

11 Boiler maintenance

11.1 Why is regular maintenance important?

Heating systems should be regularly maintained for the following reasons:

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

Offer an annual inspection and maintenance contract (depending on requirements) to your customer. You can check in the inspection and maintenance reports (→ Chapter 11.6, page 54) what should be included in such contracts.



NOTICE

You may order spare parts from your local distributor.

11.2 Preparing the boiler for cleaning

- Shut down the heating system (→ Chapter 10.1, page 49).



WARNING!

DANGER TO LIFE

from electric shock.

- Before you open the control: shut off electrical supply and secure against accidental activation.
- Remove the burner door panel or the burner hood from the boiler.
- Disconnect electrical supply to burner.



WARNING!

DANGER TO LIFE

through the explosion of volatile gases.

- Work on gas components must be carried out by qualified and authorized personnel only.

11.3 Boiler cleaning

The boiler can be cleaned with brushes and/or by a wet method. Cleaning equipment is available as accessory.



CAUTION!

DANGER OF BURNS

by touching hot boiler parts.

- Wear appropriate protective gloves or use pliers.

- Open burner door by removing the two hexagon bolts on the sides.

11.3.1 Cleaning the boiler with cleaning brushes

- Note the position of the flue gas baffle plates to enable their correct re-installation later.
- Remove the flue gas baffle plates from the flue gas flues.
- Clean the flue gas baffle plates with one of the two cleaning brushes.

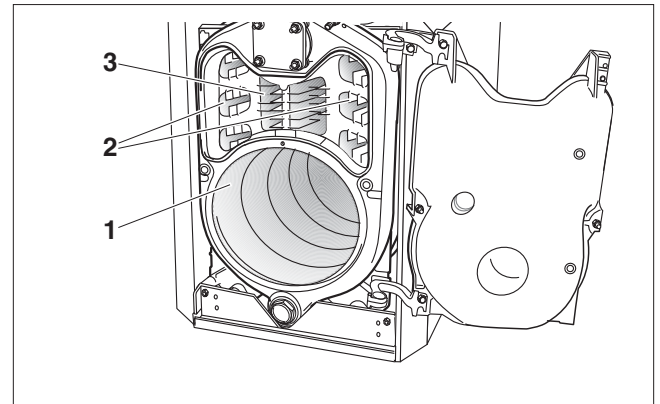


Fig. 67 Open the burner door

- 1 Combustion chamber
- 2 1. flue gas pass
- 3 2. flue gas pass

- Clean the flue passages by turning the round cleaning brush.

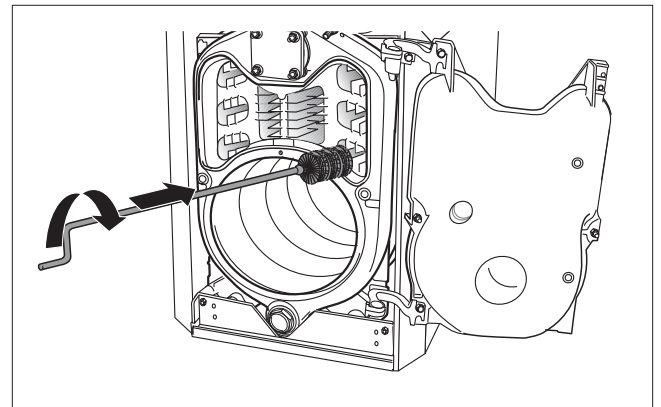


Fig. 68 Brushing out the flue gas passages

- Clean the combustion chamber with a flat brush. Remove the debris from the combustion chamber, the flue passages and the flue connection.
- Install the flue baffle plates in their original position.
- Check sealing rope on burner door. Replace damaged or hardened sealing rope.



NOTICE

You can obtain suitable sealing rope from your local Buderus distributor.

- Close burner door with the two hexagon bolts (approx. 90 lbs/inch) Tighten the hexagon bolts evenly to properly seal the burner door.

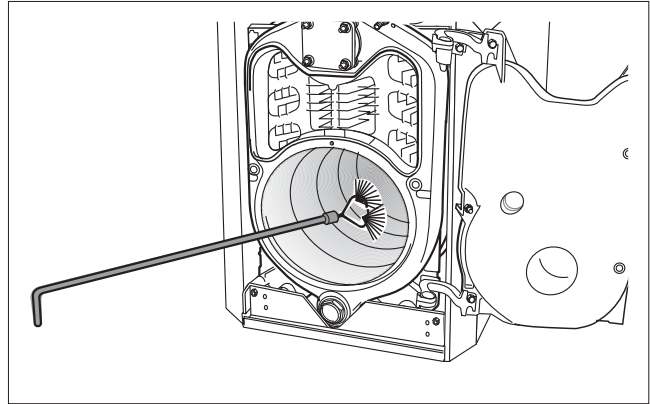


Fig. 69 Brushing out the combustion chamber

11.3.2 Wet cleaning (chemical cleaning)

When using a wet cleaning method use a suitable cleaning agent (soot or accumulation of debris).

Proceed with the wet cleaning in the same order as described for cleaning with brushes (→ Chapter 11.3.1, page 51).



NOTICE

Observe the instructions for use of the cleaning agent. You may need to proceed differently from the method described here in some circumstances.

- Cover the control panel with plastic to prevent spray from entering the control panel.
- Spray cleaning agent evenly into the flue gas passes.
- Close burner door and start up the heating system.
- Heat the boiler to a temperature of at least 160 °F.
- Shut down the heating system.
- Brush out the hot gas flues.

11.4 Checking the heating system operating pressure

The system pressure for closed systems must be 12 – 30 psi (1 – 2.1 bar).

- Check system pressure
- If the pressure gauge shows less than 12 psi, the pressure is too low. Top up with water.



CAUTION!

SYSTEM DAMAGE

due to frequent topping up.

If you need to add water frequently, the heating system may be damaged by corrosion and lime accumulation.

- Ensure that your heating system is bled properly.
- Check the heating system for leaks and proper operation of the expansion tank.



CAUTION!

SYSTEM DAMAGE

due to material stress as a result of temperature differentials.

- Only fill the system when cold (the flow temperature should be no more than 100 °F).

- Add water through the feed valve.
- Vent heating system
- Check the pressure again.

11.5 Testing relief valve

The functioning of the pressure relief valve must be checked at regular intervals (1-3 years as specified by local codes).

- Make sure that no persons are in the discharge area of the pressure relief valve.
- Raise the lever on the pressure relief valve.

The pressure relief valve must open and release pressure. If the pressure relief valve does not discharge, it must be replaced, because system components may be damaged by excessive pressure.

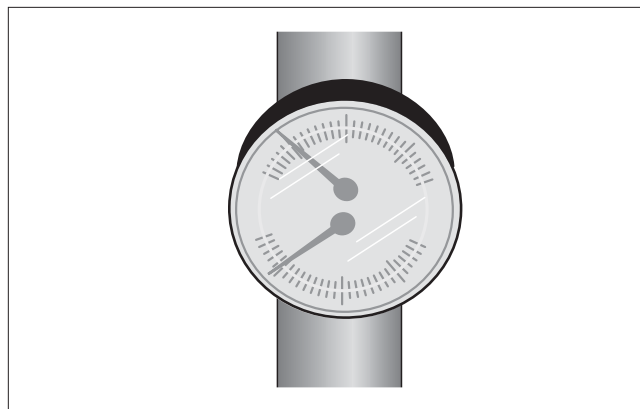


Fig. 70 Pressure/temperature gauge for showing operating pressure and feed temperature

11.6 Inspection and maintenance protocols

- Sign all service work as completed and enter the relevant date.

The service and maintenance protocols can also be used as templates.

	Service work	Page	Date: _____	Date: _____	Date: _____
1.	Check the general condition of the heating system		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Visual and function check of the heating system		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Check all fuel and water components of the system for: <ul style="list-style-type: none"> – leaks during operation – leak test – visible signs of corrosion – signs of ageing 		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Check the combustion chamber and the heating surface for contamination; shut down the system for this step	50	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Check the burner (→ burner manual)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Check the combustion air supply and flue gas routing for function and safety		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Check the operating pressure, relief valve and expansion tank inlet pressure	53	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Check the DHW tank and corrosion anode for function (→ DHW tank documentation)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Check the control settings (→ control manual)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Record the final checks of the inspection work, incl. measurements and test results		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Confirm service work				
			Company stamp/signature	Company stamp/signature	Company stamp/signature

	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature



NOTICE

During the inspection if you identify any required maintenance steps, do it as soon as possible.

	On-demand maintenance procedures	Page	Date: _____	Date: _____	Date: _____
1.	Shut down the heating system	49	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Remove and clean the flue baffles	51	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Clean the (heating surfaces) and combustion chamber, then re-install the flue baffle plates in their original position.	51	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Check and, if required, replace gaskets/sealing rope on the burner door and burner	52	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Start up the heating system	45	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Carry out final check of the maintenance work		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Check the function and safety in operation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confirm professional maintenance					
			Company stamp/signature	Company stamp/signature	Company stamp/signature

	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____	Date: _____
1.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature

12 Troubleshooting

Two different types of faults are defined

- Burner faults and
- control and heating system faults.

If there is a burner fault the alarm light on the burner comes on (→ burner manual). Such faults can generally be reset by pressing the reset button on the burner only once.

Control and heating system faults are indicated on the control display if it is fitted with a display. For further information see → control manual.

Correcting burner faults

- Remove the burner hood if the boiler is equipped with an integral burner.
- Press reset button on burner only once.



CAUTION!

SYSTEM DAMAGE

due to freezing temperatures.

The heating system can freeze up in cold weather if it has been switched off by a fault shutdown.

- Immediately remedy the fault and restart the heating system.
- If this is not possible, protect your heating system against freezing by draining the heating system and hot water pipes at the lowest possible point.

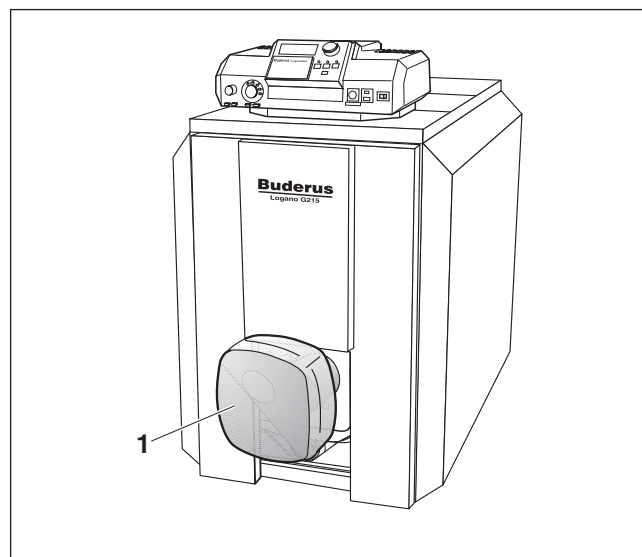


Fig. 71 Resetting the burner

1 Burner