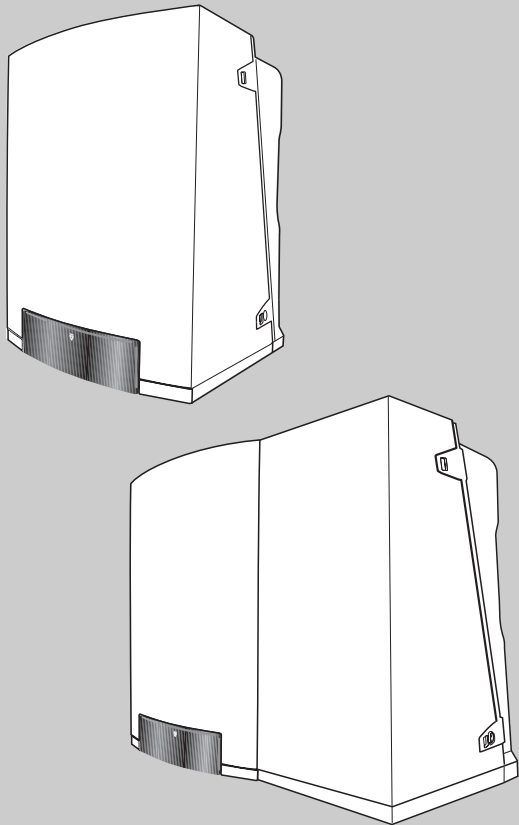


# Propane Conversion Kit Instruction

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

This kit and instructions are for converting the GB142 model boilers from Natural Gas to Liquid 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.**

## GB142-24/30/45/60

For the contractor

Please read these instructions carefully!

7215 0100 (2009/03) US/CA



# **Buderus**

# Contents

---

<b>1</b>	<b>Safety considerations</b> .....	<b>3</b>
1.1	Application purpose .....	3
1.2	Hazard definitions .....	3

---

<b>2</b>	<b>Parts list for converting the boiler to propane</b> ...	<b>4</b>
----------	--	----------

---

<b>3</b>	<b>LP conversion</b> .....	<b>5</b>
3.1	Testing for gas leaks .....	7
3.2	Inlet gas pressure .....	7
3.3	Checking and adjusting the gas/air ratio .....	9
3.4	Carrying out a tightness test in operating conditions .....	10
3.5	Measuring the carbon monoxide content (CO) .	10
3.6	Lighting Instructions .....	11

---

<b>4</b>	<b>Operating Instructions</b> .....	<b>12</b>
----------	-------------------------------------	-----------

# 1 Safety considerations

For use in Canada the conversion kit shall be carried out in accordance with the requirements of the provincial authorities having jurisdiction and in accordance with the requirements of the CAN-B149.1 and CAN1-B149.2 Installation Code. See also E.I.V.

Please observe the following safety instructions.

## 1.1 Application purpose

This kit and instructions are for converting the GB142-24/30/45/60 from Natural gas to Liquid Propane.

## 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 or cause minor personal injury or property damage.



### **CAUTION:**

Risk of electric shock.

Indicates presence of hazards due to electric shock.



### **NOTICE**

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



### **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:**

due to electricity.

- ▶ Prior to doing any work on the heating system, disconnect all electrical power to the appliance at the emergency switch.
- ▶ It is NOT sufficient to shut off only the appliance control!



### **NOTICE**

All service work on gas components must be performed by a trained and qualified service technician.

## **2 Parts list for converting the boiler to propane**

Conversion kit propane for the 24/30 kW # 76687 includes:

- orifice # 7099016 (dia. 3.35 mm / 0.131 inch)
- 2 o-rings
- bag
- these instructions
- label to be filled out and affixed to the boiler.

Conversion kit propane for the 45 kW # 76688 includes:

- orifice # 7099935 (dia. 4.05 mm / 0.158 inch)
- 2 o-rings
- bag
- these instructions
- label to be filled out and affixed to the boiler.

Conversion kit propane for the 60 kW # 7746900156 includes:

- orifice # 76690 (dia. 5.40 mm / 0.213 inch)
- 2 o-rings
- bag
- these instructions
- label to be filled out and affixed to the boiler
- diffuser plate.

### 3 LP conversion

To convert the boiler to 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/Propane.

#### **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.

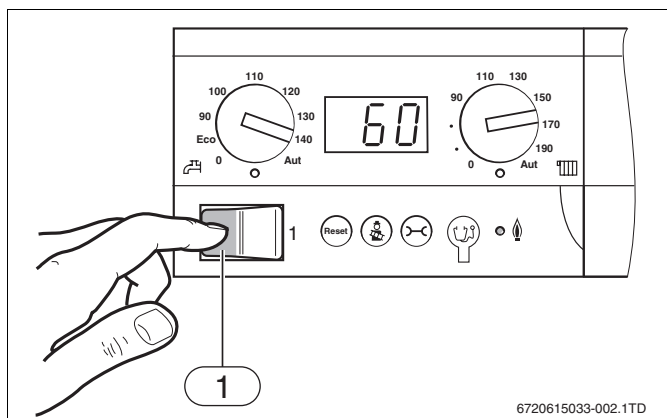


Fig. 1

- ▶ Remove the casing (→ fig. 2).

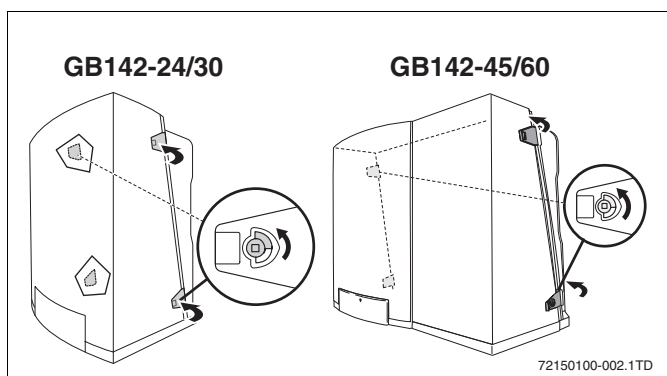


Fig. 2

#### **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.

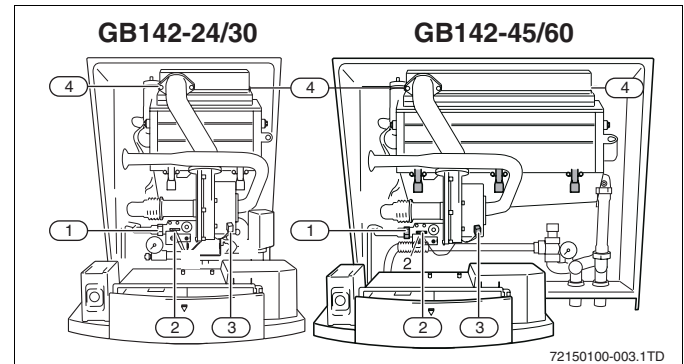


Fig. 3

- ▶ Loosen the three Phillips screws (→ fig. 4, [1]) and remove the gas valve from the fan unit.
- ▶ Remove the gas orifice (→ fig. 4, [2]).
- ▶ Fit the correct orifice for the new type of gas supply (table 1). Make sure not to damage the O-rings.
- ▶ 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 underneath the existing rating plate sticker indicating the type of gas supply installed. Fill out the required information on the conversion label.

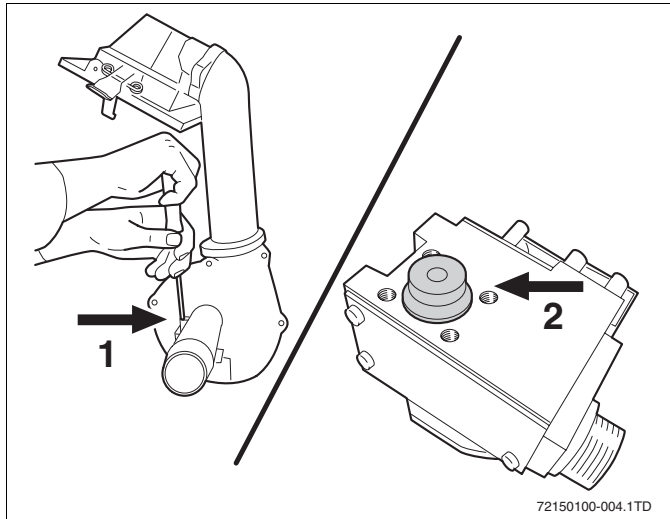


Fig. 4

**Installation of diffuser plate (GB142/60 model only)**

- ▶ Remove burner gasket (→ fig. 5, [1]).
- ▶ Remove gas-air distribution plate (→ fig. 5, [2]).
- ▶ If present, remove old diffuser plate (→ fig. 5, [3]).
- ▶ Always install the new diffuser plate of the conversion kit propane 60 kW.
- ▶ Reassemble new diffuser plate, gas-air distribution plate and burner gasket.
- ▶ Secure the supplied LP conversion kit label to the boiler next to its rating plate.

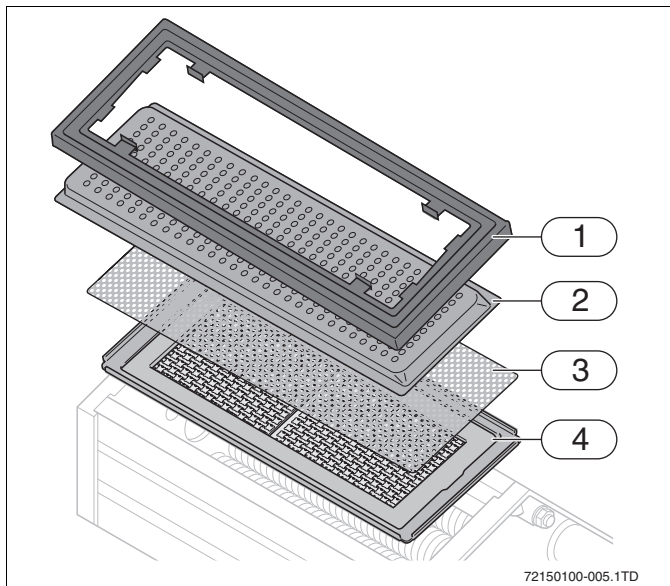


Fig. 5

**3.1 Testing for gas leaks**

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

**DANGER:**

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

Boiler capacity	Type of gas supply	Gas orifice diameter in mm (inch)	Venturi article number
24 kW	Natural gas	4.45 (0.174)	423.072A
	LPG P	3.35 (0.131)	423.072A
30 kW	Natural gas	4.45 (0.174)	423.072A
	LPG P	3.35 (0.131)	423.072A
45 kW	Natural gas	5.40 (0.213)	423.170A
	LPG P	4.05 (0.158)	423.170A
60 kW	Natural gas	7.50 (0.293)	423.173A
	LPG P	5.40 (0.213)	423.173A

Tab. 1 Gas orifice diameter

**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.

### 3.2 Inlet gas pressure

- ▶ Open at least one 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 two turns (→ fig. 6, [1]).
- ▶ Connect the pressure gauge connection hose to the testing nipple (→ fig. 6, [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 ½ 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 ½ psi (3.5 kPa).

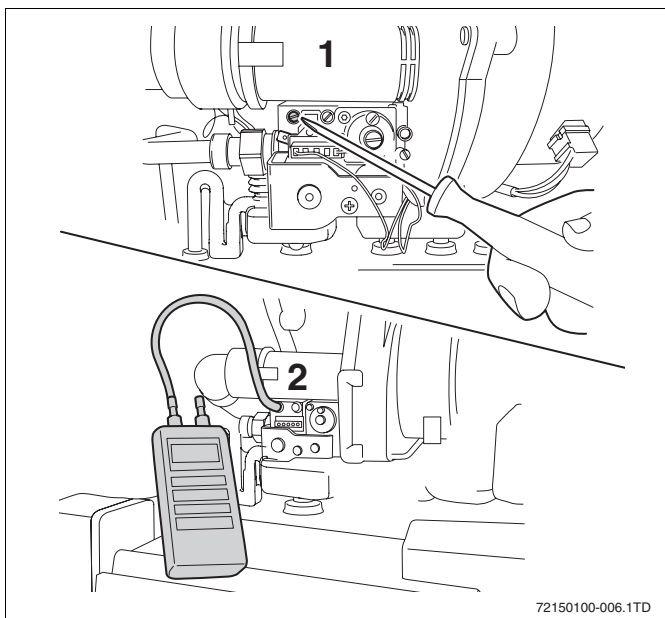


Fig. 6 Measuring the inlet gas pressure

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

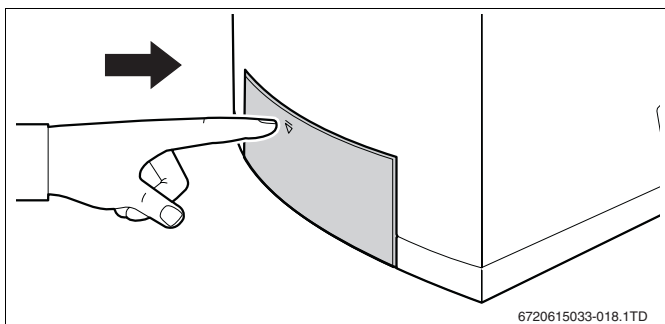
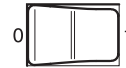


Fig. 7 Opening the control panel

- ▶ Switch on the heating system by setting the main switch to position "1" (see fig. 11, page 11).



- ▶ Press the "Chimney Sweep" button and hold it (for approx. two 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.



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).
- ▶ 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.

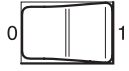


#### CAUTION

- ▶ 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.

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

- ▶ Switch off the heating system using the main switch.



- ▶ Loosen the screw plug on the measuring nipple for the burner pressure by two rotations (→ fig. 8, [1]).
- ▶ Set the pressure gauge to zero.
- ▶ Use a hose to connect the plus terminal of the pressure gauge to the burner pressure measuring nipple (→ fig. 8, [2]).

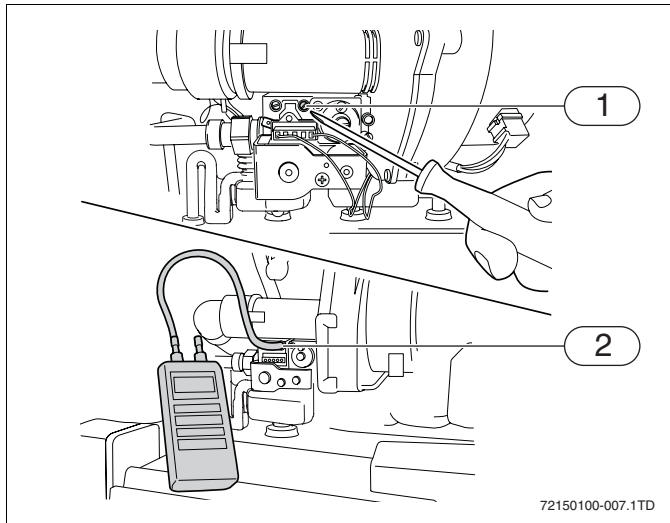


Fig. 8 Checking the gas/air ratio

- ▶ Switch on the heating system using the main switch.



- ▶ Press the "Chimney Sweep" button and hold it (for approx. two seconds) until the display shows the decimal point.



- ▶ Press and hold the "Chimney Sweep" and "Service" buttons (for approx. five seconds) until the display shows "Lxx" (e. g. L.88).



+



- ▶ Set the boiler to partial load "L30" by pressing the "Chimney Sweep" button (higher values) or the "Reset" button (lower values).



= higher values



= lower values

- ▶ Read out the differential pressure. The differential pressure ( $p_{Gas} - p_{Air}$ ) 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.

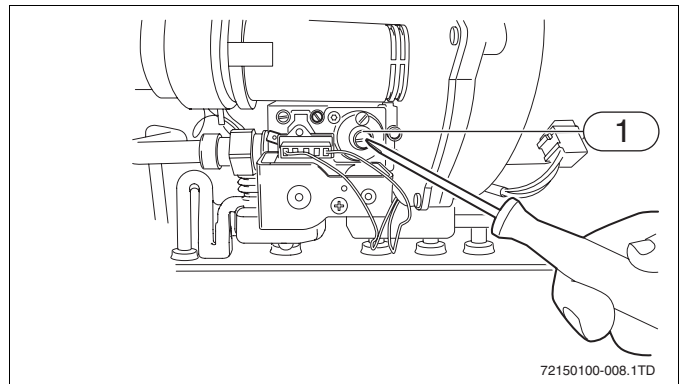


Fig. 9 Setting the gas/air ratio

- ▶ 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.



- ▶ Remove the measurement set-up, tighten the screw in the burner pressure measuring nipple.

- ▶ Switch on the heating system using the main switch.





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

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



#### **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 testing agent onto cables, plugs or electrical connection lines. Do not allow it to drip onto them either.

### 3.5 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.

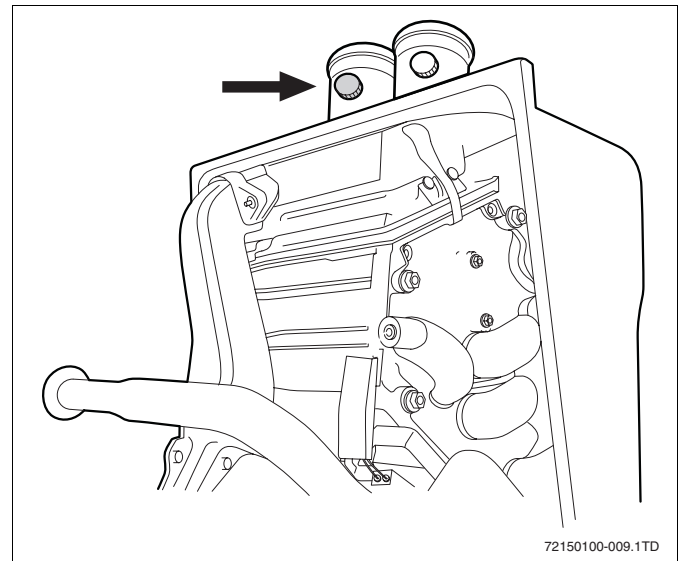


Fig. 10 Flue gas sampling point

72150100-009.1TD

## 3.6 Lighting Instructions

For your safety, read before lighting.

**WARNING:**

due to not follow 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.

**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!

- A** This boiler is equipped with an ignition device which automatically lights the pilot. Do not try to light the pilot by hand.
- B** 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.
- C** 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 10 of this manual.

- ▶ Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow "B" in the safety information on page 10. 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).

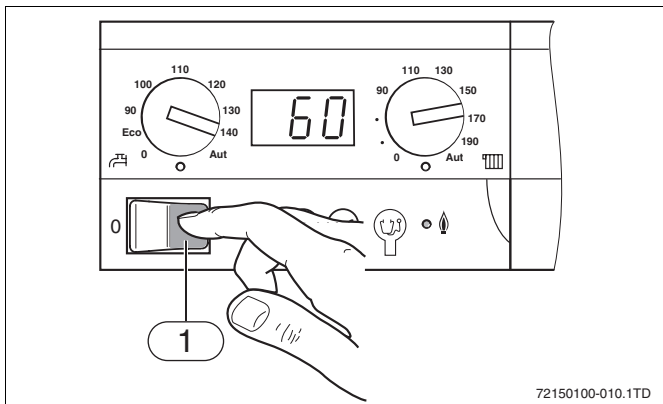


Fig. 11

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)

Bosch Thermotechnology Corp. reserves the right to make changes  
without notice due to continuing engineering and technological  
advances.

**Buderus**

721.501A 0004