



WARNING!

Improper installation, adjustment, alteration, service or maintenance can cause injury, loss of life or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

NOTICE!

In the Commonwealth of Massachusetts this boiler must be installed by a licensed Plumber or Gas Fitter.

Warning: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- What to do if you smell gas
 - Do not try to light any boiler.
 - Do not touch any electrical switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
 - If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency or the gas supplier.

Notice:

- This manual is available in the English and French language.
- This manual must be retained for future reference.

Logamax plus GB162-80 kW/100 kW

For the contractor

Please read these instructions carefully before servicing!



section 1 Product description

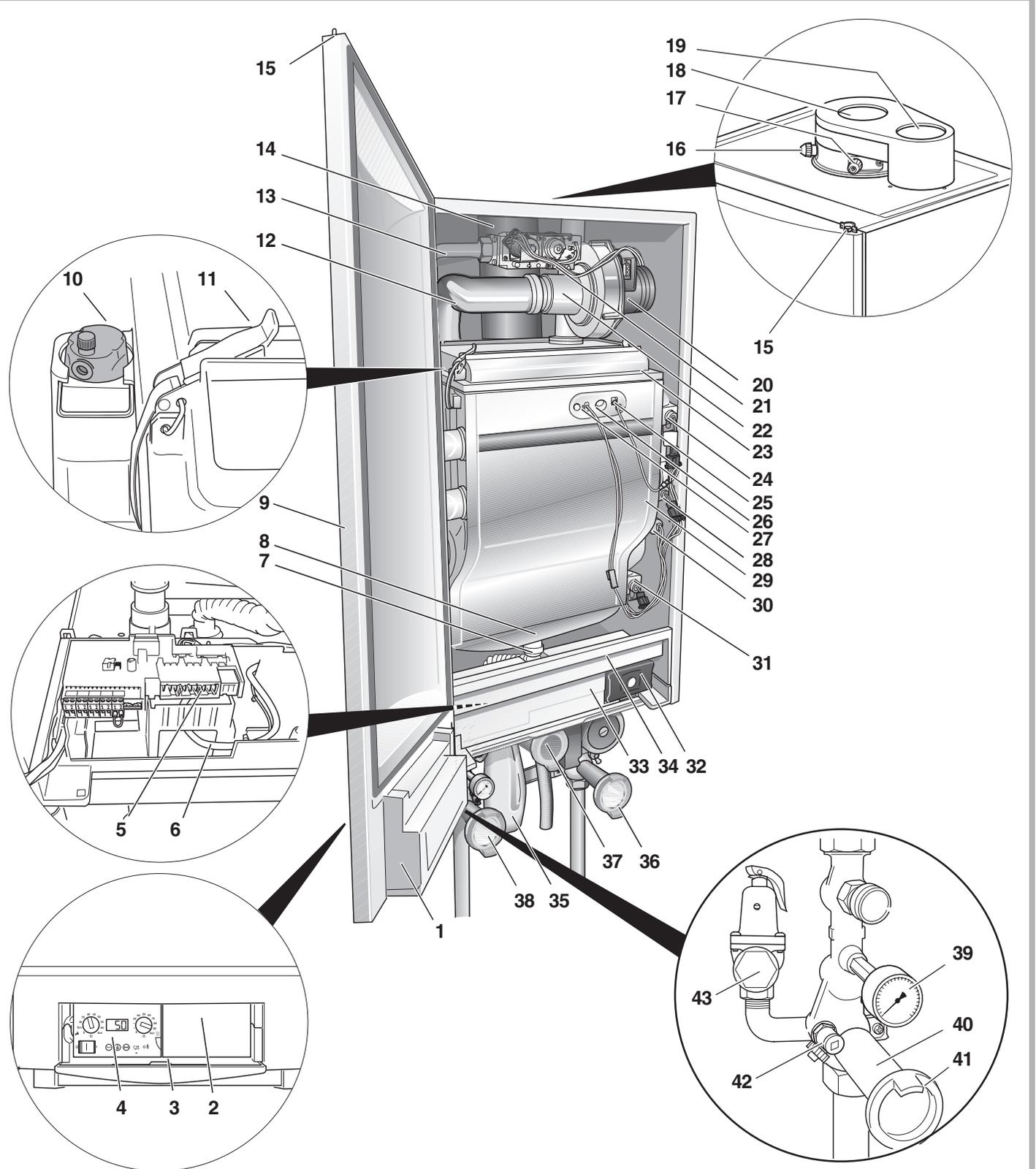


Fig. 1 Logamax plus GB162 with pump group

section 2 Legend

- 1: *BC10 basic controller receptacle*
- 2: *Installation option for room controller, e.g. RC35*
- 3: *Cover with user manual compartment*
- 4: *BC10 basic controller, can be expanded e.g. by the RC35 room controller*
- 5: *Connection box (low-voltage and 120 VAC connections)*
- 6: *Fan harness and mains lead of the pump*
- 7: *Condensate drain outlet*
- 8: *Condensate collector*
- 9: *Boiler front door*
- 10: *Automatic air vent*
- 11: *Retaining clips*
- 12: *Air intake for the fan*
- 13: *Gas pipe*
- 14: *Flue gas pipe*
- 15: *Door lock*
- 16: *Flue measuring point*
- 17: *Measuring point for air intake*
- 18: *Flue gas connection*
- 19: *Air intake connection*
- 20: *Fan*
- 21: *Gas valve*
- 22: *Venturi*
- 23: *Burner cover*
- 24: *Flow temperature sensor*
- 25: *Ionization electrode*
- 26: *Sight glass*
- 27: *Glow ignitor*
- 28: *Safety temperature sensor*
- 29: *Heat exchanger*
- 30: *Pressure sensor*
- 31: *Return temperature sensor*
- 32: *Universal Burner Automatic Version 3 (UBA 3)*
- 33: *Drawer with function module integration options*
- 34: *Cover shield*
- 35: *Condensate trap*

Pump group (scope of delivery):

- 36: *Isolating valve, blue (CH boiler return) with pump, drain valve, check valve and thermometer*
- 37: *Manual gas shutoff valve, yellow (GAS)*
- 38: *Isolating valve, red (CH boiler supply) with drain valve, pressure gauge, thermometer and pressure relief valve*
- 39: *Pressure gauge*
- 40: *Isolating valve*
- 41: *Thermometer (optional accessory)*
- 42: *Drain valve*
- 43: *Pressure relief valve 30 PSI (2 bar)
(or 50 PSI [3.45 bar] = optional)*

The pump group also includes an insulation cover (see also pump group installation instructions).

Low loss header (scope of delivery, single appliance only)

- 44: *Low loss header (not illustrated)*

| Section | page |
|---|-----------|
| 1 General | 5 |
| General information | 5 |
| Layout of this document | 5 |
| Remedying faults using this document | 6 |
| Logamax plus GB162 | 6 |
| 2 Safety and general instructions | 7 |
| Safety and general instructions | 7 |
| 3 Regulations and guidelines | 9 |
| General regulations | 9 |
| Regulations in Massachusetts | 9 |
| 4 Operation | 10 |
| General | 10 |
| Menu structure | 12 |
| Normal Operation menu | 13 |
| Flue Gas Test menu | 13 |
| Service Mode menu | 14 |
| Manual Operation menu | 15 |
| Settings menu | 15 |
| Operation | 17 |
| 5 Symptoms | 21 |
| Symptoms | 21 |
| Removing the control panel | 21 |
| Display readings | 21 |
| Display settings | 21 |
| Display codes and other symptoms | 21 |
| 6 Diagnosis | 30 |
| Diagnosis | 30 |
| 7 Actions | 56 |
| Hanging the control panel from the boiler | 56 |
| Shutting down | 56 |
| Switching off main power | 56 |
| Closing cover of the BC10 | 57 |
| Switching off power supply | 57 |
| Opening boiler door | 57 |
| Closing isolating valves | 57 |
| Draining the system | 57 |
| Opening isolating valves | 58 |
| Closing boiler door | 58 |
| Filling and bleeding the system | 58 |
| Switch on power supply | 59 |
| Switching on main power | 59 |
| Initial startup | 60 |
| Checking/replacing fuses | 61 |
| Checking the fan unit; operation (120 VAC) | 61 |
| Checking the fan unit; power supply cord (120 VAC) | 62 |
| Checking the fan unit; tachometer cable | 62 |
| Checking and/or replacing the fan unit | 63 |
| Checking the pump; mechanical obstruction | 64 |
| Checking the pump; activation | 65 |
| Checking the pump; power supply cord | 65 |
| Checking the pump; tachometer cable | 66 |
| Checking the pump; pollution | 67 |
| Replacing the pump | 67 |
| Checking the supply, safety, return and DHW temperature sensors | 68 |
| Checking the supply, safety, return and DHW temperature sensors; cables | 69 |
| Replacing the feed, safety and return sensors | 71 |
| Replacing the DHW temperature sensor | 72 |
| Checking the flue gas sensor | 72 |

| | |
|--|-----------|
| Checking the flue gas sensor; cable | 73 |
| Replacing the flue gas sensor | 74 |
| Checking the glow ignitor; activation | 74 |
| Checking the glow ignitor; resistance | 75 |
| Checking the glow ignitor; power supply cord | 75 |
| Replacing the glow ignitor, ionization electrode or sight glass with rubber seal | 76 |
| Measure the ionization current | 76 |
| Checking the ionization electrode; short circuit | 77 |
| Checking the ionization electrode; cable | 77 |
| Checking the ionization electrode | 78 |
| Checking the ionization circuit; ground lead | 78 |
| Checking the gas valve; power supply plug | 79 |
| Checking the gas valve; activation | 79 |
| Checking the gas valve; electrical resistance of the power supply cord | 79 |
| Checking the gas valve; internal electrical resistance | 80 |
| Replacing the gas valve | 80 |
| Checking the ON/OFF controller | 81 |
| Checking the RC regulator | 82 |
| Checking an external switch contact | 82 |
| Measuring the static and dynamic gas supply pressures | 82 |
| Bleeding the gas supply pipe | 83 |
| Measuring and adjusting the gas/air ratio | 84 |
| Checking the transformer; internal electrical resistance | 85 |
| Checking the transformer; power supply cord and low-voltage cord | 85 |
| Replace transformer | 86 |
| Checking the wire harness; connections | 86 |
| Checking the control panel; supply voltage | 87 |
| Replacing the automatic air purging system | 87 |
| Replacing/cleaning the burner | 88 |
| Replacing/cleaning the siphon | 88 |
| Checking/replacing the pressure sensor; pollution | 89 |
| Replacing/cleaning the heat exchanger | 89 |
| Replacing the UBA 3 | 91 |
| 8 Appendix | 92 |
| Electrical wiring diagram | 92 |
| Legend of electrical wiring diagram | 93 |
| Power rating | 93 |
| Sensor resistance readings | 93 |
| Technical Specifications | 94 |
| Spare parts list | 96 |
| Spare parts list (continued) | 96 |
| Exploded view Logamax plus GB162-80 kW/100 kW | 97 |
| Exploded view pump group Logamax plus GB162-80 kW/100 kW | 98 |

section 4 General information

About these instructions

These servicing instructions contain important information for the safe and professional servicing of the boiler with boiler input rating of 80 kW and 100 kW.

The name of the boiler is made up of the following components:

- **Logamax plus:** heating boiler typical
- **GB162:** single boiler without domestic hot water supply
- **80 kW/100 kW:** maximum heating capacity is 80 or 100 kW.

| GB162 | Natural Gas | Propane Gas |
|--------|----------------|----------------|
| 80 kW | 290,000 btu/hr | 270,000 btu/hr |
| 100 kW | 333,000 btu/hr | 315,000 btu/hr |

Table 1 max. input rate

These servicing instructions are intended for professional installers, who have the necessary training and experience for working on heating and gas systems.

Cascade installation

Special cascade units (accessories) have been developed to enable this boiler to be installed in a cascade system. Every cascade unit includes an installation frame, horizontal headers, connection pipes for the boiler, main gas pipe and a vertical low loss header.

Cascade units are available for installing the boilers inline or back-to-back. These cascade units make installing a cascade system easier and less labor intensive.

Please contact Buderus for further information about cascade systems.

Updating of documentation

The following technical documentation is available for the Logamax plus GB162-80 kW/100 kW:

- Installation Instructions
- User's Manual
- Service Instructions.

Please contact us if you have any suggestions for improvement or corrections.

Subject to technical modifications

Slight changes may be made without prior notice to the illustrations, process steps and technical data as a result of our policy of continuous improvement.

section 5 Layout of this document

This document consists of various **sections**. They have been divided into **subsections**.

Every subsection is marked with a grey frame. An ID number is always provided in the top left-hand corner. References in the document are based on these ID numbers.

In addition, a subsection may be divided into various numbered **operating steps**. Reference to a certain operating step is always made within the same subsection. If an operating step involves the taking of a yes/no decision, the right-hand side of the table indicates which **operating step** or **subsection** you should proceed with (cross-reference).

The diagram illustrates the layout of a document section. It shows a table with operating steps. Annotations include:

- Section:** A grey box at the top of the table.
- Subsection with ID number:** A grey box pointing to the ID number '24' in the first step.
- Operating step with number:** A circle around the number '4' in the 'Operation' column.
- Cross-reference to subsection or operating step:** A circle around the text 'Yes: -> Step 1' in the right-hand column.

The table content is as follows:

| section 22 Normal Operation menu | | |
|----------------------------------|--|----------------------------------|
| Step 1 | 24 Display reading: Currently measured heating system flow temperature in °C. See also section 30 "Display readings", page 22. | |
| Step 2 | Continue in Normal Operation menu? | Yes: -> Step 3 No: -> Step 1 |
| Step 3 | Press the button. | |
| Step 4 | P 16 Display reading: Currently measured heating system water pressure in bar. See also section 30 "Display readings", page 22. | |
| Step 5 | Press the button. | |
| Step 6 | -H Random operating code. In this case: Operating code: The boiler is in heating mode. See also section 32 "Display codes and other symptoms", page 22, and further. | |
| Step 7 | Have at least 5 seconds passed without a button being pressed and/or has the mains voltage been interrupted? | Yes: -> Step 1 No: -> Step 8 |
| Step 8 | Press the button. | -> Step 1 |
| section 23 Flue Gas Test menu | | |
| Step 1 | 24 Display reading: Currently measured heating system flow temperature in °C. See also section 30 "Display readings", page 22. | |
| Step 2 | Activate flue gas test? | Yes: -> Step 3 No: -> Step 1 |
| Step 3 | To activate the flue gas test: Press and hold the button for more than 2 but not longer than 5 seconds. | |
| Step 4 | 24 Display reading: Current heating system flow temperature in °C. As soon as a non-flashing dot is shown in the bottom right-hand corner of the display, the flue gas test has been activated. This means that the boiler is in heating mode at a capacity of 100 % for a maximum period of 30 minutes. The maximum heating system flow temperature set on the BC10 basic controller now applies. DHW mode is not possible during the flue gas test. | |
| Step 5 | Press the button. | |
| Step 6 | P 16 Display reading: Currently measured heating system water pressure in bar. See also section 30 "Display readings", page 22. | |
| Step 7 | Press the button. | |
| Step 8 | -H Operating code: A flue gas test is being carried out or the boiler is in service mode. Flue gas test: The boiler is in heating mode at a capacity of 100 % for a maximum of 30 minutes. The maximum heating system flow temperature set on the BC10 basic controller now applies. Service mode: The boiler is in heating mode at a reduced capacity for a period of 30 minutes. The maximum heating system flow temperature set on the BC10 basic controller now applies. DHW mode is not possible during the flue gas test or during service mode. See also section 32 "Display codes and other symptoms", page 22, and further. | |
| Step 9 | Press the button. | |
| Step 10 | 24 Display reading: Currently measured heating system flow temperature in °C. See also section 30 "Display readings", page 22. | |
| Step 11 | Have 30 minutes passed or has the mains voltage been interrupted? | Yes: -> Step 1 No: -> Step 12 |
| Step 12 | Deactivate flue gas test? | Yes: -> Step 13 No: -> Step 5 |
| Step 13 | To deactivate the flue gas test: Press and hold the button for more than 2 seconds until the dot disappears. | -> Step 1 |

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14 Logamax plus GB162-80 kW/100 kW - Subject to modifications resulting from technical improvements!

section 6 Remediating faults using this document

FAULTS CAN BE REMEDIED USING THIS DOCUMENT, BY FOLLOWING A 3-STEP PLAN. IT IS IMPORTANT THAT THE SAME SEQUENCE IS FOLLOWED EVERY TIME.

Step 1: Symptoms

Step 2: Diagnosis

Step 3: Action

Step 1: chapter 5 Symptoms

Symptom = every indication which may be relevant in order to recognize faults or errors.

An important symptom is the display indication on the BC10 basic controller of the boiler, but all other symptoms must also be taken into consideration. In most cases, the display indication (e.g. the locking fault code $\overline{21}$ $\overline{255}$) can easily be read from the BC10 basic controller, but the user of the boiler must also be asked whether other symptoms have occurred. Examples of such symptoms are "the boiler makes whistling noises in the morning" or "the room does not reach the required temperature". The display indications and their meanings as well as other symptoms are described in section 29 "Display codes and other symptoms" on page 21.

There are three types of display indication:

- display reading (section 27 "Display readings" on page 21)
- display setting (section 28 "Display settings" on page 21)
- display code (section 29 "Display codes and other symptoms" on page 21).

There are three types of display code:

- operating code
This code gives the status of the boiler. No action is necessary.
- blocking fault code
The boiler is locked and will only restart after a manual reset. The pump will operate continuously for frost protection.
- locking fault code
The boiler resumes normal operation when the fault has cleared.

Every display code (e.g. the locking fault code $\overline{21}$ $\overline{255}$) consists of:

- a main code (in this case $\overline{21}$)
- a subcode (in this case $\overline{255}$).

After reading the main code, the subcode can be called up by pressing the service key.

Step 2: chapter 6 Diagnosis

Diagnosis = establishing the cause of the fault or error on the basis of the symptoms.

A diagnosis (chapter 6 "Diagnosis" on page 30) can be made after determining all symptoms.

The right-hand column of the symptoms overview (section 5 "Symptoms" on page 21) refers to the corresponding diagnosis box. The diagnosis box can be used next to easily find the cause of the fault.

Step 3: chapter 7 Actions

Action = remedying the cause of the fault or error.

After laying down the diagnosis, the fault can be remedied by means of chapter 7 "Actions" on page 56.

section 7 Logamax plus GB162

The **Logamax plus GB162** condensing gas boiler is a fully up-to-date central heating boiler, designed to provide a high level of convenience, maximum energy savings, optimum care for the environment and advanced safety features – all in a single device.

This is why the boiler is equipped with the very latest electronics. The electronic system consists of the UBA 3 (= Universal Burner Automat 3) (see section 1, [32]) and the connected control panel, the BC10 (= Basic Controller 10) (see section 1, [4]).

The main task of this electronic system is to control and ensure the safe operation of the central heating boiler.

In addition, it is possible to call up display readings, settings and codes on the display of the BC10. The display settings can be changed after calling them up. Also see section 23 and section 28.

The working of the boiler during normal operation mode is explained in more detail in chapter 4 "Operation" on page 10. This chapter provides a step-by-step explanation of the boiler operation under normal operating conditions.

section 8 Safety and general instructions

Please observe these instructions in the interest of your own safety.

Designated use

The boiler was designed for heating water for a central heating system and generating domestic hot water.

The boiler is suitable for connection to fully pumped, sealed water systems ONLY.

The boiler can be installed either as a single system or as part of a multiple system (cascade system) with a maximum of 8 boilers connected together.

Hazard definitions

The following defined terms are used throughout the documentation to bring attention to the presence of hazards of various risk levels. Notices give important information concerning the operation of the product.

**DANGER**

Indicates the presence of hazards that will cause severe personal injury, death or substantial property damage.

**WARNING**

Indicates the presence of hazards that can cause severe personal injury, death or substantial property damage.

**CAUTION**

Indicates presence of hazards that will or cause minor personal injury or property damage.

**CAUTION**

Risk of electric shock.

Indicates presence of hazards due to electric shock.

**NOTICE**

Indicates special instructions on installation, operation or maintenance that are important but not related to personal injury or property damage.

The following instructions must be observed

- The boiler must only be used for its designated purpose, observing the Installation Instructions.
- Only use the boiler in the combinations and with the accessories and spares listed.
- Maintenance and repairs must only be carried out by trained professionals.
- You are only permitted to operate the condensing gas boiler with the combustion air/flue gas system that has been specifically designed and approved for this type of boiler.

- Please note that local approval of the flue system and the condensate connection to the public sewer system may be required.
- If boiler installation is provided as replacement heater, DO NOT connect new boiler venting to an existing vent system, if it is shared with other appliances.

You must also observe:

- The local building regulations stipulating the installation rules at the time of installation.
- The local building regulations concerning the air intake and outlet systems and the chimney connection.
- The regulations for the power supply connection.
- The technical rules laid down by the gas utility company concerning the connection of the gas burner fitting to the local gas main.
- The instructions and standards concerning the safety equipment for the water/space heating system.
- The Installation Instructions for building heating systems.
- The boiler must be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the boiler or to lower floors of the structure. When such locations cannot be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the boiler. The pan must not restrict combustion air flow.
- The boiler must be installed such that the gas ignition system components are protected from water (dripping, spraying, rain etc.) during boiler operation and service.
- The boiler must not be installed on carpeting.
- Do not restrict or seal any air intake or outlet openings.
- If you find any defects, you must inform the owner of the system of the defect and the associated hazard in writing.

**DANGER**

if flammable gas explodes.

Beware if you smell gas: there may be an explosion hazard!

Warning: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other boiler.

What to do if you smell gas

- Do not try to light any boiler.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

**WARNING**

Danger of fatal accident from explosive fumes.

- Only carry out work on gas pipes and fittings if you are properly registered.

**WARNING**

Dangerous flue gas can escape if the air supply is insufficient.

- Make sure that air vents are not reduced in size or obstructed.
- The boiler may only be operated after the defect has been remedied.
- Warn the user of the system of the defect verbally and in writing.

Observe these instructions for space system water

Unsuitable heating system water can promote the formation of scale or sludge, which affects system efficiency.

It can also cause corrosion and reduce life of the heat exchanger.

- You must follow Buderus guidelines for boiler water quality.
- Thoroughly flush the system prior to filling.
- Use of a Buderus approved boiler cleaner is recommended.
- Never use salt bedding exchangers to soften the water.
- Do not use inhibitors or other additives unless approved by Buderus for that purpose!
- When using oxygen-permeable pipes, e. g. for floor heating systems, you must separate the system using heat exchangers.
- The **maximum permissible flow rate** at delta-T of 36 °F (20 °C) of the Logamax plus GB162-80 kW/100 kW is 22 GPM (83 l/min.).

Pump test

If the boiler has not been operational for approx. 4 weeks, the pump will automatically run for 10 seconds every 24 hours. This pump test is first carried out 24 hours after the main power has been connected to the boiler.

Freeze protection

The boiler has integrated freeze protection that switches the boiler ON at a space heating (CH) water temperature of 45 °F (7 °C) and switches it OFF at a CH supply temperature of 59 °F (15 °C).

This feature does not protect the central heating system from freezing. If there is a risk of radiators or pipe sections freezing up, we recommend setting the pump run-over time to 24 hours.

Tools, materials and further equipment

For the installation and maintenance of the boiler you will need the standard tools for space heating, gas and water fitting. In addition, a hand truck with a fastening belt is useful.

Disposal

- Dispose of the boiler packaging in an environmentally sound manner.
- Dispose of components of the heating system (e. g. boiler or control device), that must be replaced in an environmentally responsible manner.

section 9 General regulations

The installation must conform to the requirements of the authority having jurisdiction or, in the absence of such requirements, to the latest edition of the National Fuel Gas Code, ANSI Z223.1/NFPA 54. In Canada, installation must be in accordance with the requirements of CAN/CSA B149.1, Natural Gas and Propane Installation Code. Where required by the authority having jurisdiction, the installation must conform to the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1. Install CO detectors per local regulations. Boiler requires yearly maintenance, see chapter 12 "Maintenance" in the installation instructions.

Operating Limits of the boiler:

| | |
|---------------------------------------|--------------------|
| Max. boiler temperature: | 230 °F (110 °C) |
| Max. operating pressure: | 30 PSI (2.1 bar) |
| – with optional pressure relief valve | 50 PSI (3.45 bar). |

The hot water distribution system must comply with all applicable codes and regulations. When replacing an existing boiler, it is important to check the condition of the entire hot water distribution system to ensure safe operation.

section 10 Regulations in Massachusetts

Massachusetts Installations Only:

(a) For all side wall side horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied:

1. **INSTALLATION OF CARBON MONOXIDE DETECTORS.** At the time of installation of the side wall horizontal vented gas fueled equipment, the installing plumber or gasfitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed. In addition, the installing plumber or gasfitter shall observe that a battery operated or hard wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard wired carbon monoxide detectors.
 - a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
 - b. In the event that the requirements of this subdivision cannot be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.

2. **APPROVED CARBON MONOXIDE DETECTORS.** Each carbon monoxide detector as required in accordance with the above provisions shall comply with NPA 720 and be ANSI/UL 2034 listed and IAS certified.
3. **SIGNAGE.** A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fueled heating appliance or equipment. The sign shall read, in print size no less than one-half (½) inch in size, "GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS".
4. **INSPECTION.** The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspections, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CRM 5.08(2)(a)1 through 4.

(b) EXEMPTIONS: The following equipment is exempt from 248 CRM 5.08(2)(a)1 through 4:

1. The equipment listed in Chapter 10 entitled "Equipment Not Required To Be Vented" in the most current edition of NFPA 54 as adopted by the board: and
2. Product Approved side wall horizontally vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.

(c) MANUFACTURERS REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM REQUIRED.

When the manufacturer of Product Approved side wall horizontally mounted gas equipment provides a venting system design or venting system components with the equipment, the instructions provided by the manufacturer for the installation of the equipment and venting shall include:

1. Detailed instructions for the installation of the venting system or the venting system components: and
2. A complete parts list for the venting system design or venting system.

(d) MANUFACTURERS REQUIREMENTS - GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED.

When the manufacturer of Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for the venting of flue gases, but identifies "special venting systems", the following requirements shall be satisfied by the manufacturer:

1. The referenced "special venting systems" shall be included with the appliance or equipment installation instructions: and
2. The "special venting systems" shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instructions.

(e) A copy of all instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or venting design instructions shall remain with the appliance or equipment at the completion of the installation.

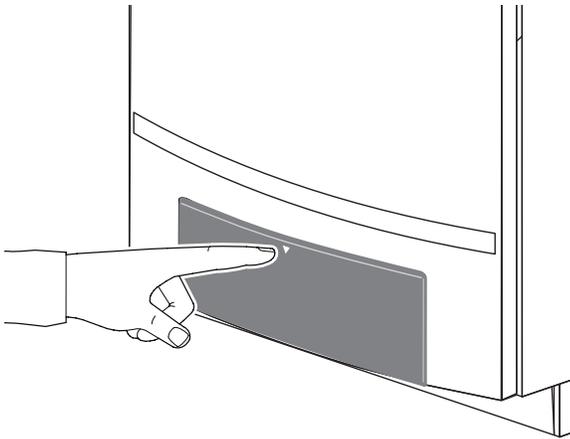
section 11 General

General points

The heating boiler is fitted with a control panel, the BC10 basic controller. The BC10 can be used to control the heating system.

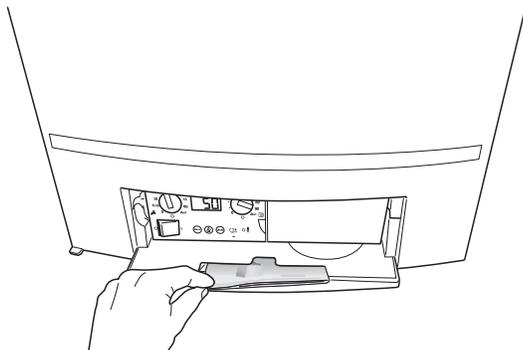
In addition, it is possible to call up display readings, settings and codes on the display of the BC10. The display settings can be changed after calling them up. See chapter 5 "Symptoms" on page 21.

section 12



- Briefly press the access cover of the BC10 to open it.

section 13

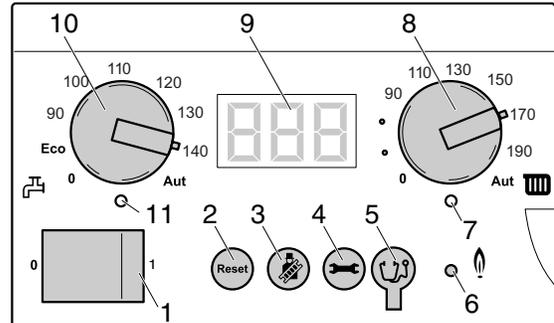


The control panel is located on the left, behind the access cover [2].

The Operating Instructions are located in a compartment on the back of the access cover [1].

section 14

The control panel has the following elements:



- 1: Main power switch
- 2: "Reset" button
- 3: "Chimney sweep" button
- 4: "Service" button
- 5: Service Tool Connector
- 6: LED "Burner operation"
- 7: LED "Central heat demand"
- 8: Space heating water temperature knob
- 9: Display
- 10: DHW temperature knob
- 11: LED "DHW demand"

Main power switch

The main power switch [1] is used to switch the mains power to the heating boiler on and off.

"Reset" button

With certain faults you may have to restart the boiler by pressing the "Reset" button [2]. This is only required in the event of a "locking" fault (can be recognized by a flashing error code in the display). During a reset, the display shows **rE**.

Blocking errors (which can be recognized by a non-flashing error code) are reset automatically as soon as their cause has been removed.

"Chimney sweep" button

The "Chimney sweep" button [3] is used to activate a flue gas test, the service mode or manual operation.

The **flue gas test** enables the boiler to be run in full-load operation manually for a short period. See also section 20, "Flue Gas Test menu", page 13.

The **service mode** enables the boiler to be run in part-load operation manually for a short period. The service mode should be used to carry out measurements and settings on the boiler. See also section 21, "Service Mode menu", page 14.

section 15

The **manual operation mode** enables the boiler to be run manually for a long period. Manual operation should be used for situations where the controller has not been installed yet, or where the controller is out of order. See also section 22, "Manual Operation menu", page 15.

A maximum heating system supply temperature in accordance with the setting of the space heating water temperature knob (section 14, [8]) on the BC 10 applies during the flue gas test, service and manual operation.



DAMAGE TO THE INSTALLATION

with floor heating: by the pipework being overheated.

- Use the space heating water temperature knob [8] to limit the maximum heating system supply temperature to the permitted heating system supply temperature of the floor heating circuit. This is usually approximately 104 °F (40 °C).

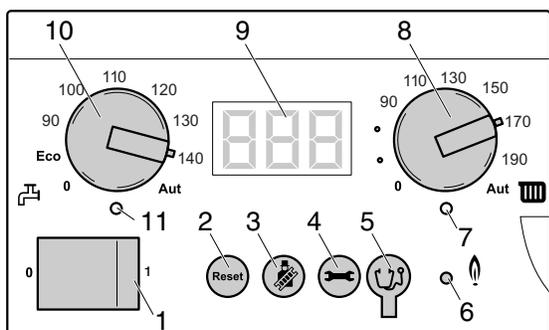


DAMAGE TO THE INSTALLATION

due to frost while manual operation is switched on.

After a power failure or after switching off the main voltage, the heating system may freeze since manual operation is no longer active.

- Re-activate manual operation after switching on the heating system, so that the system is permanently in operation.



"Service" button

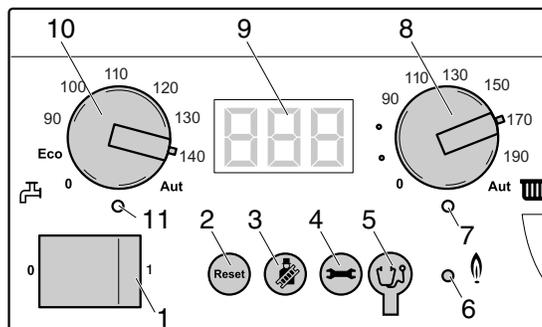
The "Service" button [4] is used to display the heating system supply temperature, the water pressure on the heating system etc. See also section 27 "Display readings", section 28 "Display settings" and section 29 "Display codes and other symptoms".



USER INSTRUCTION

If there is a risk of radiators or pipe sections freezing up, we recommend setting the pump run-over time to 24 hours. See section 28 "Display settings".

section 16



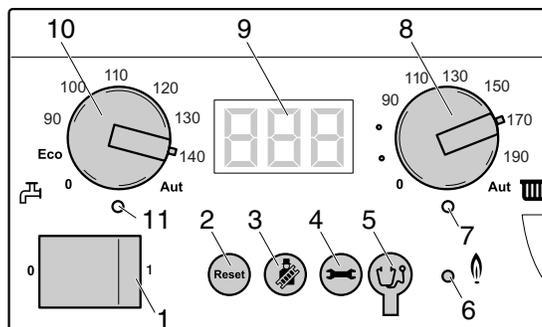
LED "Burner operation"

The LED "Burner operation" [6] lights up when the burner of the heating boiler is active and it is extinguished when the burner is no longer in operation.

The LED "Burner operation" indicates the burner status.

| LED | Status | Explanation |
|-----|--------------------|---|
| On | Burner operational | The heating water is being heated. |
| Off | Burner off | The heating water has reached the required temperature range and there is no heat demand. |

section 17



LED "Central heat demand"

The LED "Central heat demand" [7] lights up as soon as there is a heat demand from the control system and is extinguished as soon as there is no longer a heat demand.

Space heating water temperature knob

The Space heating water temperature knob [8] is used to set the maximum heating system supply temperature. The unit is °F. See table 2.

| Knob position | Explanation |
|-------------------|--|
| 0 | Heating mode off (but still DHW operation possible). |
| 85 – 194 | The maximum heating system supply temperature in °F. |
| Aut ¹⁾ | The maximum heating system supply temperature is 194 °F (90 °C). |

table 2

¹⁾ for use with Buderus controls

Display

The display [9] can show display readings, display settings and display codes. If a fault occurs the display will immediately show the accompanying fault code. If a locking fault has occurred, the display code will flash.

DHW temperature knob

The DHW temperature knob [10] is used to set the DHW temperature as required. The unit is °F. See table 3.

| Knob position | Meaning | Legionella indication |
|-------------------|--|---|
| 0 | DHW mode is off (but heating operation may still be possible). | Legionella propagation ruled out |
| ECO | Do not use this setting! | |
| 85 – 115 | The required DHW temperature in °F. | Very low risk if hot water is used daily |
| 115 – 140 | The required DHW temperature in °F. | Legionella propagation ruled out. This position is recommended. |
| Aut ¹⁾ | The required DHW temperature is 140 °F (60 °C). | Legionella propagation ruled out. |

table 3

¹⁾ for use with Buderus controls

LED "DHW demand"

The LED "DHW demand" [11] lights up as soon as water is being heated as the result of a hot water demand and is extinguished as soon as the heating system for DHW mode is switched off.

section 18 Menu structure

The boiler menu structure can be browsed on the BC10 using the "Reset", "Chimney sweep" or "Service" buttons (section 17, [2], [3] and [4]) and the display (section 17, [9]).

The boiler menu structure consists of 5 menus:

- Normal Operation menu (section 19, page 13);
- Flue Gas Test menu (section 20, page 13);
- Service Mode menu (section 21, page 14);
- Manual Operation menu (section 22, page 15);
- Settings menu (section 23, page 15).

section 19 Normal Operation menu

| | | |
|---------------|--|-------------------------------|
| Step 1 | 75 Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 2 | Continue in Normal Operation menu? | Yes: → Step 3 No: → Step 1 |
| Step 3 | ● Press the "" button. | |
| Step 4 | P22 Display reading: Currently measured heating system water pressure in PSI. See also section 27 "Display readings", page 21. | |
| Step 5 | ● Press the "" button. | |
| Step 6 | -H Random operating code. In this case: Operating code: The boiler is in heating mode. See also section 29 "Display codes and other symptoms", page 21, and further. | |
| Step 7 | Have at least 5 seconds passed without a button being pressed and/or has the main voltage been interrupted ? | Yes: → Step 1 No: → Step 8 |
| Step 8 | ● Press the "" button. | → Step 1 |

section 20 Flue Gas Test menu

| | | |
|----------------|--|--------------------------------|
| Step 1 | 75 Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 2 | Activate flue gas test? | Yes: → Step 3 No: → Step 1 |
| Step 3 | To activate the flue gas test: ● Press and hold the "" button for more than 2 but not longer than 5 seconds. | |
| Step 4 | 75 Display reading: Current heating system supply temperature in °F. As soon as a non-flashing dot is shown in the bottom right-hand corner of the display, the flue gas test has been activated. This means that the boiler is in heating mode at a capacity of 100 % for a maximum period of 30 minutes. The maximum heating system supply temperature set on the control panel now applies. DHW mode is not possible during the flue gas test. | |
| Step 5 | ● Press the "" button. | |
| Step 6 | P22 Display reading: Currently measured heating system water pressure in PSI. See also section 27 "Display readings", page 21. | |
| Step 7 | ● Press the "" button. | |
| Step 8 | -R Operating code: A flue gas test is being carried out or the boiler is in service mode. Flue gas test: The boiler is in heating mode at a capacity of 100 % for a maximum of 30 minutes. The maximum heating system supply temperature set on the control panel now applies. Service mode: The boiler is in heating mode at a reduced capacity for a period of 30 minutes. The maximum heating system supply temperature set on the control panel now applies. DHW mode is not possible during the flue gas test or during service mode. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 9 | Press the "" button. | |
| Step 10 | 75 Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 11 | Have 30 minutes passed or has the main voltage been interrupted? | Yes: → Step 1 No: → Step 12 |
| Step 12 | Deactivate flue gas test? | Yes: → Step 13 No: → Step 5 |
| Step 13 | To deactivate the flue gas test: ● Press and hold the "" button for more than 2 seconds until the dot disappears. | → Step 1 |

section 21 Service Mode menu

| | | |
|----------------|---|---------------------------------|
| Step 1 | Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 2 | Activate service mode? | Yes: → Step 3 No: → Step 1 |
| Step 3 | To activate service mode, step 1: ● Press and hold the "" button for more than 2 but not longer than 5 seconds. | |
| Step 4 | Display reading: Currently measured heating system supply temperature in °F. As soon as a non -flashing dot is shown in the bottom right-hand corner of the display, the boiler will run in heating mode at 100 % performance for a maximum of 30 minutes. The maximum heating system supply temperature set on the control panel now applies. DHW mode is not possible during service mode operation. | |
| Step 5 | To activate service mode, step 2: ● Press and hold the "" + "" buttons for more than 2 seconds. | |
| Step 6 | Display setting: Maximum capacity setting during heating mode as a %. See also section 28 "Display settings", page 21. In this case: = 100 % Service mode has been activated. You can now temporarily lower the boiler performance to partial load to check - and if relevant adjust- the gas/air ratio or the ionization current. | |
| Step 7 | ● Press and hold the "" button until the display shows with a 80 kW boiler or with a 100 kW boiler. | |
| Step 8 | or Display setting: Minimum capacity setting during service mode as a %. See also section 28 "Display settings", page 21. Within a couple of seconds the boiler will be modulated back to 20 % of its capacity in case of an 80 kW boiler and 25 % in case of a 100 kW boiler. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). Check the gas/air ratio or the ionization current and if necessary set the gas/air ratio according to section section 119 "Measuring and adjusting the gas/air ratio", page 84 or section 104 "Measure the ionization current", page 76. | |
| Step 9 | ● Press the "" button. | |
| Step 10 | Display setting: required pump run-over time after the end of the heating operation in minutes. See also section 28 "Display settings", page 21. | |
| Step 11 | ● Press the "" button. | |
| Step 12 | Display setting: required DHW mode position (on/off). This setting has priority over -for example- a possible DHW mode (On/Off) setting on a room thermostat. See also section 28 "Display settings", page 21. | |
| Step 13 | ● Press the "" button. | |
| Step 14 | Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 15 | ● Press the "" button. | |
| Step 16 | Display reading: Currently measured heating system water pressure in PSI. See also section 27 "Display readings", page 21. | |
| Step 17 | ● Press the "" button. | |
| Step 18 | Operating code: The boiler is in service mode. See also section 29 "Display codes and other symptoms", page 21, and further. | |
| Step 19 | ● Press the "" button. | |
| Step 20 | Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 21 | Have 30 minutes passed or has the main voltage been interrupted? | Yes: → Step 22 No: → Step 23 |
| Step 22 | Service mode is deactivated. | → Step 25 |
| Step 23 | Deactivate service mode? | Yes: → Step 24 No: → Step 15 |
| Step 24 | To deactivate the service mode: ● Press and hold the "" button for more than 2 seconds until the dot disappears. | |
| Step 25 | The boiler performance is then reduced according to the settings made in the "Settings" menu in section 23, page 15. | → Step 1 |

section 22 Manual Operation menu

| | | |
|----------------|---|--------------------------------|
| Step 1 | <input type="text" value="75"/> Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 2 | Activate manual operation? | Yes: → Step 1 No: → Step 1 |
| Step 3 | To activate manual operation: ● Press and hold the "⏻" button for more than 5 seconds. | |
| Step 4 | <input type="text" value="75"/> Display reading: Currently measured heating system supply temperature in °F. As soon as a flashing dot is shown in the bottom right-hand corner of the display, manual operation is active. This means that the boiler is permanently in heating mode. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). The LED "Central heat demand" lights up. | |
| Step 5 | ● Press the "⏻" button. | |
| Step 6 | <input type="text" value="P22"/> Display reading: Currently measured heating system water pressure in PSI. See also section 27 "Display readings", page 21. | |
| Step 7 | ● Press the "⏻" button. | |
| Step 8 | <input type="text" value="-H"/> Operating code. The device is in manual operation mode. See also section 29 "Display codes and other symptoms", page 21. During manual operation the "Settings" menu in section 23 from step 3 can be used to temporarily change the target boiler performance. DHW mode is possible during manual operation. CAUTION: If the boiler performance has been changed temporarily, it must be reset after ending manual operation, according to the "Settings" menu, section 23, page 15 | |
| Step 9 | ● Press the "⏻" button. | |
| Step 10 | <input type="text" value="75"/> Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 11 | Has the main voltage been interrupted? | Yes: → Step 1 No: → Step 12 |
| Step 12 | Deactivate manual operation? | Yes: → Step 13 No: → Step 5 |
| Step 13 | To deactivate manual operation: ● Press and hold the "⏻" button for more than 2 seconds until the dot disappears. | → Step 1 |

section 23 Settings menu

| | | |
|---------------|--|-------------------------------|
| Step 1 | <input type="text" value="75"/> Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 2 | Open the "Settings" menu? | Yes: → Step 3 No: → Step 1 |
| Step 3 | To open the Settings menu: ● Press and hold the "⏻" + "⏻" buttons for more than 2 seconds. | |
| Step 4 | <input type="text" value="L _ _"/> Display setting: target boiler performance as a %. See also section 28 "Display settings", page 21. As soon as the display shows <input type="text" value="L _ _"/> , the "Settings" menu is open. The boiler performance can be set using the first parameter shown on the display. | |
| Step 5 | Adjust boiler performance? | No: → Step 7 Yes: → Step 6 |
| Step 6 | Lower: Decrease the target boiler performance with the "⏻" button. The minimum setting is <input type="text" value="L 25"/> = 25 % for an 80 kW heating boiler and <input type="text" value="L 20"/> = 20 % for a 100 kW heating boiler. Higher: Increase the target boiler performance with the "⏻" button. The maximum setting is <input type="text" value="L _ _"/> = 100 %. Otherwise, this concerns the factory-adjusted setting. | |
| Step 7 | ● Press the "⏻" button. | |
| Step 8 | <input type="text" value="F 5"/> Display setting: Target pump run-over time after heating mode has elapsed in minutes. Set the second parameter as soon as the display shows <input type="text" value="F 5"/> . Recommendation: Do not set a pump run-over time of less than <input type="text" value="F 5"/> (= 5 minutes). | |

section 23 Settings menu (continued)

| | | |
|----------------|---|---------------------------------|
| Step 9 | Set the pump run-over time after heating operation has ended? | Yes: → Step 10 No: → Step 11 |
| Step 10 | <p>Lower: Decrease the target pump run-over time after the end of heating operation with the "Reset" button. The minimum setting is <input type="text" value="0"/> = 0 minutes. The factory default setting is 5 minutes.</p> <p>Higher: Increase the target pump run-over time after the end of heating operation with the "Up" button. The minimum setting is <input type="text" value="24"/> = 24 hours.</p> | |
| Step 11 | ● Press the "Left" button. | |
| Step 12 | <input type="text" value="1"/> Display setting: required DHW mode position (on/off). See also section 28 "Display settings", page 21. Set the third parameter as soon as the display shows <input type="text" value="1"/> . | |
| Step 13 | Set the DHW mode status? | Yes: → Step 14 No: → Step 15 |
| Step 14 | ● Set the DHW mode On or Off with the "Reset" or "Up" buttons. <input type="text" value="1"/> is "On", <input type="text" value="0"/> is "Off". Note! If <input type="text" value="0"/> is set, the frost protection for the internal or external hot water tank heater is switched off. | |
| Step 15 | Have at least 5 seconds passed without a button being pressed and/or has the main voltage been interrupted ? | Yes: → Step 17 No: → Step 16 |
| Step 16 | ● Press the "Left" button. | |
| Step 17 | <input type="text" value="75"/> Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. Any adjustments that you have made have been confirmed. | → Step 1 |

section 24 Operation

Start-up phase

| | | |
|----------------|--|---------------------------------|
| Step 1 | ● Switch "On" the power supply to the boiler. | |
| Step 2 | ● Turn the main power switch on the BC10 to position "1" (On), also see section 14. | |
| Step 3 | The LED of the UBA 3 (section 1, [32]) lights up for 1 second. This means that the UBA 3 is reading the KIM. When installing a new KIM or a new UBA 3, the LED will flash at a high frequency for max. 10 seconds while the data is being exchanged. | |
| Step 4 | 888 Operating code: The display is tested during starting up, immediately after switching on the main voltage. This code is displayed for a maximum of 1 second. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 5 | - Operating code: A communication test is carried out during starting up. This display code flashes to check the communication between the UBA 3 (section 1, [32]) and the control panel (section 1, [4]) for 3-5 times during a period of 3-5 seconds while starting up. If a new UBA3 or a new KIM was fitted, this code will flash for max. 10 seconds. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 6 | 75 Display reading: Currently measured heating system supply temperature in °F. See also section 27 "Display readings", page 21. | |
| Step 7 | ● Press the "←" button. | |
| Step 8 | P22 Display reading: Currently measured heating system water pressure in PSI. See also section 27 "Display readings", page 21. | |
| Step 9 | ● Press the "→" button. | |
| Step 10 | 00 Operating code: The boiler starts up after activation of the mains power supply or completion of a system reset. Start of water-side flow check: The pump will carry out max. 4 attempts to restore the water flow. Start of air-side pre-purge phase. The fan unit runs at about 60 % of maximum speed for 15 seconds. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 11 | Has the air-side pre-purge phase been completed without any problems? | Yes: → Step 13 No: → Step 12 |
| Step 12 | ● Now remedy the fault by following the section relating to the error code that is now displayed. See also section 29. As soon as a locking fault occurs (indicated by a flashing display code), the pump is activated to run continuously, thus minimizing the risk of the heating system freezing up. | → Step 1 |

Readiness for operation

| | | |
|----------------|--|---------------------------------|
| Step 13 | 0H Operating code. The boiler is in standby mode. No current heat requirement. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 14 | Start of pump over-run time for the heating system. The pump over-run time for the heating system can be adjusted as per section 23. Factory-adjusted setting: 5 minutes | |
| Step 15 | Has the preset pump over-run time expired? | Yes: → Step 19 No: → Step 16 |
| Step 16 | Is there a DHW heating system which has generated a heat demand? | Yes: → Step 29 No: → Step 17 |
| Step 17 | Is there a current heat demand from the room or external temperature-dependent controller? | Yes: → Step 48 No: → Step 18 |
| Step 18 | Is the current heating-system supply temperature lower than 45 °F (7 °C)? | Yes: → Step 65 No: → Step 15 |
| Step 19 | The pump stops. | |
| Step 20 | Has the pump been out of use for more than 24 hours? | Yes: → Step 24 No: → Step 21 |
| Step 21 | Is there a DHW heating system which has generated a demand? | Yes: → Step 29 No: → Step 22 |

section 24

| | | |
|----------------------------|---|----------------|
| Step 22 | Is there a current heat demand from the room or external temperature-dependent controller? | Yes: → Step 48 |
| | | No: → Step 23 |
| Step 23 | Is the current heating-system supply temperature lower than 45 °F (7 °C)? | Yes: → Step 65 |
| | | No: → Step 20 |
| Step 24 | The pump is run for 10 seconds in order to prevent it from seizing up. | |
| Step 25 | Have ten seconds elapsed? | Yes: → Step 19 |
| | | No: → Step 26 |
| Step 26 | Is there a DHW heating system which has generated a demand? | Yes: → Step 29 |
| | | No: → Step 27 |
| Step 27 | Is there a current heat demand from the room or external temperature-dependent controller? | Yes: → Step 48 |
| | | No: → Step 28 |
| Step 28 | Is the current heating-system supply temperature lower than 45 °F (7 °C)? | Yes: → Step 65 |
| | | No: → Step 25 |
| DHW operating phase | | |
| Step 29 | The LED "DHW demand" on the control panel (section 1, [4]) lights up. | |
| Step 30 |  Operating code. The boiler prepares for a burner start-up whenever a heat demand arises. The fan unit (section 1, [20]) and the pump are started. The glow ignitor (section 1, [27]) is activated. | |
| Step 31 |  Operating code. The gas valve (section 1, [21]) is activated. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 32 | Maximum four ignition attempts are carried out. Does the ionization current exceed 1.4 microamperes within these 4 ignition attempts? | Yes: → Step 33 |
| | | No: → Step 12 |
| Step 33 |  Operating code: The device is in DHW mode. See also section 29 "Display codes and other symptoms", page 21. The LED "Burner operation" on the control panel (section 1, [4]) lights up. The startup load on the boiler is approx. 50 % for the purposes of flow monitoring and is then modulated up or down. The degree of modulation of the pump will hardly vary during DHW mode; the pump will be running almost continuously at 100 %. | |
| Step 34 | Is there still a heat demand? | Yes: → Step 35 |
| | | No: → Step 40 |
| Step 35 | Is the heating-system supply temperature 45 °F (25 °C) higher than the preset DHW temperature or higher than 200 °F (93 °C)? | Yes: → Step 36 |
| | | No: → Step 33 |
| Step 36 |  Operating code: The supply temperature sensor has measured a current heating supply temperature higher than the supply temperature setting on the control panel (section 1, [4]), or higher than the supply temperature calculated according to the heating curve or higher than the supply temperature calculated according to the DHW mode. | |
| Step 37 | The LED "Burner operation" is extinguished. | |
| Step 38 | The fan unit (section 1, [20]) continues to run for max. 30 seconds. | |
| Step 39 | Has the heating system supply temperature fallen sufficiently? | Yes: → Step 29 |
| | | No: → Step 39 |
| Step 40 | The gas valve (section 1, [21]) is closed and the burner is shut down. | |
| Step 41 | The LED "Burner operation" is extinguished. | |
| Step 42 | The LED "DHW demand" is extinguished. | |
| Step 43 |  Operating code. The boiler is in standby mode. There is no current heat demand. Start of pump over-run time via the tank for a period of approx. 60 seconds. Start of air-side purging phase of the fan unit (section 1, [20]) for approx. 30 seconds. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 44 | Have approx. 30 seconds elapsed? | Yes: → Step 45 |
| | | No: → Step 44 |

section 24

| | | |
|-------------------------------|---|---------------------------------|
| Step 45 | The fan unit (section 1, [20]) stops. | |
| Step 46 | Have approx. 60 seconds elapsed? | Yes: → Step 47 No: → Step 46 |
| Step 47 | The pump stops. See also section 29 "Display codes and other symptoms", page 21. | |
| Boiler operating phase | | |
| Step 48 | The LED "Central heat demand" lights up. | |
| Step 49 |  Operating code. The boiler prepares for a burner start-up whenever a heat demand arises. The fan unit (section 1, [20]) and the pump are started. The glow ignitor (section 1, [27]) is activated. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 50 |  Operating code. The gas valve (section 1, [21]) is activated. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 51 | Maximum of four ignition attempts are carried out. Does the ionization current exceed 1.4 microamperes within these 4 ignition attempts? | Yes: → Step 52 No: → Step 12 |
| Step 52 |  Operating code. The device is in heating mode. See also section 29 "Display codes and other symptoms", page 21. The LED "Burner operation" on the control panel (section 1, [4]) lights up. The startup load on the boiler is approx. 50 % for the purposes of flow monitoring and is then modulated up or down. The pump modulation degree will vary strongly during heating operation. | |
| Step 53 | Is there still a heat demand from the room or external temperature-dependent controller? | Yes: → Step 54 No: → Step 59 |
| Step 54 | Is the heating-system supply temperature higher than the target setting? When working with an external temperature-dependent controller, the target setting is calculated by the controller; when working with a room temperature control device it is set on the control panel (section 1, [4]). | Yes: → Step 55 No: → Step 52 |
| Step 55 |  Operating code: The supply temperature sensor as measured a current heating supply temperature higher than the supply temperature setting on the control panel (section 1, [4]), or higher than the supply temperature calculated according to the heating curve or higher than the supply temperature calculated according to the DHW mode. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 56 | The LED "Burner operation" is extinguished. | |
| Step 57 | The fan unit (section 1, [20]) continues to run for max. 30 seconds. | |
| Step 58 | Has the heating system supply temperature fallen sufficiently? | Yes: → Step 49 No: → Step 58 |
| Step 59 | The LED "Central heat demand" is extinguished. | |
| Step 60 |  Operating code. The boiler is in standby mode. There is no current heat demand. See also section 29 "Display codes and other symptoms", page 21. The gas valve (section 1, [21]) is closed and the burner (section 1, [23]) is shut down. | |
| Step 61 | The LED "Burner operation" is extinguished. | |
| Step 62 | Start of pump over-run time for the heating system. The pump over-run time for the heating system can be adjusted as per section 23. Factory-adjusted setting: 5 minutes. Start of air-side flushing phase of the fan unit (section 1, [20]) for approx. 30 seconds. | |
| Step 63 | Have approx. 30 seconds elapsed? | Yes: → Step 64 No: → Step 63 |
| Step 64 | The fan unit (section 1, [20]) stops. | → Step 15 |

Frost-protection operating phase

| | | |
|----------------|--|---|
| Step 65 | The LED "Central heat demand" lights up. | |
| Step 66 | <input type="checkbox"/> Operating code. The boiler prepares for a burner start-up whenever a heat demand arises. The fan unit (section 1, [20]) and the pump are started. The glow ignitor (section 1, [27]) is activated. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 67 | <input type="checkbox"/> Operating code. The gas valve (section 1, [21]) is activated. See also section 29 "Display codes and other symptoms", page 21. | |
| Step 68 | Maximum of four ignition attempts are carried out. Does the ionization current exceed 1.4 microamperes within these 4 ignition attempts? | Yes: → Step 69 No: → Step 12 |
| Step 69 | <input type="checkbox"/> Operating code: The device is in heating mode. See also section 29 "Display codes and other symptoms", page 21. The LED "Burner operation" is lit up. The boiler is in heating mode. | |
| Step 70 | Is the current heating-system supply temperature higher than 59 °F (15 °C)? | Yes: → Step 59 No: → Step 69 |

section 25 Symptoms

You can find a further explanation of the symptoms in section 6 on page 6.

section 26 Removing the control panel

To make it easier to operate the BC10 when the boiler door is open and to make it easier to read the display, the BC10 can be temporarily attached to the boiler in a suspended position while carrying out service activities. See section 68, page 56.

section 27 Display readings

| Display reading | Meaning | Unit | Range |
|-----------------|---|------|-------|
| | Display reading Current heating system supply temperature in °F. | °F | |
| | Display reading Current heating system water pressure in PSI. | PSI | |

section 28 Display settings

| Display setting | Meaning | Unit | Range | Factory setting |
|-----------------|--|------|---------------|-----------------|
| | Display setting: Logamax plus GB162-80 target boiler performance as a % | % | / 100 % | |
| | Display setting: Logamax plus GB162-100 target boiler performance as a % | % | / 100 % | |
| | Display setting: Target pump over-run time in minutes after heating mode has ended. Recommendation: Do not set a pump over-run time of less than (= 5 minutes). | Min. | / 24 hours | |
| | Display setting: required DHW supply position (on/off). This setting has priority over -for example- a possible DHW mode (On/Off) setting on a room thermostat. Note! If the setting has been made, the frost protection of the DHW heating system has also been switched off. | | "Off" / "On" | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|--------------|-------------------|--|------------------|-----------------|--------------|---|--------------|
| | Main display code | | Sub-display code | Reset required? | | | |
| | | | | No display code | Off | No indication on the display of the BC10 (section 1, [4]). | → section 31 |
| | | | | No display code | Off | On devices with DHW operation: no or insufficient DHW; radiators, convectors, etc. may be heated without current heat demand. | → section 32 |
| | | | | No display code | Off | On devices with DHW operation: hot water may be available, no heating operation. On devices without DHW operation: no heating operation. | → section 33 |
| | | | | No display code | Off | No indication on the display of the BC10 (section 1, [4]). | → section 34 |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|---|------------------|--|---|-----|--|----------------------------------|--------------|
| Main display code | Sub-display code | Meaning | Reset required? | | | | |
| | | | | | | | |
| | | | Operating code: A communication test is carried out while starting up. This display code flashes to check the communication between the UBA 3 (section 1, [32]) and the control panel (section 1, [4]) 3-5 times during a period of 3-5 seconds while starting up. If a new UBA 3 or a new KIM has been fitted, this display code will flash for max. 10 seconds. | | Off or flashing at 8 Hz | | |
| | | | Fault code: If this code continues to flash on the display, there is a fault in the communication between the UBA 3 (section 1, [32]) and the control panel (section 1, [4]). | | Off or flashing at 8 Hz | No heating operation and no DHW. | → section 66 |
| | | | Operating code: The boiler is in flue gas test or service mode. Flue gas test: The boiler is in heating mode at a performance capacity of 100 % for a period of 30 minutes. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). Service mode: the boiler will run in heating mode at a reduced performance capacity for 30 minutes. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). DHW mode is not possible during the flue gas test or during service mode. | | Off | No DHW operation. | |
| | | | Operating code: The boiler is in manual operation mode. | | Off | | |
| <td></td> <td>Operating code:The boiler is in flue gas test or service mode. Flue gas test: the boiler will run in heating mode at 100 % performance capacity for 30 minutes. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). Service mode: the boiler will run in heating mode at a reduced performance capacity for 30 minutes. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). DHW mode is not possible during the flue gas test or during service mode.</td> <td></td> <td>Off</td> <td>No DHW operation.</td> <td></td> | | Operating code: The boiler is in flue gas test or service mode. Flue gas test: the boiler will run in heating mode at 100 % performance capacity for 30 minutes. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). Service mode: the boiler will run in heating mode at a reduced performance capacity for 30 minutes. The maximum heating system supply temperature set on the control panel now applies (section 1, [4]). DHW mode is not possible during the flue gas test or during service mode. | | Off | No DHW operation. | | |
| <td></td> <td>Operating code: The boiler is in heating mode.</td> <td></td> <td>Off</td> <td></td> <td></td> | | Operating code: The boiler is in heating mode. | | Off | | | |
| <td></td> <td>Operating code: The boiler is in manual operation mode.</td> <td></td> <td>Off</td> <td></td> <td></td> | | Operating code: The boiler is in manual operation mode. | | Off | | | |
| <td></td> <td>Operating code: The boiler is in DHW mode.</td> <td></td> <td>Off</td> <td></td> <td></td> | | Operating code: The boiler is in DHW mode. | | Off | | | |
| <td></td> <td>Operating code:The switch optimization program is activated. This program is activated if a hot water request from an RC regulator or an ON/OFF controller occurs more frequently than once every 10 minutes. This means that the boiler cannot be restarted until at least ten minutes have elapsed since initial startup of the burner.</td> <td></td> <td>Off</td> <td>The target room temperature possibly is not reached.</td> <td>→ section 35</td> | | Operating code: The switch optimization program is activated. This program is activated if a hot water request from an RC regulator or an ON/OFF controller occurs more frequently than once every 10 minutes. This means that the boiler cannot be restarted until at least ten minutes have elapsed since initial startup of the burner. | | Off | The target room temperature possibly is not reached. | → section 35 | |
| <td></td> <td>Operating code:The heating boiler cannot start up temporarily after DHW mode has ended.</td> <td></td> <td>Off</td> <td></td> <td></td> | | Operating code: The heating boiler cannot start up temporarily after DHW mode has ended. | | Off | | | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|---|---|---|---|---|--------------|----------------|-----------|
| Main display code | Sub-display code | Meaning | Reset required? | | | | |
|     |     |   |     |   | | | |
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|   |   |   |     |   | | | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|-------------------|------------------|---|--------------------|------------------|--|----------------|-----------|
| Main display code | Sub-display code | Meaning | Reset required? | | | | |
| 04 | 285 | Blocking fault code: The return temperature sensor (section 1, [31]) has measured a current return water temperature higher than 203 °F (95 °C). | No 5) 7) | Off | The target room temperature possibly is not reached. Possibly no DHW operation. | → section 37 | |
| 1A | 316 | Locking fault code: The flue gas sensor temperature is too high. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 38 | |
| 1C | 210 | Locking fault code: The safety temperature switch has measured an excessively high temperature and is open, or no connection is made between contacts 50 and 78 of the UBA 3 mounting base. CAUTION: The boiler can have a flue gas thermostat or a connection between contacts 50 and 78 of the UBA 3 mounting base, depending on the boiler type. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 39 | |
| 1U | 317 | Locking fault code: The flue gas sensor contacts have shorted. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 40 | |
| 1Y | 318 | Locking fault code: The flue gas sensor contacts are open. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 40 | |
| 2E | 207 | Blocking fault code: The heating system water pressure is too low and is less than 3 PSI. Neither the boiler nor the pump are started up. As soon as the water pressure of the heating system is 14 PSI or more, the display code 2E 207 will disappear and both the boiler and the pump will start running. As soon as the water pressure of the heating system is less than 6 PSI, the boiler performance for both the heating operation and the DHW mode will be limited. | No | Off | No heating operation and no DHW. | → section 41 | |
| 2F | 260 | Blocking fault code: The supply temperature sensor (section 1, [24]) has not measured any heating water temperature increase after a burner start. | No | Off | No heating operation and no DHW. | → section 37 | |
| 2F | 271 | Operating code blocking fault code: The temperature difference of the heating water measured between the supply (section 1, [24]) and safety temperature sensors (section 1, [28]) is too much. | No | Off | No heating operation and no DHW. | → section 37 | |
| 2L | 266 | Locking fault code: The pressure sensor (section 1, [30]) failed to measure a pressure increase on the heating side during any of four attempts. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 42 | |
| 2P | 212 | Blocking fault code: The supply temperature sensor (section 1, [24]) has measured a heating water temperature increase of more than 9 °F/sec (5 °C/sec). | No 5) 7) | Off | No heating operation and no DHW. | → section 37 | |
| 2U | 213 | Blocking fault code: The temperature difference measured between the supply temperature sensor (section 1, [24]) and the return temperature sensor (section 1, [31]) is more than 90 °F (50 °C). | No 5) 7) | Off | No heating operation and no DHW. | → section 37 | |
| 2Y | 281 | Operating code: The pump speed was found to be too high or too low while starting up 00. The modulating function of the pump is switched off. The pump continues to run, but the pump speed is fixed. | No | Off | No heating operation and no DHW. | → section 43 | |
| 2Y | 282 | Operating code: The tacho signal of the pump is missing. | No | Off | No heating operation and no DHW. | → section 44 | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|-------------------|------------------|--|--------------------|------------------|----------------------------------|----------------|-----------|
| Main display code | Sub-display code | Meaning | Reset required? | | | | |
| 3A | 264 | Blocking fault code: The fan unit tacho signal (section 1, [20]) or the fan unit voltage has failed during the operating phase. | No | Off | No heating operation and no DHW. | → section 45 | |
| 3C | 217 | Locking fault code: The fan unit (section 1, [20]) is running irregularly while starting up. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 46 | |
| 3F | 273 | Blocking fault code: the boiler has been switched off for a couple of seconds, since it had been operational for 24 hours. This is a safety check. | No 5) 7) | Off | | → section 47 | |
| 3L | 214 | Locking fault code: The fan unit tacho signal (section 1, [20]) or the fan unit main voltage is not available during the pre-operative phase 0C. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 45 | |
| 3P | 216 | Locking fault code: The fan unit (section 1, [20]) is running too slowly. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 48 | |
| 3Y | 215 | Locking fault code: The fan unit (section 1, [20]) is running too fast. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 49 | |
| 4A | 218 | Locking fault code: The supply temperature sensor (section 1, [24]) has measured a heating supply temperature higher than 221 °F (105 °C). | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 37 | |
| 4C | 224 | Locking fault code: The safety temperature switch has measured an excessively high temperature and is open, or no connection is made between contacts 22 and 24 of the UBA 3 mounting base. The boiler can have a safety temperature switch or a connection between contacts 22 and 24 of the UBA 3 mounting base, depending on the boiler type. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 50 | |
| 4E | 278 | Locking fault code: The sensor test has failed. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 51 | |
| 4F | 219 | Locking fault code: The safety temperature sensor (section 1, [28]) has measured a supply temperature higher than 221 °F (105 °C). | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 37 | |
| 4L | 220 | Locking fault code: The contacts of the safety temperature sensor (section 1, [28]) have shorted to each other, the contacts of the safety temperature sensor have shorted to ground or the contacts of the safety temperature sensor have measured a supply water temperature of over 266 °F (130 °C). | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 52 | |
| 4P | 221 | Locking fault code: The contacts of the safety temperature sensor (section 1, [28]) are open. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 53 | |
| 4U | 222 | Locking fault code: The contacts of the supply temperature sensor (section 1, [24]) have shorted. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 53 | |
| 4Y | 223 | Locking fault code: The contacts of the supply temperature sensor (section 1, [24]) are open. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 53 | |
| 5C 11) | 268 | Operating code: The Service Tool was connected at the time indicated. | No | Off | | | |
| 5H | 268 1) | Operating code: Component test phase using the Service Tool. | No | Off | | | |
| 5H 10) | | Blocking fault code: There is no communication between RCC and UBA 3 (section 1, [32]). | No | Off | No heating operation. | | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|-------------------|----------------------|--|-------------------------------|-------------------------|---|----------------|-----------|
| Main display code | Sub-display code | Meaning | Reset required? | | | | |
| 5L ₁₀₎ | | General fault code: A blocking or locking boiler fault has occurred. | Yes/No | Off flashing 1 Hz | Possibly no heating operation and no DHW. | | |
| 6A | 227 | Blocking fault code: Insufficient flame activity (ionization current) was measured during the first, second or third burner ignition attempt (section 1, [23]). | No _{5) 7)} | Off | | → section 54 | |
| 6A | 227 | Locking fault code: Insufficient flame activity (ionization current) was measured during the fourth burner ignition attempt (section 1, [23]). | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 54 | |
| 6C | 228 | Locking fault code: Flames (ionization current) were measured after a heat demand occurred, but before opening the gas valve (section 1, [21]). | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 55 | |
| 6C | 306 | Locking fault code: Flames (ionization current) were detected after switching off the burner (section 1, [23]). | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 56 | |
| 6L | 229 | Blocking fault code: Insufficient flame activity (ionization current) was measured during the burner procedure. | No _{5) 7)} | Off | No heating operation and no DHW. | → section 57 | |
| 6P | 269 | Locking fault code: The glow ignitor (section 1, [29]) was activated too long (for more than 10 minutes). | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 58 | |
| 7C | 231 | Locking fault code: The power supply was interrupted during a locking fault 4A 218, 4C 224, 4E 278, 4F 219, 4L 220, 4U 222 or 44 223. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 59 | |
| 7H | 328 | Blocking fault code: The main voltage has briefly been interrupted. | No _{5) 7)} | Off | | → section 60 | |
| 7L | 261 | Locking fault code: The UBA 3 (section 1, [32]) is defective. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |
| 7L | 280 | Locking fault code: The UBA 3 (section 1, [32]) is defective. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |
| 8Y | 232 ₁₎ | Operating code: The external switch contact has opened. | | Off | No heating operation and no DHW. | → section 61 | |
| 888 | | Operating code: Display test while starting up, immediately after switching on the main voltage. This code is displayed for a maximum of 1 second. | | On | | | |
| 9A | 235 | Locking fault code: The KIM is too new for the UBA 3 (section 1, [32]). | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 62 | |
| 9H | 237 | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |
| 9H | 267 | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |
| 9H | 272 | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |
| 9L | 234 | Locking fault code: The contacts of the gas valve (section 1, [21]) are open. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 63 | |
| 9L | 238 | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes _{4) 6) 7) 8)} | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |

section 29 Display codes and other symptoms

| Display code | | | | | Meaning | Reset required? | LED on UBA 3 | Other symptoms | Diagnosis |
|---|---|---|---|---|---|--------------------|------------------|--|--------------|
| Main display code | Sub-display code | | | | | | | | |
|  |  |  |  |  | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 66 |
|  |  |  |  |  | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 66 |
|  |  |  |  |  | Blocking fault code: The contacts for the outdoor-temperature sensor are open or have shorted. | No | Off | A minimum outdoor temperature of - 40 °F (- 40 °C) is assumed. This may cause the room temperature to be too high. | |
|  |  |  |  |  | Blocking fault code: The contacts for the DHW temperature sensor are open or have shorted. | No | Off | Heating operation, but no hot water. | |
|  |  |  |  |  | Blocking fault code: The contacts for the DHW temperature sensor 2 are open or have shorted. | No | Off | Heating operation, but no hot water. | |
|  |  |  |  |  | Blocking fault code: DHW mode was active for 4 hours without any interruption, while a heat demand occurred as well. The DHW heating system has been switched off after this period of 4 hours, while the boiler is in heating mode. | No | Off | Heating operation, but no hot water. | → section 64 |
|  |  |  |  |  | Blocking fault code: Thermal disinfection has been switched off. | No | Off | The tank has not been disinfected. | |
|  |  |  |  |  | Blocking fault code: The UBA 3 bus is overloaded. | No | Off | No heating operation and no DHW. | |
|  |  |  |  |  | Blocking fault code: The water pressure indication of the heating system does not work. | No | Off | No heating operation and no DHW. | → section 65 |
|  |  |  |  |  | Blocking fault code: No communication between the room thermostat and the control panel (section 1, [4]). | No | Off | The BC10 settings are not shown on the RC thermostat. | |
|  |  |  |  |  | Blocking fault code: The room thermostat sensor indicates a fault. | No | Off | | |
|  |  |  |  |  | Blocking fault code: No communication with the RC35 takes place. | No | Off | | |
|  |  |  |  |  | Blocking fault code: Select RC35 as one of the heating circuit addresses. | No | Off | | |
|  |  |  |  |  | Blocking fault code: Activate at least one heating circuit address via the service menu. | No | Off | | |
|  |  |  |  |  | Blocking fault code: The switch module sensor indicates a fault. | No | Off | Heating system supply temperature at heating circuit addresses too low. | |
|  |  |  |  |  | Blocking fault code: No communication with the switch module. | No | Off | The heating circuit pump is run continuously. | |
|  |  |  |  |  | Blocking fault code: Two RC room thermostats are connected; they have been assigned the wrong heating circuit addresses. | No | Off | | |
|  |  |  |  |  | Blocking fault code: There is no communication between heating circuit address 1 and the corresponding room thermostat. | No | Off | | |
|  |  |  |  |  | Blocking fault code: There is no communication between heating circuit address 2 and the corresponding room thermostat. | No | Off | | |
|  |  |  |  |  | Blocking fault code: There is no communication between heating circuit address 3 and the corresponding room thermostat. | No | Off | | |
|  |  |  |  |  | Blocking fault code: The supply temperature sensor of heating circuit address 2 indicates a fault. | No | Off | The mixer is not activated anymore and stays in its last position. | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|-------------------|------------------|--|-----------------------|------------------|---|----------------|-----------|
| Main display code | Sub-display code | Meaning | Reset required? | | | | |
| A32 | B16 | Blocking fault code: No communication with the mixer module of heating circuit 2. Faulty communication via communication bus. | No | Off | The mixer module is operated in emergency operation mode. The heating circuit pump is run continuously. | | |
| A33 | B07 | Blocking fault code: The supply temperature sensor of heating circuit address 3 indicates a fault. | No | Off | | | |
| A33 | B16 | Blocking fault code: No communication with heating circuit address 3 takes place. | No | Off | | | |
| A51 | B12 | Blocking fault code: The solar collector module has not been adjusted correctly. | No | Off | | | |
| A51 | B13 | Blocking fault code: The solar collector sensor indicates a fault. | No | Off | | | |
| A51 | B14 | Blocking fault code: The solar collector sensor indicates a fault. | No | Off | | | |
| A51 | B16 | Blocking fault code: No communication with the solar collector module. | No | Off | | | |
| CA | 286 | Locking fault code: The return temperature sensor (section 1, [31]) has measured a return water temperature higher than 221 °F (105 °C). | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 37 | |
| CO | 288 | Locking fault code: The pressure sensor contacts (section 1, [30]) are open. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 65 | |
| CO | 289 | Locking fault code: The pressure sensor contacts (section 1, [30]) have shorted. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 65 | |
| CU | 240 | Locking fault code: The contacts of the return temperature sensor (section 1, [31]) have shorted to each other or the contacts of the return sensor have shorted to ground. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 53 | |
| CY | 241 | Locking fault code: The contacts of the return temperature sensor (section 1, [31]) are open. | Yes 4) 6) 7) 8) | flashing 1 Hz | No heating operation and no DHW. | → section 53 | |
| EL | 290 | Blocking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | no 5) 7) | Off | No heating operation and no DHW. | → section 66 | |
| E ₉ | 242 to 287 | Locking fault code: The UBA 3 (section 1, [32]) or the KIM is defective. | Yes 4) 6) 7) 8) 9) | flashing 1 Hz | No heating operation and no DHW. | → section 66 | |
| H 7 | | Operating code: The heating system water pressure is too low and is less than 12 PSI. A fluctuating current water pressure may be shown (e.g. P05). As soon as the water pressure of the heating system is 14 PSI or more, the display code H 7 will disappear. As soon as the water pressure of the heating system is less than 6 PSI, the boiler performance for both the heating operation and the DHW mode will be limited. | No | Off | Possibly no heating operation and no DHW. | → section 41 | |
| P - - | | Operating code: The water pressure of the heating system is beyond the measuring range of the pressure sensor (section 1, [30]). | No | Off | | → section 65 | |

section 29 Display codes and other symptoms

| Display code | | | | | LED on UBA 3 | Other symptoms | Diagnosis |
|---|--|--|---------|--|--------------|----------------|-----------|
|  Main display code |  Sub-display code |  Sub-display code | Meaning | Reset required? | | | |
|  | | | | Operating code: Reset is carried out. After pressing the "Reset" button this code is displayed for 5 seconds. | Off | | |

- 1) Not visible on the control panel
- 2) Or any random display indication with a permanent dot in the bottom right-hand corner.
- 3) Or any random display indication with a flashing dot in the bottom right-hand corner.
- 4) The cause of the fault must be remedied first.
- 5) This fault code may deactivate again automatically after a specific time (without reset). Heating and DHW are now available once more.
- 6) The display values, e.g. the heating system water pressure, are also shown as flashing codes.
- 7) If more faults occur simultaneously, the relevant display codes are shown one after another. If one of these display codes is a flashing display code, the other display codes will also flash.
- 8) When this boiler fault occurs the pump is activated to run continuously, thus minimizing the risk of the heating system freezing up.
- 9)  + random digit or letter.
- 10) Only visible on certain RC room thermostats.
- 11) Only visible on the Service Tool.

section 30 Diagnosis

You can find a further explanation of the diagnosis in section 6, chapter 1 on page 6.

section 31

No indication on the display of the BC10 (section 1, [4]).

| | | |
|----------------|---|-------------------|
| Step 1 | Does the boiler work normally? | Yes: → Step 2 |
| | | No: → Step 11 |
| Step 2. | ● Check that there is 7.8 to 15.2 VDC on both contacts 1 and 2 of the connector between the BC10 and the bottom plate of the BC10, see section 124 and section 131. | |
| Step 3 | Is there a voltage? | Yes: → Step 4 |
| | | No: → Step 8 |
| Step 4 | ● Check the contact between the BC10 (section 1,[4]) and its slot by pushing on the BC10. | |
| Step 5 | Is there any indication on the BC10 display within a few minutes? | Yes: → Step 6 |
| | | No: → Step 7 |
| Step 6 | Diagnosis: There is insufficient contact between the BC10 (section 1, [4]) and its slot. Action: replace BC10 and/or its slot. | → Section 67 |
| Step 7 | Diagnosis: The control panel BC10 is out of order. Action: Replace BC10. See the Installation and servicing instructions of the BC10. | → Section 67 |
| Step 8 | ● Check the corresponding component of the wire harness, see section 131. | |
| Step 9 | Is the wire harness free of damage? | Yes: → Section 66 |
| | | No: → Step 10 |
| Step 10 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 11 | ● Check that the plug is in the grounded socket. | |
| Step 12 | Is the plug in the grounded socket? | Yes: → Step 14 |
| | | No: → Step 13 |
| Step 13 | Diagnosis: The plug is not in the grounded socket. Action: Insert the plug into the grounded socket, see section 79. | → Section 67 |
| Step 14 | ● Check that the main power switch is in position "1" as indicated in section 80. | |
| Step 15 | Is the main power switch in position "1" (On)? | Yes: → Step 17 |
| | | No: → Step 16 |
| Step 16 | Diagnosis: The main power switch is not in position "1" (On). Action: Turn the main power switch in position "1" (ON), see section 80. | → Section 67 |
| Step 17 | ● Is there 120 VAC on the grounded socket? | |
| Step 18 | Is there 120 VAC on the grounded socket? | Yes: → Step 20 |
| | | No: → Step 19 |
| Step 19 | Diagnosis: There is not 120 VAC on the grounded socket. Action: Remedy the problem in the electrical system. | → Section 67 |
| Step 20 | ● Measure the resistance of the 120 VAC power supply cable. | |
| Step 21 | Is the resistance of the 120 VAC power supply cable within the specified limits? | Yes: → Step 23 |
| | | No: → Step 22 |
| Step 22 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 23 | ● Test the fuse on the rear of the UBA 3 using a multimeter, see section 82. | |
| Step 24 | Is the fuse working correctly? | Yes: → Section 66 |
| | | No: → Step 25 |

section 31 (continued)

| | | |
|----------------|---|------------------------------------|
| Step 25 | Diagnosis: The fuse is defective. Action: Replace fuse, see section 82. | |
| Step 26 | ● Put the main power switch on the BC10 in position "1" (On) as referred to in section 80. | |
| Step 27 | Is there any indication on the BC10 display within a few minutes? | Yes: → Section 67 No: → Step 28 |
| Step 28 | ● Turn the main power switch to position "0" (OFF), see section 72. | |
| Step 29 | ● Disconnect the following boiler components from the electrical power supply: – pump, see section 88. – fan unit, see section 84, [1]. | |
| Step 30 | ● Check the fuse again. Test the fuse on the rear of the UBA 3 using a multimeter as indicated in section 82. | |
| Step 31 | Is the fuse working correctly? | Yes: → Step 33 No: → Step 32 |
| Step 32 | ● Replace the fuse again, see section 82. | |
| Step 33 | ● Put the main power switch on the BC10 in position "1" (On), see section 80. | |
| Step 34 | Is there any indication on the BC10 display within a few minutes? | Yes: → Step 44 No: → Step 35 |
| Step 35 | ● Use a multimeter to check the power supply cords of the pump (section 89), the fan unit (section 84) and the hot surface ignitor (section 102) for signs of short circuiting. | |
| Step 36 | Are the wires okay? | Yes: → Step 38 No: → Step 37 |
| Step 37 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. Replace the fuse again as indicated in section 82. | → Section 67 |
| Step 38 | ● Check the internal electrical resistance of the transformer, see section 120. | |
| Step 39 | Is the internal electrical resistance of the transformer okay? | Yes: → Step 41 No: → Step 40 |
| Step 40 | Diagnosis: The transformer is defective. Action: Replace transformer (section 120). | → Step 54 |
| Step 41 | ● Check the power supply cord and the low-voltage cord of the transformer as indicated in section 121. | |
| Step 42 | Are the power supply cord and the low-voltage cord of the transformer okay? | Yes: → Section 66 No: → Step 43 |
| Step 43 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Step 54 |
| Step 44 | ● Turn the main power switch to position "0" (OFF), as indicated in section 72. | |
| Step 45 | ● Re-connect the power supply plug to the pump in reverse order. | |
| Step 46 | ● Put the main power switch on the BC10 in position "1" (On), see section 80. | |
| Step 47 | Is there any indication on the BC10 display within a few minutes? | Yes: → Step 49 No: → Step 48 |
| Step 48 | Diagnosis: The pump is defective. Action: Replace pump, see section 92. | → Step 54 |
| Step 49 | ● Turn the main power switch to position "0" (OFF), as indicated in section 72. | |
| Step 50 | ● Re-connect the power supply plug to the fan unit in reverse order. | |
| Step 51 | ● Put the main power switch in position "1" (On), see section 80. | |
| Step 52 | Is there any indication on the BC10 display within a few minutes? | Yes: → Section 67 No: → Step 53 |
| Step 53 | Diagnosis: The fan unit is defective. Action: Replace the fan unit, see section 86. | → Step 54 |
| Step 54 | ● Replace the fuse again, see section 82. | → Section 67 |

section 32

For devices with a hot-water supply: no or insufficient DHW; radiators, convectors, etc. may be heated without a heat demand.

| | | |
|----------------|---|------------------------------------|
| Step 1 | ● Put the main power switch on the BC10 in position "0" (Off) as referred to in section 70 and put the main power switch in position "1" (on) as indicated in section 80. | |
| Step 2 | ● Open a hot-water tap. | |
| Step 3 | ● Check to ensure that the hot-water primary supply pipe to the tank warms up. | |
| Step 4 | Does this pipe warm up (to approx. 140 °F (60 °C))? | Yes: → Step 5 No: → Step 15 |
| Step 5 | Diagnosis: The cause of this fault does not lie with the heating boiler, but with the water supply or hot water tank. | |
| Step 6 | ● Check to see if the cold-water inlet and hot-water outlet have been incorrectly connected to the storage-type water heater. | |
| Step 7 | Are the pipes connected correctly? | Yes: → Step 9 No: → Step 8 |
| Step 8 | Diagnosis: The pipes have been connected incorrectly. Action: Connect the pipes correctly. | → Section 67 |
| Step 9 | ● Close the stop tap in the cold-water inlet and open a hot-water tap at random to see if water is still flowing. | |
| Step 10 | Is this the case? | Yes: → Step 11 No: → Step 12 |
| Step 11 | Diagnosis: The cause is a defective (thermostat-controlled) mixer tap, a thermostat-controlled mixer valve or a short circuit between the hot- and cold-water pipe circuits. Action: Replace the relevant component or connect the pipes correctly. | → Section 67 |
| Step 12 | ● Check to see if any other external part of the drinking-water system is a possible cause. | |
| Step 13 | Is such a cause detected? | Yes: → Step 14 No: → Section 67 |
| Step 14 | Diagnosis: Another external part of the drinking-water system is a possible cause of the fault. Action: Take the affected components out of service. | → Section 67 |
| Step 15 | ● Check – the DHW mode <input type="checkbox"/> I as indicated in section 23; – that the DHW temperature is adjusted to a high enough setting according to section 81; – that the DHW supply has not been shut off by the timer-switch program of the RC regulator. Consult the operating instructions of the RC regulator. | |
| Step 16 | Are the settings okay? | Yes: → Step 18 No: → Step 17 |
| Step 17 | Diagnosis: The settings are not OK. Action: Adjust the settings. | → Section 67 |
| Step 18 | ● Open the stop tap of the cold water inlet pipe and a hot-water tap. | |
| Step 19 | ● Check that the LED "DHW demand" on the BC10 is lit, see section 14, [11]. | |
| Step 20 | Is the LED lit? | Yes: → Step 27 No: → Step 21 |
| Step 21 | ● Check the DHW temperature sensor, see section 93. | |
| Step 22 | Is the DHW temperature sensor okay? | Yes: → Step 24 No: → Step 23 |
| Step 23 | Diagnosis: The DHW temperature sensor is defective. Action: Replace the DHW temperature sensor, see section 96. | → Section 67 |
| Step 24 | ● Check the DHW temperature sensor lead as indicated in section 94. | |
| Step 25 | Is the wire okay? | Yes: → Section 66 No: → Step 26 |

section 32 (continued)

| | | |
|----------------|--|------------------------------------|
| Step 26 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 27 | ● Check that the heating boiler starts up to supply hot water according to section 24. | |
| Step 28 | Does the heating boiler start up? | Yes: → Step 30 No: → Step 29 |
| Step 29 | ● Check the meaning of the current display code in section 29 and resolve the fault. | → Section 67 |
| Step 30 | ● Check the pump for contamination as instructed in section 91. | |
| Step 31 | Is the pump dirty? | Yes: → Step 32 No: → Step 33 |
| Step 32 | Diagnosis: The pump is dirty. Action: Clean pump, see section 91. | → Section 67 |
| Step 33 | ● Check the following elements for contamination and/or damage: - outer flue duct; - air suction tube; - orifice (if present, see section 135); - fan unit; - connection between fan unit and burner; - burner; - heat exchanger; - flue-gas system. | |
| Step 34 | Are the above-mentioned components clean and free of damage? | Yes: → Step 36 No: → Step 35 |
| Step 35 | Diagnosis: The above components are contaminated or damaged. Action: Clean and/or replace the relevant components. | → Section 67 |
| Step 36 | ● Check the static and dynamic gas supply pressure as instructed in section 117. | |
| Step 37 | Are the static and dynamic gas supply pressures correct? | Yes: → Step 39 No: → Step 38 |
| Step 38 | Diagnosis: The static and/or dynamic gas supply pressure are not correct. If the required static and dynamic gas supply pressures are not detected, consult your gas utility company. | → Section 67 |
| Step 39 | ● Check the gas/air ratio as indicated in section 119. | |
| Step 40 | Is the gas/air ratio okay? | Yes: → Step 42 No: → Step 41 |
| Step 41 | Diagnosis: The gas/air ratio is not okay. Action: Adjust the gas/air ratio, see section 119. | → Section 67 |
| Step 42 | ● Check the storage-type water heater for furring "(lime scale build up)". | |
| Step 43 | Does the storage-type water heater furred up? | Yes: → Step 44 No: → Section 66 |
| Step 44 | Diagnosis: The storage-type water heater is furred up. Action: Decalcify the storage type water heater. | → Section 67 |

section 33

For devices with a DHW mode: DHW possibly available, no heating operation.
For devices without a DHW mode: no heating operation.

| | | |
|---------------|---|-------------------------------|
| Step 1 | ● Check that the RC regulator or ON/OFF controller is set to heat demand operation. Consult the operating instructions of the RC regulator or the ON/OFF controller. The RC regulator or ON/OFF controller is automatically set to heat demand operation when the temperature setting is higher than the current temperature. | |
| Step 2 | Is the RC regulator or ON/OFF controller setting high enough? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The RC regulator or ON/OFF controller has not been set to heat demand operation. Action: Increase the setting of the RC regulator or ON/OFF controller as indicated in the Operating instructions for the regulator or controller. | → Section 67 |
| Step 4 | ● Check that the LED "Central heat demand" on the BC10 lights up, see section 14. | |

section 33 (continued)

| | | |
|----------------|---|-------------------|
| Step 5 | Does the LED "Central heat demand" light up? | Yes: → Step 11 |
| | | No: → Step 6 |
| Step 6 | ● Check the ON/OFF controller according to section 114 or the RC regulator according to section 115. | |
| Step 7 | Does the boiler start heating operation within approx. 3 minutes <input type="text" value="- H"/> ? | Yes: → Step 8 |
| | | No: → Step 9 |
| Step 8 | Diagnosis: The thermostat cable is defective. Action: Replace thermostat cable. | → Section 67 |
| Step 9 | Diagnosis: The ON/OFF controller, the RC regulator or the RCC module, if present, is defective. Action: Replace ON/OFF controller, RC regulator or RCC module. The RCC module is a suspended connection tray, required for certain RC regulators. | |
| Step 10 | Has the fault been remedied? | Yes: → Section 67 |
| | | No: → Section 66 |
| Step 11 | ● Check that the heating system supply temperature on the BC10 or on the RC regulator or ON/OFF controller has been set high enough as instructed in section 81 or in the operating instructions of the regulator or controller. | |
| Step 12 | Is the heating-system supply temperature adjusted to a high enough setting? | Yes: → Step 13 |
| | | No: → Step 15 |
| Step 13 | Are enough thermostatic valves open on the radiators, convectors, etc.? | Yes: → Step 16 |
| | | No: → Step 14 |
| Step 14 | Diagnosis: There are not enough thermostatic valves open on the radiators, convectors etc. Action: Open more thermostatic valves. | → Section 67 |
| Step 15 | Diagnosis: The heating system supply temperature setting is too low. Action: Increase the heating system supply temperature setting on the BC10 or on the RC regulator or ON/OFF controller as instructed in section 81 or in the operating instructions of the regulator or controller. | → Section 67 |
| Step 16 | ● Check that the boiler performance has been set correctly in accordance with section 23 and 133. | |
| Step 17 | Is the boiler performance setting high enough? | Yes: → Step 19 |
| | | No: → Step 18 |
| Step 18 | Diagnosis: The boiler performance setting is too low. Action: Adjust the boiler performance to a higher setting, see section 23 and 133. | → Section 67 |
| Step 19 | Is the boiler performance of the wall-mounted condensing gas boiler sufficient to heat the building? | Yes: → Step 21 |
| | | No: → Step 20 |
| Step 20 | Diagnosis: The boiler performance is too insufficient. Action: Install a larger heating boiler. | → Section 67 |
| Step 21 | Is there a hot-water supply? | Yes: → Step 22 |
| | | No: → Section 66 |
| Step 22 | ● Check the movement of the servomotor of the three-way valve. | |
| Step 23 | Does the servomotor of the three-way valve move? | Yes: → Step 24 |
| | | No: → Step 27 |
| Step 24 | ● Check that the three-way valve has been installed correctly. | |
| Step 25 | Has the three-way valve been installed correctly? | Yes: → Step 33 |
| | | No: → Step 26 |
| Step 26 | Diagnosis: The three-way valve has not been installed correctly. Action: Install the three-way valve in the correct way. | → Section 67 |
| Step 27 | ● Check the three-way valve activation. | |
| Step 28 | Does the activation of the three-way valve work correctly? | Yes: → Step 29 |
| | | No: → Step 30 |
| Step 29 | Diagnosis: The servomotor of the three-way valve is defective. Action: Replace the servomotor of the three-way valve. | → Section 67 |

section 33 (continued)

| | | |
|----------------|---|------------------------------------|
| Step 30 | ● Check the wiring of the three-way valve. | |
| Step 31 | Is the wiring of the three-way valve okay? | Yes: → Step 36 No: → Step 32 |
| Step 32 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 33 | ● Check the interior of the three-way valve for contamination, mechanical obstructions etc. | |
| Step 34 | Is the three-way valve okay? | Yes: → Section 66 No: → Step 35 |
| Step 35 | Diagnosis: The three-way valve is defective. Action: Replace the three-way valve. | → Section 67 |
| Step 36 | ● Check the wiring of the three-way valve between the connection tray and the UBA 3 mounting base. | |
| Step 37 | Is the wiring of the three-way valve okay? | Yes: → Section 66 No: → Step 32 |

section 34

No pressure indication on the display of the BC10 (section 1, [4]).

| | | |
|---------------|--|---------------------------------------|
| Step 1 | ● Check that the plug-and-socket connection of the pressure sensor is connected. See section 128, [1]. | |
| Step 2 | Is the plug-and-socket connection okay? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The plug-and-socket connection of the pressure sensor is not correct. Action: Reconnect the plug-and-socket connection, see section 128, [1]. | → Section 67 |
| Step 4 | ● Check the wiring between the pressure sensor plug and the UBA 3 mounting base by measuring, see section 131. | |
| Step 5 | Is the wiring okay? | Yes: → Step 7 No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 7 | Diagnosis: The pressure sensor is defective. Action: Replace the pressure sensor, see section 128. | |
| Step 8 | Has a pressure indication appeared on the display? | Yes: → Section 67 No: → Section 66 |

section 35



Operating code: The switch optimization program is activated. This program is activated if there has been a hot water request from an RC regulator or an ON/OFF controller more frequently than once every 10 minutes. This means that the boiler cannot be restarted until at least ten minutes have elapsed since initial startup of the burner.

| | | |
|---------------|---|-------------------------------|
| Step 1 | Has the maximum heating system supply temperature setting just been changed? | Yes: → Step 2 No: → Step 3 |
| Step 2 | Diagnosis: The maximum heating system supply temperature setting has just been changed. Action: Set the maximum heating system supply temperature to the target value and switch off the power supply to the boiler by removing the plug from the grounded socket and reinserting it. | → Section 67 |
| Step 3 | Are the service valves open as instructed in section 78? | Yes: → Step 5 No: → Step 4 |
| Step 4 | Diagnosis: The service valves are closed. Action: Open the service valves as instructed in section 78. | → Section 67 |
| Step 5 | ● Check that the connections of the room thermostat to the boiler and the room thermostat are correct. | |
| Step 6 | Has the thermostat cable been connected correctly? | Yes: → Step 8 No: → Step 7 |
| Step 7 | Diagnosis: The thermostat cable has not been installed correctly. Action: Connect the thermostat cable correctly. | → Section 67 |

section 35 (continued)

| | | |
|----------------|---|---------------------------------------|
| Step 8 | ● Visually check the thermostat cable for breaks and loose contacts, if possible, and measure the electrical resistance using a multimeter. | |
| Step 9 | Is the thermostat cable okay? | Yes: → Step 11 No: → Step 10 |
| Step 10 | Diagnosis: The thermostat cable is defective. Action: Replace thermostat cable. | → Section 67 |
| Step 11 | ● Check that enough thermostatic valves are open on the radiators, convectors, etc. | |
| Step 12 | Are enough thermostatic valves open on the radiators, convectors, etc.? | Yes: → Step 14 No: → Step 13 |
| Step 13 | Diagnosis: There are not enough thermostatic valves open on the radiators, convectors etc. Action: Open more thermostatic valves. | → Section 67 |
| Step 14 | ● Attempt to rectify the fault by temporarily replacing the room thermostat or external temperature-dependent controller. | |
| Step 15 | Has the fault been remedied? | Yes: → Section 67 No: → Section 66 |

section 36

04



204

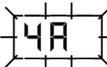
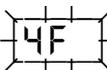
Operating code: The supply temperature sensor (section 1, [24]) has detected that the current heating-system supply temperature is higher than the temperature entered at the BC10 (section 1, [4]), or that it is higher than the heating-system supply temperature calculated according to the heating curve, or that it is higher than the heating-system supply temperature calculated for the purposes of DHW supply.

| | | |
|----------------|---|---------------------------------|
| Step 1 | ● Check that the heating system supply temperature setting on the BC10 is high enough, see section 81. | |
| Step 2 | Has the heating system supply temperature been set correctly on the BC10? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The heating system supply temperature setting is too low. Action: Increase the heating system supply temperature setting on the BC10 or on the RC regulator or ON/OFF controller as instructed in section 81 or in the operating instructions of the regulator or controller. | → Section 67 |
| Step 4 | Has an RC regulator been set as an external temperature-dependent controller? | Yes: → Step 5 No: → Step 8 |
| Step 5 | ● Check that the heating curve of the external temperature-dependent RC regulator has been set high enough as instructed in the operating instructions of the relevant regulator. | |
| Step 6 | Has the heating curve of the external temperature-dependent RC regulator been set high enough? | Yes: → Step 8 No: → Step 7 |
| Step 7 | Diagnosis: The heating curve setting is too low. Action: Increase the heating curve setting of the external temperature-dependent RC regulator as instructed in the operating instructions of the relevant regulator. | → Section 67 |
| Step 8 | ● Check that enough thermostatic valves are open on the radiators, convectors, etc. | |
| Step 9 | Are enough thermostatic valves open on the radiators, convectors, etc.? | Yes: → Step 11 No: → Step 10 |
| Step 10 | Diagnosis: There are not enough thermostatic valves open on the radiators, convectors etc. Action: Open more thermostatic valves. | → Section 67 |
| Step 11 | ● Check that no hot-water tap is dripping and that there is no leakage in the hot-water pipe. | |
| Step 12 | Is a hot-water tap dripping or is there a leakage in the hot-water pipe? | Yes: → Step 13 No: → Step 14 |
| Step 13 | Diagnosis: The hot-water tap is dripping or the hot-water pipe is leaking. Action: Fix the dripping hot-water tap or the leakage in the hot-water pipe. | → Section 67 |
| Step 14 | ● Find out whether a hot-water tap or taps have been opened on brief, consecutive occasions. | |

section 36 (continued)

| | | |
|----------------|--|-------------------|
| Step 15 | Have a hot-water tap or taps been opened briefly and consecutively on several occasions? | Yes: → Step 16 |
| | | No: → Step 17 |
| Step 16 | Diagnosis: A hot-water tap or taps have been opened briefly and consecutively on several occasions. Action: Inform the user. | → Section 67 |
| Step 17 | ● Check the electrical resistance of the DHW temperature sensor as indicated in section 93. | |
| Step 18 | Is the electrical resistance of the DHW temperature sensor okay (→ section 134)? | Yes: → Section 66 |
| | | No: → Step 19 |
| Step 19 | Diagnosis: The DHW temperature sensor is defective. Action: Replace the DHW temperature sensor, see section 96. | |

section 37

| | | |
|---|---|---------------|
|    | Blocking fault code: The supply temperature sensor (section 1, [24]) has measured a current heating supply temperature higher than 203 °F (95 °C). | |
|    | Blocking fault code: The safety temperature sensor (section 1, [28]) has measured a current supply temperature higher than 203 °F (95 °C). | |
|    | Blocking fault code: The return temperature sensor (section 1, [31]) has measured a current return water temperature higher than 203 °F (95 °C). | |
|    | Blocking fault code: The supply temperature sensor (section 1, [24]) has not measured any heating water temperature increase after a burner start. | |
|    | Operating code blocking fault code: The temperature difference of the heating water measured between the supply (section 1, [24]) and safety temperature sensors (section 1, [28]) is too much. | |
|    | Blocking fault code: The supply temperature sensor (section 1, [24]) has measured a heating water temperature increase of more than 9 °F/sec (5 °C/sec). | |
|    | Blocking fault code: The temperature difference measured between the supply temperature sensor (section 1, [24]) and the return temperature sensor (section 1, [31]) is more than 90 °F (50 °C). | |
|    | Locking fault code: The supply temperature sensor (section 1, [24]) has measured a heating system supply temperature higher than 221 °F (105°C). | |
|    | Locking fault code: The safety temperature sensor (section 1, [28]) has measured a heating supply temperature higher than 221 °F (105°C). | |
|    | Locking fault code: The return temperature sensor (section 1, [31]) has measured a return water temperature higher than 221 °F (105°C). | |
| Step 1 | Are the service valves open as instructed in section 78? | Yes: → Step 3 |
| | | No: → Step 2 |
| Step 2 | Diagnosis: The service valves are closed. Action: Open the service valves, see section 78. | → Section 67 |
| Step 3 | Is the pressure in the heating system at least 14 PSI? | Yes: → Step 5 |
| | | No: → Step 4 |
| Step 4 | Diagnosis: The heating system pressure is too low and is less than 14 PSI. Action: Fill and bleed the heating system, see section 78. | → Section 67 |
| Step 5 | ● Check that the boiler has been purged correctly, see section 78. | |

section 37 (continued)

| | | |
|----------------|---|-------------------|
| Step 6 | Has the boiler been purged correctly? | Yes: → Step 8 |
| | | No: → Step 7 |
| Step 7 | Diagnosis: The boiler has not been properly purged. Action: Purge the boiler of air, see section 78. | → Section 67 |
| Step 8 | Are enough thermostatic valves open on the radiators, convectors, etc? | Yes: → Step 10 |
| | | No: → Step 9 |
| Step 9 | Diagnosis: There are not enough thermostatic valves open on the radiators, convectors etc. Action: Open more thermostatic valves. | → Section 67 |
| Step 10 | ● Check the supply, safety and return temperature sensors indicated in section 93. | |
| Step 11 | Are the supply, safety and return temperature sensors okay? | Yes: → Step 26 |
| | | No: → Step 12 |
| Step 12 | Diagnosis: The relevant sensor is defective. Action: Replace the relevant sensor, see section 95. | → Section 67 |
| Step 13 | ● Check the pump for mechanical obstructions as instructed in section 87. | |
| Step 14 | Is the pump blocked? | Yes: → Step 15 |
| | | No: → Step 16 |
| Step 15 | Diagnosis: The pump is blocked. Action: Attempt to start up the pump again as indicated in section 87 or replace the pump as indicated in section 92. | → Section 67 |
| Step 16 | Is the pump running while the display code is shown? | Yes: → Step 17 |
| | | No: → Step 20 |
| Step 17 | ● Check the pump for contamination as instructed in section 91. | |
| Step 18 | Is the pump dirty? | Yes: → Step 19 |
| | | No: → Step 29 |
| Step 19 | Diagnosis: The pump is dirty. Action: Clean pump, see section 91. | → Section 67 |
| Step 20 | ● Check the pump activation as instructed in section 88. | |
| Step 21 | Is the activation okay? | Yes: → Step 22 |
| | | No: → Step 23 |
| Step 22 | Diagnosis: The pump is defective. Action: Replace pump, see section 92. | → Section 67 |
| Step 23 | ● Check the pump power supply cord as instructed in section 89. | |
| Step 24 | Is the pump power supply cord okay? | Yes: → Section 66 |
| | | No: → Step 25 |
| Step 25 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 26 | ● Check the pump as indicated in section 87. | |
| Step 27 | Is the pump okay? | Yes: → Step 33 |
| | | No: → Step 28 |
| Step 28 | Diagnosis: The pump is defective. Action: Replace the pump, see section 92. | |
| Step 29 | Is this a heating system which can run while fully "sealed", e.g. a heating system with only radiator thermostat valves (TRAs) or zone valves or low loss header? | Yes: → Step 30 |
| | | No: → Section 66 |
| Step 30 | ● Check whether there is a bypass or a low loss header in the heating system which ensures a supply through the boiler at all times. | |
| Step 31 | Is there a bypass or a low loss header in the heating system? | Yes: → Step 33 |
| | | No: → Step 32 |
| Step 32 | Diagnosis: There is no bypass, nor a low loss header. Action: Install a bypass or a low loss header in the heating system. | → Section 67 |

section 37 (continued)

| | | |
|----------------|---|------------------------------------|
| Step 33 | ● Check the operation of the bypass or the low loss header in the heating system. Adjust a possible bypass to a protection pressure of max. 3.6 PSI (25 kPa). | |
| Step 34 | Is the bypass or the low loss header okay? | Yes: → Section 66 No: → Step 35 |
| Step 35 | Diagnosis: The bypass or the low loss header is defective. Action: Replace the bypass or the low loss header. | → Section 67 |

section 38



Locking fault code: The flue gas sensor temperature is too high.

| | | |
|---------------|--|-----------------------------------|
| Step 1 | ● Check the entire flue gas system for obstructions. | |
| Step 2 | Is the flue gas system okay? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The flue gas system is obstructed. Action: Remove the obstruction. | → Section 67 |
| Step 4 | ● Check the heat exchanger for contamination on the flue gas side. | |
| Step 5 | Is the heat exchanger dirty? | Yes: → Step 6 No: → Step 7 |
| Step 6 | Diagnosis: The heat exchanger is dirty. Action: Clean the heat exchanger. | → Section 67 |
| Step 7 | ● Check the flue gas sensor as indicated in section 97. | |
| Step 8 | Is the flue gas sensor okay? | Yes: → Section 66 No: → Step 9 |
| Step 9 | Diagnosis: The flue gas sensor is defective. Action: Replace the flue gas sensor, see section 99. | → Section 67 |

section 39



Locking fault code: The flue gas thermostat has measured an excessively high temperature and is open, or no connection is made between the contacts 50 and 78 of the UBA 3 mounting base.

Note: The boiler can have a flue gas thermostat or a connection between the contacts 50 and 78 of the UBA 3 mounting base, depending on the boiler type.

| | | |
|---------------|--|-----------------------------------|
| Step 1 | ● Check the connection between contacts 50 and 78 of the UBA 3 mounting base according to section 123 and section 131. | |
| Step 2 | Is the connection okay? | Yes: → Section 66 No: → Step 3 |
| Step 3 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |

section 40



Locking fault code: The flue gas sensor contacts have shorted.



Locking fault code: The flue gas sensor contacts are open.

| | | |
|---------------|--|-------------------------------|
| Step 1 | ● Check the flue gas sensor as indicated in section 97. | |
| Step 2 | Is the flue gas sensor okay? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The flue gas sensor is defective. Action: Replace the flue gas sensor, see section 99. | → Section 67 |
| Step 4 | ● Check the wiring of the flue gas sensor, see section 98. | |

section 40 (continued)

| | | |
|---------------|---|--------------------------|
| Step 5 | Is the flue gas sensor wiring okay? | Yes: → Section 66 |
| | | No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |

section 41

| | | |
|--|--|--------------------------|
|  <p>Blocking fault code: The heating system water pressure is too low and is less than 3 PSI. Neither the boiler nor the pump are started up.</p> <p>As soon as the water pressure of the heating system is 14 PSI or more, the display code  will disappear and both the boiler and the pump will start running.</p> <p>As soon as the water pressure of the heating system is less than 6 PSI, the performance of both the heating operation and the DHW mode will be limited.</p> | | |
|  <p>Operating code: The heating system water pressure is too low and is less than 12 PSI. A fluctuating current water pressure of the heating system may be shown (e.g. ).</p> <p>As soon as the water pressure of the heating system is 14 PSI or more, the display code  will disappear.</p> <p>As soon as the water pressure of the heating system is less than 6 PSI, the performance of both the heating operation and the DHW mode will be limited.</p> | | |
| Step 1 | ● Check that the heating system water pressure measured on the control panel is at least 14 PSI, see section 19. | |
| Step 2 | Is the heating system water pressure measured on the BC10 at least 14 PSI? | Yes: → Step 4 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The water pressure of the heating system is too low. Action: Fill and bleed the heating system, see section 78. | → Section 67 |
| Step 4 | Diagnosis: The pressure sensor is defective. Action: Replace the pressure sensor, see section 128. | |
| Step 5 | Has the fault been remedied? | Yes: → Section 67 |
| | | No: → Section 66 |

section 42

| | | |
|--|--|-----------------------|
|  <p>Locking fault code: The pressure sensor (section 1, pos. 30) failed to measure a pressure increase on the heating side during any of four attempts.</p> | | |
| Step 1 | ● Check the pump for mechanical obstructions as instructed in section 87. | |
| Step 2 | Is the pump blocked? | Yes: → Step 3 |
| | | No: → Step 4 |
| Step 3 | Diagnosis: The pump is blocked. Action: Attempt to start up the pump again as indicated in section 87 or replace the pump as indicated in section 92. | → Section 67 |
| Step 4 | Is the pump running while  is displayed? | Yes: → Step 5 |
| | | No: → step 15 |
| Step 5 | ● Check the pump for contamination as instructed in section 91. | |
| Step 6 | Is the pump dirty? | Yes: → Step 7 |
| | | No: → Step 8 |
| Step 7 | Diagnosis: The pump is dirty. Action: Clean pump, see section 91. | → Section 67 |
| Step 8 | Is the expansion tank connected to the supply pipe? | Yes: → Step 9 |
| | | No: → Step 10 |
| Step 9 | Diagnosis: The expansion tank is connected to the supply pipe. Action: Connect the expansion tank to the return pipe. | → Section 67 |
| Step 10 | ● Check the pressure sensor for contamination as instructed in section 128. | |
| Step 11 | Is the pressure sensor dirty? | Yes: → Step 12 |
| | | No: → Step 13 |
| Step 12 | Diagnosis: The pressure sensor is dirty. Action: Clean the pressure sensor, see section 128. | → Section 67 |

section 42 (continued)

| | | |
|----------------|---|---------------------------------------|
| Step 13 | Diagnosis: The pressure sensor is defective. Action: Replace the pressure sensor, see section 128. | |
| Step 14 | Has the fault been remedied? | Yes: → Section 67 No: → Section 66 |
| Step 15 | ● Check the pump activation as instructed in section 88. | |
| Step 16 | Is the activation okay? | Yes: → Step 17 No: → Step 18 |
| Step 17 | Diagnosis: The pump is defective. Action: Replace the pump, see section 92. | → Section 67 |
| Step 18 | ● Check the pump power supply cord as instructed in section 89. | |
| Step 19 | Is the pump power supply cord okay? | Yes: → Section 66 No: → Step 20 |
| Step 20 | Diagnosis: The power supply cord is defective. Action: Replace the power supply cord of the pump. | → Section 67 |

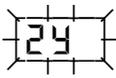
section 43



Operating code: The pump speed was found to be too high or too low while starting up . **The modulating function of the pump is switched off. The pump continues to run, but the pump speed is fixed.**

| | | |
|----------------|--|---------------------------------------|
| Step 1 | ● Check that the pump has been purged correctly, see section 78. | |
| Step 2 | Has the pump been purged correctly? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: There is air trapped in the pump. Action: Purge the pump, see section 78. | → Section 67 |
| Step 4 | ● Check the pump for mechanical obstructions as instructed in section 87. | |
| Step 5 | Is the pump blocked? | Yes: → Step 6 No: → Step 7 |
| Step 6 | Diagnosis: The pump is blocked. Action: Attempt to start up the pump again as indicated in section 87 or replace the pump as indicated in section 92. | → Section 67 |
| Step 7 | ● Check that the tacho plug of the pump valve has been installed correctly, see section 90. | |
| Step 8 | Has the tacho plug of the pump been installed correctly? | Yes: → Step 10 No: → Step 9 |
| Step 9 | Diagnosis: The tacho plug of the pump has not been installed correctly. Action: Install the tacho plug of the pump correctly, see section 90. | → Section 67 |
| Step 10 | ● Check the electrical resistance of the tacho cable of the pump as indicated in section 89. | |
| Step 11 | Is the pump tacho cable okay? | Yes: → Step 13 No: → Step 12 |
| Step 12 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 13 | ● Check the pump power supply cord as instructed in section 89. | |
| Step 14 | Is the pump power supply cord okay? | Yes: → Step 15 No: → Step 12 |
| Step 15 | ● Check the pump for contamination as instructed in section 87. | |
| Step 16 | Is the pump dirty? | Yes: → Step 17 No: → Step 18 |
| Step 17 | Diagnosis: The pump is dirty. Action: Clean the pump, see section 87. | → Section 67 |
| Step 18 | ● Attempt to rectify the fault by temporarily replacing the pump, see section 92. | |
| Step 19 | Has the fault been remedied? | Yes: → Section 67 No: → Section 66 |

section 44



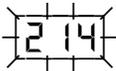
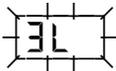
Operating code: The tacho signal of the pump is missing.

| | | |
|---------------|---|-------------------|
| Step 1 | ● Check that the tacho plug of the pump valve has been installed correctly, see section 90. | |
| Step 2 | Has the tacho plug of the pump been installed correctly? | Yes: → Step 4 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The tacho plug of the pump has not been installed correctly. Action: Install the tacho plug of the pump correctly, see section 90. | → Section 67 |
| Step 4 | ● Check the electrical resistance of the tacho cable of the pump as indicated in section 89. | |
| Step 5 | Is the pump tacho cable okay? | Yes: → Step 7 |
| | | No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 7 | ● Attempt to rectify the fault by temporarily replacing the pump, see section 92. | |
| Step 8 | Has the fault been remedied? | Yes: → Section 67 |
| | | No: → Section 66 |

section 45



Blocking fault code: The fan unit tacho signal (section 1, [20]) or the fan unit voltage has failed during the operating phase.



Locking fault code: The fan unit tacho signal (section 1, [20]) or the fan unit supply voltage is not available during the pre-operative phase [0C].

| | | |
|----------------|--|-------------------|
| Step 1 | ● Check that both plug-and-socket connections of the fan unit are correctly fitted, see section 86, [2]. | |
| Step 2 | Are the plug-and-socket connections fitted correctly? | Yes: → Step 4 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The plug-and-socket connections have not been installed correctly. Action: Reconnect the plug-and-socket connections of the fan unit. | → Section 67 |
| Step 4 | ● Check the fan unit activation 120 VAC as indicated in section 83 and section 131. | |
| Step 5 | Is the activation okay? | Yes: → Step 9 |
| | | No: → Step 6 |
| Step 6 | ● Check the fan unit power supply cord (120 VAC) as instructed in section 84. | |
| Step 7 | Is the fan unit power supply cord okay? | Yes: → Section 66 |
| | | No: → Step 8 |
| Step 8 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 9 | ● Check the fan unit tacho cable as indicated in section 85. | |
| Step 10 | Is the tacho cable okay? | Yes: → Step 12 |
| | | No: → Step 11 |
| Step 11 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 12 | ● Check that the main voltage at the grounded plug is between 102 VAC and 132 VAC. | |
| Step 13 | Is the main voltage okay? | Yes: → Step 15 |
| | | No: → Step 14 |
| Step 14 | Diagnosis: The main voltage is not OK. Action: Solve the problem in the electrical system. | → Section 67 |
| Step 15 | Diagnosis: The fan unit is defective. Action: Replace the fan unit, see section 86. | |
| Step 16 | Has the fault been remedied? | Yes: → Section 67 |
| | | No: → Section 66 |

section 46



Locking fault code: The fan unit (section 1, [20]) is running irregularly while starting up.

| | | |
|---------------|---|---------------------------------------|
| Step 1 | ● Attempt to rectify the fault by temporarily replacing the fan unit, see section 86. | |
| Step 2 | Has the fault been remedied? | Yes: → Section 67 No: → Section 66 |

section 47



Blocking fault code: The boiler has been switched off for a couple of seconds, since it had been operational for 24 hours. This is a safety check.

| | | |
|---------------|---|---------------------------------------|
| Step 1 | ● Fully switch off the DHW mode and the heat demand and check that the fan unit remains operational after 1 minute. | |
| Step 2 | Is the fan unit still operational? | Yes: → Section 66 No: → Section 67 |

section 48



Locking fault code: The fan unit (section 1, [20]) is running too slowly.

| | | |
|---------------|--|---------------------------------------|
| Step 1 | ● Check that the fan unit is not dirty or wet, see section 86. | |
| Step 2 | Is the fan unit dry and clean? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The fan unit is dirty or wet. Action: Clean or replace the fan unit, see section 86. | |
| Step 4 | ● Check that the main voltage at the grounded plug is between 102 VAC and 132 VAC. | |
| Step 5 | Is the main voltage sufficient? | Yes: → Step 7 No: → Step 6 |
| Step 6 | Diagnosis: The main voltage is not OK. Action: Solve the problem in the electrical system. | → Section 67 |
| Step 7 | Diagnosis: The fan unit is defective. Action: Replace the fan unit, see section 86. | |
| Step 8 | Has the fault been remedied? | Yes: → Section 67 No: → Section 66 |

section 49



Locking fault code: The fan unit (section 1, [20]) is running too fast.

| | | |
|---------------|---|--------------------------------|
| Step 1 | ● Check the plug-and-socket connection of the tacho cable to the fan unit. This is the narrow plug, see section 85, [2]. | |
| Step 2 | Is the plug-and-socket connection okay? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The plug-and socket connection of the tacho cable to the fan unit is loose. Action: Replace the plug-and-socket connection, see section 86, [2]. | → Section 67 |
| Step 4 | ● Check the fan unit tacho cable as indicated in section 85. | |
| Step 5 | Is the tacho cable okay? | Yes: → Step 7 No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 7 | ● Check that the main voltage at the grounded plug is between 102 VAC and 132 VAC. | |
| Step 8 | Is the main voltage okay? | Yes: → Step 10 No: → Step 9 |

section 49 (continued)

| | | |
|----------------|--|-------------------|
| Step 9 | Diagnosis: The main voltage is not OK. Action: Solve the problem in the electrical system. | → Section 67 |
| Step 10 | ● Check that there is no obstruction in the fan unit, burner, heat exchanger or flue-gas system. | |
| Step 11 | Is there an obstruction? | Yes: → Step 12 |
| | | No: → Step 13 |
| Step 12 | Diagnosis: There is an obstruction in the fan unit, burner, heat exchanger or flue-gas system. Action: Remove the obstruction. | → Section 67 |
| Step 13 | ● Check that there is a second fan unit in the flue gas pipe or air inlet system. | |
| Step 14 | Is a second fan unit fitted? | Yes: → Step 15 |
| | | No: → Step 16 |
| Step 15 | Diagnosis: A second fan unit has been fitted. Action: Take the second fan unit out of service. | → Section 67 |
| Step 16 | ● Check that the fan unit wheel has not come loose at the motor spindle, see section 86. | |
| Step 17 | Has the fan unit wheel come loose? | Yes: → Step 18 |
| | | No: → Step 19 |
| Step 18 | Diagnosis: The fan unit is defective. Action: Replace the fan unit, see section 86. | |
| Step 19 | Has the fault been remedied? | Yes: → Section 67 |
| | | No: → Section 66 |

section 50



Locking fault code: The safety temperature switch has measured an excessively high temperature and is open, or no connection is made between the contacts 22 and 24 of the UBA 3 mounting base.

Note: The boiler can have a safety temperature switch or a connection between the contacts 22 and 24 of the UBA 3 mounting base, depending on the boiler type.

| | | |
|---------------|--|-------------------|
| Step 1 | ● Check the connection between contacts 22 and 24 of the UBA 3 mounting base according to section 123 and section 131. | |
| Step 2 | Is the connection okay? | Yes: → Section 66 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |

section 51



Locking fault code: The sensor test has failed.

| | | |
|---------------|---|-------------------|
| Step 1 | ● Check the supply and safety temperature sensors and their wiring for short circuits, as instructed in section 93. | |
| Step 2 | Are the supply and safety temperature sensors and their wiring okay? | Yes: → Section 66 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The supply and safety temperature sensors and/or their wiring are defective. Action: Replace the supply and/or safety temperature sensor as instructed in section 95, the wire harness or the relevant part of the wire harness. | → Section 67 |

section 52



Locking fault code: The contacts of the safety temperature sensor (section 1, [28]) have shorted to each other, the contacts of the safety temperature sensor have shorted to ground or the safety temperature sensor have measured a supply water temperature of over 266 °F (130 °C).

| | | |
|---------------|---|---------------|
| Step 1 | Are the service valves open as instructed in section 78? | Yes: → Step 3 |
| | | No: → Step 2 |
| Step 2 | Diagnosis: The service valves are closed. Action: Open the service valves, see section 78. | |

section 52 (continued)

| | | |
|----------------|---|-------------------|
| Step 3 | Is the water pressure of the heating system at least 14 PSI? | Yes: → Step 5 |
| | | No: → Step 4 |
| Step 4 | Diagnosis: The water pressure of the heating system is less than 14 PSI. Action: Fill and bleed the heating system, see section 78. | → Section 41 |
| Step 5 | Are enough thermostatic valves open on the radiators, convectors, etc? | Yes: → Step 7 |
| | | No: → Step 6 |
| Step 6 | Diagnosis: There are not enough thermostatic valves open on the radiators, convectors etc. Action: Open more thermostatic valves. | → Section 67 |
| Step 7 | ● Check the safety temperature sensor as indicated in section 93. | |
| Step 8 | Is the safety temperature sensor okay? | Yes: → Step 10 |
| | | No: → Step 9 |
| Step 9 | Diagnosis: The safety temperature sensor is defective. Action: Replace the safety temperature sensor, see section 95. | |
| Step 10 | ● Check the safety temperature sensor cable as indicated in section 94. | |
| Step 11 | Is the wire okay? | Yes: → Step 13 |
| | | No: → Step 12 |
| Step 12 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 13 | ● Check the pump as indicated in section 87. | |
| Step 14 | Is the pump okay? | Yes: → Section 66 |
| | | No: → Step 15 |
| Step 15 | Diagnosis: The pump is defective. Action: Replace the pump, see section 92. | → Section 67 |

section 53



Locking fault code: The contacts of the safety temperature sensor (section 1, [28]) are open.



Locking fault code: The contacts of the supply temperature sensor (section 1, [24]) have shorted.



Locking fault code: The contacts of the supply temperature sensor (section 1, [24]) are open.



Locking fault code: The contacts of the return temperature sensor (section 1, [31]) have shorted to each other or the contacts of the return temperature sensor have shorted to ground.



Locking fault code: The contacts of the return temperature sensor (section 1, [31]) are open.

| | | |
|---------------|--|-------------------|
| Step 1 | ● Check the supply, safety and return temperature sensors indicated in section 93. | |
| Step 2 | Are the supply, safety and return temperature sensors okay? | Yes: → Step 4 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The supply, safety and or return temperature sensors are defective. Action: Replace the supply, safety and or return temperature sensors, see section 95. | |
| Step 4 | ● Check the cables of the supply, safety and/or return temperature sensors indicated in section 94. | |
| Step 5 | Are the wires okay? | Yes: → Section 66 |
| | | No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |

section 54

6A



227

Blocking fault code: Insufficient flame activity (ionization current) was measured during the first, second or third burner ignition attempt (section 1, [23]).

6A



227

Locking fault code: Insufficient flame activity (ionization current) was measured during the fourth burner ignition attempt (section 1, [23]).

| | | |
|----------------|---|-------------------|
| Step 1 | Is the heating system propane gas-fired? | Yes: → Step 2 |
| | | No: → Step 5 |
| Step 2 | ● Contact the gas utility company to check that there is no nitrogen in the new or existing gas tank and the gas supply pipe. | |
| Step 3 | Is there still nitrogen in the new or existing gas tank and the gas supply pipe? | Yes: → Step 4 |
| | | No: → Step 5 |
| Step 4 | Diagnosis: There is nitrogen in the gas tank and the gas supply pipe. Action: Remove the nitrogen in conjunction with the gas utility company. | → Section 67 |
| Step 5 | ● Check that the device gas stop valve is open as instructed in section 81 and that the main gas stop valve is open. | |
| Step 6 | Are both gas stop valves open? | Yes: → Step 8 |
| | | No: → Step 7 |
| Step 7 | Diagnosis: The device gas stop valve and/or the main gas stop valve is/are closed. Action: Open the device gas stop valve as instructed in section 81 and open the main gas stop valve. | → Section 67 |
| Step 8 | ● Check the static and dynamic gas supply pressures as indicated in section 117. | |
| Step 9 | Are the static and dynamic gas supply pressures correct? | Yes: → Step 16 |
| | | No: → Step 10 |
| Step 10 | ● Check that there is no obstruction in the gas pipe between the device gas stop valve and gas valve. | |
| Step 11 | Did you find an obstruction? | Yes: → Step 12 |
| | | No: → Step 13 |
| Step 12 | Diagnosis: There is an obstruction in the gas pipe. Action: Remove the obstruction. | → Section 67 |
| Step 13 | ● Check that there is no obstruction in other parts of the gas pipe. | |
| Step 14 | Did you find an obstruction? | Yes: → Step 15 |
| | | No: → Step 39 |
| Step 15 | Diagnosis: There is an obstruction in the gas pipe. Action: Remove the obstruction. | → Section 67 |
| Step 16 | Has the gas supply pipe been purged? | Yes: → Step 18 |
| | | No: → Step 17 |
| Step 17 | Diagnosis: The gas supply pipe has not been purged. Action: Bleed the gas supply pipe, see section 118. | → Section 67 |
| Step 18 | ● Check that the glow ignitor activates when the operating code <input type="text" value="00"/> is displayed, see section 100. | |
| Step 19 | Does the glow ignitor activate when the operating code <input type="text" value="00"/> is displayed? | Yes: → Step 23 |
| | | No: → Step 20 |
| Step 20 | ● Check the electrical resistance of the power supply cord of the glow ignitor as indicated in section 102. | |
| Step 21 | Is the power supply cord okay? | Yes: → Section 66 |
| | | No: → Step 22 |
| Step 22 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 23 | ● Check the electrical resistance of the glow ignitor as indicated in section 102. | |
| Step 24 | Is the electrical resistance of the glow ignitor okay? | Yes: → Step 26 |
| | | No: → Step 25 |
| Step 25 | Diagnosis: The glow ignitor is defective. Action: Replace the glow ignitor, see section 103. | → Section 67 |

section 54 (continued)

| | | |
|----------------|---|------------------------------------|
| Step 26 | ● Put the boiler in operation, see section 19, and check that the glow ignitor activates when the operating code <input type="text"/> is displayed. | |
| Step 27 | Does the glow ignitor activate when the operating code <input type="text"/> is displayed? | Yes: → Step 28 No: → Step 25 |
| Step 28 | ● Connect a digital pressure gauge, see section 119. Open the gas stop valve, see section 81, and put the boiler into operation, see section 20. Check that the gas valve is opened while switching over from the operating code <input type="text"/> to the operating code <input type="text"/> . The opening of the gas valve while switching over from the operating code <input type="text"/> to the operating code <input type="text"/> can be recognized by the pressure reading changing to approx. -0.02 inch W.C. | |
| Step 29 | Does the pressure reading change to approx. -0.02 inch W.C. while switching over from the operating code <input type="text"/> to the operating code <input type="text"/> ? | Yes: → Step 43 No: → Step 30 |
| Step 30 | ● Check the plug-and-socket connection of the gas valve, see section 109. | |
| Step 31 | Is the plug-and-socket connection okay? | Yes: → Step 33 No: → Step 32 |
| Step 32 | Diagnosis: The plug-and-socket connection has come loose. Action: Replace the plug-and-socket connection on the gas valve, see section 109. | → Section 67 |
| Step 33 | ● Check that a voltage is supplied to the gas valve while the operating code <input type="text"/> is displayed, see section 110. | |
| Step 34 | Is voltage supplied to the gas valve? | Yes: → Step 35 No: → Step 36 |
| Step 35 | Diagnosis: The gas valve is defective. Action: Replace the gas valve, see section 113. | → Section 67 |
| Step 36 | ● Check the gas valve power supply cord as indicated in section 111. | |
| Step 37 | Is the power supply cord okay? | Yes: → Section 66 No: → Step 38 |
| Step 38 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 39 | ● Check that the overall gas supply network is of sufficient capacity. | |
| Step 40 | Is the overall gas supply network of sufficient capacity? | Yes: → Step 42 No: → Step 41 |
| Step 41 | Diagnosis: The gas supply network is not of sufficient capacity. Action: Increase the capacity of the gas supply network. | → Section 67 |
| Step 42 | Diagnosis: The cause of the fault is to be found outside the boiler and the gas pipe. The gas supply pressure regulator may be defective. Action: Contact the gas utility company. | → Section 67 |
| Step 43 | ● Check that the gas/air ratio is approximately -0.02 inch W.C. while switching over from the operating code <input type="text"/> to the operating code <input type="text"/> , see section 119. | |
| Step 44 | Is the gas/air ratio while switching over from the operating code <input type="text"/> to the operating code <input type="text"/> approximately -0.02 inch W.C.? | Yes: → Step 46 No: → Step 45 |
| Step 45 | Diagnosis: The gas/air ratio setting is not okay. Action: Adjust the gas/air ratio, see section 119. | → Section 67 |
| Step 46 | ● Check that the correct orifice has been installed, see section 113 and 135. | |
| Step 47 | Has the correct orifice been installed? | Yes: → Step 49 No: → Step 48 |
| Step 48 | Diagnosis: The wrong orifice has been installed. Action: Fit the correct orifice, see section 113 and 135. | → Section 67 |

section 54 (continued)

| | | |
|----------------|--|------------------------------------|
| Step 49 | <ul style="list-style-type: none"> ● Check the following elements for contamination, damage and/or incorrect installation: <ul style="list-style-type: none"> - Siphon, section 127; - Air suction tube, section 1, [12]; - Seal and connection between venturi pipe and fan unit; - Venturi pipe, see section 86; - Orifice, see section 113; - Fan unit; - Seal and connection between fan unit and burner; - Burner, section 126; - Heat exchanger; - Flue gas outlet and air inlet system; - Ground wire insulation, see section 108. | |
| Step 50 | Are the above-mentioned components clean, free of damage and/or correctly installed? | Yes: → Step 52 No: → Step 51 |
| Step 51 | Diagnosis: The above components are dirty, damaged or not correctly installed. Action: Clean, replace and/or re-install the relevant components. | → Section 67 |
| Step 52 | ● Check the ionization current as indicated in section 104. | |
| Step 53 | Is the ionization current okay? | Yes: → Section 67 No: → Step 54 |
| Step 54 | ● Check the plug-and-socket connection between the ionization electrode and wire harness as instructed in section 104. | |
| Step 55 | Is the plug-and-socket connection okay? | Yes: → Step 57 No: → Step 56 |
| Step 56 | Diagnosis: The plug-and-socket connection has come loose. Action: Connect the plug-and-socket connection correctly. | → Section 67 |
| Step 57 | ● Check the cable of the ionization electrode as indicated in section 106. | |
| Step 58 | Is the wiring okay? | Yes: → Step 60 No: → Step 59 |
| Step 59 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 60 | ● Check the ionization electrode as indicated in section 105 and section 107. | |
| Step 61 | Is the ionization electrode okay? | Yes: → Step 63 No: → Step 62 |
| Step 62 | Diagnosis: The ionization electrode is defective. Action: Replace the ionization electrode, see section 103. | → Section 67 |
| Step 63 | <ul style="list-style-type: none"> ● Temporarily remove the combustion air supply and exhaust gas outlet connections from the top of the device. Put the device into operation as instructed in section 20. Note: Ensure that there is sufficient air supply during this test. Check that the fault has been rectified. | |
| Step 64 | Has the fault been remedied? | Yes: → Step 65 No: → Section 66 |
| Step 65 | Diagnosis: The cause of the fault is to be found in the air inlet/flue gas outlet system. Action: Switch off the device and remedy the fault. | → Section 67 |

section 55



Locking fault code: Flames (ionization current) were measured after a heat demand occurred, but before opening the gas valve (section 1, [21]).

| | | |
|---------------|---|-----------------------------------|
| Step 1 | ● Check the ionization electrode as indicated in section 105. | |
| Step 2 | Is the ionization electrode okay? | Yes: → Section 66 No: → Step 3 |
| Step 3 | Diagnosis: The ionization electrode is defective. Action: Replace the ionization electrode, see section 103. | → Section 67 |

section 56



Locking fault code: Flames (ionization current) have been detected after switching off the burner (section 1, [23]).

| | | |
|---------------|---|-----------------------------------|
| Step 1 | ● Connect a digital pressure gauge, see section 119. Open the gas stop valve, see section 81, and put the boiler into flue gas test mode, see section 20. End the heat demand in accordance with the flue gas test (section 20), wait for the LED "Burner operation" to extinguish and then check that burner pressure is still available (gas/air ratio of -0.02 inch W.C.). | |
| Step 2 | Is burner pressure still available (gas/air ratio of -0.02 inch W.C.)? | Yes: → Step 6 No: → Step 3 |
| Step 3 | ● Check the ionization electrode as indicated in section 105. | |
| Step 4 | Is the ionization electrode okay? | Yes: → Section 66 No: → Step 5 |
| Step 5 | Diagnosis: The ionization electrode is defective. Action: Replace the ionization electrode, see section 103. | → Section 67 |
| Step 6 | ● Close the gas stop valve as indicated in section 74. Remove the digital pressure gauge and close the gas/air ratio measuring nipple. Open the gas stop valve, see section 81, and put the boiler into operation, see section 20. End the heat demand in accordance with section 20, wait for the LED "Burner operation" to extinguish and then check that there is still a voltage on the gas valve, see section 110. | |
| Step 7 | Is there still a voltage on the gas valve? | Yes: → Section 66 No: → Step 8 |
| Step 8 | Diagnosis: The gas valve is defective. Action: Replace the gas valve, see section 113. | |

section 57



Blocking fault code: Insufficient flame activity (ionization current) was measured during the burner procedure.

| | | |
|----------------|---|---------------------------------|
| Step 1 | Is the heating system propane gas-fired? | Yes: → Step 2 No: → Step 5 |
| Step 2 | ● Contact the gas utility company to check that there is no nitrogen in the new or existing gas tank and the gas supply pipework. | |
| Step 3 | Is there still nitrogen in the new or existing gas tank and the gas supply pipework? | Yes: → Step 4 No: → Step 5 |
| Step 4 | Diagnosis: There is nitrogen in the gas tank and the gas supply pipework. Action: Remove the nitrogen in conjunction with the gas utility company. | → Section 67 |
| Step 5 | ● Check that the device gas stop valve is open as instructed in section 81 and that the main gas stop valve is open. | |
| Step 6 | Are both gas stop valves open? | Yes: → Step 8 No: → Step 7 |
| Step 7 | Diagnosis: The device gas stop valve and/or the main gas stop valve is/are closed. Action: Open the device gas stop valve as instructed in section 81 and open the main gas stop valve. | → Section 67 |
| Step 8 | ● Check the static and dynamic gas supply pressures as indicated in section 117. | |
| Step 9 | Are the static and dynamic gas supply pressures correct? | Yes: → Step 16 No: → Step 10 |
| Step 10 | ● Check that there is no obstruction in the gas pipe between the device gas stop valve and gas valve. | |
| Step 11 | Did you find an obstruction? | Yes: → Step 12 No: → Step 13 |
| Step 12 | Diagnosis: There is an obstruction in the gas pipe. Action: Remove the obstruction. | → Section 67 |
| Step 13 | ● Check that there is no obstruction in other parts of the gas pipe. | |
| Step 14 | Did you find an obstruction? | Yes: → Step 15 No: → Step 24 |

section 57 (continued)

| | | |
|----------------|--|---|
| Step 15 | Diagnosis: There is an obstruction in the gas pipe. Action: Remove the obstruction. | → Section 67 |
| Step 16 | Has the gas supply pipe (and the gas tank, if relevant) been purged? | Yes: → Step 18 No: → Step 17 |
| Step 17 | Diagnosis: The gas supply pipe (and the gas tank, if relevant) has not been purged. Action: Purge the gas supply pipe (and the gas tank, if relevant), see section 118. | → Section 67 |
| Step 18 | ● Check the plug-and-socket connection of the gas valve, see section 109. | |
| Step 19 | Is the plug-and-socket connection okay? | Yes: → Step 21 No: → Step 20 |
| Step 20 | Diagnosis: The plug-and-socket connection has come loose. Action: Replace the plug-and-socket connection on the gas valve, see section 109. | → Section 67 |
| Step 21 | ● Check the gas valve power supply cord as indicated in section 111. | |
| Step 22 | Is the power supply cord okay? | Yes: → Step 28 No: → Step 23 |
| Step 23 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 24 | ● Check that the overall gas supply network is of sufficient capacity. | |
| Step 25 | Is the overall gas supply network of sufficient capacity? | Yes: → Step 27 No: → Step 26 |
| Step 26 | Diagnosis: The gas supply network is not of sufficient capacity. Action: Increase the capacity of the gas supply network. | → Section 67 |
| Step 27 | Diagnosis: The cause of the fault is to be found outside the boiler and the gas pipe work. The gas supply pressure regulator may be defective. Action: Contact the gas utility company. | → Section 67 |
| Step 28 | ● Adjust the gas/air ratio, see section 119. | |
| Step 29 | Is the gas/air ratio okay? | Yes: → Step 31 No: → Step 30 |
| Step 30 | Diagnosis: The gas/air ratio setting is not okay. Action: Adjust the gas/air ratio, see section 119. | → Section 67 |
| Step 31 | ● Check that the correct orifice has been installed, see section 119 and 135. | |
| Step 32 | Has the correct orifice been installed? | Yes: → Step 34 No: → Step 33 |
| Step 33 | Diagnosis: The wrong orifice has been installed. Action: Install the correct orifice, see section 119 and 135. | → Section 67 |
| Step 34 | ● Check the following elements for contamination, damage and/or incorrect installation: - Siphon, section 127; - Air suction tube, section 1, [12]; - Seal and connection between venturi pipe and fan unit; - Venturi pipe, see section 86; - Orifice, see section 113; - Fan unit; - Seal and connection between fan unit and burner; - Burner, section 126; - Heat exchanger; - Flue gas outlet and air inlet system; - Ground wire insulation, see section 108. | |
| Step 35 | Are the above-mentioned components clean, free of damage and/or correctly installed? | Yes: → Step 37 No: → Step 36 |
| Step 36 | Diagnosis: The above components are dirty, damaged or not correctly installed. Action: Clean, replace and/or re-install the relevant components. | → Section 67 |
| Step 37 | ● Check the ionization current as indicated in section 104. | |

section 57 (continued)

| | | |
|----------------|--|------------------|
| Step 38 | Is the ionization current okay? | Yes: → Step 54 |
| | | No: → Step 39 |
| Step 39 | ● Check the plug-and-socket connection between the ionization electrode and wire harness as instructed in section 104. | |
| Step 40 | Is the plug-and-socket connection okay? | Yes: → Step 42 |
| | | No: → Step 41 |
| Step 41 | Diagnosis: The plug-and-socket connection has come loose. Action: Connect the plug-and-socket connection correctly. | → Section 67 |
| Step 42 | ● Check the cable of the ionization electrode as indicated in section 106. | |
| Step 43 | Is the wiring okay? | Yes: → Step 45 |
| | | No: → Step 44 |
| Step 44 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 45 | ● Check the ionization electrode as indicated in section 105 and section 107. | |
| Step 46 | Is the ionization electrode okay? | Yes: → Step 48 |
| | | No: → Step 47 |
| Step 47 | Diagnosis: The ionization electrode is defective. Action: Replace the ionization electrode, see section 103. | → Section 67 |
| Step 48 | ● Check whether flue gas is being recirculated by visually checking the boiler for discolouring or temporarily running the boiler without air intake. Note! This is only allowed if the conditions in the installation room permit this. | |
| Step 49 | Is flue gas being recirculated? | Yes: → Step 50 |
| | | No: → Step 51 |
| Step 50 | Diagnosis: Flue gas is recirculated by the boiler. Action: Remedy the cause of the recirculation. | → Section 67 |
| Step 51 | ● Temporarily remove the combustion air supply and exhaust gas outlet connections from the top of the device. Put the device into operation as instructed in section 20. Note: Ensure that there is sufficient air supply during this test. Check that the fault has been rectified. | |
| Step 52 | Has the fault been remedied? | Yes: → Step 53 |
| | | No: → Step 54 |
| Step 53 | Diagnosis: The cause of the fault is to be found in the air inlet/flue gas outlet system. Action: Switch off the device and remedy the fault. | → Section 67 |
| Step 54 | ● Check whether the fault can be remedied by temporarily replacing the gas valve. | |
| Step 55 | Has the fault been remedied? | Yes: → Step 56 |
| | | No: → Section 66 |
| Step 56 | Diagnosis: The gas valve is defective. | → Section 67 |

section 58



Locking fault code: The glow ignitor (section 1, [27]) was activated too long (for more than 10 minutes).

| | | |
|---------------|--|-------------------|
| Step 1 | ● Press and hold the "Reset" button for at least 2 seconds. | |
| Step 2 | Has the fault been remedied? | Yes: → Section 67 |
| | | No: → Step 3 |
| Step 3 | Diagnosis: The KIM is defective. Action: Contact the manufacturer. See the back of this document for contact details. | |

section 59

   **Locking fault code: The power supply was interrupted during a locking fault**
         
  or  .

| | | |
|---------------|---|-----------------------------------|
| Step 1 | ● Press and hold the  button for at least 2 seconds. | |
| Step 2 | Is an error code displayed again? | Yes: → Step 3 No: → Section 67 |
| Step 3 | ● Check the meaning of the new fault, see section 29, and resolve the fault. | |

section 60

   **Blocking fault code: The main voltage has been briefly interrupted.**

| | | |
|---------------|--|-----------------------------------|
| Step 1 | ● Check whether windmills, generators or other equipment are present which may have caused the main voltage to be interrupted. | |
| Step 2 | Is this the case? | Yes: → Step 3 No: → Step 4 |
| Step 3 | Diagnosis: The fault is caused by the presence of windmills, generators or other equipment which may cause the main voltage to be interrupted. Action: Place the affected equipment out of service. | → Section 67 |
| Step 4 | ● Use a main voltage monitoring device to check, over a long period of time, whether the main voltage is actually interrupted briefly. | |
| Step 5 | Has the main voltage actually been briefly interrupted? | Yes: → Step 6 No: → Section 66 |
| Step 6 | Diagnosis: The cause of the fault lies in the electrical system. Action: Solve the problem in the electrical system. | → Section 67 |

section 61

   **Operating code: The external switch contact has opened.**

| | | |
|----------------|--|-----------------------------------|
| Step 1 | ● Check that an external switch contact has been connected to the device, see section 116. | |
| Step 2 | Is an external switch contact connected? | Yes: → Step 9 No: → Step 3 |
| Step 3 | ● Check that a connection is present, see section 116. | |
| Step 4 | Is there a connection? | Yes: → Step 6 No: → Step 5 |
| Step 5 | Diagnosis: There is no connection. Action: Restore the connection to the connection box, see section 116, [1]. | → Section 67 |
| Step 6 | ● Check the wire harness between the connection tray and the UBA 3 mounting base according to section 131. | |
| Step 7 | Is the wire harness okay? | Yes: → Section 66 No: → Step 8 |
| Step 8 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 9 | ● Check that the fault can be remedied by making a connection, see section 116. | |
| Step 10 | Has the fault been remedied? | Yes: → Step 11 No: → Step 6 |
| Step 11 | Diagnosis: The external switch contact has opened or a wire has broken in the external switch contact wiring outside the boiler. Action: Remedy the cause of the external switch contact opening or replace the wiring. | → Section 67 |

section 62



Locking fault code: The KIM is too new for the UBA 3 (section 1, [32]).

| | | |
|---------------|---|-----------------------------------|
| Step 1 | ● Replace the UBA 3 by a UBA 3 provided with the most recent software possible. | |
| Step 2 | Has the fault been remedied? | Yes: → Section 67 No: → Step 3 |
| Step 3 | Diagnosis: The KIM is too new for the UBA 3. Measure: Contact the manufacturer. See the back of this document. | → Section 67 |

section 63



Locking fault code: The contacts of the gas valve (section 1, [21]) are open.

| | | |
|---------------|--|-----------------------------------|
| Step 1 | ● Check the plug-and-socket connection of the gas valve, see section 109. | |
| Step 2 | Is the plug-and-socket connection okay? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The plug-and-socket connection has come loose. Action: Replace the plug-and-socket connection, see section 109. | → Section 67 |
| Step 4 | ● Check the electrical resistance of the power supply cord of the gas valve as indicated in section 111. | |
| Step 5 | Is the wire okay? | Yes: → Step 7 No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 7 | ● Check the electrical resistance of the gas valve coils as indicated in section 111. | |
| Step 8 | Is the resistance correct? | Yes: → Section 66 No: → Step 9 |
| Step 9 | Diagnosis: The gas valve is defective. Action: Replace the gas valve, see section 113. | → Section 67 |

section 64



Blocking fault code: 4 hours of continuous DHW operation, while a heat demand also occurred at the same time. The DHW operation has been switched off after this period of 4 hours, for as long as the boiler is active for the heating operation.

| | | |
|----------------|---|---------------------------------|
| Step 1 | ● Check that no hot-water tap is dripping and that there is no leakage in the hot-water pipe. This can be checked by feeling whether the hot-water pipe is hot at half a metre below the boiler. | |
| Step 2 | Is a hot-water tap dripping or is there a leakage in the hot-water pipe? | Yes: → Step 3 No: → Step 4 |
| Step 3 | Diagnosis: The hot-water tap is dripping or the hot-water pipe is leaking. Action: Fix the dripping hot-water tap or the leakage in the hot-water pipe. | → Section 67 |
| Step 4 | ● Check the electrical resistance of the DHW temperature sensor as indicated in section 93. | |
| Step 5 | Is the electrical resistance of the DHW temperature sensor okay? | Yes: → Step 7 No: → Step 6 |
| Step 6 | Diagnosis: The DHW temperature sensor is defective. Action: Replace the DHW temperature sensor, see section 95. | |
| Step 7 | ● Check the movement of the servomotor of the three-way valve. | |
| Step 8 | Does the servomotor of the three-way valve move? | Yes: → Step 9 No: → Step 12 |
| Step 9 | ● Check that the three-way valve has been installed correctly. | |
| Step 10 | Has the three-way valve been installed correctly? | Yes: → Step 18 No: → Step 11 |

section 64

| | | |
|----------------|---|------------------------------------|
| Step 11 | Diagnosis: The three-way valve has not been installed correctly. Action: Install the three-way valve correctly. | → Section 67 |
| Step 12 | ● Check that the three-way valve is being activated. | |
| Step 13 | Is the three-way valve activated? | Yes: → Step 14 No: → Step 15 |
| Step 14 | Diagnosis: The servomotor of the three-way valve is defective. Action: Replace the servomotor of the three-way valve. | → Section 67 |
| Step 15 | ● Check the wiring of the three-way valve. | |
| Step 16 | Is the wiring of the three-way valve okay? | Yes: → Section 66 No: → Step 17 |
| Step 17 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 18 | ● Check the interior of the three-way valve for contamination and/or damage. | |
| Step 19 | Is the three-way valve okay? | Yes: → Section 66 No: → Step 20 |
| Step 20 | Diagnosis: The three-way valve is defective. Action: Replace the three-way valve. | → Section 67 |

section 65



Locking fault code: The pressure sensor contacts (section 1, [30]) are open.



Locking fault code: The pressure sensor contacts (section 1, [30]) have shorted.



Blocking fault code: The water pressure indication does not work properly.



Operating code: The water pressure of the heating system is beyond the measuring range of the pressure sensor (section 1, [30]).

| | | |
|----------------|--|---------------------------------------|
| Step 1 | ● Check the plug-and-socket connection of the pressure sensor. See section 1, [30]. | |
| Step 2 | Is the plug-and-socket connection okay? | Yes: → Step 4 No: → Step 3 |
| Step 3 | Diagnosis: The plug-and-socket connection has come loose. Action: Renew the plug-and-socket connection. | → Section 67 |
| Step 4 | ● Check the wiring between the pressure sensor plug and the UBA 3 mounting base by measuring the electrical resistance, see section 131. | |
| Step 5 | Is the wiring okay? | Yes: → Step 7 No: → Step 6 |
| Step 6 | Diagnosis: The wire harness is defective. Action: Replace the wire harness or the affected part. | → Section 67 |
| Step 7 | ● Use another pressure gauge than the pressure gauge on the control panel to check whether the heating system water pressure measured at the height of the boiler is too high and is more than 83 PSI. | |
| Step 8 | Is the water pressure of the heating system too high? | Yes: → Section 67 No: → Section 66 |
| Step 9 | Diagnosis: The water pressure of the heating system is too high. Action: Drain the heating system until the water pressure is approx. 22 PSI. | → Section 67 |
| Step 10 | Diagnosis: The pressure sensor is defective. Action: Replace the pressure sensor, see section 128. | |
| Step 11 | Has the fault been remedied? | Yes: → Section 67 No: → Section 66 |

section 66

Poor electrical contacts, UBA 3 defective or KIM defective.

| | | |
|---------------|--|-----------------------------------|
| Step 1 | Diagnosis: Poor electrical contacts, UBA 3 is defective or KIM is defective. Action: Check the contact between: <ul style="list-style-type: none"> - the UBA 3 and the UBA 3 mounting base by screwing the UBA 3 tightly onto the UBA 3 mounting base; - BC10 and the bottom plate of the BC10 by pushing the BC10 tightly onto the bottom plate; - all other plug-and-socket connections; remedy any contact problems found. | |
| Step 2 | ● Press and hold the "Reset" button for at least 2 seconds. See section 14. | |
| Step 3 | Is the same fault message shown again? | Yes: → Step 4 No: → Step 7 |
| Step 4 | Has the UBA 3 already been replaced? | Yes: → Step 6 No: → Step 5 |
| Step 5 | Diagnosis: The UBA 3 is defective. Action: Replace the UBA 3, see section 130. | → Step 2 |
| Step 6 | Diagnosis: The KIM is defective. Action: Contact the boiler manufacturer before replacing the KIM. See the back of this document for contact details. | |
| Step 7 | Has a new fault occurred? | Yes: → Step 8 No: → Section 67 |
| Step 8 | ● Check the meaning of the new fault, see section 29, and resolve the fault. | |

section 67

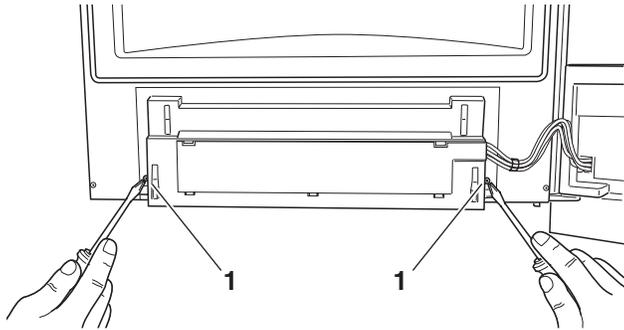
| | | |
|---------------|---|--|
| Step 1 | ● Install the removed components in reverse order of removal. | |
| Step 2 | ● Install the boiler casing. | |
| Step 3 | ● Put the main power switch on the control panel in position "0" (Off), see section 70. | |
| Step 4 | ● Put the main power switch on the control panel in position "1" (On), see section 80. | |

The fault has now been rectified!
The Logamax plus GB162-80 kW/100 kW is working correctly!

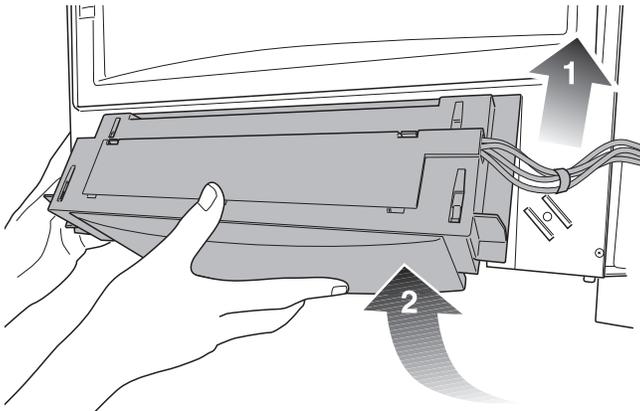
section 68 Hanging the control panel from the boiler

To make it easier to operate the BC10 when the boiler door is open and to make it easier to read the display, the BC10 can be temporarily attached to the boiler in a suspended position. Proceed as follows:

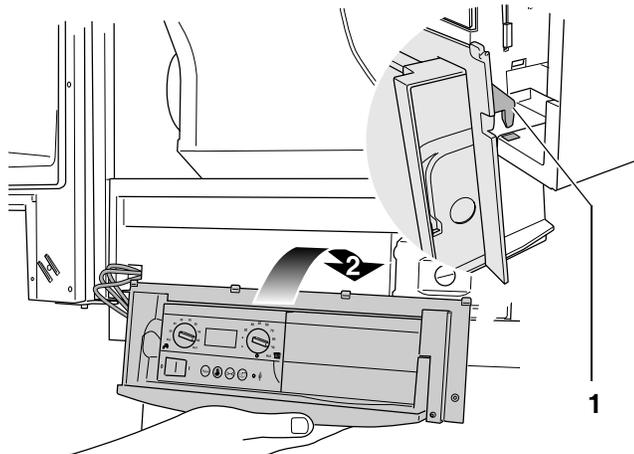
- Put the boiler out of operation, see section 69, 70 and 72.
- Open the door as instructed in section 73.



- Loosen the 2 screws on the back of the door of the BC10 [1].

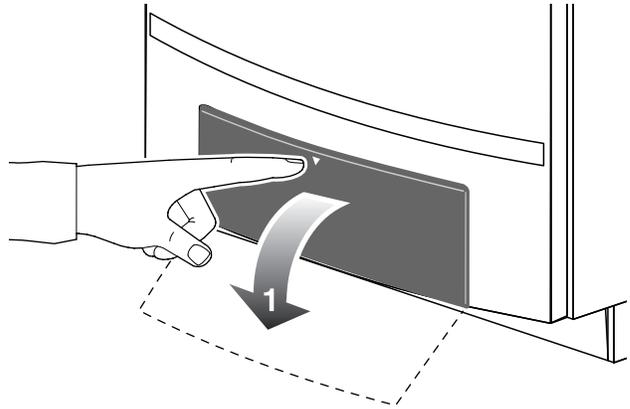


- Remove the cable ties [1].
- Remove the basic controller BC10 [2].

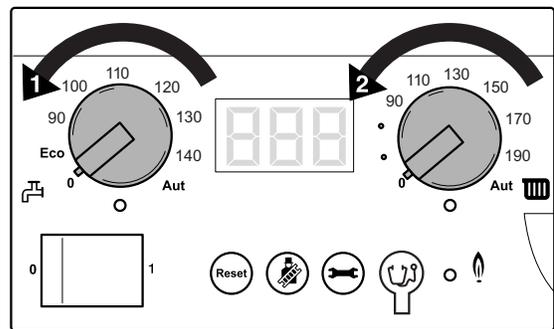


- Hang the BC10 from the boiler [2] using the 2 hooks on the left and the right [1].
- After completing the service activities, install the BC10 on the boiler door in reverse order of removal and secure the BC10 with the 2 screws.

section 69 Shutting down

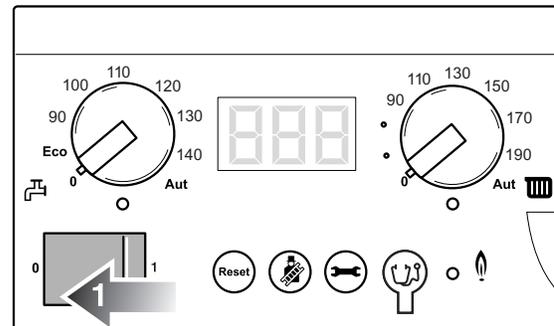


- Open the cover of the BC10 on the front of the boiler [1].



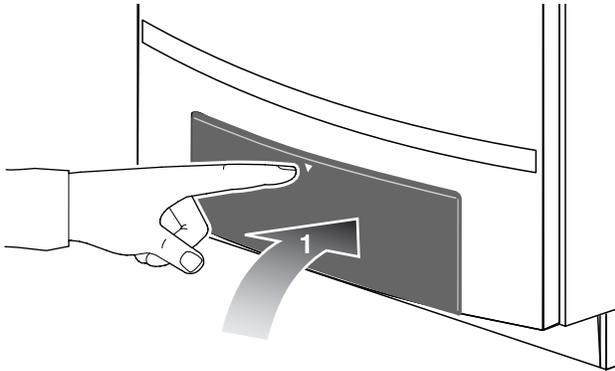
- Put the selector for the DHW temperature setting [1] and the selector for the maximum heating-system supply temperature [2] in position "0".

section 70 Switching off main power



- Put the main power switch [1] on the control panel in position "0" (Off).

section 71 Closing cover of the BC10



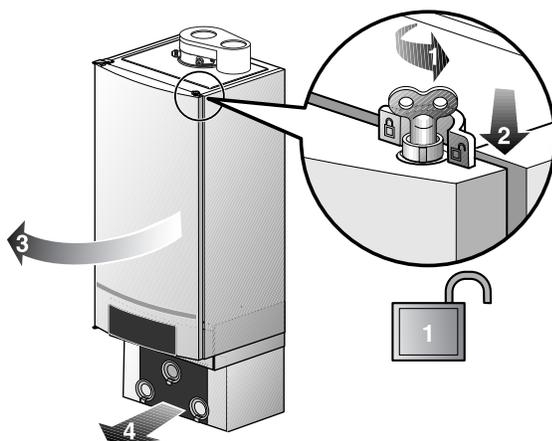
- Close the cover of the BC10 on the front of the boiler [1].

section 72 Switching off power supply



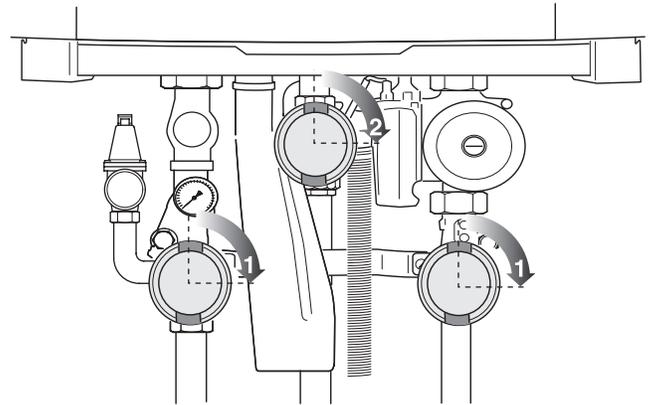
- Switch off the power supply to the heating system.

section 73 Opening boiler door



- Open the door lock by turning it a quarter turn counterclockwise using a bleed key [1].
- Push the lock down [2] and open the door [3].
- If a pump group is available: Remove the casing of the pump group [4].

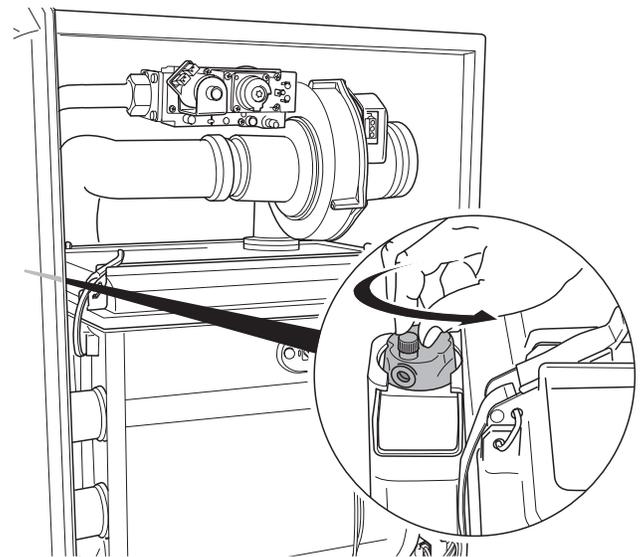
section 74 Closing isolating valves



- If a pump group is available: Close the heating supply and return isolating valves [1] by turning them in a clockwise direction (closed position: at a right angle to the pipework).
- If a pump group is available: Close the gas stop valve [2] by turning it in a clockwise direction (closed position: at a right angle to the pipework).

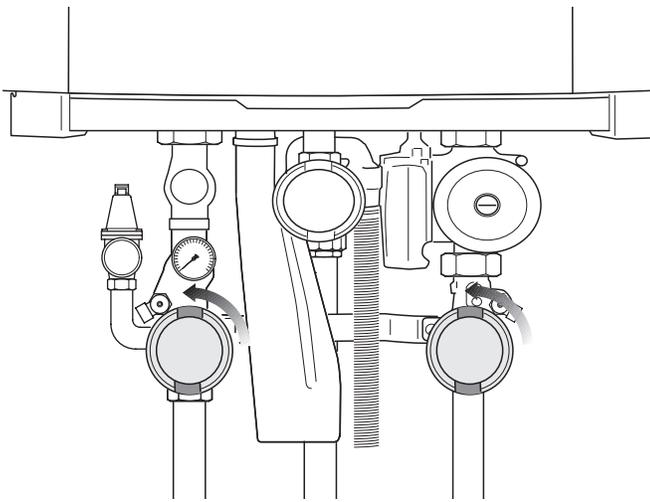
section 75 Draining the system

- Switch off the power supply to the heating system, see section 72.
- If a pump group is available: Remove the casing of the pump group as indicated in section 73.
- Close the service valves if a pump group is available, see section 74, [1].



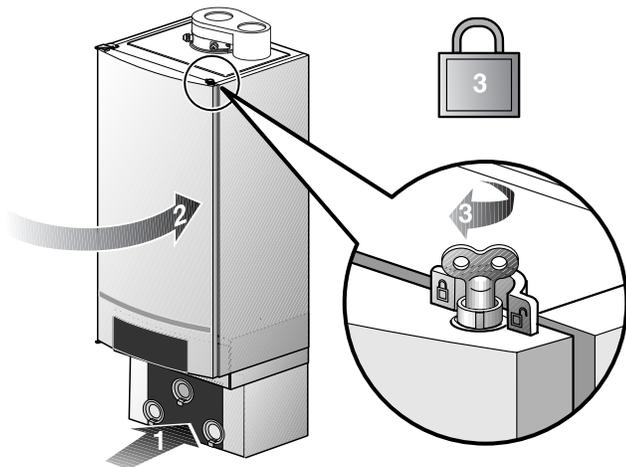
- Loosen the cap on the automatic air purging system located on the top left-hand part of the boiler by turning it through one rotation.
- Remove the cap of the filling and drain valve of the boiler.
- Connect the filling hose to the filling and drain valve of the boiler.

section 76 Opening isolating valves



- If a pump group is available: Open the heating supply and return isolating valves on the pump group (open position: parallel to the pipework).
- Close the heating supply and return isolating valves on the pump group in reverse order.

section 77 Closing boiler door



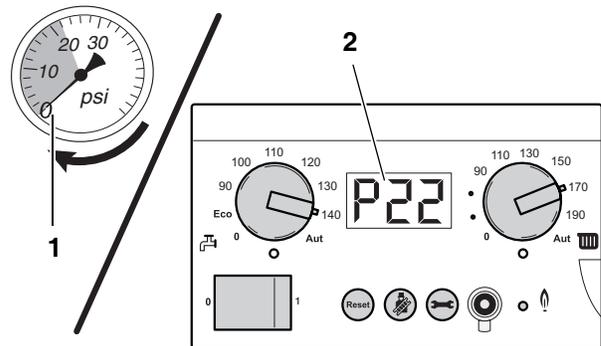
- If a pump group is available: Install the casing of the pump group [1] again.
- Close the door [2] and then the lock by turning it a quarter turn clockwise using a bleed key [3].

section 78 Filling and bleeding the system

- Open the cover of the control panel as instructed in section 69.
- Turn the Space heating water temperature knob [1] and DHW temperature knob [2] counterclockwise to the "0" position as indicated in section 69.
- Turn the vent key a quarter rotation to undo the boiler door lock and remove the insulation cover of the pump group as instructed in section 73.

To purge the boiler, every radiator in the heating system must have a purge facility. In some situations it may even be necessary to provide extra purging facilities at certain locations. The boiler itself has an automatic air vent.

- Loosen the cap of the automatic air vent by turning one rotation counterclockwise, see section 75.
- Open the heating supply and return isolating valves on the pump group, see section 76. The open position is parallel to the pipework.
- Fill the heating system to a pressure of about 22 PSI (1.5 bar).



- Read the pressure (PSI) from the pressure gauge [1] on the pump group or on the control panel [2] of the BC10.

The pressure in the heating system, which is measured directly at the boiler, must be at least equal to the required pre-pressure of the expansion vessel plus 7 PSI (0.5 bar). This minimum pressure must not be less than 12 PSI (0.8 bar) (if the heating system is cold). The maximum pressure in the heating system, measured directly at the boiler, must not exceed 38 PSI (2.6 bar) or 50 PSI (3.5 bar) when the optional 50 PSI (3.5 bar) pressure relief valve is used.

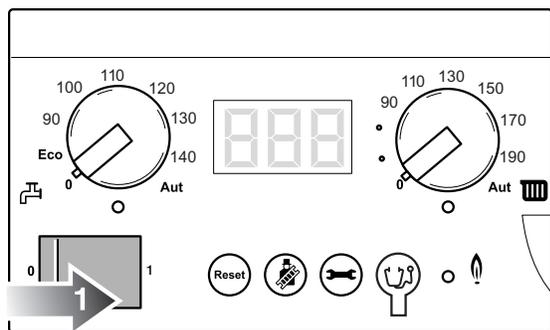
- Purge the heating system via the air vents on the heating bodies. Start at the lowest floor of the premises and then work your way up from floor to floor.

section 79 Switch on power supply

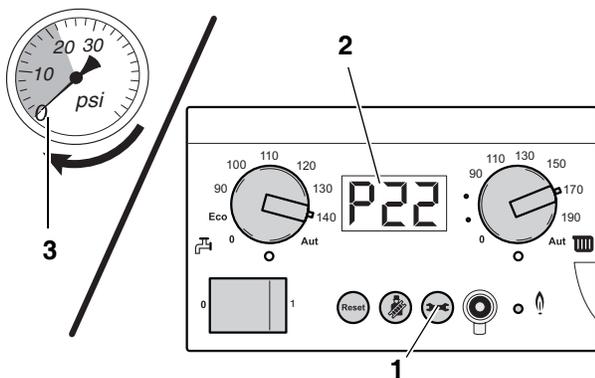


- Switch on the power supply to the heating system.

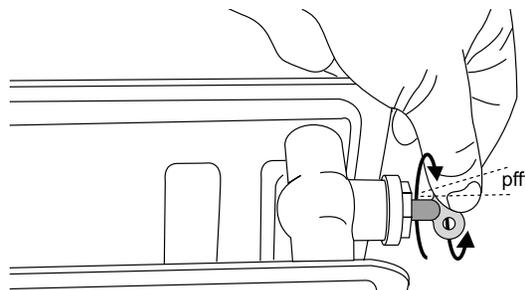
section 80 Switching on main power



- Put the main power switch [1] on the control panel in position "1" (On).



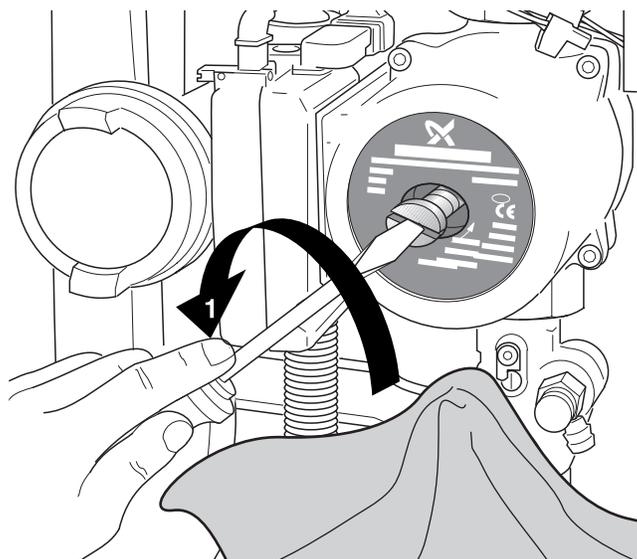
- Press the "Service" button [1] a number of times until the pressure is displayed (e.g. **P22**), [2] or read out the pressure from the analog pressure gauge [3] in the pump group.



- Purge all radiators in the heating system. Start at the lowest floor of the premises and then work your way up from floor to floor.

If the boiler has been in use for approx. one week and the pressure reading on the display is less than 14 PSI, the system has to be topped up. The pressure loss in a heating system is caused by air bubbles escaping via screw connections and (automatic) air purging units. The oxygen contained in the fresh heating water will also escape from the heating water after some time and cause the water pressure in the heating system to drop.

Should it be necessary to top up the heating system more frequently because the water pressure keeps dropping, water is probably escaping due to a leakage in the heating system or a defective expansion vessel. In this case the cause of the water loss must be removed as soon as possible.



- Drain the pump by removing the vent screw at the front of the pump [1].

CAUTION!
Since a little heating water may escape when purging the pump you are advised to lay a dry cloth under the pump.

CAUTION!
Correct purging of the pump will help ensure that it runs for its specified service life. The sliding bearing located behind the vent screw is lubricated by the heating water.

- Check the water pressure of the heating system after all air has been purged from the heating system. If the water pressure is less than 14 PSI, the heating system has to be topped up again as described above.

- Close the water stop valve.
- Close the filling valve on the boiler.
- Disconnect the filling hose.
- Install the cover on the filling valve.
- Open the boiler door and install the casing of the pump group as instructed in section 77.
- Adjust the set buttons on the control panel to the target value, see section 81.
- Close the cover of the BC10 on the front of the boiler as instructed in section 71.

section 81 Initial startup

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

- This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.
- BEFORE OPERATING** smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
WHAT TO DO IF YOU SMELL GAS
 - Do not try to light any appliance.
 - Do not touch any electric switch; do not use any phone in your building.
 - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instruction.
 - If you cannot reach your gas supplier, call the fire department.
- Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.
- Do not use this appliance if any parts have been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

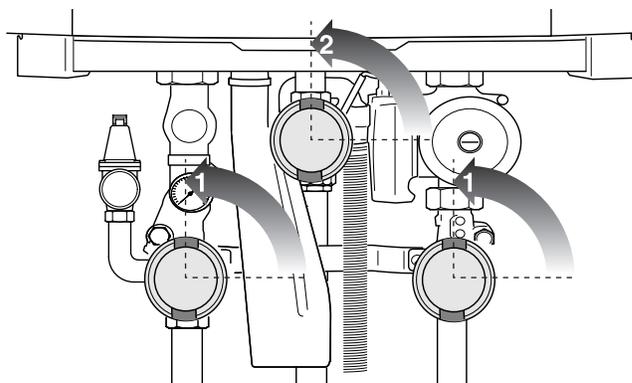
1. **STOP!** read the safety information above on this label.
2. Turn off all electric power to the appliance.
3. Set the thermostat or other operating control to lowest setting.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.
5. Close main gas shut off valve.
6. Wait (5) minutes to clear out any gas. Then smell for gas. Including near the floor. If you smell gas, **STOP!** Follow "B" in the safety information above on this label. If you don't smell gas, go to the next step.
7. Open main shut off valve.
8. Set the thermostat or other operation control to desired setting.
9. Turn on all electric power to the appliance.
10. If the appliance will not operate, follow the instruction "To Turn Off Gas To Appliance" and call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

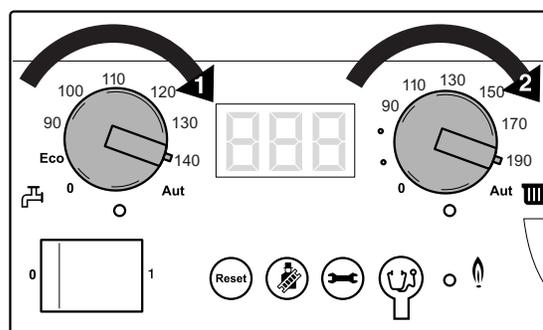
1. Turn off all electric power to the appliance if service is to be performed.
2. Set the thermostat or other operating control to lowest setting.
3. Close main gas shut off valve.

708.375A - 2172B

- Open the boiler door and remove the casing of the pump group as instructed in section 73.



- Open both service valves [1].
- Open the gas stop valve [2].
- Open the cover of the BC10 on the front of the boiler as instructed in section 69.

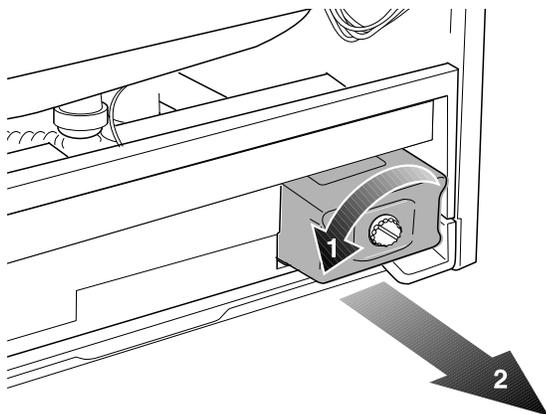


- Put the selector for the DHW temperature setting [1] and the selector for the maximum heating-system supply temperature [2] on the control panel in the required position.
- Switch on the power supply to the heating system, see section 79.
- Put the main power switch on the BC10 in position "1" (On), see section 80.
- Close the cover of the BC10 on the front of the boiler, see section 71.
- Open the boiler door and install the casing of the pump group, see section 77.

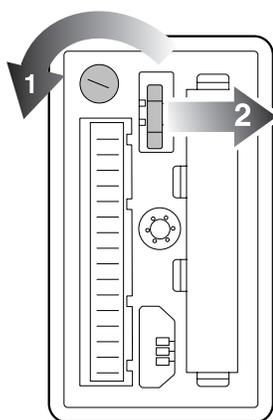
section 82 Checking/replacing fuses

DANGER OF FATAL ACCIDENT
due to electric shock!

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



- Undo the mounting screw [1] of the UBA 3.
- Remove the UBA 3 by moving it in the direction indicated by the arrow [2]).



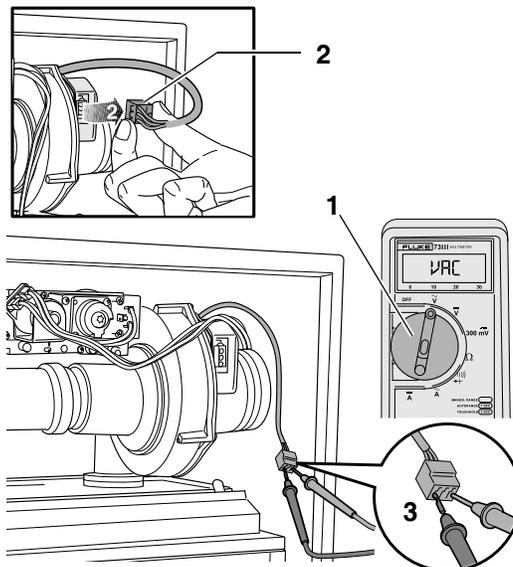
- Remove the fuse holder by turning the bayonet connector [1] in a counterclockwise direction, using a flat-head screw-driver.
- Remove the fuse from the fuse holder.
- Measure the fuse using a multimeter. If the fuse has an infinite electrical resistance, it is defective.
- Replace the defective fuse with a (new) 5 AT [2] spare fuse.
- Install the UBA 3 burner automat in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 83 Checking the fan unit; operation (120 VAC)

DANGER OF FATAL ACCIDENT
due to electric shock!

DAMAGE TO THE INSTALLATION!
To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



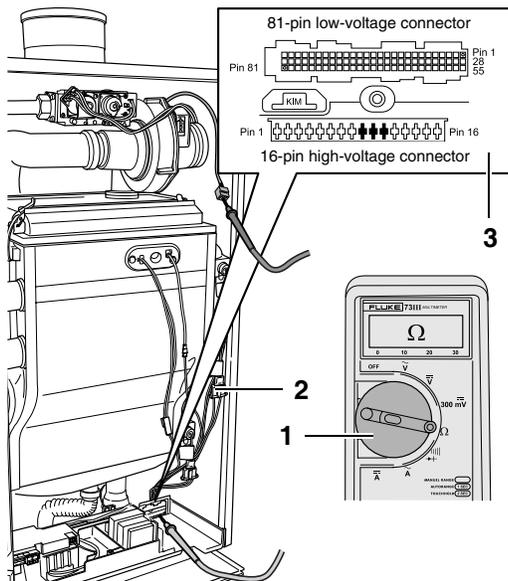
- Set the multimeter to VAC [1].
Minimum measuring range: 250 VAC.
- Remove the 120 VAC plug [2] from the fan unit.
- Connect the multimeter to the two outer contacts (blue and brown) of the fan unit power supply plug [3].
- Switch on the power supply to the heating system, see section 79.
- Put the main power switch on the control panel in position "1" (On), see section 80.
- Put the boiler in flue gas test mode, see section 20.
- Check whether, with operating code active, there is a voltage of 120 VAC at the two outer contacts (blue and brown) of the plug.
- Switch off the power supply to the heating system, see section 72.
- Connect the fan unit power supply plug in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see, section 79.

section 84 Checking the fan unit;
power supply cord (120 VAC)

⚠ DANGER OF FATAL ACCIDENT
due to electric shock!

⚠ DAMAGE TO THE INSTALLATION!
To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 burner automat as instructed in section 82.
- Remove the cover from the connection tray, see section 114.



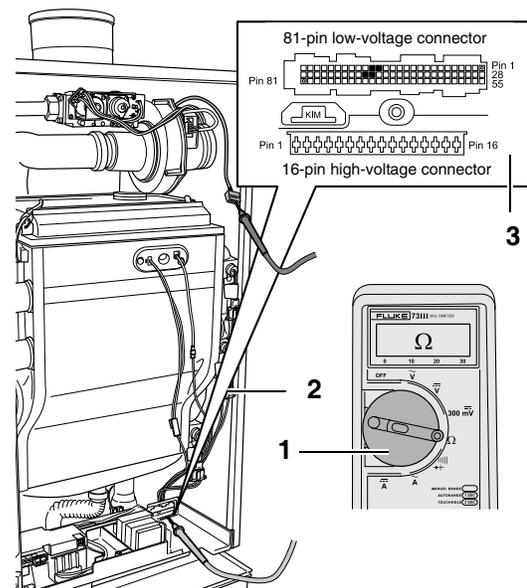
- Undo the fan unit power supply cord plug as instructed in section 86, [1].
- Set the multimeter to "Measure resistance" [1].
- Check the power supply cord of the fan unit for breaks. The electrical resistance measured separately for every wire must be approx. 0Ω [2]. Measure between the plug and the black contacts (high-voltage connector pins 9, 10 and 11) on the UBA 3 mounting base [3].
- Check the power supply cord of the fan unit for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite. See also section 131.
- Remove the multimeter.
- Connect the fan unit power supply plug in reverse order.
- Install the UBA 3 burner automat in reverse order of removal.
- Install the lid on the connection tray in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

 section 85 Checking the fan unit;
tacho cable

⚠ DANGER OF FATAL ACCIDENT
due to electric shock!

⚠ DAMAGE TO THE INSTALLATION!
To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.



- Remove the tacho cable plug, see section 86, [2].
- Set the multimeter to "Measure resistance" [1].
- Connect the multimeter.
- Check the fan unit tacho cable for breaks. The electrical resistance measured separately for every wire must be approx. 0Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 16, 17, 44 and 45) on the UBA 3 mounting base [3].
- Check the fan unit tacho cable for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite. See also section 131.
- Remove the multimeter.
- Connect the tacho cable plug in reverse order.
- Install the UBA 3 in reverse order of removal.
- Install the lid on the connection tray in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

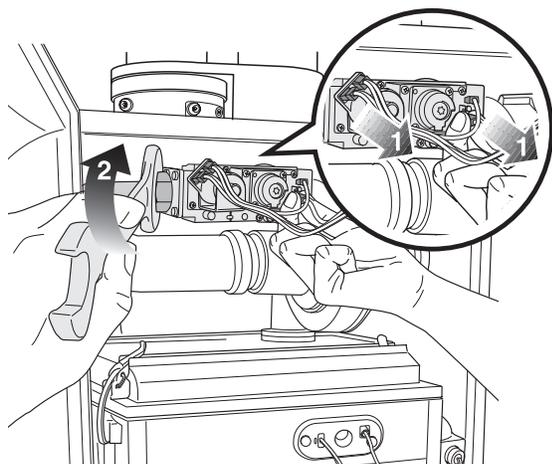
section 86 Checking and/or replacing the fan unit

⚡ DANGER OF FATAL ACCIDENT
due to electric shock!

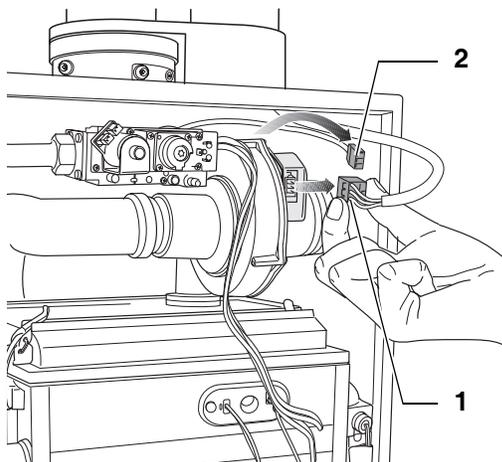
⚠ DANGER OF FATAL ACCIDENT/FIRE
from explosive fumes.

All work on gas pipes and fittings must be carried out by authorized gas technicians.

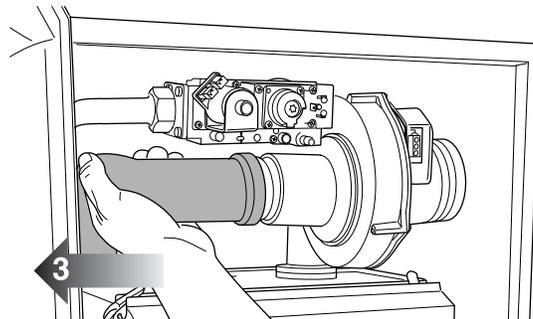
- While carrying out these activities check all sealing rings and gaskets for damage, deformation and signs of aging and replace if required.
- After carrying out these activities, check the system for leaks on the gas side and/or the flue gas side.
- Take the boiler out of operation, see section 72 and 73.
- Close the gas stop valve as indicated in section 74.



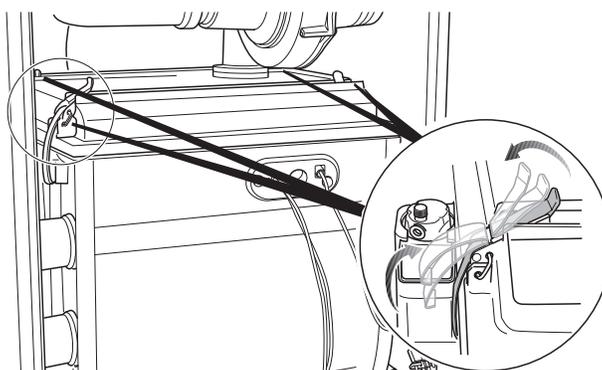
- Remove the power supply plug(s) of the gas regulation valve [1].
- Undo the union from the gas supply [2].



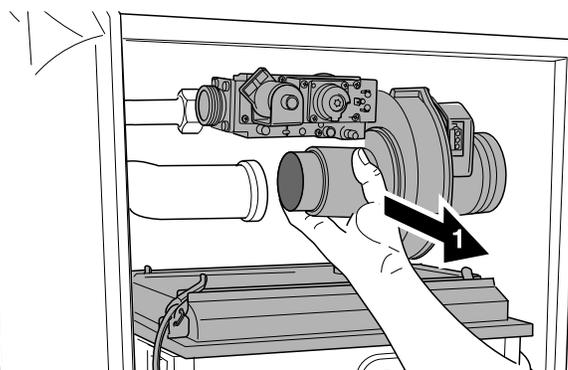
- Remove both the fan unit power supply cord plug [1] and the fan unit tachometer cable plug [2].



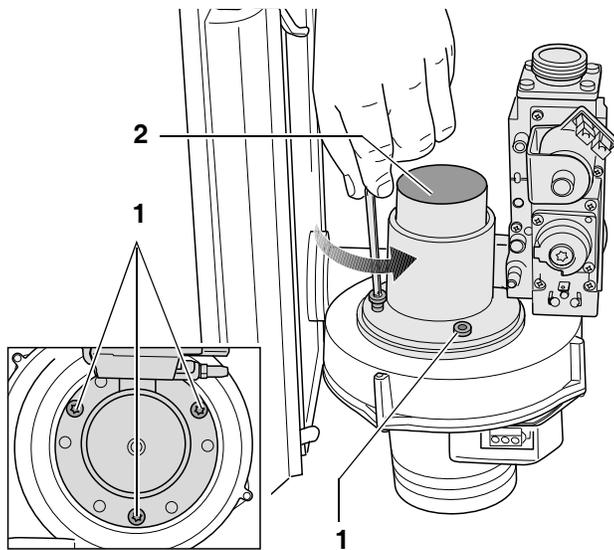
- Pull the air suction pipe from the venturi pipe [3].



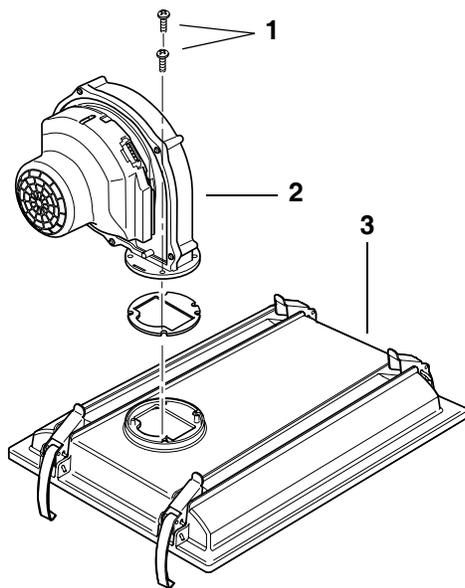
- Open the 4 snap closures of the burner cover.



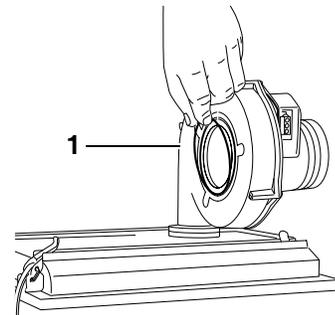
- Remove the gas/air unit including the burner cover [1] by moving it in the direction indicated by the arrow.



- Loosen the torx screws [1] and remove the gas valve including the venturi pipe [2] from the fan unit.
- Check that the fan unit is not dirty or wet; clean or dry it if required.
- Check that the fan unit wheel has not come loose at the motor spindle,



- Loosen the two torx screws [1] and remove the fan unit [2] from the burner cover [3].
- Install the new fan unit in reverse order on the burner cover.



- If necessary, replace the O-ring between the fan unit and the venturi pipe [1]. Install the new O-ring in the fan unit and then install the venturi pipe including the gas valve on the fan unit, in reverse order of removal.
- Install the gas/air unit including the burner cover on the heat exchanger, in reverse order of removal.
- Install the air suction pipe on the fan unit.
- Re-connect the gas supply to the gas valve. Ensure when doing so that the flat rubber sealing ring is correctly fitted.
- Fit the power supply plug or plugs to the gas valve and to the fan unit and fit the tacho cable plug to the fan unit.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 87 Checking the pump; mechanical obstruction

- Remove the casing of the pump group as indicated in section 73.
- Open the cover of the BC10 as instructed in section 69.
- Loosen the vent screw on the front of the pump, see section 80.
- Put the boiler in flue gas test mode, see section 20.
- Check that the pump is running while operating code **01** is displayed or while the locking fault code **2L** **266** is displayed. The locking fault code may be displayed after appr. 4 minutes. The pump may become mechanically blocked if the boiler has been out of use for an extended period.
- In this event, attempt to start the pump again using a screwdriver. Use the screwdriver to turn the pump rotor in the direction of rotation shown on the pump identification plate.
- Stop the flue gas test, see section 20.
- Install the vent screw on the pump in reverse order.
- Install the casing of the pump group as indicated in section 77.
- Close the cover of the BC10 in reverse order.

section 88 Checking the pump; activation



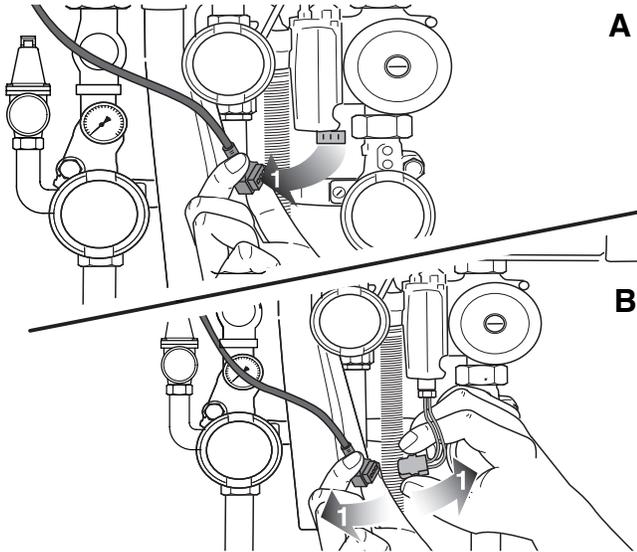
DANGER OF FATAL ACCIDENT
due to electric shock!



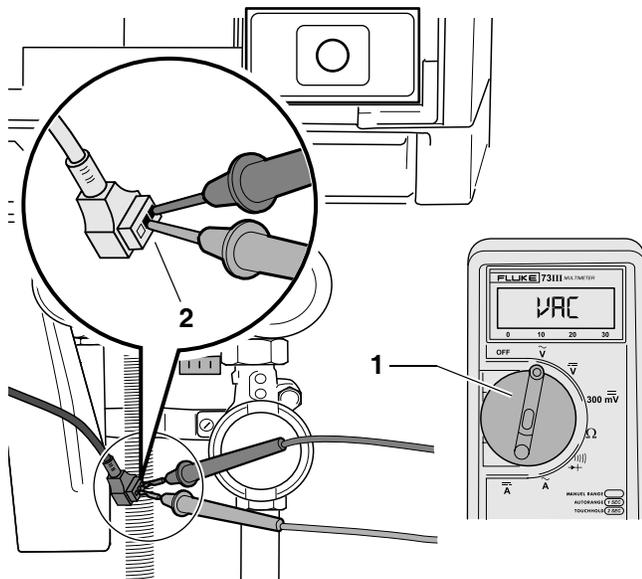
DAMAGE TO THE INSTALLATION!

To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Remove the casing of the pump group as indicated in section 73.



- Undo the pump power supply cord plug as instructed in A, [1] and B, [1].



- Set the multimeter to "Measure AC voltage". Minimum measuring range 250 VAC [1].
- Switch on the power supply to the heating system, see section 79.

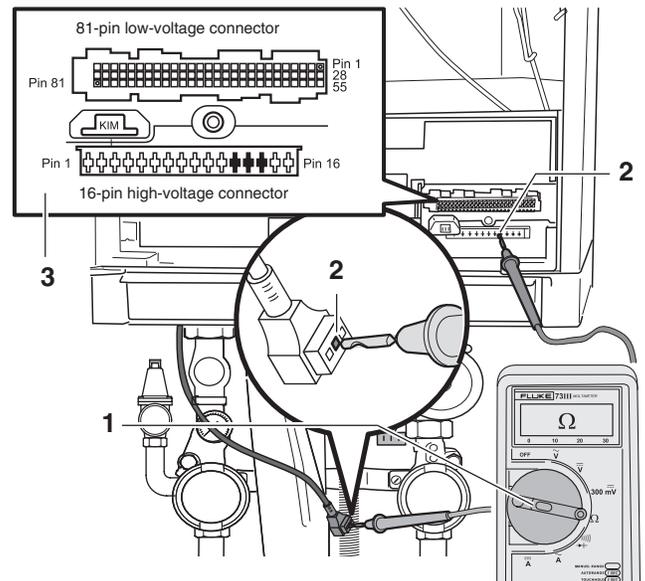
- Put the boiler in flue gas test mode, see section 20.
- Check that there is 120 VAC on the two contacts (L and N) of the pump power supply cord plug while operating code `01` is displayed or while the locking fault code `21` `266` is displayed. The locking fault code may be displayed after appr. 4 minutes.
- Stop the flue gas test as instructed in section 20.
- Attach the pump power supply cord plug.
- Install the casing of the pump group in reverse order of removal.

section 89 Checking the pump; power supply cord



DANGER OF FATAL ACCIDENT
due to electric shock!

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.
- Pull the supply cord plug from the pump as instructed in section 88.



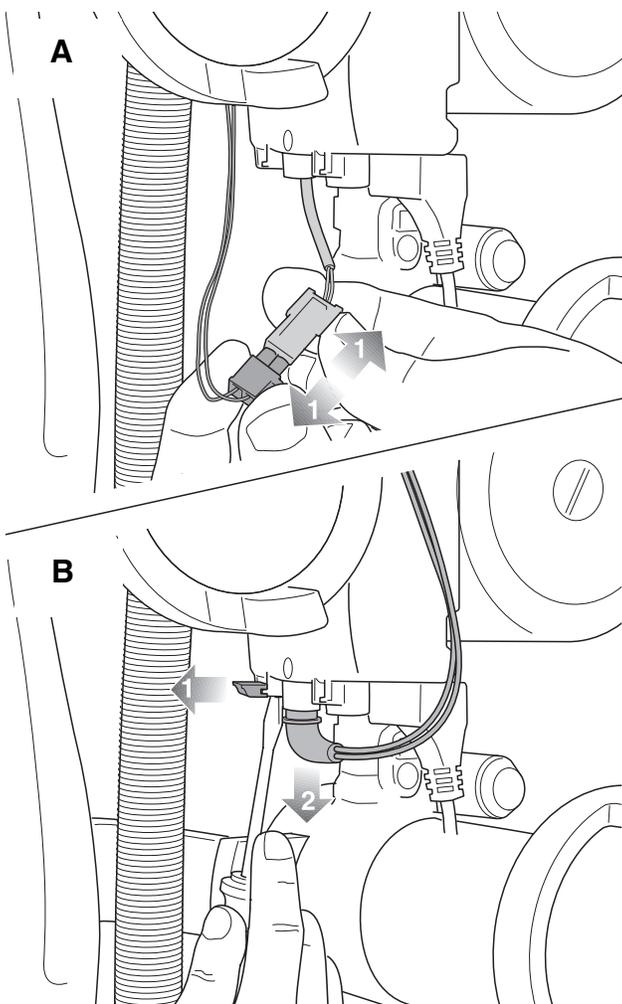
- Set the multimeter to "Measure resistance" [1].
- Connect the multimeter [2].
- Check the power supply cord of the pump for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [2].
- Check the power supply cord of the pump for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite. Measure between the plug and the black contacts (high-voltage connector pins 12, 13 and 14) on the UBA 3 mounting base [3].
- Attach the pump power supply cord plug in reverse order of removal.

- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door and install the casing of the pump group in reverse order of removal.
- Switch on the power supply to the heating system, see section 79.

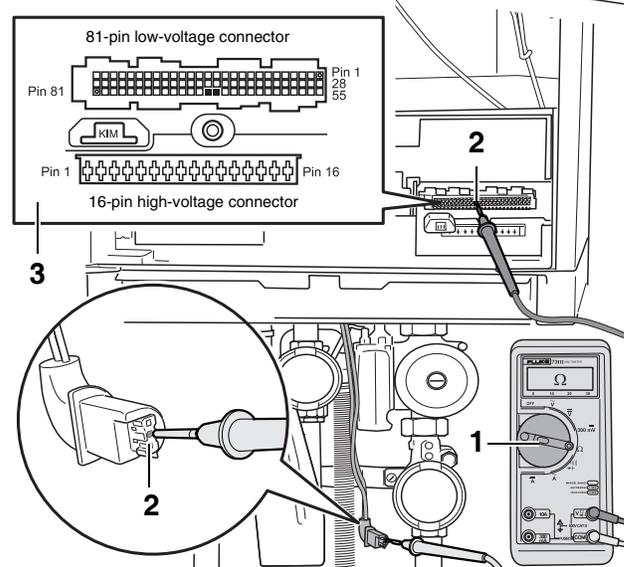
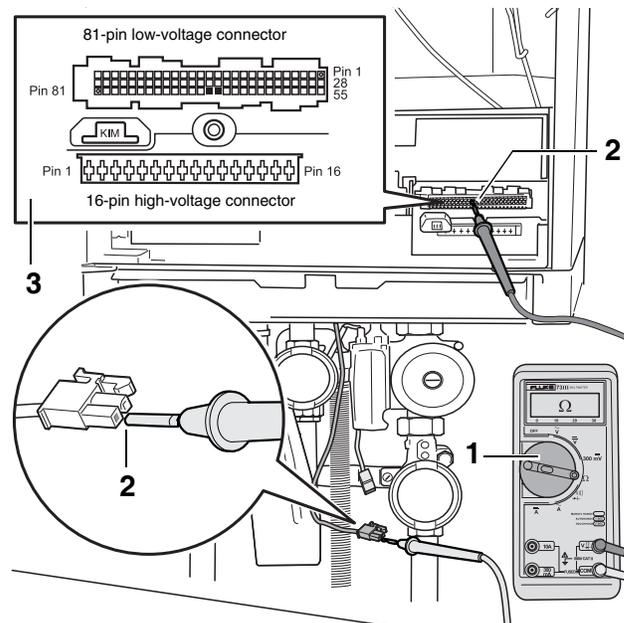
section 90 Checking the pump;
tacho cable

⚠ DANGER OF FATAL ACCIDENT
due to electric shock!

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.



- Disconnect the pump tacho cable plug.

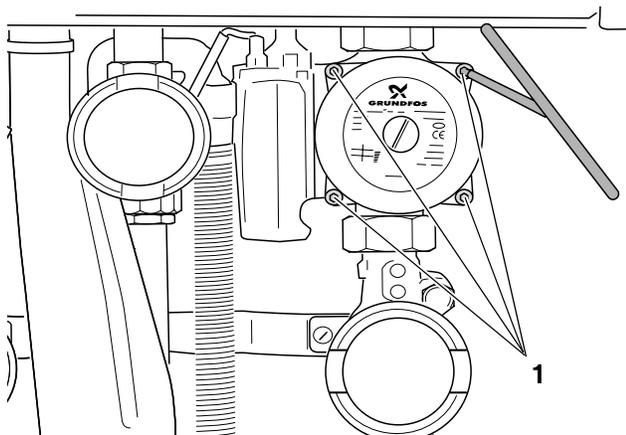


- Set the multimeter to "Measure resistance" [1].
- Connect the multimeter [2].
- Check the tacho cable of the pump for breaks. The electrical resistance measured separately for every wire must be approx. 0Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 67 and 68) on the UBA 3 mounting base [3].
- Check the tacho cable of the pump for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite. See section 131.
- Measure the electrical resistance over the pump tacho cable to ground. The electrical resistance must be infinite for every individual wire.
- Attach the pump tacho cable plug in reverse order of removal.
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.

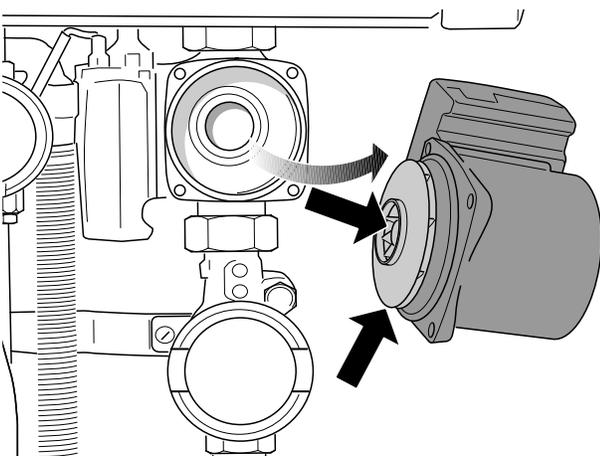
- Close the boiler door and install the casing of the pump group in reverse order of removal.
- Switch on the power supply to the heating system, see section 79.

section 91 Checking the pump; pollution

- Drain the boiler as indicated in section 75.



- Loosen the four Allen screws on the pump [1].
- Remove the upper part of the pump.

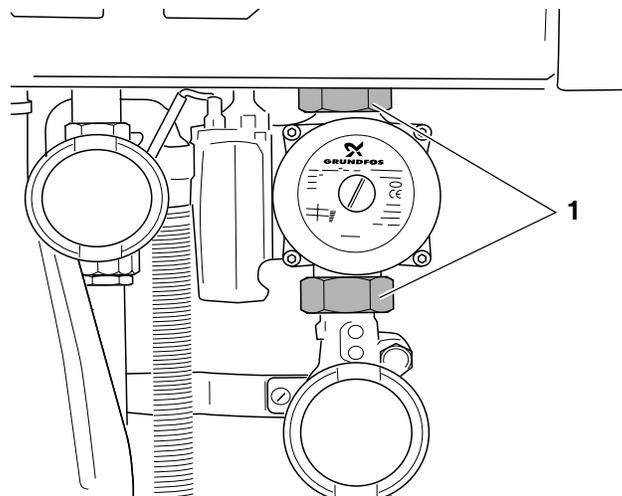


- Clean the pump impeller wheel by removing any deposits from the inner edges and / or the center of the pump impeller wheel.
- Install the upper part of the pump in reverse order.
- Fill and purge the heating system, see section 78.

section 92 Replacing the pump

DANGER OF FATAL ACCIDENT
due to electric shock!

- Drain the boiler as indicated in section 75.
- Undo the pump's power supply cord plug and the tacho cable plug as instructed in section 88 and 89.



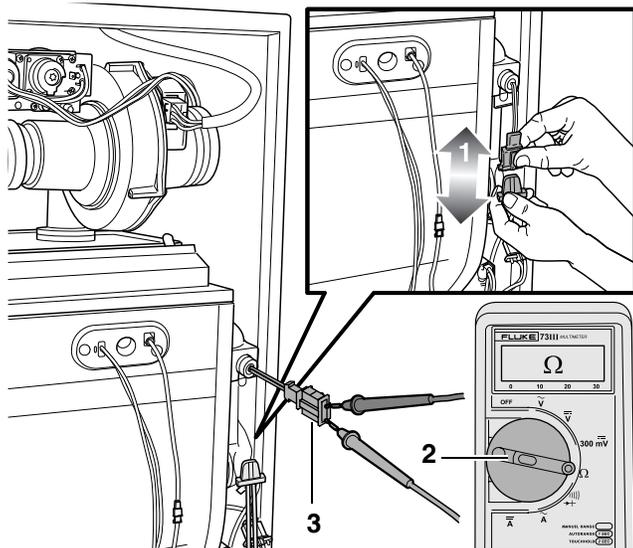
- Unscrew both unions [1] from the top and bottom of the pump.
- Remove the pump.

CAUTION!
Use new rubber seals when installing the new pump.

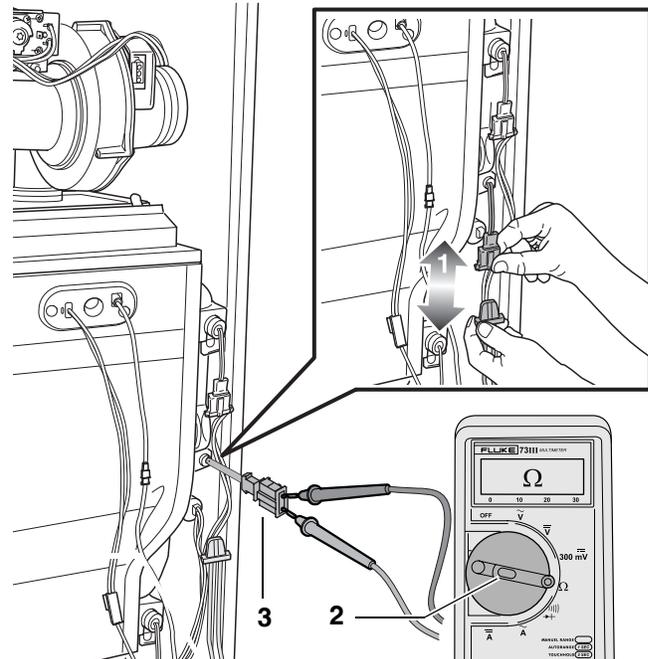
- Install the new pump.
- Attach the pump's power supply plug and tacho plug.
- Fill and purge the heating system, see section 78.

section 93 Checking the supply, safety, return and DHW temperature sensors

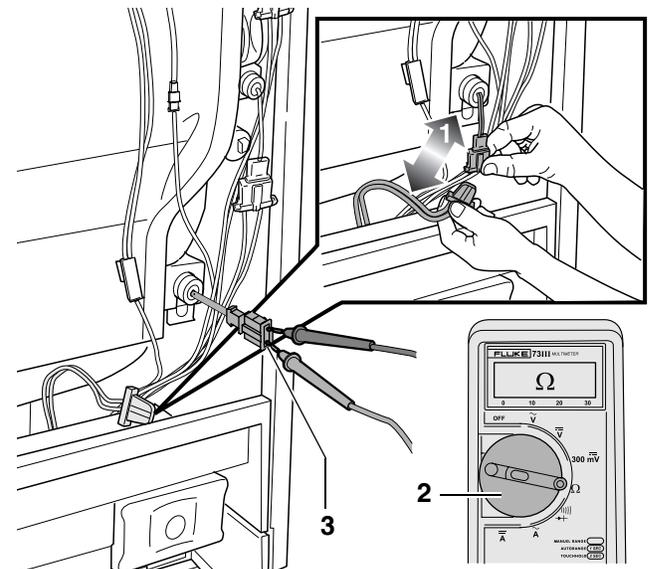
- Open a hot-water tap and wait for the boiler to start up, then gradually close the hot-water tap to bring the heating-system supply temperature to over 176 °F (80°C).
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



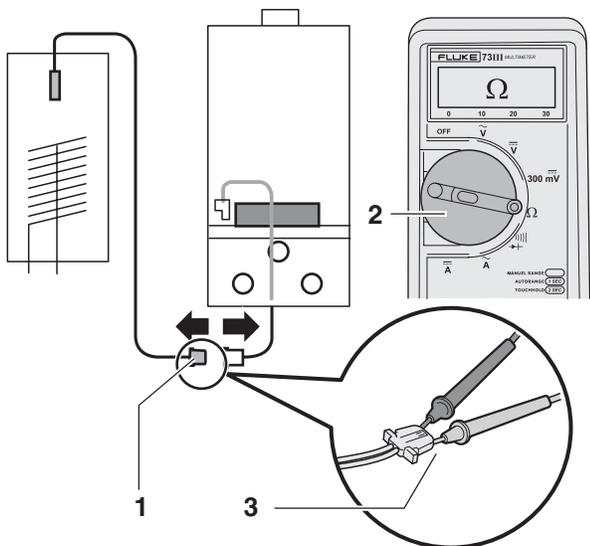
- Disconnect the supply temperature sensor plug [1]. This is the upper sensor.
- Set the multimeter to "Measure resistance" [2].
- Measure the electrical resistance of the supply temperature sensor [3].
- Measure the electrical resistance over the supply temperature sensor to ground. This electrical resistance must be infinite.



- Disconnect the safety temperature sensor plug [1]. This is the central sensor.
- Set the multimeter to "Measure resistance" [2].
- Measure the electrical resistance of the safety temperature sensor [3].
- Measure the electrical resistance over the safety temperature sensor to ground. This electrical resistance must be infinite.



- Disconnect the return temperature sensor plug [1]. This is the lower sensor.
- Set the multimeter to "Measure resistance" [2].
- Measure the electrical resistance of the return temperature sensor [3].
- Measure the electrical resistance over the return temperature sensor to ground. This electrical resistance must be infinite.



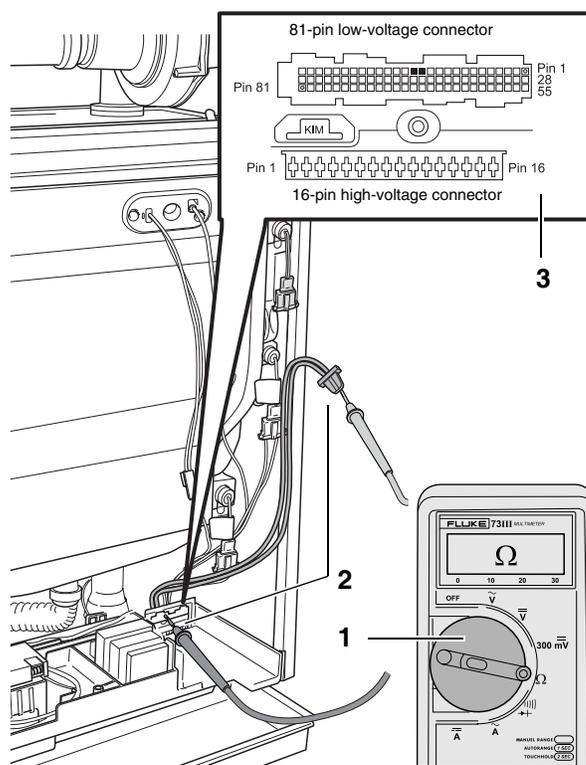
- Disconnect the DHW temperature sensor plug [1].
- Set the multimeter to "Measure resistance" [2].
- Measure the electrical resistance of the DHW temperature sensor [3].
- Measure the electrical resistance over the DHW temperature sensor to ground. This electrical resistance must be infinite.
- Use a digital contact-type thermometer to measure the temperature in the vicinity of the corresponding sensor.
- Compare the resistance values measured at the temperatures measured to the values in section 134.
- Replace the relevant sensor if the reading fluctuates by more than 10 % with respect to the reference value (e.g. infinitely high resistance in the event of a line break or resistance of 0 Ω in the case of a short circuit).
- Attach the relevant sensor plugs.
- Close the boiler door and install the casing of the pump group in reverse order of removal.
- Switch on the power supply to the heating system, see section 79.

section 94 Checking the supply, safety, return and DHW temperature sensors; cables

DANGER OF FATAL ACCIDENT
due to electric shock!

DAMAGE TO THE INSTALLATION!
To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.
- Disconnect the supply temperature sensor plug, see section 93, [1].



- Set the multimeter to "Measure resistance" [1].
- Check the supply temperature sensor cable for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 13 and 14) on the UBA 3 mounting base [3].
- Check the supply temperature sensor cable for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the supply temperature sensor cable to ground. The electrical resistance must be infinite for every individual wire.
- Disconnect the safety temperature sensor plug as instructed in section 93, [1].

81-pin low-voltage connector
Pin 81 Pin 1
28 55
KIM

16-pin high-voltage connector
Pin 1 Pin 16

3

2

1

FLUKE 731II MULTIMETER
Ω
OFF V V 300 mV
A A
MANUAL RANGE AUTO-RANGE TOUCHHOLD

- Set the multimeter to "Measure resistance" [1].
- Check the safety temperature sensor cable for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 38 and 39) on the UBA 3 mounting base [3].
- Check the safety temperature sensor cable for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the safety temperature sensor cable to ground. The electrical resistance must be infinite for every individual wire.
- Disconnect the return temperature sensor plug as instructed in section 93, [1].

81-pin low-voltage connector
Pin 81 Pin 1
28 55
KIM

16-pin high-voltage connector
Pin 1 Pin 16

3

2

1

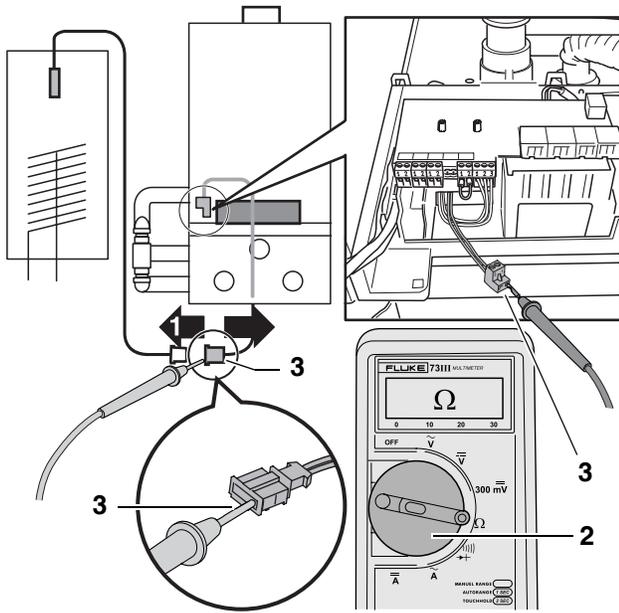
FLUKE 731II MULTIMETER
Ω
OFF V V 300 mV
A A
MANUAL RANGE AUTO-RANGE TOUCHHOLD

- Set the multimeter to "Measure resistance" [1].
- Check the return temperature sensor cable for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 11 and 12) on the UBA 3 mounting base [3].
- Check the return temperature sensor cable for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the return temperature sensor cable to ground. The electrical resistance must be infinite for every individual wire.

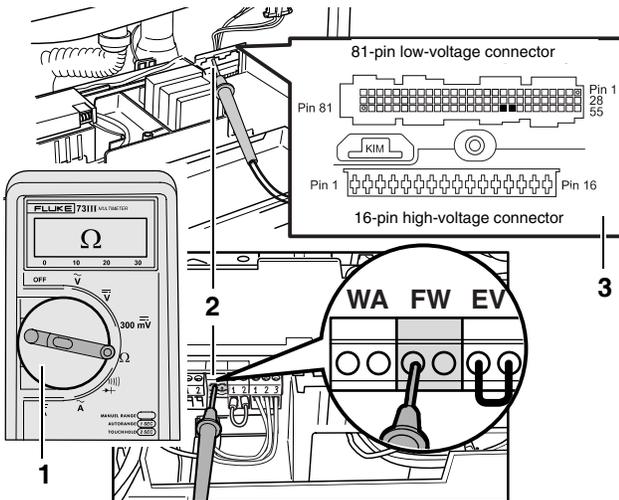
RC FA WA FW EV DWV

1

- Disconnect the DHW temperature sensor (FW) plug in the connection tray [1].



- Disconnect the DHW temperature sensor plug [1].
- Set the multimeter to "Measure resistance" [2].
- Check the DHW temperature sensor cable for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [3].
- Check the DHW temperature sensor cable for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the DHW temperature sensor cable to ground. The electrical resistance must be infinite for every individual wire.

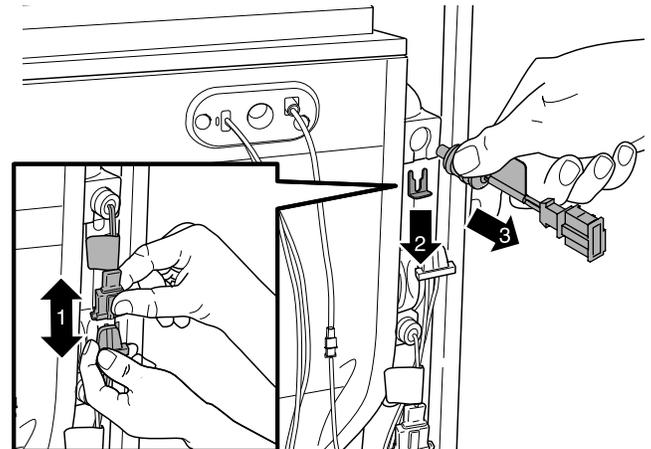


- Set the multimeter to "Measure resistance" [1].
- Check the cable of the DHW temperature sensor between the connection tray and the UBA 3 mounting base for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [2]. Measure between the connection tray and the black contacts (low-voltage connector pins 63 and 64) on the UBA 3 mounting base [3].

- Check the cable of the DHW temperature sensor between the connection tray and the UBA 3 mounting base for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the DHW temperature sensor cable to ground. The electrical resistance must be infinite for every individual wire.
- Attach the relevant sensor plugs.
- Install the UBA 3 in reverse order of removal.
- Install the lid on the connection tray in reverse order.
- Close the boiler door in reverse order.
- Switch on the power supply to the heating system, see section 79.

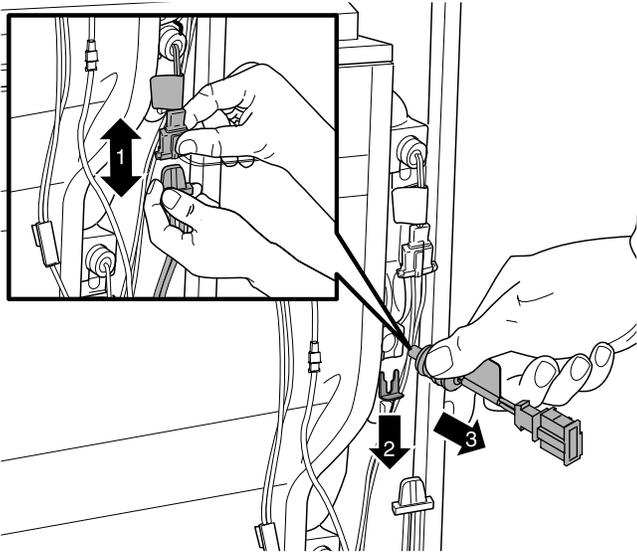
section 95 Replacing the feed, safety and return sensors

- Drain the boiler, see section 75.
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.

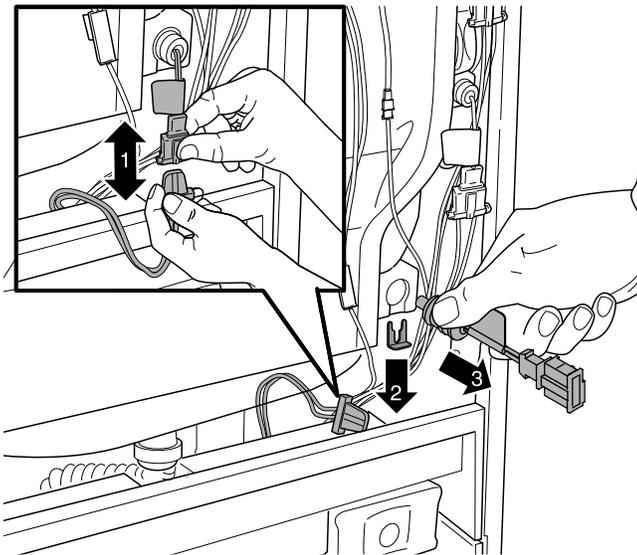


CAUTION! Note that some water may escape when the sensor is removed. Keep a bucket and a cleaning rag ready.

- Disconnect the supply temperature sensor plug [1].
- Remove the clamp spring of the supply temperature sensor by moving it in the direction indicated by the arrow [2].
- Remove the supply temperature sensor [3].



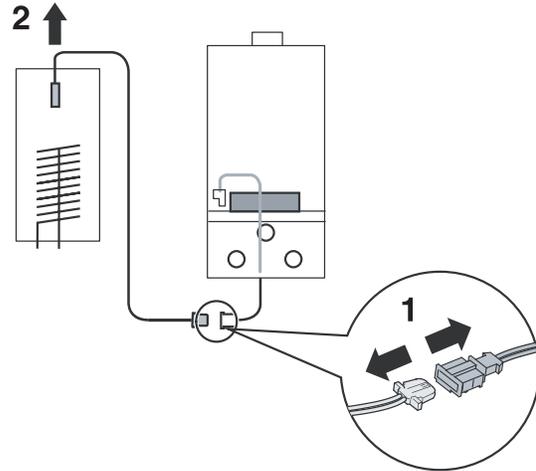
- CAUTION!** Note that some water may escape when the sensor is removed. Keep a bucket and a cleaning rag ready.
- Disconnect the safety temperature sensor plug [1].
 - Remove the clamp spring of the safety temperature sensor by moving it in the direction indicated by the arrow [2].
 - Remove the safety temperature sensor [3].



- CAUTION!** Note that some water may escape when the sensor is removed. Keep a bucket and a cleaning rag ready.
- Disconnect the return temperature sensor plug [1].
 - Remove the clamp spring [2].
 - Remove the return temperature sensor [3].
 - Install the relevant new sensor in reverse order.
 - Fill and purge the heating system and put the boiler into operation, see section 78.
 - Switch on the power supply to the heating system, see section 79.

section 96 Replacing the DHW temperature sensor

- Switch off the power supply to the heating system, see section 72.

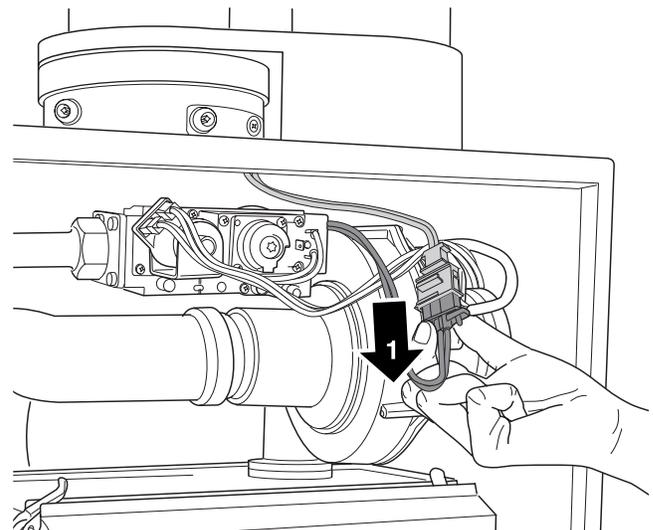


- Disconnect the DHW temperature sensor plug [1].
- Remove the DHW temperature sensor from the tank [2].
- Install the new DHW temperature sensor in reverse order.
- Attach the plug of the DHW temperature sensor in reverse order.
- Switch on the power supply to the heating system, see section 79.

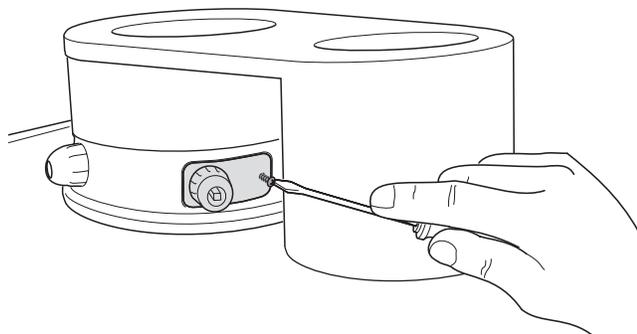
section 97 Checking the flue gas sensor

- DANGER OF FATAL ACCIDENT/FIRE** due to flue gas escaping. After carrying out these activities, check the system for leaks on the flue gas side.

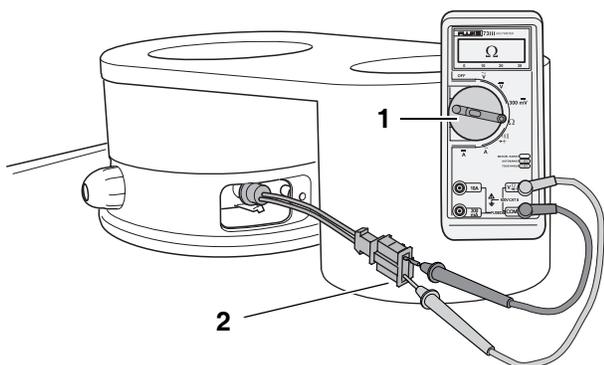
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



- Disconnect the plug of the flue gas sensor [1].



- Remove the cap from the measuring nipple of the combustion air supply.

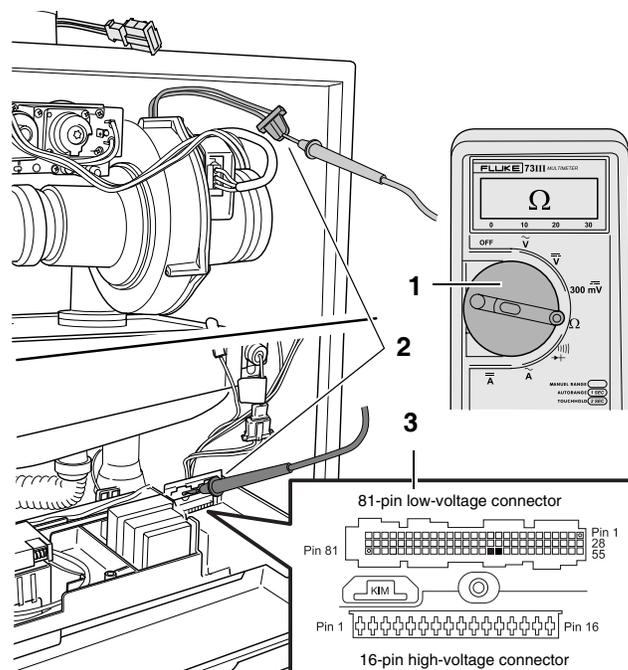


- Pull the plug of the flue gas sensor upwards.
- Set the multimeter to "Measure resistance" [1].
- Check the electrical resistance of the flue gas sensor by measuring it [2].
- Check the flue gas temperatures by measuring them in the flue gas measuring nipple, see section 1, [16].
- Compare the resistance values measured and flue gas temperatures measured, to the values in section 134.
- Replace the flue gas sensor if the reading fluctuates by more than 10 % with respect to the reference value (e.g. infinitely high resistance in the event of a line break or resistance of 0Ω in the case of a short circuit).
- Attach the plug of the flue gas sensor in reverse order.
- Install the cap on the measuring nipple of the combustion air supply.
- Close the boiler door in reverse order.
- Switch on the power supply to the heating system, see section 79.

section 98 Checking the flue gas sensor; cable

DANGER OF FATAL ACCIDENT
due to electric shock!

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.
- Disconnect the plug of the flue gas sensor as instructed in section 97.

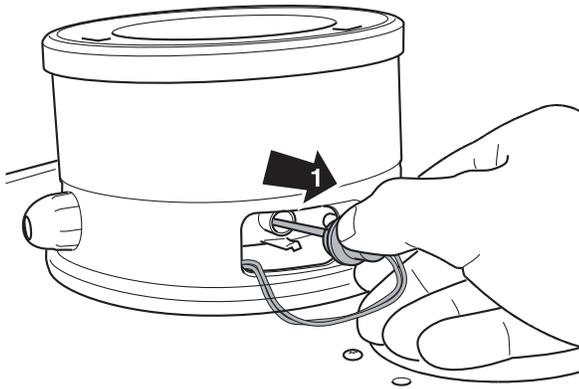


- Set the multimeter to "Measure resistance" [1].
- Check the safety sensor cable for breaks. The electrical resistance measured separately for every wire must be approx. 0Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 65 and 66) on the UBA 3 mounting base [3].
- Check the flue gas sensor cable for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the flue gas sensor cable to ground. The electrical resistance must be infinite for every individual wire.
- Attach the plug of the flue gas sensor in reverse order.
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door as instructed in section 73.
- Switch on the power supply to the heating system, see section 79.

section 99 Replacing the flue gas sensor

⚠ DANGER OF FATAL ACCIDENT/FIRE
due to flue gas escaping.

- After carrying out these activities, check the system for leaks on the flue gas side.
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Disconnect the plug of the flue gas sensor as instructed in section 97.
- Remove the cap from the measuring nipple of the combustion air supply as instructed in section 97.

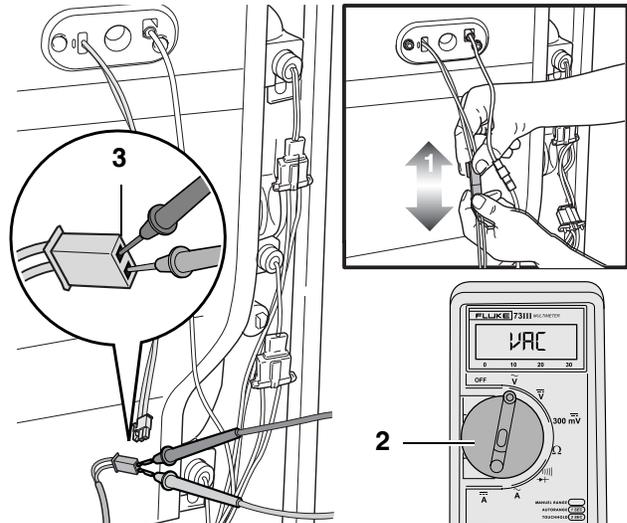


- Remove the flue gas sensor [1].
- Install the new flue gas sensor in reverse order.
- Attach the plug of the new flue gas sensor in reverse order.
- Close the boiler door in reverse order.
- Switch on the power supply to the heating system, see section 79.

section 100 Checking the glow ignitor;
activation

⚠ DANGER OF FATAL ACCIDENT
due to electric shock!

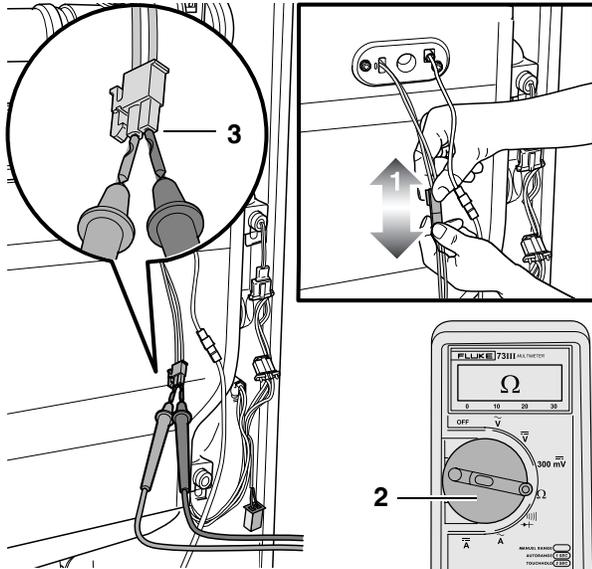
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



- Disconnect the plug of the glow ignitor [1].
- Set the multimeter to "Measure AC voltage". Minimum measuring range: 120 VAC [2].
- Switch on the power supply to the heating system, see section 79.
- Put the boiler in flue gas test mode, see section 20.
- Check that approx. 120 VAC is measured on the plug [3] while the operating code **□□** is displayed.
- Switch off the power supply to the heating system, see section 72.
- Attach the plug of the glow ignitor in reverse order.
- Close the boiler door in reverse order.
- Switch on the power supply to the heating system, see section 79.

section 101 Checking the glow ignitor; resistance

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



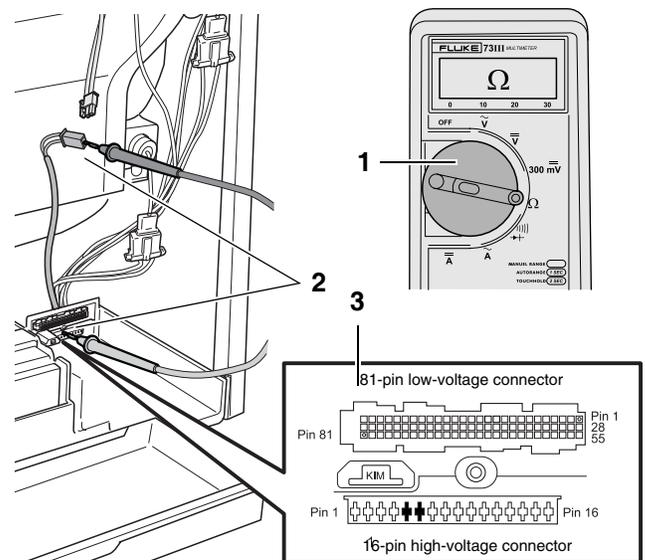
- Disconnect the plug of the glow ignitor [1].
- Set the multimeter to "Measure resistance" [2].
- Check that the electrical resistance of the glow ignitor is between 50 and 300 Ω [3].
- Attach the plug of the glow ignitor in reverse order.
- Close the boiler door in reverse order.
- Switch on the power supply to the heating system, see section 79.

section 102 Checking the glow ignitor; power supply cord

⚡ DANGER OF FATAL ACCIDENT
due to electric shock!

⚠ DAMAGE TO THE INSTALLATION!
To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.
- Disconnect the plug of the glow ignitor as instructed in section 101, [1].

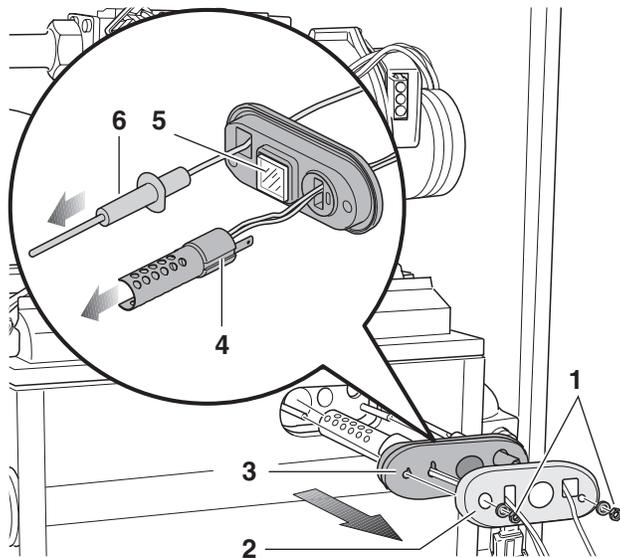


- Set the multimeter to "Measure resistance" [1].
- Check the power supply cord of the glow ignitor for breaks. The electrical resistance measured separately for every wire must be approx. 0 Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 5 and 6) on the UBA 3 mounting base [3].
- Check the power supply cord of the glow ignitor for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the glow ignitor cable to ground. The electrical resistance must be infinite for every individual wire.
- Attach the plug of the glow ignitor in reverse order.
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 103 Replacing the glow ignitor, ionization electrode or sight glass with rubber seal

DANGER OF FATAL ACCIDENT
due to electric shock!

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Disconnect the plug of the glow ignitor as instructed in section 101, [1] and or the plug of the ionization electrode as instructed in section 104, [1].



- Loosen both nuts [1].
- Remove the retaining plate [2].
- Remove the complete glow unit: glow ignitor [4], ionization electrode [6] and sight glass [5] with rubber seal [3].

DANGER OF FATAL ACCIDENT
due to electric shock!

DANGER OF FATAL ACCIDENT/FIRE
due to flue gas escaping or explosion of flammable gases. All work on gas pipe work and fittings must be carried out by authorized gas technicians.

- While carrying out these activities check all sealing rings and gaskets for damage, deformation and signs of ageing and replace if required.
- After carrying out these activities, check the system for leaks on the gas side and/or the flue gas side.
- Install the new rubber seal with the same measurements as the old rubber seal. Check, if the sight glass (not broken) is placed in the new rubber seal.

DAMAGE TO THE INSTALLATION
due to incorrect glow ignitor assembly.

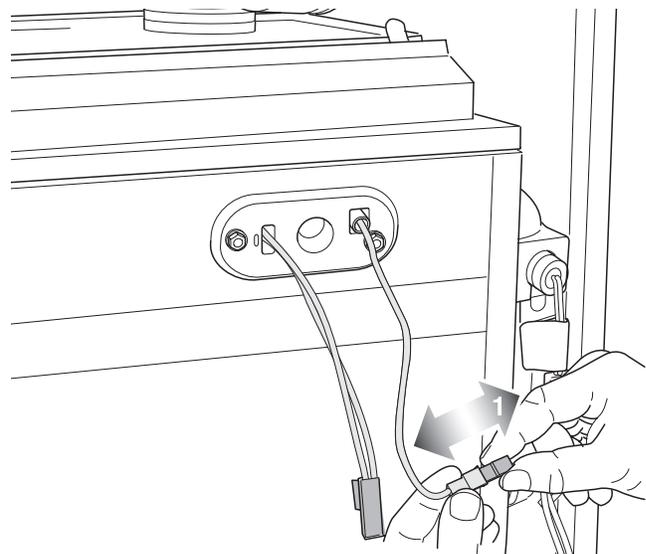
The coil of the glow ignitor consists of sintered material and is highly breakable.

DAMAGE TO THE INSTALLATION
due to incorrect glow ignitor assembly.

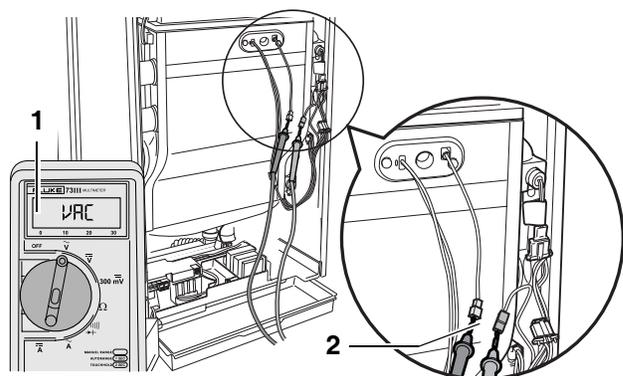
- Install the glow ignitor so that the lug of the heat exchanger pump is located in the relevant opening in the glow ignitor (section 103, [4]).
- Install the replacable parts (glow ignitor, ionization electrode, sight glass) in reverse order. Use a new rubber seal.
- Attach the plug of the glow ignitor and the ionization electrode in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 104 Measure the ionization current

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



- Disconnect the plug of the ionization electrode [1].

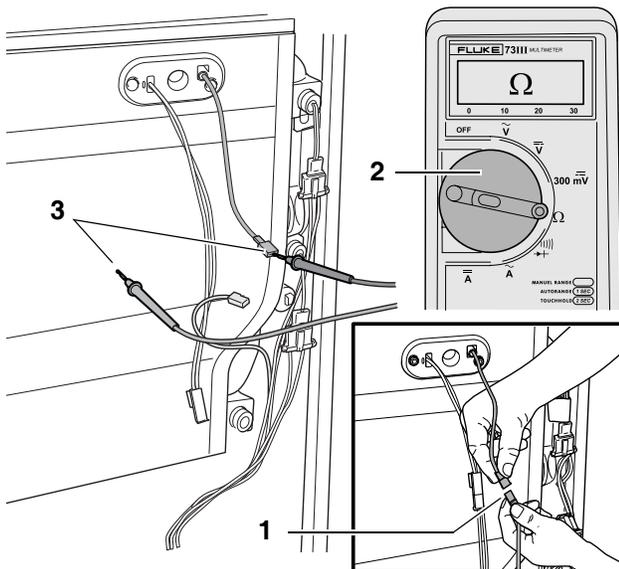


- Select the μA DC range on the multimeter. The multimeter must have a resolution of at least $1\mu\text{A}$ [1].
- Connect the multimeter to the ionization circuit in series [2].
- Switch on the power supply to the heating system, see section 79.
- Put the boiler in service mode, see section 21.

- During service mode, adjust the capacity to $\lfloor \frac{25}{100} \rfloor = 25\%$ with an 80-kW boiler or $\lfloor \frac{20}{100} \rfloor = 20\%$ with a 100-kW boiler.
- Check that the ionization current is at least $3\ \mu\text{A}$ (microamperes) during service mode, operating code $\lfloor -R \rfloor$. The actual value in practice is $5 - 40\ \mu\text{A}$.
- Switch off the power supply to the heating system, see section 72.
- Remove the multimeter.
- Connect the plug of the ionization electrode.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 105 Checking the ionization electrode; short circuit

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



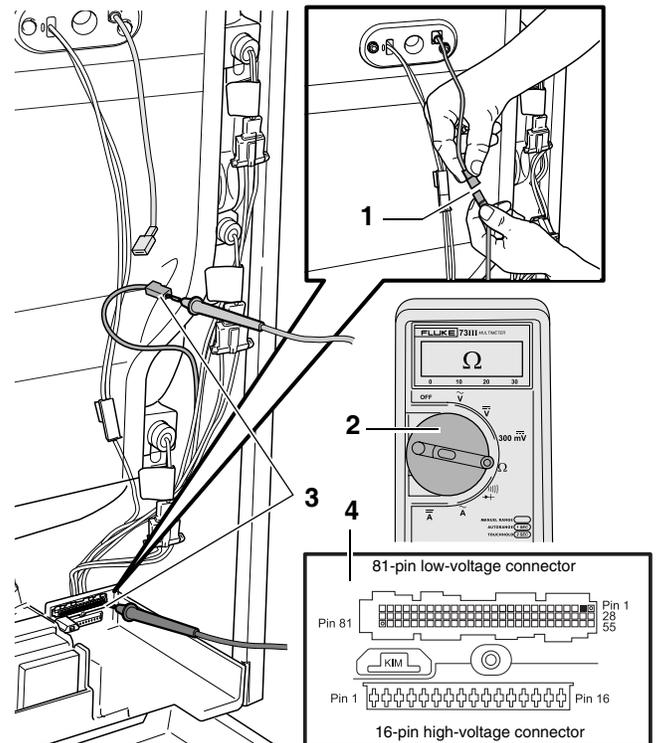
- Disconnect the plug and socket connection of the ionization electrode [1].
- Set the multimeter to "Measure resistance" [2].
- Measure the ionization electrode to ground to make sure that there is no short circuit between the ionization electrode and ground. The electrical resistance between the ionization electrode and ground must be infinite [3].
- Attach the plug of the ionization electrode in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 106 Checking the ionization electrode; cable

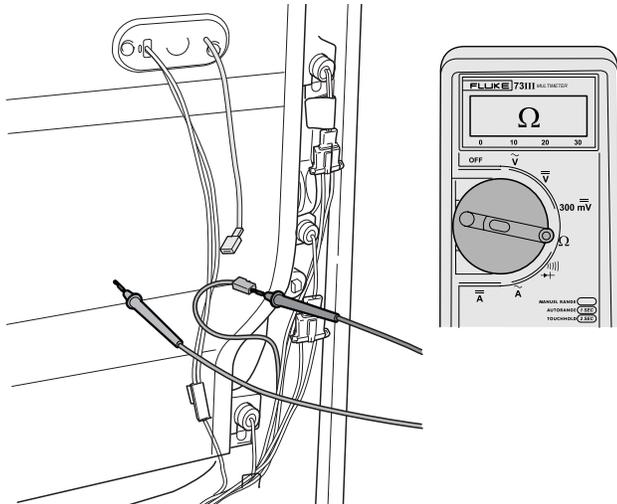
DANGER OF FATAL ACCIDENT
due to electric shock!

DAMAGE TO THE INSTALLATION!
To prevent damage, do not insert the multimeter measuring electrodes too far into the holes of the plug-and-socket connection.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.



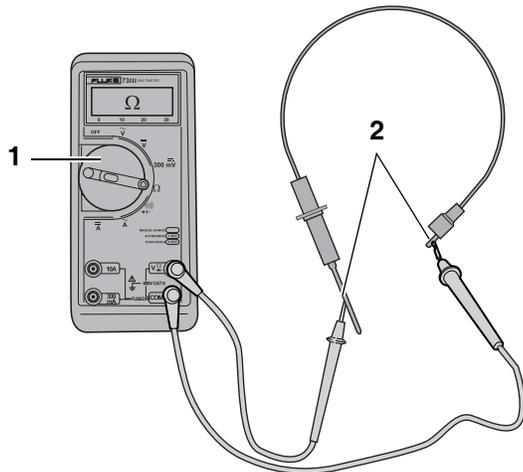
- Disconnect the plug of the ionization electrode [1].
- Set the multimeter to "Measure resistance" [2].
- Carry out a measurement to make sure that there is no breakage in the ionization electrode cable. The electrical resistance measured separately for every wire must be approx. $0\ \Omega$ [3]. Measure between the plug and the black contact (low-voltage connector pin 2) on the UBA 3 mounting base [4].



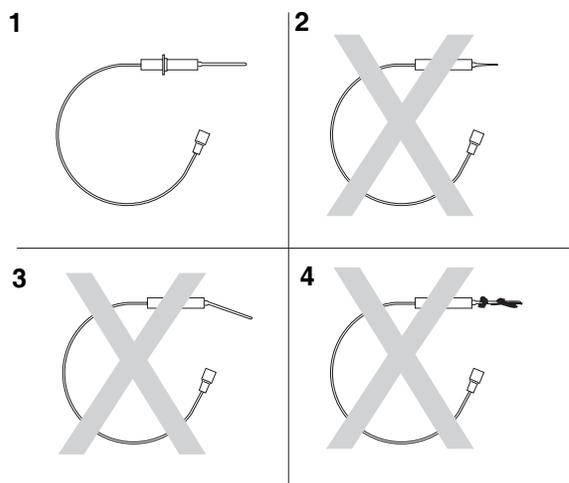
- Carry out a measurement to make sure that there is no short circuit between the ionization electrode cable and ground. The electrical resistance between the ionization electrode cable and ground must be infinite.
- Connect the plug of the ionization electrode.
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 107 Checking the ionization electrode

- Disassemble the ionization electrode as indicated in section 103.



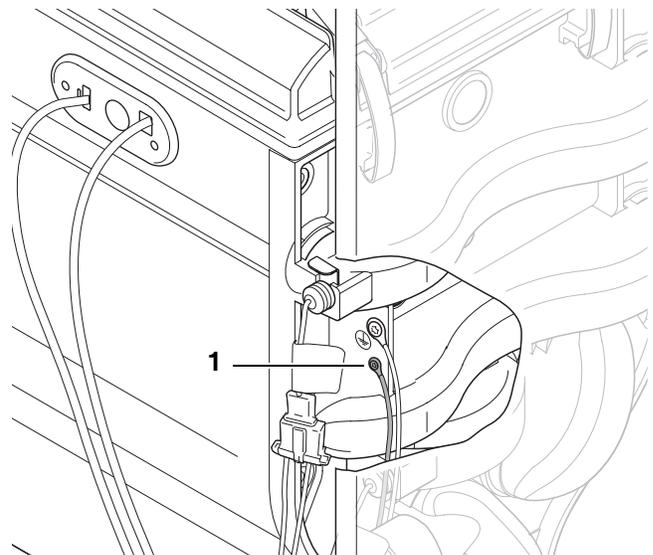
- Set the multimeter to "Measure resistance" [1].
- Carry out a measurement to make sure that there is no breakage in the ionization electrode. The electrical resistance of the ionization electrode cable must be approximately 0 Ω [2].



- Check the ionization electrode for signs of wear [2], damage [3] or contamination [4].
- Replace the ionization electrode if necessary.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 108 Checking the ionization circuit; ground lead

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



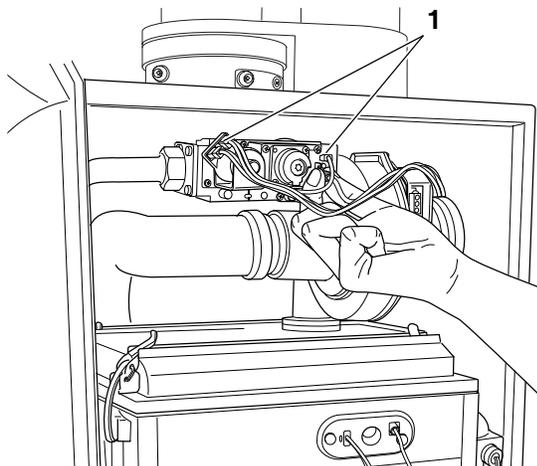
- Check that the ground lead of the ionization circuit [1] has been installed correctly.

Note: The upper cable is the ground lead of the heat exchanger pump, the lower cable [1] is the ground lead of the ionization circuit.

- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 109 Checking the gas valve; power supply plug

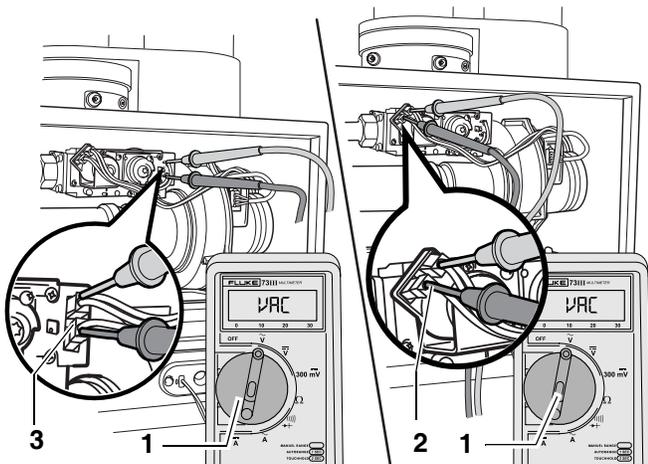
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



- Check that the power supply plug [1] has been attached correctly to the gas valve.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 110 Checking the gas valve; activation

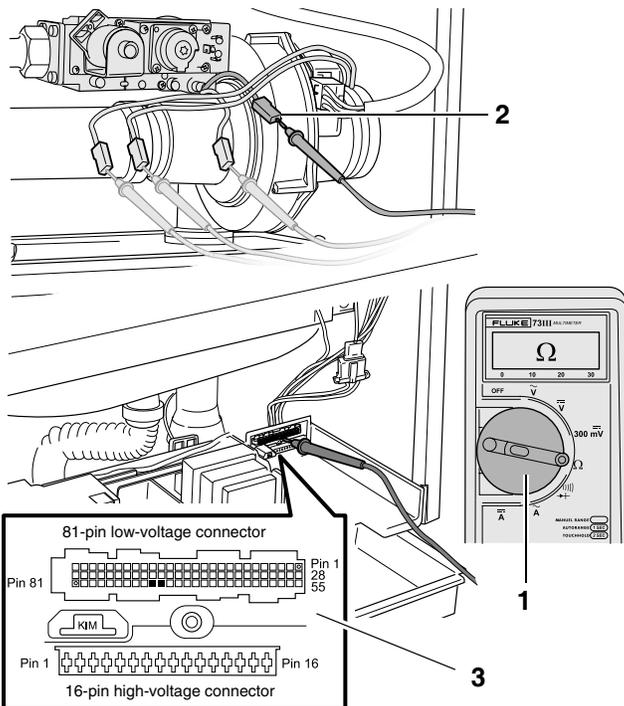
- Open the boiler door as instructed in section 73.



- Set the multimeter to "Measure AC voltage" [1]. Minimum measuring range 40 VAC.
- Put the boiler in flue gas test mode, see section 20.
- Check that the gas valve is activated: While operating code **QL** is displayed, approx. 24 VAC must be available on the two contacts of the right-hand coil [2] and on the two contacts of the left-hand coil [3] of the gas valve power supply plug.
- Stop the flue gas test as instructed in section 20.
- Close the boiler door as instructed in section 77.

section 111 Checking the gas valve; electrical resistance of the power supply cord

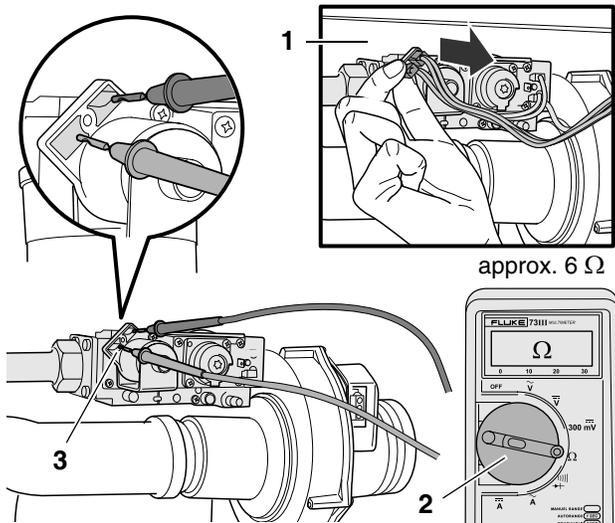
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.
- Undo the plug or plugs of the gas valve supply cord as shown in the illustration in section 109.



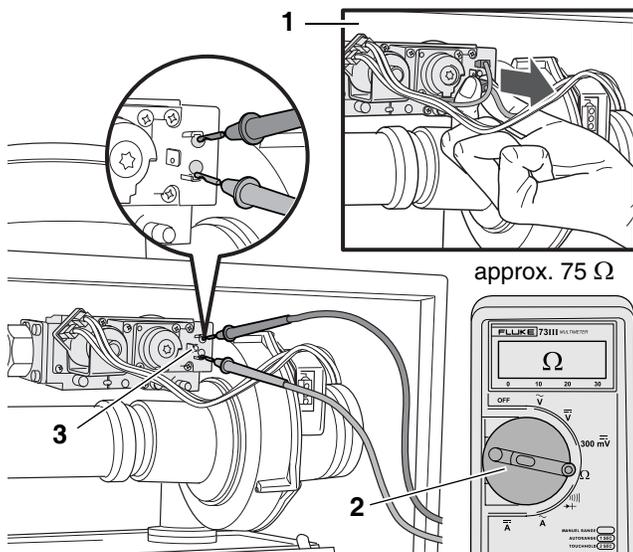
- Set the multimeter to "Measure resistance" [1].
- Check the power supply cord of the gas valve for breaks.
- The electrical resistance measured separately for every wire must be approx. 0 Ω [2]. Measure between the plug and the black contacts (low-voltage connector pins 71 and 72) on the UBA 3 mounting base [3].
- Check the power supply cord of the gas valve for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Carry out a measurement to ground to make sure that there is no short circuit between the gas valve and ground. The electrical resistance between the gas valve cable and ground must be infinite. See section 131.
- Attach the gas valve plug or plugs in reverse order of removal.
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 112 Checking the gas valve;
internal electrical resistance

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



- Disconnect the plug of the gas valve [1].
- Set the multimeter to "Measure resistance" [2].
- Check the internal electrical resistance of the left-hand coil of the gas valve by measuring it. The electrical resistance of the left-hand coil must be approximately 6 Ω [3].



- Disconnect the plug of the gas valve [1].
- Set the multimeter to "Measure resistance" [2].
- Check the internal electrical resistance of the right-hand coil of the gas valve by measuring it. The electrical resistance of the right-hand coil must be approximately 75 Ω [3].
- Attach the gas valve plug or plugs in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

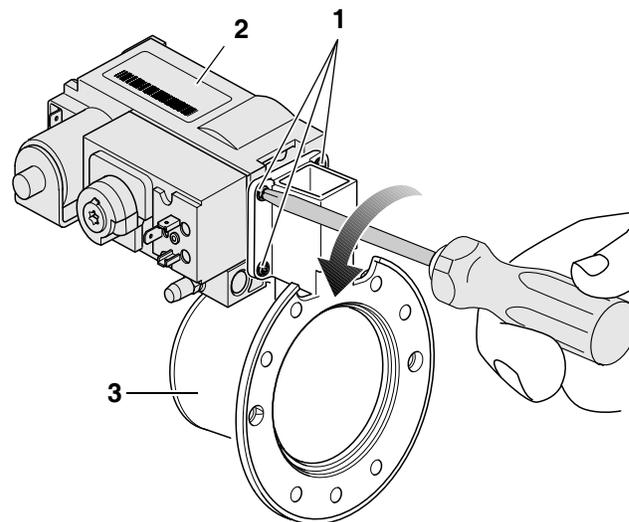
section 113 Replacing the gas valve

**DANGER OF FATAL ACCIDENT/FIRE**

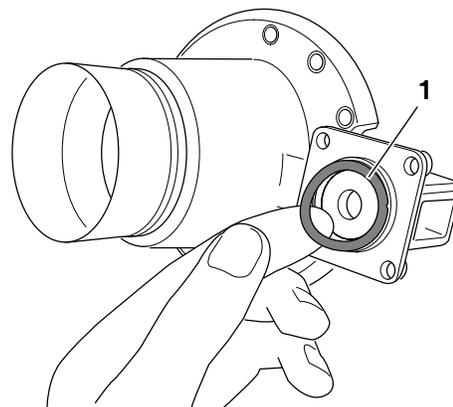
from explosive fumes.

All work on gas pipe work and fittings must be carried out by authorized gas technicians.

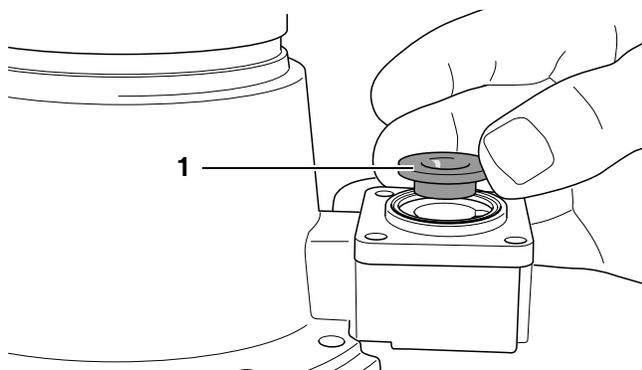
- While carrying out these activities check all sealing rings and gaskets for damage, deformation and signs of ageing and replace if required.
- After carrying out these activities, check the system for leaks on the gas side and/or the flue gas side.
- After carrying out these activities check the measuring nipples used for leaks using a foaming agent which has been approved for gas leak testing.
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Close the gas stop valve as indicated in section 74.
- Disassemble the gas valve as indicated in section 86.



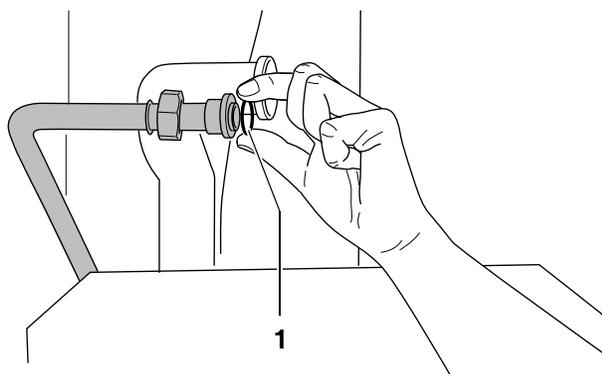
- **100 kW:** Loosen the 4 torx screws [1] and remove the gas valve [2] from the venturi pipe [3].



- Install a new O-ring [1] in the venturi pipe.



- Install the orifice [1] in the venturi pipe.
- Install the new gas valve on the venturi pipe in reverse order, as instructed before.
- If necessary, replace the gasket between the fan unit and the venturi pipe as instructed in section 86.
- Install the new gas valve including the venturi pipe on the fan unit in reverse order, as instructed before.

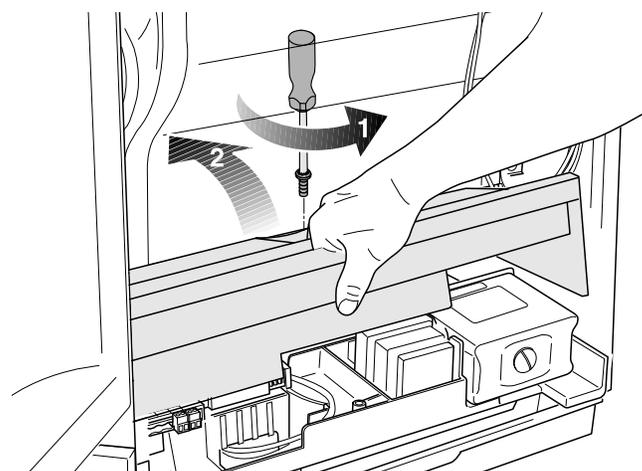


- Check the rubber seal [1] for signs of ageing and damage and replace it if necessary.
- Install the gas/air unit including the burner cover in reverse order of removal as instructed in section 86.
- Install the air suction pipe on the venturi pipe in reverse order, as instructed in section 86.
- Connect the plug of the fan unit power supply cord and the plug of the fan unit tacho cable in reverse order as instructed in section 86.
- Attach the gas valve plug or plugs in reverse order of removal as instructed in section 86.

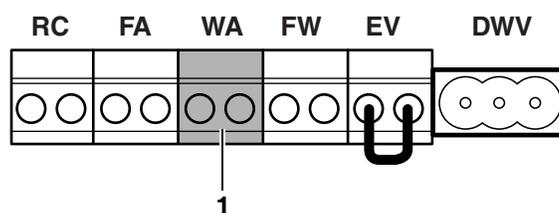
- CAUTION!**
 While connecting the gas pipe to the gas valve make sure that the rubber seal is fitted between the gas pipe and the gas valve.
- Connect the gas pipe to the gas valve in reverse order as instructed in section 86.
 - Open the gas stop valve as indicated in section 81.
 - Switch on the power supply to the heating system, see section 79.
 - Check the gas/air ratio and adjust it if necessary, see section 119.
 - Close the boiler door as instructed in section 91.

section 114 Checking the ON/OFF controller

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.



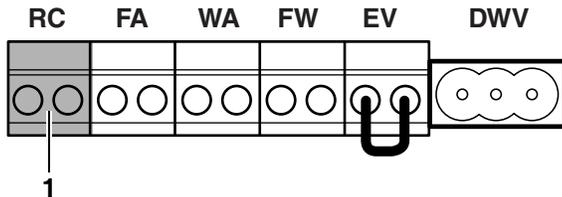
- Loosen the screw [1].
- Remove the cover from the connection tray [2].
- Remove the ON/OFF controller from the wall.



- Connect the ON/OFF controller to the green plug ("WA", [1]) in the connection tray of the boiler, using a short length of two-pole electric cable.
- Switch on the power supply to the heating system, see section 79.
- Adjust the selector for the DHW temperature setting on the control panel to position "0", see section 70, [1].
- Set the ON/OFF controller to heat demand operation. If the boiler runs in heating mode H for approx. 3 minutes, the cause of the fault lies outside the heating boiler.
- Switch off the power supply to the heating system, see section 72.
- Attach the ON/OFF controller to the wall in reverse order of removal.
- Connect the ON/OFF controller to the boiler in reverse order.
- Install the lid on the connection tray in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.
- Adjust the selector for the DHW temperature setting on the control panel to the required position, as instructed in section 81, [1].

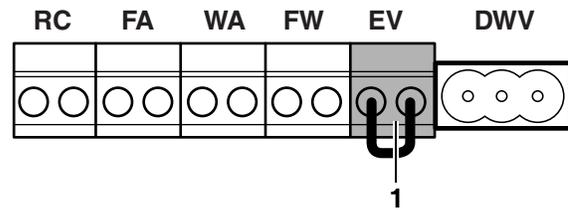
section 115 Checking the RC regulator

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the cover from the connection tray, see section 114.
- Remove the RC regulator from the mounting plate.
- Remove the mounting plate from the wall.



- Use a short length of two-pole electric cable to connect the RC regulator including the mounting plate to the orange plug directly at the boiler ("RC", [1]). When using an RC regulator which must be connected with an RCC, connect the RC regulator to the RCC using a short length of two-pole electric cable.
- When using an RCC: Check that the RCC has been connected correctly to the boiler connection tray.
- Check that the contacts 1 and 2 on the back of the RCC correspond with contacts 1 and 2 of the orange plug ("RC", [1]).
- Switch on the power supply to the heating system, see section 79.
- Adjust the selector for the DHW temperature setting on the control panel to position "0", see section 70, [1].
- Set the RC regulator to heat demand operation. If the boiler runs in heating mode H for approx. 3 minutes, the cause of the fault lies outside the heating boiler.
- Switch off the power supply to the heating system, see section 72.
- Attach the RC regulator to the wall in reverse order of removal.
- Connect the RC regulator to the boiler in reverse order.
- Install the lid on the connection tray in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.
- Adjust the selector for the DHW temperature setting on the control panel to the required position, as instructed in section 81, [1].

section 116 Checking an external switch contact



- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the cover from the connection tray, see section 114.
- Check that an external switch contact has been connected at [1].
- Check that a connection loop has been connected at [1].
- Install the lid on the connection tray in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 117 Measuring the static and dynamic gas supply pressures

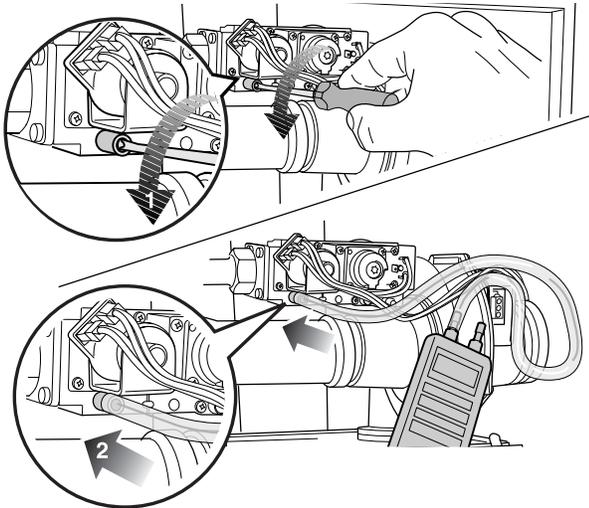
**DANGER OF FATAL ACCIDENT/FIRE**

from explosive fumes.

All work on gas pipe work and fittings must be carried out by authorized gas technicians.

- After carrying out these activities check the measuring nipples used for leaks using a foaming agent which has been approved for gas leak testing.

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Close the gas stop valve as indicated in section 74.
- Open some of the radiator valves.



- Zero the digital pressure gauge.

CAUTION!
Throughout the measuring operation, keep the pressure gauge in the same position (horizontal or vertical) in which it was zeroed.

- Set the pressure gauge to the correct measuring range.
- Loosen the gas connection pressure testing nipple screw [1] by two turns.
- Connect the pressure gauge to the measuring nipple [2].
- Open the gas stop valve as indicated in section 81.
- Switch off all other gas-fired equipment (such as gas heaters, gas cookers and any other boilers, possibly in cascade etc.).
- Check that the static gas supply pressure does not rise slowly for 2 minutes.
- Switch all other gas-fired equipment (such as gas heaters, gas cookers and any other boilers, possibly in cascade etc.) to full-load operation. Do NOT switch the **Logamax plus GB162** on while the measurement is carried out to full-load operation.
- Measure the static gas supply pressure.
The gas supply **static** pressure should be:
for **natural gas** min. 7 inch W.C. (17.4 mbar), max. 10.5 inch W.C. (26.1 mbar),
nominal supply pressure 8 inch W.C. (19.9 mbar) and
for **LPG** min. 8 inch W.C. (19.9 mbar), max. 13 inch W.C. (32.3 mbar),
nominal supply pressure 11 inch W.C. (27.4 mbar).
- Switch on the power supply to the heating system, see section 79.
- Put the boiler in flue gas test mode as indicated in section 20.
- Wait for one minute until the boiler is running at full load.
- Measure the **dynamic** gas supply pressure.
- Check the difference between the **static** and **dynamic** gas supply pressures. The difference allowed is:
 - for **natural gas** max. Δ 2.0 inch W.C., 7.6 inch W.C. minimum (max. Δ 5 mbar, 19 mbar minimum).
 - for **LPG** max. Δ 8.0 inch W.C., 12.0 inch W.C. minimum (max. Δ 20 mbar, 30 mbar minimum).

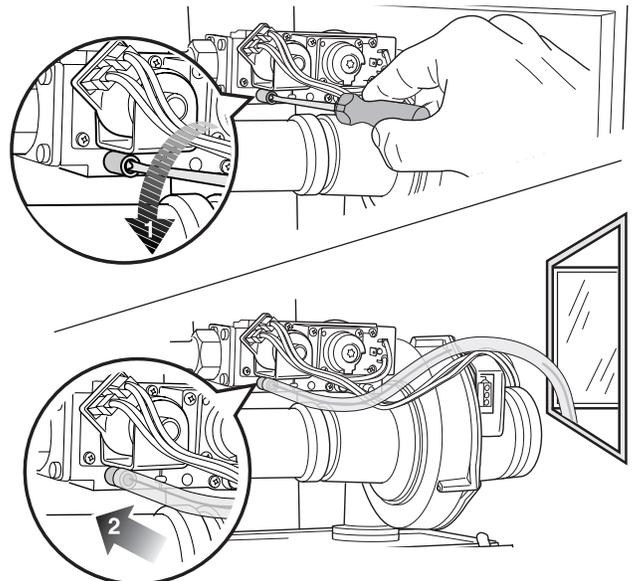
If the difference between the static and dynamic gas supply pressures is too much, this indicates that the dynamic gas supply pressure is not OK.

- Switch off the power supply to the heating system, see section 72.
- Close the gas stop valve as indicated in section 74.
- Remove the pressure gauge.
- Tighten the gas connection pressure testing nipple screw.
- Open the gas stop valve as indicated in section 81.
- Check the gas connection pressure testing nipple for leaks using a foaming agent which has been approved for gas leak testing.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 118 Bleeding the gas supply pipe

DANGER OF FATAL ACCIDENT/FIRE
from explosive fumes.
All work on gas pipe work and fittings must be carried out by authorized gas technicians.

- After carrying out these activities check the measuring nipples used for leaks using a foaming agent which has been approved for gas leak testing.
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Close the gas stop valve as indicated in section 74.



- Loosen the gas connection pressure testing nipple screw [1] by two turns.
- Connect a long hose [2] to the gas connection pressure testing nipple and lay this hose so that it ends up outside the building.

- Open the gas stop valve as instructed in section 81 until no further air escapes from the hose.
- Close the gas stop valve as indicated in section 74.
- Remove the hose from the gas connection pressure testing nipple.
- Tighten the gas connection pressure testing nipple screw.
- Open the gas stop valve as indicated in section 81.
- Check the gas connection pressure testing nipple for leaks using a foaming agent which has been approved for gas leak testing.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

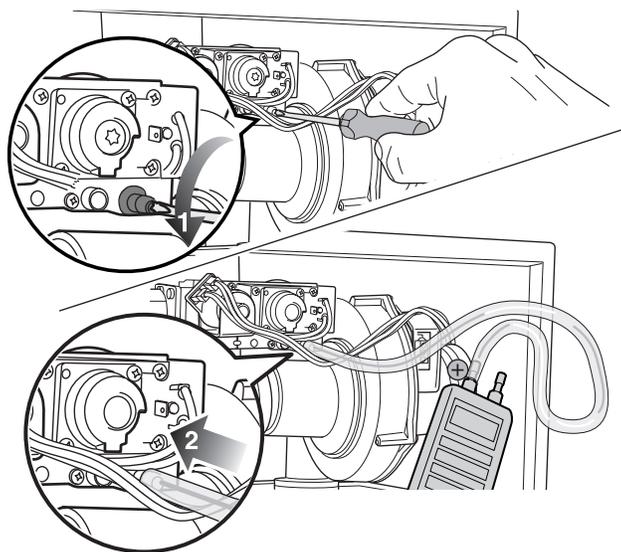
section 119 Measuring and adjusting the gas/air ratio

DANGER OF FATAL ACCIDENT/FIRE

from explosive fumes.

All work on gas pipe work and fittings must be carried out by authorized gas technicians.

- Check the measuring nipples used for leaks using a foaming agent which has been approved for gas leak testing.
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Close the gas stop valve as indicated in section 74.
- Open some of the radiator valves.

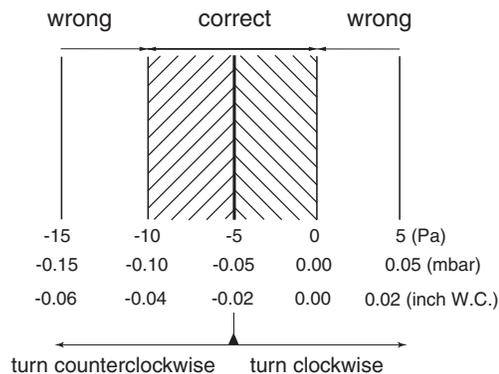


- Zero the digital pressure gauge.

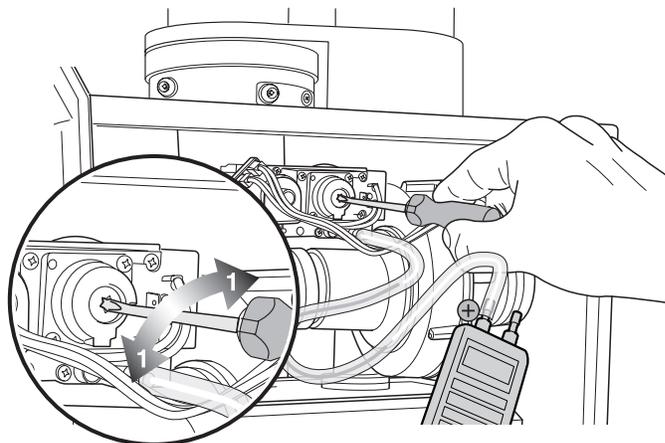
 **CAUTION!** Throughout the measuring operation, keep the pressure gauge in the same position (horizontal or vertical) in which it was zeroed.

- Loosen the gas/air ratio testing nipple screw [1] by two turns.
- Connect the pressure gauge to the gas/air ratio testing nipple [2].

- Open the gas stop valve as indicated in section 81.
- Switch on the power supply to the heating system, see section 79.
- Put the boiler in service mode, see section 21.
- During service mode, adjust the capacity to $\boxed{L 25}$ = 25 % with an 80-kW boiler or $\boxed{L 20}$ = 20 % with a 100-kW boiler.
- Briefly wait for the boiler to modulate down to minimum capacity.



- Check the gas/air ratio. The gas/air ratio is measured as a pressure difference between the pressure in the gas valve and the ambient pressure. This pressure difference must be between -0.04 – 0 inch W.C. As a result, the nominal pressure difference is -0.02 inch W.C.



- If necessary, adjust the gas/air ratio using the set screw [1].

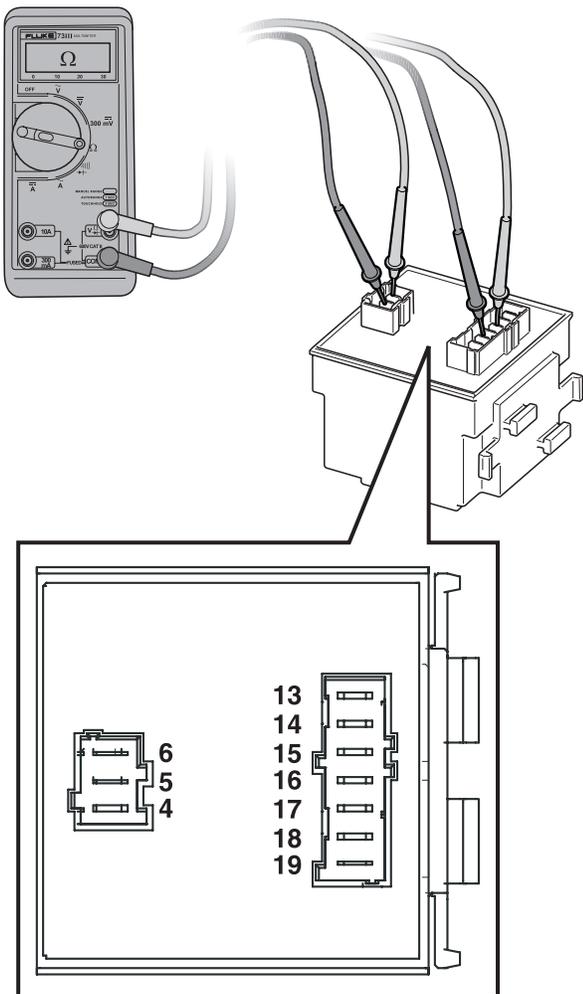
 **NOTE:** The set screw is located behind the cover.

- Switch off the power supply to the heating system, see section 72.
- Close the gas stop valve as indicated in section 74.
- Remove the pressure gauge.
- Tighten the gas/air ratio testing nipple screw.
- Open the gas stop valve as indicated in section 81.
- Switch on the power supply to the heating system, see section 79.
- Put the boiler in flue gas test mode as indicated in section 20.
- Wait for the burner to ignite.

- Check the gas/air ratio testing nipple for leaks using a foaming agent which has been approved for gas leak testing.
- Put the boiler in flue gas test mode as indicated in section 20.
- Close the boiler door as instructed in section 77.

section 120 Checking the transformer; internal electrical resistance

- Disassemble the transformer as indicated in section 122.



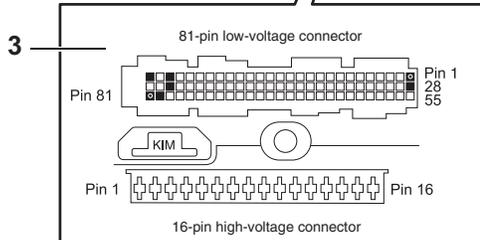
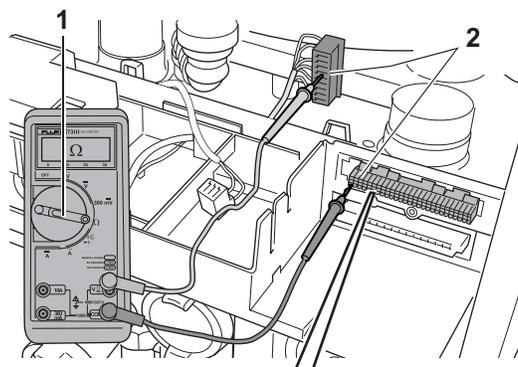
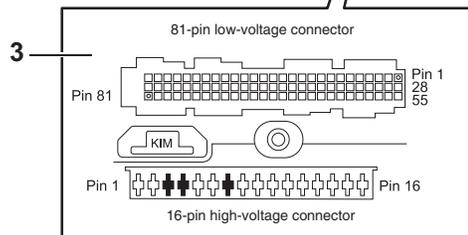
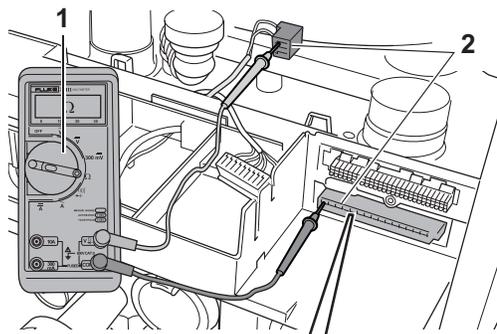
- Set the multimeter to "Measure resistance".
- Check the resistance of the different coils of the transformer. The resistance measured must not be zero or infinite (∞).

| Contact | Resistance [Ω] |
|---------|-------------------------|
| 4 - 6 | $0 < x < \infty$ |
| 4 - 5 | $0 < x < \infty$ |
| 13 - 14 | $0 < x < \infty$ |
| 14 - 15 | $0 < x < \infty$ |
| 16 - 17 | $0 < x < \infty$ |
| 18 - 19 | $0 < x < \infty$ |

- Install the transformer in reverse order.

section 121 Checking the transformer; power supply cord and low-voltage cord

- Disassemble the transformer as indicated in section 122.



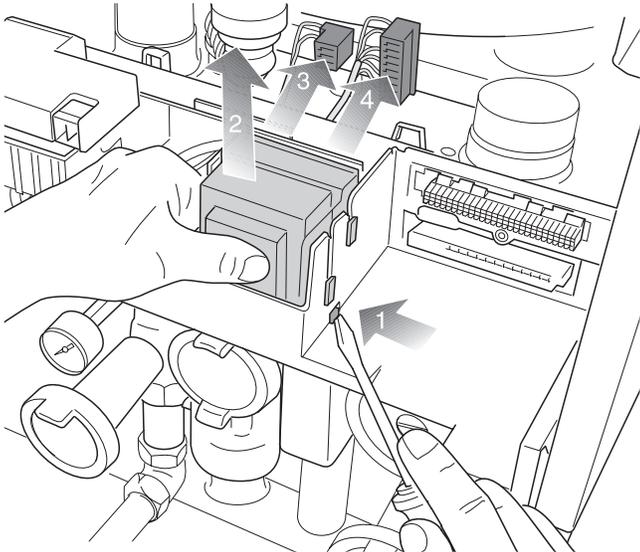
- Set the multimeter to "Measure resistance" [1].
- Check the power supply cord and the low-voltage cord for breaks. The electrical resistance measured separately for every wire must be approx. 0Ω [2]. Measure between the plug and the black contacts (high-voltage connector pins 3, 4, 7 and low-voltage connector pins 1, 25, 27, 28, 52, 80, 81) on the UBA 3 mounting base [3].
- Check the power supply cord and the low-voltage cord for internal short circuiting. The electrical resistance, measured between two random wires, must be infinite.
- Measure the electrical resistance over the power supply cord and the low-voltage cord to ground. The electrical resistance must be infinite for every individual wire.
- Install the transformer in reverse order.

section 122 Replace transformer

**DANGER OF FATAL ACCIDENT**

due to electric shock!

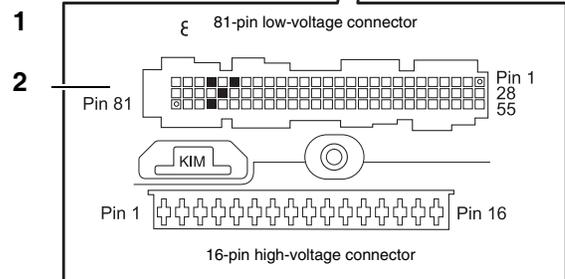
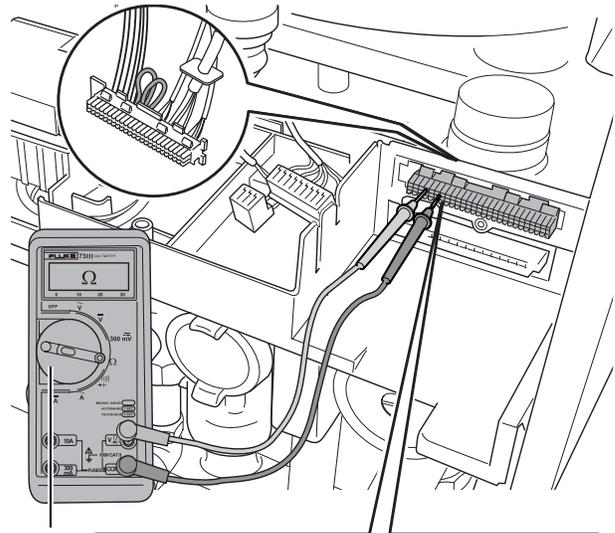
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.



- While depressing the lock using a screwdriver [1] pull the transformer upwards [2].
- Remove both the power supply plug [3] and the low-voltage plug [4].
- Install the new transformer in reverse order.
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 123 Checking the wire harness; connections

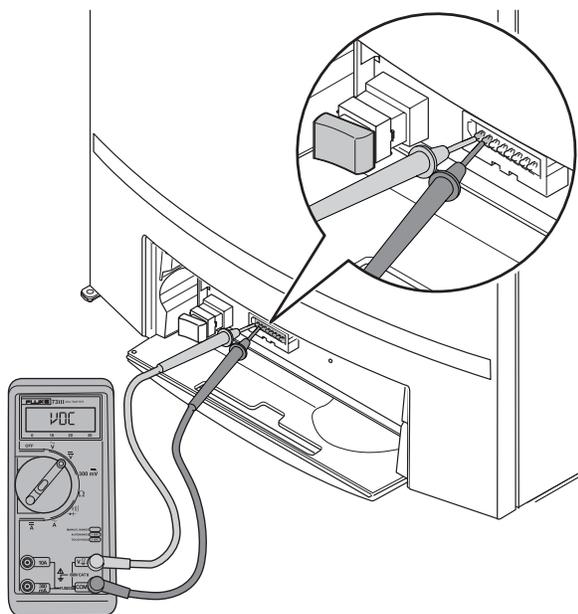
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the UBA 3 as instructed in section 82.
- Remove the cover from the connection tray, see section 114.



- Set the multimeter to "Measure resistance" [1].
- Check the electrical resistance of the connection between the two black contacts (low-voltage connector pins 22 and 24) on the UBA 3 mounting base [2]. The electrical resistance of this connection must be approximately 0 Ω [2].
- Check the electrical resistance of the connection between the two black contacts (low-voltage connector pins 50 and 78) on the UBA 3 mounting base [2]. The electrical resistance of this connection must be approximately 0 Ω [2].
- Install the lid on the connection tray in reverse order.
- Install the UBA 3 in reverse order of removal.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 124 Checking the control panel; supply voltage

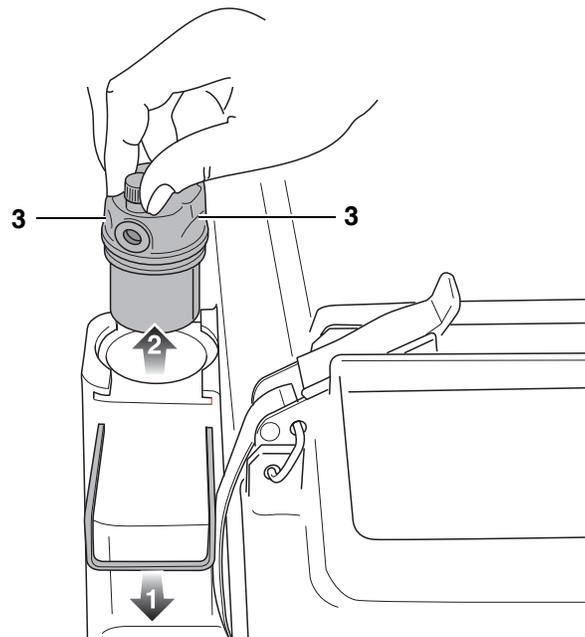
- Open the cover of the BC10 on the front of the boiler as instructed in section 69.
- Remove the BC10 by depressing the lock on the left-hand side.
- Switch on the power supply to the heating system, see section 79.
- Put the main power switch on the control panel in position "1" (On), see section 80.



- Set the multimeter to "Measure DC voltage".
- Check that there is between 7.8 and 15.2 VDC on both left-hand contacts of the connector on the bottom plate of the BC10.
- Install the BC10 in reverse order.
- Close the cover of the BC10 on the front of the boiler in reverse order.

section 125 Replacing the automatic air purging system

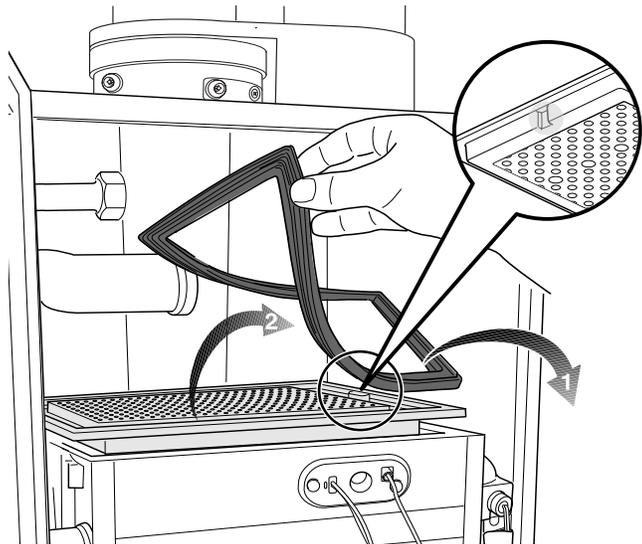
- Drain the boiler as indicated in section 75.
- Open the boiler door as instructed in section 73.



- Pull the clamp spring forwards [1] and remove the automatic air purging system [2].
- **Note:** The top of the automatic air purging system has two cut-outs [3]. Install the new automatic air purging system so that the clamp spring engages in both cut-outs.
- Fill and purge the heating system and put the boiler into operation, see section 78.

section 126 Replacing/cleaning the burner

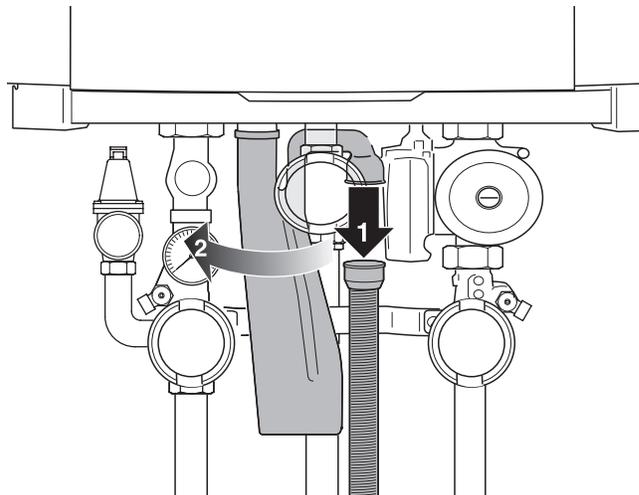
- Disassemble the gas/air unit including the burner cover as indicated in section 86.



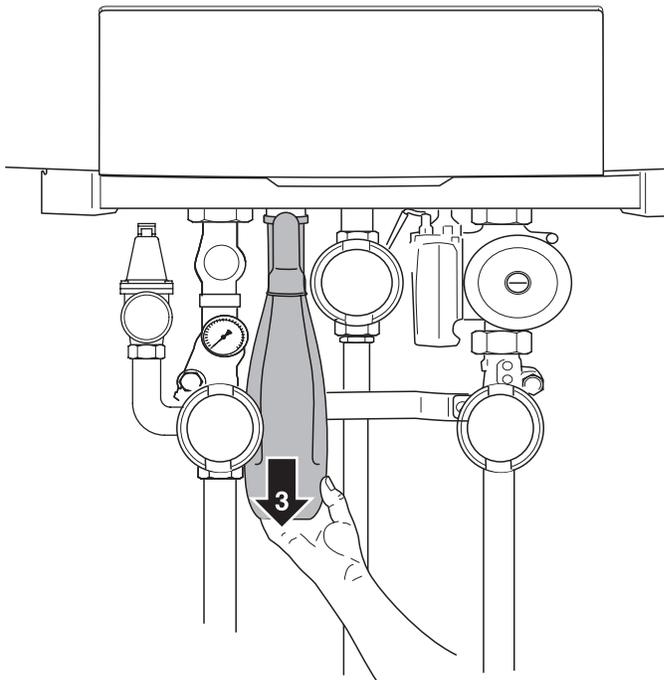
- Remove the burner gasket [1] and replace it if necessary.
- Remove the burner [2].
- Check the burner and the distributor plate for dirt and cracks and clean or replace the burner.
- Check the burner gasket for signs of ageing.
- Replace the burner gasket if necessary.
- Install the burner and the burner cover in reverse order.
- Open the gas stop valve and put the boiler into chimney sweep operation as instructed in section 81.
- Check all couplings and locations in the gas train -which have been disconnected to install the burner- for leaks. Use a foaming agent which has been approved for gas leak testing.
- If a gas leak is found: switch off the power supply to the heating system, see section 72, close the gas stop valve as indicated in section 74 and deal with the cause of the gas leak.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.
- Open the gas stop valve as indicated in section 81.

section 127 Replacing/cleaning the siphon

- Switch off the power supply to the heating system, see section 72.
- Remove the casing of the pump group as indicated in section 73.



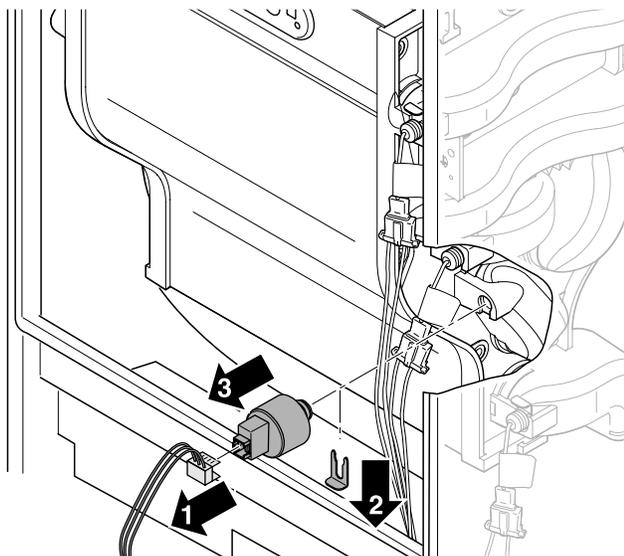
- Remove the rubber sleeve including the ribbed pipe [1].
- Turn the siphon a quarter turn in a counterclockwise direction [2].



- Remove the siphon by pulling it downwards [3].
- Clean the siphon if necessary.
- Install the new or cleaned siphon.
- Install the casing of the pump group in reverse order of removal.
- Switch on the power supply to the heating system, see section 79.

section 128 Checking/replacing the pressure sensor; pollution

- While carrying out these activities check all sealing rings and gaskets for damage, deformation and signs of aging and replace if required.
- Take the boiler out of operation and drain the boiler as instructed in section 75.



- Disconnect the plug of the pressure sensor [1].
- Remove the clamp spring [2].
- Remove the pressure sensor [3].
- Check the pressure sensor for dirt and clean it if necessary.
- Install the new or cleaned pressure sensor in reverse order.
- Fill and purge the heating system and put the boiler into operation, see section 78.

section 129 Replacing/cleaning the heat exchanger



DANGER OF FATAL ACCIDENT
due to electric shock!



DANGER OF FATAL ACCIDENT/FIRE
from explosive fumes.

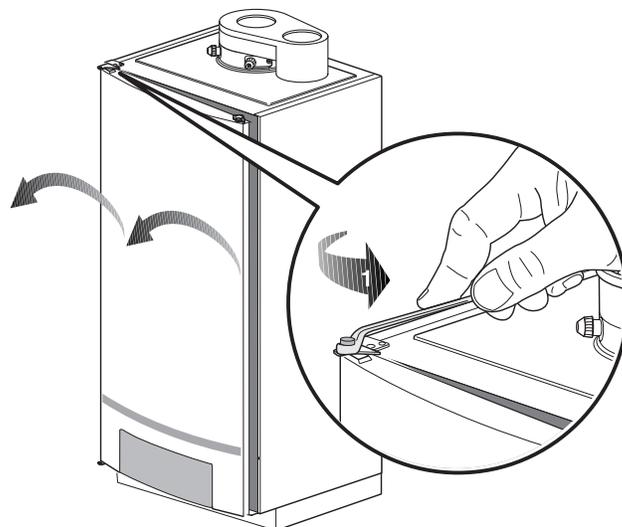
All work on gas pipe work and fittings must be carried out by authorized gas technicians.

- While carrying out these activities check all sealing rings and gaskets for damage, deformation and signs of ageing and replace if required.
- After carrying out these activities, check the system for leaks on the gas side and/or the flue gas side.



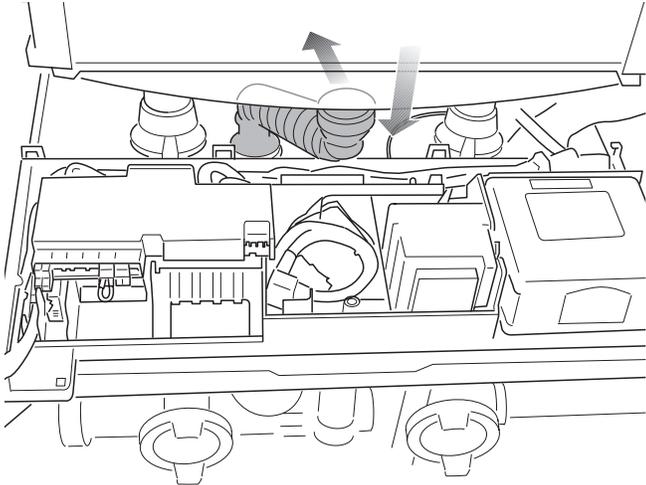
DAMAGE TO THE DEVICE
due to damage to the coating.

- The heat exchanger has been coated. Avoid damaging this coating. Do not use steel-bristle brushes to clean the various parts and components.

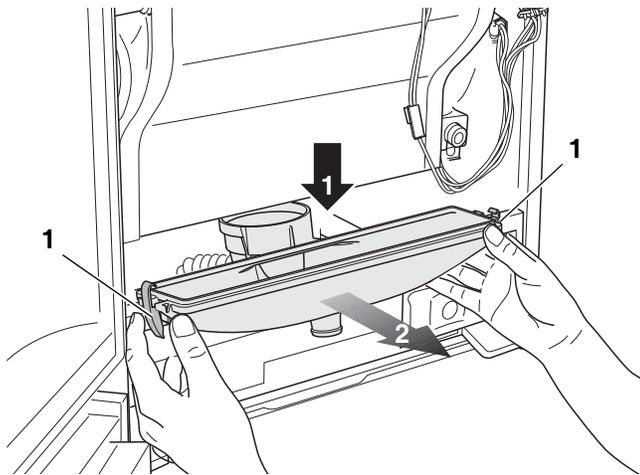

USER INSTRUCTION

If the boiler door cannot be opened all the way, making it difficult to remove the heat exchanger if required, you may remove the door.

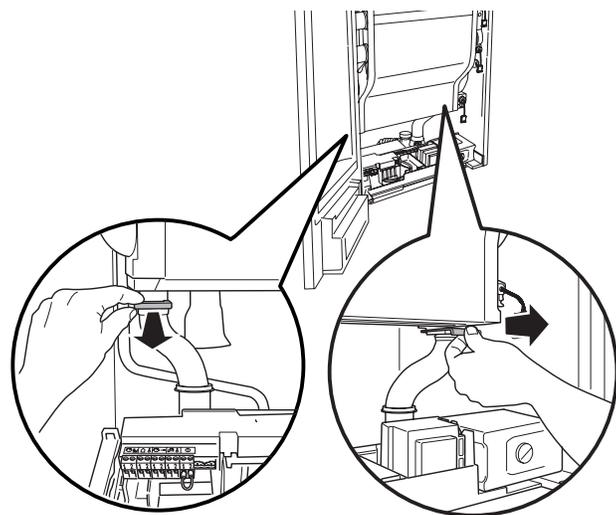
- Suspend the BC10 from the radiator as instructed in section 68.
- Unscrew the hinge pin of the hinge [1] and remove it including its washer.
- Pull the door upwards a bit and then pull it out of the hinge. Carefully put the door down.
- See the Installation and servicing instructions of the boiler for detailed maintenance information.
- Switch off the power supply to the heating system, see section 72.
- Open the boiler door and remove the casing of the pump group as instructed in section 73.
- Close the gas stop valve and service valves as indicated in section 74.
- Disassemble the burner including the gas/air unit including as indicated in section 126.
- Remove the glow ignitor and the ionization electrode as indicated in section 103.
- Remove the supply, safety and return sensors as instructed in section 95.
- Remove the pressure sensor as instructed in section 128.
- Remove the automatic air purging system as instructed in section 125.



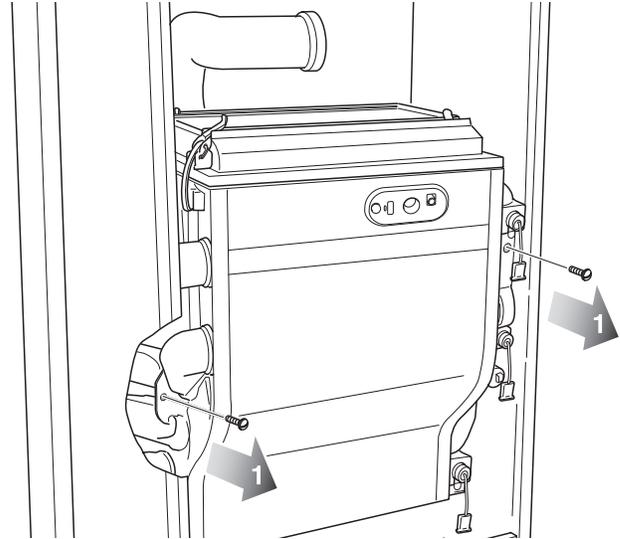
- Pull the condensate draining pipe down and bend it backwards.



- Open the 2 snap closures [1] on the left and the right and remove the condensate water tank.



- Remove both clamp springs.
- Remove both the ground lead of the heat exchanger and the ground lead of the ionization circuit as instructed in section 108.



- Loosen both mounting screws [1].



- Remove the heat exchanger.
- Install the new heat exchanger and all other parts in reverse order.
- Fill and purge the heating system, see section 78.
- Open the gas stop valve as indicated in section 81.
- Close the boiler door and install the casing of the pump group in reverse order of removal.
- Switch on the power supply to the heating system, see section 79.

section 130 Replacing the UBA 3

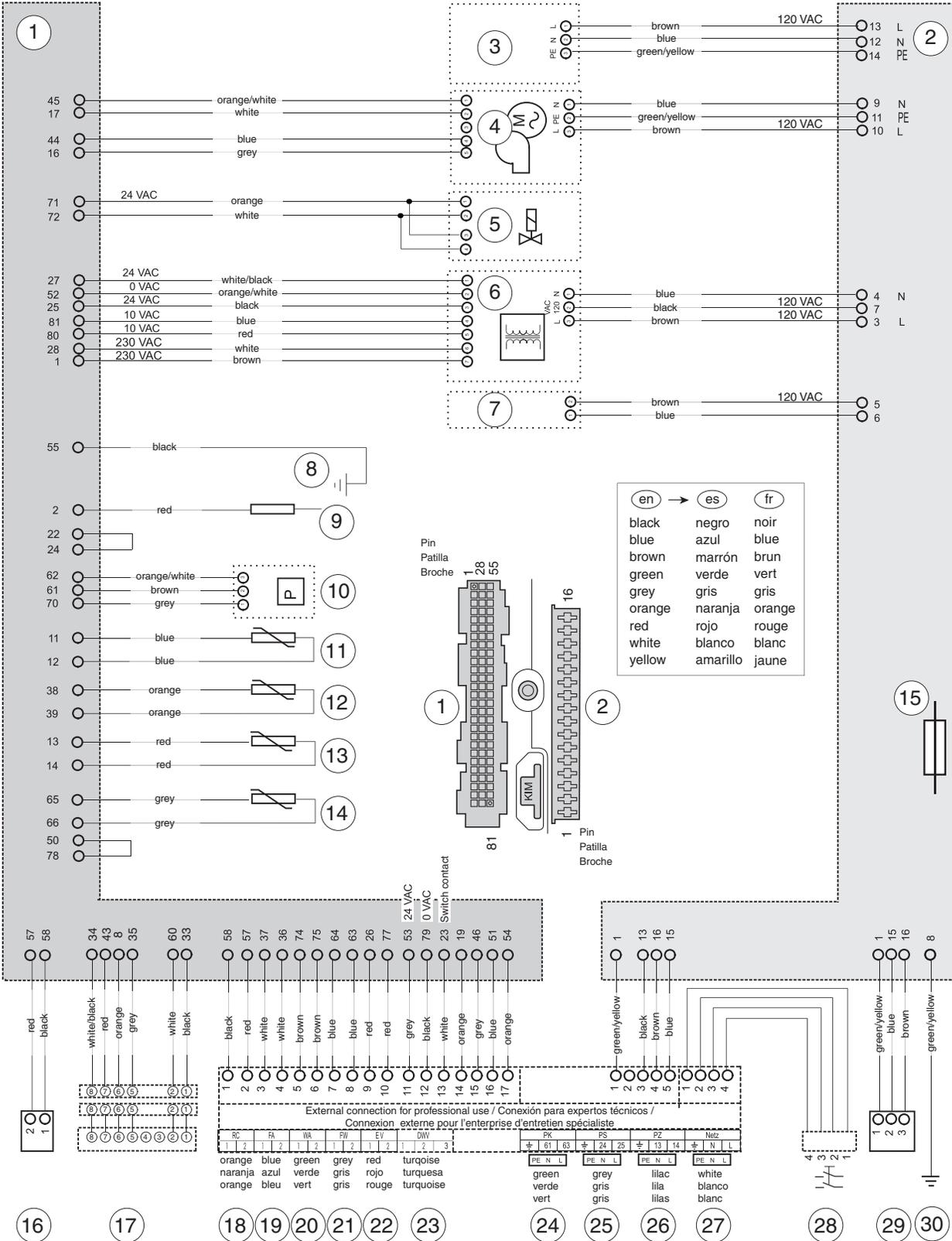
**DANGER OF FATAL ACCIDENT**

due to electric shock!

- Switch off the power supply to the heating system, see section 72.
- Open the boiler door as instructed in section 73.
- Remove the cover from the connection tray, see section 114.
- Remove the UBA 3 as instructed in section 82.
- Install the new UBA 3 in reverse order of removal.
- Install the lid on the connection tray in reverse order.
- Close the boiler door as instructed in section 77.
- Switch on the power supply to the heating system, see section 79.

section 131 Electrical wiring diagram

Logamax plus GB162 -80 kW/-100 kW



IMPORTANT
 The wires in this mains lead are colored in accordance with the following code: **GREEN AND YELLOW - EARTH ; BLUE - NEUTRAL ; BROWN - LIVE**
 As the colors of the wires in the mains lead of the appliance may not correspond with the colored markings identifying the terminals in your connector proceed as follows:
 The wire colored green and yellow must be connected to the terminal on the connector marked with the letter E or by the ground symbol \perp or colored green or green-and-yellow.
 The wire colored blue must be connected to the terminal marked with the letter N or colored blue.
 The wire colored brown must be connected to the terminal marked with the letter L or colored red.
WARNING
THIS APPLIANCE MUST BE GROUNDED
 Ensure that your appliance is connected correctly - if you are in any doubt consult a qualified electrician. For location of individual components, see service section and the exploded views in this manual.

section 132 Legend of electrical wiring diagram

- 1: 81-pole connector (AC 0, 10, 24 and 230 V)
- 2: 16-pole connector (AC 120 V)
- 3: Connection for pump in connection kit (accessory)
- 4: Fan
- 5: Gas valve
- 6: Transformer
- 7: Glow ignitor
- 8: Ground
- 9: Ionization
- 10: Pressure sensor
- 11: Return sensor
- 12: Safety-temperature sensor
- 13: Supply sensor
- 14: Flue gas sensor (optional)
- 15: Fuse (5 amp. FAST, sand filled)
- 16: BUS function modules
- 17: Connector for control panel
- 18: Room controller RC and EMS bus
- 19: Outdoor temperature sensor
- 20: On/off temperature controller (potential free)
- 21: DHW sensor
- 22: External switch contact (potential free, e.g. floor heating)
- 23: External three-way valve
- 24: Boiler pump (120 VAC, max. 100 W)
- 25: DHW pump (pump 120 VAC, max. 100 W)
- 26: DHW re-circulation pump (pump 120 VAC, max. 100 W)
- 27: Main power connection 120 V 60 Hz, max. permissible 5 A
- 28: Mains switch
- 29: 120 VAC function module
- 30: Ground

section 133 Power rating

| Display indication on the control panel [%] | Power rating at 104/86 °F [kW] | |
|---|--------------------------------|---------------------------|
| | Logamax plus GB162-80 kW | Logamax plus GB162-100 kW |
| L20 | – | 20.0 |
| L25 | 20.0 | 25.0 |
| L30 | 24.3 | 29.9 |
| L35 | 28.6 | 34.9 |
| L40 | 32.9 | 39.9 |
| L45 | 37.2 | 44.8 |
| L50 | 41.5 | 49.8 |
| L55 | 45.8 | 54.8 |
| L60 | 50.1 | 59.8 |
| L65 | 54.4 | 64.7 |
| L70 | 58.7 | 69.7 |
| L75 | 63.0 | 74.7 |
| L80 | 67.3 | 79.6 |
| L85 | 71.6 | 84.6 |
| L90 | 75.9 | 89.6 |
| L95 | 80.2 | 94.5 |
| L-- | 84.5 | 99.5 |

section 134 Sensor resistance readings

| Temperature in °F | Resistance in Ω | Temperature in °F | Resistance in Ω |
|-------------------|-----------------|-------------------|-----------------|
| 32 | 29,490 | | |
| 41 | 23,462 | 176 | 1,458 |
| 50 | 18,787 | 185 | 1,255 |
| 59 | 15,136 | 194 | 1,084 |
| 68 | 12,268 | 203 | 940 |
| 77 | 10,000 | 212 | 817 |
| 86 | 8,197 | 221 | 714 |
| 95 | 6,754 | 230 | 626 |
| 104 | 5,594 | 239 | 550 |
| 113 | 4,656 | 248 | 484 |
| 122 | 3,893 | 257 | 428 |
| 131 | 3,271 | 266 | 379 |
| 140 | 2,760 | 275 | 337 |
| 149 | 2,339 | 284 | 300 |
| 158 | 1,990 | 293 | 268 |
| 167 | 1,700 | 302 | 239 |

section 135 Technical Specifications

| General specifications | unit | GB162-80 (NG) | GB162-80 (LP) | GB162-100 (NG) | GB162-100 (LP) |
|---|----------------|---|------------------|------------------|------------------|
| Gas category | | Natural gas | Propane | Natural gas | Propane |
| Rated thermal load | btu/h | 69,000 - 290,000 | 58,000 - 270,000 | 69,000 - 333,000 | 58,000 - 315,000 |
| Rated heating capacity, heating curve 176/140 °F (80/60 °C) | btu/h | 61,400 - 255,200 | 51,600 - 237,600 | 61,400 - 293,000 | 51,600 - 277,200 |
| Rated heating capacity, heating curve 122/86 °F (50/30 °C) | btu/h | 68,300 - 281,300 | 57,400 - 261,900 | 68,300 - 326,300 | 57,400 - 308,700 |
| Boiler efficiency at max. capacity, heating curve 176/140 °F (80/60 °C) | % | 88 | | 88 | |
| Boiler efficiency at max. capacity, heating curve 122/86 °F (50/30 °C) | % | 97 | | 98 | |
| CSA Output | btu/h | 261,000 | 243,000 | 295,000 | 279,000 |
| De-rating altitudes 2,000 - 5,500 ft | % / 1,000 ft | 2.2 | 2.3 | 2.0 | 2.1 |
| De-rating altitudes 5,500 - 8,000 ft | % / 1,000 ft | 2.0 | 2.5 | 1.7 | 2.1 |
| De-rating altitudes 8,000 - 10,200 ft | % / 1,000 ft | 2.8 | 2.0 | 2.6 | 1.9 |
| Heating | | | | | |
| Maximum boiler temperature | °F (°C) | 230 (110) | | | |
| Maximum supply temperature | °F (°C) | 190 (88) | | | |
| Maximum working pressure (boiler) | PSI (bar) | 50 (3.6) | | | |
| Minimum water circulation volume | Gal/h (l/h) | 0 | | | |
| Supply temperature | °F (°C) | 86-190 (30-88), can be set on the control panel | | | |
| Resistance at $\Delta T = 38$ °F (20 °C) | PSI (mbar) | 3.26 (225) | | 4.57 (315) | |
| Heating circuit volume of heat exchanger | Gal (L) | 1.3 (5.0) | | | |
| Pipe connections boiler, without pump group | | | | | |
| Gas connection | in | Rp1" | | | |
| Heating water connection | in | G1½" union nut with female thread enclosed | | | |
| Condensate connection | in (mm) | Ø 1¼" (32 mm) | | | |
| Flue gas values | | | | | |
| Condensate quantity at 104/86 °F (40/30 °C) | Gal/h (L/h) | 2.4 (9.0) | | 2.85 (10.8) | |
| pH value of condensate | pH | approx. 4.1 | | | |
| Flue gas mass flow rate, full load | g/s | 35.3 | | 44.9 | |
| Flue gas temperature 176/140 °F (80/60 °C), full load | °F (°C) | 153 (67) | 149 (65) | 169 (76) | 165 (63) |
| Flue gas temperature 176/140 °F (80/60 °C), partial load | °F (°C) | 142 (61) | 136 (58) | 142 (61) | 136 (58) |
| Flue gas temperature 122/86 °F (50/30 °C), full load | °F (°C) | 118 (48) | 114 (46) | 124 (51) | 120 (49) |
| Flue gas temperature 122/86 °F (50/30 °C), partial load | °F (°C) | 93 (34) | 88 (31) | 93 (34) | 88 (31) |
| CO ₂ content at full load | % | 9.3 | 9.6 | 9.4 | 9.7 |
| Free fan feed pressure | Inch w.c. (Pa) | 0.602 (150) | | 0.883 (220) | |
| Flue gas connection | | | | | |
| Ø flue gas system, room-air dependent | in (mm) | Ø 4" (100 mm) | | | |
| Ø flue gas system, room-air independent | in (mm) | Ø 4" (100 mm) / 4" (100 mm) parallel | | | |
| | | | | | |

section 135 Technical Specifications (continued)

General specifications unit GB162-80 (NG) GB162-80 (LP) GB162-100 (NG) GB162-100 (LP)

Electrical data

| | | | |
|---|---------|---------|-----|
| Mains connection voltage | VAC, Hz | 120, 60 | |
| Electrical protection rating | | IPX4D | |
| Fuses | Amp | 5 | |
| Electrical power consumption, full load (without a pump group) | W | 104 | 156 |
| Electrical power consumption, partial load (without a pump group) | W | 29 | 29 |

Boiler dimensions and weight

| | | | |
|--|---------|---------------------------------------|--|
| Height x width x depth (with pump group) | in (mm) | 50.4 x 20.5 x 18.3 (1280 x 520 x 465) | |
| Weight (without a pump group) | lb (kg) | 154 (70) | |

Other specifications

| | | | |
|-----------------|--|----------|--|
| Pump group pump | | UP 26-99 | |
|-----------------|--|----------|--|

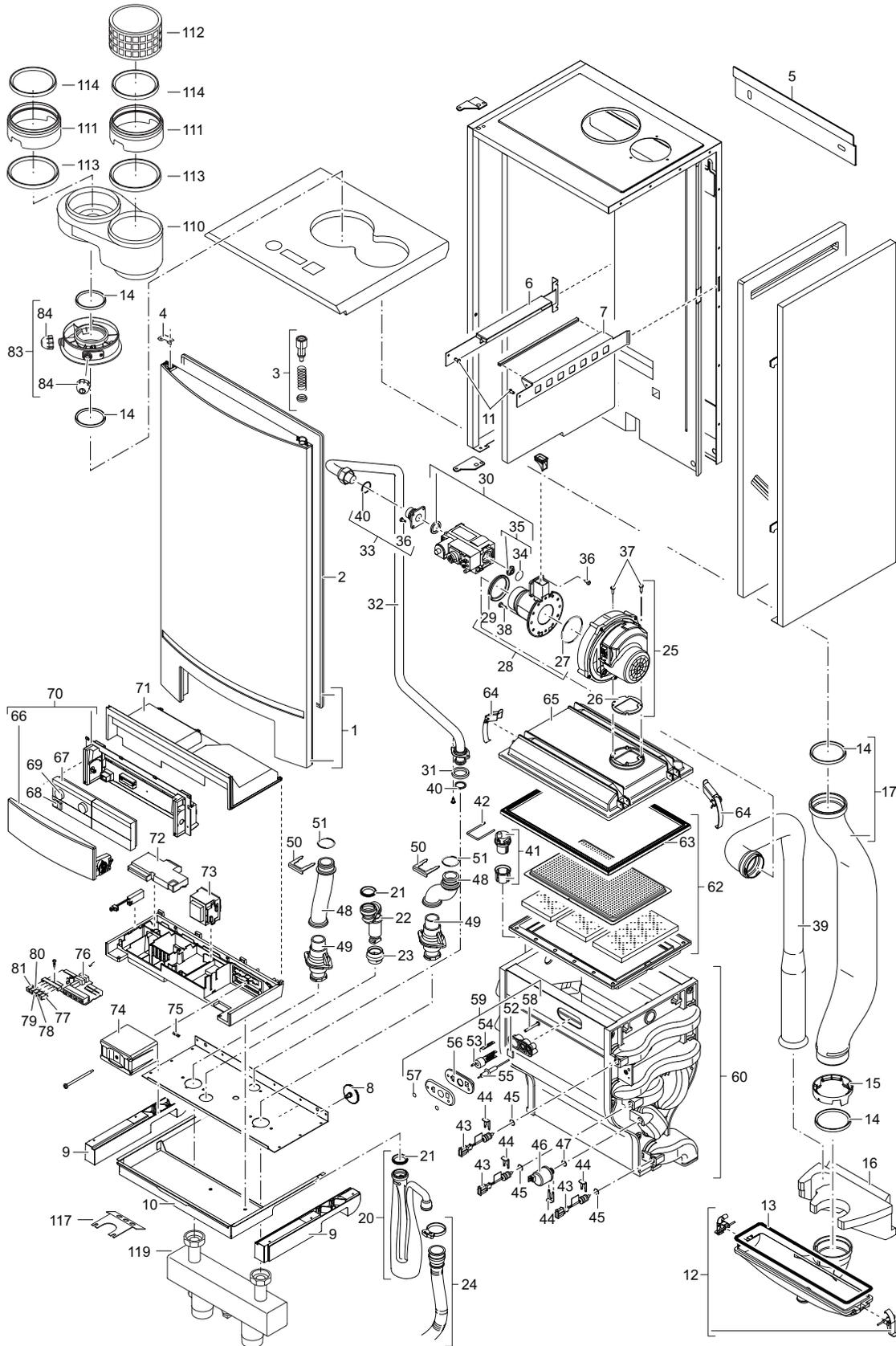
Fuels and configurations

Logamax plus GB162-80 kW/100 kW

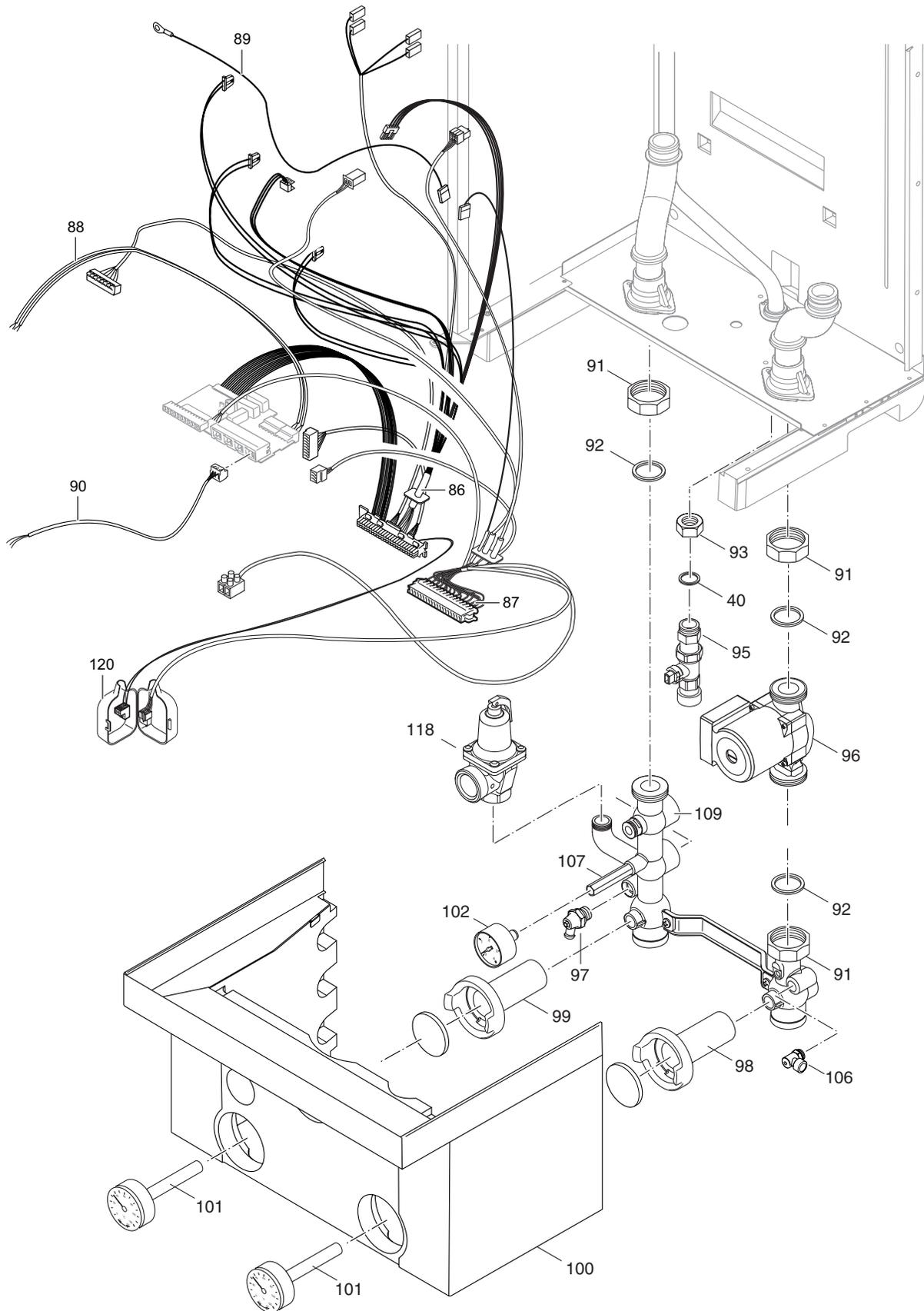
| | | | |
|----------------------------------|--|--|--|
| Type of gas supply | Natural gas H (G20, delivery setting), LP-gas (propane, after conversion) | | |
| Version | B ₂₃ , C ₁₃ , C ₃₃ , C ₄₃ , C ₅₃ , C ₆₃ , C ₈₃ depending on room air and independent of room air (Compliance with increased tightness requirements with operation independent of room air). | | |
| Gas category according to EN 437 | US/CA II _{2H3P} 20, 37 mbar | | |

| Thermal power gas boiler | Type of gas supply | Altitude in ft (m) | Gas orifice diameter in mm (inch) | Venturi article number |
|--------------------------|--------------------|--------------------------------|-----------------------------------|------------------------|
| GB162-80 KW | Natural gas | 0 - 10,200 (0 - 3,111) | 8.40 (0.331) | 73983 |
| | LPG | 0 - 8,000 (0 - 2,440) | 4.70 (0.185) | 7746900499 |
| | LPG | 8,000 - 10,200 (2,440 - 3,111) | 4.90 (0.193) | 7746900499 |
| GB162-1000 KW | Natural gas | 0 - 10,200 (0 - 3,111) | 8.40 (0.331) | 73983 |
| | LPG | 0 - 8,000 (0 - 2,440) | 4.70 (0.185) | 7746900499 |
| | LPG | 8,000 - 10,200 (2,440 - 3,111) | 4.90 (0.193) | 7746900499 |

section 138 Exploded view Logamax plus GB162-80 kW/100 kW



section 139 Exploded view pump group Logamax plus GB162-80 kW/100 kW



section 140 Index

B

Bleeding the gas supply pipe83

C

Checking an external switch contact82
 Checking and/or replacing the fan unit63
 Checking the cable harness – connections86
 Checking the control panel – supply voltage87
 Checking the fan unit – operation 120 VAC61
 Checking the fan unit – power supply cord
 (120 VAC)62
 Checking the fan unit – tachometer cable62
 Checking the flue gas sensor72
 Checking the flue gas sensor – cable73
 Checking the gas valve – activation79
 Checking the gas valve – electrical resistance
 of power supply cord79
 Checking the gas valve – internal electrical
 resistance80
 Checking the gas valve – power supply plug79
 Checking the glow ignitor – activation74
 Checking the glow ignitor – power supply cord75
 Checking the glow ignitor – resistance75
 Checking the ionization circuit – ground lead78
 Checking the ionization electrode78
 Checking the ionization electrode – cable77
 Checking the ionization electrode – short circuit77
 Checking the ON/OFF controller81
 Checking the pump – activation65
 Checking the pump – mechanical obstruction64
 Checking the pump – pollution67
 Checking the pump – power supply cord65
 Checking the pump – tachometer cable66
 Checking the RC regulator82
 Checking the supply, safety, return and
 DHW temperature sensors68
 Checking the supply, safety, return and
 DHW temperature sensors – cables69
 Checking the transformer – internal electrical
 resistance85
 Checking the transformer – power supply cord
 and low-voltage cord85
 Checking/replacing fuses61
 Checking/replacing the pressure sensor –
 pollution89

D

Draining the system57

E

Electrical wiring diagram92

F

Filling the system and bleeding it of air58
 Flow temperature, maximum94
 Flue gas connection94
 Front protection8

H

Heat exchanger3, 94

I

Initial startup60

M

Measure the ionization current76
 Measuring and adjusting the gas/air ratio84
 Measuring the gas supply pressures – static
 and dynamic82

P

Pump run-over time8
 Pump test8

R

Replace transformer86
 Replacing the automatic air purging system87
 Replacing the DHW temperature sensor72
 Replacing the feed, safety and return sensors71
 Replacing the flue gas sensor74
 Replacing the gas valve80
 Replacing the glow ignitor and/or ionization
 electrode76
 Replacing the pump67
 Replacing the UBA 391
 Replacing/cleaning the burner88
 Replacing/cleaning the heat exchanger89
 Replacing/cleaning the siphon88

T

Technical specifications94

V

Venturi95

W

Working pressure94

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