condensate siphon.
8. Connect the condensate discharge hose to the lower section of the siphon.

10.5.6 Cleaning the strainer in the cold water inlet

Validity: Product with integrated hot water generation

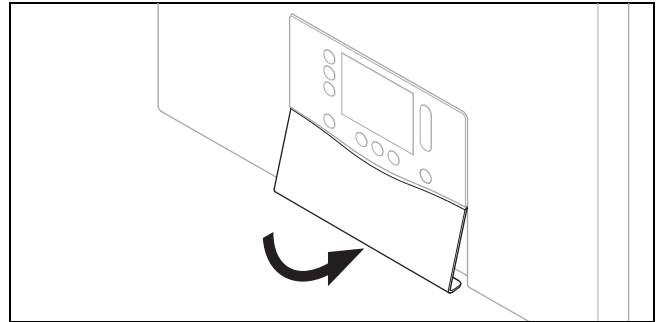
1. Close the cold-water isolation valve.
2. Drain the product on the domestic hot water side.
3. Hinge the electronics box forwards.



4. Pull the clip (4) out to the maintenance position. The clip is secured against falling out.
5. Pull the assembly straight out of the product without any rotational movement.
6. Disconnect the lowest section of the assembly by rotating the upper section.
7. Note the installation position. Remove the flow rate limiter (1), O-ring (2) and strainer (3).
8. Rinse the strainer under a jet of water, holding it against the direction of flow.
9. If the strainer is damaged or it can no longer be cleaned sufficiently, you must replace the strainer.
10. Always use new O-rings. Reinsert the flow rate limiter.
11. Reinsert the strainer, O-ring and flow rate limiter in the correct installation position.
12. Slide the clip back in until you hear it click into place.
13. Open the cold-water isolation valve.

10.5.7 Completing cleaning and inspection work

1. Install the compact thermal module. (→ Section 10.4.2)
2. Hinge the electronics box upwards.
3. Open all service valves and the gas stopcock if this has not yet been done.
4. Check the product for tightness. (→ Section 7.15)
5. Install the front casing. (→ Section 7.11.3)



6. If required, install the front panel below the display.
7. If required, install the modules below the product (→ Module installation instructions).
8. Establish the power supply if this has not yet been done.
9. Switch the product back on if this has not yet been done.

10.6 Draining the product

1. Temporarily decommission the product. (→ Section 12.1)
2. Close the service valves of the product.
3. Close the gas stopcock.
4. Start up the product.
5. Start check programme **P.008**. (→ Section 6.4)
6. Open the drain valves.
◁ The product (heating circuit) is drained.
7. Close the drain valve.
8. Temporarily decommission the product. (→ Section 12.1)

10.7 Completing inspection and maintenance work

- ▶ Check the gas connection pressure/gas flow pressure. (→ Section 7.11.2)
- ▶ Check the CO₂ and O₂ content. (→ Section 7.11.4)
- ▶ Check the product for tightness. (→ Section 7.15)
- ▶ If required, reset the maintenance interval. (→ Section 10.2.1)
- ▶ Log the inspection/maintenance work.

11 Troubleshooting

11.1 Checking the data overview

1. Navigate to **MENU** → **SETTINGS** → **Installer level** → **Data overview**.
2. Read the limp home mode and fault history to determine whether there is a fault. (→ Section 11.3.2.1)

11.2 Service messages

If the set maintenance interval has passed or if a service message has been issued,  appears in the display. The product is not in fault mode.

If multiple service messages occur at the same time, these are shown in the display. Each service message must be confirmed.

Maintenance codes (→ Appendix G)

11.3 Fault messages

If several faults occur at the same time, the display shows the faults. Each fault must be confirmed.



Note

Due to a condensate blockage test after the last ignition attempt, fault messages **F.028**, **F.029** and **F.347** appear after a delay. Wait for the fault displays.

11.3.1 Eliminating faults

- ▶ Eliminate the faults (fault messages/fault codes) after checking the measures.
Fault codes (→ Appendix D)
- ▶ Press the reset button to restart the product.
 - Maximum number of repetitions: 3
- ▶ If you are unable to eliminate the fault and the fault recurs despite reset attempts, contact customer service.

11.3.2 Fault history/limp home mode history

If faults have occurred, the last ten (max.) fault messages are available in the fault history/limp home mode history.

11.3.2.1 Requesting/clearing the fault history/limp home mode history

1. Call up the installer level. (→ Section 6.2)
2. Navigate to the **Fault history / Limp home mode history** menu.
 - ◁ The display shows the number of faults that have occurred, the fault numbers and the corresponding plain text display.
3. Use the scroll bar to select the required fault message.
4. To delete the fault history/limp home mode history, set diagnostics code **D.094**. (→ Section 6.3)
5. Exit the menu level. (→ Section 6.8)

11.4 Limp home mode messages

The limp home mode message are divided into reversible and irreversible messages. The reversible **L.XXX** codes eliminate themselves and the irreversible **N.XXX** codes require action.

If an irreversible **N.XXX** code occurs for the first time, you can use the reset button to attempt to eliminate the short-term loss of comfort. If the same irreversible limp home mode occurs multiple times, carry out the measures from the table.

If multiple irreversible limp home mode messages occur at the same time, these are shown in the display. Each irreversible limp home mode message must be confirmed.

Reversible limp home mode codes (→ Appendix H)

Irreversible limp home mode codes (→ Appendix I)

11.4.1 Requesting the limp home mode history

1. Call up the installer level. (→ Section 6.2)
2. Navigate to the **Limp home mode history** menu.
 - ◁ The display shows a list of the limp home mode messages that are displayed.
3. Use the scroll bar to select the required limp home mode message.
4. Exit the installer level. (→ Section 6.2.1)

11.5 Eliminating faults in the product



Note

Maximum number of repetitions: 3.

- ▶ Press and hold  for longer than three seconds.
 - ◁  is shown on the display.
- ▶ When you are prompted to do so, confirm the product reset using .
 - ◁ The product restarts.
- ▶ If you cannot eliminate the fault, contact customer service.

11.6 Resetting parameters to factory settings

1. Note all of the relevant settings in the **Current** column of the "Diagnostics codes" table in the appendix. (→ Appendix B)



Note

When you reset to the factory settings, all of the installation-specific settings are deleted. The values for diagnostics codes **D.052** and **D.182**, if available, are still automatically saved. (→ Section 6.3)

2. Set diagnostics code **D.096**. (→ Section 6.3)
 - ◁ Parameters are restored to the factory settings.
3. Check the installation-specific settings and adjust these.
4. Exit the menu level. (→ Section 6.8)

11.7 Replacing defective components

1. Carry out the preparatory work before undertaking any repair work. (→ Section 11.7.2)
2. Carry out the work required to finish the task before undertaking any repair work. (→ Section 11.7.15)

11.7.1 Procuring spare parts

The original components of the product were also certified by the manufacturer as part of the declaration of conformity. If you use other, non-certified or unauthorised parts during maintenance or repair work, this may result in the product no longer meeting the applicable standards, thereby voiding the conformity of the product.

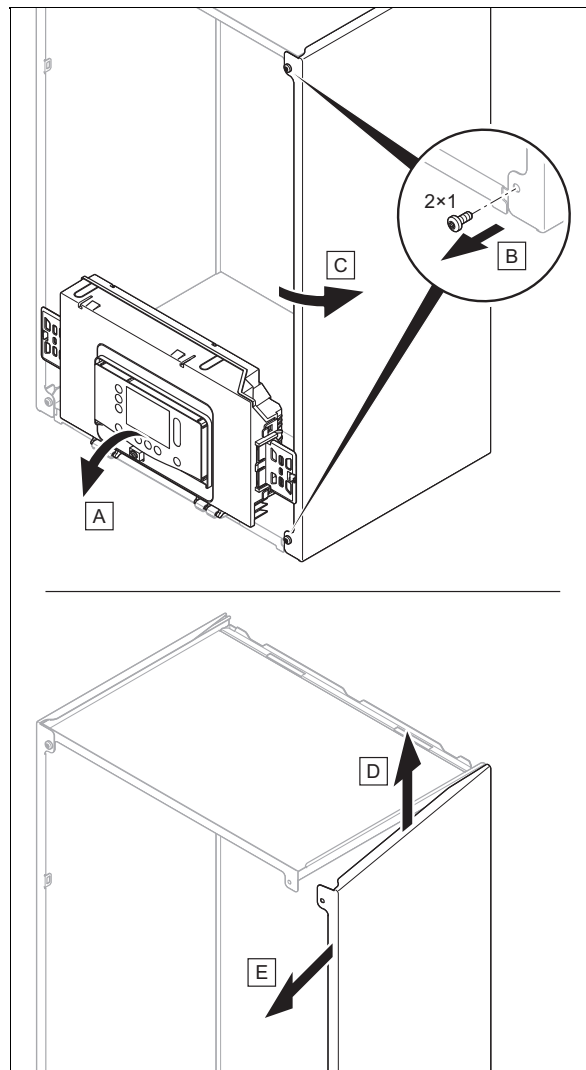
We strongly recommend that you use original spare parts from the manufacturer as this guarantees fault-free and safe operation of the product. To receive information about the available original spare parts, contact the contact address provided on the back page of these instructions.

- If you require spare parts for maintenance or repair work, use only the spare parts that are permitted for the product.

11.7.2 Preparing the repair work

1. Drain the product if you want to replace water-carrying components of the product. (→ Section 10.6)
2. Temporarily decommission the product. (→ Section 12.1)
3. Disconnect the product from the power grid.
4. If required, remove the installed modules from below the product (→ Module installation instructions).
5. Remove the front casing. (→ Section 5.8.3)

6.



Caution.

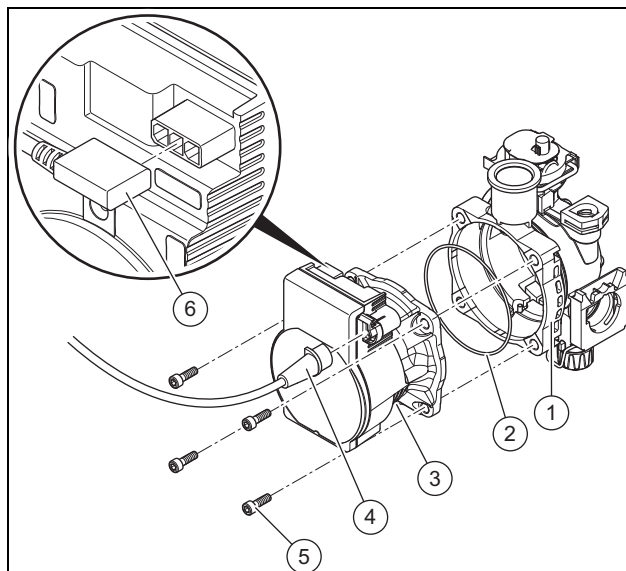
Risk of material damage caused by mechanical deformation.

Removing both side casing panels may cause mechanical distortion in the product, which may cause damage to the piping, for example, and potentially result in leaks.

- Always only remove one side casing panel – never both side casing panels at the same time.

7. Close the gas stopcock.
8. Close the service valves in the heating flow, in the heating return and in the cold water pipe, if you have not already done so.
9. Ensure that water does not drip on live components (e.g. the electronics box).
10. Remove the air intake pipe.
11. Use only new seals and screws.

11.7.3 Replacing the pump head



1. Pull out the plugs (4) and (6) from the pump head.
2. Undo the four screws (5).
3. Remove the pump head (3).
4. Check the inside of the lower section of the pump (1) for dirt.

Result 1:

Dirt is present

- Clean the inside of the lower section of the pump.

Result 2:

Dirt is magnetic

- Check the installed magnetite separator.

5. Replace the O-ring (2).
6. Secure the new pump head using four new screws at the lower section of the pump.
7. Tighten the four screws in a cross-wise pattern until the pump head on the lower section of the pump fits uniformly.
 - Tightening torque: 5 Nm
8. Reconnect the two plugs on the pump head.
9. Fill and purge the heating installation. (→ Section 7.7)
10. Purge the product. (→ Section 7.8)
11. Check the product for tightness. (→ Section 7.15)

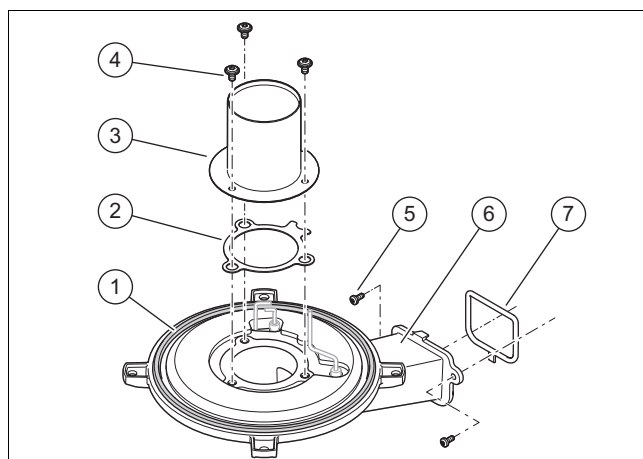
11.7.4 Replacing the burner



Note

Never replace the burner only, but always replace the burner flange, the burner and the control electrode, as well as all of the seals.

1. Remove the compact thermal module. (→ Section 10.4.1)
2. Remove the ignition electrode. (→ Section 11.7.12)



3. Unscrew the two screws (5) between the burner flange (6) and the fan.
4. Remove the burner flange.
5. Fit the new burner (3) with a new burner seal (2) to the new burner flange.
6. Tighten the three screws (4).
 - Tightening torque: 6 Nm
7. Fit the new burner flange with a new burner flange seal (1). Replace the seal (7) between the burner flange and the fan.
8. Tighten the two screws from the burner flange.
 - Tightening torque: 5.5 Nm
9. Install the new control electrode on the new burner flange. (→ Section 11.7.13)
10. Insert the ignition electrode with a new seal.



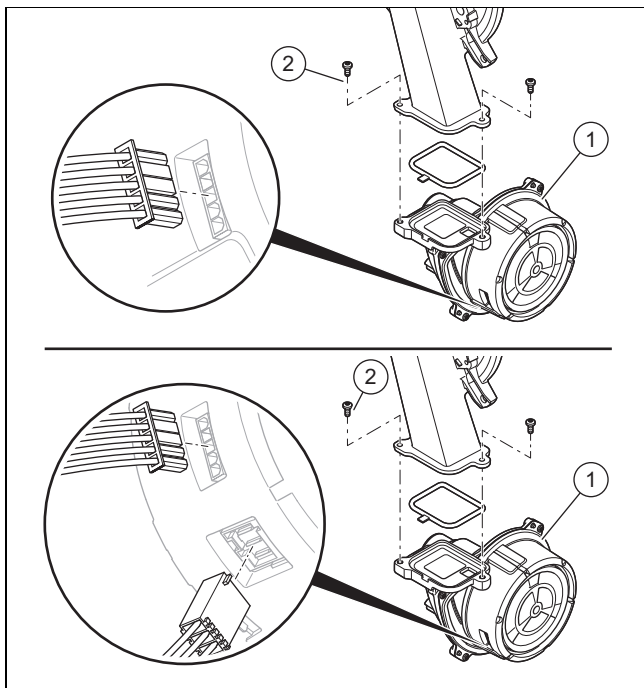
Note

Only touch the ignition and control electrodes at the ceramic section.

11. Install the compact thermal module. (→ Section 10.4.2)
12. Check the CO₂ and O₂ content. (→ Section 7.11.4)

11.7.5 Replacing the fan

1. Remove the gas valve assembly. (→ Section 11.7.6)

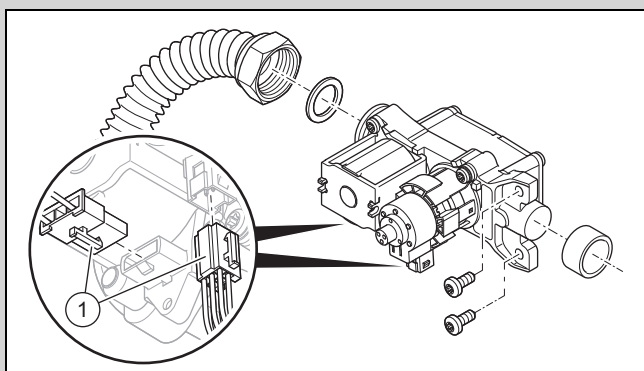


2. Remove the plug or, if required, the two plugs from the fan motor.
3. Unscrew the air intake pipe from the upper retainer, tilt the air intake pipe forwards, and remove the air intake pipe from the intake stub.
4. Unscrew the two screws (2) between the mixture pipe and the fan flange.
5. Remove the fan (1).
6. Insert the new fan. When doing so, replace all of the seals.
7. Screw the two screws between the mixture pipe and the fan flange in tightly.
 - Tightening torque: 5.5 Nm
8. Install the gas valve assembly. (→ Section 11.7.6)
9. Plug the air intake pipe onto the intake stub, tilt the air intake pipe backwards and push the air intake pipe into the upper retainer.
10. Connect the plug or, if required, the two plugs to the fan motor.

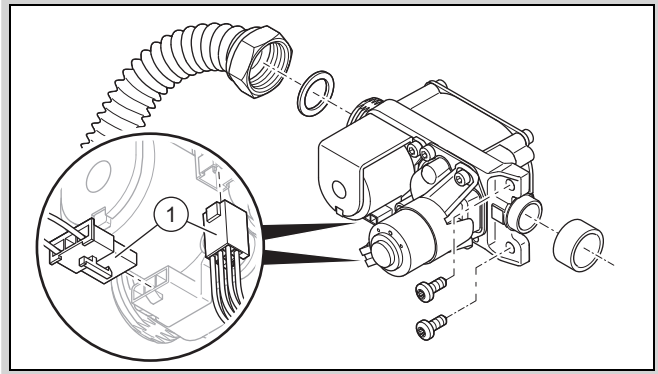
11.7.6 Replacing the gas valve assembly

Removing the gas valve assembly

Condition: Gas valve assembly version A



Condition: Gas valve assembly version B

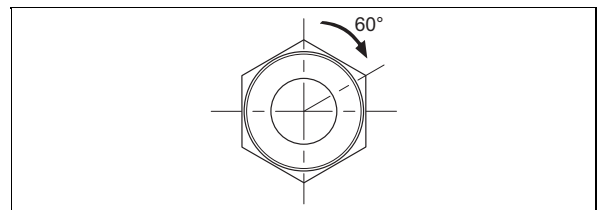


1. Remove the two plugs (1) from the gas valve assembly.
2. Unscrew the union nut from the gas valve assembly.
3. Undo both screws securing the gas valve assembly to the fan.
4. Remove the gas valve assembly.

Installing the gas valve assembly

5. Insert the gas valve assembly. When doing so, replace all of the seals.
6. Use both screws to fasten the gas valve assembly onto the fan.
 - Tightening torque: 5.5 Nm
7. **Alternatives 1:**
 - Screw the union nut onto the gas valve assembly with a new seal. In the process, secure the gas pipe against twisting.
 - Tightening torque: 40 Nm

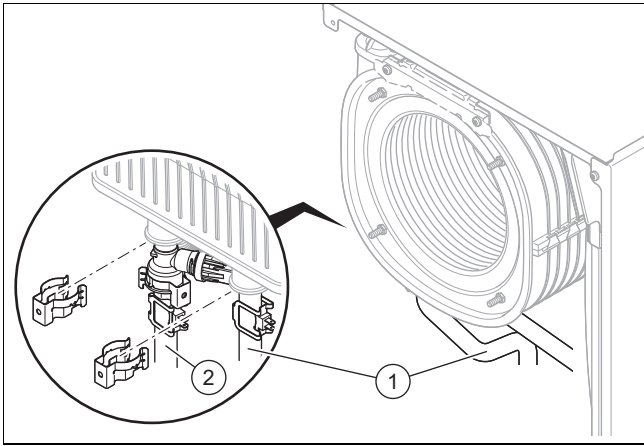
7. Alternatives 2:



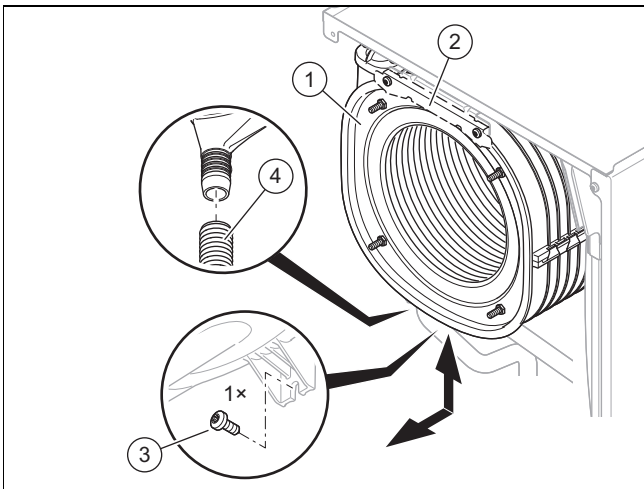
- Screw the union nut onto the gas valve assembly with a new seal. In the process, secure the gas pipe against twisting.
 - Tightening torque: 15 Nm + 60°
8. Plug in both of the gas valve assembly's plugs.
 9. Check the gas valve assembly and the connections for tightness. (→ Section 7.15)
 10. Install the front casing. (→ Section 7.11.3)
 11. Follow the directions in the spare parts instructions that are included with the gas valve assembly, and set the required diagnostics codes.
 12. Check the CO₂ and O₂ content. (→ Section 7.11.4)

11.7.7 Replacing the heat exchanger

1. Remove the connector for the air/flue pipe. (→ Section 5.7.2.1)
2. Remove the side casing. (→ Section 11.7.2)
3. Remove the compact thermal module. (→ Section 10.4.1)

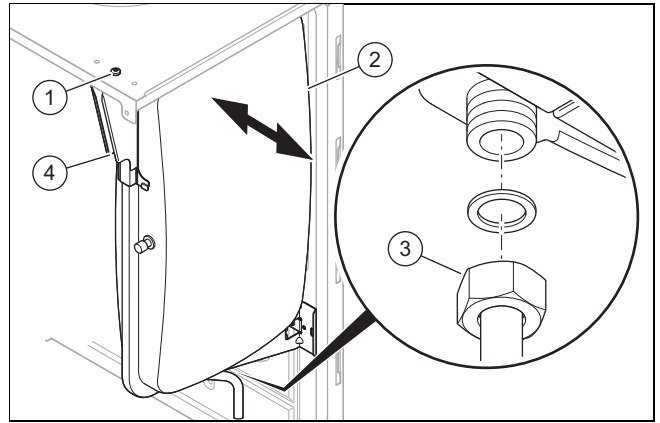


4. Remove the clips from the flow pipe (2) and the return pipe (1).
5. Loosen the pipes for the flow/return on the heat exchanger.



6. Remove the condensate discharge hose (4) from the heat exchanger (1).
7. If a front retainer (2) is available, remove the two screws from the retainer and remove the retainer.
8. Remove the screw (3) from the underside of the heat exchanger.
9. Pull the heat exchanger out to the front and downwards diagonally.
10. Insert the new heat exchanger into the grooves on the back panel.
11. Screw in a new screw tightly on the underside of the heat exchanger.
12. If you have removed an existing front retainer, use two screws each to screw the retainer in tightly.
13. Secure the condensate discharge hose on the heat exchanger.
14. Insert the flow/return pipes into the heat exchanger as far as they will go. When doing so, replace all of the seals.
15. Secure the clips to the flow/return pipe.
16. Install the compact thermal module. (→ Section 10.4.2)
17. Install the side casing. (→ Section 11.7.15)
18. Install the connector for the air/flue pipe. (→ Section 5.7.2.2)
19. Fill and purge the heating installation. (→ Section 7.7)
20. Purge the product. (→ Section 7.8)

11.7.8 Replacing the expansion vessel



1. Undo the nut (3).
2. Undo the screw (1) on the support plate (4) and remove the support plate.
3. Pull out the expansion vessel (2) to the side.
4. Insert the new expansion vessel into the product.
5. Screw in the nuts below the expansion vessel tightly. Use a new seal for this.
6. Use the screw to secure the support plate.
7. Fill and purge the heating installation. (→ Section 7.7)
8. Purge the product. (→ Section 7.8)

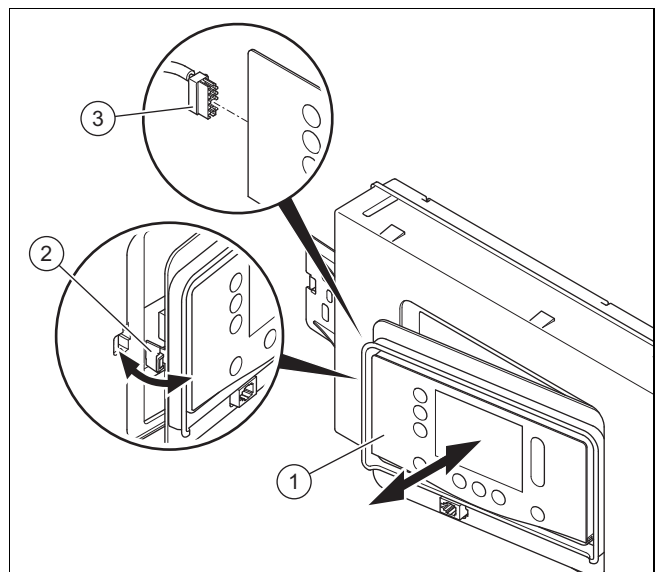
11.7.9 Replace the display



Note

Spare parts must only be used once.

If you only replace the display, when the product is switched on, the new display adopts the parameters that were previously set from the PCB that was not replaced. After replacing the display assembly, the **DSN code** (Device Specific Number) is transferred to the respective replaced assembly and is written to its memory, where it cannot be deleted.



1. Release the display (1) from the retainer (2) on the left-hand side.
2. Remove the plug (3) from the display.
3. Replace the display.

4. Plug the plug into the new display.
5. Install the display in the retainer.
6. Establish the power supply.
 - ◁ Data exchange takes place between the PCB and the display.

11.7.10 Replacing the PCB



Note

Spare parts must only be used once.

If fault **F.064** is present, check diagnostics code **D.166** before you replace the PCB.

If you only replace the PCB, when the product is switched on, the new PCB adopts the parameters that were previously set from the display that was not replaced. After replacing the PCB assembly, the **DSN code** (Device Specific Number) is transferred to the respective replaced assembly and is written to its memory, where it cannot be deleted.

1. Open the electronics box. (→ Section 5.8.4)
2. Replace the PCB in accordance with the set-up and installation instructions supplied.
3. Close the electronics box. (→ Section 5.8.12)
4. Establish the power supply.
 - ◁ Data exchange takes place between the PCB and the display.
5. If necessary, set the required offsets. (→ Section 11.7.11)

11.7.11 Replacing the PCB and the display



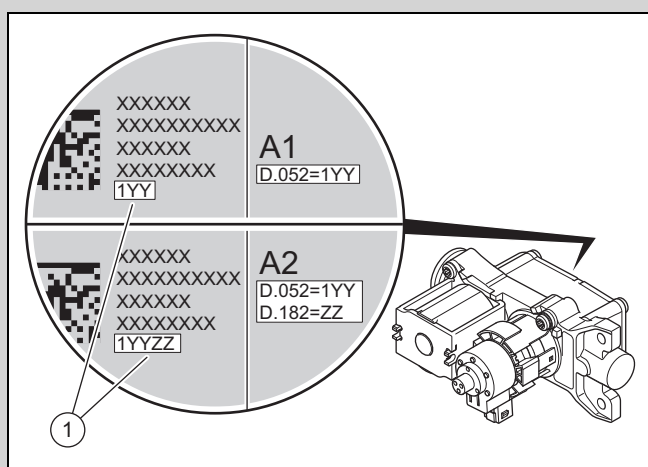
Note

Spare parts must only be used once.

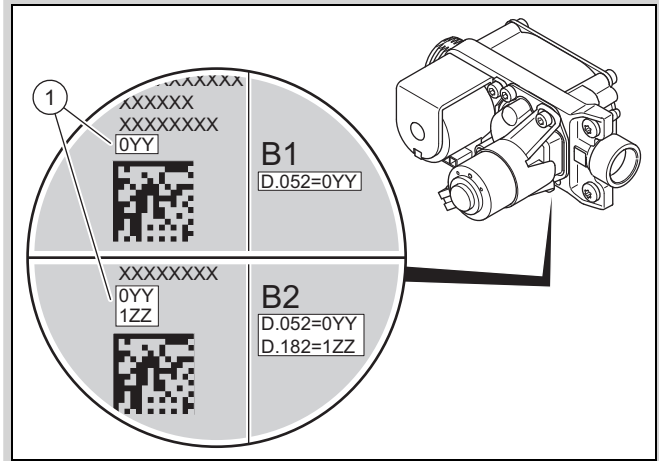
After replacing the display and PCB assemblies, all of the installation-specific settings are deleted.

If required, use the installation-specific settings, e.g. from the "Diagnostics codes" table in the appendix if they have been noted there. (→ Appendix B)

Condition: PCB and display defective; gas valve assembly version A1 or A2



Condition: PCB and display defective; gas valve assembly version B1 or B2



1. Read the offset **(1)** that is printed on the rear or underside of the new gas valve assembly. Use a mirror, for example. In a part replacement scenario, read the offset that is printed on the front of the gas valve assembly.
2. Open the electronics box. (→ Section 5.8.4)
3. Replace the PCB and display according to the set-up and installation instructions supplied.
4. Close the electronics box. (→ Section 5.8.12)
5. Replace the control electrode. (→ Section 11.7.13)
6. Install the front casing. (→ Section 7.11.3)
7. Establish the power supply.
8. Switch on the product. (→ Section 7.3)
 - ◁ After switching on, the product switches directly to the menu to select the language.
9. Select the required language.
10. Read the **DSN-Code** (Device Specific Number) from the data plate on the rear of the electronics box.
11. Set the correct value (via **D.093**) for the relevant product type. (→ Section 6.3)
 - ◁ The electronics are now set to the product type and the parameters of all diagnostics codes are set to factory settings.
 - ◁ The installation assistant starts.
12. To reconfigure the gas valve assembly, set the offsets in accordance with the table below. Note the version of the gas valve assembly and the gas family used.

Gas valve assembly version	Natural gas		Liquefied petroleum gas	
	D.052	D.182	D.052	D.182
A1	1YY	–	–	–
A2	1YY	–	1YY	ZZ
B1	0YY	–	0YY	1YY
B2	0YY	–	0YY	1ZZ

13. Check the CO₂ and O₂ content. (→ Section 7.11.4)

11.7.12 Replacing the ignition electrode

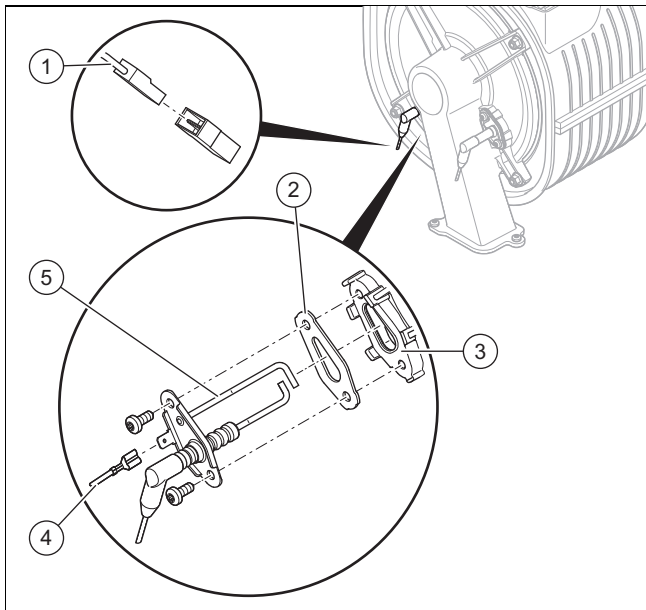


Danger!

Risk of death from hot flue gases!

Seals, screws and insulation on the control electrode and combustion chamber must not be damaged.

- ▶ Avoid damaging the burner insulating mat on the back panel of the combustion chamber cover.
- ▶ Replace the burner insulating mat as soon as it shows signs of damage.
- ▶ Replace the seal and screws each time you replace the ignition electrode.



1. Remove the earth cable (4).
2. Remove the plug (1) for the ignition electrode's cable.
3. Unscrew both screws.
4. Thread the ignition electrode (5) carefully out of the burner flange (3). Ensure that you do not damage the burner insulating mat on the rear of the combustion chamber cover.
5. Remove the sealing residue from the burner flange.
6. Insert the new ignition electrode with a new seal (2).



Note

Only touch the ignition electrode at the ceramic section. Cleaning the ignition electrode is prohibited.

7. Use two new screws to screw the ignition electrode in tightly.
 - Tightening torque: 3 Nm
8. Plug the plug for the ignition electrode's ignition line back in.
9. Plug the plug on the earth cable back in.

11.7.13 Replacing the control electrode



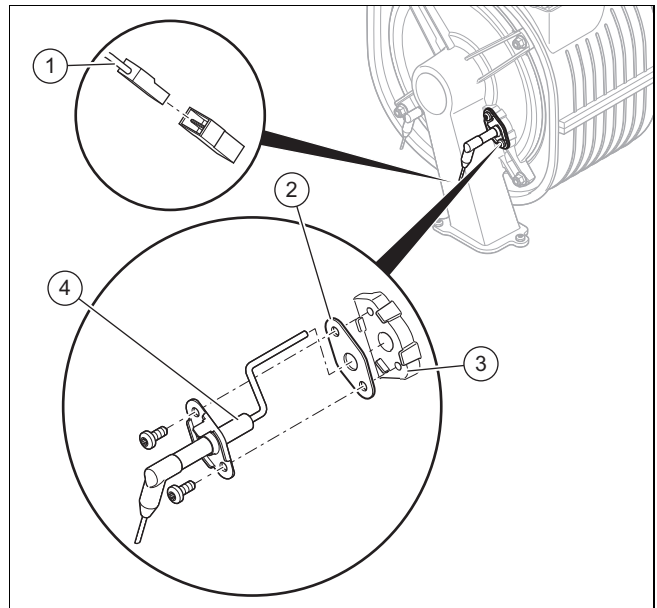
Danger!

Risk of death from hot flue gases!

Seals, screws and insulation on the control electrode and combustion chamber must not be damaged.

- ▶ Avoid damaging the burner insulating mat on the back panel of the combustion chamber cover.
- ▶ Replace the burner insulating mat as soon as it shows signs of damage.

- ▶ Replace the seal and screws each time you replace the control electrode.



1. Remove the plug (1) for the control electrode's cable.
2. Unscrew both screws.
3. Thread the control electrode (4) carefully out of the burner flange (3). Ensure that you do not damage the burner insulating mat on the rear of the combustion chamber cover.
4. Remove the sealing residue from the burner flange.
5. Insert the new control electrode with a new seal (2).



Note

Only touch the control electrode at the ceramic section. Cleaning the control electrode is prohibited.

6. Use two new screws to screw the control electrode in tightly.
 - Tightening torque: 3 Nm
7. Reconnect the plug for the control electrode's ignition line.
8. Install the front casing. (→ Section 7.11.3)
9. Open the gas stopcock.
10. Connect the product to the power supply.
11. Activate diagnostics code **D.147** via **D.146**. (→ Section 6.3)
12. Set diagnostics code **D.147** to **New electrode** (→ Section 6.3).
13. Check the CO₂ and O₂ content. (→ Section 7.11.4)

11.7.14 Routing wiring harnesses



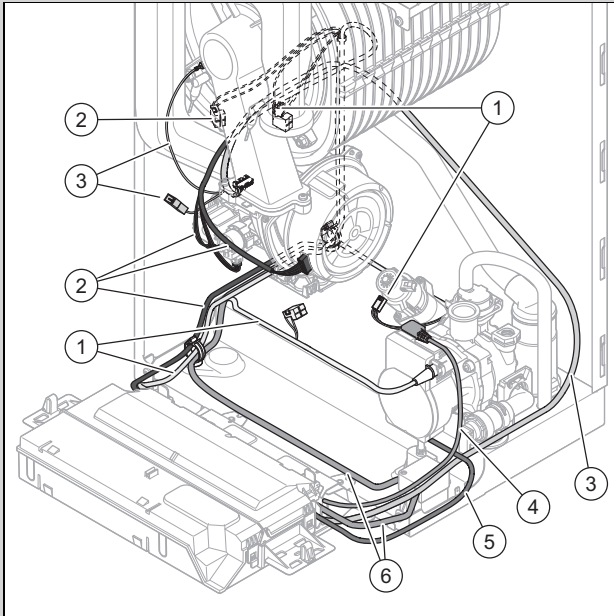
Note

High temperatures may damage wiring harnesses.

Incorrect routing of the wiring harnesses may lead to electromagnetic faults.

To prevent damage and faults, install the wiring harnesses as shown in the figure.

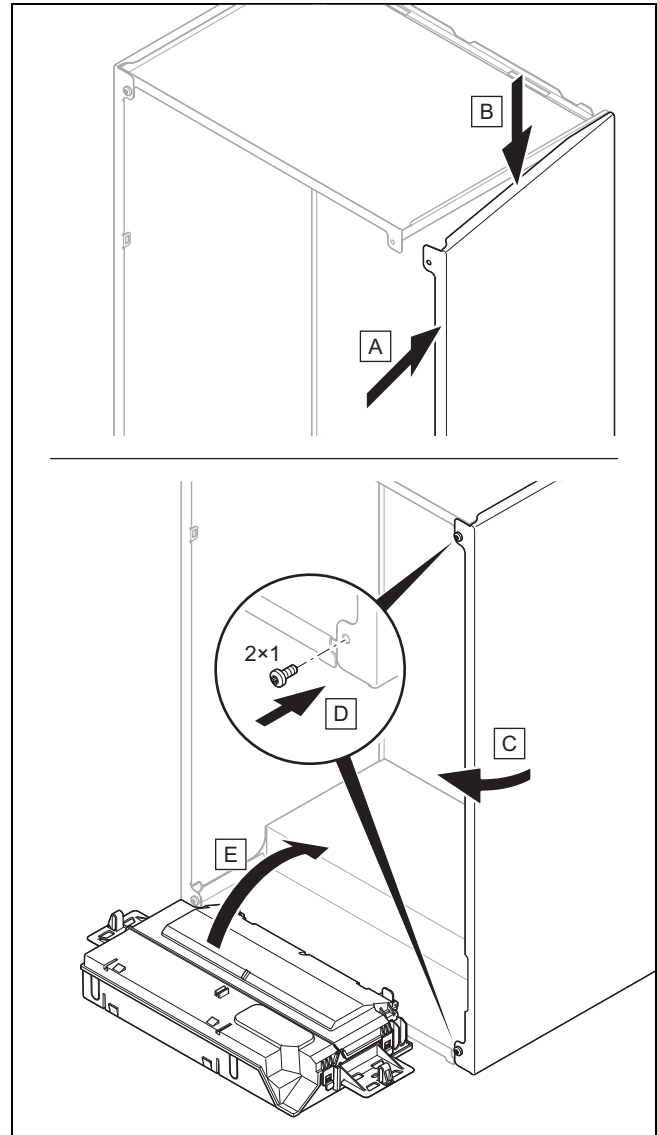
Validity: VU 15CS/1-5 (N-INT3) OR VU 25CS/1-5 (N-INT3) OR VU 30CS/1-5 (N-INT3) OR VUW 36CS/1-5 (N-INT3)



- | | | | |
|---|--|---|----------------------------|
| 1 | Hydraulics wiring harness (impeller water flow sensor, water pressure sensor, prioritising diverter valve) | 3 | Ignition wiring harness |
| 2 | Wiring harness (fan, gas valve assembly, temperature sensors) | 4 | High-efficiency pump cable |
| | | 5 | Socket cable |
| | | 6 | Power supply cable |

1. Install the wiring harnesses as shown in the figure.
2. When plugging in the plug, observe the colour coding.

11.7.15 Completing repair work



1. If you have removed the side casing, install it as shown in the figure.
2. Use two new screws to screw the side casing in tightly.
3. Open all service valves and the gas stopcock if this has not yet been done.
4. Check the product for tightness. (→ Section 7.15)
5. Install the front casing. (→ Section 7.11.3)
6. If required, install the front panel below the display.
7. If required, install the modules below the product (→ Module installation instructions).
8. Establish the power supply if this has not yet been done.
9. Switch the product back on if this has not yet been done.

12 Decommissioning

12.1 Temporarily decommissioning

1. Press the unit main switch on the underside of the product.
◁ The display goes out.
2. Close the gas stopcock.
3. On products with a connected domestic hot water cylinder, you must also close the cold-water isolation valve.

12.2 Permanently decommissioning

1. Drain the product. (→ Section 10.6)
2. Press the unit main switch on the underside of the product.
◁ The display goes out.
3. Disconnect the product from the power grid.
4. Close the gas stopcock.
5. On products with a connected domestic hot water cylinder, you must also close the cold-water isolation valve.

13 Disposing of the packaging

- Dispose of the packaging correctly.
- Observe all relevant regulations.

14 Customer service

For contact details for our customer service department, you can write to the address that is provided on the back page, or you can visit www.vaillant.com.

Appendix

A Installer level



Note

Since the code table is used for various products, some codes or some steps may not be visible in the installation assistant.

Setting level	Values		Unit	Increment, select, explanation	Factory setting
	Min.	Max.			
Enter access code	0	99		1 (competent person code 17)	
Data overview	Current value				
Installation assistant					
→ Language:				Languages available for selection	Country-specific
Enter access code	0	99		1 (competent person code 17)	
→ Date:				Current date	
→ Time:				Current time	
→ Device Specific Number (DSN)	0	250		Setting the Device Specific Number (only displayed in a double part replacement scenario for the display and PCB)	
→ Fill the installation with water				Check the filling pressure and, if required, top up the heating installation.	
Note on manual purging				Before the next step, ensure that the heating circuit and domestic hot water circuit have been manually purged.	
→ Gas type selection				0: Not selected 1: Natural gas 2: Propane 30/37 mbar 3: Special gas FR 4: Special gas GB 5: Special gas IT 6: Propane 50 mbar 7: Ls gas Only the selection for the product in question is shown here. If your product can be converted to liquefied petroleum gas and liquefied petroleum gas is selected, the corresponding stickers must be affixed. (→ Section 7.16)	
→ Offset: Gas valve stepper motor	101	183		This value corresponds to diagnostics code D.052 if the offset is specified on the rear of the gas valve assembly (only displayed in a double part replacement scenario for the display and PCB). In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11)	
	20	70		This value corresponds to diagnostics code D.052 if the offset is specified on the underside of the gas valve assembly (only displayed in a double part replacement scenario for the display and PCB). In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11)	
→ Offset: Gas valve assy step. motor 2	1	80		This value corresponds to diagnostics code D.182 if the offset is specified on the rear of the gas valve assembly (only displayed in a double part replacement scenario for the display and PCB). In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11) Valid for products with liquefied petroleum gas set as the gas type.	
* Select the optimum operating point for the on-site installation.					

Setting level	Values		Unit	Increment, select, explanation	Factory setting
	Min.	Max.			
→ Offset: Gas valve assy step. motor 2	101	199		This value corresponds to diagnostics code D.182 if the offset is specified on the underside of the gas valve assembly (only displayed in a double part replacement scenario for the display and PCB). In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11) Valid for products with liquefied petroleum gas set as the gas type.	
→ Single flue installation				Adjustment takes place automatically after the selection is made. Product-dependent	
→ Air/flue pipe type				0: Single-flue configuration 1: Multiple-flue configuration (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and mass air flow sensor, → installation instructions for the conversion set) Basic diagram 1 → Cascade Basic diagram 2 → unit type C(10)3/C(12)3 Basic diagram 3 → unit type C(11)3/C(13)3 Basic diagram 4→ Unit type C(14)3 Basic diagram 5→ Replacing products from other generations on multiple-flue systems for excess pressure and cascades Applies for basic diagram 5: ► Check and, if required, set the maximum load in domestic hot water mode. ► Check and, if required, set the maximum load in heating mode.	
→ Hydraulic operating mode	0	4		0: Without bypass, Δp-const. 1: W/o bypass, Δp-const.,kick 2: Bypass, Δp-const. 3: Spread ΔT 4: Fixed pump stage	*
→ Adjust the available pressure			mbar	This selection depends on the setting Hydraulic operating mode .	
→ Spread setting			K	This selection depends on the setting Hydraulic operating mode .	
→ Pump stage setting			%	This selection depends on the setting Hydraulic operating mode .	
→ Weather-comp. control system				0: Deactivated 1: Activated This function must be activated if an outdoor temperature sensor is installed and there is no room control.	
→ Heat curve	0.1	4.0		Increment: 0.05 Product-dependent (→ Section 8.3.9)	1.2
→ Installer contact info				Company, Phone number	
Assistant for hydraulic balancing					
Check programmes					
→ P.XXX	Current value			You can find more detailed information in the table of check programmes.	
Electronics self-test				Not active.	
Actuator test					
→ T.XXX	Current value			You can find more detailed information in the table of actuator tests.	
Diagnostics codes					
→ D.XXX	Current value			You can find more detailed information in the table of diagnostics codes.	

* Select the optimum operating point for the on-site installation.

Setting level	Values		Unit	Increment, select, explanation	Factory setting
	Min.	Max.			
Fault history					
→ F.XXX	Current value			Fault codes are only displayed and can only be deleted if faults have occurred. You can find more detailed information in the table of fault codes.	
Limp home mode history					
→ L.XXX → N.XXX	Current value			Reversible codes Irreversible codes You can find more detailed information in the table of LHM codes.	
Maintenance codes					
→ I.XXX	Current value			You can find more detailed information in the table of maintenance codes.	
Factory settings?				No, Yes	
Installation configuration (can only be selected if a control module is installed)					
→ Status:				S.XXX	
→ Heating	Current value		°C	Target flow temp.:	
	Current value		°C	Actual flow temperature:	
	10	99	°C	OT switch-off threshold:	20
	0.10	4.00		Heat curve:	1.2
	30	80	°C	Min. target flow temp.:	30
	40	80	°C	Max. target flow temp.:	40
				Set-back mode: Eco, Reduced	Reduced
→ DHW				Circ. pump: Off, On	Off
				Anti-legio. day: Off, Daily, Day of the week	Off
				Anti-legio. time:	
→ Screed drying profiles	0	90	°C	Display and set the target flow temperature for Day 1 to 29.	
Screed drying (can only be selected if a control module is installed)				Activates screed drying for freshly laid screed in accordance with the settings under Screed drying profiles . Drying day: Screed-drying temp.: °C	
* Select the optimum operating point for the on-site installation.					

B Diagnostics codes



Note

Since the code table is used for various products, some codes may not be visible or cannot be set for the product in question.

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.000 Maximum load in heating mode	Product-dependent		kW	Adjustable partial heat load: The adjustment range can be viewed in the technical data. Not all products have an adjustment range. Auto: Product automatically adjusts the max. partial heat load to the current system demand.	Auto	
D.001 Heating pump overrun time	1	60	min	1 Overrun time of internal heating pump for heating mode	5	

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.002 Maximum burner anti-cycling time	2	60	min	1 Maximum heating burner anti-cycling time at 20 °C flow temperature	20	
D.003 Domestic hot water temperature, actual value	Current value		°C	1		
D.004 Domestic hot water cylinder temperature	Current value		°C	Measured value for the cylinder temperature sensor.		
D.005 Target heating flow temperature value	Current value		°C	The maximum value that is set in D.071 and is restricted by means of an eBUS control (if connected).		
D.006 Domestic hot water temperature target value	Current value		°C		35	
D.008 Room temperature control status (230V)				Off, On		
D.009 Target value for the eBUS control	Current value			Displayed if a control is connected.		
D.010 Status of the heating pump	Current value			Off, On		
D.011 Status of the external pump	Current value			Off, On		
D.012 Status of cylinder charging pump	Current value			Off, On		
D.013 Status of circulation pump	Current value			Off, On		
D.015 Actual pump speed	Current value		%			
D.016 Room temperature control status (24V)	Current value			Off, On		
D.017 Heating control type				Flow temperature control Return temp. control (If you have activated the return temperature control, the automatic heat output determination function is not active.)	Flow temperature control	
D.018 Heating pump operating mode				Permanent (pump runs while there is a demand from the room temperature control) Eco (pump runs intermittently after burner operation. Pump cycle: 5 minutes on/25 minutes off.)	Eco	
D.020 Setting the max. domestic hot water temperature	50	70	°C	1 Only products with domestic hot water generation	70 (Boiler) 65 (Combi boiler)	
D.021 Status of warm start for DHW	Current value			Off, On		
D.022 Status of DHW demand	Current value			Off, On		
D.023 Status of the heat demand	Current value			Off, On		
D.025 Status of the eBUS control's domestic hot water demand	Current value			Off, On (Displayed if a control is connected.)		

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.026 Function of internal additional relay D.027 Function of ext. accessory relay 1 D.028 Function of ext. accessory relay 2	1	9		1: Circulation pump 2: External pump 3: Cylinder charging pump 4: Extraction hood 5: External solenoid valve 6: External fault message 8: eBUS remote control 9: Anti-legionella pump 10: Solar cyl. bypass valve	2	
D.029 Heating circuit flow rate	Current value		l/h	Current flow rate quantity via the water flow sensor		
D.031 Automatic filling device	Current value			1. Semi-automatic 2. Automatic		
D.033 Target fan speed value	Current value		rpm			
D.034 Actual fan speed value	Current value		rpm			
D.035 3-port valve position	Current value		%	0: Heating position 1: Mid-position (centre position) 2: DHW	1	
D.036 Domestic hot water circuit flow rate	Current value		l/min	Current flow rate quantity via the water flow sensor impeller		
D.039 Actual DHW inlet temperature value	Current value		°C			
D.040 Flow temperature actual value	Current value		°C			
D.041 Return temperature actual value	Current value		°C			
D.043 Heat curve	0.1	4.0		0.05	1.2	
D.045 Heat curve offset	5	30	°C	1	21	
D.047 Outdoor temperature	Current value		°C	Only in conjunction with an outdoor temperature sensor.		
D.052 Offset: Gas valve assy step. motor	101	183		The offset is specified on the rear of the gas valve assembly. In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11)	Product-dependent	
	20	70		The offset is specified on the underside of the gas valve assembly. In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11)	Product-dependent	

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.058 Solar circuit post-heating	3	5		3: Min. target DHW val. 60 °C 5: Auto Outlet temperature 40 °C: - At an inlet temperature ≤ 35 °C, the heat generator starts in order to reach the set outlet temperature. - At an inlet temperature > 35 °C, the heat generator stops or does not start. If the inlet temperature is < 30 °C, the heat generator starts again. Outlet temperature 60 °C: - At an inlet temperature ≤ 55 °C, the heat generator starts in order to reach the set outlet temperature. - At an inlet temperature > 55 °C, the heat generator stops or does not start. If the inlet temperature is < 50 °C, the heat generator starts again. Only for products with integrated domestic hot water generation.	5	
D.060 Number of overheating faults	Current value					
D.061 Number of ignition faults	Current value					
D.062 Night set-back	0	30	°C	1	0	
D.064 Average ignition time	Current value		s			
D.065 Maximum ignition time	Current value		s			
D.066 Warm start activation				Warm start deactivated Warm start activated	Product-dependent	
D.067 Remaining burner anti-cycling time	Current value		min			
D.068 Number of unsuccessful ignitions at 1st attempt	Current value					
D.069 Number of unsuccessful ignitions at 2nd attempt	Current value					
D.070 3-port valve setting	0	2		0: Auto 2: Heating position Only for products without integrated domestic hot water generation.	0	
D.071 Maximum target flow temperature	40	80	°C	1	75	
D.072 Pump overrun after cylinder charging	0	10	min	Internal pump	2	
D.073 Offset: Target warm start value	-15	5	K	1	0	
D.074 Anti-legionella function with cyl.				Off, On	On	
D.075 Maximum duration of the cylinder charging	20	90	min	1	45	

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.077 Maximum load in domestic hot water mode	Output-dependent		kW	1	Max. load	
D.078 Maximum target flow temperature value for domestic hot water	50	80	°C	1 Note The chosen value must be at least 15 K or 15 °C above the set target cylinder value.	75	
D.080 Operating hours, heating	Current value		h			
D.081 DHW operating hours	Current value		h			
D.082 Burner starts in heating mode	Current value					
D.083 DHW burner starts	Current value					
D.084 Operating hours until service	"--"	7000	h	1 "--" = Deactivated	5000	
D.085 Minimum load for the unit	Output-dependent		kW	1	Min. load	
D.088 Minimum domestic hot water flow rate	Current value			1.5 l/min (no delay) 3.7 l/min (2 s delay)		
D.090 eBUS control				Not recognised Recognised		
D.091 Status of the DCF connection				No reception Data reception Synchronised Valid		
D.092 Shift-load cylinder				Not connected Communication fault Connection active		
D.093 Device Specific Number (DSN)	Current value				Product-dependent	
D.094 Delete fault history				No, Yes		
D.095 Software versions	Current value					
D.096 Factory settings?				No, Yes		
D.098 Coding resistor value				Coding resistor 1 Coding resistor 3		
D.124 Smart ECO, current status	Current value					
D.125 Domestic hot water cylinder outlet temperature	Current value		°C			
D.128 Minimum heating target flow temperature	Current value		°C		40	
D.129 Minimum target domestic hot water value	Current value		°C		40	

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.145 Deactivate detection: Air/flue pipe blocked	Current value			Diagnostics code for deactivating the check of the flue gas blockage. Only use this diagnostics code if the product displays fault code F.235 during the initial start-up. After the air/flue pipe has been checked and any blockage has been removed, the check of the flue gas blockage must be deactivated via D.145 .		
D.146 Enable control electrode replacement				No, Yes		
D.147 Replace control electrode				No New electrode (New electrode can only be selected if D.146 is enabled)		
D.156 Enable gas conversion				Enable gas conversion; gas type selected		
D.157 Gas type selection				0: Not selected 1: Natural gas 2: Propane 30/37 mbar 3: Special gas FR 4: Special gas GB 5: Special gas IT 6: Propane 50 mbar 7: Ls gas Only the selection for the product in question is shown here.	Product-dependent	
D.158 Gas-air ratio setting	0	-5		0: Standard value -1: Weakening 1 -2: Weakening 2 -3: Weakening 3 -4: Weakening 4 -5: Weakening 5 For natural gas operation only.	0	
D.159 Switching procedure anti-cycl. time				Deactivated, Activated Switching procedure anti-cycling time between domestic hot water and heating mode.	Activated	
D.160 Target water pressure value	1.0	2.0	bar	0.1 Product-dependent	1.5	
D.161 Service date	Current value				Current date + one year	
D.162 Weather-compensated control system				0: Deactivated 1: Activated Only applies if an outdoor temperature sensor is installed but there is no room control. Product-dependent	1	
D.163 Function of int. accessory relay 2				1: Circulation pump 11: Automatic filling device On products with an automatic filling device, the factory setting is 11.	Product-dependent	
D.164 Single flue system	-5	5		To compensate for the pressure losses through the air/flue pipe, a setting is required in the installation assistant (country-specific) or the diagnostics code D.164 .	0	

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.166 ADC fault index	0	20		1: Check the flow temperature sensor 2: Check the return temperature sensor 5: Check the heat cell coding resistor 7–8: Check the ignition electrode 9: Check the DHW inlet temperature sensor 15: Check the fan coding resistor 17, 19, 20: Check the control electrode >30: Replace the PCB		
D.167 Cylinder connection	0	1		0: Cylinder not connected 1: Cylinder connected	0	
D.170 Hydraulic operating mode	0	4		0: Without bypass, Δp-const. 1: W/o bypass, Δp-const.,kick 2: Bypass, Δp-const. 3: Spread ΔT 4: Fixed pump stage The diagnostics codes D.171 - D.175 refer to the selection in D.170 .	Product-dependent	
D.171 Target pressure level value	100	400	mbar	Valid for Without bypass, Δp-const., W/o bypass, Δp-const.,kick and Bypass, Δp-const..	200	
D.172 Target spread value	Current value		K	Valid for Spread ΔT.	20	
D.173 Minimum pressure level	Current value		mbar	Valid for Spread ΔT.	100	
D.174 Maximum pressure level	Current value		mbar	Valid for W/o bypass, Δp-const.,kick, Bypass, Δp-const. and Spread ΔT.	400	
D.175 Pump stage	Current value		%	10 Valid for Fixed pump stage.	100	
D.182 Offset: Gas valve assy step. motor 2	1	80		The offset is specified on the rear of the gas valve assembly. In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11) Valid for products with liquefied petroleum gas set as the gas type.	Product-dependent	
	101	199		The offset is specified on the underside of the gas valve assembly. In a part replacement scenario, the offset is specified on the front of the gas valve assembly. (→ Section 11.7.11) Valid for products with liquefied petroleum gas set as the gas type.	Product-dependent	
D.185 Configuration type setting	0	1		0: Single-flue configuration 1: Multiple-flue configuration Multiple-flue configuration can only be selected if D.187 is enabled.	0	

Diagnostics code	Values		Unit	Increment, select, explanation	Setting	
	Min.	Max.			Factory	Current
D.186 Multiple-flue system diagram	0	5		0: Not selected 1: Basic diagram 1 → Cascade 2: Basic diagram 2 → Unit type C(10)3/C(12)3 3: Basic diagram 3 → Unit type C(11)3/C(13)3 4: Basic diagram 4 → Unit type C(14)3 5: Basic diagram 5 → Replacing products from other generations on multiple-flue systems for excess pressure and cascades (Only visible if Multiple-flue configuration is selected under D.185 . Only the selection for the product in question is shown here.)	0	
D.187 Enable flue system config.				Enable flue sys./diag. sel. Flue sys./diagram selected (only visible if the conversion set comprising air intake pipe with integrated non-return valve and mass air flow sensor is installed)	Product-dependent	

C Status codes



Note

Since the code table is used for various products, some codes may not be visible for the product in question.

Code	Meaning
S.000	There is no demand for heating mode.
S.001	Heating mode is active and the fan is in prerun mode.
S.002	Heating mode is active and the heating pump is in prerun mode.
S.003	Heating mode is active and the unit ignites.
S.004	Heating mode is active and the burner is operating.
S.005	Heating mode is active and the heating pump and fan are in overrun mode.
S.006	Heating mode is active and the fan is in overrun mode.
S.007	Heating mode is active and the heating pump is in overrun mode.
S.008	Heating mode is active and the unit is in burner anti-cycling time.
S.009	The heating mode is active and the unit carries out an automatic drift adaptation of the control electrode in order to offset the ageing of the electrode.
S.010	There is no demand for domestic hot water draw-off.
S.011	The domestic hot water draw-off is active and the fan is starting up.
S.012	The domestic hot water draw-off is active and the heating pump is in prerun mode.
S.013	The domestic hot water draw-off is active and the unit ignites.
S.014	The domestic hot water draw-off is active and the burner is operating.
S.015	The domestic hot water draw-off is active and the heating pump and fan are in overrun mode.
S.016	The domestic hot water draw-off is active and the fan is in overrun mode.
S.017	The domestic hot water draw-off is active and the heating pump is in overrun mode.
S.019	Domestic hot water draw-off is active and the unit carries out an automatic drift adaptation of the control electrode in order to offset the ageing of the electrode.
S.020	There is no demand for the domestic hot water cylinder charging.
S.021	The domestic hot water cylinder charging is active and the fan starts.
S.022	The domestic hot water cylinder charging is active and the pump is in prerun mode.
S.023	The domestic hot water cylinder charging is active and the unit ignites.
S.024	The domestic hot water cylinder charging is active and the burner is operating.

Code	Meaning
S.025	The domestic hot water cylinder charging is active and the pump and fan are in overrun mode.
S.026	The domestic hot water cylinder charging is active and the fan is in overrun mode.
S.027	The domestic hot water cylinder charging is active and the heating pump is in overrun mode.
S.028	The domestic hot water cylinder charging is active and the unit is in burner anti-cycling time.
S.029	The domestic hot water cylinder charging is active and the unit carries out an automatic drift adaptation of the ionisation electrode in order to offset the ageing of the electrode.
S.030	No demand is present for the thermostat. Heating mode is blocked.
S.031	Heating mode has been deactivated and there is no domestic hot water demand.
S.032	The fan is restarted due to an excessive deviation in speed.
S.034	The frost protection function is active.
S.039	The floor surface-mounted thermostat or condensate pump blocks the burner operation. The unit is in a waiting period.
S.041	The water pressure in the heating system is too high.
S.042	An external unit (e.g. condensate pump or external flue non-return flap) is blocking the burner operation. The unit is in a waiting period.
S.054	Due to a water deficiency, the unit is in a waiting period.
S.057	The limp home mode for the combustion regulation blocks the burner operation. The unit is in a waiting period.
S.059	Heat demand available. The circulation water volume is not sufficient for a burner start.
S.088	The purge programme is active.
S.091	The presentation mode is active with limited functionality.
S.092	The self-test for the circulation water volume is active.
S.093	A flue gas analysis is not currently possible.
S.096	The self-test for the return temperature sensor is active. The heat demands are blocked.
S.097	The self-test for the water pressure sensor is active. The heat demands are blocked.
S.098	The self-test for the flow and return temperature sensor is active. The heat demands are blocked.
S.109	The standby mode is active.
S.175	The installation assistant is in progress and all demands are blocked.
S.199	The unit is automatically filled with water.
S.326	The hydraulic sensor and actuator test is active.
S.328	The external pump runs continuously and is not connected to the unit.
S.335	Checking whether a flue gas blockage is present.
S.341	The unit temporarily decreases the load to the minimum modulation due to long, permanent burner operation.
S.599	The unit has a fault.

D Fault codes



Note

Since the code table is used for various products, some codes may not be visible for the product in question.



Note

Due to a condensate blockage test after the last ignition attempt, fault messages **F.028**, **F.029** and **F.347** appear after a delay. Wait for the fault displays.

Code/meaning	Possible cause	Measure
F.000 The signal for the flow temperature sensor has been interrupted.	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
F.001 The signal for the return temperature sensor has been interrupted.	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.

Code/meaning	Possible cause	Measure
F.001 The signal for the return temperature sensor has been interrupted.	Return temperature sensor defective	► Check and, if required, replace the return temperature sensor.
F.002 The signal for the domestic hot water connection temperature sensor has been interrupted.	Fault in the electrical connection for the domestic hot water temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Domestic hot water temperature sensor defective	► Check and, if required, replace the domestic hot water temperature sensor.
F.003 The signal for the cylinder temperature sensor has been interrupted.	Fault in the electrical connection for the cylinder temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Cylinder temperature sensor defective	► Check and, if required, replace the cylinder temperature sensor.
F.010 The flow temperature sensor has short-circuited.	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
F.011 The return temperature sensor has short-circuited.	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Return temperature sensor defective	► Check and, if required, replace the return temperature sensor.
F.012 The domestic hot water connection temperature sensor has short-circuited.	Fault in the electrical connection for the domestic hot water temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Domestic hot water temperature sensor defective	► Check and, if required, replace the domestic hot water temperature sensor.
F.013 The cylinder temperature sensor has short-circuited.	Fault in the electrical connection for the cylinder temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Cylinder temperature sensor defective	► Check and, if required, replace the cylinder temperature sensor.
F.020 The safety cut-out (SCO) interrupts the gas valve control. The gas valve was closed because the temperature of the flow or return temperature sensor has exceeded the maximum limit.	Insufficient/no water in the product.	1. Fill the heating installation. 2. Check the product and the system for leakages.
	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
	Return temperature sensor defective	► Check and, if required, replace the return temperature sensor.
	The pump is defective.	► Check and, if required, replace the pump.
	3-port diverter valve defective or blocked	► Check and, if required, replace the 3-port diverter valve.
	Water pressure sensor defective	► Check and, if required, replace the water pressure sensor.
	Volume flow sensor defective	► Check and, if required, replace the volume flow sensor.
	Black discharge via the ignition cable, ignition plug or ignition electrode	► Check the ignition cable, ignition plug and ignition electrode.
F.022 No/insufficient water in the product or the water pressure is too low.	Insufficient/no water in the product.	1. Fill the heating installation. 2. Check the product and the system for leakages.
	Fault in the electrical connection for the water pressure sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Cable for the pump/for the water pressure sensor is loose/not connected/defective	► Check the cable for the pump/for the water pressure sensor.
	Water pressure sensor defective	► Check and, if required, replace the water pressure sensor.

Code/meaning	Possible cause	Measure
F.022 No/insufficient water in the product or the water pressure is too low.	Pump operation interrupted	► Check and, if required, replace the cable to the pump/to the water pressure sensor.
	Solenoid valve for the automatic filling device defective	► Check the automatic filling device and replace it, if necessary.
	Internal expansion vessel defective	► Check and, if required, replace the internal expansion vessel.
F.023 The temperature spread between the flow/return is too great.	Air in the product	► Purge the heating installation.
	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
	Return temperature sensor defective	► Check and, if required, replace the return temperature sensor.
	Pump blocked	► Check that the pump is working correctly.
	Pump runs with insufficient output	► Check that the pump is working correctly.
	3-port diverter valve defective or blocked	► Check and, if required, replace the 3-port diverter valve.
	Internal expansion vessel defective	► Check and, if required, replace the internal expansion vessel.
F.024 The temperature increases too quickly.	Air in the product	► Purge the heating installation.
	System pressure too low	► Check the system pressure.
	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
	Return temperature sensor defective	► Check and, if required, replace the return temperature sensor.
	Pump blocked	► Check that the pump is working correctly.
	Pump runs with insufficient output	► Check that the pump is working correctly.
	3-port diverter valve defective or blocked	► Check and, if required, replace the 3-port diverter valve.
F.025 The flue gas temperature is too high.	Wiring harness defective	► Check the wiring harness including all plug connections and, if required, replace it (PCB plug X20, contact 14/15).
	If present: Flue gas temperature monitor has triggered	► Check and, if required, replace the flue gas temperature monitor.
F.027 A flame signal has been detected while the burner is off.	Gas solenoid valve not leak-tight	► Check that the gas valve assembly is working correctly and, if required, replace it.
	PCB defective	► Replace the PCB.
F.028 The flame signal was not detected during the ignition phase.	Hard ignition takes place	1. Check the heat exchanger, siphon, siphon adapter, siphon hose (connection between the primary heat exchanger and the siphon, and siphon hose outside of the product), flue pipe adapter, unit housing, front casing and side section for possible damage. 2. If required, replace any damaged parts immediately.
	Gas isolator cock closed	► Open the gas isolator cock.
	Gas connection pressure too low	► Check the gas connection pressure.
	Air in the gas supply (e.g. during initial start-up)	► Reset the unit once.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .

Code/meaning	Possible cause	Measure
F.028 The flame signal was not detected during the ignition phase.	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Ignition failed	1. Check the ignition using check programme P.021 . 2. Product starts: Ignition electrode, ignition transformer, gas valve assembly and fan are working, gas is flowing and the gas volume is correct, no blockage or recirculation detected. 3. Product does not start and displays a fault code again: Carry out the next check for the cause.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Control electrode comes into contact with the burner	1. Check the clearance between the control electrode and the burner. 2. Check and, if required, replace the control electrode.
	Ignition electrode defective	► Check and, if required, replace the ignition electrode.
	Ignition failed (for liquefied petroleum gas only)	► Run check programme P.022 .
	Burner defective	► Check and, if required, replace the burner.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Earthing defective	► Check the product's earthing.
	Ionisation flow interrupted	► Check the control electrode, the connection cable and the plug connection.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Ignition transformer not connected	► Check the plug and the plug connection.
	Defective ignition transformer	► Check that the ignition transformer is working correctly and, if required, replace it.
	PCB defective	► Replace the PCB.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
F.029 The ignition following a flame loss during operation was unsuccessful.	The gas supply is interrupted	► Check the gas supply.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Earthing defective	► Check the product's earthing.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Ignition failed	1. Check the ignition using check programme P.021 . 2. Product starts: Ignition electrode, ignition transformer, gas valve assembly and fan are working, gas is flowing and the gas volume is correct, no blockage or recirculation detected. 3. Product does not start and displays a fault code again: Carry out the next check for the cause.
	Ignition misfire	► Check that the ignition transformer works correctly.
	Control electrode comes into contact with the burner	1. Check the clearance between the control electrode and the burner. 2. Check and, if required, replace the control electrode.
	Burner defective	► Check and, if required, replace the burner.

Code/meaning	Possible cause	Measure
F.029 The ignition following a flame loss during operation was unsuccessful.	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Ignition electrode defective	► Check and, if required, replace the ignition electrode.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
F.032 The fan speed is outside of the tolerance.	Fault in the electrical connection for the fan	► Check the wiring harness between the PCB and fan, including all plug connections.
	Fan blocked	► Check that the fan works correctly.
	Fan defective	► Check and, if required, replace the fan.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	PCB defective	► Replace the PCB.
F.035 The air/flue pipe is blocked.	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
	Insufficient combustion air supply	► Check the combustion air supply.
	Control electrode defective	► Check and, if required, replace the control electrode.
	Burner defective	► Check and, if required, replace the burner.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
F.040 The air ratio is too low.	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .

Code/meaning	Possible cause	Measure
F.040 The air ratio is too low.	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Fault in the electrical connection for the gas valve assembly	► Check and, if required, replace the wiring harness for the gas valve assembly.
	Gas valve assembly not electrically connected/incorrectly connected	► Check the electrical connection to the gas valve assembly.
	Control electrode defective	► Check and, if required, replace the control electrode.
	Burner defective	► Check and, if required, replace the burner.
	PCB defective	► Replace the PCB.
	Fan defective	► Check and, if required, replace the fan.
	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.
F.042 The coding resistor (in the wiring harness) or the gas group resistor (on the PCB, if available) is invalid.	Interruption in the wiring harness to the fan	► Check the wiring harness between the PCB and fan, including all plug connections (especially on the PCB).
	Using an incorrect wiring harness between the PCB and gas valve assembly	► Check the article number of the wiring harness between the PCB and the gas valve assembly or heat cell, and replace the wiring harness if necessary.
	Heat cell coding resistor is not detected	► Check the coding resistor (PCB plug X25, contact 11/12).
F.044 The ionisation signal for the control electrode is too low. The drift adaptation has failed.	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Burner defective	► Check and, if required, replace the burner.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Control electrode defective	► Check and, if required, replace the control electrode.
	Gas valve defective	► Replace the gas valve.
	PCB defective	► Replace the PCB.
	Fault in the electronic connection for the cylinder outlet temperature sensor	► Check the wiring harness between the PCB and sensor, including all plug connections.
	Cylinder outlet temperature sensor defective	► Replace the cylinder outlet temperature sensor.
F.047 The signal for the domestic hot water temperature sensor at the output for the internal cylinder is implausible.		

Code/meaning	Possible cause	Measure
F.049 The eBUS has short-circuited or two active eBUS sources have inverted polarity.	Short circuit in the eBUS connection	► Check all eBUS connections.
	Different polarities at the eBUS connection	► Check the polarity ($\pm$) of the eBUS connections.
	PCB defective	► Replace the PCB.
F.057 The combustion regulation has failed and the associated limp home mode has failed.	Limp home mode failed	► Check the limp home mode and fault history, and carry out the required measures.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	PCB defective	► Replace the PCB.
	Fan defective	► Use D.033 and D.034 to check whether the fan speed deviates by more than 20–30 rpm.
F.061 The ASIC or μ Control does not run in the defined times.	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.
	Fault in the electrical connection for the gas valve assembly	► Check and, if required, replace the wiring harness for the gas valve assembly.
	PCB defective	► Replace the PCB.
F.062 The flame switch-off was detected after a delay.	Gas valve defective	► Replace the gas valve.
	PCB defective	► Replace the PCB.
	Ignition electrode defective	► Check and, if required, replace the ignition electrode.
F.063 EEPROM reports faults during the read/write test.	PCB defective	► Replace the PCB.
F.064 The sensor signal could not be converted correctly.	Sensor defective	► Check the sensor displayed under D.166 .
	PCB defective	► If the displayed value for D.166 is > 30 and is not listed, replace the PCB.
F.065 The permissible operating temperature range for an electronic component has been exceeded.	Electronics overheated	► Check the external heat effects on the electronics.
	PCB defective	► Replace the PCB.
F.067 The flame monitor is defective.	Implausible flame signal	► Check the flame signal.
	PCB defective	► Replace the PCB.
F.068 The flame monitor reports an unstable signal.	PCB defective	► Replace the PCB.

Code/meaning	Possible cause	Measure
F.070 The Device Specific Number (DSN) is incorrect, missing or does not match the coding resistor.	Device Specific Number not set correctly following simultaneous replacement of the PCB and display	1. Set the correct Device Specific Number. 2. Following simultaneous replacement of the PCB and display, replace the control electrode.
	Fault in the electrical connection for the gas valve assembly	► Check the wiring harness between the PCB and gas valve assembly, including all plug connections.
F.071 Flow temperature sensor returns implausible values.	Flow temperature sensor in the incorrect position	► Check the positioning of the flow temperature sensor.
	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
F.072 The temperature spread between the flow and return temperature sensor is invalid.	Flow temperature sensor defective	► Check and, if required, replace the flow temperature sensor.
	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Return temperature sensor defective	► Check and, if required, replace the return temperature sensor.
	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
F.074 The signal for the water pressure sensor has been interrupted.	Fault in the electrical connection for the water pressure sensor	► Check the wiring harness including all plug connections and, if required, replace it.
	Water pressure sensor defective	► Check and, if required, replace the water pressure sensor.
F.075 The pressure change is too low when the heating pump is started up.	Water pressure sensor defective	► Check and, if required, replace the water pressure sensor.
	Internal heating pump defective	► Replace the internal heating pump.
	System pressure too low	► Check the system pressure.
	Internal expansion vessel defective	► Check and, if required, replace the internal expansion vessel.
	Insufficient/no water in the product.	1. Fill the heating installation. 2. Check the product and the system for leakages.
	Air in the product	► Purge the heating installation.
	Open circuit in wiring harness (LIN cable)	► Check the wiring harness (LIN cable).
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
F.076 The overheating protection for the primary heat exchanger is active.	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it (PCB plug X20, contact 3/14).
F.077 A condensate pump or an external flue non-return flap is blocking the burner operation.	No feedback from the flue non-return flap or the feedback is incorrect	► Check that the flue non-return flap functions correctly.
	Flue non-return flap defective	► Replace the flue non-return flap.
	Fault in the electrical connection to the condensate pump	► Check the electrical connection to the condensate pump.
	Condensate pump defective	► Replace the condensate pump.
F.078 The control centre is not supported by the unit.	Incorrect control module connected	► Check whether the control module is compatible with the product.
	Fault in the electrical connection for the domestic hot water connection temperature sensor	1. For products without integrated domestic hot water generation: Check whether the bridge on plug X2 between contacts 2 and 5 is plugged in and is without interruption. 2. If the bridge is working correctly, check and, if necessary, replace the wiring harness between the PCB and sensor.
F.080 The cold water inlet temperature sensor in the internal cylinder is defective.	Inlet temperature sensor defective or not connected	► Check and, if required, replace the NTC sensor, plug, wiring harness and the PCB.
F.081 Cylinder charging has failed.	Interruption in the wiring harness	► Check the wiring harness to the internal cylinder.
	Secondary heat exchanger clogged/blocked	► Check the secondary heat exchanger for dirt.

Code/meaning	Possible cause	Measure
F.081 Cylinder charging has failed.	Pump non-return valve blocked	► Check that the non-return valve for the pump in the internal cylinder is working correctly.
	Plug on domestic hot water connection temperature sensor loose/not plugged in	► Check the plug and the plug connection for the domestic hot water connection temperature sensor.
	Domestic hot water connection temperature sensor installed incorrectly	► Check whether the temperature sensor on the domestic hot water connection is correctly installed on the pipe.
	Pump blocked	► Check that the pump in the internal cylinder is working correctly.
	The pump is defective.	► Replace the pump in the internal cylinder.
	3-port diverter valve defective or blocked	► Check and, if required, replace the 3-port diverter valve.
	Impeller sensor in the shift-load cylinder is defective	► Check and, if required, replace the impeller sensor in the shift-load cylinder.
F.083 When the burner starts, no temperature increase is registered at the flow or return temperature sensor or the temperature increase here is too slow.	System pressure too low	► Check the system pressure.
	Flow temperature sensor: No contact	► Check whether the flow temperature sensor is lying against the flow pipe correctly.
	Fault in the electrical connection for the flow temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Return temperature sensor: No contact	► Check whether the return temperature sensor is lying against the return pipe correctly.
	Fault in the electrical connection for the return temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
	Insufficient/no water in the product.	1. Fill the heating installation. 2. Check the product and the system for leakages.
F.084 The temperature difference between the flow and return temperature sensors returns implausible values.	Flow temperature sensor installed incorrectly	► Check whether the flow temperature sensor has been installed correctly.
	Return temperature sensor installed incorrectly	► Check whether the return temperature sensor has been installed correctly.
	Flow and return temperature sensors inverted	► Check whether the flow and return temperature sensor has been installed correctly.
F.085 The NTC sensors are installed incorrectly.	Flow/return temperature sensors have been installed on the same pipe/wrong pipe	► Check that the flow and return temperature sensors have been installed on the correct pipe.
F.087 The ignition transformer is not connected to the PCB.	Fault in the electrical connection for the ignition transformer	► Check the wiring harness between the PCB and ignition transformer, including all plug connections.
	Defective ignition transformer	► Check that the ignition transformer is working correctly and, if required, replace it.
F.088 The electrical connection to the gas valve has been interrupted.	Gas valve assembly not connected	► Check the connection to the gas valve assembly.
	Gas valve assembly connected incorrectly	► Check the connection to the gas valve assembly.
	Short circuit in the wiring harness	► Check the wiring harness and, if required, replace it.
F.089 The installed heating pump does not match the unit type.	Incorrect pump connected	► Check whether the pump that is connected is the one that is recommended for the product.
F.090 Communication with the internal cylinder has been interrupted.	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Plug on PCB loose/not plugged in	► Check the plug and the plug connection.
F.092 The gas-type conversion was not completed correctly.	Gas conversion in D.156 not completed	► Check the setting in D.156 .
F.095 The gas valve stepper motor has reached the minimum permissible step number.	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.

Code/meaning	Possible cause	Measure
F.095 The gas valve stepper motor has reached the minimum permissible step number.	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Burner defective	► Check and, if required, replace the burner.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Fault in the electrical connection for the gas valve assembly	► Check the wiring harness between the PCB and gas valve assembly, including all plug connections.
	Control electrode defective	► Check and, if required, replace the control electrode.
	PCB defective	► Replace the PCB.
	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.
F.096 The gas valve stepper motor has reached the maximum permissible step number.	Gas connection pressure too low	► Check the gas connection pressure.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
	Fault in the electrical connection for the gas valve assembly	► Check the wiring harness between the PCB and gas valve assembly, including all plug connections.
	Control electrode defective	► Check and, if required, replace the control electrode.
	Burner defective	► Check and, if required, replace the burner.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	PCB defective	► Replace the PCB.
	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.

Code/meaning	Possible cause	Measure
F.097 The self-test of the main PCB has failed.	PCB self-test failed (PCB defective)	► Replace the PCB.
F.105 When replacing the gas valve assembly or replacing the PCB and the display at the same time, the gas valve assembly offset must be set according to the current gas valve assembly.	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Fault in the electrical connection for the gas valve assembly	► Check the wiring harness between the PCB and gas valve assembly, incl. all plug connections.
F.110 No successful ignition could be detected with the enriched gas-air mixture.	Insufficient heat consumption	► Ensure that the boiler can release the heat to an adequate extent.
	Hard ignition takes place	1. Check the heat exchanger, siphon, siphon adapter, siphon hose (connection between the primary heat exchanger and the siphon, and siphon hose outside of the product), flue pipe adapter, unit housing, front casing and side section for possible damage. 2. If required, replace any damaged parts immediately.
	Gas isolator cock closed	► Open the gas isolator cock.
	Gas connection pressure too low	► Check the gas connection pressure.
	Air in the gas supply (e.g. during initial start-up)	► Reset the unit once.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Ignition failed	1. Check the ignition using check programme P.021 . 2. Product starts: Ignition electrode, ignition transformer, gas valve assembly and fan are working, gas is flowing and the gas volume is correct, no blockage or recirculation detected. 3. Product does not start and displays a fault code again: Carry out the next check for the cause.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Control electrode comes into contact with the burner	1. Check the clearance between the control electrode and the burner. 2. Check and, if required, replace the control electrode.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Ignition electrode defective	► Check and, if required, replace the ignition electrode.
	Burner defective	► Check and, if required, replace the burner.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Earthing defective	► Check the product's earthing.
	Ionisation flow interrupted	► Check the control electrode, the connection cable and the plug connection.
	Ignition transformer not connected	► Check the plug and the plug connection.
	Defective ignition transformer	► Check that the ignition transformer is working correctly and, if required, replace it.
	PCB defective	► Replace the PCB.

Code/meaning	Possible cause	Measure
F.110 No successful ignition could be detected with the enriched gas-air mixture.	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
F.194 The power supply unit for the PCB is defective.	Power supply unit for the PCB is defective	► Replace the PCB.
F.195 The unit has detected significant undervoltage in the power supply.	Undervoltage in the power supply	► Check the mains voltage. ► If the mains voltage is not correct, contact the energy supply company.
	Pump defective	► If the mains voltage is correct, replace the pump (voltage measurement via pump electronics).
	Fault in the electrical connection for the pump	► Check the wiring harness between the PCB and pump, including all plug connections.
F.196 The unit has detected significant overvoltage in the power supply.	Overvoltage in the power supply	► If the mains voltage is not correct, contact the energy supply company.
	Pump defective	► If the mains voltage is correct, replace the pump (voltage measurement via pump electronics).
	Fault in the electrical connection for the pump	► Check the wiring harness between the PCB and pump, including all plug connections.
F.228 The unit was in limp home mode. In this status, ignition was unsuccessful during the start phase.	Hard ignition takes place	1. Check the heat exchanger, siphon, siphon adapter, siphon hose (connection between the primary heat exchanger and the siphon, and siphon hose outside of the product), flue pipe adapter, unit housing, front casing and side section for possible damage. 2. If required, replace any damaged parts immediately.
	Ignition failed in limp home mode	► Check the limp home mode and fault history, and carry out the required measures.
	Gas connection pressure too low	► Check the gas connection pressure.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Gas isolator cock closed	► Open the gas isolator cock.
	Ignition electrode defective	► Check and, if required, replace the ignition electrode.
	Ignition electrode wiring harness defective	► Check the wiring harness for the ignition electrode and, if required, replace it.
	Defective ignition transformer	► Check that the ignition transformer is working correctly and, if required, replace it.
	Ignition transformer wiring harness defective	► Check the wiring harness for the ignition transformer and, if required, replace it.
	Earthing defective	► Check the product's earthing.
	Burner defective	► Check and, if required, replace the burner.

Code/meaning	Possible cause	Measure
F.228 The unit was in limp home mode. In this status, ignition was unsuccessful during the start phase.	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
F.229 The unit was in limp home mode. In this status, ignition was unsuccessful following a flame loss.	Ignition failed after flame loss in limp home mode	► Check the limp home mode and fault history, and carry out the required measures.
	The gas supply is interrupted	► Check the gas supply.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Defective ignition transformer	► Check that the ignition transformer is working correctly and, if required, replace it.
	Ignition transformer wiring harness defective	► Check the wiring harness for the ignition transformer and, if required, replace it.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Earthing defective	► Check the product's earthing.
	Ignition electrode defective	► Check and, if required, replace the ignition electrode.
	Ignition electrode wiring harness defective	► Check the wiring harness for the ignition electrode and, if required, replace it.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
F.235 The air/flue pipe is blocked during initial start-up.	Air/flue pipe blocked during initial start-up	► Check the entire flue gas route and deactivate D.145 .
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
F.281 The flame has failed during the stabilisation period.	Hard ignition takes place	1. Check the heat exchanger, siphon, siphon adapter, siphon hose (connection between the primary heat exchanger and the siphon, and siphon hose outside of the product), flue pipe adapter, unit housing, front casing and side section for possible damage. 2. If required, replace any damaged parts immediately.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Gas connection pressure too low	► Check the gas connection pressure.
	Air in the gas supply (e.g. during initial start-up)	► Reset the unit once.
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.

Code/meaning	Possible cause	Measure
F.281 The flame has failed during the stabilisation period.	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Flame loss with liquefied petroleum gas	► Run check programme P.022 .
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Ignition failed	1. Check the ignition using check programme P.021 . 2. Product starts: Ignition electrode, ignition transformer, gas valve assembly and fan are working, gas is flowing and the gas volume is correct, no blockage or recirculation detected. 3. Product does not start and displays a fault code again: Carry out the next check for the cause.
	Control electrode defective	► Check and, if required, replace the control electrode.
	Control electrode wiring harness defective	► Check the wiring harness for the control electrode and, if required, replace it.
	Burner defective	► Check and, if required, replace the burner.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.
F.291 The flame has failed during the stabilisation period following flame loss during operation.	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly defective/incorrect spare part gas valve assembly	► Check and, if required, replace the gas valve assembly.
	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Air intake pipe blocked	► Check and, if required, replace the air intake pipe.
	Ignition failed	1. Check the ignition using check programme P.021 . 2. Product starts: Ignition electrode, ignition transformer, gas valve assembly and fan are working, gas is flowing and the gas volume is correct, no blockage or recirculation detected. 3. Product does not start and displays a fault code again: Carry out the next check for the cause.
	Control electrode defective	► Check and, if required, replace the control electrode.
	Control electrode wiring harness defective	► Check the wiring harness for the control electrode and, if required, replace it.
	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check that the condensate discharge has been installed correctly. 3. Check the combustion chamber (electrodes, insulating mats, burner). 4. If required, replace the insulating mats in the combustion chamber.
	Condensate pump (if fitted) defective	► Check and clean the condensate pump. Replace the condensate pump, if required.

Code/meaning	Possible cause	Measure
F.317 The signal for the volume flow sensor in the domestic hot water circuit is implausible.	Fault in the electrical connection for the volume flow sensor in the domestic hot water circuit	► Check the wiring harness between the PCB and volume flow sensor, including all plug connections.
	Volume flow sensor in the domestic hot water circuit defective	► Replace the volume flow sensor in the domestic hot water circuit.
F.318 The 3-port motorised valve does not move.	Fault in the electrical connection for the 3-port diverter valve	► Check the wiring harness between the PCB and 3-port diverter valve, including all plug connections.
	3-port diverter valve defective or blocked	► Check and, if required, replace the 3-port diverter valve.
F.320 The heating pump is blocked. The unlocking function was not successful.	Dirt or foreign bodies in the pump	► Clean the pump and, if required, replace the pump.
F.321 The pump electronics are defective.	The pump is defective.	► Check and, if required, replace the pump.
F.322 The heating pump has overheated. The temperature could not be lowered by the limp home mode.	The pump temporarily reports excessive temperatures in the electronics	► Check the pump and, if required, replace the pump.
F.323 The heating pump is dry running.	Air in the product	► Purge the heating installation.
	Pump has been dry-running	► Replace the pump.
F.324 The electrical connection to the pump has been interrupted.	The cable to the pump is defective	► Check the cable for the 230 V power supply to the pump and, if required, replace the cable for the 230 V power supply.
	The pump is defective.	► Check and, if required, replace the pump.
F.325 The heating pump has a fault.	Pump blocked	► Check that the pump is working correctly.
	The pump is defective.	► Check and, if required, replace the pump.
F.326 The hydraulic sensor and actuator test has detected at least two hydraulic components that are not working.	3-port diverter valve defective or blocked	► Check and, if required, replace the 3-port diverter valve.
	Plug on 3-port motorised valve loose/not plugged in	► Check the plug and the plug connection on the 3-port motorised valve.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Domestic hot water circuit not connected	► Connect the domestic hot water circuit.
	External pump runs continuously	► Check the external pump and the system configuration.
	The pump is defective.	► Check and, if required, replace the pump.
F.327 The minimum heating volume flow is limited due to there being no domestic hot water circuit connected.	Cylinder bypass not connected	► Check the cylinder connection pipes.
	Domestic hot water circuit clogged/blocked	► Check the secondary heat exchanger for dirt.
F.330 The pump is not responding to commands during the hydraulic test.	Fault in the electrical connection for the pump	► Check the wiring harness between the PCB and pump, including all plug connections.
	The pump is defective.	► Check and, if required, replace the pump.
F.334 The configuration of the flue system was not completed.	Flue system configuration not completed	► Check the flue gas configuration and complete this.
F.336 The unit is not permitted in this configuration.	Flue system configuration set incorrectly	► Set the approved flue system configuration.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
F.337 The multiple-flue configuration conversion set is not suitable for the heat cell.	The multiple-flue system conversion set is not suitable for the heat cell	► Check and, if required, replace the conversion set comprising air intake pipe with integrated non-return valve and air-mass flow sensor.

Code/meaning	Possible cause	Measure
F.338 Incorrect multiple-flue configuration setting	Multiple-flue configuration set incorrectly	► Set the approved flue system configuration.
F.342 The air-mass flow is not within the permitted limits.	Fan speed does not correspond to the target value	► Use D.033 and D.034 to check whether the fan speed deviates by more than 20–30 rpm.
	Plug on PCB loose/not plugged in	► Check the plug and the plug connection.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Air-mass flow sensor plug loose/not plugged in	► Check the plug and the plug connection for the air-mass flow sensor.
	You exit the measuring range permanently. Air-mass flow sensor defective	► Replace the entire air intake pipe.
	Flue gas pipe blocked	► Check the entire flue gas pipe.
F.343 The signal for the air-mass flow sensor is not plausible.	Air-mass flow sensor plug loose/not plugged in	► Check the plug and the plug connection for the air-mass flow sensor.
	Plug on PCB loose/not plugged in	► Check the plug and the plug connection.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Measurement discrepancy too high. Air-mass flow sensor dirty.	► Check the air-mass flow sensor for dirt.
	You exit the measuring range permanently. Air-mass flow sensor defective	► Replace the entire air intake pipe.
	PCB defective	► Replace the PCB.
F.344 The control electrode can no longer be used.	Transmission fault for calibration values	► Replace the control electrode (D.146 , D.147).
F.347 Condensate has been detected in the combustion chamber. The burner operation is interrupted.	Condensate in the combustion chamber due to a blocked condensate discharge	1. Check and, if required, clean the condensate discharge pipe including the siphon. 2. Check the combustion chamber (electrodes, insulating mats, burner). 3. If required, replace the insulating mats in the combustion chamber.
F.363 The display's EEPROM reports errors during the read/write test.	Display electronics defective	► Replace the display.
F.707 No communication is possible between the display and the PCB.	Communication between the display and the PCB is interrupted	1. Check the connection between the display and the PCB. 2. If required, replace the cable between the display and the PCB. 3. If required, replace the display or the PCB.
F.905 Communication interface switched off	Overcurrent at the communication interface	1. Check the connection between the PCB and the modules that are connected to the interface. 2. Check the connected modules and replace these, if required.

E Check programmes



Note

Since the code table is used for various products, some codes may not be visible for the product in question. Check programmes (**P.XXX**) can temporarily block **L.XXX** codes.

Check programme	Meaning
P.000 Purge programme	The internal pump is cyclically actuated. The heating circuit and the domestic hot water circuit are adaptively purged by automatically switching the circuits using the automatic air vent (the automatic air vent's flap must be loose). The active circuit is shown in the display. Press  once to start purging the heating circuit. Press  once to end the purge programme. The duration of the purge programme is displayed using a countdown. The programme then ends.

Check programme	Meaning
P.001 Adjustable load	After successful ignition, the product is operated at the set heat input (query at the start of the programme).
P.003 Maximum heat load	After successful ignition, the product is operated at the partial heat load that was set under D.000 .
P.008 Filling of product with water	The prioritising diverter valve is moved to the mid-position. The burner and pump are switched off (to fill or drain the product).
P.021 Help for ignition diagnostics	The programme is used to analyse the ignition in the event of a fault message. This checks whether ignition can be successfully carried out. In this case, the flame is not monitored via the control electrode. If the ignition has been carried out successfully,  appears permanently on the display during the check programme.
P.022 Enriched ignition	If F.028 occurs (for liquefied petroleum gas only), start check programme P.022 .

F Actuator test



Note

Since the code table is used for various products, some codes may not be visible for the product in question. Actuator tests (**T.XXX**) can temporarily block **L.XXX** codes.

Code	Meaning
T.001 Internal pump	The internal pump is switched on and regulated at the selected differential pressure.
T.002 3-port valve	The prioritising diverter valve is moved to the heating or domestic hot water position.
T.003 Fan	The fan is switched on and off. The fan runs at maximum rotational speed.
T.004 Cylinder charging pump	The cylinder charging pump is switched on and off.
T.005 Circulation pump	The circulation pump is switched on and off.
T.006 External pump	The external pump is switched on and off.
T.007 Min. modulation	Product starts up and switches to minimum load. The flow temperature is shown in the display.

G Maintenance codes



Note

Since the code table is used for various products, some codes may not be visible for the product in question.

Code/meaning	Possible cause	Measure
I.003 The product's maintenance time has been reached.	Maintenance interval elapsed	1. Carry out maintenance work. 2. Reset the service interval.
I.020 The water pressure in the heating system is at the lower limit.	Filling pressure of the heating installation is low	► Top up the heating installation.
I.144 The electrode drift test shows progressed ageing of the control electrode.	The drift test electrode has reached the maximum permissible value	► Replace the control electrode and reset the drift offsets via D.146 and D.147 .

H Reversible limp home mode codes



Note

Since the code table is used for various products, some codes may not be visible for the product in question. The reversible **L.XXX** codes eliminate themselves. Check programmes (**P.XXX**) and actuator tests (**T.XXX**) can temporarily block **L.XXX** codes.

Code	Meaning
L.016	A flame loss has been detected at minimum output.
L.022	The circulation water volume in the heating circuit is too low.
L.025	The cold water inlet temperature sensor has short-circuited.
L.032	The volume flow sensor is defective or the signal is not plausible.
L.095	The gas valve stepper motor has reached the minimum permissible step number.
L.096	The gas valve stepper motor has reached the maximum permissible step number.
L.097	The air ratio is too low.
L.105	The unit is not purged correctly. The purge programme could not be completed successfully.
L.144	The ionisation signal for the control electrode is too low. The drift adaptation has failed.
L.194	The power supply unit for the PCB is faulty.
L.195	The unit has detected undervoltage in the power supply.
L.196	The unit has detected overvoltage in the power supply.
L.319	The unit's internal bypass valve is blocked.
L.320	The heating pump is blocked. The unit attempts to loosen the blockage.
L.322	The pump electronics have overheated.
L.343	The signal for the air-mass flow sensor is not plausible.

I Irreversible limp home mode codes



Note

Since the code table is used for various products, some codes may not be visible for the product in question. The irreversible **N.XXX** codes require action.

Code/meaning	Possible cause	Measure
N.013 The signal for the water pressure sensor is invalid.	Water pressure sensor defective	► Check and, if required, replace the water pressure sensor.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Short circuit in the connection cable	► Check the connection cable and, if required, replace it.
N.027 The signal for the temperature sensor on the domestic hot water connection is implausible.	Temperature sensor defective	► Check and, if required, replace the temperature sensor.
	Fault in the electrical connection for the domestic hot water temperature sensor	► Check and, if required, replace the wiring harness between the PCB and sensor, including all plug connections.
N.032 The volume flow sensor is defective or the signal is not plausible.	Air in the system	► Purge the system.
	Volume flow sensor defective	► Check and, if required, replace the volume flow sensor.
	Bypass is blocked (only for products with a bypass)	► Remove the blockage.
	Air in the pump (only for products with a bypass)	► Purge the system.
	Pump defective (only for products with a bypass)	► Replace the pump.
N.089 The installed heating pump does not match the unit type.	Incorrect pump connected	► Check whether the pump that is connected is the one that is recommended for the product.
N.095 The gas valve stepper motor has reached the minimum permissible step number.	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.

Code/meaning	Possible cause	Measure
N.095 The gas valve stepper motor has reached the minimum permissible step number.	Condensate discharge pipe blocked	► Check the condensate discharge pipe.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Fault in the electrical connection for the gas valve assembly	► Check and, if required, replace the wiring harness for the gas valve assembly.
	Gas valve assembly not electrically connected/incorrectly connected	► Check the electrical connection to the gas valve assembly.
	Control electrode defective	► Check and, if required, replace the control electrode.
	PCB defective	► Replace the PCB.
	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.
N.096 The gas valve stepper motor has reached the maximum permissible step number.	Gas connection pressure too low	► Check the gas connection pressure.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Fault in the electrical connection for the gas valve assembly	► Check and, if required, replace the wiring harness for the gas valve assembly.
	Gas valve assembly not electrically connected/incorrectly connected	► Check the electrical connection to the gas valve assembly.
	PCB defective	► Replace the PCB.
	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.
N.097 The air ratio is too low.	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Condensate discharge pipe blocked	► Check the condensate discharge pipe.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Gas valve assembly offset incorrectly stored in D.052 and, if applicable, D.182	► Check the offset setting for the gas valve assembly.
	Fault in the electrical connection for the gas valve assembly	► Check and, if required, replace the wiring harness for the gas valve assembly.
	Gas valve assembly not electrically connected/incorrectly connected	► Check the electrical connection to the gas valve assembly.
	Control electrode defective	► Check and, if required, replace the control electrode.
	PCB defective	► Replace the PCB.
	Fan defective	► Check and, if required, replace the fan.

Code/meaning	Possible cause	Measure
N.097 The air ratio is too low.	Air-mass flow sensor dirty or defective (only in conjunction with the conversion set comprising the air intake pipe with integrated non-return valve and air-mass flow sensor)	1. Check the air-mass flow sensor for dirt. 2. If required, replace the entire air intake pipe.
N.100 The signal for the outdoor temperature sensor has been interrupted.	Outdoor temperature sensor not connected	► Check the settings on the control.
	Outdoor temperature sensor defective	► Check the outdoor temperature sensor.
	Outdoor temperature sensor not installed	► Deactivate the weather-compensated control using D.162 .
N.144 The ionisation signal for the control electrode is too low. The drift adaptation has failed again.	Fault in the flue gas route caused by recirculation or flue gas blockage	► Check the entire flue gas route.
	Condensate discharge pipe blocked	► Check the condensate discharge pipe.
	Gas flow pressure too low	► Check the gas flow pressure and the external gas pressure switch.
	Incorrect gas type set	► Check the gas type and the gas type setting under D.156 and D.157 .
	Control electrode defective	► Check and, if required, replace the control electrode.
	Gas valve defective	► Replace the gas valve.
	PCB defective	► Replace the PCB.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
N.194 The power supply unit for the PCB is defective.	Power supply unit for the PCB is defective	► Replace the PCB.
N.270 The temperature spread via the secondary heat exchanger (heating flow – domestic hot water connection) is too high. The unit switches from regulating to controlling until the cause has been eliminated by customer service.	Domestic hot water connection temperature sensor installed incorrectly	► Check whether the temperature sensor on the domestic hot water connection is correctly installed on the pipe.
	Strainer at cold water inlet dirty	► Check the strainer at the cold water inlet for dirt, clean it and, if required, replace it.
	Cold water adjusting valve not installed (only on a product with no factory-installed flow rate limiter)	► Install the cold water adjusting valve.
	Flow rate quantity set incorrectly on the cold water adjusting valve (only on a product with no factory-installed flow rate limiter)	► Set the flow rate quantity on the cold water adjusting valve.
	Interruption in the diverter valve's wiring harness	► Check whether the wiring harness to the stepper motor and to the PCB is connected correctly.
	Scale in the secondary heat exchanger.	► Descale or, if required, replace the affected heat exchanger.
	3-port diverter valve defective	► Check and, if required, replace the 3-port diverter valve.
	Flow rate limiter defective	► Check and, if required, replace the flow rate limiter.
N.317 The signal for the volume flow sensor in the domestic hot water circuit is implausible.	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Volume flow sensor in the domestic hot water circuit defective	► Replace the volume flow sensor in the domestic hot water circuit.
N.319 The unit's internal bypass valve is blocked.	Bypass valve dirty	► Clean the bypass valve.
	Bypass valve defective	► Replace the bypass valve.
N.324 The electrical connection to the pump has been interrupted.	Open circuit in wiring harness (LIN cable)	► Check the wiring harness (LIN cable).

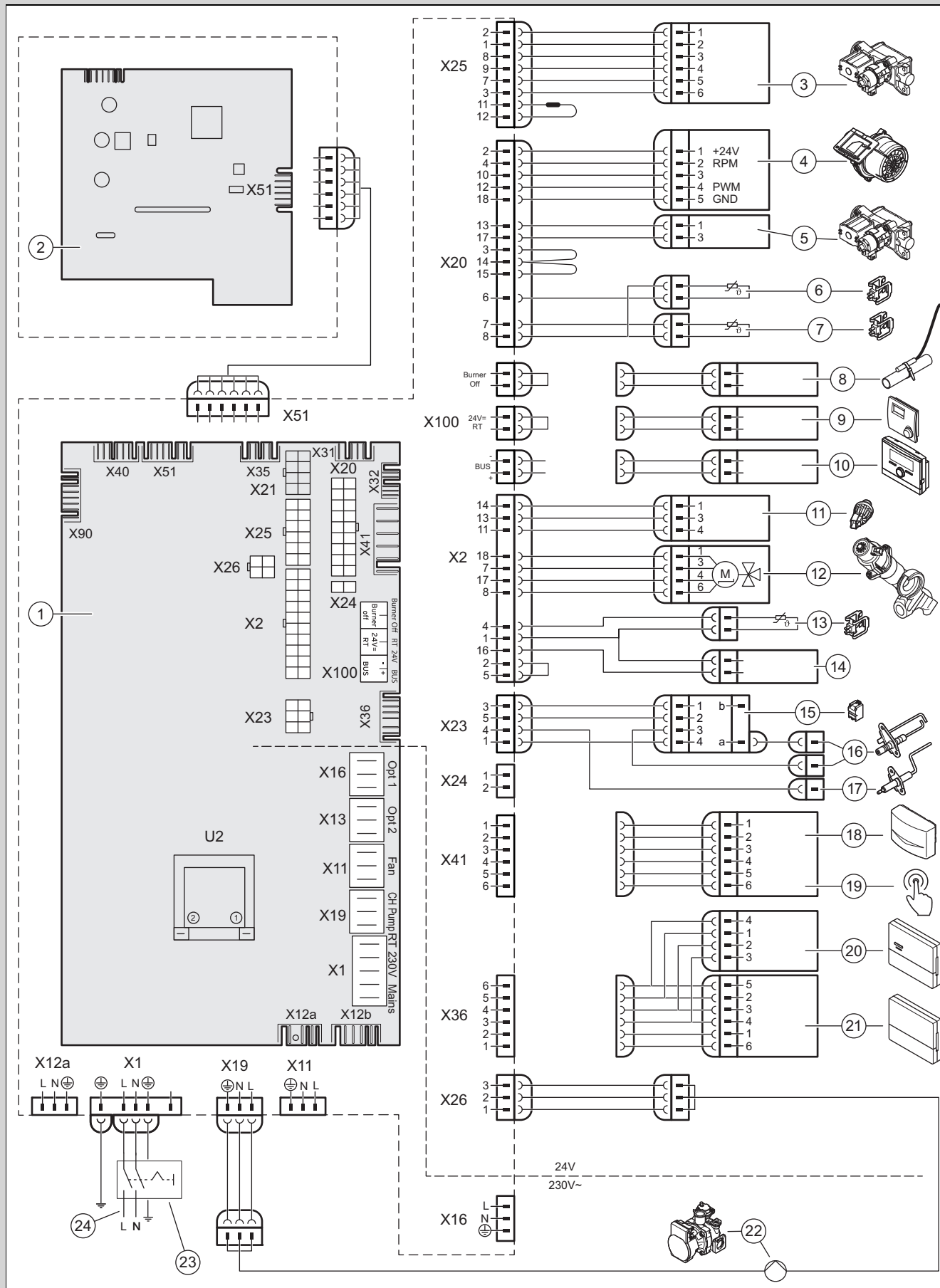
Code/meaning	Possible cause	Measure
N.343 The signal for the mass air flow sensor is not plausible. If the mass air flow sensor is connected and there is feedback, but the values are implausible, the unit works in limp home mode.	Air-mass flow sensor plug loose/not plugged in	► Check the plug and the plug connection for the air-mass flow sensor.
	Plug on PCB loose/not plugged in	► Check the plug and the plug connection.
	Interruption in the wiring harness	► Check the wiring harness including all plug connections and, if required, replace it.
	Measurement discrepancy too high. Air-mass flow sensor dirty.	► Check the air-mass flow sensor for dirt.
	You exit the measuring range permanently. Air-mass flow sensor defective	► Replace the entire air intake pipe.
	PCB defective	► Replace the PCB.

J Wiring diagram



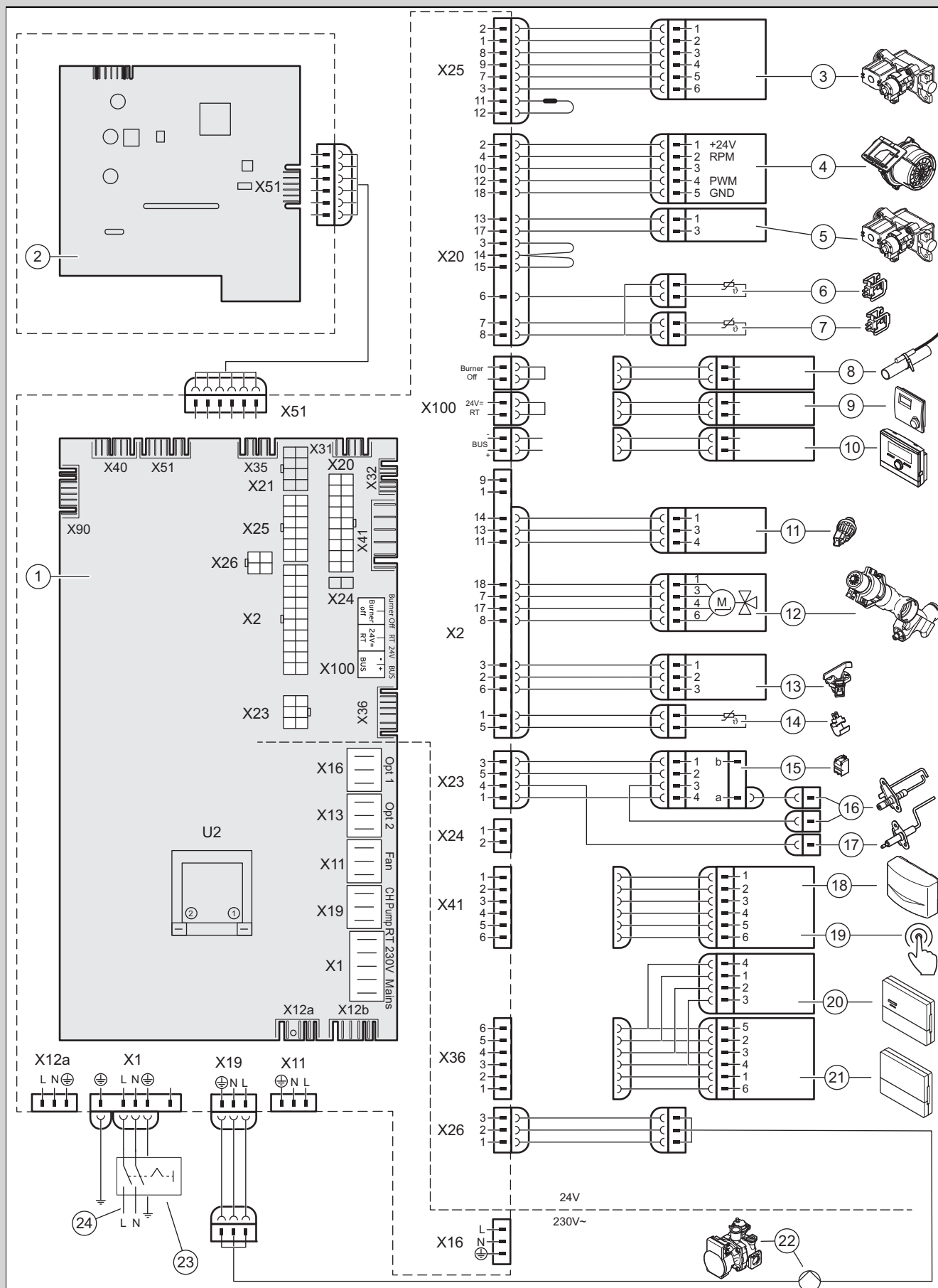
Note

The slot for the X13 connection is product-dependent and may not be present.



- | | | | |
|---|-----------------------|---|---------------------------------------|
| 1 | Printed circuit board | 4 | Fan |
| 2 | Control panel PCB | 5 | Gas valve assembly for main gas valve |
| 3 | Gas valve assembly | 6 | Return temperature sensor |

7	Flow temperature sensor	16	Ignition electrode
8	Surface-mounted thermostat/ <i>Burner off</i>	17	Control electrode
9	24 V DC room thermostat	18	Outdoor temperature sensor, flow temperature sensor (optional, external), DCF receiver
10	Bus connection (system control/digital room thermostat)	19	Circulation pump remote control
11	Water pressure sensor	20	Control module
12	Prioritising diverter valve	21	Communication unit
13	Cylinder temperature sensor (optional)	22	Internal pump
14	C1/C2 cylinder contact (optional)	23	Unit main switch
15	Ignition transformer	24	Main power supply



- 1 Printed circuit board
- 2 Control panel PCB
- 3 Gas valve assembly

- 4 Fan
- 5 Gas valve assembly for main gas valve
- 6 Return temperature sensor

7	Flow temperature sensor	16	Ignition electrode
8	Surface-mounted thermostat/ <i>Burner off</i>	17	Control electrode
9	24 V DC room thermostat	18	Outdoor temperature sensor, flow temperature sensor (optional, external), DCF receiver
10	Bus connection (system control/digital room thermostat)	19	Circulation pump remote control
11	Water pressure sensor	20	Control module
12	Prioritising diverter valve	21	Communication unit
13	Impeller water flow sensor	22	Internal pump
14	Connection temperature sensor for the domestic hot water	23	Unit main switch
15	Ignition transformer	24	Main power supply

K Inspection and maintenance work

The table below lists the manufacturer requirements with respect to minimum inspection and maintenance intervals. If national regulations and directives require shorter inspection and maintenance intervals, you should observe these instead of the intervals listed. Each time inspection and maintenance work is carried out, carry out the required preparatory and completion work.



Note

The country-specific specification for the maximum CO content has a higher value. With regard to the measured CO content, first check the country-specific regulations before starting any measures.

As part of a combustion check that is carried out, (→ Section 7.11.4) a CO content of > 650 ppm undiluted is determined.

- ▶ Check the permissible total pipe length as well as the diameter of the air/flue system in accordance with the enclosed valid set-up instructions for air/flue systems.
- ▶ Check whether the air/flue system has been installed correctly.
- ▶ Check whether the air/flue system is blocked and/or damaged.

The check was not completed with the result that the determined CO content is > 650 ppm.

- ▶ Replace the control electrode. (→ Section 11.7.13)

The control electrode has been replaced and the CO content is still > 650 ppm.

- ▶ Check the combustion chamber. (→ Section 10.5.2)

The combustion chamber has been inspected and the CO content is still > 650 ppm.

- ▶ Contact customer service.

#	Maintenance work	Interval	
1	Check that the flue pipe is leak-tight, that it is not damaged, that it has been attached correctly and that it has been installed correctly	Annually	
2	Removing dirt from the product and the vacuum chamber	Annually	
3	Visually checking the condition of the heat cell, checking for corrosion, rust or damage	Annually	
4	Checking the gas connection pressure at maximum heat input	Annually	
5	Checking the control electrode using the CO ₂ content	Annually	
6	Recording the CO ₂ content (the air ratio)	Annually	
7	Check that the connections/electrical plug connections have been connected correctly/function correctly (product must be voltage-free)	Annually	
8	Check that the gas isolator cock and service valves function correctly	Annually	
9	Checking the condensate siphon for dirt and cleaning it	Annually	
10	Checking the pre-charge pressure of the expansion vessel	If required, at least every 2 years	32
11	Checking the insulating mats in the combustion area and replacing damaged insulating mats	If required, at least every 2 years	
12	Check the burner for damage	If required, at least every 2 years	
13	Replacing the control electrode	If required, at least every 5 years or 20,000 operating hours (whichever comes first)	40

#	Maintenance work	Interval	
14	Cleaning the heat exchanger	If required, at least every 2 years	32
15	Checking that the flue non-return flap in the air intake pipe is working (opening/closing) (type: Multiple-flue configuration in excess pressure mode or cascades) (→ Instructions for the conversion set)	Every 2 years	
16	Replacing the air intake pipe with integrated non-return valve (type: Multiple-flue configuration in excess pressure mode or cascades) (→ Instructions for the conversion set)	At the latest after 15 years, enter the year of installation on the additional data plate	
17	Guaranteeing the permissible system pressure	If required, at least every 2 years	20
18	Run the test operation on the product/heating installation including hot water generation (if available) and, if required, purge the product/heating installation	Annually	
19	Completing inspection and maintenance work	Annually	33

L Technical data

During initial start-up, the operating data may initially deviate from the specified nominal data.

Technical data – General

	VU 15	VU 25	VU 30	VUW 36
Designated country (designation in accordance with ISO 3166)	BG, GR, EE, LT, LV, NZ	BG, GR, EE, LT, LV, MD, NZ	BG, MD, NZ, PT	BG, GR, EE, LT, LV, MD, NZ, PT
Permitted gas boiler category (depending on the unit version)	– II _{2H3P} – GR: I _{2N} , I _{3P} – EE, LV: I _{2H}	– II _{2H3P} – GR: I _{2N} , I _{3P} – EE, LV: I _{2H}	II _{2H3P}	– II _{2H3P} – GR: I _{2N} , I _{3P} – EE, LV: I _{2H}
CE PIN	0063CU3910	0063CU3910	0063CU3910	0063CU3910
Gas connection, boiler side	15 mm	15 mm	15 mm	15 mm
Flow/return heating connections, boiler side	G 3/4 "	G 3/4 "	G 3/4 "	G 3/4 "
Flow/return cylinder connections, boiler side	G 1/2 "	G 1/2 "	G 1/2 "	–
Domestic hot/cold water connections, boiler side	–	–	–	G 3/4 "
Expansion relief valve connection	15 mm	15 mm	15 mm	15 mm
Condensate discharge hose connection	19 mm	19 mm	19 mm	19 mm
Air/flue pipe connection	60/100 mm	60/100 mm	60/100 mm	60/100 mm
Min. flue gas temperature	35 °C	35 °C	35 °C	35 °C
Max. flue gas temperature	85 °C	85 °C	85 °C	85 °C

	VU 15	VU 25	VU 30	VUW 36
Approved unit types	– BG: B33, C13, C33, C83 – EE: B33, C13x, C33x, C43x – GR: B23, B53P, C13x, C33x, C53x – LT: B23, B33, C13x, C33x, C53x, C83x, C93x – LV: B23, B33, C13x, C33x, C53x – NZ: C13, C33	– BG: B33, C13, C33, C83 – EE: B33, C13x, C33x, C43x – GR: B23, B53P, C13x, C33x, C53x – LT: B23, B33, C13x, C33x, C53x, C83x, C93x – LV: B23, B33, C13x, C33x, C53x – NZ: C13, C33 – MD: B33, C13, C33, C53, C83, C93	– BG: B33, C13, C33, C83 – MD: B33, C13, C33, C53, C83, C93 – PT: B33, C13, C33, C53 – NZ: C13, C33	– BG: B33, C13, C33, C83 – EE: B33, C13x, C33x, C43x – GR: B23, B53P, C13x, C33x, C53x – LT: B23, B33, C13x, C33x, C53x, C83x, C93x – LV: B23, B33, C13x, C33x, C53x – MD: B33, C13, C33, C53, C83, C93 – NZ: C13, C33 – PT: B33, C13, C33, C53
NOx class	6	6	6	6
Empty weight of the product	32 kg	32 kg	35 kg	36 kg

Technical data – G20 output/heat input (depending on the unit version)

	VU 15	VU 25	VU 30	VUW 36
Gas connection pressure, G20 natural gas	2.0 kPa (20.0 mbar)	2.0 kPa (20.0 mbar)	2.0 kPa (20.0 mbar)	2.0 kPa (20.0 mbar)
NOx emission, weighted, G20 (EN 15502-2-1)	26.2 mg/kWh	26.7 mg/kWh	28.0 mg/kWh	28.0 mg/kWh
Max. gas volume flow based on 15 °C and 1013 mbar, dry gas (domestic hot water generation), G20	2.2 m³/h	3.0 m³/h	3.8 m³/h	3.9 m³/h
Nominal heat output range at 50/30 °C	2.8 to 16.2 kW	2.8 to 27.1 kW	3.9 to 32.3 kW	3.9 to 32.3 kW
Nominal heat output range at 80/60 °C	2.5 to 14.8 kW	2.5 to 24.7 kW	3.4 to 29.8 kW	3.4 to 29.8 kW
Nominal heat input range for heating (Hi)	2.7 to 15.3 kW	2.7 to 25.5 kW	3.7 to 30.6 kW	3.7 to 30.6 kW
Min. flue gas mass flow rate	1.24 g/s (4.46 kg/h)	1.24 g/s (4.46 kg/h)	1.72 g/s (6.19 kg/h)	1.72 g/s (6.19 kg/h)
Max. flue gas mass flow rate	10.35 g/s (37.26 kg/h)	14.15 g/s (50.94 kg/h)	17.58 g/s (63.29 kg/h)	18.29 g/s (65.84 kg/h)
Max. heat output for domestic hot water	20.0 kW	27.5 kW	34.8 kW	35.6 kW
Nominal heat input for domestic hot water (Hi)	20.4 kW	28.3 kW	35.5 kW	36.7 kW
Heating adjustment range	2.7 to 15.3 kW	2.7 to 25.5 kW	3.7 to 30.6 kW	3.7 to 30.6 kW

Technical data – G31 output/heat input (depending on the unit version)

	VU 15	VU 25	VU 30	VUW 36
Gas connection pressure, G31 liquefied petroleum gas	3.0 kPa (30.0 mbar)	3.0 kPa (30.0 mbar)	3.0 kPa (30.0 mbar)	3.0 kPa (30.0 mbar)
Max. gas mass flow based on 15 °C and 1013 mbar, dry gas (domestic hot water generation), G31	1.6 kg/h	2.0 kg/h	2.8 kg/h	2.8 kg/h

	VU 15	VU 25	VU 30	VUW 36
Nominal heat output range at 50/30 °C	5.4 to 15.8 kW	5.4 to 26.2 kW	8.6 to 31.3 kW	8.6 to 31.3 kW
Nominal heat output range at 80/60 °C	4.8 to 14.8 kW	4.8 to 24.7 kW	7.6 to 29.8 kW	7.6 to 29.8 kW
Nominal heat input range for heating (Hi)	5.2 to 15.3 kW	5.2 to 25.5 kW	8.2 to 30.6 kW	8.2 to 30.6 kW
Min. flue gas mass flow rate	2.53 g/s (9.11 kg/h)	2.53 g/s (9.11 kg/h)	4.09 g/s (14.72 kg/h)	4.09 g/s (14.72 kg/h)
Max. flue gas mass flow rate	9.84 g/s (35.42 kg/h)	12.82 g/s (46.15 kg/h)	17.95 g/s (64.62 kg/h)	17.95 g/s (64.62 kg/h)
Max. heat output for domestic hot water	20.0 kW	25.4 kW	34.8 kW	34.8 kW
Nominal heat input for domestic hot water (Hi)	20.4 kW	26.2 kW	35.5 kW	35.5 kW
Heating adjustment range	5.2 to 15.3 kW	5.2 to 25.5 kW	8.2 to 30.6 kW	8.2 to 30.6 kW

Technical data – Heating

	VU 15	VU 25	VU 30	VUW 36
Max. flow temperature	85 °C	85 °C	85 °C	85 °C
Flow temperature adjustment range (factory setting: 75 °C)	30 to 80 °C	30 to 80 °C	30 to 80 °C	30 to 80 °C
Max. operating pressure, heating (PMS)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)
Nominal circulation water volume based on $\Delta T = 20 \text{ K}$	638 l/h	1,063 l/h	1,281 l/h	1,281 l/h
Remaining pump head at nominal circulation water volume	0.025 MPa (0.250 bar)	0.025 MPa (0.250 bar)	0.025 MPa (0.250 bar)	0.025 MPa (0.250 bar)

Technical data – Domestic hot water

	VUW 36
Start-up flow rate	2 l/min
Specific flow rate D ($\Delta T = 30 \text{ K}$) (EN 13203-1)	17.0 l/min
Specific flow rate D ($\Delta T = 30 \text{ K}$) (EN 13203-1), G31	16.6 l/min
Permissible operating pressure (PMW)	0.03 to 1.0 MPa (0.30 to 10.0 bar)
Required connection pressure	0.07 MPa (0.70 bar)
Domestic hot water temperature adjustment range	35 to 65 °C
Flow rate limiter	11.7 l/min
Classification in accordance with the total comfort factor (EN 13203-1)	* * *

Technical data – Electrics

	VU 15	VU 25	VU 30	VUW 36
Rated voltage	230 V~	230 V~	230 V~	230 V~
Mains frequency	50 Hz	50 Hz	50 Hz	50 Hz
Permissible connected voltage	190 to 253 V~	190 to 253 V~	190 to 253 V~	190 to 253 V~
Built-in fuse (slow-blow)	4 A	4 A	4 A	4 A
Max. power consumption in heating mode	82 W	104 W	90 W	90 W
Max. power consumption in domestic hot water mode	89 W	113 W	110 W	110 W
Electrical standby energy consumption	< 2 W	< 2 W	< 2 W	< 2 W
IP rating	IPX4D	IPX4D	IPX4D	IPX4D

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