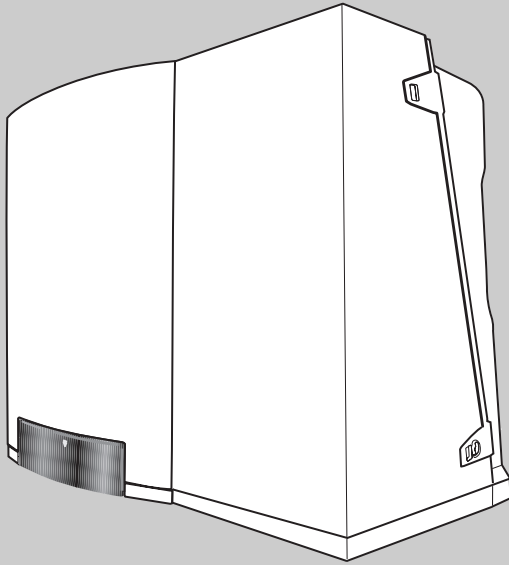


# High Altitude Low CO<sub>2</sub> correction and/ or Propane, Conversion Kit Instruction

Condensing gas boiler

## Required Input Rates

GB142-24	GB142-30	GB142-45	GB142-60
84,800 btu/hr	106,000 btu/hr	160,900 btu/hr	214,800 btu/hr



6720646861-000.1N

This kit and these instructions are for converting the GB142 model boilers for usage at high altitude with low CO<sub>2</sub> correction and/or propane.

### WARNING!

This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction.

The information in these instructions must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury or death. The qualified service agency is responsible for the proper installation of this kit.

The installation is not proper and complete until the operation of the converted boiler is checked as specified in the manufacturer's instructions supplied with the kit.

### CAUTION!

The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.

**Notice! Save these instructions for later use.**

## Logamax plus

GB142-24/30/45/60

6 720 646 861 (2011/11) US/CA



# Buderus

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# 1 Safety considerations

The conversion shall be carried out by a manufacturer's authorized representative, in accordance with the requirements of the manufacturer, provincial or territorial authorities having jurisdiction and in accordance with the requirements of the CAN/CGA-B149.1 or CAN/CGA-B149.2 installation codes.

For use in Canada the conversion shall be carried out in accordance with the requirements of the provincial authorities having jurisdiction and in accordance with the requirements of the CAN/CGA-B149.1 and CAN/CGA-B149.2 Installation Code. See also E.I.V.


Please observe the following safety instructions.


## 1.1 Application purpose


This kit and these instructions are for converting the Logamax plus GB142-24/3045/60 for usage at high altitude >4,001 – 10,200ft. with low CO<sub>2</sub> and/or propane correction.


## 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 operation of the product.

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


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

 **CAUTION:** Indicates presence of hazards that will out cause minor personal injury or property damage.


 **CAUTION:** Indicates presence of hazards due to electric shock.

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

## 1.3 Observe the following warnings

 **DANGER:** due to explosion of gas.

- ▶ Work only on gas components when you have a license to do so.
- ▶ Note that the assembly of gas and vent connections, the initial start-up, the electrical connections, the maintenance and service can only be performed by a licensed service contractor or technician.

 **DANGER:** Electric shock. Live components are present inside the boiler.

- ▶ Isolate the electrical mains supply before working on the boiler.
- ▶ Lock-out the mains supplies to prevent accidental activation.

## 1.4 Additional symbols

Symbol	Function
▶	Sequence of steps
→	Cross-reference to other points in this document or to other documents
•	Listing/list entry
-	Listing/list entry (2nd level)

Table 1 Additional symbols

## 2 Parts list for converting the boiler to high altitude >4,001-10,200 ft. low CO<sub>2</sub> and/or propane

1. # 7746901353 Conversion kit for the 24/30 kW, to propane high altitude (4,001-10,200 ft.), includes:
  - orifice # 871861724A (dia. 3.40 mm / 0.134 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.
2. # 7746901354 Conversion kit for the 24 kW, natural gas high altitude (4,001-10,200 ft.), includes:
  - orifice # 871861726A (dia. 4.55 mm / 0.179 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.
3. # 7746901421 Conversion kit for the 30 kW, natural gas high altitude (4,001-10,200 ft.), includes:
  - orifice # 871862002A (dia. 4.50 mm / 0.177 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.
4. # 7746901356 Conversion kit for the 45 kW, natural gas high altitude (4,001-10,200 ft.), includes:
  - orifice # 871861750A (dia. 5.55 mm / 0.219 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.
5. # 7746901355 Conversion kit for the 45 kW, to propane high altitude (0-10,200 ft.), includes:
  - orifice # 871861734A (dia. 4.15 mm / 0.163 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.
6. # 7746901358 Conversion kit for the 60 kW, natural gas high altitude (4,001-10,200 ft.), includes:
  - orifice # 871861781A (dia. 7.65 mm / 0.301 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.
7. # 7746901357 Conversion kit for the 60 kW, to propane high altitude (4,001-10,200 ft.), includes:
  - orifice # 871861770A (dia. 5.45 mm / 0.215 inch)
  - O-ring 2x
  - these instructions
  - label to be filled out and affixed to the boiler.

### 3 Conversion to high altitude >4,001-10,200 ft. low CO<sub>2</sub> and/or Propane

To convert the boiler to high altitude >4,001-10,200 ft. low CO<sub>2</sub> and/or propane, the following instructions must be adhered to:



#### DANGER:

if flammable gas explodes.

- ▶ Only carry out work on gas conduits and fittings if you are licensed for such work.
- ▶ This appliance is NOT suitable for use with gas mixtures such as Butane.



#### CAUTION:

wrong boiler identification module version.

- ▶ Only use this conversion kit for boilers with a boiler identification module version  $\geq 4$ . See installation instructions or servicing instructions, spare part list pos. 63. When the boiler identification module version is  $< 4$  or doubts about the version get in touch with the supplier, for contact information see the backside of these instructions.

#### 3.1 Shut down the boiler

- ▶ Turn off the gas supply.
- ▶ Switch off the heating system using the main switch (→ fig. 1).
- ▶ Disconnect the electrical power to the boiler.
- ▶ Set the thermostat or other operating control to lowest setting.

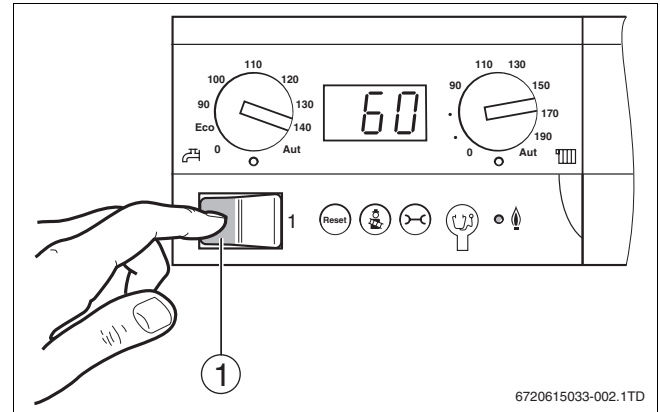


Fig. 1 Main switch

- ▶ Remove the casing (→ fig. 2).

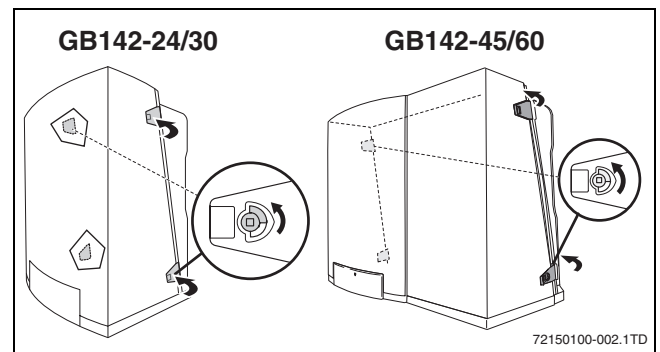


Fig. 2 Remove the casing

### 3.2 Changing the gas orifice

- ▶ Loosen the screw connection on the gas valve (→ fig. 3, [1]) and pull the plug (→ fig. 3, [2]) from the gas valve.
- ▶ Pull both plugs from the fan unit (→ fig. 3, [3]).
- ▶ Loosen both retaining clips (→ fig. 3, [4]) on the burner cover and remove the burner cover together with the fan unit and the gas valve.

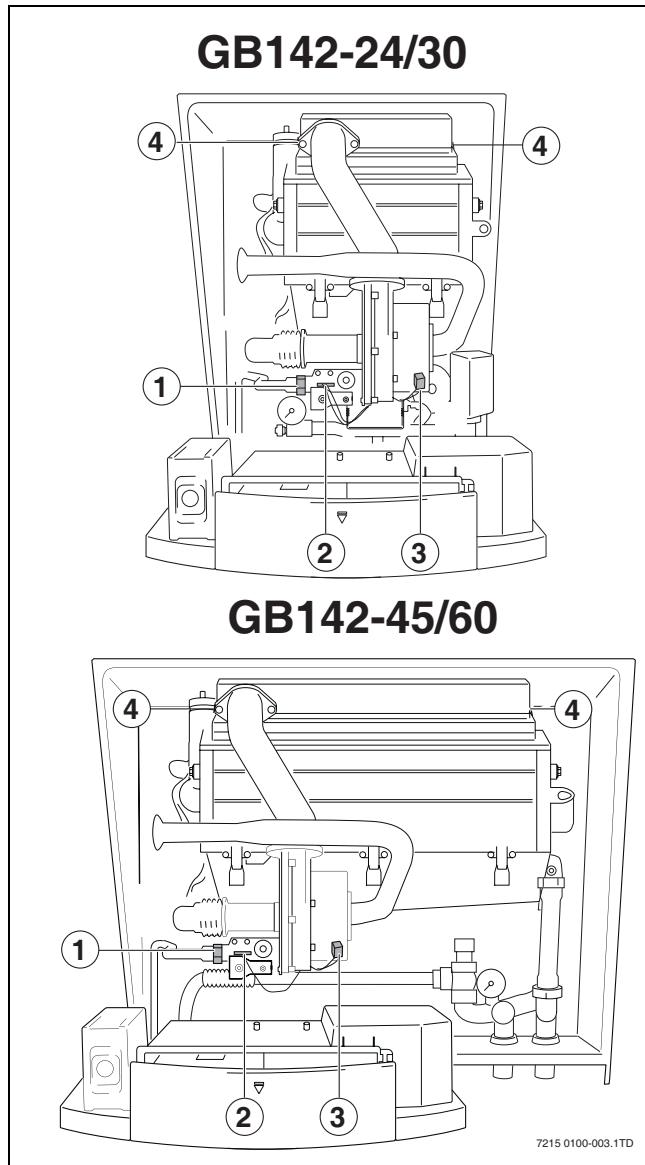


Fig. 3 Overview GB 142-24/30/45/60

- ▶ Loosen the three Phillips screws (→ fig. 4, [1]) and remove the gas valve from the fan unit.
- ▶ Remove the gas orifice fitted with O-rings (→ fig. 4, [2]).
- ▶ Fit the new O-rings on the new orifice

- ▶ Fit the correct orifice for the new type of gas supply (→ table 2). Make sure not to damage the new O-rings.

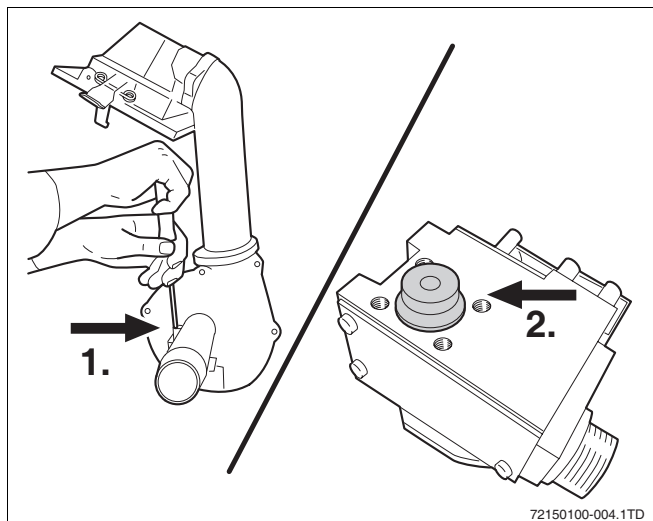


Fig. 4 Remove orifice

- ▶ Re-assemble all parts in reverse order of disassembly.
- ▶ Carry out the start-up activities and complete a new start-up report.
- ▶ Also check all joints and gaskets affected by the installation activities while carrying out the tightness test in operating conditions.
- ▶ Place a new sticker near the existing rating plate sticker indicating the type of gas supply installed. Fill out the required information on the conversion label.

Boiler capacity	Gas Type	Altitude 4,001-10,200ft.	
		Gas orifice diameter mm	inch
24 kW	Natural gas	4.55	0.179
	LPG P	3.40	0.134
30 kW	Natural gas	4.50	0.177
	LPG P	3.40	0.134
45 kW	Natural gas	5.55	0.219
	LPG P	4.15	0.163
60 kW	Natural gas	7.65	0.301
	LPG P	5.45	0.215

Table 2 Gas orifice diameter, altitude 4,001-10,200ft.

### 3.3 Testing for gas leaks

Prior to start-up of the boiler check the external tightness of the gas supply valve and confirm this in the start-up report.



#### CAUTION:

due to a short circuit.

- ▶ Cover damageable parts before leak testing.
- ▶ Do not spray the leak detection agent onto cables, plugs or electrical connection lines. Do not allow it to drip onto them either.



#### DANGER:

Commissioning and maintenance activities can cause leaks in pipe and screw connections.

- ▶ Carry out a proper leak test.
- ▶ Only use approved leak detection agents for leak detection.

- ▶ Disconnect the heating system from the power supply.
- ▶ Check the exterior tightness of new conduit sections up to and including the direct sealing point on the gas burner fitting. The maximum test pressure allowed on the input of the gas burner fitting is 14 inch W.C. (35 mbar).
- ▶ Check the input rates after converting the boiler to LPG to the values on the front page.

### 3.4 Inlet gas pressure

- ▶ Open at least 1 thermostatic radiator valve if present to allow water to flow through the boiler. Do not switch on the boiler.
- ▶ Close the gas shut-off valve. Loosen the screw plug on the inlet gas pressure testing nipple by 2 turns (→ fig. 5, [1]).
- ▶ Connect the pressure gauge connection hose to the testing nipple (→ fig. 5, [2]).
- ▶ Slowly open the gas shut-off valve.

The boiler and its individual shutoff valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).

The boiler must be isolated from the gas supply piping system by closing its individual manual shutoff valve during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).

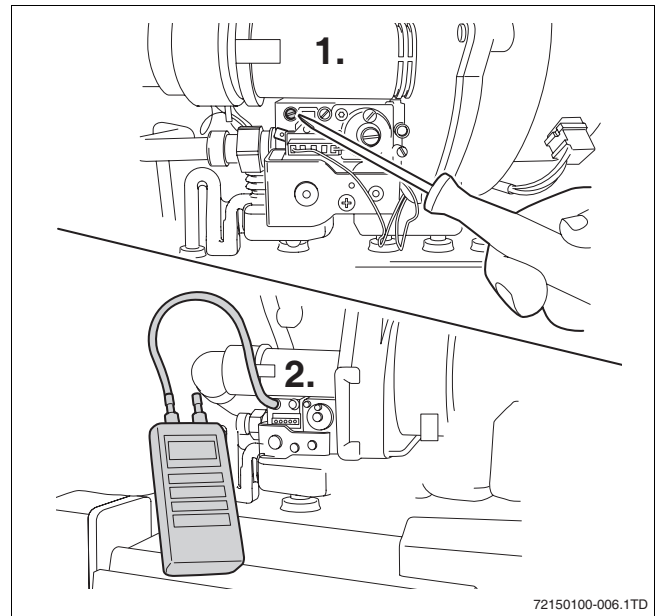


Fig. 5 Measuring the inlet gas pressure

- ▶ Briefly press on the control panel cover to open it.

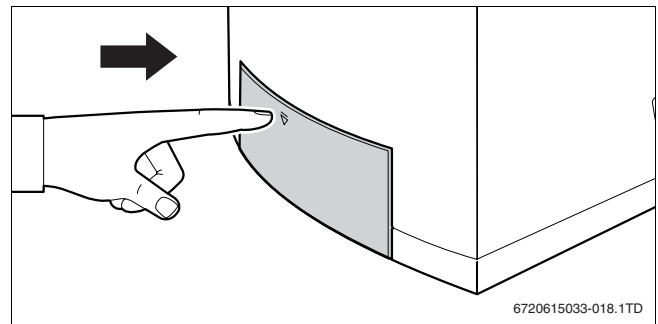


Fig. 6 Opening the control panel

- ▶ Switch on the heating system by setting the main switch to position "1" (→ fig. 7, [1]).

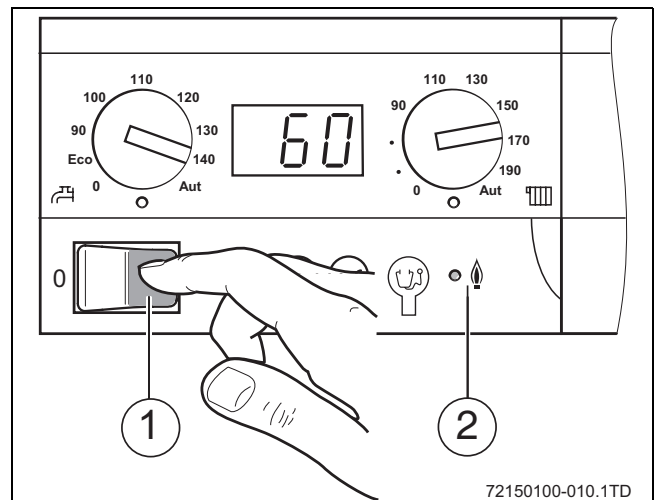



Fig. 7 Mains switch



- ▶ Press the “Chimney Sweep”  button and hold it (for approx. 2 seconds) until the display shows a decimal point.
- ▶ Measure the gas connection pressure as soon as the “Burner” LED lights and enter this value in the start-up report (→ fig. 7, [2], page 7).

### The inlet gas pressure must be:



#### NOTICE

- ▶ Contact the relevant gas utility company if the required inlet gas pressure is not available.
- ▶ Install a gas pressure regulator before the gas burner fitting if the supply pressure is too high.

- 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).
- ▶ Repeatedly press the “Service”  button until the temperature indication is displayed.
- ▶ Press the “Chimney Sweep”  button to end the measurement procedure.
- ▶ Close the gas shut-off valve.
- ▶ Remove the connection hose again and tighten the screw plug on the testing nipple.
- ▶ Open the gas shut-off valve again.

### 3.5 Checking and adjusting the gas/air ratio

- ▶ Switch off the heating system using the main switch (→ fig. 7, [1], page 7).
- ▶ Loosen the screw plug on the measuring nipple for the burner pressure by 2 rotations (→ fig. 8, [1]).
- ▶ Set the pressure gauge to 0.
- ▶ Use a hose to connect the plus terminal of the pressure gauge to the burner pressure measuring nipple (→ fig. 8, [2]).

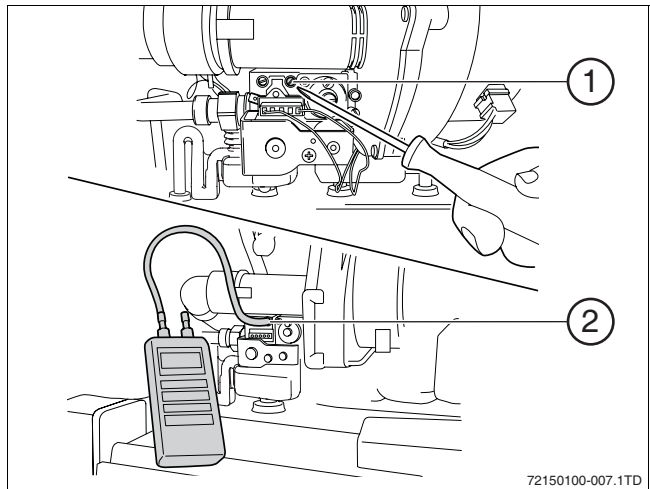







Fig. 8 Checking the gas/air ratio

- ▶ Switch on the heating system using the main switch (→ fig. 8, [1]).
- ▶ Press the “Chimney Sweep”  button and hold it (for approx. 2 seconds) until the display shows the decimal point.
- ▶ Press and hold the “Chimney Sweep”  and “Service”  buttons (for approx. 5 seconds) until the display shows “Lxx” (e. g. “L80”).
- ▶ Set the boiler to partial load “L30” by pressing the “Chimney Sweep”  button (higher values) or the “Reset”  button (lower values).
- ▶ Read out the differential pressure. The differential pressure ( $p_{\text{Gas}} - p_{\text{Air}}$ ) must be -0.02 inch W.C. (-5 Pa) ( $\pm 0.02$  inch W.C. =  $\pm 5$  Pa) (read-out on pressure gauge: -0.04 - 0 inch W.C. = -10 - 0 Pa).
- ▶ Enter the value measured in the start-up report.
- ▶ If the gas/air ratio is not correct it can be adjusted using the adjustment screw (→ fig. 9, [2]). The adjustment screw is located behind the cover screw.

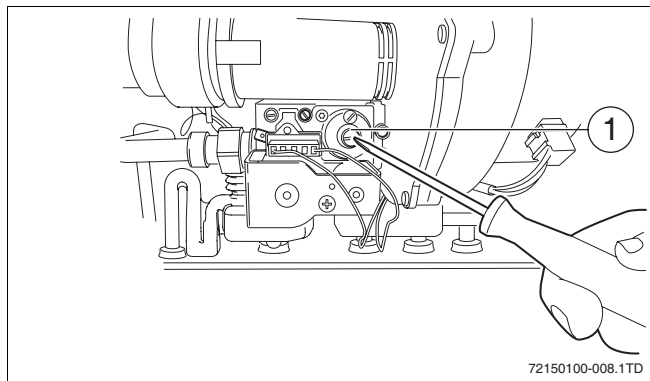




Fig. 9 Setting the gas/air ratio

- ▶ Repeatedly press the “Service”  button until the temperature indication is displayed.
- ▶ Press the “Chimney Sweep”  button until the decimal point is cleared from the display.



- ▶ Switch off the heating system using the main switch (→ fig. 8, [1]).
- ▶ Remove the measurement set-up, tighten the screw in the burner pressure measuring nipple.
- ▶ Switch on the heating system using the main switch.

### 3.6 Carrying out a tightness test in operating conditions



#### **DANGER:**

Leaks may be caused to pipes and screw connections during start-up activities if flammable gas explodes.

- ▶ Only use approved leak detection agents for leak detection such as a soapy water solution.



#### **CAUTION:**

due to a short circuit.

- ▶ Cover damageable parts before leak testing.
- ▶ Do not spray the leak detection agent onto cables, plugs or electrical connection lines. Do not allow it to drip onto them either.

- ▶ Check all gaskets and joints in the burner gas circuit for leaks while the burner is operational, using a foaming agent.

### 3.7 Measuring the carbon monoxide content (CO)

- ▶ Measure the carbon monoxide content on the flue gas sampling point (→ fig. 10).

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.

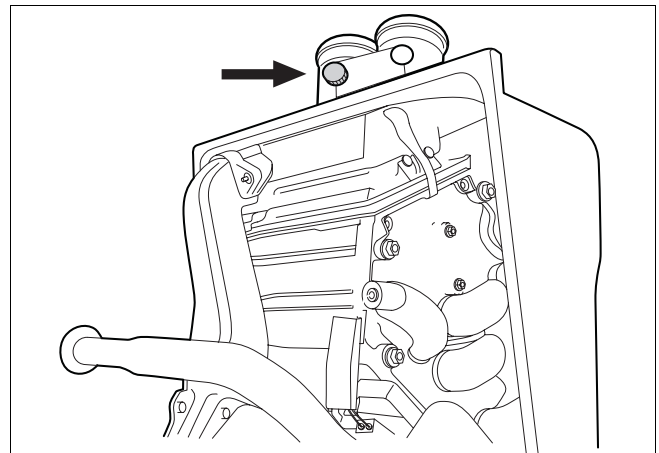


Fig. 10 Flue gas sampling point

### 3.8 Lighting Instructions



#### **DANGER:**

What to do if you smell gas:

- ▶ No open fire.
- ▶ Do not smoke.
- ▶ Avoid formation of sparks! Do not touch any electric switch, phone, electric plug or bell.
- ▶ Shut off main gas supply.
- ▶ Open windows and doors.
- ▶ Notify all occupants.
- ▶ Leave the building.
- ▶ Immediately call your gas supplier, heating contractor or fire department from a phone outside the building.



#### **WARNING:**

due to not following these instructions.

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

- This boiler is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- Check for smell of gas around the boiler area. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. Do not use this boiler if any part has been under water.
- Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control which has been under water.

## 4 Operating Instructions

### Start up the boiler

#### STOP

Read the safety precautions on page 9 of this manual.

- ▶ Wait 5 minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! and see the safety information on page 9. If you do not smell gas, go to the next step.
- ▶ Fit the casing again.
- ▶ Open the gas shut-off valve.
- ▶ Set the thermostat or other operation control to desired setting.
- ▶ Connect the heating system to the power supply.
- ▶ Switch on the heating system using the main switch (→ fig. 11).

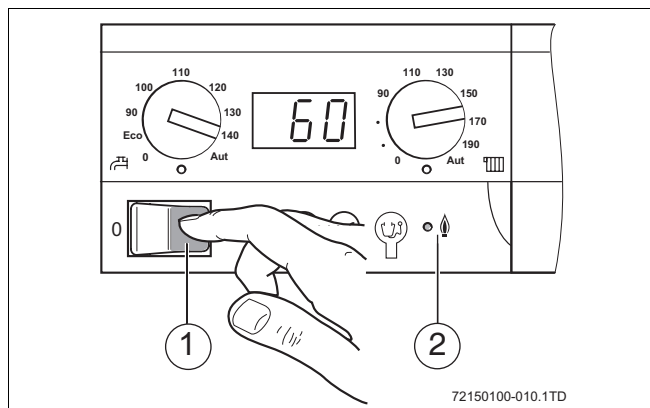


Fig. 11 Mains switch



## Notes

### **United States and Canada**

Bosch Thermotechnology Corp.  
50 Wentworth Avenue  
Londonderry, NH 03053  
Tel. 603-552-1100  
Fax 603-584-1681  
[www.buderus.net](http://www.buderus.net)  
U.S.A.

Products manufactured by  
Bosch Thermotechnik GmbH  
Sophienstrasse 30-32  
D-35576 Wetzlar  
[www.buderus.de](http://www.buderus.de)

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