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 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.

Notice:
This manual must be retained for future reference.

Logamax plus
GB142-24/30/45/60

For installers
Please read thoroughly before servicing
About these instructions
These Servicing Instructions contain important information to diagnose and resolve issues concerning the GB142 boiler with capacities 24, 30, 45 and 60 kW.
These Servicing Instructions are intended for specialist installers, who have the necessary training and experience for working on heating and gas systems.

Subject to technical changes!
Slight changes may be made to the illustrations, process steps and technical data as a result of our policy of continuous improvement.

Updating of documentation
Please contact us if you have any suggestions for improvements or corrections.
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1 Safety and general instructions

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

1.1 Designated use

The boiler was designed for heating water for a space heating system and generating hot water e.g. for domestic purposes. The boiler is delivered with a BC10 basic controller and the "Universal Automatic Burner Control Unit 3" (UBA 3) pre-installed.

The boiler can be fitted with a modulating outdoor reset control AM10 (scope of delivery) and an On/Off thermostat or relay panel end switch (24 V) (accessories).

1.2 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 life of the product.

DANGER:
Indicates the presence of hazards that can 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 can 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.

1.3 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.
- Other combinations, accessories and consumables must only be used if they are specifically designed for the intended application and do not affect the system performance and the safety requirements.
- Maintenance and repairs must only be carried out by authorized professionals.
- You must report the installation of a condensing gas boiler to the relevant gas utility company and have it approved.
- You are only allowed 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 permission for the flue system and the condensate water connection to the public sewer system may be required.
- You must also observe:
  - the local building regulations stipulating the installation rules.
  - 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.
1.4 Observe these instructions for heating system water

- Thoroughly flush the system prior to filling. Only use untreated main water to fill and top off the system.
- Do not use salt bedding exchangers to soften the water.
- Do not use inhibitors or other additives!
- No Toxic chemicals such as used for boiler treatment, shall be introduced into the heating water used for space heating.
- The maximum permissible flow rate of the GB142-24/30 this is 11 GPM (gal./min.), for the GB142-45 is 15 GPM and for the GB142-60 is 20 GPM.
- When using oxygen-permeable pipes, e.g., for floor heating systems, you must separate the system using heat exchangers. Unsuitable heating system water promotes the formation of sludge and corrosion. This may damage the heat exchanger or affect its operation.

1.5 Tools, materials and additional equipment

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

1.6 Inspection

We advise you to offer your customer an annual inspection and maintenance contract. If inspection reveals that maintenance work is necessary you can carry this out as required in the Installation instruction of the boiler.

Installation

CAUTION:
- Check and clean the heating system at least once a year.
- Carry out a maintenance overhaul if necessary. Immediately repair defects to avoid damage to the heating system!
- Periodically examine the venting systems and cleaning of the screens in the vent terminal.
- Also periodically inspect the low water cutoffs, including flushing of float types.
- And periodically inspect the burner flames (see page 8, fig. 1, pos. 10).
- Check the neutralization unit if present.
- Check to see if there are no obstructions to the flow combustion and ventilation air.
- For direct vent boilers, proper reassembly and resealing of the vent-air intake system is required.

Maintenance

- Cleaning the heat exchanger, the burner and the condensate trap (see installation instructions, Maintenance).
- Checking the ionization signal (par. 8.1.15, page 95)
- Checking and adjusting the gas/air ratio (par. 8.1.26, page 108).

1.7 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, by handing them in to an authorized recycling facility.
- Keep boiler area clear and free from combustible materials, gasoline and other flammable vapors and liquids.
## 1.8 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM10</td>
<td>Outdoor reset module</td>
</tr>
<tr>
<td>AS</td>
<td>System fault code</td>
</tr>
<tr>
<td>AV</td>
<td>Air Vent</td>
</tr>
<tr>
<td>BC</td>
<td>Operating code</td>
</tr>
<tr>
<td>BC10</td>
<td>Control panel (on the boiler)</td>
</tr>
<tr>
<td>BCT</td>
<td>Boulter Buderus cylinder thermostat</td>
</tr>
<tr>
<td>BDV</td>
<td>Boulter Buderus diverter valve</td>
</tr>
<tr>
<td>BKS</td>
<td>Blocking boiler fault code</td>
</tr>
<tr>
<td>CB</td>
<td>Connection Block</td>
</tr>
<tr>
<td>CH</td>
<td>Central Heating</td>
</tr>
<tr>
<td>CHF</td>
<td>Central Heating Supply</td>
</tr>
<tr>
<td>CHR</td>
<td>Central Heating Return</td>
</tr>
<tr>
<td>CM10</td>
<td>Cascade module</td>
</tr>
<tr>
<td>CT</td>
<td>Cylinder Thermostat</td>
</tr>
<tr>
<td>CWDO</td>
<td>Condensate water drainage outlet</td>
</tr>
<tr>
<td>CM10</td>
<td>Cascade module</td>
</tr>
<tr>
<td>DHW</td>
<td>Domestic Hot Water</td>
</tr>
<tr>
<td>DV</td>
<td>Diverter Valve</td>
</tr>
<tr>
<td>E</td>
<td>Earth</td>
</tr>
<tr>
<td>EM10</td>
<td>External control module</td>
</tr>
<tr>
<td>EMS</td>
<td>Energy management system</td>
</tr>
<tr>
<td>FA</td>
<td>Outdoor sensor</td>
</tr>
<tr>
<td>HK1 or HK2</td>
<td>Central Heating line</td>
</tr>
<tr>
<td>KIM</td>
<td>Boiler identification module</td>
</tr>
<tr>
<td>L</td>
<td>Live Line</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
</tr>
<tr>
<td>LSV</td>
<td>Lock Shield Valve</td>
</tr>
<tr>
<td>MCW</td>
<td>Mains Cold Water</td>
</tr>
<tr>
<td>MM10</td>
<td>Controller for HK2, second Central Heating line module.</td>
</tr>
<tr>
<td>N</td>
<td>Neutral</td>
</tr>
<tr>
<td>PE</td>
<td>Ground</td>
</tr>
<tr>
<td>PL</td>
<td>Permanent hot line</td>
</tr>
<tr>
<td>Prog</td>
<td>Programmer</td>
</tr>
<tr>
<td>RT or RC</td>
<td>Room Thermostat</td>
</tr>
<tr>
<td>SC</td>
<td>Service code</td>
</tr>
<tr>
<td>T</td>
<td>Timer</td>
</tr>
<tr>
<td>TRV</td>
<td>Thermostatic Radiator Valve</td>
</tr>
<tr>
<td>ÜC</td>
<td>Other display codes</td>
</tr>
<tr>
<td>UBA 3</td>
<td>Universal automatic burner control unit 3</td>
</tr>
<tr>
<td>VKS</td>
<td>Locking boiler fault code</td>
</tr>
<tr>
<td>WC</td>
<td>Wiring Centre</td>
</tr>
<tr>
<td>WM10</td>
<td>Controller for HK1, first Central Heating line</td>
</tr>
<tr>
<td>ZV</td>
<td>Two Port Zone Valve</td>
</tr>
</tbody>
</table>
2 Regulations and guidelines

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. 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. The boiler requires yearly maintenance, see maintenance section see chapter "8.1.27 Measuring the carbon monoxide content (CO)" on page 109.

Operating Limits of the boiler:
Max. boiler temperature: 220 °F (105 °C)
Max. operating pressure: 44 psi (3 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.

Massachusetts Installations Only:
For direct-vent boilers, mechanical-vent heating boilers or domestic hot water equipment, where the bottom of the vent terminal and the intake is installed below four feet above grade the following requirements must be satisfied:

1) If there is not one already present, a carbon monoxide detector and alarm shall be placed in the living area outside the bedrooms. The carbon monoxide detector and alarm shall comply with NFPA 720 (2005 Edition).

2) A carbon monoxide detector and alarm shall:
   a) Be located in the area where the boiler or equipment is located;
   b) Have battery back-up power;
   c) Be a minimum comply with NFPA 720 (2005 Edition).

3) A product-approved vent terminal must be used, and if applicable, a product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the boiler or equipment at the completion of the installation.

4) A metal or plastic identification plate shall be mounted at the exterior of the building, four feet directly above the location of vent terminal. The plate shall be of sufficient size to be easily read from a distance of eight feet away, and read “Gas Vent Directly Below”.

b) For direct-vent boilers mechanical-vent heating boilers or domestic hot water equipment where the bottom of the vent terminal and the intake is installed four feet or above grade the following requirements must be satisfied:

   1) If there is not one already present, a carbon monoxide detector and alarm shall be placed in the living area outside the bedrooms, The carbon monoxide detector and alarm shall comply with NFPA 720 (2005 Edition).

   2) A carbon monoxide detector shall:
      a) Be located in the area where the boiler or equipment is located;
      b) Have battery back-up power;
      c) Be a minimum comply with NFPA 720 (2005 Edition).

   3) A product-approved vent terminal must be used, and if applicable, a product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the boiler or equipment at the completion of the installation.
3 Product description

1) ECO mode means that the temperature inside the hot water tank is 140 °F (60 °C), with a hysteresis ($\Delta T$) of 18 °F instead of 9 °F.

---

Buderus
Logamax plus GB142-24/30/45/60 - We reserve the right to make any changes due to technical modifications!
4 Operation

4.1 Operating the BC10 basic controller

4.1.1 General

The boiler is equipped with a control unit, the basic controller BC10. The BC10 allows you to operate the boiler.
- Briefly press on the control panel cover to open it (see fig. 3).

The basic controller BC10 (see fig. 2) is located on the left side in the drawer.
On the right side of the drawer there’s space for a RC control unit.

4.1.2 Switching the heating system on and off

Switching on the heating system
- Set the main switch on the BC10 basic controller to position "1" (On).

Switching off the heating system
- Set the main switch on the BC10 basic controller to position "0" (Off).

4.2 Menu structure of the BC10 basic controller

The menu structure of the boiler can be viewed on the BC10 using the "Reset", "Chimney sweep" and "Service" buttons and the display indication (see fig. 2, pos. 9, 10 and 11).

The menu structure consists of 4 menus, schematically represented on the following pages using structure diagrams:
- "Flue gas test" menu (page 10)
- "Service Mode" menu (page 11)
- "Manual Operation" menu (page 12)
- "Settings" menu (page 12).
4.2.1 "Flue gas test" menu

**FLUE GAS TEST** MENU

- **Activate flue gas test?**
  - no
  - yes

  **Activate flue gas test:**
  Press and hold the chimney sweep button 2 to 5 seconds.

  The flue gas test is activated as soon as a dot is visible in the lower right hand corner of the display. This means that the boiler runs in heating mode at 100% for 30 minutes. The maximum boiler water temperature as set on the BC10 basic controller applies here.

- **Press the service button.**

- **Current supply temperature 0…199 °F (-18…93 °C). See page 20.**

- **Press the service button.**

- **Operating code. See page 21.**

- **Press the service button.**

- **Current heating system pressure. See page 20.**

- **Press the service button.**

- **Have 30 min. passed or was the power interrupted?**
  - yes
  - no

  **Deactivate flue gas test?**
  - no
  - yes

  **Deactivate flue gas test:**
  Press and hold the chimney sweep button for more than 2 seconds, until the decimal point has disappeared.
4.2.2 "Service Mode" menu

**"SERVICE MODE" MENU**

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Activate service mode?

no

yes

 Boiler load in line with "Settings" menu.

Activate service mode 1st step:
Press and hold the "Chimney sweep" button for 2 to 5 seconds.

As soon as a non-flashing dot is shown in the right-hand bottom corner of the display, the boiler will run in heating mode at 100 % load for 30 minutes. The maximum boiler water temperature set on the BC10 basic controller applies.

Activate service mode 2nd step:
Simultaneously press and hold the "Chimney sweep" and "Service" buttons for more than 2 seconds.

Current boiler load. See page 20. Service mode activated. You can now temporarily lower the boiler load to partial load to check, and if relevant set the gas/air ratio or the ionization current.

Press and hold the "Reset" button until the display shows "L30."

Current boiler load. See page 20. The boiler will reduce its load to 30 % within a couple of seconds. The maximum boiler water temperature as set on the BC10 basic controller applies. Check the gas/air ratio (see page 108) or the ionization current (see page 95) and adjust the gas/air ratio if necessary.

Press the "Service" button.

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Have 30 min. passed or was the power interrupted?

yes

no

Deactivate service mode?

yes

no

Deactivate service mode:
Press and hold the "Chimney sweep" button for more than 2 seconds until the decimal point has disappeared.

Current heating system pressure. See page 20.

Press the "Service" button.

Operating code. See page 46.

Press the "Service" button.

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Have 30 min. passed or was the power interrupted?

yes

no
4.2.3 "Manual Operation" menu

**MANUAL OPERATION** MENU

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Activate manual operation?

no

To activate manual operation:
Press and hold the "Chimney sweep" button for more than 5 seconds.

As soon as a flashing dot is shown in the right-hand bottom corner of the display, manual operation is active. The means that the boiler is permanently in heating mode. The maximum boiler water temperature as set on the BC10 basic controller now applies. The "Heat request" LED is lit.

Press the "Service" button.

Current heating system pressure. See page 20.

Press the "Service" button.

Operating code. See page 20. During manual operation the "Adjustments" menu on page 12 can be used to temporarily change the required boiler load in case of an emergency.

Press the "Service" button.

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Deactivate manual operation?

no

Power interrupted?

yes

Deactivate manual operation:
Press and hold the "Chimney sweep" button for more than 2 seconds until the flashing decimal point has disappeared.

no

Deactivate manual operation?

yes

Press the "Service" button.

Press the "Service" button.

Press the "Service" button.
**ADJUSTMENTS** MENU

- Open programming mode: Simultaneously press and hold the "Chimney sweep" and "Service" buttons for more than 2 seconds.

As soon as the display shows "L--", the programming mode is open. The first parameter shown on the display is used to set the boiler load for heating operation.

Adjust the boiler load with the "Reset" button.

- Press the "Service" button.

As soon as the display shows "F ", the second parameter can be set. This parameter indicates the pump post purge time.

Adjust the pump post purge time with the "Chimney sweep" button.

- Press the "Service" button.

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Boiler load and pump post purge time settings confirmed.
5 Function

5.1 General

To clarify the operation of the Logamax plus GB142-24/30/45/60 thermal power gas boilers under normal operating conditions, the work steps are schematically represented in the structure diagrams on the following pages of this chapter.
5.2 Structure diagram "Function"

Start up

Connect the heating system to the power grid by turning the circuit breaker ON.

Turn the main switch on the BC10 to position “1” (ON), see page 8, fig. 2.

The LED of the UBA 3 lights for 1 second. This means that the UBA 3 is reading the KIM. If a new KIM or UBA 3 has been installed, the LED will flash at a high frequency for max. 10 sec. while data is being exchanged.

888
A display check is carried out (for max. 1 second).

Flashes twice for 2 seconds until communication between the UBA 3 and the BC10 has been established.

Current supply temperature 0 ... 199 °F (-18 ... 93 °C). See page 20.

Press the "Service" button.

Operating code.
The heating boiler is started.

Start of air-side pre-flushing phase. The blower runs for < 20 seconds at approx. 60 % of the maximum speed.

Current heating system pressure. See page 20.

Press the "Service" button.

Is the air purging phase okay?

no

Unit will show an error code. Fault must be fixed before proceeding. See chapter 6, 7 and 7.2.

yes

Page 16

2

9P
2 psi
Has the pump post purge time expired?

Yes

The primary circulation pump stops.

No

Start of pump post purge time via the heating system. Pump post purge time in line with "Settings" menu. See page 12 and page 20. Factory default setting: 5 minutes.

Has the primary circulation pump been off for more than 24 hours?

Yes

The primary circulation pump is run for 10 seconds to prevent it from seizing up.

No

Is there a heat request from the room or outdoor temperature-dependent regulator?

Yes

Is the temperature in the hot water tank at least 9 °F (5 K) lower than the temperature set on the BC10 or RC?

No

Is there a heat request from the room or outdoor temperature-dependent regulator?

Yes

Is the temperature in the hot water tank at least 9 °F (5 K) lower than the temperature set on the BC10 or RC?

No

Is there a heat request from the room or outdoor temperature-dependent regulator?

Yes

Is the temperature in the hot water tank at least 9 °F (5 K) lower than the temperature set on the BC10 or RC?

No

Is there a heat request from the room or outdoor temperature-dependent regulator?

Yes

Have ten seconds passed or was the power supply interrupted?

No

Operating code. The boiler is in ready mode, there is no heat request.

Yes
Is the temperature in the hot water tank higher than the hot water temperature setting in the BC10 or RC control device?

**Yes**

The hot surface ignitor is activated for seven seconds.

The primary circulation pump is started.

**No**

The gas valve is closed, the burner is shut down.

The "Burner" LED goes off.

The blower stops.

Is the supply temperature 82.8 K higher than the hot water temperature setting or higher than 200 °F (93 °C)?

**Yes**

The gas valve is closed, the burner is shut down.

The "Burner" LED goes off.

The blower stops.

**No**

Is the supply temperature lower than the preset hot water temperature plus 63 °F (35 K)?

**Yes**

The gas valve is closed, the burner is shut down.

The "Burner" LED goes off.

The blower stops.

**No**

The "Hot water mode" LED goes off.

**H**

GB142 is in the hot water mode.

The "Burner" LED is lit.

Is the temperature in the hot water tank higher than the hot water temperature setting in the BC10 or RC control device?

**Yes**

The "Hot water mode" LED goes off.

**No**

The blower is started up.

The tank filling pump is activated.

The hot surface ignitor is activated for seven seconds.

The primary circulation pump is started.

**OL**

Ignition phase: The gas valve is opened.

**OC**

The blower is started up.

The tank filling pump is activated.

The hot surface ignitor is activated for seven seconds.

The primary circulation pump is started.

The "Hot water mode" LED on the BC10 is lit.
Is there a heat request from the room or outdoor temperature-dependent regulator?

- **Yes**
  - The gas valve is closed, the burner is shut down.
  - The "Burner" LED goes off.
  - Start the pump over-run time through the hot water tank at least 30 seconds, max. 1 minute, if there is a heat request.
  - Air-side after-purging by blower for 30 seconds.
  - The blower stops.
  - The primary circulation pump stops.
  - The tank filling pump is stopped.

- **No**
  - The burner continues to operate.
  - After purging, the burner can be restarted.
  - Data logging is available.
Is the temperature in the hot water at least 9 °F (5 K) lower than the temperature set on the BC10 or RC?

- Yes
- No

Is the room or outdoor temperature-dependent regulator in the request position?

- Yes
- No

The GB142 enters heating mode.

The "Heat request" LED goes off.

The gas valve is closed, the burner is shut down.

The "Burner" LED goes off.

Start of pump post purge time via the heating system. Pump post purge time in line with "Settings" menu. See page 12 and page 20. Factory default setting: 5 minutes.

Air-side after-purging by blower for 30 seconds.

The primary circulation pump stops.

The blower stops.
6 Symptoms

6.1 Display indication on the BC10 basic controller

6.1.1 General

A display value or code is shown on the display of the BC 10 basic controller (see page 8, fig. 2).

6.1.2 Display values on the display of the BC10 basic controller

The display value is shown automatically or can be called up by pressing the “Chimney sweep” or “Service” button (see page 10 and 12.

The following display values can be shown on the display of the BC10 basic controller:

<table>
<thead>
<tr>
<th>Display value</th>
<th>Type of display value</th>
<th>Unit</th>
<th>Range</th>
<th>Factory default setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>72</td>
<td>Current supply temperature</td>
<td>°F</td>
<td>0 – L99</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>°C</td>
<td>-18 – 93</td>
<td></td>
</tr>
<tr>
<td>P29</td>
<td>Current heating system pressure</td>
<td>psi</td>
<td>P00 – P29</td>
<td>/</td>
</tr>
<tr>
<td>F5</td>
<td>Configured target pump post purge time</td>
<td>min</td>
<td>F00 – F60</td>
<td>/ F1d F5</td>
</tr>
</tbody>
</table>

Table 1: Display values on the BC10 basic controller

6.1.3 Display codes on the display of the BC10 basic controller

A display code shows the current status of the Logamax plus GB142.

The display value is shown automatically or can be called up by pressing the “Service” button.

Two display codes (see table 2 level 3 and level 4) are shown. After the first display code (level 3) is displayed, the second one (level 4) can be called up by pushing the “Service” button. On the BC10 basic controller level 4 can only be called up in the event of a fault code.

Under normal operating conditions it is only possible to call up level 4 using the RC control device or a service tool.

If the display code is a fault code, this fault code either flashes (locked fault code) in the display or it is shown permanently (blocking fault code). A boiler reset is only necessary with a locking fault code (flashing) (see 8, fig. 2). The cause of the fault must be remedied first. The cause has to be remedied and the boiler resumes regular operation.

In the event of a locking boiler fault code both the display value and the display code flash.

If there are more than once display codes at the same time, the display codes will be shown in turn. And if one of these display codes is a locking display code, the blocking display codes shown will also flash.

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The following display values can be shown on the display of the BC10 basic controller:

**Abbreviations used in table 2:**

- **BC**  - Operating code
- **SC**  - Service code
- **BKS**  - Blocking boiler fault code
- **VKS**  - Locking boiler fault code (flashing)
- **AS**  - System fault code
- **ÜC**  - Other display codes

<table>
<thead>
<tr>
<th>Display code</th>
<th>Key to display code</th>
<th>Type of display code</th>
<th>Reset required?</th>
<th>Other symptoms</th>
<th>Diagnosis</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Main display code" /> <img src="image" alt="Sub-display code" /></td>
<td>![image]</td>
<td>BC</td>
<td></td>
<td></td>
<td>No indication in display.</td>
<td>page 28</td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>Communication test while starting up. This code flashes 2 x 2 seconds while starting up to indicate that the communication between the UBA 3 and the BC10 basic controller is being tested. If a new UBA 3 or a new KIM was fitted, this code will flash for max. 10 seconds. If this code continues to flash on the display, there is a fault in the communication between the UBA 3 and the BC10 basic controller. See page 46. This fault code will also appear when connecting a thermostat to the RC terminals.</td>
<td>ÜC</td>
<td>No heating operation and no hot water.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>The boiler is in the flue gas test mode or in service mode.</td>
<td>BC</td>
<td></td>
<td>page 10 or page 11</td>
<td></td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>The boiler is in heating mode.</td>
<td>BC</td>
<td></td>
<td>page 12</td>
<td></td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>The boiler is in manual operation mode.</td>
<td>BC</td>
<td>The room temperature is too high.</td>
<td>page 12</td>
<td></td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>The boiler is in hot water mode.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>![image]</td>
<td>![image]</td>
<td>The boiler has switched off. Start the pump over-run time via the tank for at least 30 seconds and maximum 1 minute.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*table 2  Display indications on the BC10 basic controller*

1) only visible using the service tool
2) is being carried out
### Symptoms

<table>
<thead>
<tr>
<th>Display code</th>
<th>Main display code</th>
<th>Sub-display code</th>
<th>Key to display code</th>
<th>Type of display code</th>
<th>Reset required?</th>
<th>Other symptoms</th>
<th>Diagnosis</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>OA</td>
<td></td>
<td>202</td>
<td>1)</td>
<td>Operating phase: The switch optimization program is activated. This program is activated if there is more than one burner firing request from an RC or ON/OFF regulator within 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>BC</td>
<td>Possibly no heating operation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OC</td>
<td></td>
<td>283</td>
<td>1)</td>
<td>The burner is started.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OE</td>
<td></td>
<td>265</td>
<td>1)</td>
<td>Readiness for operation: The boiler is in ready mode. The time-proportional program is activated. The time-proportional program is activated as soon the load requested by the modulating room controller is lower than the lower limit of the boiler load. During the time-proportional program the burner is switched on and off repeatedly. The period in which the burner is switched on depends on the difference between the load required by the modulating room controller and the lower limit of the boiler load. As soon as the burner is switched on, the device is operating at minimum load. As soon as the burner is switched off, the display code [OE 265] is indicated in the display of the BC10. The time-proportional program is deactivated automatically as soon as the load required by the modulating room controller is higher than the lower limit of the boiler load.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OH</td>
<td></td>
<td>203</td>
<td>1)</td>
<td>The boiler is in ready mode, there is no heat request.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OL</td>
<td></td>
<td>284</td>
<td>1)</td>
<td>The gas valve is opened.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OU</td>
<td></td>
<td>270</td>
<td>1)</td>
<td>Power Up. Boiler is starting up after a reset or after the main power is switched on. This display code will be displayed for 4 minutes maximum.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OY</td>
<td></td>
<td>204</td>
<td>1)</td>
<td>The boiler switches off, the temperature is higher than the target temperature.</td>
<td>BC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OY</td>
<td></td>
<td>276</td>
<td>The supply sensor has measured a temperature higher than 203 °F (95 °C).</td>
<td>BKS</td>
<td>no</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OY</td>
<td></td>
<td>277</td>
<td>The safety sensor has measured a temperature higher than 203 °F (95 °C).</td>
<td>BKS</td>
<td>no</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OY</td>
<td></td>
<td>285</td>
<td>The return sensor has measured a temperature higher than 203 °F (95 °C).</td>
<td>BKS</td>
<td>no</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2** Display indications on the BC10 basic controller

1) only visible using the service tool
2) is being carried out
## Symptoms

<table>
<thead>
<tr>
<th>Display code</th>
<th>Key to display code</th>
<th>Type of display code</th>
<th>Reset required?</th>
<th>Other symptoms</th>
<th>Diagnosis</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1C 2:10</td>
<td>Flue gas sensor is activated (not available).</td>
<td>BKS</td>
<td>no</td>
<td>Flue gas sensor has measured a flue gas temperature higher than 221 °F (105 °C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1L 2:11</td>
<td>The UBA 3 does not register any connections to the unused contacts 78 and 50.</td>
<td>BKS</td>
<td>no</td>
<td>No heating operation and no hot water.</td>
<td>page 48</td>
<td>page 48</td>
</tr>
<tr>
<td>2E 2:07</td>
<td>The system pressure is too low.</td>
<td>BKS</td>
<td>no</td>
<td>No heating operation and no hot water.</td>
<td>page 48</td>
<td>page 48</td>
</tr>
<tr>
<td>2F 2:60 1)</td>
<td>No temperature increase after burner start or the temperature difference between the supply and safety sensors is more than 27 °F (15 K).</td>
<td>BC</td>
<td></td>
<td></td>
<td>page 49</td>
<td>page 49</td>
</tr>
<tr>
<td>2F 2:71</td>
<td>The temperature difference between the supply and safety sensors is more than 27 °F (15 K).</td>
<td>BKS</td>
<td>no</td>
<td></td>
<td>page 49</td>
<td>page 49</td>
</tr>
<tr>
<td>2L 2:65 1)</td>
<td>The primary circulation pump does not generate a pressure difference.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 50</td>
<td>page 50</td>
</tr>
<tr>
<td>2P 2:12 1)</td>
<td>Temperature increase of supply sensor or safety sensor is more than 9 °F/sec (5 K/sec).</td>
<td>BC</td>
<td></td>
<td></td>
<td>page 52</td>
<td>page 52</td>
</tr>
<tr>
<td>2U 2:23 1)</td>
<td>The temperature difference between the supply and return sensors is more than 90 °F (50 K).</td>
<td>BC</td>
<td></td>
<td></td>
<td>page 53</td>
<td>page 53</td>
</tr>
<tr>
<td>3A 2:64</td>
<td>The air flow by the blower has failed during the operating phase.</td>
<td>BKS</td>
<td>no</td>
<td></td>
<td>page 54</td>
<td>page 54</td>
</tr>
<tr>
<td>3F 2:73</td>
<td>The blower is switched off during the safety test.</td>
<td>BKS</td>
<td>no</td>
<td></td>
<td>page 55</td>
<td>page 55</td>
</tr>
<tr>
<td>3L 2:14</td>
<td>The blower is switched off during the safety test.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 56</td>
<td>page 56</td>
</tr>
<tr>
<td>3P 2:16</td>
<td>The blower is running too slowly.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 57</td>
<td>page 57</td>
</tr>
<tr>
<td>3Y 2:15</td>
<td>The blower is running too fast.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 58</td>
<td>page 58</td>
</tr>
<tr>
<td>4A 2:18</td>
<td>The supply sensor has measured a temperature higher than 221 °F (105 °C).</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 59</td>
<td>page 59</td>
</tr>
<tr>
<td>4C 2:22 1)</td>
<td>The UBA 3 does not register the short cut between the unused contacts 22 and 24.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 60</td>
<td>page 60</td>
</tr>
<tr>
<td>4E 2:78</td>
<td>The sensor test has failed.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 60</td>
<td>page 60</td>
</tr>
<tr>
<td>4L 2:20</td>
<td>The safety sensor is shorted or measures temperatures higher than 266 °F (130 °C).</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 61</td>
<td>page 61</td>
</tr>
<tr>
<td>4P 2:22 1)</td>
<td>The safety sensor contact is interrupted.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 62</td>
<td>page 62</td>
</tr>
<tr>
<td>4U 2:22</td>
<td>The supply sensor is shorted.</td>
<td>VKS</td>
<td>yes</td>
<td>No heating operation and no hot water.</td>
<td>page 63</td>
<td>page 63</td>
</tr>
</tbody>
</table>

| Table 2 | Display indications on the BC10 basic controller |

1) only visible using the service tool  
2) is being carried out
### Symptoms

<table>
<thead>
<tr>
<th>Display code</th>
<th>Key to display code</th>
<th>Type of display code</th>
<th>Other symptoms</th>
<th>Diagnosis</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The supply sensor contact is interrupted.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No ionization after ignition. After four startup attempts, a locking boiler fault follows.</td>
<td>BKS</td>
<td>no</td>
<td>page 65</td>
<td>page 65</td>
</tr>
<tr>
<td></td>
<td>No ionization after four startup attempts.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>An ionization current was measured before the burner start.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>An ionization current was measured after the burner switch-off.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ionization fails during the operating phase.</td>
<td>BKS</td>
<td>no</td>
<td>page 73</td>
<td>page 73</td>
</tr>
<tr>
<td></td>
<td>The hot surface ignitor activates too long.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The power supply was interrupted and switched on again after a fault message.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The external switch contact is activated.</td>
<td>BC</td>
<td></td>
<td>page 79</td>
<td>page 79</td>
</tr>
<tr>
<td></td>
<td>Display test while starting up. This code is displayed for a maximum of 1 second.</td>
<td>UC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KIM or UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KIM or UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The gas valve coil or the wiring to the gas valve is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KIM or UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KIM or UBA 3 is defective.</td>
<td>VKS</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2** Display indications on the BC10 basic controller

1) only visible using the service tool

2) is being carried out

---

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24 Logamax plus GB142-24/30/45/60 - We reserve the right to make any changes due to technical modifications!
<table>
<thead>
<tr>
<th>Display code</th>
<th>Key to display code</th>
<th>Diagnosis</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outdoor sensor</strong></td>
<td>AS</td>
<td>The minimum outdoor temperature is assumed.</td>
<td>Check the sensor connection and the sensor wire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor connected or fitted incorrectly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor wire broken or shorted.</td>
<td>Check the sensor installation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sensor is defective.</td>
<td>Compare the resistance value to the sensor graph.</td>
</tr>
<tr>
<td><strong>Hot water temperature sensor</strong></td>
<td>AS</td>
<td>No water is heated any more.</td>
<td>Check the sensor connection and the sensor wire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor connected or fitted incorrectly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor wire broken or shorted.</td>
<td>Check the sensor installation on the hot water tank.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sensor is defective.</td>
<td>Compare the resistance value to the sensor graph.</td>
</tr>
<tr>
<td><strong>Hot water temperature sensor 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hot water remains cold.</strong></td>
<td>AS</td>
<td>The system constantly tries to heat the hot water tank to the hot water target value setting.</td>
<td>Remedy the leak if relevant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The hot water priority is cancelled when the fault message appears.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor connected or fitted incorrectly.</td>
<td>Check the sensor connection and the sensor wire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor wire broken or shorted.</td>
<td>Check the sensor installation on the hot water tank.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sensor is defective.</td>
<td>Compare the resistance value to the sensor graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill pump connected incorrectly or defective.</td>
<td>Test the fill pump operation e.g. using a relay test.</td>
</tr>
<tr>
<td><strong>Thermal disinfection.</strong></td>
<td>AS</td>
<td>Thermal disinfection was interrupted.</td>
<td>Choose the time for thermal disinfection so that no additional heat request occurs at this time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tap flow rate too great during disinfection period.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Boiler load too low for simultaneous heat use by other connected loads (e.g. 2nd heating circuit).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor connected or fitted incorrectly.</td>
<td>Check the sensor connection and the sensor wire.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor wire broken or shorted.</td>
<td>Check the sensor installation on the hot water tank.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The sensor is defective.</td>
<td>Compare the resistance value to the sensor graph.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fill pump defective</td>
<td>Test the fill pump operation e.g. using a relay test.</td>
</tr>
</tbody>
</table>

**table 2 Display indications on the BC10 basic controller**

1) only visible using the service tool
2) is being carried out
6.2 LED on the UBA 3

In addition to the display indication on the BC10 basic controller, there is a red LED on the UBA 3.

The meaning of this LED is explained in see table 3.

<table>
<thead>
<tr>
<th>LED</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Normal operation</td>
</tr>
<tr>
<td>Flashing slowly (1 Hz)</td>
<td>There is a boiler fault (locking fault).</td>
</tr>
<tr>
<td>Flashing fast (10 seconds)</td>
<td>During startup after replacing the KIM or the UBA 3.</td>
</tr>
<tr>
<td>On</td>
<td>During a fault in the UBA 3 or if the KIM is not recognized.</td>
</tr>
</tbody>
</table>

**table 3 LED on the UBA 3**

**6.2 LED on the UBA 3**

In addition to the display indication on the BC10 basic controller, there is a red LED on the UBA 3.

The meaning of this LED is explained in see table 3.
7 Diagnosis

7.1 Faults without a fault code

Hot water request
Although the UBA 3 indicates that the system is ready for operation, it is possible that in the event of a hot water request no hot water is made available, or it is only made available for a short time.
Structure diagram for troubleshooting, see page 33.

Heating mode
Although the UBA 3 shows that the system is ready for operation and the room temperature has not reached the preset value, the Logamax plus GB142 does not enter the heating mode.
Structure diagram for troubleshooting: page 44.
Diagnosis

No indication in display.

- Do the other functions of the device work normally?
  - Yes: Go to page 29, question 19.
  - No: Proceed with the following steps.

- Check that the mains power switch is ON.
  - Yes: Proceed to the next step.
  - No: Switch on the mains power switch.

- Is the mains power switch ON?
  - Yes: Proceed to the next step.
  - No: Turn the operating switch on the BC 10 to position “1” (ON). See page 9 (fig. 2).

- Check that the operating switch is in position “1” (ON). See page 9.
  - Yes: Proceed to the next step.
  - No: Turn the operating switch on the BC 10 to position “1” (ON). See page 9 (fig. 2).

- Check that there is a 120V AC power supply at the mains power switch.
  - Yes: Proceed to the next step.
  - No: Deal with any problem in the electrical system.

- Is there a voltage at the mains power switch?
  - Yes: Measure the resistance of the 120V AC supply cord.
  - No: Replace the cable loom (or the affected part thereof).

- Measure the resistance of the 120V AC supply cord.
  - Yes: Proceed to the next step.
  - No: Replace the fuse.

- Is the fuse okay?
  - Yes: Replace the fuse. See page 84.
  - No: Is there any indication on the BC10 display?

- Is there any indication on the BC10 display?
  - Yes: Turn the operating switch on the BC10 to position “0” (OFF). See page 9, par. 4.2.
  - No: Go to page 30, question 7.
Diagnosis

Check that there is between 7.8 and 15.2 VDC on both contacts 1 and 2 of the BC10. See page 126.

Is there a voltage?

Yes → Replace the BC10. See the fitting instructions of the BC10.

No → Measure the relevant part of the cable loom. See page 126.

Is the cable loom okay?

Yes → Replace the cable loom or the affected part thereof.

No → No

Replace the cable loom or the affected part thereof.
Turn the operating switch on the BC10 to position “0” (OFF). See page 9, par. 4.2.

Connect the blower. See page 86.

Turn the operating switch on the BC10 to position “1” (ON). See page 9, par. 4.2.

Is there any indication on the BC10 display?

No

Replace the blower.
See page 88.

Yes

Replace the fuse again.
See page 84.

Fit the casing.

Turn the operating switch on the BC10 to position “0” (OFF). See page 9, par. 4.2.

Make the heating system ready for operation.

Turn the operating switch on the BC10 to position “1” (ON). See page 9, par. 4.2.

Logamax plus
GB142-15/24/30/45/60 okay.
Use a volt-ohm-multimeter to check the supply wires of the primary circulation pump, the blower and the hot surface ignitor for signs of short circuiting. See page 87 and page 93.

Are the wires okay?

Yes

Use a volt-ohm-multimeter to measure contacts L and N of the transformer for resistance.

Is the resistance approx. 50 Ohms?

Yes

Measure the supply cord of the transformer to make sure it is not broken or shorted.

Is the supply cord okay?

Yes

Replace the supply cord of the transformer and replace the fuse again. See page 84.

No

Replace the cable loom or the affected part thereof and the fuse again. See page 84.

No

Replace the transformer, see page 109. And replace the fuse again. See page 84.

No

Replace the transformer, see page 109. And replace the fuse again. See page 84.
No hot water but heating is operational, possibly radiators become hot without there being a heat request.
On devices with external hot water tanks.

1. Turn the operating switch on the BC10 to position “0” (OFF) and turn the operating switch to “1” (ON).
2. Open hot water tap.
3. Check that the hot water outlet conduit immediately under the hot water tank becomes hot and that the settings on the RC device are correct.

- Does this conduit warm up to approx. 140 °F (60 °C)?

  - Yes
  - No

  **Check:**
  - that the hot water supply has been registered with the control device. See the Operating instructions of the BC10 and the RC control device.
  - that the hot water target value setting is high enough (140 °F = 60 °C). See page 8, fig 2.
  - that the hot water supply is not switched off by the timer program of the RC control device. See the Operating Instructions of the RC control device.

- Are the settings okay?

  - Yes
  - No

  **Check that the "Hot water mode" LED on the BC10 is lit.**
  See page 8, fig 2.

- Is the LED lit?

  - Yes
  - No

  **Adjust the settings.**
The cause of the fault is to be found outside the device and the hot water tank.

Check that the cold water inlet and hot water outlet conduit connections on the hot water tank are not reversed.

Are the water-side conduits connected properly?

No

Connect the conduits correctly.

Yes

Close the shut-off valve in the cold-water inlet and open a hot water tap at random to see if water comes out of it.

Is this the case?

Yes

The cause is then a defective mixer tap, a thermostat-controlled mixer valve or a short circuit between the hot- and cold-water conduit circuits.

No

Check to see if any other external part of the heating circuit is a possible cause.

Are such items detected?

Yes

Place the affected components out of service.

No
Diagnosis 7

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**No**

12

Check the hot water temperature sensor. See page 89.

Is the hot water temperature sensor okay?

No

Replace the hot water temperature sensor. See page 91.

Yes

Check the wire of the hot water temperature sensor between the terminal strip and the UBA 3 mounting base using a continuity checking device. See page 92.

Is the wire okay?

No

Replace the cable loom or the affected part thereof.

Yes

44

page 83

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No

13

Check that the burner in the boiler activates as specified in the structural diagram, page 17.

Does the burner in the boiler activate?

No

Remedy the fault using the structure diagram that corresponds with the fault code.

Yes

Is a tank filling pump fitted?

No

21

page 36

Yes

15

page 39

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page 33

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No

8

page 31

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Yes

15

page 39

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No

8

page 31

---
Check that the tank filling pump is running.

Is the tank filling pump running?

No

Check that during hot water mode there is a 120V AC voltage on the tank filling pump.

Is the tank filling pump being activated?

No

Check the connection board to make sure that there is 120V AC on both contacts L and N of connection PS (gray) during hot water mode.

Does the connection board have on both contacts L and N of connection PS 120V AC during hot water operation?

No

Check the fuse on the connection board. Value: 5A. See page 84.

Is the fuse on the connection board okay?

No

Replace the fuse on the connection board. See page 84.

Yes

Check the cable loom of the device.

Is the cable loom okay?

No

Replace the cable loom.

Yes

Replace the circuit board.

Is the tank filling pump running?

No

Replace the supply cord of the tank-filling pump.

Yes

Replace the fuse on the connection board. See page 84.

Replace the cable loom.

Replace the circuit board.

Is the tank filling pump running?

No

Yes

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Page 34

Page 37

Page 83

Page 84
Check the tank-filling pump for soiling or for a defective pump impeller wheel.

Is the tank-filling pump soiled or is the pump impeller wheel defective?

- Yes: Replace or clean the tank filling pump.
- No: The external hot water tank is furred up. Decalcify the tank.

Check that the pump impeller wheel of the tank filling pump is not blocked.

Is the pump impeller wheel of the tank filling pump blocked?

- Yes: As described for the primary circulation pump, the tank filling pump must be turned in the direction of rotation of the pump using a screwdriver.
- No:
Check that the capacitor of the tank filling pump is okay.

Is the capacitor of the tank filling pump okay?

- No
  - Replace the tank filling pump.

- Yes
  - Replace the capacitor.

Replace the tank filling pump.

Replace the capacitor.
Check the primary circulation pump for corrosion or scale.

Is there corrosion or scale inside the primary circulation pump?

Yes

Clean the primary circulation pump (inside).

No

Check the following elements for soiling and/or damage:
- the combustion-air inlet conduit
- the air suction tube,
- the gas orifice, see page 101
- the blower, see page 86
- the connection between the blower and the burner
- the burner
- the heat exchanger, see page 117
- the flue gas conduit.

Are the above-mentioned components clean and free from damage?

Yes

Measure the inlet gas pressure (flow pressure). See page 107.

No

Clean and/or replace the corresponding components.

Is the inlet gas pressure okay?

Yes

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No

If the required inlet gas pressure is not available, you should consult the relevant gas utility company.
Check the gas/air ratio. See page 108.

Is the gas/air ratio okay?

No → Adjust the gas/air ratio. See page 108.

Yes → Check the hot water tank for scale build-up.

Is the hot water tank scaled up?

Yes → Decalcify the tank.

No → Check to see if any other external part of the heating circuit is a possible cause of the fault.

Are such items detected?

Yes → Place the affected components out of service.

No →
hot water available, no heating operation.
On devices with external hot water tanks.

Check that the RC control device settings are correct. See the Operating Instructions of the RC control device.

Are the RC control device settings correct?

Yes: Increase the temperature setting on the RC control device. See the Operating Instructions of the RC control device.

No: Check that the "Heating request" LED on the BC10 is lit. See fig. 2, page 8.

Is the "Heating request" LED lit?

Yes: Check that the boiler water temperature setting on the BC10 (see page 9) or the RC control device is high enough.

No: Increase the boiler water temperature setting on the BC10 (see page 9) or on the RC control device.

Is the boiler water temperature setting high enough?

Yes: Check that the boiler load setting is correct. See "Adjustments" menu on page 12.

No: Increase the boiler load setting. See "Adjustments" menu on page 12.

Is the boiler load setting high enough?

Yes: Is a hot water tank connected?

No: Increase the boiler load setting. See "Adjustments" menu on page 12.

Yes: Is a tank pump fitted?

No: Increase the boiler load setting. See "Adjustments" menu on page 12.

Yes: Is a hot water tank connected?

No: Increase the boiler load setting. See "Adjustments" menu on page 12.

Yes: Is a tank pump fitted?

No: Increase the boiler load setting. See "Adjustments" menu on page 12.

Yes: Is a hot water tank connected?

No: Increase the boiler load setting. See "Adjustments" menu on page 12.

Yes: Is a tank pump fitted?
Check that during heating mode there is a 120V AC voltage on the DHW circulation pump.

Is there a voltage?

No

Check the cable loom of the device.

Is the cable loom okay?

Yes

Replace the cable loom.

No

Replace the connection board.

Is the DHW circulation pump running?

Yes

Replace the supply cord of the tank-filling pump.

No

Replace the connection board.

Is the DHW circulation pump running?

No

Replace the cable loom.
The fault is caused by the system and not by the boiler.

Check the DHW circulation pump for soiling or for a defective pump impeller wheel.

Is the DHW circulation pump soiled or is the pump impeller wheel defective?

- Yes: Clean or replace the DHW circulation pump.
- No: The fault is caused by the system and not by the boiler.

Check that the pump impeller wheel is not blocked.

Is the pump impeller wheel blocked?

- Yes: As described for the primary circulation pump, the DHW circulation pump must be turned in the direction of rotation of the pump using a screwdriver.
- No: 

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Page 31

Page 43
Check that the capacitor of the DHW circulation pump is okay.

Is the capacitor of the DHW circulation pump okay?

- Yes: Replace the DHW circulation pump.
- No: Replace the capacitor.

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**50**

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**8**

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**page 36**
No digital system water pressure indication on the display of the BC10 basic controller.

Check that the cable plug from the pressure sensor is connected. See page 8, fig. 1, pos. 17.

- Is the plug-and-socket connection okay?
  - Yes
  - No
    - Reconnect the plug-and-socket connection of the pressure sensor. See page 8, fig. 1, pos. 17.

- Check the wires between the pressure sensor plug and the UBA 3 mounting base, by using a proper measuring device. See page 126, fig. 110.

  - Is the wiring okay?
    - Yes
    - No
      - Replace the cable loom or the affected part thereof.

- Replace the pressure sensor to test whether the fault can be traced back to the sensor. See page 116, paragraph 8.1.33.

  - Can a pressure indication be read out on the display?
    - Yes
    - No
      - 44 page 83

8 page 29
7.2 Faults with a fault code

The following structural diagrams can be used for the systematic troubleshooting of faults with fault codes.

While trying to establish the fault causes, you should always also check the contacts of all electrical plug-and-socket connections and the connection plugs in the UBA 3.

**WARNING!**

Danger to life due to electric shock.

- Switch off the Logamax plus GB142 when testing the connections!

Whenever a fault has been remedied, you must press the "Reset" button (for at least 5 seconds) to reset the UBA 3 to its setting status (release).

**NOTE!**

Resetting is not possible by switching off the operating switch!

If a fault is displayed again, you should follow the relevant structural diagram to carry out further troubleshooting.

Certain trouble-shooting activities have to be carried out in the heating mode of the Logamax plus GB142. The flue gas test or the service mode must be activated then, see chapter "4 Operation" on page 9, "Flue gas test" menu on page 10 and "Service Mode" menu on page 11.
The supply sensor has measured a temperature higher than 203 °F (95 °C).  
The safety sensor has measured a temperature higher than 203 °F (95 °C).

The return sensor has measured a temperature higher than 203 °F (95 °C).

The supply sensor has measured a temperature higher than 203 °F (95 °C).

The safety sensor has measured a temperature higher than 203 °F (95 °C).

The return sensor has measured a temperature higher than 203 °F (95 °C).

Locking boiler-fault code.

Wait approx. 60 seconds until the boiler automatically becomes operational again.

fault message 0Y ?

Yes

Are all servicing cocks open?

No

Open the servicing cocks.

Yes

Is the system pressure (measured on the boiler) in the heating system at least 14.5 psi (1 bar)?

No

Fill and bleed the heating system.

Yes

Is at least one thermostatic valve open?

No

Open a thermostatic valve.

Yes

Check the supply, safety and return sensors (page 89).

Are the supply and safety sensors okay?

No

Replace the supply, safety and/or return sensors (page 91).

Yes

Check the primary circulation pump.

Is the primary circulation pump okay?

No

Replace the primary circulation pump.

Yes

page 83
**Diagnosis**

**1L 211** The UBA 3 does not register any connections to the unused contacts 78 and 50.  
Locking boiler-fault code.

Check the contact between the UBA 3 and the UBA 3 mounting base.  
See page 125, fig 109.

- Is the contact okay?
  - Yes: Try to remedy the fault by replacing the entire cable loom.
  - No: Is the malfunction been repaired?
    - Yes: Restore the contact between the UBA 3 and the UBA 3 mounting base.  
      See page 125, fig 109.
    - No: 44 page 83

**12E 207** The system pressure is too low.  
Locking boiler-fault code.

- Is the pressure in the heating system at least 14.5 psi (1 bar)?
  - Yes: Replace the pressure sensor to test whether the fault can be traced back to the sensor.  
    See page 116.
  - No: Fill and bleed the heating system.

- Is the blocking boiler-fault code cleared from the display?
  - Yes:  
  - No: 44 page 83

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8 page 31

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Buderus

Logamax plus GB142-24/30/45/60 - We reserve the right to make any changes due to technical modifications!
No temperature increase after burner start or the temperature difference between the supply and safety sensors is more than 27 °F (15 K).

The temperature difference between the supply and safety sensors is more than 27 °F (15 K).

Wait approx. 60 seconds until the boiler automatically becomes operational again.

fault message 2F ?

Yes

Are all servicing cocks open?

No

Open the servicing cocks.

Yes

Is the system pressure (measured on the boiler) in the heating system at least 14.5 psi (1 bar)?

No

Fill and bleed the heating system.

Yes

Is at least one thermostatic valve open?

No

Open a thermostatic valve.

Yes

Check the supply and safety sensors (page 89).

Are the supply and safety sensors okay?

No

Replace the supply and/or safety sensors (page 91).

Yes

Check the primary circulation pump.

Is the primary circulation pump okay?

No

Replace the primary circulation pump.

Yes

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page 31
The primary circulation pump does not generate a pressure difference.

Locking boiler-fault code.

Check the primary circulation pump for mechanical jamming.

Is the primary circulation pump jammed?

Yes

Try to undo the jam or replace the primary circulation pump.

No

Does the primary circulation pump run during L2?

Yes

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No

Check the primary circulation pump activation.

Is the activation okay?

Yes

Replace the primary circulation pump.

No

Check the primary circulation pump; check that the supply cord is not broken.

Is the supply cord okay?

Yes

Replacement of primary circulation pump.

No

Replace the supply cord.

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Page 83

44
Check the primary circulation pump for soiling.

- Is the primary circulation pump soiled?
  - Yes: Clean the circulation pump (inside).
  - No: Is the expansion tank correctly connected to the supply conduit?
    - Yes: Connect the expansion tank to the return conduit.
    - No: Check whether the pressure sensor is soiled. See page 116.

- Is the pressure sensor soiled?
  - Yes: Clean the pressure sensor.
  - No: Replace the pressure sensor. See page 116.

- Has the malfunction been repaired?
  - Yes: Stop.
  - No: page 83
Diagnosis

Temperature increase of supply sensor or safety sensor is more than 7.5 °F/sec (5 K/sec). Operating code

Wait approx. 30 seconds until the boiler automatically becomes operational again.

fault message ²P ?

Yes

Are all servicing cocks open?

No

Open the servicing cocks.

Yes

Is the pressure in the heating system (measured on the boiler) at least 14.5 psi (1 bar)?

No

Fill and bleed the heating system.

Yes

Is at least one thermostatic valve open?

No

Open a thermostatic valve.

Yes

Check the supply and safety sensors (page 89).

Are the supply and safety sensors okay?

No

Replace the supply and/or safety sensors (page 91).

Yes

Check the primary circulation pump.

Is the primary circulation pump okay?

No

Replace the primary circulation pump.

Yes

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page 83

No

Yes

Check the primary circulation pump.

page 83

No

page 31
The temperature difference between the supply and return sensors is more than 90 °F (50 K).

Fault message 2U?

- Yes
  - Are all servicing cocks open?
    - Yes
      - Open the servicing cocks.
    - No
      - Are at least one thermostatic valve open?
        - Yes
          - Check the supply and return sensors (page 89).
        - No
          - Replace the supply and return sensors (page 91).
  - No
    - Is the primary circulation pump okay?
      - Yes
        - Check the primary circulation pump.
      - No
        - Replace the primary circulation pump.

Wait approx. 30 seconds until the boiler automatically becomes operational again.

Are the supply and return sensors okay?

- Yes
  - Check the primary circulation pump.
- No
  - Replace the primary circulation pump.
The air fan has failed during the operating phase.

Blocking boiler-fault code.

Check that both the plug-and-socket connections of the blower are correctly fitted. See page 86, fig 12.

Are the plug-and-socket connections fitted correctly? No: Reconnect the plug-and-socket connection of the blower. See page 88, fig 12.

Yes: Check blower – activation 120V AC See page 86.

Is the activation okay? No: Replace the tacho wire (page 88).

Yes: Check the tacho wire of the blower. See page 88.

Tacho wire okay? No: Replace the tacho wire (page 88).

Yes: Check whether you can remedy the fault by temporarily fitting a new blower. See page 88, paragraph 8.1.6.

Has the malfunction been repaired? Yes: Have the electrical system tested.

No: Check that the mains voltage is 120V AC.

Sufficient mains voltage? No: Have the electrical system tested.

Yes: Check that the plug-and-socket connections of the blower are correctly fitted. See page 86, fig 12.
Diagnosis 7

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**Blocking boiler fault code 3A-2**
- The blower is switched off during the safety test.
- Locking boiler-fault code.

**Is the supply cord okay?**
- Yes
- No

**Replace the supply cord.**

**Check the supply cord of the blower (120V AC). See page 87.**

**Is the supply cord okay?**
- Yes
- No

**Replace the supply cord.**

**Fully switch off the heat request and check that the blower is still operational after 1 minute.**

**Is the blower still operational?**
- Yes
- No

**Replace the supply cord.**
The blower is switched off during the safety test.

Locking boiler-fault code.

Check that both the plug-and-socket connections of the blower are correctly fitted.
See page 88, fig 12.

Are the plug-and-socket connections fitted correctly?

Yes

Check blower – activation 120V AC.
See page 86.

Is the activation okay?

Yes

Check the tacho wire of the blower.
See page 88.

Tacho wire okay?

Yes

Attempt to rectify the fault by temporarily replacing the blower.
See page 88.

Has the malfunction been repaired?

Yes

No

Reconnect the plug-and-socket connection of the blower. See page 88, fig 12.

No

Replace the tacho wire. See page 88.

Is the activation okay?

No

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Page 57

Check blower – activation 120V AC.
See page 86.

No

Replace the tacho wire. See page 88.

No

Replace the tacho wire. See page 88.

Yes

Replace the tacho wire. See page 88.

No

Replace the tacho wire. See page 88.

Yes

Replace the tacho wire. See page 88.

No

Replace the tacho wire. See page 88.

Yes

Replace the tacho wire. See page 88.

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Replace the tacho wire. See page 88.

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Replace the tacho wire. See page 88.

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Replace the tacho wire. See page 88.

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Replace the tacho wire. See page 88.

Yes

Replace the tacho wire. See page 88.

Yes

Replace the tacho wire. See page 88.

No

Replace the tacho wire. See page 88.
Diagnosis 7

Logamax plus GB142-24/30/45/60 - We reserve the right to make any changes due to technical modifications!

Locking boiler-fault code 3L-2

Locking boiler-fault code 3P (flashing)

Is the supply cord okay?

Check the supply cord of the blower (120V AC). See page 87.

Is the supply cord okay?

Replace the supply cord.

Check to see if the blower is soiled or wet.

Check that the mains voltage is 120V AC.

Sufficient mains voltage?

Clean or replace the blower. See page 88.

Have the electrical system tested.

Try to remedy the fault by integrating another provisional blower. See page 88.

Has the malfunction been repaired?

Clean or replace the blower.

See page 88.

Have the electrical system tested.

Try to remedy the fault by integrating another provisional blower. See page 88.

Has the malfunction been repaired?

Clean or replace the blower.

See page 88.

Have the electrical system tested.

Try to remedy the fault by integrating another provisional blower. See page 88.

Has the malfunction been repaired?

Clean or replace the blower.

See page 88.

Have the electrical system tested.

Try to remedy the fault by integrating another provisional blower. See page 88.

Has the malfunction been repaired?

Clean or replace the blower.

See page 88.

Have the electrical system tested.
The blower is running too fast.  Locking boiler-fault code.

Check the plug-and-socket connection of the tacho wire to the blower. This is the thin plug. See page 88, fig 12.

Is the plug-and-socket connection okay?
- Yes
- No

Check the tacho wire by measuring the resistance (is the wire broken?). See page 88.

Tacho wire okay?
- Yes
- No

Check that the mains voltage is 120V AC.

Sufficient mains voltage?
- Yes
- No

Check that there is no blockage in the blower or the heat exchanger and that the flue-gas system is connected.

Did you find a blockage?
- Yes
- No

Check to see if there is a second blower in the flue gas outlet conduit or air inlet system.

Is a second blower fitted?
- Yes
- No

Check to see if the blower wheel has come loose at the motor spindle.

Blower wheel loose?
- Yes
- No

Attempt to rectify the fault by temporarily fitting another blower. See page 88.

Has the malfunction been repaired?
- Yes
- No

Replace the tacho wire.

Restore the plug-and-socket connection.

Have the electrical system tested.
The supply sensor has measured a temperature higher than 221 °F (105 °C).  Locking boiler-fault code.

The return sensor has measured a temperature higher than 221 °F (105 °C).  Locking boiler-fault code.

Press the "Reset" button.

New fault message? No

Yes

Are all servicing cocks open? No

Yes

Is the system pressure (measured on the boiler) in the heating system at least 14.5 psi (1 bar)? No

Fill and bleed the heating system.

Yes

Is at least one thermostatic valve open? No

Open a thermostatic valve.

Yes

Check the primary circulation pump.

Is the primary circulation pump okay? No

Replace the primary circulation pump.

Yes

Check the supply or return sensor (page 89).

Are the supply and return sensors okay? No

Replace the supply and return sensor (page 91).

Yes
The UBA 3 does not register the short cut between the unused contacts 22 and 24. Locking boiler-fault code.

Check the contact between the UBA 3 and the UBA 3 mounting base. See page 126, fig 110.

Is the contact okay? No

Try to remedy the fault by replacing the entire cable loom.

Has the malfunction been repaired? Yes

Restore the contact between the UBA 3 and the UBA 3 mounting base. See page 125, fig 109.

No

The sensor test has failed. Locking boiler-fault code.

Measure the voltage to check for a possible short circuit in the supply or safety sensor wiring. See page 126.

Is the wiring okay? No

Replace the cable loom or the affected part thereof.

Yes

44 page 83

8 page 31
The safety sensor is shorted or measures temperatures higher than 266 °F (130 °C).

Locking boiler-fault code.

Press the "Reset" button.

New fault message 4L ?

Yes

Are all servicing cocks open?

Yes

Is the pressure in the heating system at least 14.5 psi (1 bar)?

Yes

Is at least one thermostatic valve open?

Yes

Check the primary circulation pump.

No

Is the primary circulation pump okay?

Yes

Check the wire to the safety sensor for signs of short circuiting (page 92).

Is the wire okay?

Yes

No

Fill and bleed the heating system.

Open the servicing cocks.

Open a thermostatic valve.

Replace the primary circulation pump.

Replace the cable loom or the affected part thereof.

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26 page 62
Check the safety sensor (page 89).

Is the safety sensor okay?

Yes

Replace the safety sensor (page 91).

No

Replace the cable loom or the affected part thereof.

Is the wire okay?

Yes

Check the safety sensor (page 89).

No

Replace the safety sensor (page 91).

Is the safety sensor okay?

Yes

Press the "Reset" button.

New fault message P4?

Yes

Check the wire to the safety sensor for the correct contact (page 92).

No

Replace the cable loom or the affected part thereof.

Is the wire okay?

Yes

Check the safety sensor (page 89).

No

Replace the safety sensor (page 91).

Is the safety sensor okay?
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The supply sensor contact is shorted. Locking boiler-fault code.

The return sensor contact is shorted. Locking boiler-fault code.

Press the "Reset" button.

New fault message 4U or 8C?

Yes

Check the wire to the supply or return sensor for signs of short circuiting (page 92).

Is the wire okay?

No

Replace the cable loom or the affected part thereof.

Yes

Check the supply and return sensor (page 89).

Are the supply and return sensors okay?

No

Replace the supply and return sensor (page 91).

Yes

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Diagnosis

<table>
<thead>
<tr>
<th>Fault Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4Y</td>
<td>The supply sensor contact is interrupted.</td>
</tr>
<tr>
<td>CY</td>
<td>The return sensor contact is interrupted.</td>
</tr>
<tr>
<td>44</td>
<td>page 83</td>
</tr>
<tr>
<td>8</td>
<td>page 31</td>
</tr>
</tbody>
</table>

- **Diagnosis:**
  - Press the “Reset” button.
  - New fault message: 4Y or CY?
    - Yes: Check the wire to the supply or return sensor for the proper contact (page 92).
    - No: Replace the cable loom or the affected part thereof.
  - Is the wire okay?
    - Yes: Check the supply and return sensor (page 89).
    - No: Replace the supply and return sensor (page 91).
  - Are the supply and return sensors okay?
    - Yes: 44, page 83
    - No: 8, page 31
No ionization after four startup attempts.  

Locking boiler-fault code.

Press the "Reset" button.

New fault message 6R?

Yes

No

Is the heating system propane gas-fired?

Yes

No

Contact the gas utility company to ensure that no nitrogen remains in the gas tank or gas supply pipes.

Measure the static inlet gas pressure.  

See page 107.

Is the inlet gas pressure okay?

Yes

No

Bleed the gas supply pipe.  See page 106.

Has the gas supply pipe been bled of air?

Yes

No

Bleed the gas supply pipe.  See page 106.

Check the hot surface ignitor is activated during the operating code C0.  

See page 92.

Is the hot surface ignitor activated during the operating code C0?

Yes

No

Check the resistance of the hot surface ignitor.  

See page 93.

Is the resistance of the hot surface ignitor okay?

Yes

No

Replace the hot surface ignitor.  

See page 94.

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Diagnosis

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Check the hot surface ignitor glows during the operating code 0C. See page 92.

Does the hot surface ignitor activated glow during the operating code 0C?

Yes

Replace the hot surface ignitor. See page 94.

No

Check the gas valve is opened during the operating code 0L. See page 98.

Is the gas valve open?

Yes

No

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33 page 70

31 page 71

Measure the dynamic inlet gas pressure. See page 107.

Is the dynamic inlet gas pressure okay?

Yes

No

Measure the gas/air ratio during the startup phase. See page 108.

Is the gas/air ratio correctly adjusted?

Yes

No

Adjust the gas/air ratio. See page 108.

Check that the correct gas orifice was fitted. See page 127, table 5.

Was the correct gas orifice fitted?

Yes

No

Fit the correct gas orifice. See page 127, table 5.

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page 67
Check the following elements for soiling, damage and correct assembly:
- the combustion-air inlet conduit
- the air suction tube
- the seal between the Venturi and the blower
- the gas orifice, see page 101 and page 127, table 5
- the blower, see page 86
- the connection between the blower and the burner
- the burner
- the heat exchanger, see page 117
- the flue gas conduit.

Are the above-mentioned components clean and free from damage?
- Yes
- No
  Clean and/or replace the corresponding components.

Measure the ionization current.
See page 95.

Is the ionization current okay?
- Yes
- No
  page 71

No
  page 71
Check whether the gas stop tap is open. See page 101.

Is the gas stop tap open?

- Yes
  - Check to see if there is a blockage in the conduit between the gas stop tap and gas valve.
  - Did you find a blockage?
    - Yes
      - Deal with blockage.
    - No
      - Check for blockages in the remaining section of the gas supply pipe.
      - Did you find a blockage?
        - Yes
          - Deal with blockage.
        - No
          - If the required inlet gas pressure is not available, you should consult your gas utility company.

- No
  - Open the gas stop tap. See page 101.

Measure the resistance in the wires between the switch of the hot surface ignitor and the UBA 3. See page 99.

Is the wiring okay?

- Yes
  - Replace the cable loom or the affected part thereof.
- No
  - Replace the cable loom or the affected part thereof.
Is the plug-and-socket connection okay?

- Yes: Reconnect the plug-and-socket connection at the gas valve. See page 99.
- No: Check the gas valve during the operating code L to make sure it receives power then. See page 98.

Does the gas valve receive power?

- Yes: Replace the gas valve. See page 101.
- No: Measure the resistance in the wires between the gas valve plug and the UBA 3 mounting base.

Is the wiring okay?

- Yes: Replace the cable loom or the affected part thereof.
- No: Replace the gas valve. See page 101.
Check whether the gas stop tap is open. See page 101.

Is the gas stop tap open?

Yes

Check for blockages in the remaining section of the gas supply pipe.

Did you find a blockage?

Yes

Deal with blockage.

No

Check for blockages in the remaining section of the gas supply pipe.

Did you find a blockage?

Yes

Deal with blockage.

No

Check whether the overall gas-conduit network is of sufficient capacity.

Is the overall gas-conduit network of sufficient capacity?

No

Reinforce the gas-conduit network.

Yes

Consult the utility company.
Diagnosis 7

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- **Check the plug-and-socket connection between the ionization electrode and cable loom.** See page 95.
  - **Is the plug-and-socket connection okay?**
    - No: Correctly insert the plug into its socket.
    - Yes: Measure the resistance in the wires between the ionization electrode plug and the UBA 3 mounting base. See page 95.
  - **Is the wiring okay?**
    - No: Replace the cable loom or the affected part thereof.
    - Yes: Check the ionization electrode and replace it if necessary. See page 97

---

### 31

- **Press the “Reset” button.**
  - **Has a new fault code occurred?**
    - No: Remedy the fault using the structure diagram that corresponds with the fault code.
    - Yes: **Has a new locking boiler fault code occurred?**
      - No: Remedy the fault using the structure diagram that corresponds with the fault code.
      - Yes: **Did you go through all structure diagrams thru 35?**
        - No: Remedy the fault using the structure diagram that corresponds with the fault code.
        - Yes: Go through all structure diagrams thru 35.

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---
An ionization current was measured before the burner start.  

Locking boiler-fault code.

Press the "Reset" button.

New fault message 6C?

Yes

Check the ionization electrode for soiling.  
Damage see page 95.

Is the ionization electrode okay?

No

Replace the ionization electrode.  
See page 97.

Yes

Replace the gas valve.  
See page 101.

Is the burner still under pressure?

No

Check that the burner is still under pressure after the heat request has ended.  

Yes

Replace the ionization electrode.  
See page 97.

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page 31
Ionization fails during the operating phase. Locking boiler-fault code.

1. Is the heating system propane gas-fired?
   - Yes
   - No

   Measure the static inlet gas pressure. See page 107.

2. Is the static inlet gas pressure okay?
   - No
   - Yes

   Bleed the gas supply pipe. See page 106.

3. Has the gas supply pipe been bled of air?
   - No
   - Yes

   Measure the dynamic inlet gas pressure. See page 107.

4. Is the dynamic inlet gas pressure okay?
   - No
   - Yes

   Measure the gas/air ratio during the startup phase. See page 108.

5. Is the gas/air ratio correctly adjusted?
   - No
   - Yes

   Adjust the gas/air ratio. See page 108.

   Ensure that no nitrogen remains in the gas tank or gas supply pipes, in close consultation with the gas utility company.

6. Ensure that no nitrogen remains in the gas tank or gas supply pipes, in close consultation with the gas utility company.

   Bleed the gas supply pipe. See page 106.

Page references: 7, 38, 39, 40, 41.
Check that the correct gas orifice was fitted. See page 127, table 5.

Was the correct gas orifice fitted?

Check the following elements for soiling, damage and correct assembly:
- the combustion-air inlet conduit
- the air suction tube
- the seal between the Venturi and the blower
- the gas orifice, see page 101 and page 127, table 5
- the blower, see page 86
- the connection between the blower and the burner
- the burner
- the heat exchanger, see page 117
- the flue gas conduit

Are the above-mentioned components clean and free from damage?

Measure the ionization current. See page 95.

Is the ionization current okay?

Fit the correct gas orifice. See page 127, table 5.

Clean and/or replace the corresponding components.
Check whether the gas stop tap is open. See page 101.

Did you find a blockage?

Check for blockages in the remaining section of the gas supply pipe.

If the required inlet gas pressure is not available, you should consult the relevant gas utility company.

Open the gas stop tap. See page 101.

Deal with blockage.

Deal with blockage.
Check whether the gas stop tap is fully open. See page 101.

Is the gas stop tap fully open? 

Yes

Open the gas stop tap. See page 101.

No

Check to see if there is a blockage in the gas conduit section between the gas stop tap and gas valve.

Did you find a blockage? 

Yes

Deal with blockage.

No

Check for blockages in the remaining section of the gas supply pipe.

Did you find a blockage? 

Yes

Deal with blockage.

No

Check whether the overall gas-conduit network is of sufficient capacity.

Is the overall gas-conduit network of sufficient capacity? 

Yes

Consult the gas utility company.

No

Reinforce the gas-conduit network.
Check the plug-and-socket connection between the ionization electrode and cable loom. See page 95.

Is the plug-and-socket connection okay?

- Yes
- No

Measure the resistance in the wires between the ionization electrode plug and the UBA 3 mounting base. See page 99.

Is the wiring okay?

- Yes
- No

Replace the ionization electrode. See page 97

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Has a new fault code occurred?

- Yes
- No

Has a new locking boiler fault code 6L occurred?

- Yes
- No

Did you go through all structure diagrams thru 14?

- Yes
- No

Remedy the fault using the structure diagram that corresponds with the fault code.

Press the "Reset" button.

Remedy the fault using the structure diagram that corresponds with the fault code.

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Replace the ionization electrode. See page 97

Is the plug-and-socket connection okay?

- Yes
- No

Measure the resistance in the wires between the ionization electrode plug and the UBA 3 mounting base. See page 99.

Is the wiring okay?

- Yes
- No

Replace the ionization electrode. See page 97

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Has a new fault code occurred?

- Yes
- No

Has a new locking boiler fault code 6L occurred?

- Yes
- No

Did you go through all structure diagrams thru 14?

- Yes
- No

Remedy the fault using the structure diagram that corresponds with the fault code.

Press the "Reset" button.

Remedy the fault using the structure diagram that corresponds with the fault code.

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Replace the ionization electrode. See page 97

Is the plug-and-socket connection okay?

- Yes
- No

Measure the resistance in the wires between the ionization electrode plug and the UBA 3 mounting base. See page 99.

Is the wiring okay?

- Yes
- No

Replace the ionization electrode. See page 97

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Has a new fault code occurred?

- Yes
- No

Has a new locking boiler fault code 6L occurred?

- Yes
- No

Did you go through all structure diagrams thru 14?

- Yes
- No

Remedy the fault using the structure diagram that corresponds with the fault code.

Press the "Reset" button.

Remedy the fault using the structure diagram that corresponds with the fault code.

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Replace the ionization electrode. See page 97

Is the plug-and-socket connection okay?

- Yes
- No

Measure the resistance in the wires between the ionization electrode plug and the UBA 3 mounting base. See page 99.

Is the wiring okay?

- Yes
- No

Replace the ionization electrode. See page 97

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Has a new fault code occurred?

- Yes
- No

Has a new locking boiler fault code 6L occurred?

- Yes
- No

Did you go through all structure diagrams thru 14?

- Yes
- No

Remedy the fault using the structure diagram that corresponds with the fault code.

Press the "Reset" button.

Remedy the fault using the structure diagram that corresponds with the fault code.

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Replace the ionization electrode. See page 97

Is the plug-and-socket connection okay?

- Yes
- No

Measure the resistance in the wires between the ionization electrode plug and the UBA 3 mounting base. See page 99.

Is the wiring okay?

- Yes
- No

Replace the ionization electrode. See page 97

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Has a new fault code occurred?

- Yes
- No

Has a new locking boiler fault code 6L occurred?

- Yes
- No

Did you go through all structure diagrams thru 14?

- Yes
- No

Remedy the fault using the structure diagram that corresponds with the fault code.

Press the "Reset" button.

Remedy the fault using the structure diagram that corresponds with the fault code.

Correctly insert the plug into its socket.

Replace the cable loom or the affected part thereof.

Replace the ionization electrode. See page 97

Is the plug-and-socket connection okay?
The hot surface ignitor activates too long.

Press the "Reset" button.

Has the malfunction been repaired?

Yes

No

KIM defective, contact the Buderus customer service department. See on the back side of this document.

The power supply was interrupted after a fault message.

Press the "Reset" button.

Has a new fault code occurred?

Yes

Remedy the fault using the structure diagram that corresponds with the fault code.

No
Is the cable loom okay?

Check the contact between the UBA 3 and the UBA 3 mounting base.

Is the contact okay?

Join

To the UBA 3 and the terminal strip.

See page 126, fig 110.

Check that the switch contact is connected to the boiler.

See page 106, fig. 54, pos. 5 "EV".

No

The external switch contact is activated.

Locking boiler-fault code.

External switch contact has energized.

Replace the cable loom or the affected part thereof.

Is the cable loom okay?

Check to see if an external switch contact is open, by measuring its resistance using a volt-ohm-multimeter

Is an external switch contact connected?

No

Yes

Yes

No

Yes

No

Yes

No

Replace the cable loom or the affected part thereof.

Restore the contact.

Check that the switch contact is connected to the boiler.

See page 106, fig. 54, pos. 5 "EV".

Is an external switch contact connected?

Yes

No

Is the external switch contact open?

Measure the cable loom between the UBA 3 and the terminal strip.

See page 126, fig 110.

Is the cable loom okay?

Check the contact between the UBA 3 and the UBA 3 mounting base.

Is the contact okay?

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page 31
Check to see if a bridge wire is present. See page 106, fig. 54, pos. 5 “EV”.

Is there a bridge wire?
- Yes
  - Measure the cable loom between the UBA 3 and the terminal strip. See page 126, fig 110.
  - Is the cable loom okay?
    - Yes
      - Check the contact between the UBA 3 and the UBA 3 mounting base.
    - No
      - Restore the contact.
  - No
    - Restore the bridge on the terminal strip again (see page 106, fig. 54).

- No
  - Replace the cable loom or the affected part thereof.

Check the contact between the UBA 3 and the UBA 3 mounting base.

Is the contact okay?
- Yes
  - Press the “Reset” button.
- No
  - New fault message 9A or 9H or 9P or 9U or E?
  - Yes
    - Replace the cable loom or the affected part thereof.
  - No
    - The UBA 3 is defective.

KIM or UBA 3 is defective. Locking boiler-fault code.
Diagnosis 7

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Locking boiler-fault code.

The gas valve coil or the wiring to the gas valve is defective.

The UBA 3 is defective.

Press the "Reset" button.

New fault message 9L?

Check the plug-and-socket connection of the gas valve. See page 98, par. 8.1.18.

Is the plug-and-socket connection okay?

Measure the wire between the gas valve and the UBA 3. See page 99, fig 8.1.20.

Is the wire okay?

Measure the resistance of the two gas valve coils. See page 101, par. 8.1.22.

Is the resistance correct?

Replace the gas valve. See page 101.

Replace the cable loom or the affected part thereof.

Restore the plug-and-socket connection. See page 98, par. 8.1.18.

Is the plug-and-socket connection okay?

No

No

Yes

Yes

Yes

Yes

No

No

No

No

No

No

No
The UBA 3 has no connection to the pressure sensor or there is a short circuit.

Short circuit in connection to pressure sensor.

Check the plug-and-socket connection of the pressure sensor. See page 8, fig. 1, pos. 17.

Is the plug-and-socket connection okay?

Yes

Check the wiring between the pressure sensor and the UBA 3 mounting base by measuring the resistance (fracture). See page 126, fig 110.

Is the wiring okay?

No

Replace the cable loom or the affected part thereof.

Yes

Try to remedy the fault by integrating another provisional pressure sensor. See page 116.

Has the malfunction been repaired?

Yes

No

Restore the plug-and-socket connection.

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page 31
Check the contacts between the UBA 3 and the UBA 3 mounting base, between the BC10 and the base plate and all other plug-and-socket connections. See from page 92.

Press the "Reset" button and hold it for 2 seconds. See page 9.

Is the same fault message displayed?

Yes

Has the UBA 3 already been replaced?

Yes

Call the Buderus customer service department. See on the back side of this document.

No

Has a new fault occurred?

Yes

Remedy the fault using the structure diagram from this document that corresponds with the fault code.

No

Remedy contact faults. See from page 92.

Replace the UBA 3. See page 125.

No

Replace the UBA. See page 125.
8  Actions

8.1  Testing, measuring, adjusting and replacing various components

8.1.1  Checking the UBA 3 fuse; replace if necessary

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Loosen the fastening screw of the UBA 3 by turning it counterclockwise (see fig. 4, pos. 1).

**WARNING!**
Do not pull or move side to side the UBA 3 during loosening or tightening of UBA 3 fastening screw.

- Remove the UBA 3 once the fastening screw is fully loosened by pulling it forward carefully as indicated by the arrow (see fig. 4, pos. 2).
- Dismantle the fuse holder by loosening the bayonet connector (see fig. 5, pos. 1).
- Remove the fuse from the fuse holder.
- Check the circuit continuity through the fuse using the volt-ohm-multimeter. If broken, replace it by (a new) spare ceramic fuse 5 amps, 250V fast blow (F5AH, 250V) (fig. 5, pos. 2).
- Re-assemble the UBA 3 in reverse order of disassembly.
- Fasten the UBA 3 by only turning the fastening screw clockwise.

**WARNING!**
Do not push or force the UBA 3 in place by hand.

- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.2 External connection board fuse

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Remove the cover from the connection box (fig. 6).

- Dismantle the fuse holder (fig. 7, pos. 10).
- Remove the fuse from the fuse holder.
- Check the circuit continuity through the fuse using the volt-ohm-multimeter. If broken, replace it with a (new) ceramic fuse 5 amps, 250V fast blow (F5AH, 250V).
- Re-install the cover on the connection box.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.3 Checking the fan unit; 120 VAC control

NOTE
The fan unit can be controlled using the RC control device relay test function. Further instructions for the RC control device are in the Installation and Maintenance Instructions.

WARNING!
Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Remove the casing.
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Disconnect the 120V AC plug of the fan unit.
- Test the voltage with the volt-ohm-multimeter; set it to VAC. Minimum value 250V AC.
- Connect the volt-ohm-multimeter to the outer two plug contacts (blue and brown) (see fig. 8).
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
- Start up the boiler in accordance with the "Flue gas test" menu. See page 10 "Flue gas test" menu.
- Check that while the operating code 0L is displayed, 120V AC is available on the outer two contacts (blue and brown) of the plug (see fig. 8).
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Reconnect the plug to the fan unit.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.4 Checking the fan unit; supply cord (120V AC)

**WARNING!**
Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Remove the casing.
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Disconnect the 120V AC plug of the fan unit.
- Loosen the fastening screw of the UBA 3 (see fig. 9, pos. 1).
- Remove the UBA 3 by pulling it forward as indicated by the arrow (see fig. 9, pos. 2).
- Set the volt-ohm-multimeter to "Resistance testing”.
- Test the fan unit supply cord to make sure that there is no short circuit in it and that it is not broken anywhere (see fig. 10 and fig. 110 on page 126).
- Reconnect the plug to the fan unit.
- Re-assemble the UBA 3 in reverse order of disassembly.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
- Fit the casing.

---

**Fig. 9** Dismantling the UBA 3

**Fig. 10** UBA 3 installation base
8.1.5 Checking the fan unit; tacho cable

**WARNING!**
Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Remove the casing.
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Dismantle the tacho cable plug.
- Loosen the fastening screw of the UBA 3 (see fig. 9, pos. 1).
- Remove the UBA 3 by pulling it forward as indicated by the arrow (see fig. 9, pos. 2).
- Test the tacho cable to make sure that there is no short circuit in it and that it is not broken (see fig. 11).
- Assemble the tacho cable plug.
- Re-assemble the UBA 3 in reverse order of disassembly.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.6 Replacing the fan unit

**NOTE**
Follow the installation instructions for 120V fan units!

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Remove both cable plugs from the fan unit (see fig. 12, pos. 1).
- Remove the air suction tube (see fig. 13, pos. 1).
- Remove the fan unit fastening screw (see fig. 13, pos. 2).
- Remove the fan unit by swinging it to the right (see fig. 13, pos. 3).
- Install the new fan unit.
- Install the fastening screw, air suction tube and both plugs.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.7 Checking the supply/return/safety/hot-water temperature sensors

**NOTICE**

The current temperature measured by the supply, return and safety sensors, can be read out from the RC control device.

For further instructions, see installation and maintenance instructions of the RC control device.

**WARNING!**

Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Disconnect the plug and socket connection of the cable for the sensor concerned.
- Test the resistance of the sensor concerned.
  Supply sensor see fig. 14, pos. 1.
  Return sensor see fig. 14, pos. 2.
  Safety sensor see fig. 15, pos. 1.
- Measure the temperature near the sensor using a seconds thermometer.
- Compare the values measured to the values in table 4 on the next page. If the values differ, the sensor is broken.
- Reconnect the plug and socket connection if the sensor is OK.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).

<table>
<thead>
<tr>
<th>Temperature in °F</th>
<th>Temperature in °C</th>
<th>Resistance in Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>0</td>
<td>29,490</td>
</tr>
<tr>
<td>41</td>
<td>5</td>
<td>23,462</td>
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<tr>
<td>50</td>
<td>10</td>
<td>18,787</td>
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<td>59</td>
<td>15</td>
<td>15,136</td>
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<tr>
<td>68</td>
<td>20</td>
<td>12,268</td>
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<tr>
<td>77</td>
<td>25</td>
<td>10,000</td>
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<td>86</td>
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<td>35</td>
<td>6,754</td>
</tr>
<tr>
<td>104</td>
<td>40</td>
<td>5,594</td>
</tr>
<tr>
<td>113</td>
<td>45</td>
<td>4,656</td>
</tr>
<tr>
<td>122</td>
<td>50</td>
<td>3,893</td>
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<td>167</td>
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<td>176</td>
<td>80</td>
<td>1,458</td>
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<td>85</td>
<td>1,255</td>
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<tr>
<td>194</td>
<td>90</td>
<td>1,084</td>
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<tr>
<td>203</td>
<td>95</td>
<td>940</td>
</tr>
<tr>
<td>212</td>
<td>100</td>
<td>817</td>
</tr>
</tbody>
</table>

fig. 15 Checking the safety sensor
8.1.8 Replacing the supply/return/safety sensors

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Close the maintenance shut-off valves.
- Drain the Logamax plus GB142.
- Disconnect the plug and socket connection.
- Unscrew the sensor concerned and replace it by a new one.
  Supply sensor see fig. 16, pos. 1.
  Return sensor see fig. 16, pos. 2.
  Safety sensor see fig. 17, pos. 1.
- Restore the plug and socket connection.
- Open the maintenance shut-off valves.
- Purge air from the boiler.

NOTICE
Fill and purge the Logamax plus GB142 as required. See installation and maintenance instructions Logamax plus GB142-24/30/45/60.

- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.9 Checking the hot-water temperature sensor

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Disconnect the plug and socket connection of the cable for the hot-water temperature sensor.
- Pull out the sensor and replace it by a new one.
- Restore the plug and socket connection.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.10 Checking the supply/return/safety sensors cable

**WARNING!**
Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Check all plug and socket connections of the sensors and the UBA 3. A plug that has not been inserted correctly may be the cause for a fault message. Then start the boiler by pressing "Reset".
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Loosen the fastening screw of the UBA 3 (see fig. 18, pos. 1).
- Remove the UBA 3 by pulling it forward as indicated by the arrow (see fig. 18, pos. 2).
- Disconnect the plug and socket connection of the cable for the sensor.
- Check the cable between the plug and socket connection and the 81-pole plug in the UBA 3 installation base (see fig. 19) using a circuit continuity testing device. See the electric circuit diagram, fig. 110 on page 126.
- Test this in a straight line twice and test it diagonally twice.
- Restore the plug and socket connection if the cables are OK.
- Install the UBA 3.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.11 Checking the hot surface ignitor; control

**NOTICE**
The hot surface ignitor can be controlled using the RC control device relay test function. Further instructions for the RC control device are in the installation and maintenance instructions.

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Disconnect the plug and socket connection of the hot surface ignitor.
- Set the measuring device to 120V AC.
- Connect the measuring device to the plug on the cable harness.
- Connect the heating system to the power supply, insert the main fuse or switch on the circuit breaker.
Set the main switch on the BC10 to "1" (On).

Start up the boiler in accordance with the "Flue gas test" menu. See page 10 "Flue gas test" menu.

Test that during the ignition phase, while the operating code \[0/l/\|\] is being displayed, 120V AC is measured.

Switch off the power supply of the heating system on the circuit breaker.

Set the main switch on the BC10 to "0" (Off).

Remove the measuring device.

Assemble the plug and socket connection of the hot surface ignitor.

Fit the casing.

Switch on the power supply of the heating system on the circuit breaker.

Set the main switch on the BC10 to "1" (On).

### 8.1.12 Checking the hot surface ignitor; resistance

Switch off the power supply of the heating system on the circuit breaker.

Set the main switch on the BC10 to "0" (Off).

Remove the casing.

Disconnect the plug and socket connection of the cable of the hot surface ignitor.

Test the resistance of the hot surface ignitor on the plug. A resistance value between 50 – 300 Ω means that the hot surface ignitor is OK (see fig. 20).

Remove the measuring device.

Reconnect the cable plug if the hot surface ignitor is OK.

Fit the casing.

Switch on the power supply of the heating system on the circuit breaker.

Set the main switch on the BC10 to "1" (On).

### 8.1.13 Checking the hot surface ignitor; supply cord

**WARNING!**

Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

Remove the casing.

Switch off the power supply of the heating system on the circuit breaker.

Set the main switch on the BC10 to "0" (Off).

Pull the plug of the hot surface ignitor.

Loosen the fastening screw of the UBA 3 (see fig. 21, pos. 1).

Remove the UBA 3 by pulling it forward as indicated by the arrow (see fig. 21, pos. 2).

Set the volt-ohm-multimeter to "Resistance testing".
8.1.14 Replacing the hot surface ignitor

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Disconnect the plug and socket connection of the cable of the hot surface ignitor.
- Loosen the fastening screws (fig. 24, pos. 1).
- Remove the earth cable (fig. 24, pos. 2).
- Remove the mounting plate (fig. 24, pos. 3).
- Remove the hot surface ignitor (fig. 24, pos. 4).
- Install the new hot surface ignitor with a new gasket and attach the mounting plate with fastening screws (see fig. 24, pos. 1).
- Restore the plug and socket connection of the hot surface ignitor.
- Fit the casing.

- Test the supply cord of the hot surface ignitor to make sure that there is no short circuit in it and that it is not broken (fig. 23, fig. 22 and fig. 110 on page 126).

- Fit the plug to the hot surface ignitor.
- Re-assemble the UBA 3 in reverse order of disassembly.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
- Fit the casing.

---

fig. 22 UBA 3 installation base

fig. 23 Testing the supply cord of the hot surface ignitor

fig. 24 Replacing the hot surface ignitor
8.1.15 Testing the ionization current

**WARNING!**
Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Disconnect the plug and socket connection of the monitoring cable.
- Connect the measuring device in series (see fig. 25).
- Set the multi-meter to DC µA.
- Connect the heating system to the power supply, insert the main fuse or switch on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
- Start up the boiler in accordance with the "Service Mode" menu. See page 11 "Service Mode" menu.
- Test the ionization current at partial load. The boiler is in part-load operation as soon as, in the "Service Mode" menu, [L 30] is selected. The ionization current must be > 1.4 DC µA.
- Remove the measuring device.
- Reconnect the plug and socket connection of the monitoring cable if the ionization current is OK.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.16 Checking the ionization electrode; cable

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Dismantle the plug and socket connection of the ionization electrode.
- Loosen the fastening screw of the UBA 3 (see fig. 26, pos. 1).
- Remove the UBA 3 by pulling it forward as indicated by the arrow (see fig. 26, pos. 2).
- Test the ionization cable between the plug and socket connection and the UBA 3 installation base to make sure that it has no short circuit to earth (see fig. 27 and fig. 110 on page 126) and that it is not broken anywhere (see fig. 28).
- Assemble the plug and socket connection of the ionization electrode.
- Re-assemble the UBA 3 in reverse order of disassembly.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).
8.1.17 Checking the ionization electrode; replace if necessary

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Disconnect the plug and socket connection of the cable.
- Set the volt-ohm-multimeter to "Resistance testing".
- Test the earth connection circuit of the ionization electrode (see fig. 27). The height of the resistance value must be infinite.
- Loosen the fastening screws (see fig. 29, pos. 1).

- Remove the earth cable (see fig. 29, pos. 2).
- Remove the mounting plate (see fig. 29, pos. 3).
- Dismantle the ionization electrode (see fig. 29, pos. 4).
- Set the volt-ohm-multimeter to "Resistance measurement".
- Test the resistance of the ionization electrode (see fig. 30). The resistance must be 0 Ω.

- Check the ionization electrode for contamination, wear or damage (see fig. 31).
- Replace the ionization electrode if required.
- Install a new ionization electrode with a new gasket and secure the mounting plate with the fastening screws.
- Fit the earth cable (see fig. 29, pos. 2).
- Restore the plug and socket connection.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.18 Checking the gas control valve; cable connections

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “0” (Off).
- Remove the casing.
- Check that the plug of the gas control valve has been installed correctly (see fig. 32, pos. 1).
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).

8.1.19 Checking the gas control valve; Control

**NOTICE**

You can drive the burner (the gas valve) using the relay test in combination with the RC control device. See installation and maintenance instructions of the RC control device.

**WARNING!**

Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Remove the casing.
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).
- Start up the boiler in accordance with the “Flue gas test” menu. See page 10 “Flue gas test” menu.
- Use a volt-ohm-multimeter to check that, while operating code \[0/l/\[ is displayed, there is a voltage on the plug of the gas control valve. The test must indicate a voltage of 20 – 24 VDC both when testing on the central and left contacts and when testing on the central and right contacts (see fig. 33).
- Fit the casing.
8.1.20 Checking the gas control valve; cable connection between gas control valve and UBA 3 installation base

WARNING!
Avoid damage: do not push the measuring pin of the volt-ohm-multimeter too deeply into the socket.

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Remove the plug of the gas control valve (see fig. 34).
- Loosen the fastening screw of the UBA 3 (see fig. 35, pos. 1).
- Pull the UBA 3 forward in the direction indicated by the arrow (see fig. 35, pos. 2).
- Test the resistance of the cable between the plug of the gas control valve and the UBA 3 installation base (see fig. 36, fig. 37 and circuit diagram, fig. 110 on page 126).
- Reconnect the plug to the gas control valve (see fig. 34).
- Re-install the UBA 3 (see fig. 35).
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.21 Ohming out the gas control valve

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “0” (Off).
- Remove the casing.
- Remove the plug of the gas control valve (see fig. 38).
- Set the volt-ohm-multimeter to “Resistance testing”. Use a scale of 200 Ω or greater.

- Test the resistance of both coils of the gas control valve using the volt-ohm-multimeter. The resistance measured between the left and central contacts (see fig. 39) must be approx. 75 Ω and between the right and central contacts (see fig. 40) this must be approx. 185 Ω (+/- 10 Ω). If this is not the case, the gas control valve will probably be defective. It must then be replaced.
- Attach the plug to the gas control valve.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).
8.1.22 Replacing the gas control valve

DANGER
Work on gas pipes and fittings must only be carried out by a registered service provider.

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Close the gas shut-off valve (see fig. 41, pos. 1).

- Remove the cable plug from the gas control valve (see fig. 42, pos. 1).
- Remove both cable plugs from the fan unit (see fig. 43, pos. 1).

- Loosen the union nut of the gas control valve (see fig. 44, pos. 1).

- Loosen both sets of retaining clips (fig. 44, pos. 2 and fig. 45, pos. 1) of the burner cover and remove the burner cover with the fan unit and the gas burner fitting.
- Loosen three screws on the gas control valve (see fig. 46, pos. 1).

- Remove the gas control valve (see fig. 47).

- Remove the gas orifice from the gas control valve (see fig. 48, pos. 1).
- Install the gas orifice in the new gas control valve.
- Mount the new gas control valve on the fan unit.
- Assemble the burner cover with the fan unit and the gas control valve.
- Close both retaining clips.
- Tighten the union nut of the gas pipe on the gas control valve. Make sure that you have inserted the gasket!
- Connect both cable plugs to the fan unit.
- Connect the cable plug to the gas control valve.
- Open the gas shut-off valve (see fig. 49, pos. 2).
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
NOTICE!
Carry out all start-up activities according to the Installation and Servicing Instructions and complete the start-up report.

You must also check all gaskets and seals affected by the replacement activities during the tightness test carried out in operating conditions!

- Fit the casing.

8.1.23 Checking the control unit; connections to the boiler

If an On/Off thermostat is used and the boiler does not react to a heat request:

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to ”0” (Off).
- Remove the casing.
- Remove the cover from the connection box (see fig. 50).
- Use a jumper wire to create a bridging circuit between the two "WA" contacts (see fig. 53, pos. 3).
- Connect the heating system to the power supply, insert the main fuse or switch on the circuit breaker.
- Set the main switch on the BC10 to ”1” (On).

- If the boiler switches to heating mode (operating code [-H]) after some time, the cause of the fault must be outside the boiler.
- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to ”0” (Off). See page 9 „Menu structure of the BC10 basic controller“.
- Remove the bridge between the two "WA" contacts (see fig. 53, pos. 3).
- Connect the On/Off thermostat directly to the two "WA" contacts of the boiler using a short cable (see fig. 53, pos. 3).
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to ”1” (On).
- Set the On/Off thermostat to the request position.
- If the boiler switches to heating operation (operating code [-H]) after some time, the fault is caused by the cable between the On/Off thermostat and the boiler.
If the boiler does not switch to heating mode after some time, the fault is caused by the On/Off thermostat.

- Correct the cause of the fault.
- Fit the cover on the connection box (see fig. 51).
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

If a modulating control unit is used and the boiler does not react to a heat request:

- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Remove the cover from the connection box (see fig. 52).
- Connect the modulating control directly to the two "RCxx" contacts of the boiler using a short cable (see fig. 53, pos. 1).
- Connect the heating system to the power supply, insert the main fuse or switch on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
- Set the modulating control to the request position.
- If the boiler switches to heating mode (operating code [-/h/]) after some time, the fault is caused by the cable between the modulating control and the boiler.
- If the boiler does not switch to heating mode after some time, the fault is caused by the modulating control.
- Correct the cause of the fault.

**fig. 52 Removing the cover from the connection box**

**fig. 53 External connection board**

- **pos. 1:** RC Room thermostat (connection color orange)
- **pos. 2:** Outdoor-temperature sensor (connection color blue)
- **pos. 3:** Potential-free On/Off thermostat (connection color green)
- **pos. 4:** DHW temperature sensor (connection color grey)
- **pos. 5:** External switching contact, potential-free for floor heating safety etc. (connection color red)
- **pos. 6:** DO NOT USE
- **pos. 7:** Primary loop pump 120V 60Hz (connection color green)
- **pos. 8:** DHW tank pump 120V 60Hz (connection color grey)
- **pos. 9:** DHW recirculating pump 120V 60Hz (connection color lilac)
- **pos. 10:** Main connection 120V 60Hz (connection color white)
- **pos. 11:** Fuse holder
8.1.24 **Bleed the gas supply pipe**

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “0” (Off).
- Remove the casing.
- Close the gas shut-off valve (see fig. 56, pos. 1).
- Open the screw plug on the testing nipple for the inlet gas pressure and for purging (fig. 55) by two turns and install a hose.
- Open slowly the gas shut-off valve.
- Run the gas that flows out through a water bath.
- Close the gas shut-off valve when no more air escapes.
- Remove the hose and tighten the screw plug again.
- Carefully open the gas shut-off valve (see fig. 56, pos. 2).
- Check the testing nipple for leaks.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).
8.1.25 Measuring the inlet gas pressure (flow pressure)

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Open at least one thermostatic radiator valve.
- Close the gas shut-off valve (see fig. 56, pos. 1).
- Open the screw plug on the testing nipple for the inlet gas pressure (see fig. 57, pos. 1) by two turns.
- Set the pressure gauge to zero.
- Connect the measuring hose of the pressure gauge to the testing nipple (see fig. 57, pos. 2).
- Carefully open the gas shut-off valve (see fig. 56, pos. 2).
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
- Put the heating boiler into operation, see "Flue gas test" menu on page 10.
- Measure the inlet gas pressure when the "Burner" (On/Off) LED on the BC10 basic controller lights.
- The inlet gas pressure must be:
  - for natural gas – min. 3.5 to 10.5 inch W.C (8.7 to 26.1 mbar), nominal supply pressure 7.0 inch W.C. (17.4 mbar)
  - for LPG – min. 8.0 to 13.0 inch W.C. (19.9 to 32.3 mbar), nominal supply pressure 11.0 inch W.C. (27.4 mbar).
- Set the main switch on the BC10 to "0" (Off).
- Close the gas shut-off valve (see fig. 56, pos.1).
- Remove the hose and tighten the screw plug on the testing nipple again.
- Open again the gas shut-off valve (see fig. 56, pos. 2).
- Check the testing nipple for leaks.
- Fit the casing.
- Set the main switch on the BC10 to "1" (On).

NOTE!
If the required inlet gas pressure is not available, you should consult your gas utility company. If the inlet gas pressure is too high, a gas pressure regulator is to be integrated upstream of the gas valve.
8.1.26 Measure and adjust the gas/air ratio

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “0” (Off).
- Remove the casing.
- Close the gas shut-off valve (see fig. 56, pos. 1).
- Open at least one thermostatic radiator valve.
- Open the screw plug on the testing nipple for the burner pressure (fig. 58, pos. 1) by two turns.
- Set the pressure gauge to zero.
- Use a hose to connect the + connection of the pressure gauge to the burner pressure measuring nipple (fig. 58, pos. 2).
- Open the gas shut-off valve (see fig. 56, pos. 2).
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).

- Put the heating boiler into operation, see “Service Mode” menu on page 11.
- Read out the gas/air ratio from the pressure gauge when the boiler is in part-load operation.
  The boiler is running in part-load operation when, in the “Service mode” menu has been set.
- The differential pressure (p\(_{\text{Gas}}\) - p\(_{\text{Air}}\)) must be
  
  -0.02 inch W.C. (-5 Pa) (+/-0.02 inch W.C. = +/-5 Pa)
  
  (read-out on pressure gauge: -0.04 – 0 inch W.C. = -10 Pa – 0 Pa). See fig. 59.

- If the gas/air ratio is incorrect, it can be adjusted on the set screw (fig. 60, pos. 1).

**NOTE!**

The set screw is located behind the screw-on cover. This must be removed first.

- Set the main switch on the BC10 to “0” (Off).
- Close the gas shut-off valve (see fig. 56, pos. 1).
- Remove the hose and tighten the screw plug on the testing nipple again.
- Open the gas shut-off valve (see fig. 56, pos. 2).
- Check the testing nipple for leaks.
- Fit the casing.
- Set the main switch on the BC10 to “1” (On).
8.1.27 Measuring the carbon monoxide content (CO)

- Measure the carbon monoxide content on the flue gas sampling point (see fig. 61).
- The CO values in an air-free condition must be below 400 ppm or 0.04 vol. %.
- Values of 400 ppm and up indicate that the burner adjustment may be wrong, the gas burner fitting or the heat exchanger are dirty or that there may be burner faults.
- You must establish and resolve the cause. The boiler must be operational when you do this.

8.1.28 Transformer; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Dismantle the cover of the external connection board (see fig. 62).

- Pull the 4 plugs from the external connection board (see fig. 63, pos. 1, 2, 3 and 4).
• Loosen the 2 external connection board fastening screws (see fig. 64, pos. 1).

• Remove the external connection board (see fig. 65).

• Remove the transformer shield (see fig. 66).
Pull both plugs on the rear of the transformer (see fig. 67).

Check to see if you measure any resistance on the two cable plugs. If you do then the transformer is not the problem. If you don't measure any resistance then replace the transformer as described in the following steps.

- Remove the transformer by pulling it in the direction indicated by the arrow (see fig. 68).
- Install the new transformer.
- Re-assemble all parts and plugs in reverse order of disassembly.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.29 Automatic air purging system; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Close the maintenance shut-off valves and drain the Logamax plus GB142. (see fig. 69).
• Remove the plastic cover from the top of the boiler (see fig. 70).

• Remove the float cap (see fig. 71).

• Dismantle the valve case by pulling it upwards through the opening in the housing (see fig. 72).

• Assemble the new valve case and all other parts in reverse order of disassembly.

**NOTICE**
Fill and purge the Logamax plus GB142 as required.
See installation and maintenance instructions Logamax plus GB142-24/30/45/60.

• Fit the casing.
• Switch on the power supply of the heating system on the circuit breaker.
• Set the main switch on the BC10 to "1" (On).
8.1.30 Burner; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Close the gas shut-off valve (see fig. 73, pos. 1).

- Remove the cable plug from the gas control valve (see fig. 74, pos. 1).

- Remove both cable plugs from the fan unit (see fig. 75, pos. 1).
Loosen the union nut of the gas control valve (see fig. 76, pos. 1).

Loosen both sets of retaining clips (fig. 76, pos. 2 and fig. 77, pos. 1) of the burner cover and remove the burner cover with the fan unit and the gas burner fitting.

Remove the burner gasket (see fig. 78, pos. 1).
Remove the gas/air distributor plate (see fig. 78, pos. 2).
Remove the orifice plate (only applies to Logamax plus GB142-24/30 and GB142-60) (see fig. 78, pos. 3). Note that the orifice plate of the GB142-60 has a different shape.
Remove the burner (see fig. 78, pos. 4).
● Install the new burner (see fig. 79).

**WARNING!**

Fit the burner so that the scale mark is located on the left-hand side (see fig. 79).

● Re-assemble all other parts in reverse order of disassembly.

● Open the gas shut-off valve (see fig. 80, pos. 2).

● Switch on the power supply of the heating system on the circuit breaker.

● Set the main switch on the BC10 to "1" (On).

● Also check all joints and gaskets affected by the replacement activities while carrying out the tightness test in operating conditions.

● Set the gas/air ratio again. See paragraph 8.1.26.

### 8.1.31 Sight glass; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Loosen both screws of the sight glass (see fig. 81, pos. 1).
- Remove the sight glass mounting plate.
- Disassemble the sight glass inclusive of both gaskets.
- Assemble the new sight glass and all further parts in reverse order of disassembly; remember to fit new gaskets.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.32 Condensate trap; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Pull the condensate trap from the condensate plate (see fig. 82, pos. 1).
- Pull the internal condens bypass pipe from the condensate trap (see fig. 82, pos. 2).
- Loosen the condensate trap from the connection (see fig. 82, pos. 3) and remove it.
- Fill the new condensate trap with water.
- Re-assemble the new condensate trap in reverse order of disassembly.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).

8.1.33 Pressure sensor; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Close the maintenance shut-off valves and drain the Logamax plus GB142.
- Remove the cable plug from the pressure sensor.
- Loosen the pressure sensor by removing the securing clip (see fig. 84).
- Assemble the new pressure sensor and the plug in reverse order of disassembly.

**NOTICE**

Fill and purge the Logamax plus GB142 as required.  
See installation and maintenance instructions Logamax plus GB142-24/30/45/60.

- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
8.1.34 Heat exchanger; replacing

- Switch off the power supply of the heating system on the circuit breaker.
- Close the maintenance shut-off valves and drain the Logamax plus GB142, see 116, fig. 83.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Close the gas shut-off valve (see fig. 85, pos. 1).

- Remove the cable plug from the gas control valve (see fig. 86, pos. 1).

- Remove both cable plugs from the fan unit (see fig. 87, pos. 1).
Loosen the union nut of the gas control valve (see fig. 88, pos. 1).

Pull both retaining clips (see fig. 89, pos. 1) on the burner cover to open them and remove the burner cover with the fan unit and the gas control valve.

Remove the burner gasket (see fig. 90, pos. 1).
Remove the gas/air distributor plate (see fig. 90, pos. 2).
Remove the orifice plate (only applies to Logamax plus GB142-24/30 and GB142-60) (see fig. 90, pos. 3). Note that the orifice plate of the GB142-60 has a different shape.
Remove the burner (see fig. 90, pos. 4).
Disconnect the plug and socket connections of the supply, return and safety sensors (see fig. 91, 92 and 93).

**fig. 91** Loosening the plug and socket connections of the supply sensor

**fig. 92** Disconnect the plug and socket connection of the return sensor

**fig. 93** Disconnect the plug and socket connection of the safety sensor
- Disassemble the supply and return sensors (see fig. 94, pos. 1 and 2).

**WARNING**
To prevent mix-ups, the supply sensor is marked by a red sleeve on the side of the cable harness.

- Dismantle the safety sensor (see fig. 95, pos. 1).

- Disconnect the hot surface ignitor and ionization electrode plugs.
- Loosen the fastening screws (see fig. 96, pos. 1).
- Pull the earth cable from the hot surface ignitor (see fig. 96, pos. 2).
- Dismantle the mounting plate (see fig. 96, pos. 3).
• Remove both the hot surface ignitor and the ionization electrode by pulling them loose (see fig. 97, pos. 1).

• Dismantle the condensate trap connection to the condensate collector (see fig. 98, pos. 1).

• Open the four latches of the condensate collector (see fig. 99, pos. 1).
- Remove the condensate collector (see fig. 100, pos. 1).

- Loosening the backflow connection between the primary pump and heat exchanger (see fig. 101, pos. 1).

- Dismantle the tension spring between the supply pipe and the heat exchanger (see fig. 101, pos. 2).

- Loosening with one turn the nut between the supply connection and three way valve connection AB (see fig. 102, pos. 2).

- Pull the supply pipe out of the heat exchanger (see fig. 102, pos. 1).

**WARNING!**

Water will be released.
- Loosen the fastening screws of the combustion air supply and flue gas exhaust connections (see fig. 103, pos. 1).

- Pull the combustion air supply (see fig. 104, pos. 2) and flue gas exhaust (see fig. 104, pos. 1) connections on top of the boiler upwards to remove them.

- Loosen the 6 fastening screws of the flue gas adapter (see fig. 105, pos. 1).
- Remove the flue gas adapter (see fig. 105, pos. 1) from the top of the boiler.

- Remove the heat exchanger by grabbing its bottom end and pulling forward and then pushing it upwards (see fig. 107, pos. 1).

- Assemble the new heat exchanger and all other parts in reverse order of disassembly.

**NOTICE!**

Fill and purge the Logamax plus GB142 as required. See installation and maintenance instructions Logamax plus GB142-24/30/45/60.

Remove the flue gas collector from the old heat exchanger, including the oval seal. Put silicon kit on both sides of the oval seal, the flue gas collector and the heat exchanger. Reassemble the flue gas collector with the oval seal to the heat exchanger. Check if the oval seal is placed correctly by opening the condensate collector (see page 122, fig. 100).

- Open the gas shut-off valve (see fig. 108, pos. 2).
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to “1” (On).
- Also check all joints and gaskets affected by the replacement activities while carrying out the tightness test in operating conditions.
- Set the gas/air ratio again. See paragraph 8.1.26, page 108.
8.1.35 **UBA 3; replacing**

- Switch off the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "0" (Off).
- Remove the casing.
- Loosen the fastening screw of the UBA 3 (see fig. 109, pos. 1).
- Pull the UBA 3 forward in the direction indicated by the arrow (see fig. 109, pos. 2).
- Install the new UBA 3.
- Tighten the fastening screw again.
- Fit the casing.
- Switch on the power supply of the heating system on the circuit breaker.
- Set the main switch on the BC10 to "1" (On).
WARNING
Label all wires prior to disconnection when servicing.
Wiring errors can cause improper and dangerous operation.

fig. 110 Electric circuit diagram
### Table 5  Gas orifice diameter

<table>
<thead>
<tr>
<th>Boiler capacity</th>
<th>Type of gas supply</th>
<th>Venturi article number</th>
<th>Gas orifice diameter Altitude 0 - 10,200 ft</th>
<th>Altitude 4,001 - 10,200 ft with CO₂ correction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>No CO₂ correction [inch] [mm]</td>
<td>with CO₂ correction [inch] [mm]</td>
</tr>
<tr>
<td>24 kW</td>
<td>Natural gas \textbf{H}</td>
<td>423.072A</td>
<td>0.175 [inch] 4.45 [mm]</td>
<td>0.179 [inch] 4.55 [mm]</td>
</tr>
<tr>
<td></td>
<td>LPG \textbf{P}</td>
<td>423.072A</td>
<td>0.132 [inch] 3.35 [mm]</td>
<td>0.134 [inch] 3.40 [mm]</td>
</tr>
<tr>
<td>30 kW</td>
<td>Natural gas \textbf{H}</td>
<td>423.072A</td>
<td>0.175 [inch] 4.45 [mm]</td>
<td>0.177 [inch] 4.50 [mm]</td>
</tr>
<tr>
<td></td>
<td>LPG \textbf{P}</td>
<td>423.072A</td>
<td>0.132 [inch] 3.35 [mm]</td>
<td>0.134 [inch] 3.40 [mm]</td>
</tr>
<tr>
<td>45 kW</td>
<td>Natural gas \textbf{H}</td>
<td>423.170A</td>
<td>0.213 [inch] 5.40 [mm]</td>
<td>0.219 [inch] 5.55 [mm]</td>
</tr>
<tr>
<td></td>
<td>LPG \textbf{P}</td>
<td>423.170A</td>
<td>0.163 [inch] 4.15 [mm]</td>
<td>0.163 [inch] 4.15 [mm]</td>
</tr>
<tr>
<td>60 kW</td>
<td>Natural gas \textbf{H}</td>
<td>423.173A</td>
<td>0.295 [inch] 7.50 [mm]</td>
<td>0.301 [inch] 7.65 [mm]</td>
</tr>
<tr>
<td></td>
<td>LPG \textbf{P}</td>
<td>423.173A</td>
<td>0.213 [inch] 5.40 [mm]</td>
<td>0.215 [inch] 5.45 [mm]</td>
</tr>
</tbody>
</table>

### Table 6  Factory setting of gas burner fitting

- **Natural gas \textbf{H}**
  - Delivered factory-set to Wobbe index 14.1 kWh/m³ (based on 59 °F (=15°C), 14.7 psi (=1,013 mbar)), suitable for Wobbe index range 11.3 – 15.2 kWh/m³.
  - Information on gas type instruction plate:
    - Set to gas category: G 20 – 2E.
    - Previous indications: set to Wobbe index 15.0 kWh/m³ (based on 32 °F (=0°C), 14.7 psi (=1,013 mbar)), suitable for Wobbe index range 12.0 – 15.7 kWh/m³.

- **LPG \textbf{P}**
  - Suitable for propane after conversion (also see the chapter "Conversion to another type of gas supply").
  - Information on gas type instruction plate:
    - Set to gas category: G 31 – 3P.

**Figure 111  Venturi article number**

- The diameter of the gas orifice is located on the gas orifice.
- The article number of the Venturi is located on both clamps of the Venturi (see fig. 111, pos. 1 and 2).
**Spare parts**

Below is a list of the spare parts for this boiler. Look up the position number in the exploded view drawing on the next two pages for the illustration. Spare parts may be ordered from Buderus.

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Product No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Casing 24/30 kW</td>
<td>7099988</td>
</tr>
<tr>
<td>2</td>
<td>Casing latches left (2 pc)</td>
<td>7099039</td>
</tr>
<tr>
<td>3</td>
<td>Casing latches right (2 pc)</td>
<td>7099038</td>
</tr>
<tr>
<td>4</td>
<td>Casing seal 24/30 kW</td>
<td>7098752</td>
</tr>
<tr>
<td>5</td>
<td>Casing seal 45/60 kW</td>
<td>7098798</td>
</tr>
<tr>
<td>6</td>
<td>Wall mounting bracket</td>
<td>7098364</td>
</tr>
<tr>
<td>7</td>
<td>Back panel 24/30 kW</td>
<td>7099001</td>
</tr>
<tr>
<td>8</td>
<td>Back panel 45/60 kW</td>
<td>7099903</td>
</tr>
<tr>
<td>9</td>
<td>Cap air vent</td>
<td>7100250</td>
</tr>
<tr>
<td>10</td>
<td>Seal ring Ø 3&quot;</td>
<td>77470s</td>
</tr>
<tr>
<td>11</td>
<td>Seal ring Ø 80 mm</td>
<td>7096475</td>
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<tr>
<td>12</td>
<td>Flame gas collector</td>
<td>7098857</td>
</tr>
<tr>
<td>13</td>
<td>Oval seal</td>
<td>7098858</td>
</tr>
<tr>
<td>14</td>
<td>Heat exchanger 24/30 kW</td>
<td>7746900159</td>
</tr>
<tr>
<td>15</td>
<td>Heat exchanger 45 kW</td>
<td>7746900160</td>
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<td>16</td>
<td>Heat exchanger 60 kW</td>
<td>7746900161</td>
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<td>17</td>
<td>Seal condensate collector 24/30 kW</td>
<td>7098834</td>
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<td>18</td>
<td>Seal condensate collector 45 kW</td>
<td>7098838</td>
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<td>19</td>
<td>Seal condensate collector 60 kW</td>
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<td>Condensate collector + sealing 24/30 kW</td>
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<tr>
<td>21</td>
<td>Condensate collector + sealing 45 kW</td>
<td>7098844</td>
</tr>
<tr>
<td>22</td>
<td>Condensate collector + sealing 60 kW</td>
<td>67900521</td>
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<tr>
<td>23</td>
<td>Clamp</td>
<td>7098848</td>
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<tr>
<td>24</td>
<td>Sensor NTC</td>
<td>7100136</td>
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<tr>
<td>25</td>
<td>Revision set air vent **</td>
<td>7098822</td>
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<tr>
<td>26</td>
<td>Sight glass</td>
<td>7098875</td>
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<tr>
<td>27</td>
<td>Burner box 24/30 kW</td>
<td>7099057</td>
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<tr>
<td>28</td>
<td>Burner box 45 kW</td>
<td>7098875</td>
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<td>29</td>
<td>Burner box 60 kW</td>
<td>67900525</td>
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<td>30</td>
<td>Safety sensor</td>
<td>78194</td>
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<tr>
<td>31</td>
<td>Seal burner 24/30 kW</td>
<td>7098916</td>
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<td>32</td>
<td>Seal burner 45 kW</td>
<td>7098920</td>
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<td>33</td>
<td>Seal burner 60 kW</td>
<td>67900526</td>
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<td>34</td>
<td>Gas/air distribution plate 24/30 kW</td>
<td>7100922</td>
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<td>35</td>
<td>Gas/air distribution plate 45 kW</td>
<td>7098926</td>
</tr>
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<td>36</td>
<td>Gas/air distribution plate 60 kW</td>
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<td>37</td>
<td>Orifice plate 24/30 kW</td>
<td>7100920</td>
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<td>38</td>
<td>Orifice plate 45 kW</td>
<td>7100920</td>
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<td>39</td>
<td>Orifice plate 60 kW</td>
<td>7746900120</td>
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<td>40</td>
<td>Burner 24/30 kW</td>
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<td>41</td>
<td>Burner 45 kW</td>
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<td>Burner 60 kW</td>
<td>67900528</td>
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<td>43</td>
<td>Gas-air inlet</td>
<td>7099004</td>
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<td>44</td>
<td>Gas fan</td>
<td>7099023</td>
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<tr>
<td>45</td>
<td>Ionization electrode</td>
<td>78195</td>
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<tr>
<td>46</td>
<td>Hot surface igniter</td>
<td>7099006</td>
</tr>
<tr>
<td>47</td>
<td>Shield hot surface igniter</td>
<td>7100229</td>
</tr>
<tr>
<td>48</td>
<td>Mounting plate</td>
<td>7098852</td>
</tr>
<tr>
<td>49</td>
<td>Mounting plate (5 pc)</td>
<td>7098850</td>
</tr>
</tbody>
</table>

** not shown in exploded views

**Buderus**

Logamax plus GB142-24/30/45/60 - We reserve the right to make any changes due to technical modifications!
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<thead>
<tr>
<th>Pos.</th>
<th>Description</th>
<th>Product No.</th>
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<tr>
<td>58</td>
<td>Drawer</td>
<td>7099043</td>
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<tr>
<td>59</td>
<td>Drawer front</td>
<td>7099037</td>
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<tr>
<td>60</td>
<td>Controller connection plate</td>
<td>78186</td>
</tr>
<tr>
<td>61</td>
<td>On/off switch</td>
<td>7099041</td>
</tr>
<tr>
<td>62</td>
<td>Controller cover</td>
<td>73698</td>
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<tr>
<td>63</td>
<td>Boiler ident. module 24 kW</td>
<td>78223</td>
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<td></td>
<td>Boiler ident. module 30 kW</td>
<td>78224</td>
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<td></td>
<td>Boiler ident. module 45 kW</td>
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</tr>
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<td></td>
<td>Boiler ident. module 60 kW</td>
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<td>64</td>
<td>Cable harness low voltage</td>
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<td>Cable harness high voltage</td>
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<td>O-ring (10 pc)</td>
<td>38434s</td>
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<td>67</td>
<td>Sealing bush (set)</td>
<td>7099002</td>
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<td>Cable harness of on/off switch</td>
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<td>Cable harness BX holder</td>
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<td>Fuse holder</td>
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<td>Set screw M5x20 (5 pc)</td>
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<td>Cap 24/30 kW</td>
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<td>Double nipple THR x COMPR</td>
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<td>Bolt M6x16 (2 pc)</td>
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<td>Clip pressure sensor</td>
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<td>Clip (5 pc)</td>
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<td>Centering ring (5 pc)</td>
<td>73480s</td>
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<td>Coupling nut pump</td>
<td>73481s</td>
</tr>
<tr>
<td>85</td>
<td>Seal pump (10 pc)</td>
<td>15022s</td>
</tr>
<tr>
<td>86</td>
<td>Coupling nut pump</td>
<td>15020</td>
</tr>
<tr>
<td>87</td>
<td>Conversion set pump</td>
<td>73149</td>
</tr>
<tr>
<td>88</td>
<td>Condensate drain set, incl. pos. 44</td>
<td>8718000686</td>
</tr>
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Exploded view Logamax plus GB142-45/60
Unites States and Canada

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