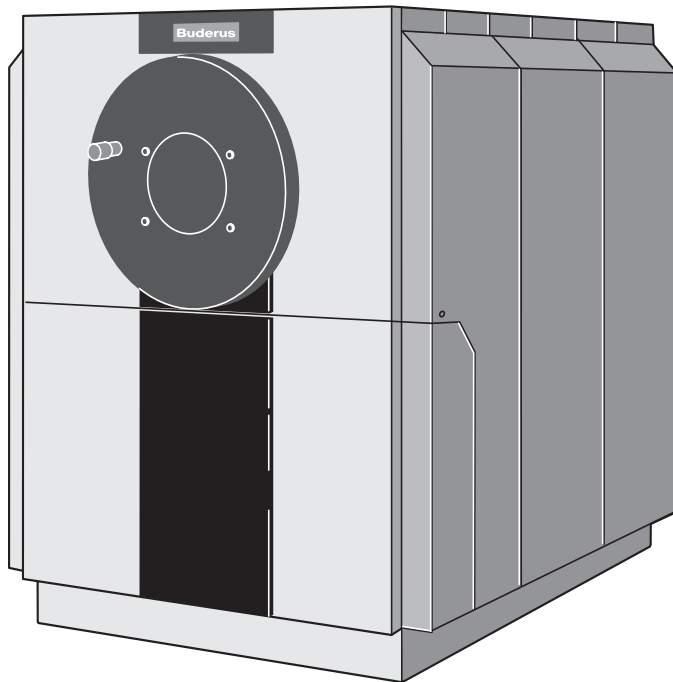



# Operating Instructions

## Condensing Gas Boiler SB735 Series



Buderus

 This device meets all basic requirements of relevant standards and guidelines. Its conformity has been verified. All associated documents and the original Declaration of Conformity are available from the manufacturer.

## To these instructions

These operating instructions contain important information for the safe and correct operation and maintenance of the condensing gas boiler SB735.

## Correct fuel

This system requires the correct fuel to ensure a proper operation. During commissioning, your system installer will enter the correct type of fuel, which your system requires, into the table below.



### SYSTEM DAMAGE

through incorrect fuel.

#### CAUTION

- Only use the correct fuel identified for your system.



### USER NOTE

We recommend you seek the advice of your system installer if you intend changing the fuel for your system.

**Use the following fuel:**

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company stamp/date/signature

## Subject to technical modifications.

Constant development may lead to minor deviations of illustrations, functional steps and specifications from those described/shown.

## Updating your documentation

Please let us know if you would like to make suggestions to improve our documentation, or if you have noticed any errors.

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## 1 For your safety

The SB735, condensing gas boiler, has been developed and built employing the latest technologies and safety regulations.

Ease of operation was given particularly high priority. Please observe the safety and operator's instructions to ensure optimum safe, economical and environmentally-friendly utilisation of your system.

### 1.1 Correct use

The SB735 condensing gas-fired boiler was designed for heating domestic hot water and, for example, the central heating of multi-occupancy buildings, as well as public and commercial buildings.

### 1.2 Notes structure

Two levels of danger are identified and signified by symbols:



**WARNING!**

#### **DANGER TO LIFE**

Identifies possible dangers emanating from a product, which might lead to serious injury or death, if appropriate care is not taken.



**CAUTION!**

#### **DANGER OF INJURY/ SYSTEM DAMAGE**

Points to a potentially dangerous situation, which might lead to medium or slight injuries or to material losses.



#### **USER NOTE**

User tips for the optimum utilisation and setting of the equipment plus useful information.

### 1.3 Please observe these safety instructions

Incorrect operation of SB 735 boilers may lead to material losses.

- Only operate the boiler as intended and when it is in perfect condition.
- Let a heating contractor install and maintain your heating system.
- Let your local heating contractor train you properly in the use of this system.
- Please read these operating instructions carefully.



**WARNING!**

#### **DANGER TO LIFE**

through the explosion of volatile gases. There is a risk of explosion if you can smell gas.

- Keep open flames away. Do not smoke. Do not use lighters.
- Avoid sparks!  
Do not operate electrical switches, incl. telephone, plugs or door-bells.
- Close the main gas shut-off valve.
- Open windows and doors.
- Warn all occupants, but do not use doorbells.
- Leave the building.
- Call your gas supplier and your local heating engineer from outside the building.
- If necessary, notify police or fire services.
- Immediately leave the danger zone if you hear gas streaming out.

### 1.3.1 Location



#### Danger to life

through poisoning.

#### WARNING!

Insufficient ventilation can lead to dangerous flue gas leaks.

- Ensure that the ventilation and exhaust air openings are neither restricted nor closed.
- The boiler must not be operated, unless you immediately remedy the fault.



#### Risk of fire

through flammable material or liquids.

#### WARNING!

- Never store flammable materials or liquids in the immediate vicinity of the heat generator.



#### Boiler damage

through contaminated combustion air.

#### CAUTION!

- Never use chlorinated cleaning agents or halogenated hydrocarbons (as, for example, contained in spray cans, solvents or cleaning agents, paints and adhesives).
- Avoid frequent very dusty atmospheres.
- Never hang laundry to dry in the boiler room.



#### System damage

through frost.

#### CAUTION!

- Ensure that the boiler room is always free from frost.

### 1.3.2 Working on the heating system



#### Danger to life

through the explosion of volatile gases.

#### WARNING!

- Ensure that the installation, the gas and flue gas connections, the initial start-up, the power connection, maintenance and repair work are only carried out by competent specialists.
- Ensure that work on parts of the gas installation are only carried out by a licensed specialist.



#### System damage

through inadequate cleaning and maintenance.

#### CAUTION!

- Have your system inspected, cleaned and maintained annually by a specialist contractor.
- We recommend you enter into a contract covering an annual inspection and maintenance on a "as-required-basis".

## 2 Product description

The following are components of the SB735, condensing gas-fired boiler (Fig. 1):

- Boiler block (Fig. 1, **item 5**) incl. thermal insulation and burner door (Fig. 1, **item 4**).  
The boiler block transfers the heat generated by the burner to the heating water. The burner door is designed to carry the burner and to close the combustion chamber.
- Boiler jacket (Fig. 1, **item 3**), thermal insulation and boiler front walls (Fig. 1, **item 1**).  
The boiler shell and thermal insulation prevent energy loss.
- Control device (Fig. 1, **item 2**) (Optional).  
The control device is designed to monitor and control all electrical components of the SB735.

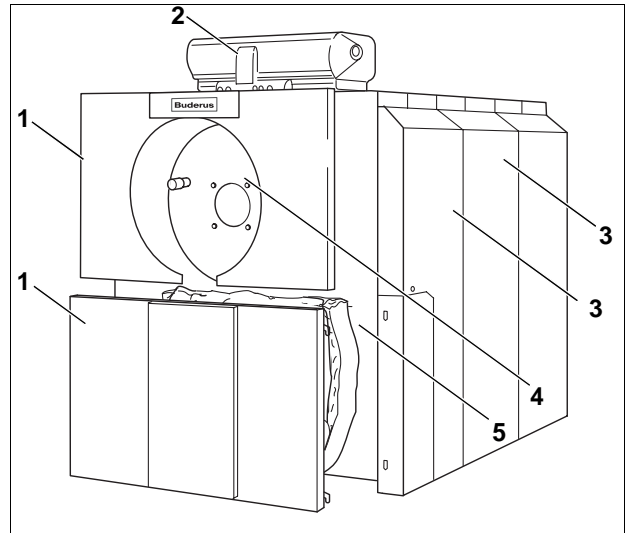


Fig. 1 SB735, condensing gas-fired boiler

**Item 1:** Boiler front walls

**Item 2:** Control device

**Item 3:** Boiler jacket panel

**Item 4:** Burner door

**Item 5:** Boiler block

## 3 Using correct fill and make-up water

This chapter contains general information about the water in your heating system.

Observe the basic, system-specific requirements for water quality in Chapter 3.2 "Water quality".

### 3.1 Water description

In your heating system, water is used as heat transfer medium. Water is given different descriptions depending on its purpose.

- Heating water:  
Water contained within your heating system.
- Fill water:  
Water used for the first filling of your system before commissioning.
- Make-up water:  
Water used for the re-filling your system in case of water losses.

## 3.2 Water quality

All water contains substances, e. g.  $\text{Ca}(\text{HCO}_3)_2$  (calcium hydrogen-carbonate), which may influence the function of your heating system. These may lead to corrosion, scaling and other deposits.

Regularly check your water consistency and, if necessary, treat your fill and make-up water, to ensure that your heating system remains economic, functional, operationally reliable and energy efficient.



**CAUTION!**

### SYSTEM DAMAGE

through corrosion and scaling because of fill and make-up water, which does not comply with system-specific requirements.

- Check with your local heating contractor or your water supply company regarding the  $\text{Ca}(\text{HCO}_3)_2$  concentration (calcium hydrogen-carbonate) in your area.
- You should treat the fill and make-up water, if it does not comply with system-specific requirements. In such cases contact your local heating contractor.

Observe the following table regarding the correct use and treatment of the fill and make-up water.

This table is an extract from the Code of Practice K8 "Water treatment for hot water heating systems" and the VDI 2035 "Water treatment guideline".

Total rated boiler output in MBH	$\text{Ca}(\text{HCO}_3)_2$ concentration in $\text{mol}/\text{m}^3$	Maximum fill and make-up water volume $V_{\text{max}}$ in $\text{m}^3$	Heating water pH value
$300 < Q \leq 1600$	$\leq 2.0$	$V_{\text{max}} = \text{three times the system volume}$	8.2–9.5
$1601 < Q \leq 3500$	$\leq 1.5$		
$300 < Q \leq 1600$	$> 2.0$	$V_{\text{max}} = 0,0313 \cdot \frac{Q(\text{kW})}{\text{Ca}(\text{HCO}_3)_2 \left( \frac{\text{mol}}{\text{m}^3} \right)}$	8.2–9.5
$1601 < Q \leq 3500$	$> 1.5$		

Table. 1 Requirements of filling, make-up and heating water

## 4 System start-up

This chapter explains how you prepare the system for operation and how to commission the control device and the burner.

### 4.1 Making the system operational

You should check the following to prepare the system for operation:

- the system water pressure see Chapter 7.2 "Checking and correcting the water pressure", page 13),
- whether the main fuel supply shut-off valve is open,
- whether the heating system emergency stop switch has been activated or the boiler room fuse is inserted.

Let your specialist show you where the fill valve is located in the pipework of your system (return).

### 4.2 Commissioning the control device and the burner

Start up your boiler via the control device (in this example (Fig. 2): 2000 series Logamatic control device). By commissioning the control device, you also automatically commission the burner. The burner can then be started via the control device. For further details in this connection, see the operating instructions of the relevant control device or burner.

- Switch the boiler water thermostat (Fig. 2, **item 1**) to "AUT".
- Set the On/Off switch (Fig. 2, **item 2**) to "I" (ON).



#### USER NOTE

- Please observe the operating instructions of the control device.

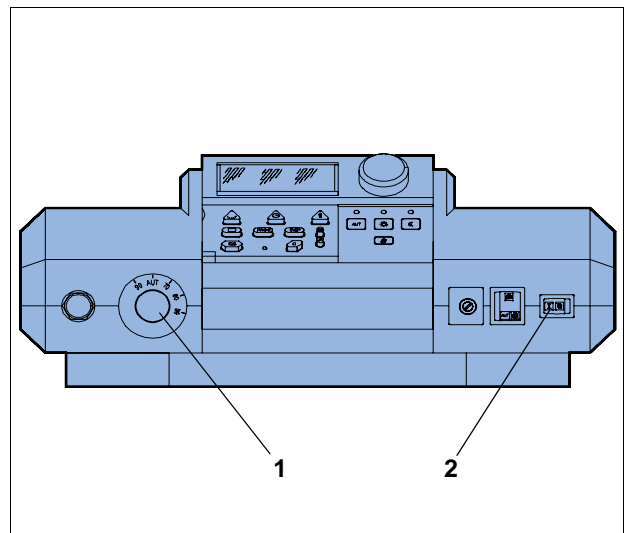


Fig. 2 2000 series Logamatic control device

**Item 1:** Boiler water thermostat

**Item 2:** On/Off switch

## 5 System shutdown

This chapter explains, how you shut down your boiler, the control device and burner. Furthermore, you will find explanations as to how you can shut down your system in emergencies.



### SYSTEM DAMAGE

through frost.

#### CAUTION!

The system can freeze up if it is out of use, e.g. through a shut-down because of fault(s).

- Protect your heating system against frost damage, where temperatures below freezing are expected.
- Drain the heating water at the lowest point in the system, using the boiler drain. To do this, open the air vent valve at the highest point in the system.

- Shut off the fuel supply at the main fuel shut-off valve.

### 5.1 Shutting down the control device and burner

Shut down your boiler via the control device. The burner is automatically shut down when the control device is shut down.

- Set the On/Off switch (Fig. 2, page 9) to "0" (OFF).



#### USER NOTE

For further details in this connection, see the operating instructions of the relevant control device.

### 5.2 Shutting down the system in an emergency



#### USER NOTE

- Only in an emergency, shut off the system via the boiler room fuse or heating system emergency stop switch.

In other dangerous circumstances, isolate the main fuel shut-off valve and the electrical power supply of the system via the boiler room main fuse or the emergency stop switch for the boiler room (see Chapter 1.3 "Please observe these safety instructions", page 4).

## 6 Correcting burner faults

Heating system faults are indicated in the control device display (Fig. 3, **item 2**). You will find detailed information regarding fault displays in the operating instructions of the respective control device. In addition, if the burner develops a fault, a fault lamp on the burner and an indicator on the (Fig. 3, **item 1**) control device may illuminate.



### SYSTEM DAMAGE

through frost.

#### CAUTION!

The system can freeze up if it is out of use, e.g. through a shut-down because of fault(s).

- You should drain the heating water via the boiler drain at the lowest point in the system, to protect it against freezing, if the system remains switched off for several days because of a fault shut down.



### SYSTEM DAMAGE

through too frequent activation of the reset button.

#### CAUTION!

The burner ignition transformer may be damaged, if you press the reset button more than three times in succession, after the burner refuses to start.

- Do not attempt to clear a fault more than three times in succession by using the reset button.
- Press the burner reset button (see burner operating instructions).

See the technical burner documentation for information regarding the resetting of the burner, if the burner will not start after three attempts.

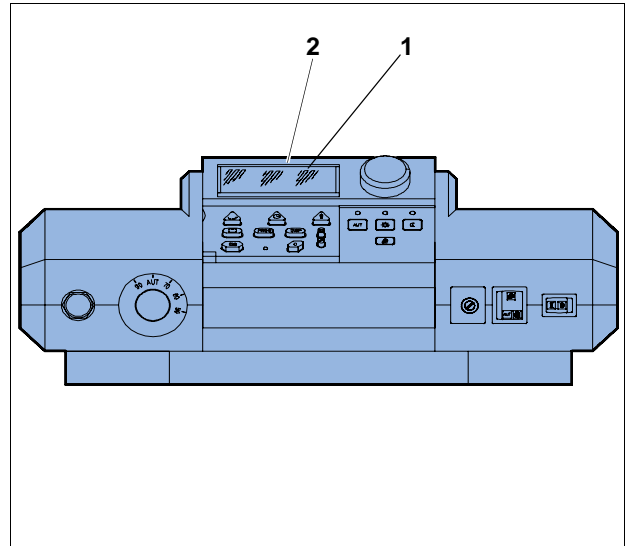


Fig. 3 Burner fault indication

**Item 1:** Indicator lamp

**Item 2:** Display

## 7 System maintenance

This chapter explains, why regular maintenance is important for your system. It will also indicate to you, how you can check and regulate the water pressure.



**CAUTION!**

### **SYSTEM DAMAGE**

through inadequate cleaning and maintenance.

- Have your system inspected, cleaned and maintained annually by a specialist contractor.
- We recommend you enter into a contract covering an annual inspection and maintenance on an "as-required-basis".

Observe the separate maintenance instructions for maintenance work on the neutralising system. Only specialists should carry out work on the neutralising system.

### 7.1 Why is regular maintenance important?

You should have your system regularly serviced for the following reasons:

- to maintain the highest level of efficiency and to operate the system economically (low fuel consumption),
- to achieve a high level of operational reliability,
- to maintain the highest level of environmentally responsible combustion.

## 7.2 Checking and correcting the water pressure

Your heating system must contain sufficient water to ensure the safe and correct function of your system.



### SYSTEM DAMAGE

through frequent re-filling.

#### CAUTION!

The system may be damaged, depending on water quality, by corrosion or scaling, if you frequently need to re-fill your system with make-up water.

- Enquire from your local heating contractor whether you can use your public water untreated or whether you need to treat it before filling your system.
- Notify your local heating contractor if you need to regularly add make-up water to your system.

Fill make-up water into your system, if the system pressure is too low (see Chapter 3 "Using correct fill and make-up water", page 7).

### 7.2.1 When do you need to check the water pressure in your heating system?

- Recently filled in make-up water loses much of its volume in the first few days because it releases gases. With new systems therefore check the water pressure in your heating system initially on a daily basis, and then after increasing intervals.



### USER NOTE

Air pockets may form through the fill or make-up water releasing gases.

- Vent the system via the radiators and, if required, replenish the system with make-up water.
- Check the water pressure monthly, if the heating system still loses volume.

Systems are generally designated as open or sealed systems. Open systems are now rarely installed. Therefore, a sealed system is used as an example of how you can check the water pressure.

The specialist will have carried out all initial settings during commissioning.

## 7.2.2 Open systems

On open systems the pressure gauge needle (Fig. 4, **item 1**) must be within the red range (Fig. 4, **item 3**).

## 7.2.3 Sealed systems

On sealed systems the pressure gauge needle (Fig. 5, **item 2**) must be within the green range (Fig. 5, **item 3**). Set the red needle (Fig. 5, **item 1**) on the pressure gauge to the required system pressure.

- Check the system water pressure.



### SYSTEM DAMAGE

through frequent re-filling.

#### CAUTION!

The system may be damaged, depending on water quality, by corrosion or scaling, if you frequently need to re-fill your system with make-up water.

- Ensure that your heating system is adequately vented.
- Check the heating system for leaks and the function of the expansion vessel.
- The water pressure in the system is too low, if the pressure gauge needle falls below (Fig. 5, **item 2**) the green range (Fig. 5, **item 3**). Re-fill the heating system with make-up water (see Chapter 3 "Using correct fill and make-up water", page 7).
- Fill make-up water through the fill cock in the heating system pipework (return).
- Vent the heating system.
- Re-check the water pressure.

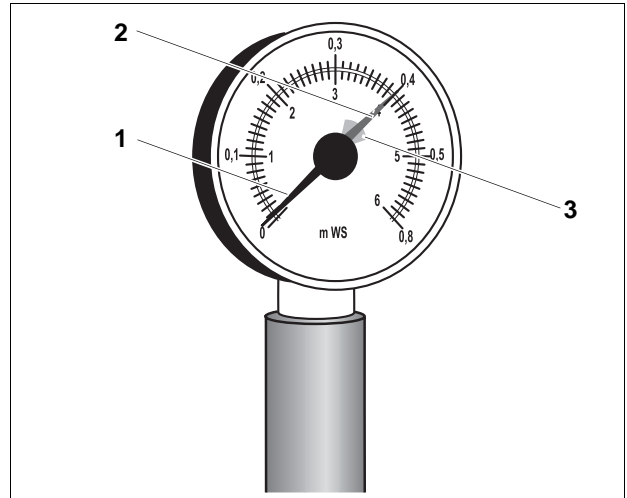


Fig. 4 Pressure gauge for open systems

**Item 1:** Pressure gauge needle

**Item 2:** Green needle

**Item 3:** Red marking

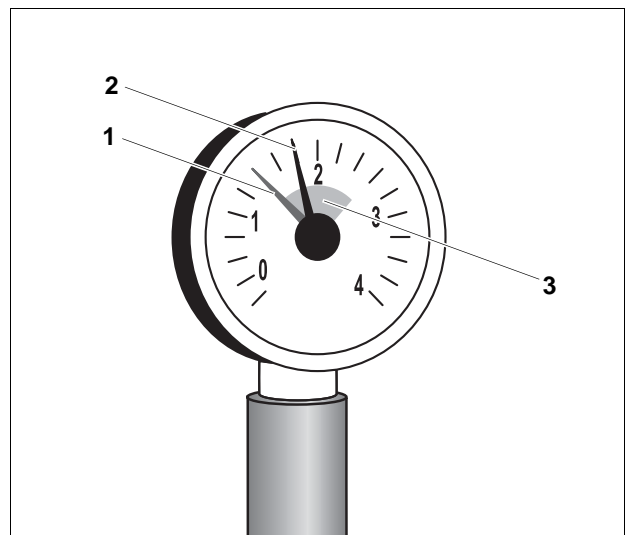


Fig. 5 Pressure gauge for sealed systems (in bars)

**Item 1:** Red needle

**Item 2:** Pressure gauge needle

**Item 3:** Green marking



