

Installation and maintenance instructions



ecoTEC exclusive

VC 156/5-7 (N-DE)

VC 216/5-7 (N-DE)

VC 246/5-7 (N-DE)

VC 276/5-7 (N-DE)

VC 326/5-7 (N-DE/DK)

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1 Safety

1.1 Action-related warnings

Classification of action-related warnings

The action-related warnings are classified in accordance with the severity of the possible danger using the following warning signs and signal words:

Warning symbols and signal words



Danger!

Imminent danger to life or risk of severe personal injury



Danger!

Risk of death from electric shock



Warning.

Risk of minor personal injury



Caution.

Risk of material or environmental damage

1.2 Intended use

There is a risk of injury or death to the user or others, or of damage to the product and other property in the event of improper use or use for which it is not intended.

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

Depending on the unit type, the products referred to in these instructions must only be installed and operated in conjunction with the air/flue pipe accessories listed in the other applicable documents.

The use of the product in vehicles, such as mobile homes and caravans, is not classed as intended use. Units that are not classed as vehicles are those that are installed in a fixed and permanent location (known as "fixed installation").

Intended use includes the following:

- observance of accompanying operating, installation and servicing instructions for the product and any other system components
- installing and fitting the product in accordance with the product and system approval

- compliance with all inspection and maintenance conditions listed in the instructions.

Intended use also covers installation in accordance with the IP code.

Any other use that is not specified in these instructions, or use beyond that specified in this document shall be considered improper use. Any direct use in industrial or commercial processes is also deemed to be improper.

Caution.

Improper use of any kind is prohibited.

1.3 General safety information

1.3.1 Risk caused by inadequate qualifications

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.

1.3.2 Risk of death from escaping gas

What to do if you smell gas in the building:

- ▶ 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 isolator cock on the product.
- ▶ Warn other occupants in the building by yelling or banging on doors or walls.

1 Safety



- ▶ Leave the building immediately and ensure that others do not enter the building.
- ▶ Alert the police and fire brigade as soon as you are outside the building.
- ▶ Use a telephone outside the building to inform the emergency service department of the gas supply company.

1.3.3 Risk of death from leaks if the product is installed below ground level

Liquid gas accumulates at floor level. If the product is installed below ground level, liquid gas may accumulate at floor level if there are any leaks. In this case, there is a risk of explosion.

- ▶ Make sure that liquid gas cannot escape from the product or the gas line under any circumstance.

1.3.4 Risk of death due to blocked or leaking flue gas routes

Installation errors, damage, tampering, unauthorised installation sites or similar can cause flue gas to escape and result in a risk of poisoning.

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.

1.3.5 Risk of poisoning due to escaping flue gases in overpressurised, multi-occupancy air/flue gas installations

In overpressurised, multi-occupancy air/flue gas installations, the combustion air is supplied in the countercurrent flow for the flue gas pipe in the air gap between the flue gas pipe and the shaft wall.

When you open inspection openings in the air/flue gas installation or in a heat generator, flue gas may escape.

- ▶ Never operate the heat generator as an open-flued system under any circumstances.

- ▶ Always operate the heat generator using a return check valve that is authorised for use with the product.

1.3.6 Risk of death caused by unburnt liquid gas

There is a risk that liquid gas may collect in the lower part of multi-occupancy air/flue gas installations. In this case, there is a risk of explosion.

- ▶ Do not use liquid gas to operate the heat generator for an overpressurised, multi-occupancy air/flue gas installation.

1.3.7 Risk of poisoning and burns caused by escaping hot flue gases

- ▶ 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.

1.3.8 Risk of death due to explosive and flammable materials

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

1.3.9 Risk of death due to cabinet-type casing

Cabinet-type casing can give rise to dangerous situations when used on a product which is operated with an open flue.

- ▶ Ensure that the product is supplied with sufficient combustion air.

1.3.10 Risk of poisoning caused by insufficient supply of combustion air

Conditions: 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.

1.3.11 Risk of death due to lack of safety devices

The schematic drawings included in this document do not show all safety devices required for correct installation.





- ▶ Install the necessary safety devices in the system.
- ▶ Observe the applicable national and international laws, standards and guidelines.

1.3.12 Risk of death from electric shock

There is a risk of death from electric shock if you touch live components.

Before commencing work 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).
- ▶ Secure against being switched back on again.
- ▶ Wait for at least 3 minutes until the capacitors have discharged.
- ▶ Check that there is no voltage.

1.3.13 Risk of being burned or scalded by hot components

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

1.3.14 Risk of death from escaping flue gas

If you operate the product with an empty condensate siphon, flue gas may escape into the room air.

- ▶ In order to operate the product, ensure that the condensate siphon is always full.

Conditions: Permitted B23 or B23P unit types with condensate siphon (third-party accessory)

- Water seal level: ≥ 200 mm

1.3.15 Risk of material damage caused by using an unsuitable tool

- ▶ Use the correct tool.

1.3.16 Risk of material damage caused by frost

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

1.3.17 Risk of corrosion damage due to unsuitable combustion and room air

Sprays, solvents, chlorinated cleaning agents, paint, adhesives, ammonia com-

pounds, dust or similar substances may lead to corrosion on the product and in the flue system.

- ▶ Ensure that the supply of combustion air is always free of fluorine, chlorine, sulphur, dust, etc.
- ▶ 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 floor-standing oil-fired boilers, or with other boilers, which could cause soot to build up in the chimney.

1.3.18 Risk of damage to the flexible gas pipe

The corrugated gas pipe may become damaged if weight is placed on it.

- ▶ Do not suspend the compact thermal module on the flexible gas pipe, for example during maintenance work.

1.4 Regulations (directives, laws, standards)

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



2 Notes on the documentation

2 Notes on the documentation

2.1 Observing other applicable documents

- You must observe all the operating and installation instructions included with the system components.

2.2 Storing documents

- Pass these instructions and all other applicable documents on to the system operator.

2.3 Applicability of the instructions

These instructions apply only to:

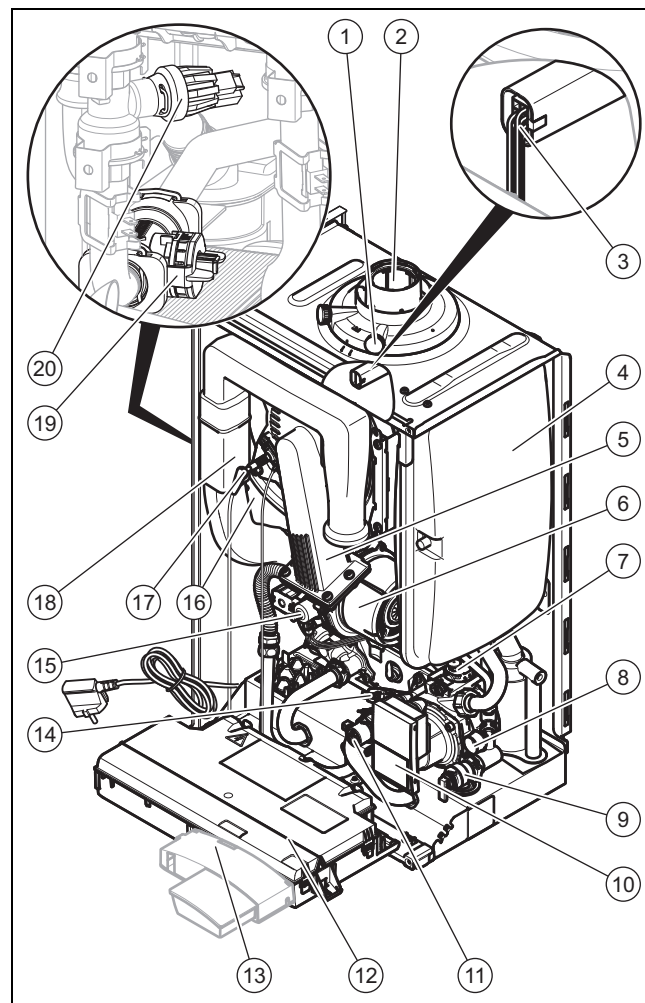
Product article number

VC 156/5-7 (N-DE) ecoTEC exclusive	0010014917, 0010024212
VC 216/5-7 (N-DE) ecoTEC exclusive	0010014919, 0010024213
VC 246/5-7 (N-DE) ecoTEC exclusive	0010022159, 0010024216
VC 276/5-7 (N-DE) ecoTEC exclusive	0010014922, 0010024214
VC 326/5-7 (N-DE/DK) ecoTEC exclusive	0010014924, 0010024215
VC 216/5-7 (N-DE) ecoTEC exclusive I. e.	0010017111

3 Product description

3.1 Product design

The product does not require a minimum volume flow.



1	Flue gas test point	11	Prioritising diverter valve
2	Connection for the air/flue pipe	12	Electronics box
3	All-gas sensor	13	Communication unit (optional)
4	Expansion vessel	14	Differential pressure sensor
5	Compact thermal module	15	Gas valve assembly
6	Fan	16	Heat exchanger
7	Automatic air vent	17	Ignition electrode
8	Manometer	18	Air intake pipe
9	Expansion relief valve	19	Volume flow sensor
10	High-efficiency pump	20	Water pressure sensor

3.2 Information on the identification plate

The identification plate is mounted on the underside of the product in the factory.

Information on the identification plate	Meaning
	Read the instructions.
VC(W) ...	Type designation
..6/5-7	Calorific value power/product generation equipment
ecoTEC exclusive	Product designation
2N, G20 – G25 20 mbar (2 kPa)	Gas group and gas connection pressure as set at the factory

Information on the identification plate	Meaning
ww/yyyy	Date of manufacture: Week/year
Cat.	Approved unit categories
Types	Approved gas-fired units
PMS	Permissible total overpressure
T _{max.}	Max. flow temperature
ED 92/42	Current efficiency directive fulfilled with 4* rating
V Hz	Mains voltage and mains frequency
W	Max. electrical power consumption
IP	Level of protection
	Heating mode
	Hot water generation
P	Nominal heat output range
Q	Heat input range
	Bar code with serial number, 7th to 16th digit = product article number

3.3 CE label



The CE label shows that the products comply with the basic requirements of the applicable directives as stated on the identification plate.

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

3.4 DVGW mark



The DVGW mark documents that the products comply with all of the requirements of the DVGW VP 112 (test basis from the German Association for Gas and Water Industry Association for granting the DVGW quality mark) in accordance with the identification plate.

4 Set-up

4.1 Unpacking the product

1. Remove the product from its box.
2. Remove the protective film from all parts of the product.

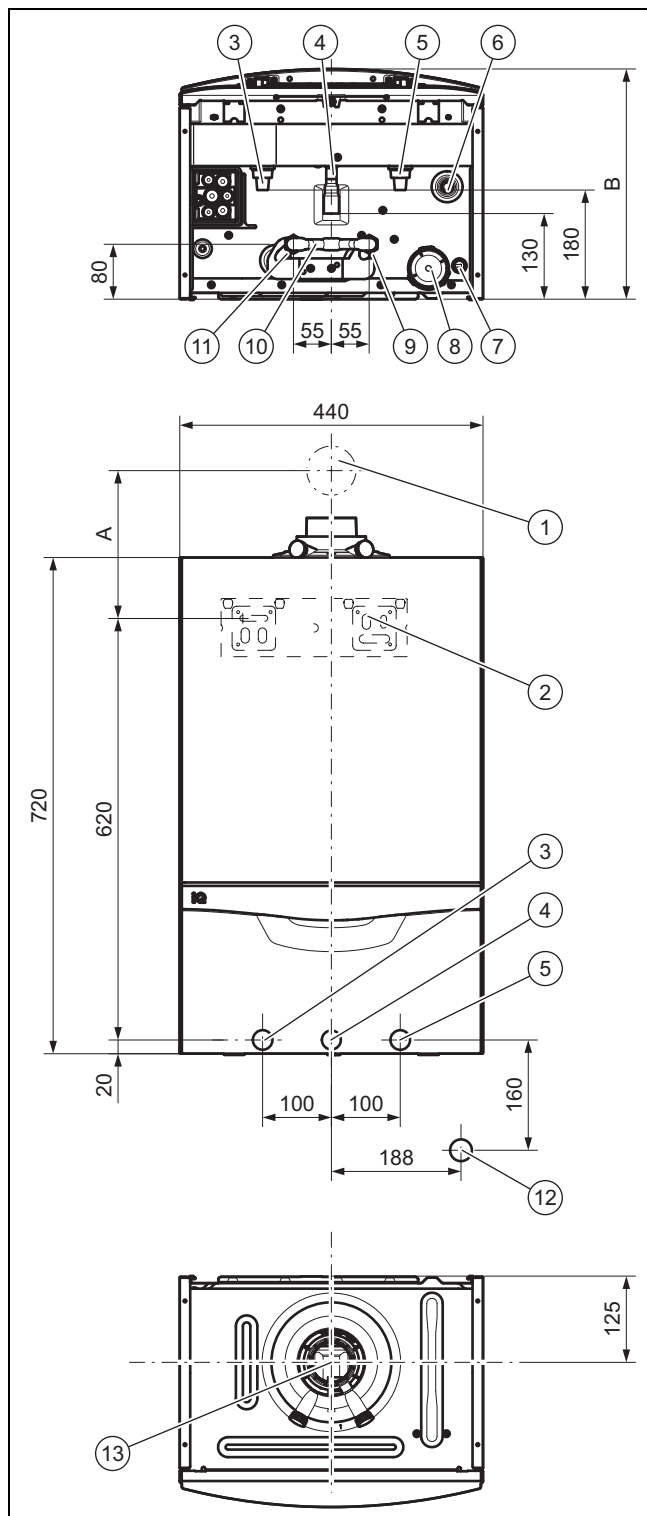
4.2 Checking the scope of delivery

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

Number	Designation
1	Heat generator
1	Installation kit containing the following:
1	- Product bracket
1	- Expansion relief valve connection pipe
1	- Noise insulation
1	- Bag of small parts for securing the product
1	- Bag with small parts
1	- Gas family coding resistor
1	Condensate discharge hose
1	Mounting template
1	Enclosed documentation

4 Set-up

4.3 Dimensions

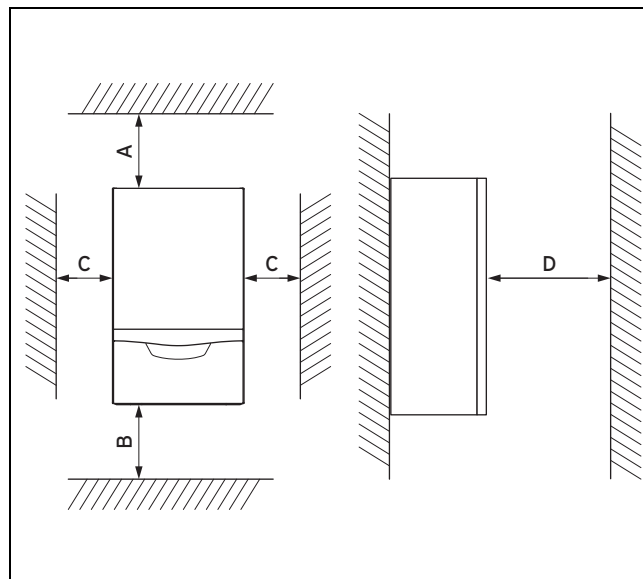


- | | |
|--|--|
| 1 Flue pipe wall duct | 7 Condensate discharge connection |
| 2 Product bracket | 8 Condensate siphon |
| 3 Heating flow | 9 Cylinder return |
| 4 Gas connection | 10 Circulation section |
| 5 Heating return | 11 Cylinder primary pipe-work |
| 6 Connection for the heating expansion relief valve drain line | 12 R1 tundish/condensate siphon connection |
| | 13 Flue pipe connection |

Consult the installation template that is supplied to find the dimension A.

The product's installation depth B can be found in the technical data in the appendix.

4.4 Minimum clearances

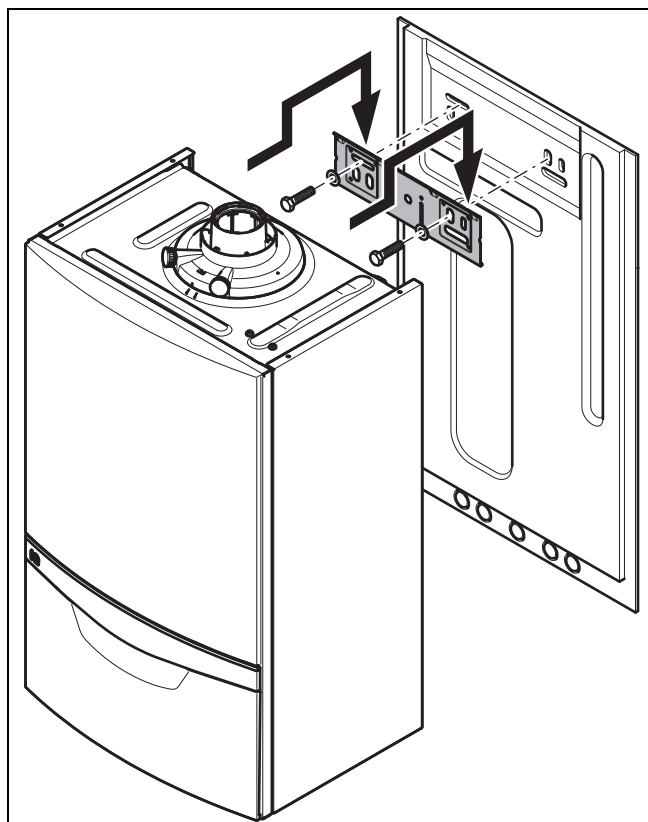


	Minimum clearance
A	165 mm: Air/flue pipe, 60/100 mm diameter 275 mm: Air/flue pipe, 80/125 mm diameter
B	180 mm; optimum approx. 250 mm
C	5 mm; optimum approx. 50 mm
D	500 mm in front of the heat generator to enable easy access for maintenance work (may be provided by an opening door).

4.5 Using the installation template

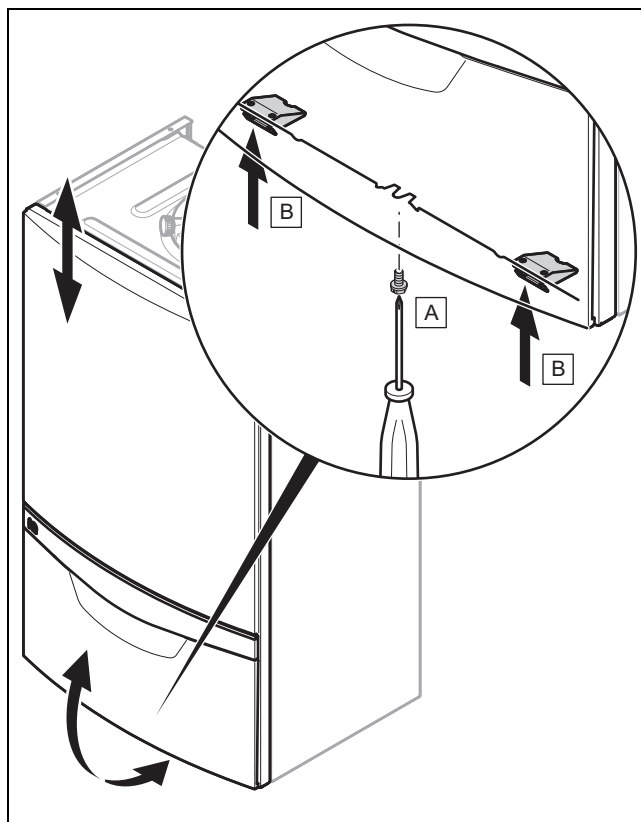
- Use the installation template to ascertain the locations at which you need to drill holes and make perforations.

4.6 Wall-mounting the product



1. Check the load-bearing capacity of the wall.
2. Note the total weight of the product.
3. Only use fixing material that is permitted for the wall.
4. If required, ensure that mounting apparatus on-site has sufficient load-bearing capacity.
5. Wall-mount the product as shown in the illustration.

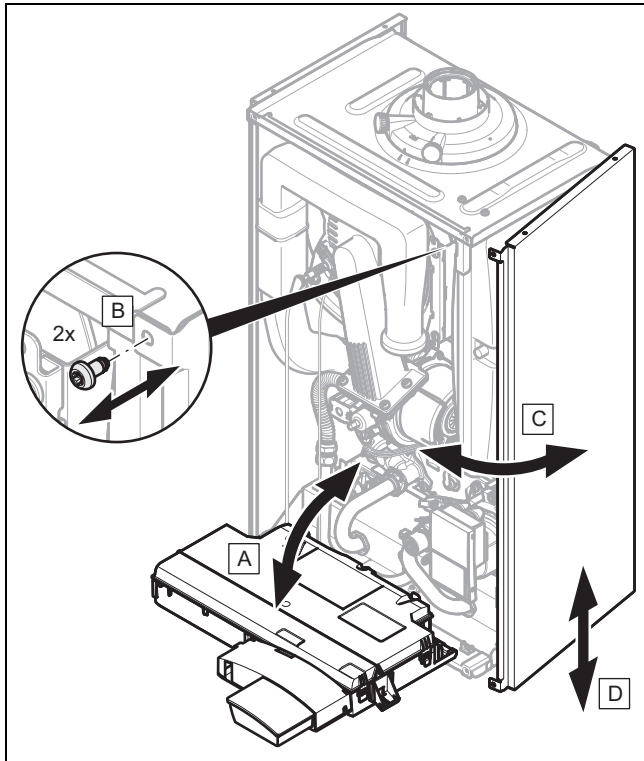
4.7 Removing the front casing



- Remove the front casing as shown in the illustration.

5 Installation

4.8 Removing the side section



Caution.
Risk of material damage caused by mechanical deformation.

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

- ▶ Depressurise the product on the water side.
- ▶ Always remove **only one** side section – never both side sections at the same time.

- ▶ Remove the side section as shown in the illustration.

5 Installation



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

Stresses in supply lines can cause leaks.

- ▶ Install the supply lines without tension.



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.

- ▶ If, during gas leak-tightness tests, you also place the gas lines and the gas valve 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 isolator cocks 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 isolator cock that is installed upstream of the product, relieve the gas line pressure before you open this gas isolator cock.



Caution.
Risk of material damage caused by corrosion

Due to non-diffusion-tight plastic pipes in the heating installation, air gets into the heating water. Air in the heating water causes corrosion in the heat generator circuit and in the product.

- ▶ If you use non-diffusion-tight plastic pipes in the heating installation, ensure that no air gets into the heat generator circuit.



Caution.
Risk of material damage due to heat transfer during soldering.

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

If you also want to install an external heating pump without a low loss header, install the external pump in the return and connect it via the auxiliary relay.

5.1 Installation requirements

5.1.1 Information on liquid gas operation

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

If you have a product that has been preset for operation with natural gas, you must convert it to run on liquid gas. You will need a conversion set for this. The conversion procedure is described in the instructions supplied with the conversion set.

5.1.2 Purging the liquid gas tank

If the liquid gas tank is not purged properly, this may result in ignition problems.

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

5.1.3 Using the correct gas type

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

- Only use a gas type from the gas group that is defined on the data plate.

5.1.4 B23 installation

A flue system for permitted unit type B23 (atmospheric gas-fired wall-hung boilers) requires careful planning and implementation.

- Observe the product's technical data when planning.
- Use the recognised rules of technology.

5.1.5 Information and specifications for installing the B23P

Pipe lengths in the B23P installation (→ Page 32)

The flue gas system must at least correspond to the classification T 120 P1 W 1 in accordance with EN 1443.

The maximum pipe length (straight pipe only) corresponds to the maximum permitted flue gas pipe length without any elbows. If elbows are used, the maximum pipe length must be reduced in accordance with the dynamic flow characteristics of the elbows. Elbows must not be connected directly after one another as this method dramatically increases pressure losses.

In particular, if the flue pipe is installed in cold rooms or outside of the building, the freezing point on the surface of the inside of the pipe may be reached. A proven design in accordance with EN 13384-1 for a maximum boiler load at a flue gas temperature of 40 °C must be used to prevent this problem. The product must not be connected to a cascade flue gas system that is being used by other units.

- Observe the applicable international, national and local regulations for flue gas systems, in particular for installations in living rooms. Inform the operator how to correctly operate the product.

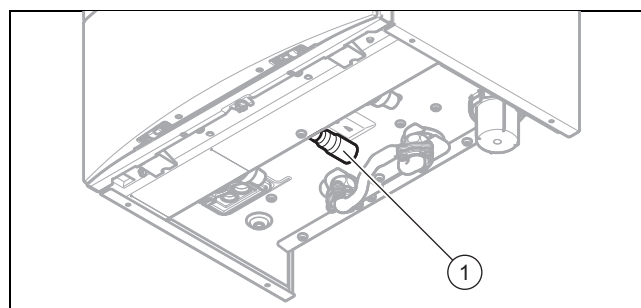
5.1.6 Required preliminary work

1. Install a stop cock in the gas line.
2. Make sure that the existing gas meter is capable of passing the rate of gas supply required.
3. Check that the volumetric capacity of the expansion vessel is sufficient for the system volume.

Conditions: The volume of the installed expansion vessel is insufficient

- Install an additional expansion vessel, connected as close to the product as possible, in the heating return.
4. Install a tundish with siphon for the condensate discharge and the exhaust pipe on the expansion relief valve. Lay as short a drain line as possible, at a downward gradient away from the tundish.
 5. Insulate bare pipes exposed to environmental influences to protect them from frost using suitable insulating material.

5.2 Installing the gas connection

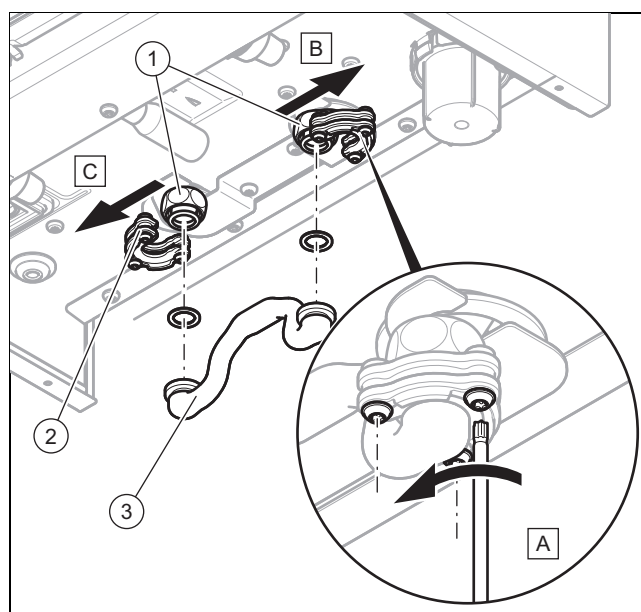


1. Install the gas line in accordance with the recognised rules of technology.
2. Connect the product's gas connection (1) to the gas line in accordance with the recognised rules of technology.
3. Remove the residues from the gas line by blowing through the gas line beforehand.
4. Purge the gas line before start-up.

5.3 Checking the gas line for leak-tightness

- Check the entire gas line properly for leak-tightness.

5.4 Installing the cylinder connections



1. Remove the circulation section (3) by undoing the screws in the clamps (2) and removing the clamps.



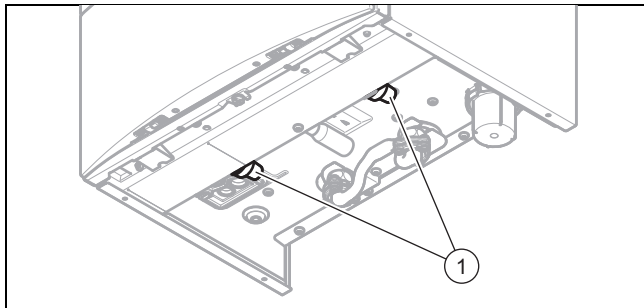
Note

If you are not connecting any cylinder, you must leave the circulation section installed.

2. Connect the cylinder connections (1) to the domestic hot water cylinder.

5 Installation

5.5 Connecting the heating flow and heating return



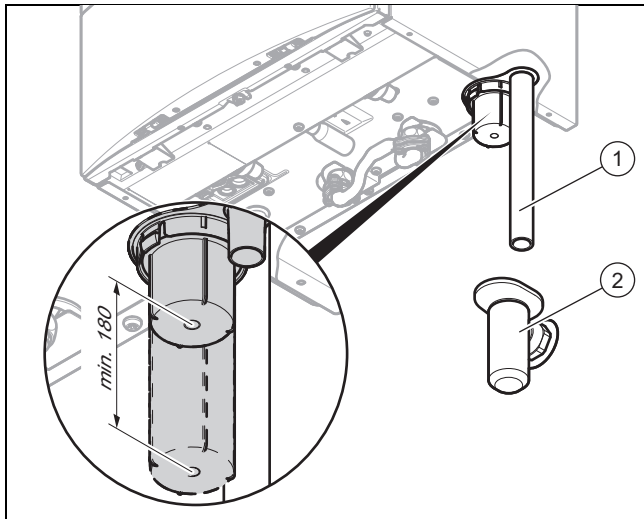
- Establish the heating connections (1) in accordance with the relevant standards.

5.6 Descaling the water

The probability of scale increases as the water temperature increases.

- Descale the water as required.

5.7 Connecting the condensate drain pipework



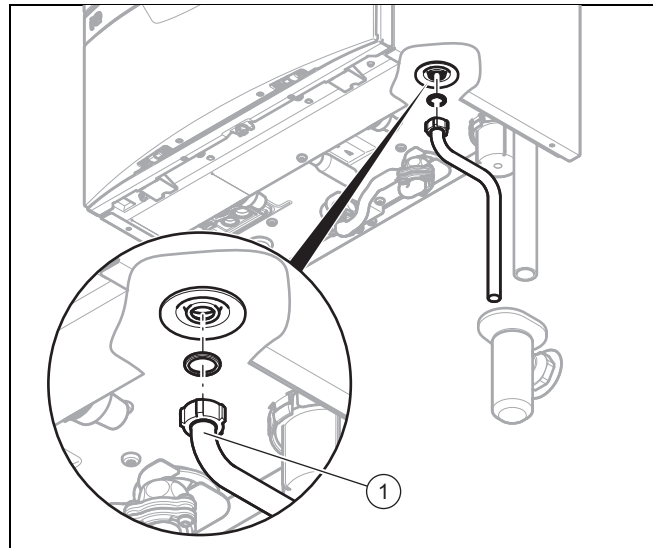
Danger! **Risk of death from escaping flue gases!**

The siphon's condensate drain pipework must not be connected to waste-water piping because, otherwise, the internal condensate siphon may be drained fully and flue gas may escape.

- Do not connect the condensate drain pipework tightly to the waste-water piping.

1. Place the condensate drain pipework (1) onto the condensate siphon.
2. If you have to extend the condensate drain pipework, use only pipes that are made of acid-resistant material (e.g. plastic).
3. Leave an installation space of at least 180 mm beneath the condensate siphon.
4. Suspend the condensate drain pipework above the pre-installed tundish (2).

5.8 Installing the discharge pipe on the expansion relief valve



- Install the discharge pipe (1) as shown (do not shorten).

5.9 Flue installation

5.9.1 Common air/flue gas installation

The static pressure in the common flue gas pipe may exceed the static pressure in the common air pipe.

The common air/flue gas installation must have the following properties:

- The wind protection device for the air/flue gas system must be designed in such a way that a negative pressure is generated in the flue gas pipe in windy conditions.
- Pressure difference between the flue gas evacuation and the air supply at the inlet into the vertical part of the air/flue gas installation:
Max. +25 Pa
- Minimum permitted pressure difference between the flue gas evacuation and the air supply at the inlet into the vertical part of the air/flue gas installation:
Min. -200 Pa
- The vertical part of the flue gas evacuation must at least correspond to the classification EN 1443 – T 120 P1 W 1.
- The air/flue gas system must be planned by applying a calculation according to EN 13384-2.
- Vertical clearance between two flue gas connections:
Min. 2.5 m
- To prevent the condensate siphon from drying out, the heat generator must drain part (min. 10%) of the condensate from the vertical section above it.
- A maximum of 10% of the flue gas may recirculate into the air pipe under the effect of wind.
- The air/flue gas system must have no overflow openings.

5.9.2 Horizontal part

The heat generator, together with the horizontal section of the air/flue gas installation, is tested and certified as a system.

Permissible accessories for the connection:

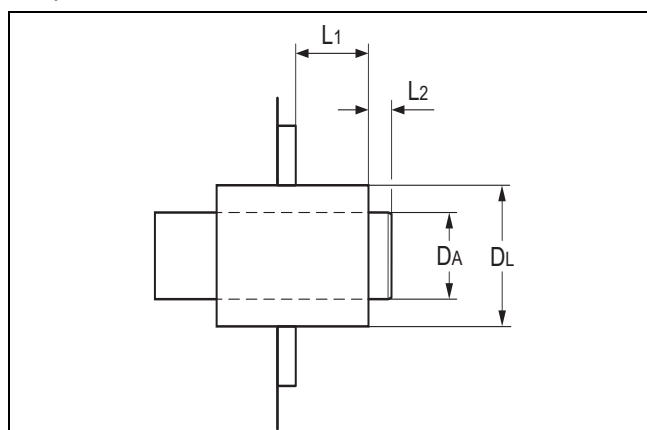
- 60/100 mm diameter: Air/flue gas system installation set, article number 303923

- 80/125 mm diameter: Air/flue gas system installation set, article number 303208

Permissible accessories for extending the horizontal connection:

- All those listed in the assembly instructions for the air/flue gas systems, which are enclosed with the heat generator
- ▶ Observe all of the installation advice given in the assembly instructions.
- ▶ Use an additional air clamp for the connection to the vertical section of the flue gas installation:
- 60/100 mm diameter: Article number 282573 (100 x 70 mm)
- 80/125 mm diameter: Article number 282564 (125 x 70 mm)

Connection requirements (to be established on-site):



	DA	DL	L1	L2
60/100	60 ± 0.5 mm	100 ± 0.5 mm	Min. 35 mm	15 mm
80/125	80 ± 0.5 mm	125 ± 0.5 mm	Min. 35 mm	30 mm

5.9.3 Maximum air/flue gas pipe lengths, horizontal section

Maximum air/flue gas pipe lengths:

- 60/100 mm diameter, horizontal: 10.0 m plus connection elbow
- 80/125 mm diameter, horizontal: 6.0 m plus connection elbow

Each additional 87° elbow reduces the total pipe length by 2.0 m.

5.9.4 Installing and connecting the flue pipe

1. You can find out which flue pipes may be used by consulting the enclosed flue pipe installation manual.

Conditions: Installation in damp rooms

- ▶ You must connect the product to a room-sealed air/flue gas installation. The combustion air must not be taken from the installation room.



Caution.

Risk of poisoning due to escaping flue gas.

Mineral-oil-based greases can damage the seals.

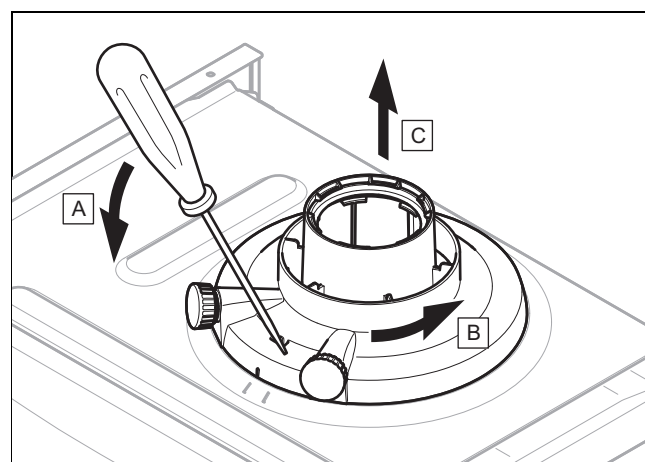
- ▶ Instead of grease, use only water or commercially available soft soap to aid installation.

2. Install the flue pipe using the installation manual.

5.9.5 Replacing the connection piece for the air/flue pipe as required

1. Replace the connection piece for the air/flue pipe as required. The product-specific standard equipment is listed under Technical Data in the appendix.
2. Remove the connection piece for the air/flue pipe. (→ Page 13)
3. **Alternatives :**
 - ▶ If required, install the connection piece for the air/flue pipe, 80/125 mm diameter. (→ Page 14)
4. **Alternatives :**
 - ▶ If required, install the connection piece for the separate flue pipe, 80/80 mm diameter. (→ Page 14)

5.9.5.1 Removing the connection piece for the air/flue pipe



1. Insert a screwdriver into the slot between the measuring stub pipes.
2. Press the screwdriver carefully down.
3. Turn the connection piece anticlockwise as far as it will go and then remove it by pulling it upwards.

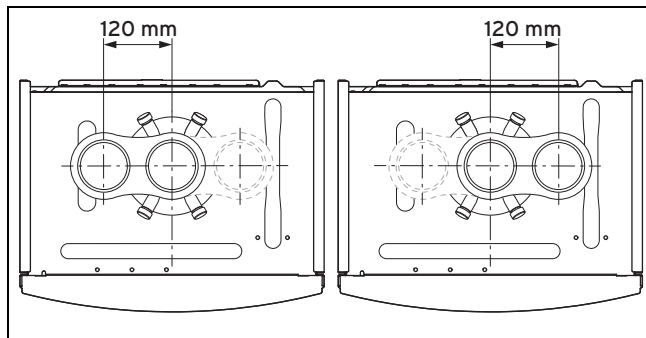
5 Installation

5.9.5.2 Installing the connection piece for the air/flue pipe, 80/125 mm diameter

1. Remove the connection piece for the air/flue pipe. (→ Page 13)
2. Insert the alternative connection piece. In doing so, pay attention to the latching lugs.
3. Turn the connection piece clockwise until it clicks into position.

5.9.5.3 Installing the connection piece for the separate flue pipe, 80/80 mm diameter

1. Remove the connection piece for the air/flue pipe. (→ Page 13)



2. Insert the alternative connection piece. The connection for the air supply can point to the left- or the right-hand side. In doing so, pay attention to the latching lugs.
3. Turn the connection piece clockwise until it clicks into position.

5.10 Electrical installation

Only qualified electricians may carry out the electrical installation.

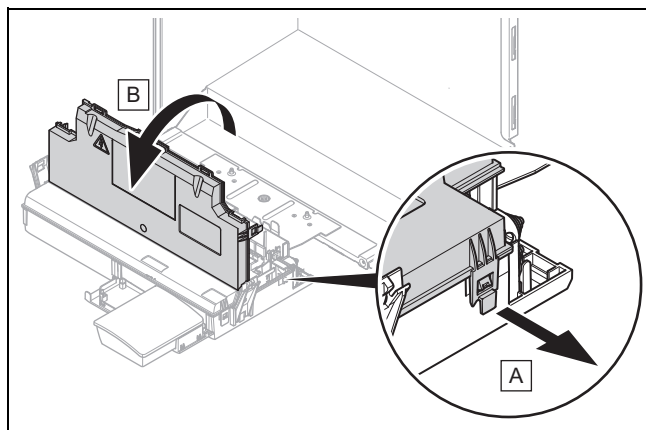


Danger! **Risk of death from electric shock!**

Mains connection terminals L and N remain live even if the on/off switch is turned off.

- Switch off the power supply.
- Secure the power supply against being switched on again.

5.10.1 Opening the electronics box



- Open the electronics box as shown in the illustration.

5.10.2 Carrying out the wiring



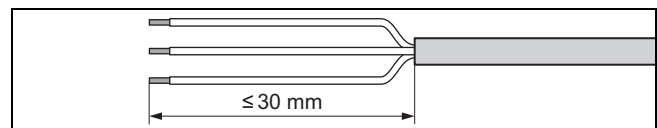
Caution.

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 mains 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. Use strain reliefs.
3. If required, shorten the connection cables.



4. Strip the flexible line as shown in the figure. In doing so, ensure that the insulation on the individual conductors is not damaged.
5. Only strip inner conductors just enough to establish good, sound connections.
6. To avoid short circuits resulting from loose individual wires, fit conductor end sleeves on the stripped ends of the conductors.
7. Screw the respective plug to the connection cable.
8. Check whether all conductors are sitting mechanically securely in the terminals of the plug. Remedy this if necessary.
9. Plug the plug into the associated PCB slot; see the wiring diagram in the appendix.

5.10.3 Establishing the power supply



Caution.

Risk of material damage due to high connected voltage.

At mains voltages greater than 253 V, electronic components may be damaged.

- Make sure that the rated voltage of the mains is 230 V.

1. Plug the mains plug into a suitable plug socket.
2. Make sure that access to the power supply is always available and is not covered or blocked.

5.10.4 Installing the product in a 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 opening of at least 3 mm (e.g. fuses or power switches).
- ▶ Use a flexible line for the mains connection line, which is routed through the cable duct into the product.

1. Open the electronics box. (→ Page 14)
2. Detach the ProE plug from the PCB slot for the mains connection (X1).
3. Unscrew the ProE plug for the factory-installed power supply cable, if installed.
4. Instead of the factory-installed power supply cable, if installed, use a suitable three-core power supply cable which complies with the relevant standards.
5. Carry out the wiring. (→ Page 14)
6. Close the electronics box.
7. Observe the flue-gas connection that is required on a room-sealed air/flue system. (→ Page 13)

5.10.5 Connecting controls to the electronics

1. Install the control if necessary.
2. Open the electronics box. (→ Page 14)
3. Connect the wiring in accordance with the wiring diagram that is included in the appendix.

Conditions: Connecting a weather-compensated control or room temperature control via eBUS

- ▶ Connect the control to the eBUS connection.
- ▶ Bridge the 24 V = RT connection (X100 or X106), if there is not already a bridge.

Conditions: Connecting a low-voltage control (24 V)

- ▶ Remove the bridge and connect the control to the 24 V = RT connection (X100 or X106).

Conditions: Connecting a limit thermostat to underfloor heating

- ▶ Remove the bridge and connect the limit thermostat to the "Burner off" connection.
4. Close the electronics box.
 5. For multi-circuit controls, change **D.018** from **Eco** (intermittently operating pump) to **Comfort** (continuously operating pump), see section "Adapting to the heating installation".

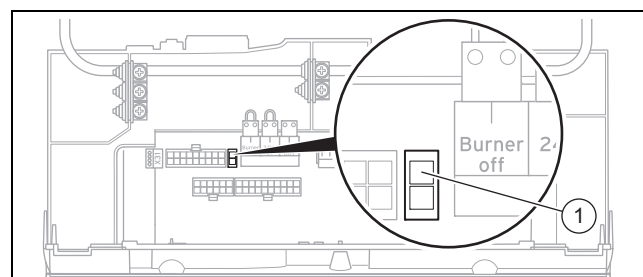
5.10.6 Connecting the communication unit

The product can be connected to the Internet.

- ▶ Connect the communication unit in accordance with the installation instructions enclosed with the communication unit.

5.10.7 Replacing the gas family coding resistor, if required

1. Open the electronics box. (→ Page 14)



2. Remove the gas family coding resistor **(1)** (plug X24) (factory setting: natural gas = yellow) and plug in the coding resistor from the bag of small parts (liquefied petroleum gas = grey).
3. Close the electronics box.
4. When starting up in the installation assistant or retroactively via diagnostics code **D.087**, set the correct gas type.

5.10.8 Connecting additional components

You can actuate an additional component with the aid of the auxiliary relay that is installed, and you can actuate two other components with the multi-functional module.

5.10.8.1 Using the auxiliary relay

1. Connect an additional component directly to the integrated auxiliary relay using the grey plug on the PCB.
2. Carry out the wiring.
3. Activate the component via **D.026**, see section "Adapting to the heating installation".

5.10.8.2 Using the VR 40 ("2 in 7" multi-functional module)

1. Install the components in accordance with the respective instructions.

Conditions: Components connected to relay 1

- ▶ Activate **D.027**, see section "Adapting to the heating installation".

Conditions: Components connected to relay 2

- ▶ Activate **D.028**, see section "Adapting to the heating installation".

6 Operation

5.10.9 Connecting the circulation pump and actuating it according to requirements

1. Carry out the wiring. (→ Page 14)
2. Connect the 230 V connection cable to the plug from slot X13 and plug it into the slot.
3. Connect the connection cable for the external button using terminals 1 ⊕ (0) and 6 (functional drawing) on the X41 edge connector, which is supplied with the control.
4. Plug the edge connector into the PCB slot X41.

6 Operation

6.1 Operating concept

The operating concept and the display and setting facilities of the operator level are described in the operating instructions.

An overview of the reading and setting options for the installer level is included in the table in the appendix.

Installer level – Overview (→ Page 32)

6.2 Calling up the installer level

1. Only call up the installer level if you are a competent person.
2. Press  and  at the same time.
3. Navigate to **Menu** → **Installer level** and confirm by pressing .
4. Set the value **17** (code) and confirm by pressing .

6.3 Live Monitor (status codes)

Menu → **Live monitor**

Status codes in the display provide information on the product's current operating status.

Status codes – Overview (→ Page 40)

7 Start-up

7.1 Switching the product on/off

- ▶ Press the on/off button on the product.
 - ◁ The basic display appears on the display.

7.2 Running the installation assistants

The installation assistant is displayed whenever the product is switched on until it has been successfully completed. It provides direct access to the most important check programmes and configuration settings for starting up the product.

To recheck and reset the most important system parameters, call up the **Appliance config.**

Menu → **Installer level** → **Appliance config.**

The settings options for more complex systems can be found in the **Diagnostics menu**.

Menu → **Installer level** → **Diagnostics menu**

- ▶ Press  to confirm the start of the installation assistant.

- ◁ All heating and hot water requests are blocked whilst the installation assistant is active.



Note

If you do not confirm the launch of the installation assistant within 10 seconds of switching the system on, the basic display reappears.

- ▶ To access the next point, confirm by pressing  in each case.

7.2.1 Language

- ▶ Set the required language.
- ▶ To confirm the set language and to avoid unintentionally changing it, press  to confirm this twice.

If you have unintentionally set a language that you do not understand, proceed as follows to change it:

- ▶ Press and hold  and  **at the same time**.
- ▶ Also briefly press .
- ▶ Press and hold  and  until the display shows the language setting option.
- ▶ Select the required language.
- ▶ Confirm twice by pressing .

7.2.2 Filling mode

Filling mode (check programme **P.06**) is activated automatically in the installation assistant for as long as the filling mode appears on the display.

- ▶ Fill the heating installation. (→ Page 19)

7.2.3 Purging

1. Unlike in the **Check programs** menu, to purge the system, start up the check programme **P.00** by pressing  or .

Hot water circulation

VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive
432 l/h	432 l/h	540 l/h	540 l/h	581 l/h



Note

The check programme must run through completely once, otherwise **S.105** (Product not purged) is displayed. The product starts anyway if the specified hot water circulations (see table) can be achieved. Furthermore, forced purging takes place. If the check programme has run through completely once, **S.105** is cancelled. The product is completely ready for operation

2. The purging is time-optimised and adaptive thanks to the automatic switching between the heating circuit and the hot water circuit.

7.2.4 Hydraulic operating mode

- ▶ The product is equipped with a constant pressure regulation, which means that an overflow section is no longer necessary (factory setting). If a low loss header is installed in the heating installation, the "direct supply" function must be deactivated and a fixed pump speed must be selected.
- ▶ If required, adjust the hydraulic operating mode.

7.2.5 Pressure level

- ▶ If required, adjust the pressure level for the hydraulic operating mode that was set at the factory (without overflow) (default setting: 200 mbar).

7.2.6 Target feed temperature

1. Press  and  to set the target feed temperature.
2. Confirm by pressing .

7.2.7 Hot water temperature

Applicability: Product with hot water generation through external 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. Press  and  to set the hot water temperature.
2. Confirm by pressing .
3. Set the hot water temperature.

Conditions: Water hardness: > 3.57 mol/m³

- Water temperature: ≤ 50 °C

7.2.8 Heating partial load

The heating partial load of the product is set to **Auto** at the factory. The product independently determines the optimum heating output depending on the current heat demand of the system. You can retroactively adjust the setting in the **Diagnostics menu** under **D.000**.

7.2.9 Green iQ

- ▶ Set **Green iQ** mode (energy-saving mode for hot water generation with cylinder and heating mode) (default setting: On).



Note

Green iQ mode is a special operating mode that can be used to save energy. If this mode is activated, the product operates in the heating and cylinder charging mode in such a way that the maximum benefits associated with condensing technology are achieved. Under certain circumstances, this may result in comfort bottlenecks because, in this operating mode, the cylinder charging time may be extended, for example.

7.2.10 Auxiliary relay and multi-functional module

1. If you have connected additional components to the product, assign these components to the individual relays.
2. In each case, confirm by pressing .



Note

This setting can be retroactively changed in the **Diagnostics menu** using **D.026**, **D.027** and **D.028**.

7.2.11 Gas type

1. Select the gas type that is available at the installation site (default setting: Natural gas). If required, retroactively change the gas type using diagnostics code **D.087** and plug the correct coding resistor (plug X24: Natural gas = yellow, liquefied petroleum gas = grey) into the PCB; see the wiring diagram in the appendix.

Conditions: Liquid gas set

- ▶ If you have selected the "liquid gas" gas type, after the start-up process is complete, affix the enclosed "Liquid gas" conversion sticker onto the data plate and affix the enclosed tank sticker (propane quality) so that it is clearly visible on the tank or the cylinder cabinet, if possible close to the filler nozzle.

7.2.12 Contact data

- ▶ If required, store your telephone number in the **Appliance config.** (max. 16 digits/no blank spaces). The operator can view the telephone number.

7.2.13 Ending the installation assistant

- ▶ Once you have run through the installation assistant successfully, confirm by pressing .
 - ◁ The installation assistant will close and will not launch again when the product is next switched on.

7 Start-up

7.3 Restarting the installation assistants

Menu → Installer level → Start inst. assistant

You can restart the installation assistant at any time by calling it up in the menu.

7.4 Test programmes

Menu → Installer level → Test programs

As well as the installation assistants, you can also call up the following test programmes for start-up, service and troubleshooting.

- Check programs
- Function menu
- Electronics self-test

7.5 Using check programmes

Menu → Installer level → Test programs → Check programs



Note

If the product does not start with the check programmes **P.01**, **P.02** and in maximum output mode, the minimum circulation of the heating water may not have been reached. If **S.85** is displayed in the **Live Monitor**, the circulation must be increased in the heating system.

Display	Meaning
P.00	Purging check programme: The internal pump is cyclically actuated. The heating circuit and hot water circuit are purged adaptively by automatically switching the circuits via the automatic air vent (the cap for the automatic air vent is loosened at the factory). Hot water circuit active or Heating circuit active display. 1 x : Start purging 1 x (Cancel): End purge programme Note The duration of the purge programme is displayed by a countdown timer. The programme then ends.
P.01	Maximum load check programme: After successful ignition, the product is operated at maximum heat input.
P.02	Minimum load check programme: After successful ignition, the product is operated at minimum heat input.
P.04	Reset eGas CH (Central Heating) check programme: Calling up the programme deletes all of the CH correction values that have been saved from previous calibration processes. The products then starts by fully calibrating the combustion regulation (status S.09).
P.06	Filling mode check programme: The diverter valve is moved to the mid-position. The burner and pump are switched off (to fill or drain the product).

7.6 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-protection measures, or fit a magnetic filter.
- ▶ 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 standards when treating the filling and supplementary water.
- ▶ In particular, observe VDI directive 2035, sheets 1 and 2.

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

You must treat the heating 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 guideline values listed in the following table are not met, or
- If the pH value of the heating water is less than 8.2 or more than 10.0.

Total heating output	Water hardness at specific system volume ¹⁾					
	≤ 20 l/kW		> 20 l/kW ≤ 50 l/kW		> 50 l/kW	
kW	°dH	mol/m³	°dH	mol/m³	°dH	mol/m³
< 50	< 16.8	< 3	11.2	2	0.11	0.02
> 50 to ≤ 200	11.2	2	8.4	1.5	0.11	0.02
> 200 to ≤ 600	8.4	1.5	0.11	0.02	0.11	0.02
> 600	0.11	0.02	0.11	0.02	0.11	0.02

1) Nominal capacity in litres/heating output; in the case of multi-boiler systems, the smallest single heating output is to be used.



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 frost and corrosion protection agents, 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.

7.7 Preventing low water pressure

To ensure that the heating installation operates smoothly, the indicator on the pressure gauge must point to the upper half of the grey area or to the middle of the bar graph display in the display (marked by the dashed limit values) when the heating installation is cold. This corresponds to a filling pressure of between 0.1 MPa and 0.2 MPa (1.0 bar and 2.0 bar).

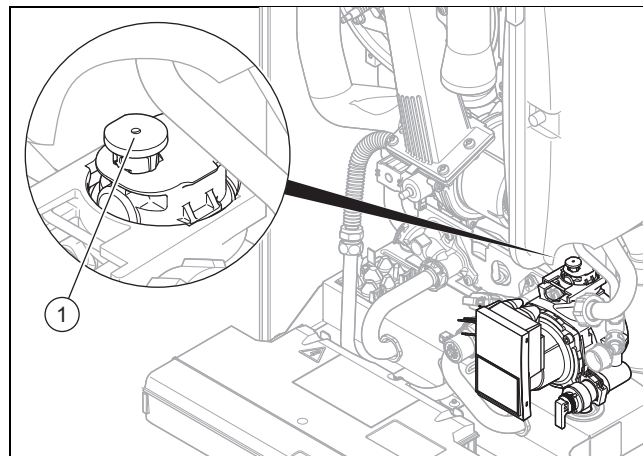
If the heating installation extends over several storeys, higher filling pressures may be required to avoid air entering the heating installation.

If the filling pressure falls below 0.08 MPa (0.8 bar), the product indicates low pressure by displaying a flashing pressure value. If the filling pressure falls below 0.05 MPa (0.5 bar), the product switches off. The display shows **F.22**.

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

The pressure value flashes in the display until a pressure of 0.11 MPa (1.1 bar) or higher has been reached.

7.8 Filling the heating installation



1. Flush the heating installation through.
2. Select the check programme **P.06**.
 - ◁ The diverter valve moves to the mid-position, the pumps do not run and the product does not switch to heating mode.



Note

The cap on the automatic air vent (1) has already been opened at the factory.

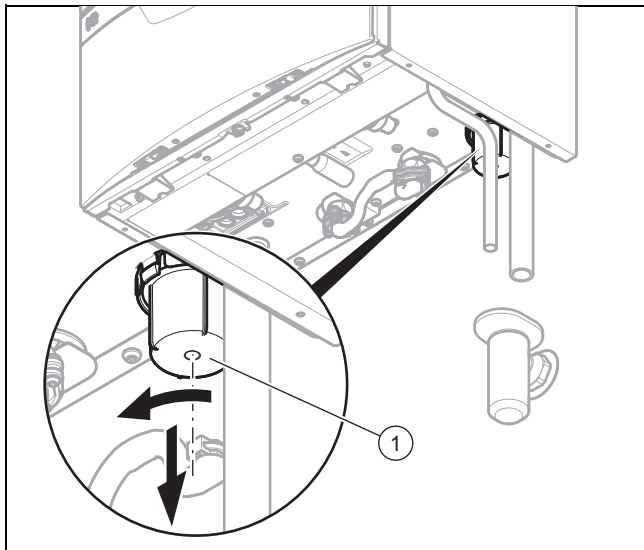
3. Connect the filling and drainage tap in the heating installation to a heating water supply, if possible with the cold water valve, in accordance with the relevant standards.
4. Open the heating water supply.
5. Open all thermostatic radiator valves.
6. If necessary, check that both service valves on the product are open.
7. Slowly open the filling and drainage tap so that the water flows into the heating system.
8. Purge the lowest radiator until water flows out of the purging valve without bubbles.
9. Purge all other radiators until the entire heating system has been filled with water.
10. Close all purging valves.
11. Monitor the rising filling pressure in the heating installation.
12. Fill with water until the required filling pressure is reached.
13. Close the filling and drainage tap and the cold water valve.
14. Check all connections and the entire system for leaks.

7 Start-up

7.9 Purging the heating installation

- Select the check programme **P.00**.
 - ◁ The product does not start up, the internal pump operates intermittently and purges either the heating circuit or the 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.
 - $\geq 0.08 \text{ MPa}$ ($\geq 0.80 \text{ bar}$)
 - ◁ At the end of the filling procedure, the filling pressure of the heating installation should be at least 0.02 MPa (0.2 bar) above the counter-pressure of the expansion vessel ("Exp") ($P_{\text{Installation}} \geq P_{\text{Exp}} + 0.02 \text{ MPa}$ (0.2 bar)).
- If there is still too much air in the heating installation at the end of the check programme **P.00**, repeat the check programme.

7.10 Filling the condensate siphon



- Remove the lower section (1) of the siphon.
- Fill the siphon trap with water up to 10 mm below the upper edge.
- Secure the lower section of the siphon to the condensate siphon.

7.11 Starting up the heat generator

The product has a gas-adaptive heat cell that automatically adjusts to the relevant gas type. We recommend that you start up the heat cell using the following steps. Calibration establishes the operational readiness. This calibration is also a prerequisite for the correct measurement of gas flow pressure and CO_2 content.

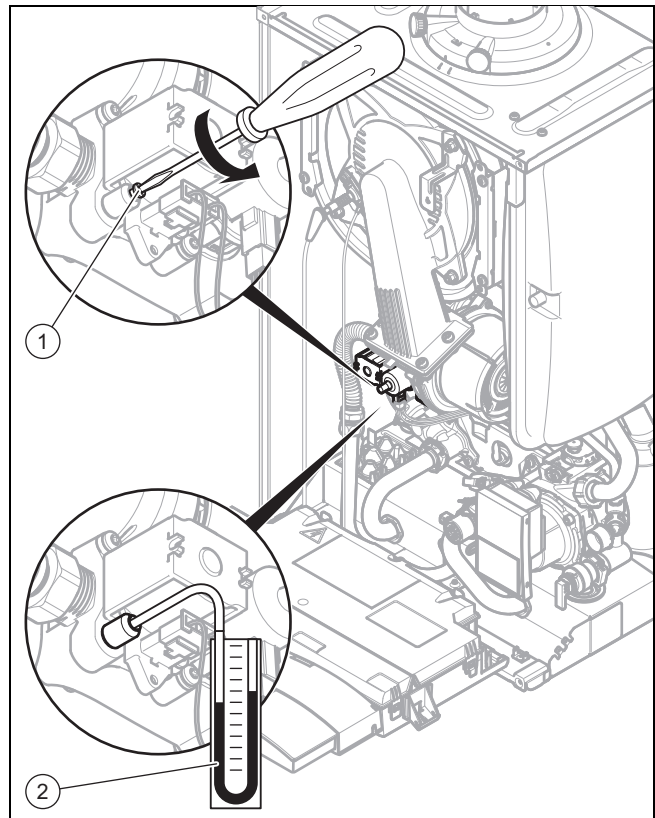
- Deleting existing calibration values
 - Calibrating in maximum mode
 - Calibrating in minimum mode
- Install the front casing.
 - Ensure that there is sufficient hot water circulation.
 - Navigate to **Menu** → **Installer level** → **Check programs** and confirm by pressing .
 - Start check programme **P.04**.

- ◁ Existing calibration points are deleted. The display shows the successful deletion.
- Start check programme **P.01**.
 - Duration: 7-10 minutes. Automatic programme end after 15 minutes
 - ◁ If the circulation in the heating system is sufficient, the test routine starts and determines the calibration points for maximum power. **S.93** is displayed.
 - ▽ **S.85** is displayed. The circulation in the heating system is not sufficient.
 - ◁ After max. 10 minutes, **S.04** is displayed.
 - Press  to end the check programme.
 - Start check programme **P.02**.
 - Duration: 3-5 minutes. Automatic programme end after 15 minutes
 - ◁ If the circulation in the heating system is sufficient, the test routine starts and determines the calibration points for minimum power. **S.93** is displayed.
 - ▽ **S.85** is displayed. The circulation in the heating system is not sufficient.
 - ◁ After max. five minutes, **S.04** is displayed.
 - Press  to end the check programme.
 - ◁ All calibration points have been determined.

7.12 Gas inspection

7.12.1 Checking the gas flow pressure

- Close the gas isolator cock.
- Remove the front casing. (→ Page 9)



- Use a screwdriver to undo the sealing screw of the measuring nipple (1) at the gas valve.
- Connect a pressure gauge (2) to the measuring nipple (1).
- Open the gas isolator cock.

6. Start up the product with the check programme **P.01**.
 - ▽ If **S.85** is shown, the hot water circulation must be extended.
 - ◁ **S.93** is briefly displayed.
 - ◁ If the display switches to **S.04**, the product is ready for the measurement.
7. Measure the gas flow pressure in comparison with the atmospheric pressure.
 - Permissible gas flow pressure for operation with G20 natural gas: 1.8 ... 2.5 kPa (18.0 ... 25.0 mbar)
 - Permissible gas flow pressure for operation with G25 natural gas: 1.8 ... 2.5 kPa (18.0 ... 25.0 mbar)
 - Permissible gas flow pressure for operation with G31 liquid gas: 4.25 ... 5.75 kPa (42.50 ... 57.50 mbar)
8. Decommission the product.
9. Close the gas isolator cock.
10. Remove the pressure gauge.
11. Tighten the screw on the measuring nipple (1).
12. Open the gas isolator cock.
13. Check the measuring nipple for gas tightness.

Conditions: Gas flow pressure **not** in the permissible range



Caution.

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

If the 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 remedy the fault, contact the gas supply company.
- Close the gas isolator cock.

7.12.2 Checking the CO₂ content



Caution.

Risk of operating faults caused by the corruption of the measured values during the calibration.

Operating the product with the front casing open or not completely installed, or with the flue pipe open, may negatively influence the calibration of the gas-air mixture.

- During the calibration and when measuring the CO₂ content, you must operate the product with the front casing installed and closed, and with the flue pipe completely installed.

1. Start up the product.



Note

Since the combustion can be continuously monitored by the product, you do not need to check the combustion.

2. Press  and  at the same time to activate the maximum output operation.
 - ▽ If **S.85** is displayed in the **Live Monitor**, the circulation must be increased in the heating system.
 - ◁ The display shows **Chimney sweep** and **S.93** at the same time.
 - ◁ The product runs through a calibration process on the flue gas installation and the gas quality.
3. Wait until the calibration process has taken place.
 - ◁ After the calibration procedure ends, the display shows **Chimney sweep** and **S.04** at the same time.
4. Now measure the CO₂ content at the flue gas analysis point.
 - ◁ The product restarts the measuring programme after the burner has been operating for five minutes so that it can take heating effects into consideration.
 - ◁ The combustion automatically optimises itself. CO₂ content of 8.0 to 10.5 vol.% (natural gas) and of 9.0 to 11.8 vol.% (liquid gas) can be measured.



Note

After initial start-up or starting the check programme **P.04**, depending on the heating partial load that is set and the existing heat consumption by the heating installation, it may be the case that the product runs through the measuring programme several times. During the calibration process, no flue gas analysis is possible.

7.13 Checking leak-tightness

- Check the gas pipe, the heating circuit and the hot water circuit for leak-tightness.
- Check that the air/flue pipe has been installed correctly.

Conditions: Room-sealed operation

- Check whether the vacuum chamber has been closed tightly.

7.13.1 Checking the heating mode

1. Make sure that there is a heat requirement.
2. Call up **Live monitor**.
 - ◁ If the product is working correctly, the display shows **S.04**.

7.13.2 Checking the hot water generation

1. Ensure that the cylinder charging mode is requesting heat.
2. Call up **Live monitor**.
 - ◁ If the cylinder is charged correctly, the display shows **S.24**.

Conditions: Controller connected

- Set the hot water temperature on the boiler to the maximum possible temperature.

8 Adapting the unit to the heating installation

- Adjust the target temperature for the connected domestic hot water cylinder to the controller.
 - ◄ The boiler adopts the set target temperature which is set on the controller.

8 Adapting the unit to the heating installation

To reset the most important system parameters, use the **Appliance config.** menu item.

Menu → Installer level → Appliance config.

Or manually relaunch the installation assistant.

Menu → Installer level → Start inst. assistant

8.1 Calling up diagnostics codes

The settings options for more complex systems can be found in the **Diagnostics menu**.

Menu → Installer level → Diagnostics menu

Overview of diagnostics codes (→ Page 35)

You can use the parameters that are marked as adjustable in the overview of diagnostics codes to adapt the product to the heating installation and the needs of the customer.

8.2 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).

8.2.1 Setting the burner anti-cycling time

1. Navigate to **Menu → Installer level → Diagnostics menu → D.002 Max. anti-cycl. time: Heating** and confirm by pressing .
2. Set the burner anti-cycling time and confirm by pressing .

T _{Flow} (target) [°C]	Set maximum burner anti-cycling time [min]						
	1	5	10	15	20	25	30
30	2.0	4.0	8.5	12.5	16.5	20.5	25.0
35	2.0	4.0	7.5	11.0	15.0	18.5	22.0
40	2.0	3.5	6.5	10.0	13.0	16.5	19.5
45	2.0	3.0	6.0	8.5	11.5	14.0	17.0
50	2.0	3.0	5.0	7.5	9.5	12.0	14.0
55	2.0	2.5	4.5	6.0	8.0	10.0	11.5
60	2.0	2.0	3.5	5.0	6.0	7.5	9.0
65	2.0	1.5	2.5	3.5	4.5	5.5	6.5
70	2.0	1.5	2.0	2.5	2.5	3.0	3.5
75	2.0	1.0	1.0	1.0	1.0	1.0	1.0

T _{Flow} (target) [°C]	Set maximum burner anti-cycling time [min]					
	35	40	45	50	55	60
30	29.0	33.0	37.0	41.0	45.0	49.5
35	25.5	29.5	33.0	36.5	40.5	44.0
40	22.5	26.0	29.0	32.0	35.5	38.5
45	19.5	22.5	25.0	27.5	30.5	33.0
50	16.5	18.5	21.0	23.5	25.5	28.0
55	13.5	15.0	17.0	19.0	20.5	22.5
60	10.5	11.5	13.0	14.5	15.5	17.0
65	7.0	8.0	9.0	10.0	11.0	11.5
70	4.0	4.5	5.0	5.5	6.0	6.5
75	1.0	1.0	1.0	1.0	1.0	1.0

8.2.2 Resetting the remaining burner anti-cycling time

1. Alternatives 1:

- Navigate to **Menu → Reset anti-cycl. time**.
 - ◄ The current burner anti-cycling time appears in the display.
- Press  to reset the burner anti-cycling time.

1. Alternatives 2:

- Press the **Fault clearance**  button.

8.3 Setting the maintenance interval

1. Navigate to **Menu → Installer level → Diagnostics menu → D.084 Maintenance in** and confirm by pressing .
2. Set the maintenance interval (operating hours) until the next maintenance work is due and confirm by pressing .

Heat demand	Number of persons	Guideline value for burner operating hours until the next inspection/maintenance work is due for an average operating time of one year (dependent upon the system type)
5.0 kW	1 - 2	1050 h
	2 - 3	1150 h
10.0 kW	1 - 2	1500 h
	2 - 3	1600 h
15.0 kW	2 - 3	1800 h
	3 - 4	1900 h
20.0 kW	3 - 4	2600 h
	4 - 5	2700 h
25.0 kW	3 - 4	2800 h
	4 - 6	2900 h
> 27.0 kW	3 - 4	3000 h
	4 - 6	3000 h

Adapting the unit to the heating installation 8

8.4 Setting the hydraulic operating mode

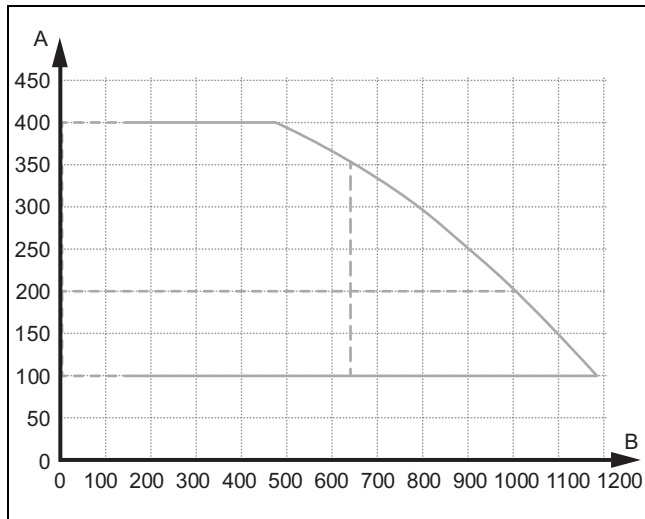
- Navigate to **Menu** → **Installer level** → **Diagnostics menu** → **D.130 Hydraulic operating mode** and confirm by pressing .
- If required, set the hydraulic mode and confirm by pressing .

If you have installed a low loss header in the heating installation, adjust the speed regulation and set the pump output to a fixed value.

8.4.1 Pump characteristics

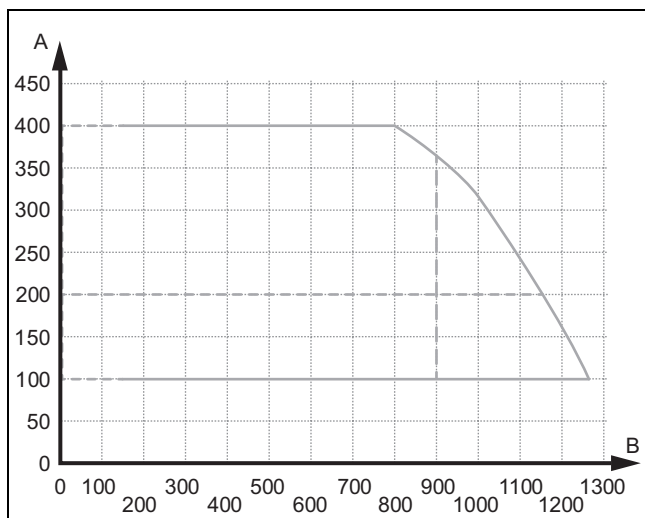
Differential pressure specified under diagnostics code **D.122**.
Factory setting: 200 hPa.

8.4.1.1 VC 156/5-7 pump characteristic



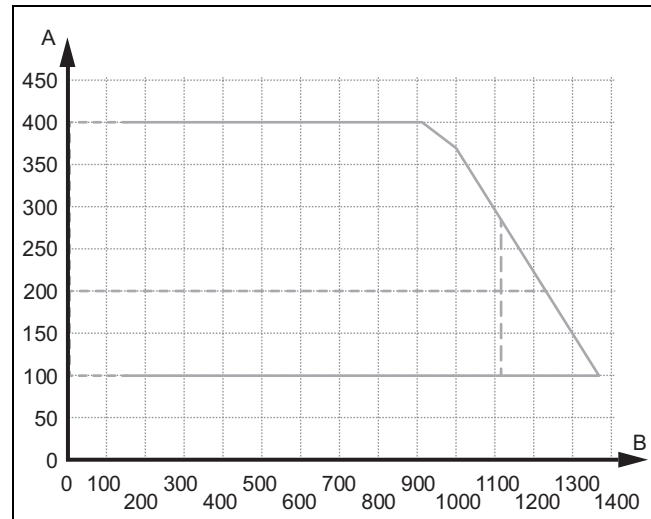
- A Constant pressure regulation for the differential pressure level **D.122** [hPa (mbar)], factory setting marked
- B System volume flow [l/hr], nominal volume flow [20 K] marked

8.4.1.2 VC 216/5-7 pump characteristic



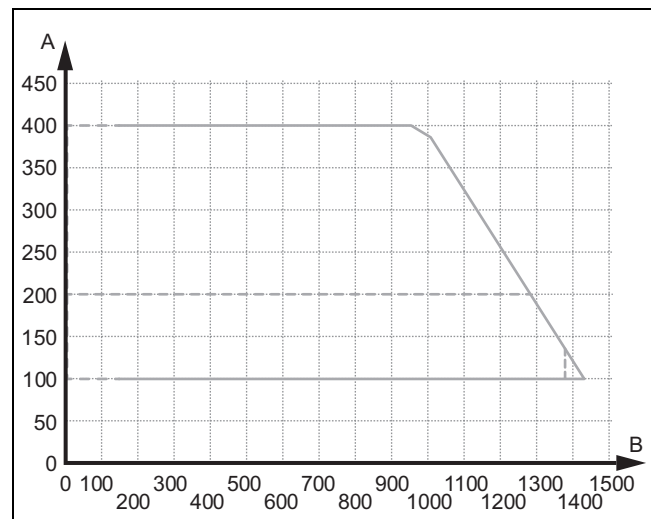
- A Constant pressure regulation for the differential pressure level **D.122** [hPa (mbar)], factory setting marked
- B System volume flow [l/hr], nominal volume flow [20 K] marked

8.4.1.3 VC 246/5-7, 276/5-7 pump characteristic



- A Constant pressure regulation for the differential pressure level **D.122** [hPa (mbar)], factory setting marked
- B System volume flow [l/hr], nominal volume flow [20 K] marked

8.4.1.4 VC 326/5-7 pump characteristic



- A Constant pressure regulation for the differential pressure level **D.122** [hPa (mbar)], factory setting marked
- B System volume flow [l/hr], nominal volume flow [20 K] marked

8.5 Hydraulic check

The hydraulic check is used to determine the relevant variables for differential pressure and volume flow and may, as a result, be used to check the pipe network in the heating installation or to support the hydraulic balancing. After specifying a pressure level between 100 and 400 mbar, the internal pump is actuated at the target differential pressure. If the target pressure has been reached, the display shows the volume flow that is to be set for the current status of the heating installation. Conversely, the required differential pressure can be determined for the required volume flow.

- Navigate to **Menu** → **Installer level** → **Test programs** → **Hydraulic check** and confirm by pressing .

9 Handing the product over to the end user

- Minimum volume flow: ≥ 180 l/h
- ▶ Specify a pressure level and confirm by pressing .
- ▶ Wait until the volume flow has been set.

9 Handing the product 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 which 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.
- ▶ If the product is equipped with a communication unit for connecting to a broadband Internet connection, point out to the end user that they can download an app from Google Play™ or the App Store™ and use it for mobile operation.
- ▶ In this case, point out to the end user the product information sticker with Data Matrix Code that is on the rear of the front flap, as they will need this in order to use the app.

10 Troubleshooting

10.1 Comfort protection mode for the heat cell

Conditions: Neither  nor a fault code **F.xx** are shown in the display

Unusual operating noises are emitted from the heat cell in the product.

- ▶ Check whether **S.40** is displayed in **Live monitor**.

If **S.40** is displayed, the product is in a temporary test mode, which it will exit again automatically.

Conditions:  is displayed.

The **Live monitor** shows **S.40** and **D.118** is at 0. The heat cell is in permanent comfort protection mode. This is not caused by the all-gas sensor.

- ▶ Decommission the product and check the entire air/flue pipe.
 - ▽ Are there any blockages or leakages?
 - ▶ Eliminate the cause.
 - ▽ Are any components damaged?
 - ▶ Replace the defective components.
- ▶ If the air/flue pipe is OK, restart the product.
- ▶ Prepare the flue gas analyser for checking the recirculation.

- ◁ The measuring probes must be rinsed and must not be contaminated by a previous measurement.
- ▶ Check for recirculation at the air test point. The following measured values are indicators of recirculation.
 - Oxygen value in the intake air: < 20 vol. %
 - Intake air CO value: ≥ 100 ppm
 - ▽ Recirculation is present.
 - ▶ Eliminate the deficiencies in the air/flue pipe.
 - ▽ No recirculation is present.
 - ▶ Ensure that there is a heat requirement. In the Live Monitor, check whether the product has the status **S.04** or **S.14**.
- ▶ If the combustion values are not OK, carry out check programmes **P.04** and **P.14**.

Conditions:  and **F.55** are displayed

The **Live monitor** shows **S.40** and **D.118** ≥ 1 . The heat cell is in permanent comfort protection mode.

- ▶ Check and, if required, replace the all-gas sensor.

10.2 Checking service messages

- ▶ To obtain further information, call up the **Live Monitor**. (→ Page 16)

Conditions: **S.40** is displayed

The product is in Comfort protection mode. The product has detected a temporary fault and continues to run with restricted comfort. The product switches back to the normal operating mode.

- ▶ To establish whether or not a component is defective, read the fault memory. (→ Page 25)



Note

If no fault message is present, the product will automatically switch back to normal operating mode after a certain time.

Conditions: **S.86** or **S.87** is displayed

The product remains in comfort safety mode and does not switch back to normal operating mode.

- ▶ Check the component that is mentioned and, if required, replace it.
- ▶ To establish whether or not a component is defective, read the fault memory (→ Page 25).

 appears if you have set a maintenance interval, for example, and this has passed or a service message is issued.

10.3 Eliminating faults

- ▶ If fault messages (**F.XX**) appear, eliminate the fault by referring to the table in the appendix or using the function menu (→ Page 28) and the check programmes (→ Page 18).
Overview of fault codes (→ Page 41)

If several faults occur at the same time, the display shows the corresponding fault messages for two seconds each in alternation.

- ▶ Press **[X]** (max. three times) to restart the product.
- ▶ If you are unable to eliminate the fault and the fault recurs despite reset attempts, contact customer service.

10.4 Calling up/clearing the fault memory

If faults have occurred, the last ten (max.) fault messages are available in the fault memory.

- ▶ Navigate to **Menu** → **Installer level** → **Fault list** and confirm by pressing **[OK]**.
◀ The display shows the number of faults that have occurred, the fault numbers and the corresponding plain text display.
- ▶ Press **[OK]** or **[+]** to call up individual fault messages.
- ▶ Press **[OK]** twice to delete the fault list.

10.5 Resetting parameters to factory settings

1. Navigate to **Menu** → **Installer level** → **Diagnostics menu** → **D.096 Reset to factory settings?** and confirm by pressing **[OK]**.
2. Press **[+]** to set the value to 1 and confirm by pressing **[OK]**.

10.6 Preparing the repair work

1. Temporarily decommission (→ Page 31) the product.
2. Disconnect the product from the power mains.
3. Remove the front casing. (→ Page 9)
4. Close the service valves in the heating flow, in the heating return and in the cold water pipe.
5. Drain the product (→ Page 31) if you want to replace any of the product's water-bearing components.
6. Make sure that water does not drip on live components (e.g. the electronics box).
7. Use only new seals.

10.6.1 Risk of poisoning caused by flue gases during maintenance work



Danger!

Risk of poisoning due to escaping flue gases in overpressurised, multi-occupancy air/flue gas installations.

- ▶ Only perform maintenance and repair work after you have shut down all of the heat generators connected to the air/flue gas installation.
- ▶ Use suitable means to seal the air/flue gas connection for the air/flue gas installation during maintenance and repair work.

10.6.2 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 void the conformity of the product and it will therefore no longer comply with the applicable standards.

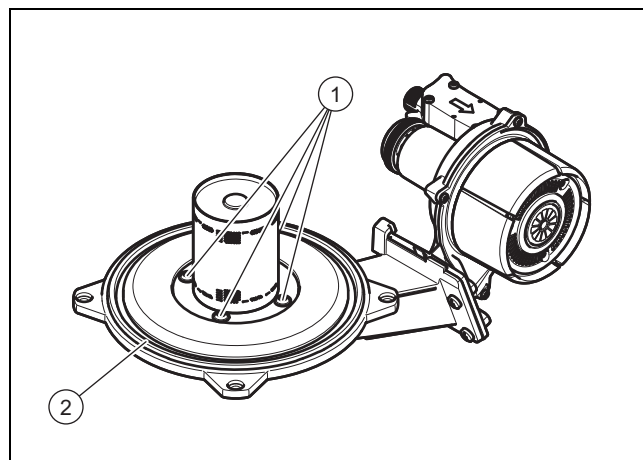
We strongly recommend that you use original spare parts from the manufacturer as this guarantees fault-free and safe operation of the product. To receive information about the available original spare parts, contact the contact address provided on the reverse of these instructions.

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

10.7 Replacing defective components

10.7.1 Replacing the burner

1. Remove the compact thermal module. (→ Page 29)

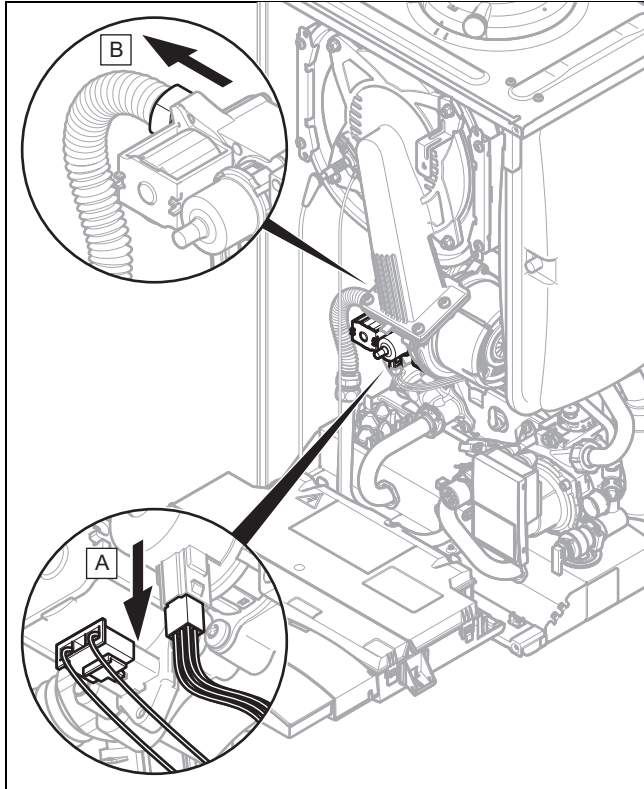


2. Undo the four screws (**1**) on the burner.
3. Remove the burner.
4. Install a new seal (**2**) on the new burner.
5. Install the compact thermal module. (→ Page 30)

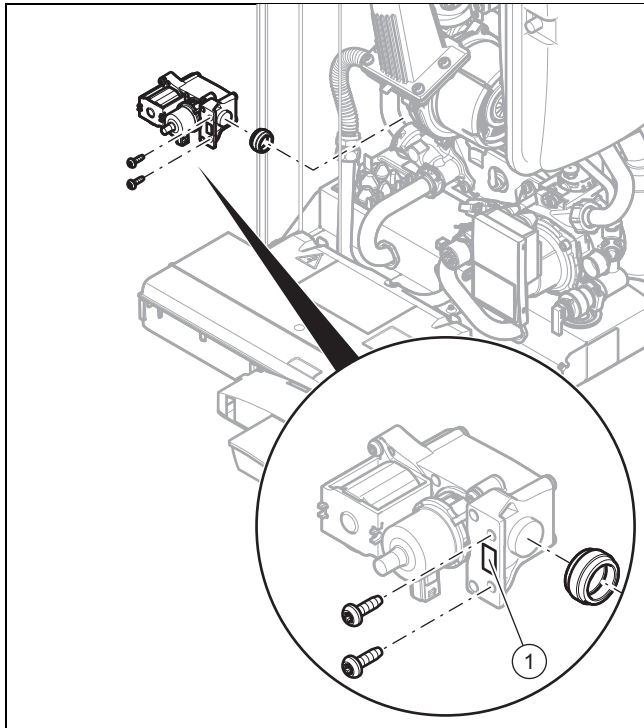
10.7.2 Replacing the gas valve

1. Switch off heating mode and hot water generation (→ Operating instructions).

10 Troubleshooting



2. Remove the air intake pipe.
3. Remove the two plugs from the gas valve.
4. Unscrew the cap nut from the gas valve.

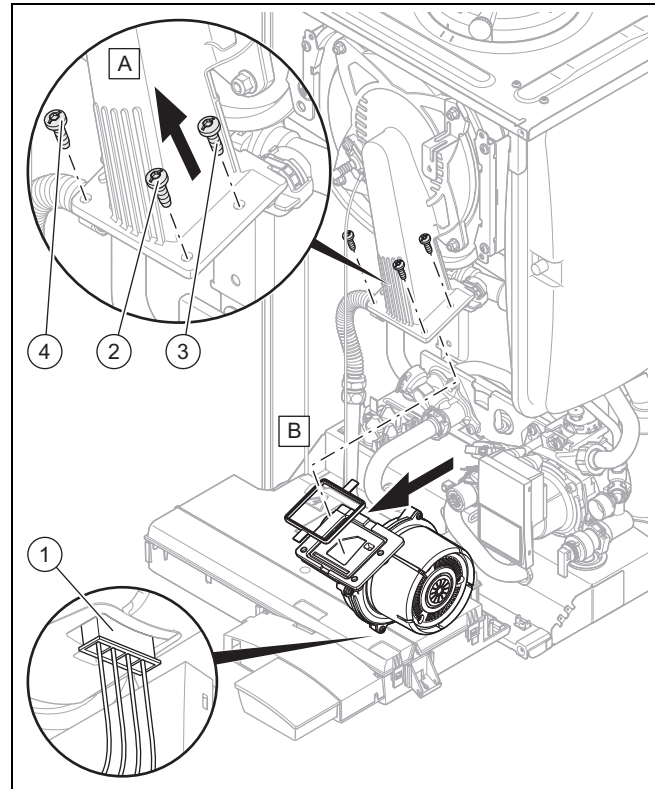


5. Unscrew both screws to secure the gas valve to the fan.
6. Reinstall the new gas valve in the reverse order. Use new seals for this.
7. Read the offset value (1) that is imprinted on the new gas valve.
8. After installing the new gas valve, carry out a leak-tightness test (→ Page 21).
9. Close the front casing.

10. Switch on the product.
11. Navigate to **Menu → Installer level → Diagnostics menu → D.052 Min. gas valve steps offset** and confirm by pressing .
12. Enter the offset value that you read off and confirm by pressing .
13. Carry out initial start-up. (→ Page 20)

10.7.3 Replacing the fan

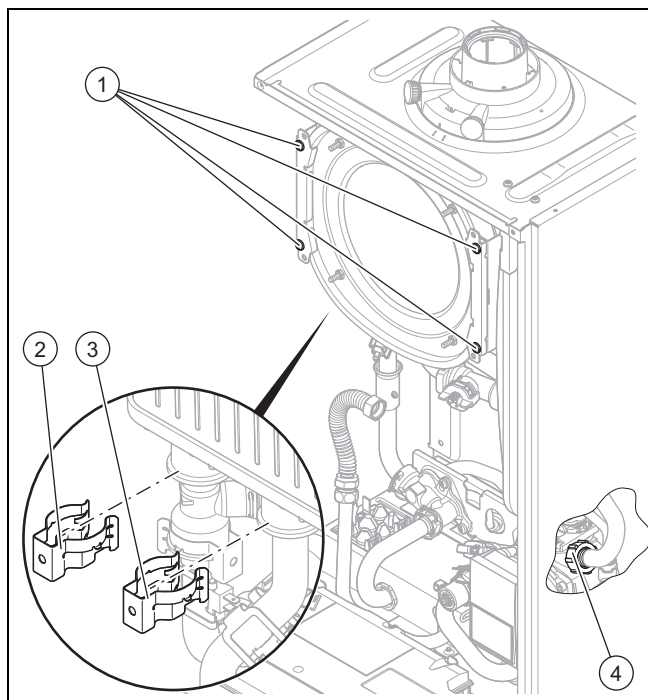
1. Remove the air intake pipe.
2. Remove the gas valve (→ Page 25).



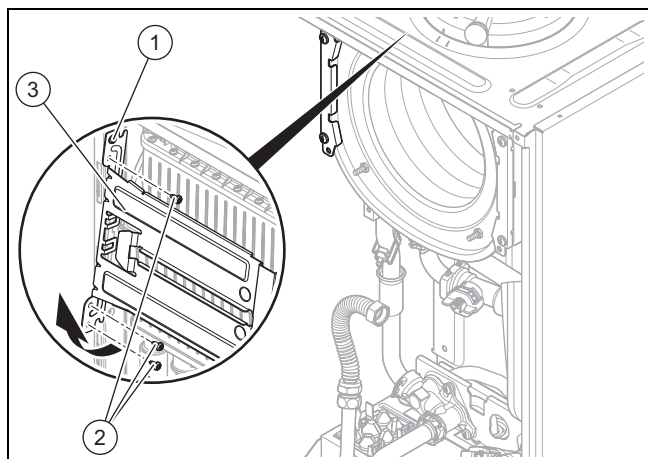
3. Remove the plug (1) from the fan.
4. Unscrew the three screws between the mixture pipe and the fan flange.
5. Replace the defective fan.
6. Reinstall the new fan in the reverse order. You must use new seals for this. Ensure that the order in which the three screws are screwed in between the fan and the mixture pipe corresponds to the numbering (2), (3) and (4).

10.7.4 Replacing the heat exchanger

1. Drain the product. (→ Page 31)
2. Remove the compact thermal module. (→ Page 29)
3. Remove the left side section.
4. Detach the condensate discharge hose from the heat exchanger.



5. Remove the clamps (2) and (3) from the flow connection and the return connection.
6. Detach the flow connection.
7. Detach the return connection.
8. Remove two screws (1) on each of the two retainers.



9. Remove the lower three screws (2) on the rear section of the retainer.
10. Swing the retainer to the side around the top screw (1).
11. Pull the heat exchanger downwards and to the right, and remove it from the product.
12. Install the new heat exchanger in reverse order.
13. Replace the seals.



Note

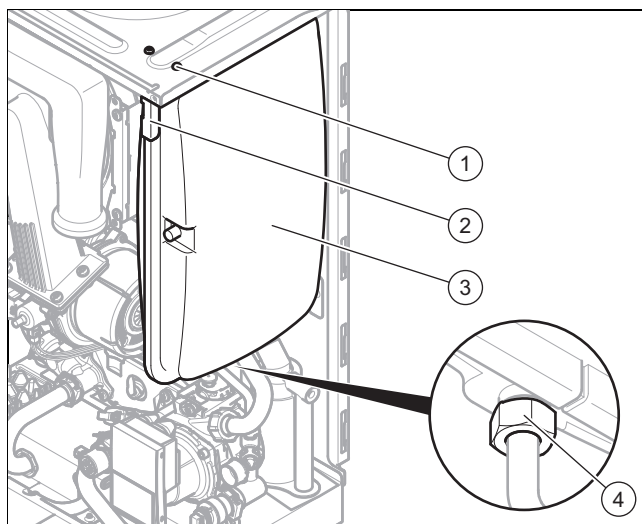
To make the installation easier, use only the lubricant that may be included with the Vaillant spare part. If no lubricant is included with the Vaillant spare part, use only water or commercially available soft soap.

14. Insert the flow and return connections into the heat exchanger as far as they will go.

15. Make sure that the brackets are seated correctly on the flow and return connections.
16. Install the compact thermal module. (→ Page 30)
17. Install the left-hand side section.
18. Fill (→ Page 19) and purge (→ Page 20) the product and, if required, the heating installation.

10.7.5 Replacing the expansion vessel

1. Drain the product. (→ Page 31)
2. Remove the right side section.



3. Undo the screwed connection (4).
4. Remove both screws (1) on the support plate (2).
5. Remove the support plate (2).
6. Pull out the expansion vessel (3) towards the front.
7. Insert the new expansion vessel into the product.
8. Screw the new expansion vessel to the water connection. Use a new seal for this.
9. Attach the support plate using both screws (1).
10. Install the right side section.
11. Fill (→ Page 19) and purge (→ Page 20) the product and, if required, the heating installation.

10.7.6 Replacing the PCB or the display

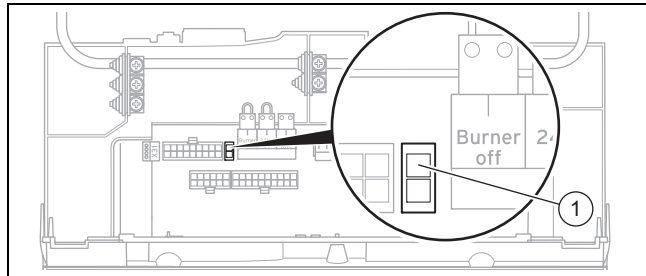


Note

If you only replace one component, when the product is switched on, the new component adopts the parameters that were previously set from the component that was not replaced.

1. Open the electronics box. (→ Page 14)
2. Replace the PCB or display according to the assembly and installation instructions supplied.

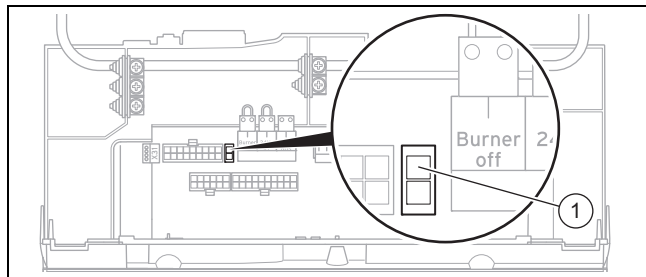
11 Inspection and maintenance



3. If you are replacing the PCB, remove the coding resistor (1) (plug X24) from the old PCB and plug the plug onto the new PCB.
4. Close the electronics box.

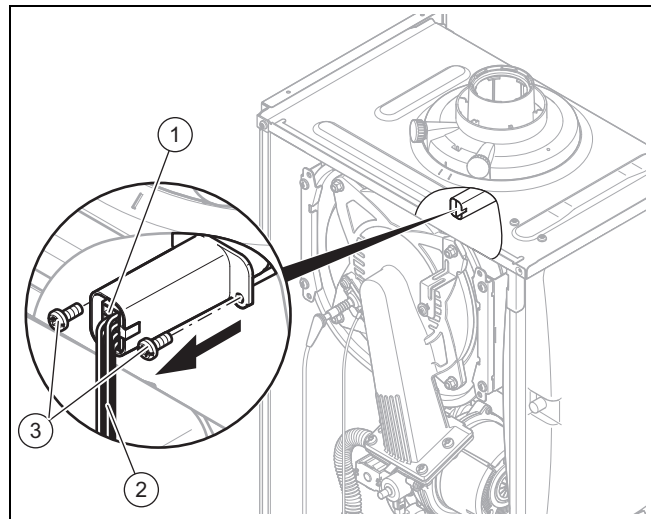
10.7.7 Replacing the PCB and the display

1. Open the electronics box. (→ Page 14)
2. Replace the PCB and display according to the assembly and installation instructions supplied.



3. Remove the coding resistor (1) (plug X24) from the old PCB and plug the plug into the new PCB.
4. Close the electronics box.
5. Press the on/off button on the product. (→ Page 16)
 - ◁ After switching on, the product switches directly to the menu to select the language. The default language setting is English.
6. Select the required language and confirm by pressing .
 - ◁ You are automatically taken to D.093 to set the device specific number.
7. Remove the correct value for the relevant product type from the technical data in the appendix, and press to confirm.
 - ◁ The electronics are now set to the product type and the parameters of all diagnostics codes are set to default settings.
 - ◁ The installation assistant starts. (→ Page 16)
8. Make the system-specific settings.

10.7.8 Replacing the all-gas sensor



1. Remove the air intake pipe, see Removing the compact thermal module (→ Page 29).
2. Undo the screws (3) just enough so that you can pull out the all-gas sensor (1) by the cable.
3. Remove the plug (2) by pushing in the latching lug.
4. Reinstall the new all-gas sensor in the reverse order.

10.8 Completing repair work

1. Establish the power supply.
2. Switch the product back on if this has not yet been done. (→ Page 16)
3. Install the front casing.
4. Open all service valves and the gas isolator cock.

10.9 Checking the product for leak-tightness

- ▶ Check that the product is leak-tight. (→ Page 21)

11 Inspection and maintenance

- ▶ Adhere to the minimum inspection and maintenance intervals. The inspection may require maintenance to be carried out earlier, depending on the results.

Inspection and maintenance work – Overview
(→ Page 46)

11.1 Function menu

Menu → Installer level → Test programs → Function menu

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

Display	Test programme	Action
T.01	Check internal pump	Switch the internal pump on and off.
T.02	Check 3-way valve	Move the diverter valve to the heating position or to the hot water position.
T.03	Check fan	Switch the fan on and off. The fan runs at maximum rotational speed.

Display	Test programme	Action
T.04	Check cylinder charge pump	Switch the cylinder charging pump on and off.
T.05	Check circulation pump	Switch the circulation pump on and off.
T.06	Check external pump	Switch the external pump on and off.
T.08	Checking the burner	Product starts up and switches to minimum load. The flow temperature is shown in the display.

11.2 Electronics self-test

Menu → Installer level → Test programs → Electronics self-test

You can use the electronics self-test to check the PCB.

11.3 Working on the compact thermal module

11.3.1 Removing the compact thermal module



Note

The compact thermal module consists of four main components:

- Speed-regulated fan,
- Gas valve,
- Burner flange,
- Premix burner.



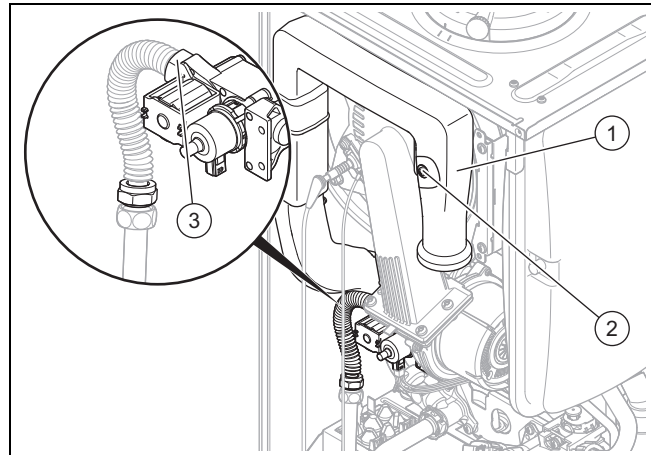
Danger!

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

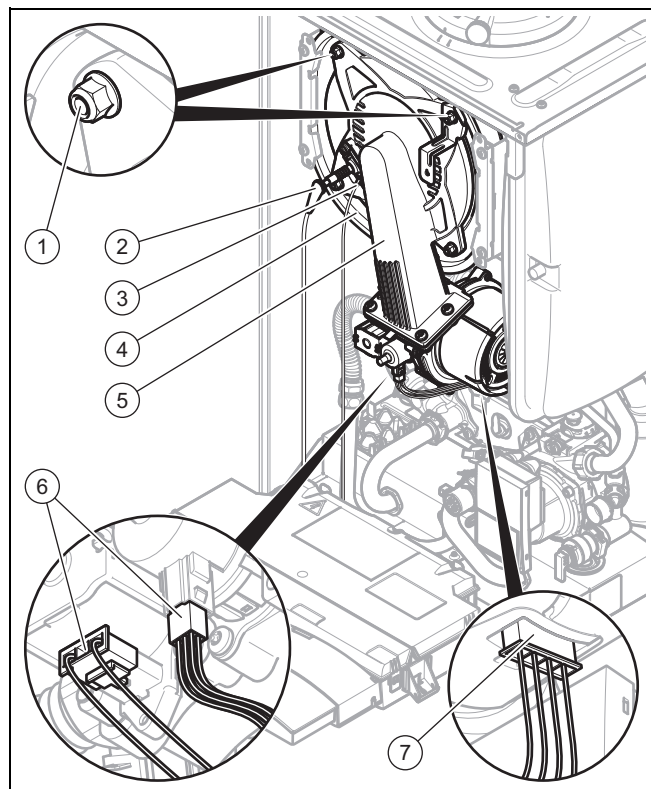
The seal, insulating mat and self-locking nuts on the burner flange must not be damaged. Otherwise, hot flue gases may escape and cause personal injury and material damage.

- ▶ 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.

1. Disconnect the product from the power supply.
2. Close the gas isolator cock.
3. Remove the front casing.
4. Tilt the electronics box forward.



5. Unscrew the retaining screw (2) and remove the air intake pipe (1) from the intake stub.
6. Unscrew the cap nut from the gas valve (3).

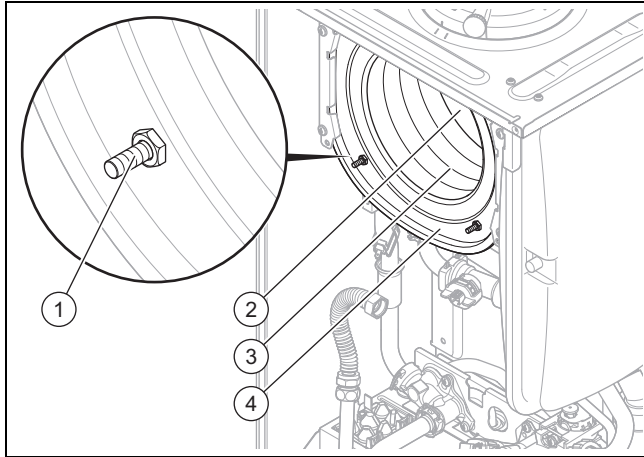


7. Remove the ignition line plug (2) and the earth line plug (3) from the ignition electrode.
8. Remove the plug (7) from the fan motor by pushing in the latching lug.
9. Remove the two plugs from the gas valve (6).
10. Release the cable harness from the clip.
11. Unscrew the four nuts (1).
12. Remove the entire compact thermal module (5) from the heat exchanger (4).
13. Check the burner and the heat exchanger for damage and dirt.
14. If necessary, clean or replace the components according to the following sections.
15. Fit a new burner flange seal.
16. Check the insulating mat on the burner flange and on the back wall of the heat exchanger. If you notice any signs of damage, replace the relevant insulating mat.

11 Inspection and maintenance

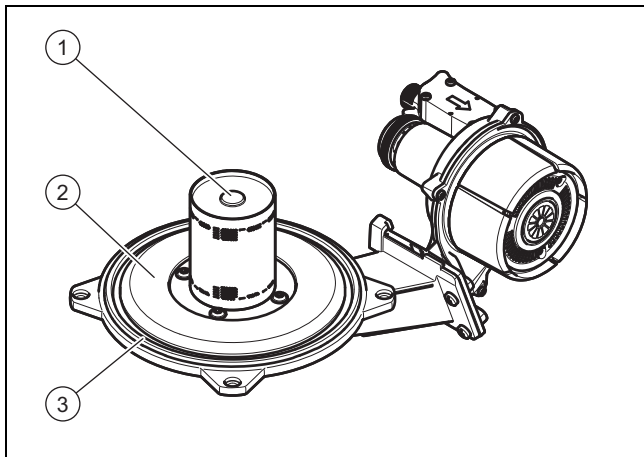
11.3.2 Cleaning the heat exchanger

1. Protect the folded down electronics box against sprayed water.



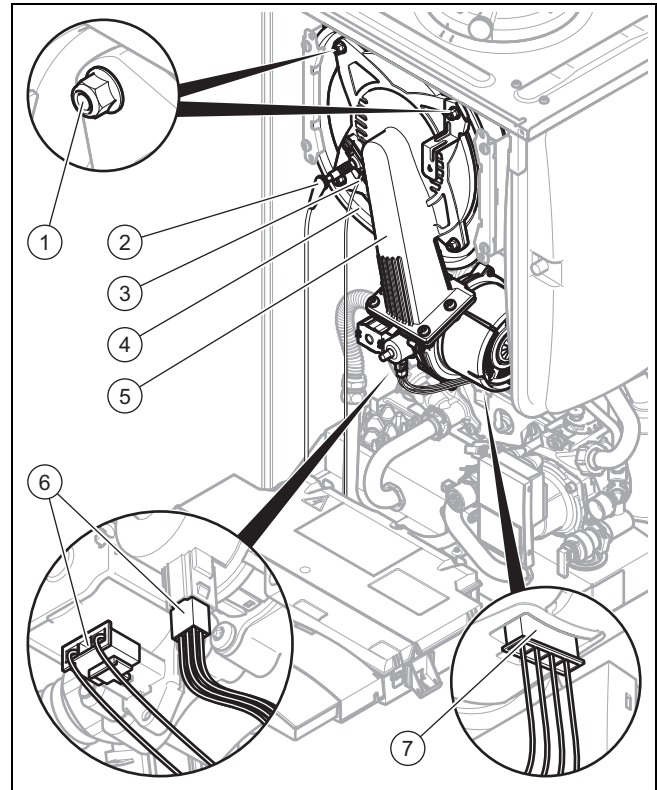
2. Never undo the four nuts on the stud bolt (1) or tighten them.
3. Clean the heating coil (3) of the heat exchanger (4) using water or, if required, vinegar (to a maximum of 5% acid). Allow the vinegar to act on the heat exchanger for 20 minutes.
4. Rinse away any loose dirt with a sharp jet of water or use a plastic brush. Do not point the water jet directly at the insulating mat (2) on the back of the heat exchanger.
 - ◁ The water flows out of the heat exchanger through the condensate siphon.

11.3.3 Checking the burner



1. Check the surface of the burner (1) for damage. If you see any damage, replace the burner.
2. Fit a new burner flange seal (3).
3. Check the insulating mat (2) on the burner flange. If you notice any signs of damage, replace the insulating mat.

11.3.4 Installing the compact thermal module



1. Connect the compact thermal module (5) to the heat exchanger (4).
2. Tighten the four nuts (1) 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 (2) for the ignition line and the plug (3) for the earth wire.
4. Reconnect the plug (6) to the gas valve assembly.
5. Reconnect the plug (7) to the fan motor.
6. Connect the gas pipe using a new seal. In the process, secure the gas pipe against twisting.
7. Open the gas isolator cock.
8. Make sure that there are no leaks.
9. Check that the sealing ring in the air intake pipe is positioned correctly in the seal seat.
10. Reconnect the air intake pipe to the intake nozzle.
11. Secure the air intake pipe with the retaining screw.
12. Check the gas flow pressure. (→ Page 20)

11.4 Cleaning the condensate siphon

1. Remove the lower section of the siphon.
2. Flush out the lower section of the siphon with water.
3. Fill the lower section of the siphon with water up to about 10 mm below the upper edge.
4. Re-fit the lower section of the siphon onto the condensate siphon.

11.5 Draining the product

1. Close the service valves of the product.
2. Start the check programme **P.06** (diverter valve mid-position).
3. Open the drain valves.
4. Make sure that the cap of the automatic air vent on the internal pump is open so that the product can be drained fully.

11.6 Checking the pre-charge pressure for the internal expansion vessel

1. Close the service valves and drain the product.
2. Measure the pre-charge pressure of the expansion vessel at the vessel valve.

Conditions: Pre-charge pressure < 0.075 MPa (0.75 bar)

- ▶ Ideally, you should top up the expansion vessel with nitrogen. Otherwise, top it up with air. Ensure that the drain valve is open when topping up.
- 3. If water escapes from the valve on the expansion vessel, you must replace the expansion vessel (→ Page 27).
- 4. Fill the heating installation. (→ Page 19)
- 5. Purge the heating installation. (→ Page 20)

11.7 Completing inspection and maintenance work

- ▶ Check the gas flow pressure. (→ Page 20)
- ▶ Check the CO₂ content. (→ Page 21)
- ▶ If required, reset the maintenance interval. (→ Page 22)
- ▶ Install the front casing.

11.8 Checking the product for leak-tightness

- ▶ Check that the product is leak-tight. (→ Page 21)

12 Decommissioning

12.1 Temporarily decommissioning the product

- ▶ Press the on/off button.
 - ◁ The display goes out.
- ▶ Close the gas stopcock.
- ▶ For products with domestic hot water generation and products with a connected domestic hot water cylinder, you must also close the cold-water isolation valve.

12.2 Decommissioning the product

- ▶ Press the on/off button.
 - ◁ The display goes out.
- ▶ Disconnect the product from the power mains.
- ▶ Close the gas isolator cock.
- ▶ Close the cold water stop valve.
- ▶ Drain the product. (→ Page 31)

13 Recycling and disposal

Disposing of the packaging

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

14 Customer service

Auftragsannahme Vaillant Kundendienst: 021 91 5767901

Appendix

Appendix

A Pipe lengths in the B23P installation



Note

The maximum pipe length (straight pipe only) corresponds to the maximum permitted flue gas pipe length without any elbows. If elbows are used, the maximum pipe length must be reduced in accordance with the dynamic flow characteristics of the elbows. Elbows must not be connected directly after one another as this method dramatically increases pressure losses.

	VC 156/5-7	VC 216/5-7	VC 246/5-7	VC 276/5-7	VC 326/5-7	VCW 266/5-7
Length in m, diameter ≥ 80 mm	40	32	32	32	29	32

B Installer level – Overview

Setting level	Values		Unit	Increment, select, explanation	Default setting
	Min.	Max.			
Installer level →					
Enter code	00	99	–	1 (competent person code 17)	–
Installer level → Fault list →					
F.XX – F.XX¹	Current value		–	–	–
Installer level → Test programs → Check programs →					
P.00 Purging	–	–	–	Yes, No	–
P.01 Maximum load	–	–	–	Yes, No	–
P.02 Minimum load	–	–	–	Yes, No	–
P.04 Reset eGas CH	–	–	–	Yes, No	–
P.06 Filling mode	–	–	–	Yes, No	–
Installer level → Test programs → Function menu →					
T.01 Internal pump	–	–	–	On, Off	–
T.02 3-way valve	–	–	–	On, Off	–
T.03 Fan	–	–	–	On, Off	–
T.04 Cylinder charging pump	–	–	–	On, Off	–
T.05 Circulation pump	–	–	–	On, Off	–
T.06 External pump	–	–	–	On, Off	–
T.08 Burner	–	–	–	On, Off	–
Installer level → Test programs → Electronics self-test →					
Self-test	–	–	–	Yes, No	–
Installer level → Test programs → Hydraulic check →					
Adjust pressure level with +/-	100	400	mbar	10	200
Installer level → Appliance config. →					
Language	–	–	–	Languages available for selection	Country-specific
Target flow temp.	30	75	°C	1	–

¹Fault lists are only displayed, and can only be deleted, if faults have occurred.

Setting level	Values		Unit	Increment, select, explanation	Default setting
	Min.	Max.			
DHW temperature	30	60	°C	1 Product with hot water generation or connected domestic hot water cylinder	–
Green iQ	–	–	–	On, Off	On
Auxiliary relay	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extractor hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Legionella protection pump (not active) 10 = Solar valve (not active)	2
Accessory relay 1	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extractor hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Legionella protection pump (not active) 10 = Solar valve (not active)	2
Accessory relay 2	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extractor hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Legionella protection pump (not active) 10 = Solar valve (not active)	2
Heating partial load	–	–	kW	Partial load only, full load only, auto	Auto
Contact details	Phone number	–	–	0 – 9	Auto
Factory setting	–	–	–	On, Off	–
Installer level → Diagnostics menu →					
D.XXX - D.XXX	Current value	–	–	–	–
Installer level → Start inst. assistant →					
Language	–	–	–	Languages available for selection	Country-specific
Filling mode: 3-way valve is in mid-position	0	2	–	0 = Normal operating mode 1 = Mid-position (parallel operation) 2 = Permanent heating mode position	–
Purge program: Select circ. using +/-	–	–	–	Automatic adaptive purging of the heating circuit and hot water circuit Not active Active	–
*Fault lists are only displayed, and can only be deleted, if faults have occurred.					

Appendix

Setting level	Values		Unit	Increment, select, explanation	Default setting
	Min.	Max.			
Hydraulic operating mode	0	4	–	0: Without overflow 1: 40% (low loss head.) 2: 60% (low loss head.) 3: 100% (low loss head.) 4: With overflow	0
Pressure level	100	400	mbar	10	200
Target flow temp.	30	75	°C	1	–
DHW temperature	35	60	°C	1 Product with hot water generation	–
Green iQ	–	–	–	On, Off	On
Heating partial load	–	–	kW	Partial load only, full load only, auto	Auto
Auxiliary relay	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extractor hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Legionella protection pump (not active) 10 = Solar valve (not active)	2
Accessory relay 1	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extractor hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Legionella protection pump (not active) 10 = Solar valve (not active)	2
Accessory relay 2	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extractor hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Legionella protection pump (not active) 10 = Solar valve (not active)	2
Set the type of gas	0	2	–	0: Natural gas 1: Propane 50 mbar 2: Propane 30/37 mbar	–
Contact details	Phone number		–	0-9	–
End the installation assistant?	–	–	–	Yes, No	–
*Fault lists are only displayed, and can only be deleted, if faults have occurred.					

C Overview of diagnostics codes



Note

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

Code	Parameter	Values		Unit	Increment, select, explanation	Default setting	Own setting
		Min.	Max.				
D.000	Heating partial load	Output-range-specific		kW	Adjustable partial heat load Auto: Product automatically adjusts max. partial load to current system demand	Auto	
D.001	Pump overrun: Heating	1	60	min	Overrun time of internal heating pump for heating mode 1	5	
D.002	Max. anti-cycl. time: Heating	2	60	min	Max. burner anti-cycling time heating at 20 °C flow temperature 1	20	
D.003	Outlet temperature actual value	Current value		°C	–	–	Not adjustable
D.004	Cylinder temperature actual value	Current value		°C	Measured value of domestic hot water sensor	–	Not adjustable
D.005	Heating target flow temperature	Current value		°C	Flow temperature target value (or return target value)	–	Not adjustable
D.006	Outlet temperature target value	Current value		°C	Target domestic hot water temperature (combination products only)	–	Not adjustable
D.007	Comfort mode target value Cylinder temperature target value	Current value		°C	Combination products only Only products with no integrated domestic hot water generation and with a connected cylinder	–	Not adjustable
D.008	Controller 3-4	Current value		–	0: Open (Room thermostat at terminal RT open = No heat requirement) 1: Closed (Room thermostat at terminal RT closed = Heat requirement)	–	Not adjustable
D.009	eBUS controller target value	Current value		–	Target value from external eBUS controller	–	Not adjustable
D.010	Internal pump	Current value		–	0: Off 1: On	–	Not adjustable
D.011	External pump	Current value		–	0: Off 1: On	–	Not adjustable
D.012	Cyl. charging pump	Current value		–	0: Off 1: On	–	Not adjustable
D.013	Circulation pump	Current value		–	0: Off 1: On	–	Not adjustable
D.015	Pump speed actual value	Current value		%	High-efficiency pump	–	Not adjustable
D.016	Controller 24 V DC: Heating mode	Current value		–	Heating mode 0: Off 1: On	–	Not adjustable

Appendix

Code	Parameter	Values		Unit	Increment, select, explanation	Default setting	Own setting
		Min.	Max.				
D.017	Control type	0	1	–	Heating flow/return temperature control changeover 0: Flow 1: Return (conversion for underfloor heating) If you have activated the return temperature control, the function for automatically limiting the heating output using the volume flow remains active. The partial heat load that is selected under D.000 (auto = max.) continues to be the upper limit.	0	
D.018	Pump operating mode	1	3	–	Setting 1 = Comfort (continuously operating pump) The internal pump is switched on when the heating flow temperature is not at Heating off and the heat requirement is enabled via an external control 3 = Eco (intermittently operating pump) Internal pump is switched on every 25 minutes for 5 minutes once the overrun time has elapsed	3	
D.020	Max. DHW temperature target value	50	70	°C	Max. set value for target cylinder value 1	65	
D.022	DHW demand	Current value		–	Domestic hot water requirement via C1/C2, impeller or APC 0: Off 1: On	–	Not adjustable
D.023	Heating mode status	Current value		–	Summer/winter mode (heating off/on) 0: Blocked 1: Released	–	Not adjustable
D.024	Air pressure sensor actual value	Current value		Pa	–	–	Not adjustable
D.025	Ext. eBUS signal: Cylinder charging	Current value		–	Domestic hot water generation enabled by eBUS control 0: Off 1: On	–	Not adjustable
D.026	Auxiliary relay	1	10	–	1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extraction hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Anti-legionella pump (not active) 10 = Solar valve (not active)	2	

Code	Parameter	Values		Unit	Increment, select, explanation	Default setting	Own setting
		Min.	Max.				
D.027	Accessory relay 1	1	10	–	Switching of relay 1 on the VR 40 "2 in 7" multi-functional module 1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extraction hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Anti-legionella pump (not active) 10 = Solar valve (not active)	2	
D.028	Accessory relay 2	1	10	–	Switching of relay 2 on the VR 40 "2 in 7" multi-functional module 1 = Circulation pump 2 = External pump 3 = Cylinder charging pump 4 = Extraction hood 5 = External solenoid valve 6 = External fault message 7 = Solar pump (not active) 8 = eBUS remote control (not active) 9 = Anti-legionella pump (not active) 10 = Solar valve (not active)	2	
D.029	Water circulation vol. actual value	Current value		m³/h	Actual value: Circulation water volume for flow sensor	–	Not adjustable
D.033	Fan speed target value	Current value		rpm	–	–	Not adjustable
D.034	Fan speed actual value	Current value		rpm	–	–	Not adjustable
D.035	3-way valve position	Current value		–	Position of the prioritising diverter valve 0. Heating mode 1: Parallel operation (mid-position) 2: DHW mode	–	Not adjustable
D.036	DHW flow rate	Current value		l/min	–	–	Not adjustable
D.039	Solar inlet temp. actual value	Current value		°C	–	–	Not adjustable
D.040	Flow temperature actual value	Current value		°C	–	–	Not adjustable
D.041	Return temperature actual value	Current value		°C	–	–	Not adjustable
D.044	Ionisation value actual value	Current value		–	> 800 = No flame < 400 = Good flame	–	Not adjustable
D.046	Pump mode	0	1	–	0 = Relay with disable facility 1 = PWM with disable facility	0	
D.047	Current outside temperature	Current value		°C	(with Vaillant weather-compensated control)	–	Not adjustable
D.050	Offset min. speed	0	3000	rpm	Nominal value set in factory	–	
D.051	Offset max. speed	-990	0	rpm	Nominal value set in factory	–	
D.052	Min. gas valve steps offset	0	99	–	The offset is specified at the gas valve assembly. 1	–	

Appendix

Code	Parameter	Values		Unit	Increment, select, explanation	Default setting	Own setting
		Min.	Max.				
D.058	Solar post-heating	0	3	–	Combination products only 0 = Solar post-heating deactivated 3 = Domestic hot water activated (min. target value 60 °C)	0	
D.060	Number of safety therm. shut-downs	Current value		–	Number of safety cut-out switch-off sequences	–	Not adjustable
D.061	No. of shut-downs in ign. flame controller	Current value		–	–	–	Not adjustable
D.064	Avg. ignition time	Current value		s	–	–	Not adjustable
D.065	Max. ignition time	Current value		s	–	–	Not adjustable
D.067	Remaining anti-cycl. time for heating	Current value		min	–	–	Not adjustable
D.068	Number of first start attempts	Current value		–	Unsuccessful ignitions at 1st attempt	–	Not adjustable
D.069	Number of second start attempts	Current value		–	Unsuccessful ignitions at 2nd attempt	–	Not adjustable
D.070	3-way valve operation	0	2	–	0 = Normal operating mode 1 = Mid-position (parallel operation) 2 = Permanent heating position	0	
D.071	Max. heating target flow temp.	40	80	°C	Target value maximum heating flow temperature 1	75	
D.072	Pump overrun after cylinder charging	0	10	min	Internal pump 1	2	
D.073	Offset setting for comfort mode	–15	5	K	Combination products only 1	0	
D.074	Anti-legionella funct. with integrated cyl.	0	1	–	0: Off 1: On	1	
D.075	Max. cylinder charging time	20	90	min	Max. charging time for domestic hot water cylinder without independent control system 1	45	
D.076	Device Specific Number	Current value		–	(Device specific number = DSN)	–	Not adjustable
D.077	DHW partial load	Output-range-specific		kW	Adjustable cylinder charging output	100 %	
D.078	DHW max. flow temperature	55	80	°C	Limit on cylinder charging temperature 1 Note The chosen value must be at least 15 K above the cylinder target value.	75	
D.080	Heating operating hours	Current value		h	–	–	Not adjustable
D.081	DHW operating hours	Current value		h	–	–	Not adjustable
D.082	Heating burner starts	Current value		–	–	–	Not adjustable
D.083	DHW burner starts	Current value		–	–	–	Not adjustable
D.084	Maintenance in	„– – –“	3000	h	Number of hours until the next maintenance 1 "– – –" = Deactivated	–	
D.086	Maintenance messages	0	1	–	0: Off 1: On	1	

Code	Parameter	Values		Unit	Increment, select, explanation	Default setting	Own setting
		Min.	Max.				
D.087	Set the type of gas	0	2	–	0: Natural gas 1: Propane 50 mbar 2: Propane 30/37 mbar Fit the correct coding resistor for gas family X24: – Natural gas (factory setting): Yellow – Liquefied petroleum gas: Grey	–	
D.088	Min. DHW flow rate	0	1	–	Switch-on delay for domestic hot water draw-off detection via impeller (combination products only) 0 = 1.5 l/hr (no delay) 1 = 3.7 l/hr (2 s delay)	0	
D.089	Ignition gas-air ratio offset	–10	15	%	–	8	
D.090	eBUS controller	Current value		–	0: Not recognised 1: Recognised	–	Not adjustable
D.091	Status DCF77	Current value		–	0: No reception 1: Reception 2: Synchronised 3: Valid	–	Not adjustable
D.092	actoSTOR communication status	Current value		–	actoSTOR module detection 0: Not connected 1: Connection error 2: Connection active	–	Not adjustable
D.093	Adjust Device Specific Number	0	999	–	VC 156/5-7 (N-DE) = 201 VC 216/5-7 (N-DE) = 202 VC 246/5-7 (N-DE) = 222 VC 276/5-7 (N-DE) = 203 VC 326/5-7 (N-DE/DK) = 204	–	
D.094	Clear fault history	0	1	–	0: No 1: Yes	–	
D.095	Software version: PeBUS participant	Current value		–	0: BMU 1: AI 2: APC 3: SMU	0	
D.096	Reset to factory settings?	0	1	–	0: No 1: Yes	–	
D.118	CO sensor fault number	Current value		–	1: Heater short circuit 2: Heater open circuit 3: Heater temperature control fault 4: Heater temperature plausibility check not OK 5: Sensor short circuit/open circuit 6: Reference resistance measurement not OK 7: Sensor impedance too high 8: Standby reference resistance not OK 9: EEPROM error 10: Sensor open circuit 11: Not used 12: Sensor plausibility test fault 13: Electrical power consumption too low 14: Electrical power consumption too high 15: Reference voltage too low 16: Reference voltage too high	–	Not adjustable
D.122	Pressure level	100	400	mbar	10	200	

Appendix

Code	Parameter	Values		Unit	Increment, select, explanation	Default setting	Own setting
		Min.	Max.				
D.130	Hydraulic operating mode	0	4	–	0: Without bypass valve 1: 40% (low loss head.) 2: 60% (low loss head.) 3: 100% (low loss head.) 4: With bypass valve	0	
D.131	Differential pressure primary circuit	Current value		mbar	–	–	Not adjustable
D.132	Multi-occupancy	0	1	–	0: Off 1: On	0	

D Status codes – Overview

Status code	Parameter	Meaning
Heating mode		
S.00	Heating: No heat demand	Heating: No heat demand
S.01	Heating mode: Fan start-up	Heating mode: Fan start-up
S.02	Heating mode: Pump pre-run	Heating mode: Pump pre-run
S.03	Heating mode: Ignition	Heating mode: Ignition
S.04	Heating mode: Burner on	Heating mode: Burner on
S.05	Heating mode: Pump/fan overrun	Heating mode: Pump/fan overrun
S.06	Heating mode: Fan overrun	Heating mode: Fan overrun
S.07	Heating mode: Pump overrun	Heating mode: Pump overrun
S.08	Heating mode: Anti-cycling time	Heating mode: Remaining anti-cycling time
S.09	Heating mode: Measuring program	Heating mode: Measuring program
Cylinder charging mode		
S.20	DHW demand	DHW demand
S.21	DHW mode: Fan start-up	DHW mode: Fan start-up
S.22	DHW mode: Pump pre-run	DHW mode: Pump pre-run
S.23	DHW mode: Ignition	DHW mode: Ignition
S.24	DHW mode: Burner on	DHW mode: Burner on
S.25	DHW mode: Pump/fan overrun	DHW mode: Pump/fan overrun
S.26	DHW mode: Fan overrun	DHW mode: Fan overrun
S.27	DHW mode: Pump overrun	DHW mode: Pump overrun
S.28	DHW anti-cycling time	Hot water burner anti-cycling time
S.29	DHW mode: Measuring program	DHW mode: Measuring program
Others		
S.30	No heat demand: Controller	Room thermostat (RT) is blocking heating mode
S.31	No heat demand: Summer mode	Summer mode active or no heat requirement from eBUS controller
S.32	Waiting time deviation: Fan speed	Waiting period because of fan speed deviation
S.33	Waiting time: Air monitor	Waiting period: Air pressure sensor/switch reports that the pressure signal is too low
S.34	Heating mode: Frost protection	Frost protection mode active
S.36	Target value for ext. controller lower than 20 °C	Reference setting for continuous controller 7-8-9 or eBUS controller is < 20°C and blocks the heating mode
S.37	Waiting time: Deviation in fan speed	Waiting time: Fan failure in operation
S.39	Contact thermostat triggered	"Burner off contact" has responded (e.g. contact thermostat or condensate pump)
S.40	Comfort protection active	Comfort protection mode is active: Product running with limited heating comfort
S.41	Water pressure too high	Water pressure > 2.8 bar

Status code	Parameter	Meaning
S.42	Flue non-return flap closed	Flue non-return flap response blocks burner operation (only in conjunction with accessory VR40) or condensate pump defective; heat requirement is blocked
S.46	Comfort protection: Minimum load, loss of flame	Comfort protection mode, flame loss at minimum load
S.53	Waiting time: Water shortage	Product is within the waiting period of the modulation block/operation block function as a result of low water pressure (flow/return spread too large)
S.54	Waiting time: Water shortage	Product is within the waiting period of the operation blocking function as a result of low water pressure (temperature gradient)
S.55	Waiting time: CO sensor	Waiting time: CO sensor
S.56	Waiting time: CO limit value exceedance	Waiting time: CO limit value exceedance
S.57	Waiting time: Measuring program	Calibration unsuccessful. Waiting period, comfort safety mode
S.58	Burner modulation limitation	Modulation limitation due to noise/wind
S.59	Waiting time: Water circulation vol.	Minimum circulation water volume
S.76	Service message: Check water pressure	System pressure too low. Top up water.
S.85	Service message: Check water circulation volume	Service message: Check water circulation volume
S.86	Service message: Check vortex sensor	Service message: Check vortex sensor
S.87	Service message: Check differential pressure sensor	Service message: Check differential pressure sensor
S.88	Purging programme is running	Purging programme is running
S.92	Water circulation volume self-test	Water circulation volume self-test
S.93	Flue gas measurement not possible	Flue gas measurement not possible because not all measuring programs have yet run
S.96	Return temperature sensor self-test	Return sensor test running, heating demands are blocked.
S.97	Water pressure sensor self-test	Water pressure sensor test running, heating demands are blocked.
S.98	Flow/return temperature sensor self-test	Flow/return sensor test running, heating demands are blocked.
S.99	Vaillant self-test	Self-test
S.105	Unit not purged	Unit not purged (D.130 = 0: No bypass valve)

E Overview of fault codes



Note

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

Code	Parameter	Possible causes
F.00	Interruption: Flow sensor	NTC plug not plugged in or has come loose, multiple plug on the PCB not plugged in correctly, interruption in cable harness, NTC defective
F.01	Interruption: Return sensor	NTC plug not plugged in or has come loose, multiple plug on the PCB not plugged in correctly, interruption in cable harness, NTC defective
F.02	Interruption: DHW outlet sensor	Only in conjunction with F.91 NTC defective, NTC cable defective, defective plug connection on NTC, defective plug connection on the actoSTOR electronics
F.03	Interruption: Cylinder sensor	Only in conjunction with F.91 NTC defective, NTC cable defective, defective plug connection on NTC, defective plug connection on the actoSTOR electronics
F.10	Short circuit: Flow sensor	NTC defective, short circuit in cable harness, cable/housing
F.11	Short circuit: Return sensor	NTC defective, short circuit in cable harness, cable/housing
F.12	Short circuit: DHW outlet sensor	Only in conjunction with F.91 NTC defective, short circuit in cable harness, cable/housing

Appendix

Code	Parameter	Possible causes
F.13	Short circuit: Cylinder sensor	Combination product: Warm start sensor/cylinder sensor short circuit Combination product with actoSTOR: Short circuit cylinder sensor (NTC) only in combination with F.91 NTC defective, short circuit in cable harness, cable/housing
F.20	Safety switch-off: Temperature limiter	Incorrect earth connection between cable harness and product, flow or return NTC defective (loose connection), stray spark via ignition cable, ignition plug or ignition electrode
F.22	Safety switch-off: Low water pressure	No or insufficient water in the product, water pressure sensor defective, cable to pump or water pressure sensor loose/not connected/defective
F.23	Safety switch-off: Temp.spread too large	Pump blocked, insufficient pump output, air in product, flow and return NTC connected the wrong way round
F.24	Safety switch-off: Temp. incr. too fast	Pump blocked, insufficient pump output, air in product, system pressure too low, non-return valve blocked/incorrectly installed
F.25	Safety switch-off: Flue temp. too high	Break in plug connection for optional flue gas safety cut-out (SCO), break in cable harness
F.26	Fault: Fuel valve not working	Gas valve assembly stepper motor not connected, multiple plug on the PCB not plugged in correctly, interruption in cable harness, gas valve assembly stepper motor defective, electronics defective
F.27	Safety switch-off: Flame simulation	Moisture on the electronics, electronics (flame monitor) defective, gas solenoid valve leaking
F.28	Start-up failure: Ignit. unsuccessful	Gas meter defective or gas flow monitor has triggered, air in gas, gas flow pressure too low, thermal isolator (TAE) has triggered, condensate route blocked, incorrect gas injector, incorrect spare part gas valve assembly, value in D.052 does not correspond to the printed value on the current gas valve assembly, fault on the gas valve assembly, multiple plug on PCB incorrectly plugged in, break in cable harness, ignition system (ignition transformer, ignition cable, ignition plug, ignition electrode) defective, ionisation flow interrupted (cable, electrode), incorrect earthing of product, electronics defective
F.29	Operating failure: Ignit. unsuccessful	Gas supply temporarily stopped, flue gas recirculation, condensate route blocked, defective earthing of product, ignition transformer has spark failure
F.32	Fault: Fan	Plug on fan not correctly plugged in, multiple plug on PCB not correctly plugged in, break in cable harness, fan blocked, Hall sensor defective, electronics defective
F.33	Pressure switch	Check: Cable harness, vacuum hose (blockage), supply air/flue gas route (blockage), panel (correct type), flue pipe (length), air pressure sensor, settings (if necessary, switch D.132 to multiple-flue configuration), pressure switch, fan.
F.35	Fault: Air/flue gas duct	Check the entire air/flue pipe for: – Permitted design – Restriction or blockage in the air/flue pipe caused by obstructions – Damage The air/flue pipe must be installed in accordance with the recognised rules If the supply of combustion air (air pipe) or discharge of flue gas (flue pipe) occurs with no problems, reset the product using  and start it up If F.35 occurs again after start-up and the air/flue pipe is present and correct, the function for checking the air/flue pipe can be deactivated via D.145 If the function is deactivated via D.145, the product  can be reset and it can be started up Note D.145 can be used to permanently activate or deactivate the function After the function is deactivated, the product no longer automatically checks whether there are restrictions for the air/flue pipe.
F.42	Fault: Coding resistor	Gas family coding resistor short circuit/interruption (on the PCB) – Gas family coding resistor missing – The coding resistor does not match the gas type selection under D.087 Incorrect coding resistor or incorrect gas type selected
F.49	Fault: eBUS	Short circuit on eBUS, eBUS overload or two power supplies with different polarities on the eBUS

Code	Parameter	Possible causes
F.55	Fault: CO sensor	Checking the cable harness All-gas sensor defective, replace the all-gas sensor Electronics defective, replace the PCB
F.56	Safety switch-off: CO limit exceeded	Safety shutdown: CO limit value exceeded A component in the combustion regulation is defective – Contact fault at the gas valve assembly (plug not plugged in correctly or not plugged in, plug defective, slot is defective (loose connection)) – If the fault occurs again after the product is reset: The gas valve assembly is defective
F.57	Fault: Measuring program	Active comfort protection mode has detected a regulation fault – Ignition electrode highly corroded
F.61	Fault: Fuel valve actuation	The gas valve assembly cannot be actuated – Cable harness supply line to the gas valve assembly is defective (short to earth, short circuit) – Gas valve assembly defective – PCB defective
F.62	Fault: Fuel valve switch-off delay	Delayed switch-off sequence of gas valve assembly detected – Flame indicator light (ignition and monitoring electrode indicates delayed extinguishing of the flame signal) – Gas valve assembly defective – PCB defective
F.63	Fault: EEPROM	Electronics defective
F.64	Fault: Electronics/sensor	Flow or return NTC short circuited, electronics defective
F.65	Fault: Electronics temp.	Electronics overheating due to external influences, electronics defective
F.67	Fault: Electronics/flame	Implausible flame signal, electronics defective
F.68	Fault: Flame signal unstable	Air in gas, gas flow pressure too low, incorrect air ratio, condensate route blocked, ionisation flow interruption (cable, electrode), flue gas recirculation, condensate route
F.70	Fault: Invalid Device Specific Number	If spare parts fitted: Display and PCB replaced at same time and DSN not reset, incorrect or missing output range coding resistance
F.71	Fault: Flow sensor	Flow temperature sensor signalling constant value: – Flow temperature sensor incorrectly positioned at flow pipe – Flow temperature sensor defective
F.72	Fault: Flow/return sensor	Flow/return NTC temperature difference too great → flow and/or return temperature sensor defective
F.73	Fault: Water press. sensor	Interruption/short circuit of water pressure sensor, interruption/short circuit to GND in supply line to water pressure sensor or water pressure sensor defective
F.74	Fault: Water press. sensor	The line to the water pressure sensor has a short circuit to 5 V/24 V or internal fault in the water pressure sensor
F.75	Fault: Pump/ water shortage	Water pressure sensor and/or pump defective, air in the heating installation, insufficient water in the product; connect external expansion vessel to the return
F.77	Fault: Flue non-ret. valve/condens. pump	No response from flue non-return flap or condensate pump defective
F.78	Interrupt.: DHW outlet sensor on ext. contr.	UK link box is connected but the domestic hot water NTC is not bridged
F.80	Fault: actoSTOR inlet sensor	Only in conjunction with F.91 NTC defective, NTC cable defective, defective plug connection on NTC, defective plug connection on the actoSTOR electronics Sensor plug has short to earth to the housing, short circuit in cable harness, sensor defective

Appendix

Code	Parameter	Possible causes
F.81	Fault: cylinder charging pump	Only in conjunction with F.91 Cylinder is not fully charged after specified time. – Check cylinder charging sensor and cylinder sensor – Air in the actoSTOR pump – Inspect cable harness for pump – Check the impeller sensor and/or limiter in the product – Prioritising diverter valve defective – Secondary heat exchanger blocked – Pump defective
F.82	Fault: Ext. current anode	External current anode not connected: – X43 edge connector with bridge missing from the PCB External current anode connected: – Power supply to the external current anode was interrupted – Cable between PCB and external current anode defective – External current anode defective
F.83	Fault: NTC temp. gradient	When the burner starts, the temperature change registered at the flow and/or return temperature sensor is non-existent or too small. – Insufficient water in product – Flow or return temperature sensor not in correct position at pipe
F.84	Fault: NTC temp. diff. implausible	Flow and return temperature sensors returning implausible values. – Flow and return temperature sensors have been inverted – Flow and return temperature sensors have not been correctly installed
F.85	Fault: NTCs fitted incorrectly	The flow and/or return temperature sensors have been installed on the same pipe/incorrect pipe
F.90	Fault: Communication	Check the cable harness from the product to the actoSTOR module (PEBus). If the product is to be operated without an actoSTOR module, set D.092 = 0.
F.94	Fault: Vortex and differential pressure	Check: Pump (function), cable harness, plug, sensors.
LED actoSTOR module	actoSTOR electronics status	LED on: Communication OK LED flashing: Communication not OK LED off: No power supply
Commu- nication fault	Communication fault	Communication fault between display and PCB in the electronics box



Appendix

1	Main PCB	13	Prioritising diverter valve
2	Control panel PCB	14	Water pressure sensor
3	All-gas sensor	15	Cylinder temperature sensor
4	Gas valve assembly	16	Cylinder contact "C1/C2"
5	Outdoor temperature sensor, flow temperature sensor (optional, external), DCF receiver	17	Internal heating circuit flow rate sensor
6	Circulation pump remote control	18	Internal heating circuit differential pressure sensor
7	Return temperature sensor	19	Internal pump
8	Flow temperature sensor	20	Gas family coding resistor
9	Fan	21	Additional relay (select via D.026)
10	Surface-mounted thermostat/burner off	22	Circulation pump
11	24 V DC room thermostat	23	Ignition electrode
12	Bus connection (digital room thermostat/control)	24	Communication unit (optional)

G Inspection and maintenance work – Overview



Note

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 in the table.

No.	Work	Inspection (annual)	Maintenance (At least every two years)
1	Check the air/flue pipe for leak-tightness and to ensure that it is fastened correctly. Make sure that it is not blocked or damaged and has been installed in accordance with the relevant set-up instructions.	X	X
2	Check the general condition of the product. Remove any dirt from the product and the vacuum chamber.	X	X
3	Visually inspect the general condition of the product. In doing so, pay particular attention to signs of corrosion, soot and other defects.	X	X
4	Check the gas flow pressure at maximum heat input. If the gas flow pressure is not within the correct range, carry out maintenance work.	X	X
5	Check the product's CO ₂ content (air ratio) and adjust this, if required. Keep a record of this.	X	X
6	Disconnect the product from the power grid. Check that the electrical plug connections and other connections are seated correctly and correct these if necessary.	X	X
7	Close the gas stopcock and the service valves.		X
8	Drain the product on the water side (observe the manometer). Check the pre-charge pressure of the expansion vessel and top the vessel up, if necessary (approx. 0.3 bar below the system filling pressure).		X
9	Remove the compact thermal module.		X
10	Check the insulating mats in the combustion area. If you notice any damage, replace the insulating mats. Replace the burner flange seal each time it is opened and accordingly each time maintenance work is carried out.		X
11	Clean the heat exchanger.		X
12	Check the burner for damage and replace it if necessary.		X
13	Check the condensate siphon in the product, clean and fill if necessary.	X	X
14	Install the compact thermal module. Caution: Replace the seals.		X
15	Open the gas stopcock, reconnect the product to the mains and switch it on.	X	X
16	Open the service valves, fill up the product/heating installation to 1.0-2.0 bar (depending on the static height of the heating installation) and start the purging programme P.00 .		X
17	Run a function test for the product and the heating installation – especially the domestic hot water generation. Then purge the installation again, if required.	X	X
18	Check the gas type.		X
19	Visually inspect the ignition and burner behaviour.	X	X
20	Check the CO ₂ content (the air ratio) of the product again.		X

No.	Work	Inspection (annual)	Maintenance (At least every two years)
21	Ensure that no gas, flue gas, domestic hot water or condensate is leaking from the product. Restore leak-tightness if necessary.	X	X
22	Record the inspection/maintenance work carried out.	X	X

H Technical data

Technical data – General

	VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive I. e.
Designated country (designation in accordance with ISO 3166)	DE (Germany)	DE (Germany)	DE (Germany)	DE (Germany)	DE (Germany)	DE (Germany)
Approved unit categories	II _{2N3P}	II _{2N3P}	II _{2N3P}	II _{2N3P}	II _{2N3P}	II _{2N3P}
Gas connection, boiler side	20 x 1.0 mm	20 x 1.0 mm	20 x 1.0 mm	20 x 1.0 mm	20 x 1.0 mm	20 x 1.0 mm
Flow/return heating connections, boiler side	22 x 1.5 mm	22 x 1.5 mm	22 x 1.5 mm	22 x 1.5 mm	22 x 1.5 mm	22 x 1.5 mm
Expansion relief valve connection pipe (min.)	15 mm	15 mm	15 mm	15 mm	15 mm	15 mm
Air/flue connection	60/100 mm	60/100 mm	60/100 mm	60/100 mm	80/125 mm	60/100 mm
Condensate discharge pipe (min.)	19 mm	19 mm	19 mm	19 mm	19 mm	19 mm
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)	2.0 kPa (20.0 mbar)	2.0 kPa (20.0 mbar)
Gas connection pressure, G25 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)	2.0 kPa (20.0 mbar)	2.0 kPa (20.0 mbar)
Gas connection pressure, G31 propane	5.0 kPa (50.0 mbar)	5.0 kPa (50.0 mbar)	5.0 kPa (50.0 mbar)	5.0 kPa (50.0 mbar)	5.0 kPa (50.0 mbar)	5.0 kPa (50.0 mbar)
Gas flow rate at 15 °C and 1013 mbar (based on domestic hot water generation, if applicable), G20	1.9 m³/h	2.6 m³/h	2.6 m³/h	3.2 m³/h	3.5 m³/h	2.6 m³/h
Gas flow rate at 15 °C and 1013 mbar (based on domestic hot water generation if applicable), G25	2.3 m³/h	3.1 m³/h	3.1 m³/h	3.9 m³/h	4.3 m³/h	3.1 m³/h
Gas flow rate at 15 °C and 1013 mbar (based on domestic hot water generation, if applicable), G31	1.4 kg/h	1.9 kg/h	1.88 kg/h	2.4 kg/h	2.59 kg/h	1.9 kg/h
Min. flue gas mass flow rate (G20)	0.84 g/s	0.84 g/s	0.84 g/s	1.47 g/s	1.60 g/s	0.84 g/s
Min. flue gas mass flow rate (G25)	0.86 g/s	0.86 g/s	0.86 g/s	1.49 g/s	1.62 g/s	0.86 g/s
Min. flue gas mass flow rate (G31)	1.81 g/s	1.81 g/s	1.81 g/s	1.81 g/s	3.62 g/s	1.81 g/s
Max. flue gas mass flow rate	8.24 g/s	10.98 g/s	10.98 g/s	13.73 g/s	15.10 g/s	10.98 g/s
Min. flue gas temperature	40 °C	40 °C	40 °C	40 °C	40 °C	40 °C
Max. flue gas temperature	65 °C	65 °C	65 °C	65 °C	65 °C	65 °C

Appendix

	VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive I. e.
Approved gas boiler types	B23, B23P, B33, B33P, B53, B53P, C13x, C33x, C43x, C53x, C83x, C93x	B23, B23P, B33, B33P, B53, B53P, C13x, C33x, C43x, C53x, C83x, C93x	B23, B23P, B33, B33P, B53, B53P, C13x, C33x, C43x, C53x, C83x, C93x	B23, B23P, B33, B33P, B53, B53P, C13x, C33x, C43x, C53x, C83x, C93x	B23, B23P, B33, B33P, B53, B53P, C13x, C33x, C43x, C53x, C83x, C93x	B23, B23P, B33, B33P, B53, B53P, C13x, C33x, C43x, C53x, C83x, C93x
30% efficiency	107.5 %	108.0 %	108.0 %	108.0 %	108.1 %	108.0 %
NOx class	6	6	6	6	6	6
Device Specific Number (DSN)	201	202	222	203	204	202
Unit dimensions, width	440 mm	440 mm	440 mm	440 mm	440 mm	440 mm
Unit dimensions, height	720 mm	720 mm	720 mm	720 mm	720 mm	720 mm
Unit dimensions, depth	338 mm	338 mm	338 mm	338 mm	372 mm	338 mm
Approx. net weight	33 kg	33 kg	33 kg	34.5 kg	37 kg	33 kg

Technical data – Power/loading G20/G25

	VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive I. e.
Nominal heat output range P at 50/30 °C	1.9 ... 15.3 kW	1.9 ... 21.6 kW	1.9 ... 25.6 kW	3.4 ... 26.7 kW	3.8 ... 32.9 kW	1.9 ... 21.6 kW
Nominal heat output range P at 80/60 °C	1.7 ... 14.2 kW	1.7 ... 20.0 kW	1.7 ... 23.9 kW	3.0 ... 24.7 kW	3.4 ... 30.6 kW	1.7 ... 20.0 kW
Maximum heat output for domestic hot water generation	18.0 kW	24.0 kW	24.0 kW	30.0 kW	33.0 kW	24.0 kW
Maximum heat input for domestic hot water generation	18.2 kW	24.2 kW	24.2 kW	30.3 kW	33.3 kW	24.2 kW
Maximum heat input, heating side	14.5 kW	20.4 kW	24.2 kW	25.3 kW	31.2 kW	20.4 kW
Minimum heat input	1.9 kW	1.9 kW	1.9 kW	3.3 kW	3.6 kW	1.9 kW
Heating adjustment range	2 ... 15 kW	2 ... 21 kW	2 ... 24 kW	3 ... 26 kW	4 ... 32 kW	2 ... 21 kW

Technical data – Power/loading G31

	VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive I. e.
Nominal heat output range P at 50/30 °C	4.1 ... 15.3 kW	4.1 ... 21.6 kW	4.1 ... 25.6 kW	4.2 ... 26.7 kW	8.5 ... 32.9 kW	4.1 ... 21.6 kW
Nominal heat output range P at 80/60 °C	3.6 ... 14.2 kW	3.6 ... 20.0 kW	3.6 ... 23.9 kW	3.7 ... 24.7 kW	7.6 ... 30.6 kW	3.6 ... 20.0 kW
Maximum heat output for domestic hot water generation	18.0 kW	24.0 kW	24.0 kW	30.0 kW	33.0 kW	24.0 kW
Maximum heat input for domestic hot water generation	18.2 kW	24.2 kW	24.2 kW	30.3 kW	33.3 kW	24.2 kW
Maximum heat input, heating side	14.5 kW	20.4 kW	24.2 kW	25.3 kW	31.2 kW	20.4 kW
Minimum heat input	4.0 kW	4.0 kW	4.0 kW	4.0 kW	8.0 kW	4.0 kW

Technical data – Heating

	VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive I. e.
Maximum flow temperature	85 °C	85 °C	85 °C	85 °C	85 °C	85 °C
Max. flow temperature adjustment range (default setting: 75 °C)	30 ... 80 °C	30 ... 80 °C	30 ... 80 °C	30 ... 80 °C	30 ... 80 °C	30 ... 80 °C
Permissible total excess pressure	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)	0.3 MPa (3.0 bar)
Minimum pressure for full operation	0.08 MPa (0.80 bar)	0.08 MPa (0.80 bar)	0.08 MPa (0.80 bar)	0.08 MPa (0.80 bar)	0.08 MPa (0.80 bar)	0.08 MPa (0.80 bar)
Expansion vessel capacity	10 l	10 l	10 l	10 l	10 l	10 l
Circulation water volume (with reference to $\Delta T = 20 \text{ K}$)	609 l/h	859 l/h	1,029 l/h	1,064 l/h	1,314 l/h	859 l/h
Approx. condensate rate (pH value 3.5 to 4.0) in 50/30 °C heating mode	1.45 l/h	2.04 l/h	2.42 l/h	2.52 l/h	3.12 l/h	2.04 l/h
Remaining feed head of pump (at nominal circulation water volume)	0.020 MPa (0.200 bar)	0.020 MPa (0.200 bar)	0.020 MPa (0.200 bar)	0.020 MPa (0.200 bar)	0.015 MPa (0.150 bar)	0.020 MPa (0.200 bar)

Technical data – Electrics

	VC 156/5-7 (N-DE) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive	VC 246/5-7 (N-DE) ecoTEC exclusive	VC 276/5-7 (N-DE) ecoTEC exclusive	VC 326/5-7 (N-DE/DK) ecoTEC exclusive	VC 216/5-7 (N-DE) ecoTEC exclusive I. e.
Electric connection	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz	230 V/50 Hz
Permissible connected voltage	190 ... 253 V	190 ... 253 V	190 ... 253 V	190 ... 253 V	190 ... 253 V	190 ... 253 V
Built-in fuse (slow-blow)	2 A	2 A	2 A	2 A	2 A	2 A
Min. electrical power consumption	23 W	30 W	31 W	29 W	36 W	30 W
Max. electrical power consumption for heating mode (nominal heat input)	51 W	62 W	62 W	62 W	81 W	62 W
Max. electrical power consumption for cylinder charging	67 W	81 W	81 W	80 W	85 W	81 W
Standby electrical power consumption	< 1.9 W	< 1.9 W	< 1.8 W	< 1.9 W	< 1.9 W	< 1.9 W
IP rating	IP X4 D	IP X4 D	IP X4 D	IP X4 D	IP X4 D	IP X4 D

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VIESSMANN



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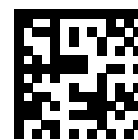
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Über 15 Jahre Erfahrung



Markenhersteller



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