Installation and maintenance instructions

Solid fuel boiler

CAUTION!
Observe the safety instructions of this installation and maintenance manual before placing the boiler in operation.

DANGER!
If installation, adjustment, modification, operation or maintenance of the heating system is carried out by an unqualified person, this may result in danger to life and limb or property damage. The directions of this installation and maintenance manual must be followed precisely.
If you require assistance or further information, contact a qualified installer or an appropriate service provider.

CAUTION!
The installation and service instructions are a component of the technical documentation and must be handed over to the operator of the heating system. Discuss the instruction in this manual with the owner or operator of the heating system to ensure that they are familiar with all information required for operation of the heating system.

Logano G201

For contractor

Please read carefully before installing and servicing.

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Contents

1 Safety instructions and symbol key

1.1 Explanation of symbols

Safety instructions in the text are marked with a warning triangle and printed on a gray background.

Signal words are used to indicate the level of risk if countermeasures are not taken.

– **Caution** indicates that minor damage to property may occur.
– **Warning** indicates that minor personal injury or severe damage to property may occur.
– **Danger** means that severe personal injury may occur. Very serious cases may result in death.

Notes are identified in the text by this symbol. They are separated by horizontal lines above and below the text.

Notes contain important information in cases where there is no risk to the user or the appliance.

1.2 General safety instructions

Risk of poisoning. Dangerous flue gas can escape if the air supply is insufficient

- Never close off or reduce the size of air inlet or outlet vents.
- The boiler must not be operated until the obstruction has been removed.
- Inform the system operator in writing of the problem and associated danger.

Explosive or easily flammable materials

- Do not store flammable materials or liquids near the boiler.
- Maintain minimum distances to combustible materials.

Installation, operation

- Only have the appliance installed by an approved heating contractor.
- Do not modify any parts that carry flue gas.
- Do not operate the appliance without a sufficient quantity of water.
- Only use approved fuels according to the rating plate.
- Do not cover or reduce the size of ventilation openings in doors, windows and walls.

Maintenance and servicing

- Recommendation: sign a maintenance and inspection contract with an approved heating contractor and have the appliance serviced annually.
- The operator is responsible for the general and environmental safety of the system.
- Read and follow the safety instructions in the "Cleaning and maintenance" chapter.
- Use only genuine spare parts.

Combustion/room air

- Keep combustion/room air free of aggressive materials (e.g. ones that contain halogenated hydrocarbons, chlorine or fluorine compounds). In that way you will prevent corrosion.

Instructing the customer

- Instruct customers about the functions and operation of the appliance.
- Inform the customer that he/she must not carry out any alterations or repairs.
- Instruct customers that children may not go near the heating system when unsupervised by an adult.

2 Information about the appliance

This installation and maintenance manual contains important information for the safe and correct installation, initial commissioning, and maintenance of this boiler.

This manual is intended for qualified technicians with experience and training in heating systems.

For operating information about the boiler, see the operating instructions.

2.1 Designated use

The Logano G201 solid fuel boiler is a heating boiler for coal and wood firing (split log firing) in single and multi-family houses. In order to ensure proper use, please observe the details on the rating plate and the specifications to ensure proper use of this appliance.

2.2 Standards, regulations and directives

Follow local regulations and standards during installation and operation!
Installation of the heating system must be performed by an approved and qualified installer according to the valid standard NFPA-31 "Installation of solid fuel systems". The installation must correspond to the national and local standards and rules. For the USA/Canada, the standards UL391/CSA/CAN B366.1 must be adhered to.

Boiler usage conditions

The heat exchanger has been designed and certified in accordance with the ASME Boiler and Vessel Code, Section IV.

Maximum boiler temperature:	200 °F
Maximum operating pressure:	50 psi

2.3 Installation tips

Only use original Buderus spare parts. Buderus assumes no liability for damage caused by the use of parts not supplied by Buderus.

When installing the heating system, observe the following requirements:

- Local building regulations regarding the installation conditions
- Local building code regulations regarding combustion air supply and flue gas systems
- Regulations and standards regarding safety equipment of the heating system

2.4 Operating tips

When operating the heating system observe the following:

- The boiler may only be operated by adults who are familiar with the instructions and boiler operation.
- Make sure that children are not allowed in the vicinity of the boiler unsupervised when it is in operation.
- Do not use any fluids for lighting or boosting the boiler.
- Empty the ashes into a non-flammable container with a lid.
- Do not place or store any flammable objects near the filling or combustion chamber or at a safety distance of at least 24 inches around the boiler.
- Do not place any flammable objects on the boiler.
- Only clean the surface of the boiler with non-flammable cleaners.
- Do not store any flammable materials in the boiler room (e.g. petroleum, oil).
- Do not use any flammable liquids for heating.
- While the boiler is operating, do not exceed the rated output of the boiler (overheating).
- Store ashes in a fireproof container with a closed cover.
- Operate the boiler at a maximum temperature of 194 °F and check it regularly during operation.
- Operate the boiler with a minimum return temperature of 131 °F. Ensure that this temperature limit is adhered to with a suitable set-up.
- The minimum boiler water temperature must be above 131 °F, because with a lower temperature, flue gases can condense. This has negative consequences for the proper operation of the boiler and its life span.
- The boiler operator must follow the operating instructions.
- The boiler operator may only commission the boiler, take the boiler out of operation, and clean it. All other work must be performed by an authorized service company.
- The service technician is obligated to inform the boiler operator about the operation and the correct, safe operation of the boiler.
- In case of danger of explosion, fire, escaping combustible gases or vapors (e.g. vapors that arise when gluing linoleum, PVC, etc.), do not operate the boiler.
- Heed the flammability of building materials.

2.5 Air supply

Danger: Risk of fatal injury from lack of oxygen in the boiler room!

- Make sure there is adequate fresh-air ventilation by providing air vents to the outside.
- Point out to the system operator that those air vents must remain open.

Warning: System damage and risk of injury in case of incorrect commissioning!

Lack of adequate air for combustion can lead to creosote formation.

- Make sure there is adequate fresh-air ventilation by providing air vents to the outside.
- Point out to the system operator that those air vents must remain open.

Warning: Risk of system damage due to aggressive materials in the ventilation!

During combustion, halogenated hydrocarbons that contain chlorine or fluorine compounds cause increased corrosion in the boiler.

- Keep ventilation free of aggressive materials.

The boiler draws in the required combustion air from the environment. The boiler may only be set up and operated in rooms that are permanently well-ventilated!

2.6 Minimum clearances and flammability of building materials

- Different minimum clearances from those specified below may apply in certain countries. Ask your heating contractor or the flue installer about this.
- The minimum distance from combustible materials is 24 inches. A clearance of 24 inches should also be maintained if the flammability of the materials is not known.

Flammability of building materials	
non-combustible	Asbestos, stone, masonry, ceramic wall tiles, fired clay, mortar, plaster (without organic additives)
normally-flammable	Pine, larch and spruce wood, laminated wood
flammable	Asphalt, cardboard, cellulose materials, tar paper, wood fiber boards, cork, polyurethane, polystyrene, polypropylene, polyethylene, carpet tiles

Tab. 1 Flammability of building materials

2.7 Tools, Materials and Accessories

For the installation and maintenance of the boiler, you will need the standard tools used for central heating and oil/gas and water systems.

2.8 Product description

The Logano G201 is a solid fuel boiler and approved for fueling with coal and wood blocks.

The boiler consists of:

- Air vent [1]
- Ash pan door [2]
- Fuel filler door [3]
- Firing controller [4] with rod and chain
- Aquastat [5]
- Manifold [6] with pressure relief valve and pressure/ temperature gauge and supply manifold.

Using the firing controller [4], the desired boiler water temperature is set and limited to this maximum value.

The firing controller [4] is connected to the air vent [1] via a chain (in the ash pan door) and regulates the airflow of the boiler. The warmer the boiler becomes, the more the air vent is closed so that the set boiler water temperature is not exceeded.

The fuel filler door [3] allows you to fill the ignition chamber with solid fuel.

The ignition chamber transmits the heat generated to the heating water.

The ash container is behind the ash pan door [2].

The pressure/temperature gauge on the manifold [6] displays the temperature in the boiler and the water pressure.

The jacket is lined with insulation materials and thus prevents radiation loss and stand-by heat losses.

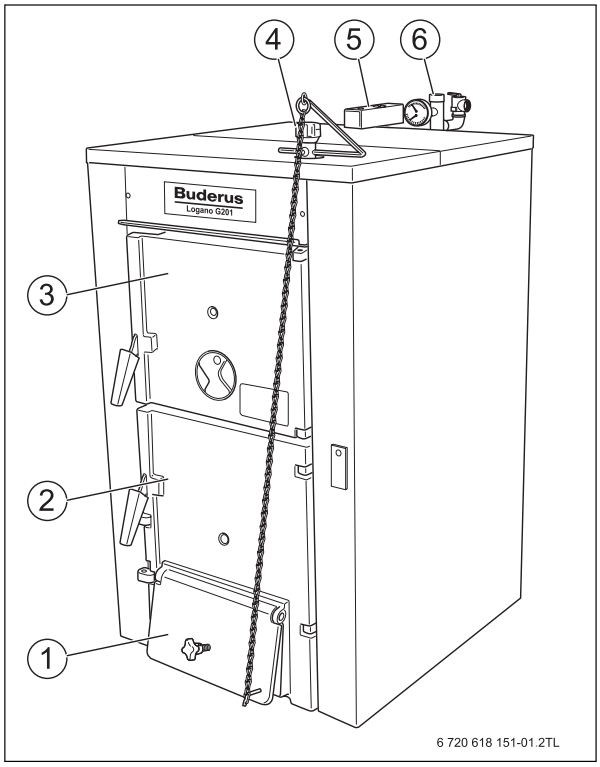

Fig. 1 Logano G201

1 Air vent
2 Ash pan door
3 Fuel filler door
4 Ignition controller
5 Aquastat
6 Manifold

Exhaust flap

The exhaust flap is opened to heat up a cold boiler or in case of poor flue draft (→ Fig. 2 above). This allows hot flue gas to escape more quickly into the chimney and the chimney "draws" better.

When the boiler is operating normally and when there is sufficient flue draft, the exhaust flap is closed (→ Fig. 2 below). This way, less heat is lost through the chimney.

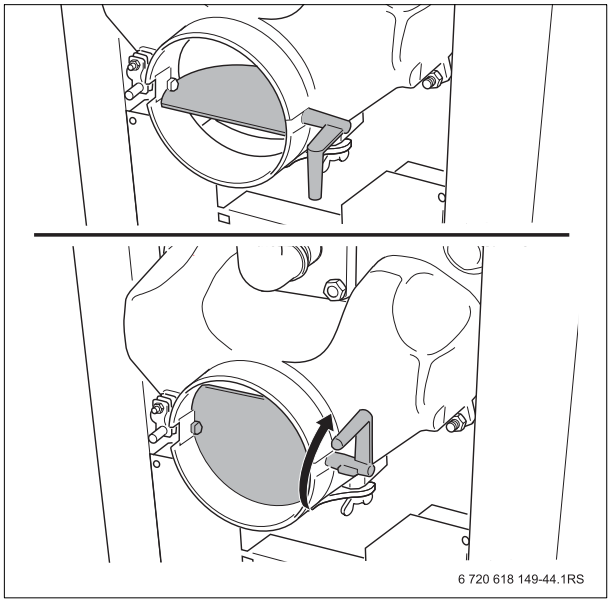

Fig. 2 Exhaust flap (top: open; bottom: closed)

2.9 Disposal

- Packing materials made of wood and paper can be burned in the boiler.
- Dispose of packaging in an environmentally responsible manner.
- Dispose of old devices in an environmentally responsible manner at an authorized disposal site.

2.10 Scope of delivery

When receiving the boiler, observe the following:

- When receiving the delivery, check if the packaging is intact.
- Check that all package contents are present.
- Dispose of packaging in an environmentally responsible manner.

Component	Number	Packaging
Boiler heat exchanger	1	On pallet
Boiler jacket	1	In a box on a separate pallet
Firing controller	1	
Flue gas header	1	Factory-fitted
Installation material	1	Foil package in the combustion chamber
Technical documentation	1	Foil package
Ash pan	1	In the boiler block
B-Kit	1	In the box

Tab. 2 Scope of delivery

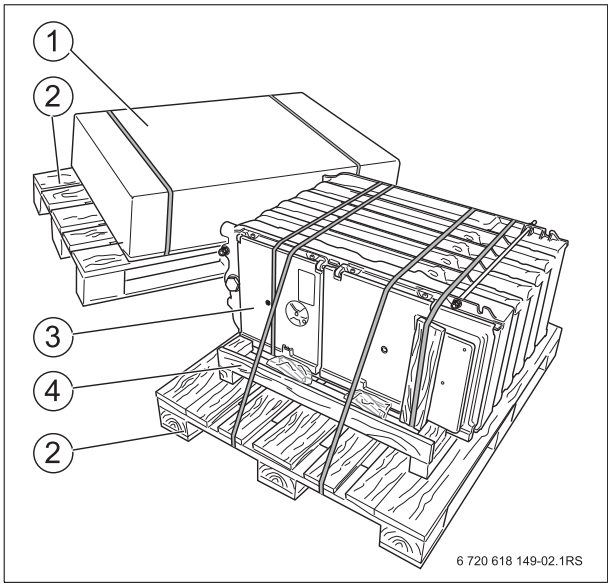

Fig. 3 Scope of delivery

1 Box with boiler jacket
2 Europallet
3 Boiler heat exchanger
4 Special pallet

2.11 Dimensions and specifications

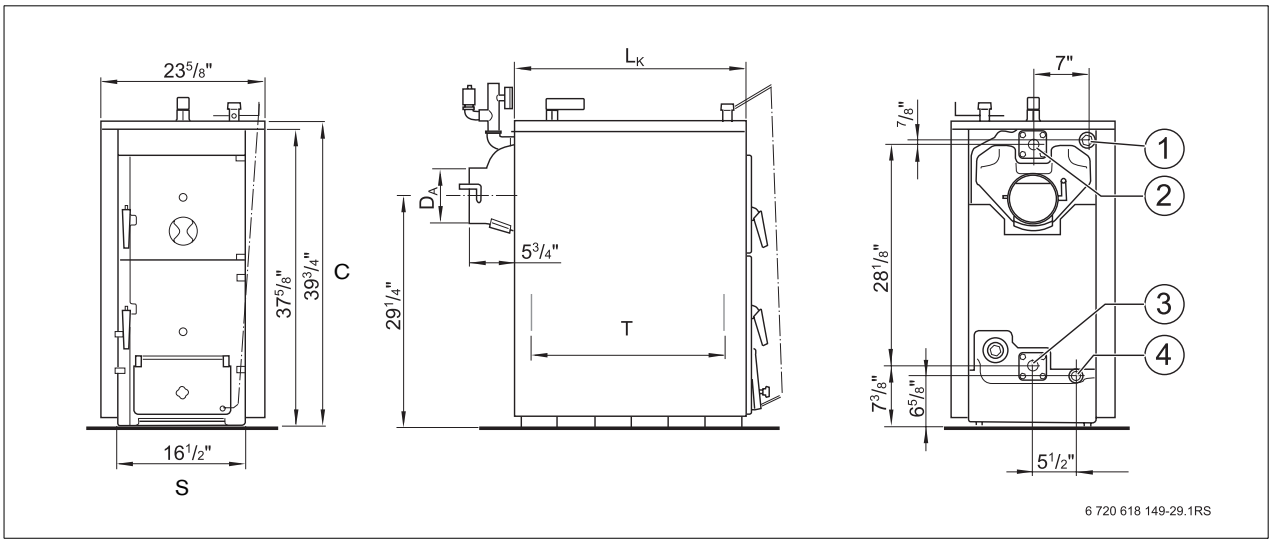

Fig. 4 Dimensions and connections Logano G201 (measurements in inches)

1 1¼ " plug
2 Supply boiler (G 1¼ " internal thread NPT)
3 Return boiler (G 1¼ " internal thread NPT)
4 Drain (¾ ")

	Unit	Boiler rating		
		27	35	40
Height C	inches	39 ¾		
Width S	inches	23 5/8		
Boiler overall length L	inches	23	27	34 3/8
Flue connection height K	inches	29 ¼		
Flue connection diameter	inches	6		
Boiler flow height	inches	35 ½		
Boiler return height	inches	7 3/8		
Drain height	inches	6 5/8		
Pressure relief valve height	inches	36 3/8		
Firing controller height	inches	43		

Tab. 3 Dimensions and connections

2.11.1 Technical specifications

	Unit	Boiler sizes		
		27	35	40
Rated output wood[1)]	BTU/HR	96000	125000	145000
Rated heat output coal	BTU/HR	108000	140000	160000
Efficiency	%	78 – 85		
Flue gas temperature	°F	212/392		
Burning time (rated output)	h	2 – 4		
Content of the fuel filler space	Cu.Ft / Lbs	2 3/8 / 153	3 3/8 / 196	4 3/8 / 254
Maximum log length (4-inch diameter)	inches	15 ¼	19 ¼	27 ¼
Water capacity	gal	9	10	12
CO_2 content (max)	%	20.6	20.7	20.7
Permissible operating pressure	psi	50		
Maximum testing pressure	psi	75		
Maximum operating temperature	°F	200		
Minimum return temperature	°F	131		
Required flue draft requirement	inch W.C.	– 0.04	– 0.048	– 0.052
Weight	lbs	620	706	876

Tab. 4 Technical specifications

1) fuel wood with high calorific value (beech, oak, maple) and maximum humidity of 20%

2.11.2 Flow resistance graph

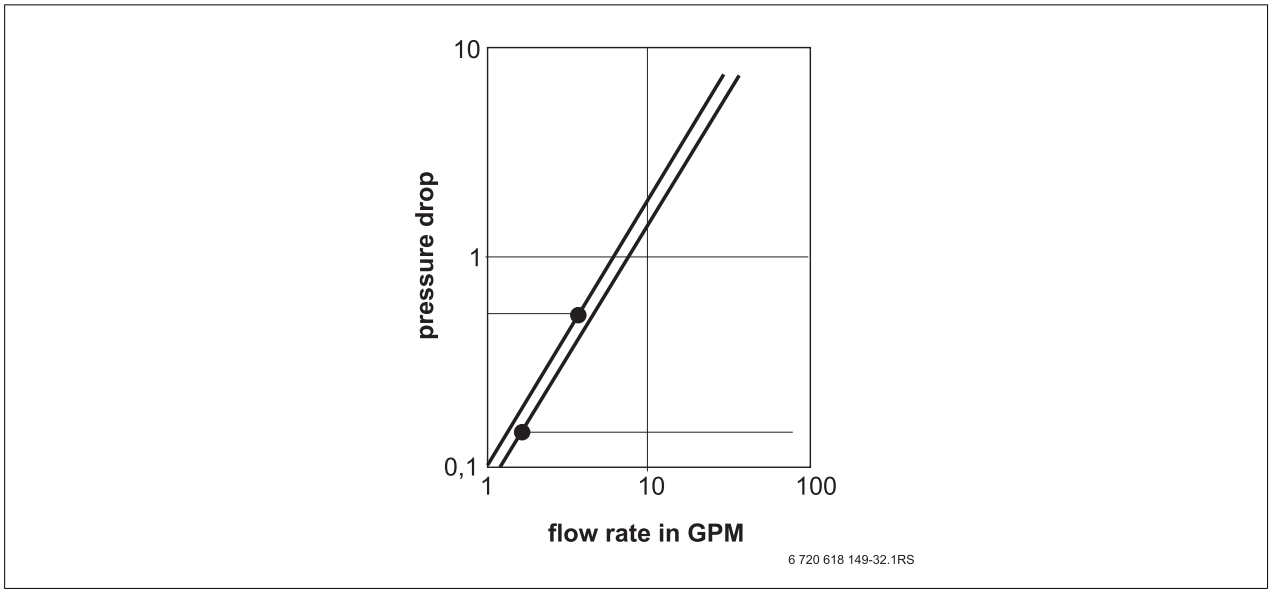

Fig. 5 Flow resistance depending on the volumetric flow rate

3 General instructions about the fuels wood and coal

Wood and coal can be used as fuels.

Danger: Danger of fatal accident due to escaping carbon monoxide (CO)!
In case of firing with brown coal, the boiler can silt up and CO can escape.

- Do not use brown coal for firing.

Danger: Health and/or system damage due to the use of unsuitable fuels!
The use of unsuitable fuels can create materials that endanger health and/or the heating system.

- Do not use plastics, household waste, chemically-treated wood, old paper, chips, bark or chipboard waste for firing.

The flue gas temperatures are generally 212 – 392 °F. Depending on local conditions, fuels used (wood or coal), and how clean the boiler is, these values can be exceeded.

3.1 Wood firing

Prescribed is split and dried wood with a diameter of 6 inches or less and a maximum wood humidity of 20 %.

Boiler type	Maximum length of split or chipped wood
27	15 ¼ inches
35	19 ¼ inches
40	27 ¼ inches

Tab. 5 Maximum length of split or chipped wood

Only use dry, natural, chunky wood. With a wood humidity of more than 20 %, the boiler output is reduced. In addition, there can be increased tar formation, which reduces the life span of the boiler. The specified output values and the trouble-free function of the boiler can only be guaranteed with a maximum wood humidity of up to 20 %.

Type of wood	Heating value (with wood humidity of 20 %)	
	Weight per cord LBs	BTUs per cord air-dried wood
Beech	3000	24,000,000
Oak	3250	26,000,000
Pine	1800	17,000,000
Spruce	2100	18,000,000

Tab. 6 Energy value of various types of wood

As substitute fuels, the following are permissible (reduced output and shorter maintenance intervals): wood briquets, and wood chips.

3.2 Coal firing

Best suited are anthracite coal and coke – any kind of lump 1 (0.8 – 1.6 inches). The burning times for coal are significantly longer than the burning times for wood.

As substitute fuels, the following are permissible (reduced output and shorter maintenance intervals): anthracite coal and coke type lump 2 (0.4 – 0.8 inches) or fragments (1.6 – 4.0 inches) and pressed fuels.

3.3 Condensate and tar formation

Improper operation of the boiler causes excessive condensate and tar formation. This way, damage to the boiler and the flue gas system can occur.

When heating up the cold boiler, water condenses in the boiler, which runs down on the interior walls. This way, you might think that the boiler is draining off. This "sweating" of the boiler ends as soon as the ashes accumulate on the interior walls of the boiler.

In case of operation at low boiler return temperature (less than 131 °F) and fuel with too high a humidity content, condensation can also form on the heating surfaces. Here too, the condensation runs downwards.

Heating with too low a boiler temperature causes tar formation and can cause premature damage to the flue gas system due to sooting.

- Follow the operating instructions for the boiler.
- Operate the boiler at the recommended operating temperatures.
- Only heat the boiler with the recommended fuels (→ Chapter 3.1 and 3.2).
- Remove tar accumulations with the cleaning scraper when the boiler is warm.

4 Transport and set-up

This chapter describes how to transport the boiler block safely and how to set it up in the boiler room.

Bring the boiler block into the boiler room with a dolly and transport belts.

Danger: Risk of fatal injury!
Falling loads can cause fatal injuries.

- Please observe the safety instructions for transporting heavy loads with a dolly.
- Use personal protective equipment (e.g. helmet, safety shoes, protective gloves).

Caution: Risk of system damage from impact shocks!
Fragile components could be damaged.

- Observe the transport instructions on the packaging.

Protect boiler connections from dirt if the boiler is not to be installed immediately.

Dispose of packaging in an environmentally responsible manner.

4.1 Transporting the boiler block with transport aids

Warning: Danger of injury during transport!
Improperly-secured transport goods can cause injuries.

- Use only suitable transport aids, e.g. a trolley with strap, a stair or step trolley.
- Secure the load against falling.

The boiler block is on a special pallet and is secured with transport bands.

- Loosen and remove the transport bands on the Europallet.

Warning: Risk of injury from carrying heavy loads!
Lifting heavy loads can cause injuries.

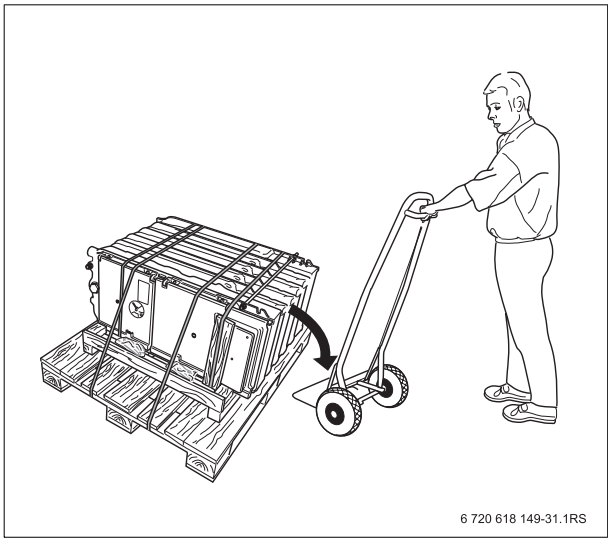

Fig. 6 Transporting the boiler block

- Lift the boiler block with special pallet onto the transport aid (e.g. sack trolley).
- Secure the boiler block on the transport aid.
- Transport the boiler block to the set-up location.

4.2 Installing the boiler block

4.2.1 Installation requirements for the set-up room

Caution: Risk of system damage due to frost!

If the heating system has been switched off, it may freeze up in cold weather conditions.

- Install the heating system in a frost-free room.

Danger: Risk of death from explosion and fire!

The storage of explosive or easily-flammable materials near the boiler can create life-threatening situations.

- Do not store easily-combustible and explosive materials (paper, curtains, clothing, thinners, paints, etc.) near the boiler.
- Maintain a clearance of 24 inches from the boiler.

4.2.2 Wall clearances

Wherever possible, position the boiler with the recommended wall clearances. Reducing the wall clearances makes the boiler more difficult to access.

Dimension	Wall clearances
A	48"
B	24"
C	6"
Top	24"
Flue gas line from combustible materials	18"

Tab. 7 Wall clearances (dimensions in inches)

We recommend placing the boiler on a 2 – 4 inch high non-combustible base.

The non-combustible boiler base or foundation must be perfectly flat and level. If the foundation is not level, the connection side (rear) can be 0.2 inches higher for improved bleeding and air flow. The foundation must be larger than the boiler footprint – by at least 48 inches in the front and approx. 24 inches on the rear. The base must be able to bear the weight of the boiler. We recommend a stable concrete base.

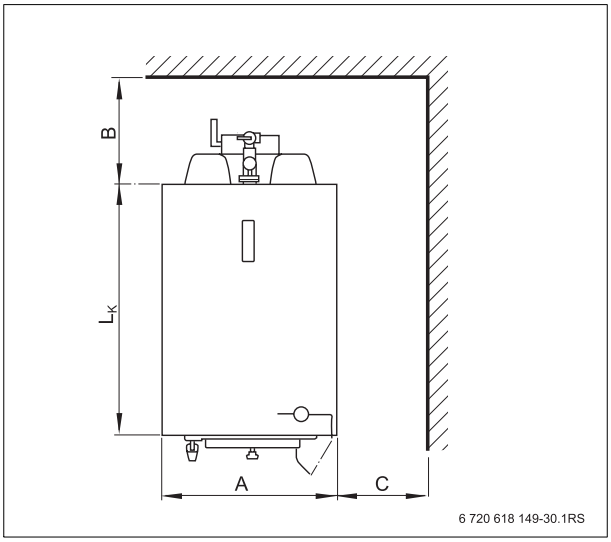

Fig. 7 Wall clearances

Installing and aligning the boiler block

- Loosen and remove the transport bands on the special pallet.

Warning: Risk of injury from carrying heavy loads!
Lifting heavy loads can cause injuries.

- Always lift the boiler block with at least two people.

- Lift the boiler block from the special pallet.
- Set the boiler block on the prepared base.
- If necessary, align the boiler block with wedges [1] of non-flammable material and with the help of a level in the horizontal and vertical directions.

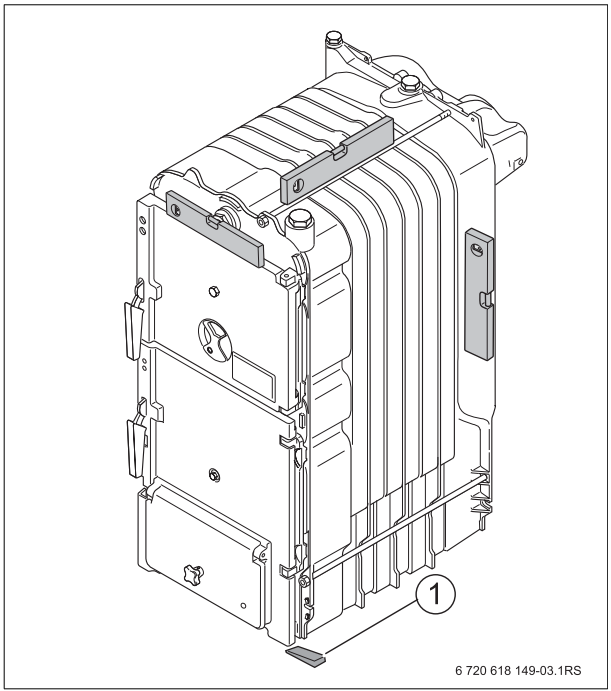

Fig. 8 Installing and aligning the boiler block

1 Wedge (of non-flammable material)

5 Installation

5.1 Fitting the flange of the supply and return connections

The flange for the supply connection [1] is in the combustion chamber. The flange for the return connection [2] is fastened to the rear wall with two nuts at the factory.

- Remove the flange for the supply connection [1] from the combustion chamber.
- Loosen the nuts on the flange for the return connection [2] and remove the flange.
- Place the gaskets [3] on the flange.
- Screw the flange with gaskets onto the supply and return connection. Check that the gaskets are seated correctly.

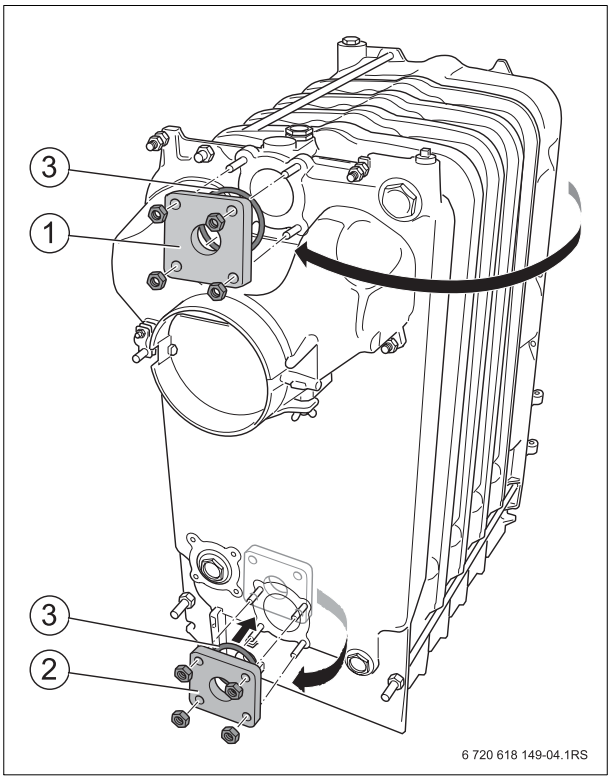

Fig. 9 Fitting the flange of the supply and return connector

1 Supply connection flange
2 Return connection flange
3 Gasket

5.2 Fitting the side panels and rear wall

The boiler jacket and the installation material are packaged in a carton and are on a separate pallet.

5.2.1 Fitting the front tie-bar

- Remove the counternut [4] and washer [3] from the anchor rod [2].
- Fit the front tie-rod [1] on the anchor rod [2].
- Fit the washer [3].
- Tighten the front tie-bar [1] with counternut [4].

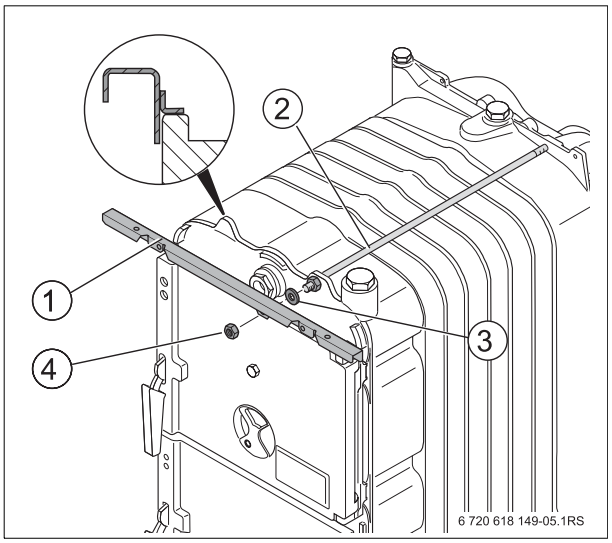

Fig. 10 Fitting the front tie-bar

1 Front tie-bar
2 Anchor rod
3 Washer
4 Counternut

5.2.2 Fitting the rear tie-bar

The nuts (spacer and counternut) for the stud bolts are in a bag with the boiler jacket.

- Remove the nuts from the bag.

The rear tie-bar (Z-rail) has cable bushings.

- Fit the spacer nut [3] on the stud bolts [4].
- Fit the rear tie-bar [1].
- Fit the counternuts [2] and tighten slightly.

Only tighten the spacer and counternuts after fitting the side panels.

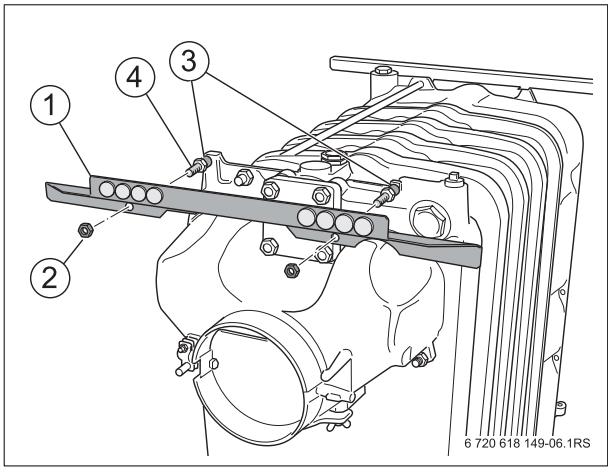

Fig. 11 Fitting the rear tie-bar

1 Rear tie-bar
2 Counternut
3 Spacer nut
4 Stud bolt

5.2.3 Fitting the side panels

The fitting sequence is the same for the right and left side panels; proceed as follows:

- Loosen the counternut [2] of the lower anchor rod [4] (front) until there is a small gap between the counternut and the nut.
- Hook the front connecting bracket [1] of the side panel into the resulting gap.
  The front connecting bracket of the side panel sits on the anchor rod [4].
- Hook the rear part of the side panel into the anchor rod.

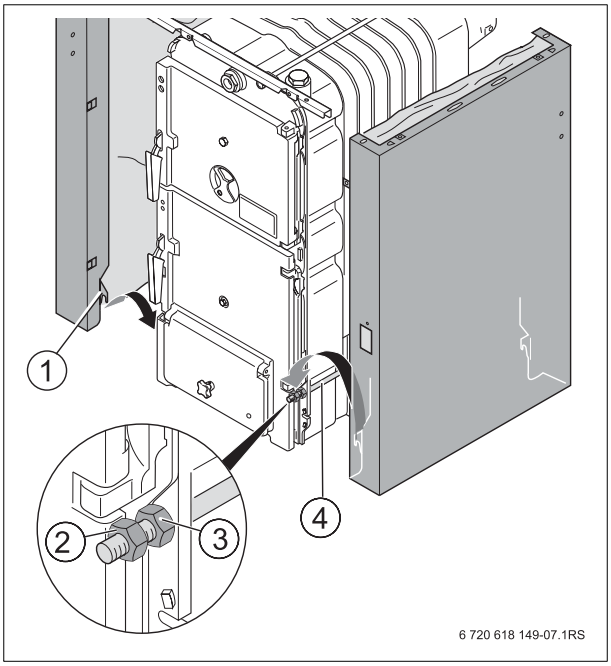

Fig. 12 Fitting the side panels

1 Front connecting bracket
2 Counternut
3 Nut
4 Anchor rod

- Position and tighten the front and rear tie-bars (→ Fig. 13).
- Tighten the counternut of the lower anchor rod (front) above the open ash pan door.
- Tighten all nuts and bolts.

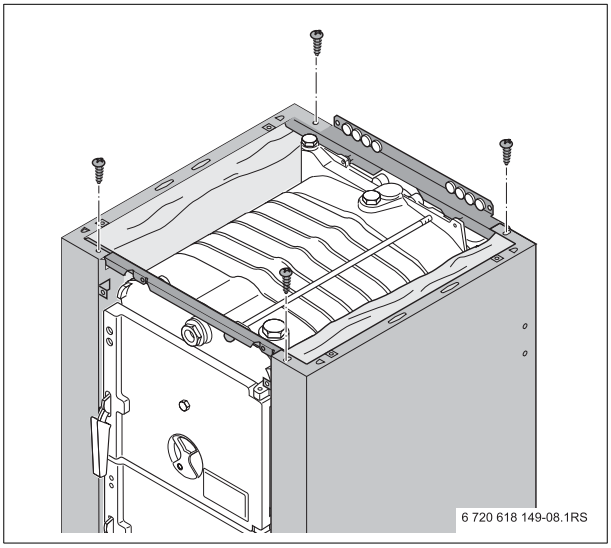

Fig. 13 Fitting the side panels

5.2.4 Fitting the rear panel

- Hook the rear panel [1] below into the tabs [2] of the side panels.
- Fasten the rear panel [1] above with two bolts to the side panels.

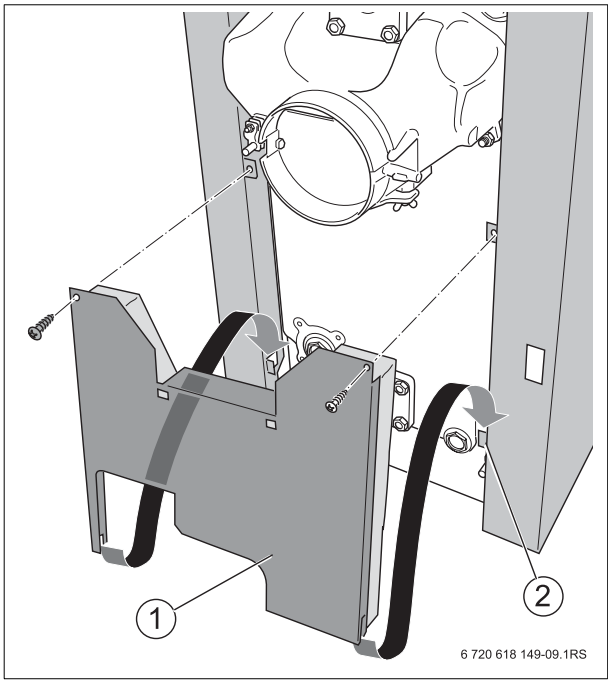

Fig. 14 Fitting the rear panel

1 Rear panel
2 Tabs

5.3 Sealing the firing controller

- Remove the plugs [1] for the connection of the firing controller. The connection is in the front part in the upper right.
- Seal the firing controller [3].

After sealing, the red marking [2] on the firing controller points directly forward.

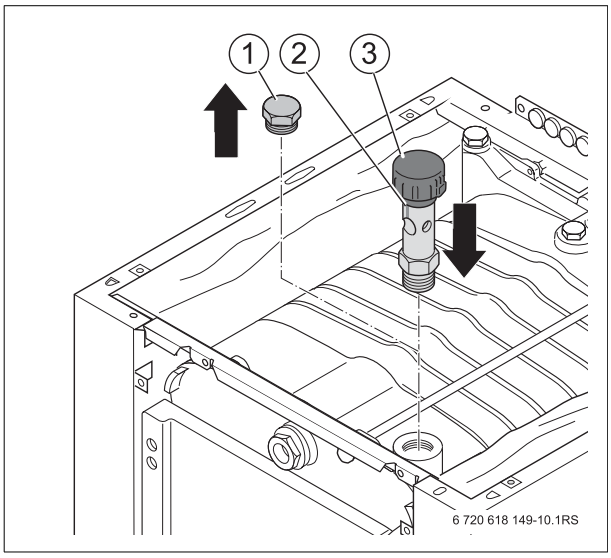

Fig. 15 Sealing the firing controller

1 Plug
2 Red marking
3 Firing controller

5.4 Sealing the immersion sleeve (Aquastat scope of delivery)

- Remove the plugs [2] for the connection of the Aquastat. The connection is on the top in the middle of the rear section [3].
- Seal the immersion sleeve [1] (Aquastat scope of delivery) in the rear section [3].

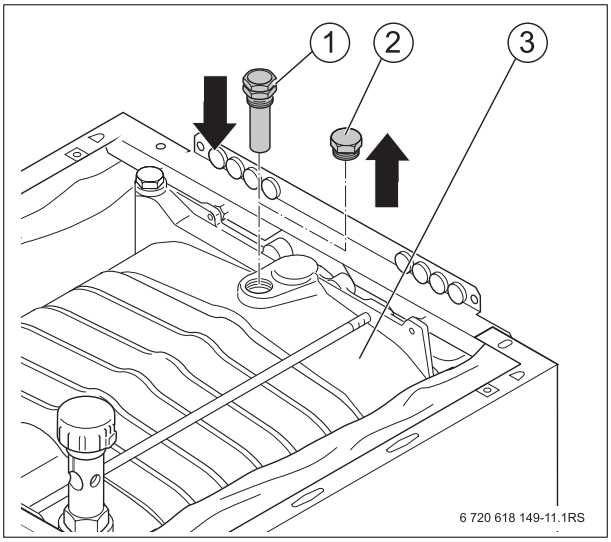

Fig. 16 Sealing the immersion sleeve

1 Immersion sleeve
2 Plug
3 Rear section

5.5 Installing the front and rear boiler cover

- Cut out the pre-punched openings [1, 2] for the ignition controller and the Aquastat in the front and rear boiler cover [5, 4] with tin shears.
- Place the thermal insulation [6] on the boiler block so that the cross-shaped cut-out [3] lies above the connection for the Aquastat.

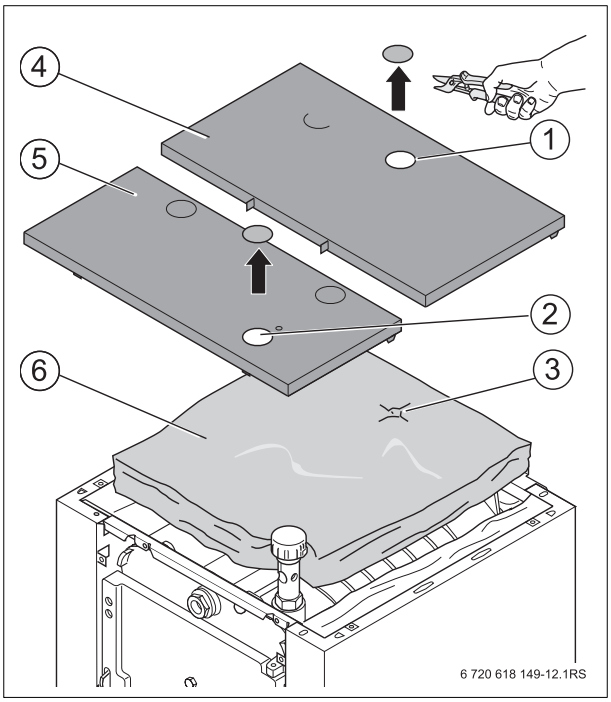

Fig. 17 Installing the front and rear boiler cover

1 Pre-punched opening in the rear boiler cover
2 Pre-punched opening in the front boiler cover
3 Cross-shaped cut-out
4 Rear boiler cover
5 Front boiler cover
6 Thermal insulation

- Insert the front boiler cover [3] so that the firing controller [4] goes through the opening.
- Tighten the front boiler cover [3] with two bolts on the tie-rod.
- Insert the rear boiler cover [1] so that the two edges [2] of the rear boiler cover [1] are inserted into the front boiler cover [3].
- Insert the side hooks of the rear boiler cover [1] into the side panels.
- Tighten the rear boiler cover [1] with two bolts on the tie-rod.

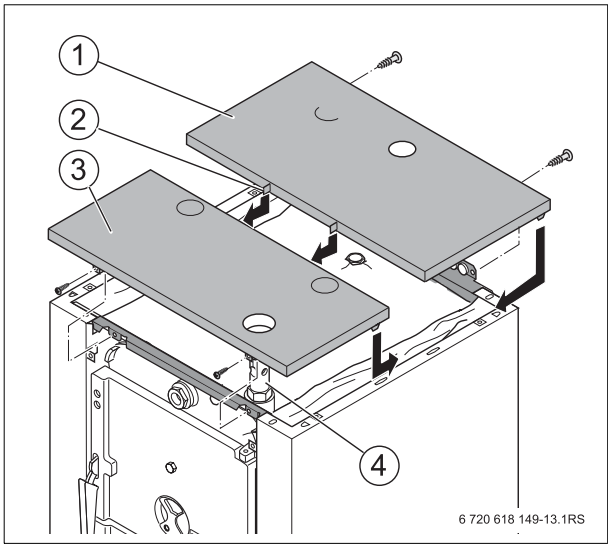

Fig. 18 Installing the front and rear boiler cover

1 Rear boiler cover
2 Edges
3 Front boiler cover
4 Firing controller

5.6 Connecting the firing controller with the air vent

- Insert the set screw [1] into the firing controller below the red marking.
- Push the hexagon bolt [2] through the opening in the set screw.
- Fasten the hexagon bolt [2] over the set screw [1] on the firing controller.

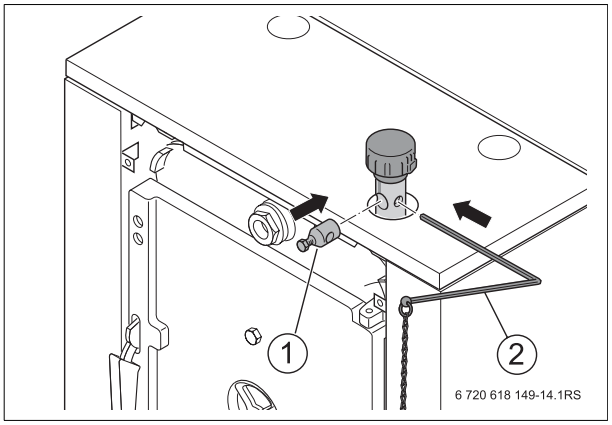

Fig. 19 Connecting the firing controller with the air vent

1 Set screw
2 Hexagon bolt

- Fasten the controller chain rod [1] to the air vent of the ash pan door.
- Connect the controller chain rod [1] and hexagon bolt via a chain (included).

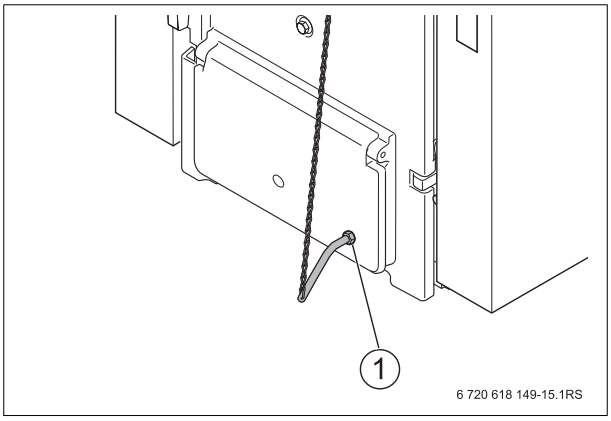

Fig. 20 Installing the controller chain rod

1 Controller chain rod

Installing the regulator screw

- Screw the regulator screw [1] into the air vent of the ash pan door until this is a slight crack open (0.2 inches).

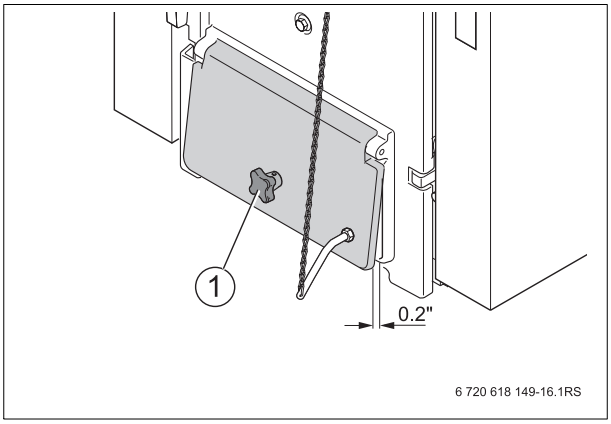

Fig. 21 Installing the regulator screw

1 Regulator screw

5.7 Installing the front faceplate

- Install the protective bar [3] in the front faceplate [1].
- Insert the faceplate [1] with protective bar [3] and fasten with two bolts to the side panels.
- Affix the appliance insignia plate [2] to the faceplate [1].

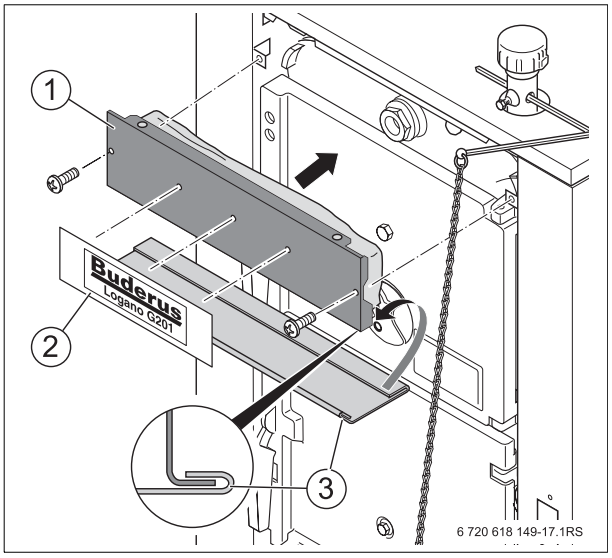

Fig. 22 Installing the front faceplate

1 Front faceplate
2 Appliance insignia plate
3 Protective bar

5.8 Installing the Aquastat

- Drill four holes in the rear boiler cover [4] for fastening the Aquastat [1] (→ Fig. 23).
- Insert temperature sensor [2] of the Aquastat into the immersion sleeve [3] on the rear section.
- Fasten the Aquastat [1] on the rear boiler cover [4].

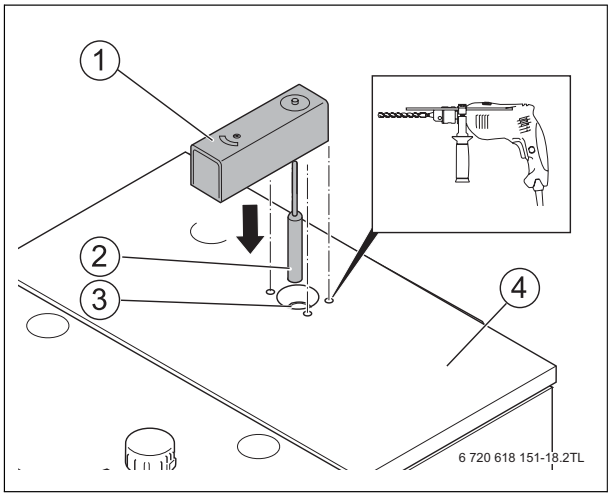

Fig. 23 Installing the Aquastat

1 Aquastat
2 Temperature sensor
3 Immersion sleeve
4 Rear boiler cover

6 Openings for combustion air supply and venting

To ensure an adequate combustion air supply and venting of the heating system suitable measures must be taken in accordance with the NFPA 31 Air for Combustion and Ventilation, or the local codes. In Canada, the regulations in accordance with CSA/CGA–B 149.1 and 2 Installation Codes apply.

Caution: Risk of boiler damage and malfunctions due to missing or inadequate openings for combustion air and venting of the boiler room.

The openings for combustion air supply and venting are always required regardless of whether the combustion air is supplied from the room (operation from room air) or directly to the boiler through ducts (operation independent of room air).

Inadequate venting of the boiler room may result in excessive ambient temperatures. This can damage the boiler. Inadequate combustion air supply may cause malfunctions in operation.

- Make sure that air inlet or outlet vents are not closed off or their size reduced and that they are adequately dimensioned.
- The boiler must not be operated until the obstruction has been removed.
- Draw the operator's attention to any deficiencies and the potential dangers.

Caution: Risk of boiler damage from contaminated combustion air.

- Never use cleaning agents that contain chlorine or halogenated hydrocarbons (e.g. in spray cans, solvents and cleaning agents, paints, glues).
- Do not store or use such substances in the boiler room.
- Avoid excessive dust accumulation.

If contamination of the combustion air is possible (e.g. installation near swimming pools, dry cleaners or hair salons), operation with air outside the room is recommended.

Danger: Dangers posed by explosive and easily combustible materials.

- Do not use or store combustible materials (paper, curtains, clothing, thinners, paints, etc.) in the boiler room.
- Maintain a clearance of 24 inches from the boiler.

Overall air supply within the building

Make sure that the boiler room has two permanent air vents that are connected to one or more other rooms. When calculating the cross-sectional areas of the vent apertures, the total burner output of all gas-fired appliances in the connected rooms must be taken into account. Each vent must have a minimum cross-section of one square inch per 1000 Btu/h of the total burner output of all gas-fired appliances inside the connected rooms. Make sure that the cross-sectional area of each vent is at least 100 square inches. One of the vents must be no more than 12" from the ceiling and the other no more than 12" from the floor of the boiler room, measured from the outer edge of the vent aperture. The smallest dimension of all inlet and outlet vents must be not less than 3".

Total air supply from outside the building

Make sure that the boiler room has two permanent air vents, one of which must not be more than 12" from the ceiling and the other not more than 12" from the floor of the boiler room, measured from the outer edge of the vent aperture. The vents must be connected either directly or via air ducts to the outside or to rooms that have an unobstructed connection to the open air (crawl passage or roof space). The smallest dimension of all inlet and outlet vents must be not less than 3".

– If there is a direct connection to the outside, each opening must have a minimum cross-section of one square inch per 4000 Btu/h of the total combustion output of all combustion-fired appliances inside the closed room.
– If there is a direct connection to the outside via a ventilated attic with vertical ventilation ducts, each opening must have a minimum cross-section of one square inch per 4000 Btu/h of the total combustion output of all combustion-fired appliances inside the closed room. The attic must be ventilated on both sides of the house.
– If there is a connection to the outside through horizontal ventilation ducts, each vent aperture must have a minimum cross-section of one square inch per 2000 Btu/h of the total burner output of all combustion-fired appliances inside the closed room. The ventilation ducts must have the same cross-section as the intake opening.
– If there is a direct connection to the outside via a ventilated attic with vertical ventilation ducts, each opening must have a minimum cross-section of one square inch per 4000 Btu/h of the total combustion output of all combustion-fired appliances inside the closed room. The attic must be ventilated on both sides of the house.

7 Installation

7.1 Air intake and flue gas connection

7.1.1 Notes about air intake connection

Danger: Risk of fatal injury from lack of oxygen in the boiler room!

- Make sure there is adequate fresh-air ventilation by providing air vents to the outside.
- Point out to the system operator that those air vents must remain open.

Danger: System damage and risk of injury in case of incorrect commissioning!

Lack of adequate air for combustion can lead to creosote formation.

- Make sure there is adequate fresh-air ventilation by providing air vents to the outside.
- Point out to the system operator that those air vents must remain open.

Warning: Risk of system damage due to aggressive materials in the ventilation!

During combustion, halogenated hydrocarbons that contain chlorine or fluorine compounds cause increased corrosion in the boiler.

- Keep ventilation free of aggressive materials.

The boiler draws in the required combustion air from the environment. The boiler may only be set up and operated in rooms that are permanently well-ventilated!

7.1.2 Notes about flue gas connection

Danger: Risk of fatal injury due to faulty flue gas connection!

In case of unprofessional connection of the flue gas connection, heating and flue gases can get into the ambient air.

- Ensure that the calculation of the flue gas path and the connection of the flue gas system is only carried out by qualified personnel.

A sufficient flue draft of the flue gas system is the basic requirement for the correct functioning of the boiler. It fundamentally affects its performance and efficiency. Therefore, heed the following for the flue gas connection:

– Please note that the boiler must be connected to the flue gas system in accordance with the relevant local building code regulations and in consultation with an approved flue installer.
– The boiler may only be connected to a flue gas system with proper flue draft (→ Tab. 4, page 9).
– The dimensioning calculations of the flue gas path must be based on the flue gas mass-flow rate at maximum rated output. The effective chimney flue height is measured from the point of entry of the flue pipe into the chimney.

Caution: System damage due to insufficient flue draft of the flue gas system!

- Adhere to the necessary flue draft that is specified in the technical data.
- To limit the maximum flue draft, install a draft limiter/additional air equipment.

7.1.3 Flue pipe installation

Fig. 24 shows the proper flue gas connection with additional air equipment.
Observe the following during the installation of the flue gas connection:

- Install a flue pipe connection with an inspection aperture for cleaning.
- Fasten the flue gas connector piece to the boiler.
- Feed the connector into the flue gas system on a short, ascending path. Avoid deflections, especially those with an angle of 90°.
- Fasten and support connectors sufficiently.
- Since the flue pipe is only fixed into the flue gas system and push-fitted onto the boiler flue socket, it should be fitted very carefully so that it does not come loose.
- Only use parts of non-flammable materials for the flue gas system.

The figures in Tab. 8 are only guide figures. The draft depends on the diameter, height, roughness of the chimney wall, and the temperature difference between combustion products and the outside atmosphere. We recommend the use of a chimney liner.

- Have precise calculations carried out by a heating engineer or flue installer.

Boiler output	Flue duct type	Minimum height
27	Ø 6.0 inches	at least 26.25 feet
	Ø 7.0 inches	at least 19.5 feet
	Ø 8.0 inches	at least 16.5 feet
	Ø 9.0 inches	at least 16.5 feet
35	Ø 6.0 inches	at least 32.4 feet
	Ø 7.0 inches	at least 26.25 feet
	Ø 8.0 inches	at least 22.95 feet
	Ø 9.0 inches	at least 19.5 feet
40	Ø 7.0 inches	at least 32.4 feet
	Ø 8.0 inches	at least 29.4 feet
	Ø 9.0 inches	at least 26.25 feet

Tab. 8 Recommended minimum chimney flue heights

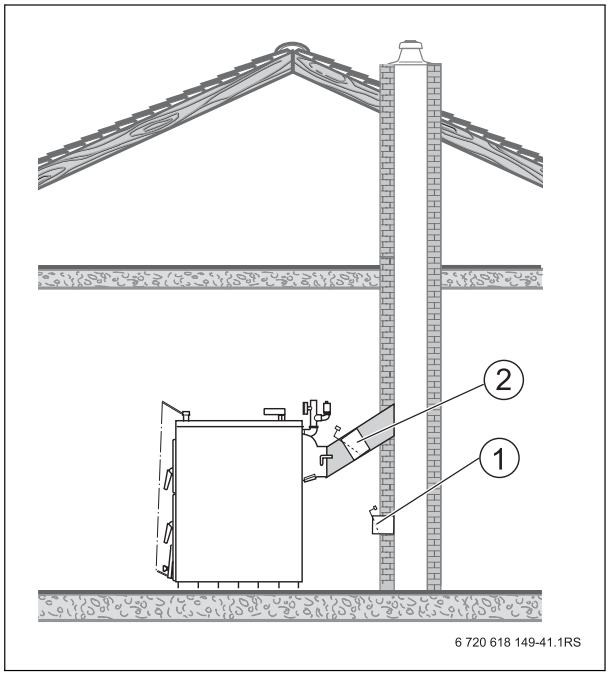

Fig. 24 Position of the additional air equipment

1 Optimal position: additional air equipment in the chimney flank

2 Alternative position: additional air equipment in the flue gas pipe

7.2 Making the water connections

Caution: Risk of system damage due to leaking connections!

- Support the pipes to the boiler to prevent them from being under stress.

7.2.1 Installing B-Kit

The pressure relief valve [6] and the pressure/temperature gauge [1] are mounted on the boiler supply VK using the return manifold [5] (included in B-Kit).

- Seal the double nipple [2] with R 1¼ " threads NPT.
- Seal 90° 1¼ " NPT street elbow [3] on double nipple.
- Seal supply manifold [5] on 90° 1¼ " NPT elbow [3].

Do not install the pressure relief valve [6] until the leak test (→ Chapter 7.3, page 29) has been completed.
The pressure relief valve must be installed in a vertical position.

- Seal the temperature/pressure gauge [1] on the supply manifold.

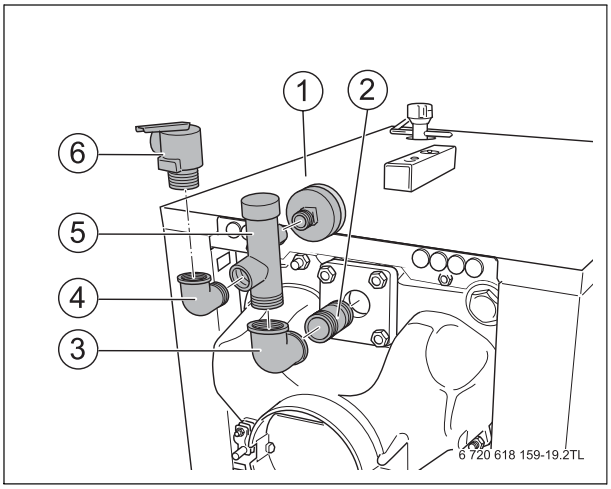

Fig. 25 Installing B-Kit

1 Pressure/temperature gauge
2 Double nipple
3 90° elbow
4 90° elbow on supply manifold
5 Supply manifold
6 Pressure relief valve (30 psi)

7.2.2 Connecting the water lines

- Connect the return to the connection RK.
- Connect the supply to the supply manifold.
- Seal the fill & drain valve with sealing twine.
- Connect the fill & drain valve to the connection EL (→ Fig. 26).

Caution: System damage due to condensation and tar formation!
The life span of the boiler can be compromised.

- The return temperature must be at least 131 °F, and the boiler water temperature between 176 and 194 °F.
- Install a thermostatic valve that prevents the return flow temperature from dropping below 131 °F (return temperature booster).

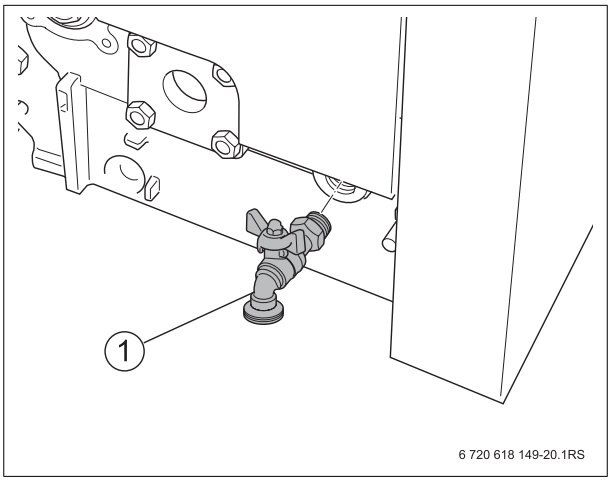

Fig. 26 Sealing the fill & drain valve

1 Fill & drain valve

7.3 Filling the heating system and checking connections for leaks

Before commissioning the heating system, check it for soundness to avoid leaks occurring during operation.

Warning: Risk to health due to pollution of drinking water!

- Always observe the regulations and standards applicable in your jurisdiction for the prevention of contamination of drinking water (e.g. by water from heating systems).

Warning: Risk of system damage from excessive pressure!

Pressure, control, and safety equipment and the DHW cylinder may be damaged by excessive pressure.

- When you carry out a leakage test, make sure that no pressure, control or safety equipment that cannot be isolated from the boiler water chamber is installed.

Caution: Risk of damage to system due to temperature stresses.

If you fill the heating system when it is hot, the resulting temperature stresses can cause stress cracks. The boiler will then leak.

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

Carry out the leak test at 1.5 times the normal operating pressure and in accordance with the local regulations:

- Seal pressure relief valve connection (→ Fig. 25, page 28) and all other open connection with blind plugs.
- Isolate the expansion tank from the system by closing the valve.
- Open the mixing and shut-off valves on the heating water side.
- Connect the hose to the water tap. Push hose onto the hose connection of the boiler fill & drain valve, fasten with a hose clip, and fill with water.
- Open the fill & drain valve.
  Slowly fill the heating system. Observe the pressure gauge (pressure/temperature gauge) while doing so.
- Close the water tap and the boiler fill & drain valve once the required operating pressure has been reached.
- Check the connections and pipework for leaks.
- Bleed the boiler by carefully opening the pressure relief valve on the manifold.
- Bleed the heating system via the purge valves on the boiler piping.
- Replenish with water if the pressure drops as a result of bleeding the system.
- Remove the hose from the boiler fill & drain valve.
- Installing the pressure relief valve (→ Fig. 25, page 28)

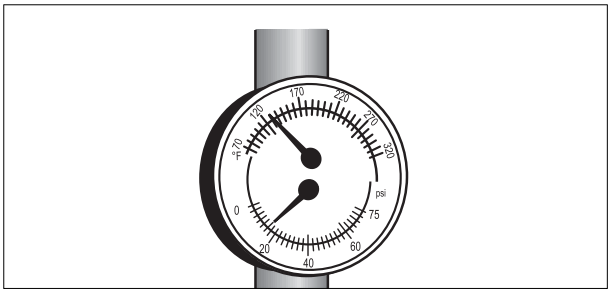

Fig. 27 Pressure/temperature gauge

8 Commissioning

This chapter explains how to commission the heating system for the first time.

- Complete the commissioning report during this process (→ Chapter 8.6, page 36).

Danger: Risk of fatal accident due to chimney fire!
- Before initial commissioning, have the chimney checked by the local chimney installer.
- If soot ignites, close all ventilation ducts to the boiler and the fuel space door.
- Check flue pipe for leaks.
- Do not make any constructional changes to the boiler.

Warning: System damage and risk of injury in case of incorrect commissioning!
- Only have the appliance installed or altered by an approved heating contractor.
- Before the initial commissioning, check whether the heating system is filled up with water and bled.

Warning: Risk of injury from open boiler doors!
- Do not open the fuel filler door of the boiler during operation.

Warning: Risk of injury from too-high temperature of the flue gas header!
- Avoid touching the flue gas header during operation.

Warning: Risk of system damage due to incorrect operation!
- Instruct the customer or system operator about the operation of the appliance.

8.1 Bring the system up to operating pressure

Bring the system up to the normal operating pressure before commissioning.

Caution: Risk of damage to system due to temperature stresses.
If you fill the heating system when it is hot, the resulting temperature stresses can cause stress cracks. The boiler will then leak.

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

Warning: Damage to the system!
Commissioning without a sufficient quantity of water destroys the appliance.

- Do not operate the boiler without a sufficient quantity of water.

- Top up the heating water or drain via the boiler fill & drain valve until the desired operating pressure has been reached: minimum 15 psi, maximum 30 psi positive pressure (depending on the pressure relief valve).

Warning: Risk to health due to pollution of drinking water!

- Always observe the regulations and standards applicable in your jurisdiction for the prevention of contamination of drinking water (e.g. by water from heating systems).

- Bleed air from the heating system while filling.

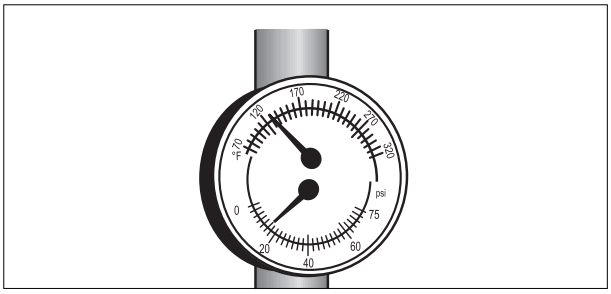

Fig. 28 Pressure/temperature gauge

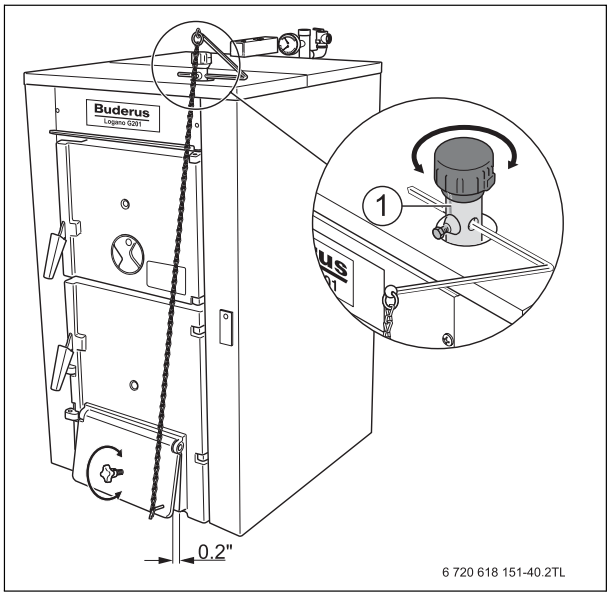

Fig. 29 Setting the firing controller

1 Red marking (70 °C/158 ° F)

8.2 Setting the firing controller

- Set the firing controller to the red marking (70 °C/ 158 °F) (→ Fig. 29) or depending on the outdoor temperature according to Tab. 9.
- Heat up the boiler (→ Chapter 8.3, page 33).
- Adjust the tension of the chain by setting the lever (or shortening the chain) so that the air vent is closed at 70 °C/158 °F boiler water temperature up to a minimum degree (0.2 inches) and the chain hangs somewhat loosely.
  This prevents creosote formation when the boiler water temperature has been reached.

If the air vent is closed completely, there is no complete combustion. Creosote accumulates on the heating surfaces, which requires more cleaning effort.

Outdoor temperature in °F	Flow temperature in °F	Setting firing controller in °C
5	194	90
14	176	80
28	158	70
32	149	65
41	140	60
50	113	45
60	104	40

Tab. 9 Settings for the firing controller depending on the outdoor temperature

8.3 Heating up the boiler

Warning: Risk of system damage due to incorrect operation!
Overfilling the ignition chamber with fuel can cause overheating and damage to the boiler.

- Adjust fuel quantity to the energy absorption of the heating system (→ Chapter 8.4, page 35).

Decisive for clean burning in the boiler are the correct operation of the boiler and a sufficient flue draft for the flue gas system.

- Open the ash pan door.
- Turn the bolt [2] of the front grate counter-clockwise to the stop.
- Fold the front grate [1] downwards.

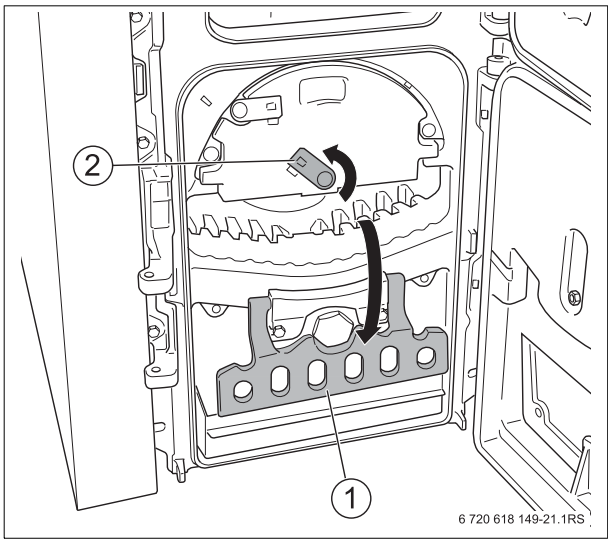

Fig. 30 Folding the front grate downwards

1 Front grate
2 Bolt

- Turn the bolt [2] of the segment plate counter-clockwise to the stop.
- Remove the segment plate [1].

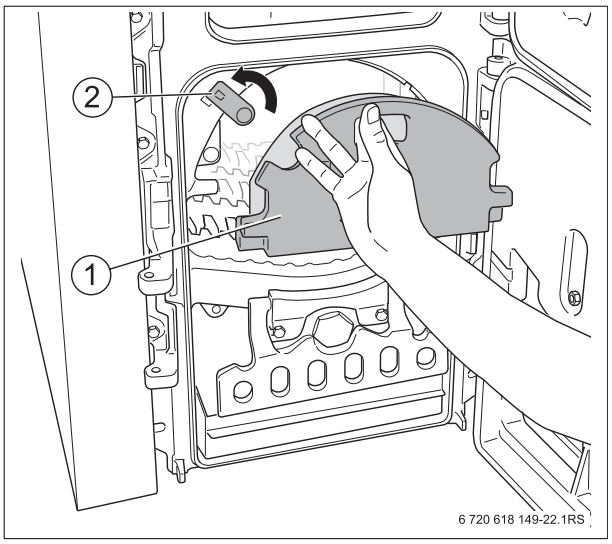

Fig. 31 Removing the segment plate

1 Segment plate
2 Bolt

- To increase the draft of the boiler, open the exhaust flap.

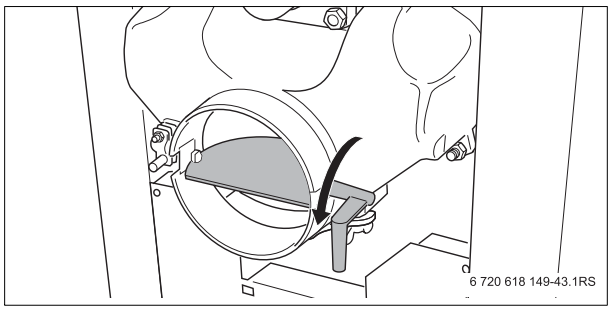

Fig. 32 Open the exhaust flap

- Insert a layer of paper [2].
- Insert a 3 to 4 inch layer of fuel (thin kindling, coal or coke) on the paper layer [2]. Do not use any thick logs.
- Light the fuel inside the boiler.
- If you are using solid accelerant (coal igniter), light the accelerant outside of the boiler and then place it on the ignition material.
- Fold the front grate upwards and insert the segment plate.
- Leave the ash pan door slightly open.
- Let the fuel burn for 15 – 20 minutes until there are embers.
- Close the ash pan door.

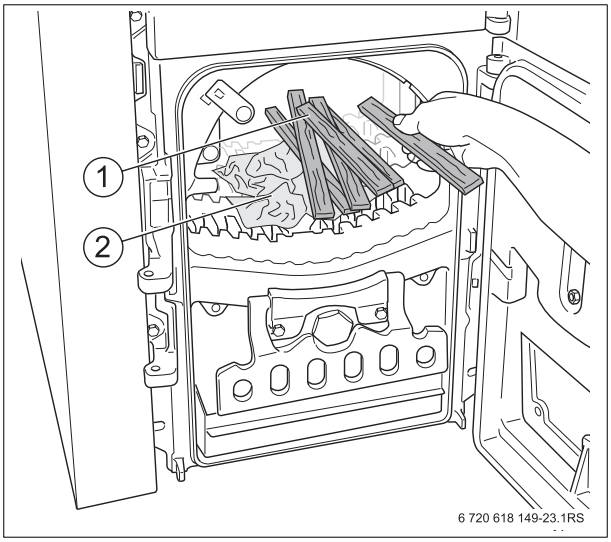

Fig. 33 Inserting the paper layer and fuel

1 Fuel (e.g. wood)
2 Paper layer

- Open the fuel filler door and fill the ignition chamber [1] to ¼ of its volume with fuel.

Before the fuel space [1] is filled, the fuel inserted must be completely burned off and there must be sufficient embers.

- Close the fuel filler door.
- To prevent heat losses in the chimney, close the exhaust flap depending on the flue draft (→ Fig. 35). If the flue gases are not drawing properly (flue draft is not sufficient), open the exhaust flap a little again (→ Fig. 32, page 33).

The heating-up time may vary depending on how clean the boiler is, the local conditions, the fuels used, and the weather (low pressure in the flue gas system).

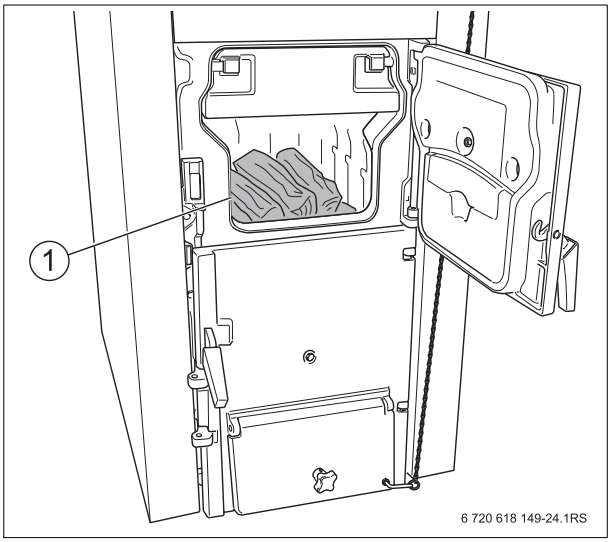

Fig. 34 Inserting fuel (heating up)

1 Combustion chamber

With wood firing, note: logs that are too short and too thick cause uneven burning.

- Only use logs of the specified thickness and length (→ Chapter 3.1, page 11).

Large types of anthracite coal and coke burn longer; with too great a quantity of fuel, the output can be reduced. Check and stoke the fire at short intervals.

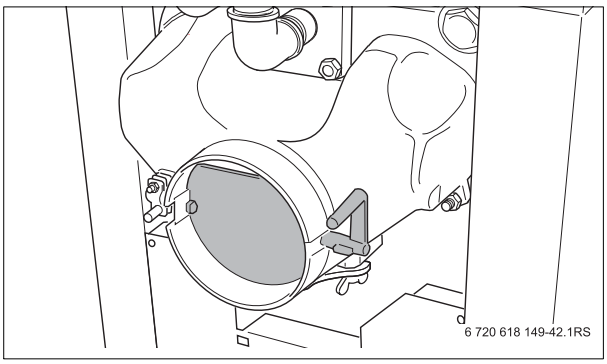

Fig. 35 Closing the exhaust flap

8.4 Energy absorption

The energy absorption of the heating system (consisting essentially of boiler and buffer storage) depends on the actual value of the water temperature of the buffer storage. For economical operation of the heating system, the fuel quantity used must be adjusted to the respective energy absorption. This way, overheating of the boiler is avoided and pollutant emission is reduced.

8.5 Re-filling fuel

Depending on the type and quality of fuel, the burning duration of a boiler filling with nominal output of the boiler is approximately 2 to 4 hours with wood firing and approximately 3 to 5 hours with coal firing.

The combustion is disturbed if the fuel filler door is opened in between. This can cause poor burning and excessive flue gas emission.

- If possible, let the fuel burn completely down.

In order to re-fill fuel or check the fill level:

- Open the fuel filler door a crack and wait approximately 10 seconds so that there is less flue gas in the fuel space. As soon as the flue gas quantity is reduced, open the fuel filler door completely.
- In order to reduce the smoke formation in the boiler room during re-filling, open the exhaust flap (→ Fig. 37 above).
- Stoke the fire with a poker and add the desired quantity of fuel.
  Through regular stoking, even combustion and a constant power output of the boiler can be achieved.

A quick covering of the embers with fuel reduces the emission of flue gases from the ignition chamber.
Note if you are burning wood: only re-fill enough wood that there is a distance of at least 2 inches remaining between the uppermost log and the upper edge of the ignition chamber (→ Fig. 36).
Note if you are burning coal: fill coal up to a height of 12 inches. The best conditions for a coal fire are if the height and width of the fill quantity are equal. On each firing, fill the ignition chamber with coal up to the beginning of the fuel fill door.

- Close the fuel filler door [1] and exhaust flap (→ Fig. 37 below).

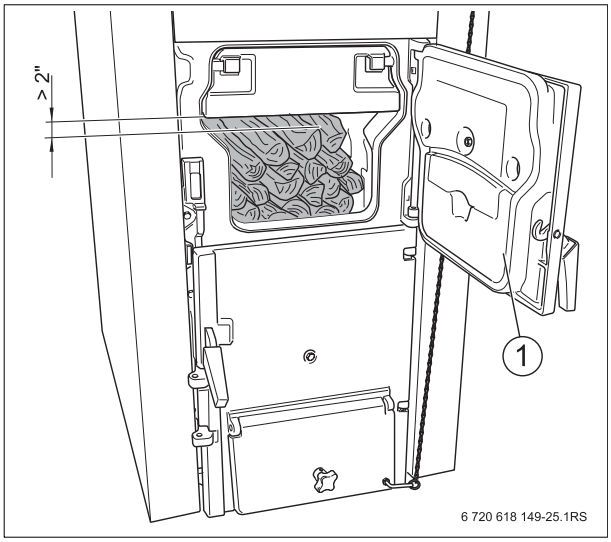

Fig. 36 Re-filling fuel

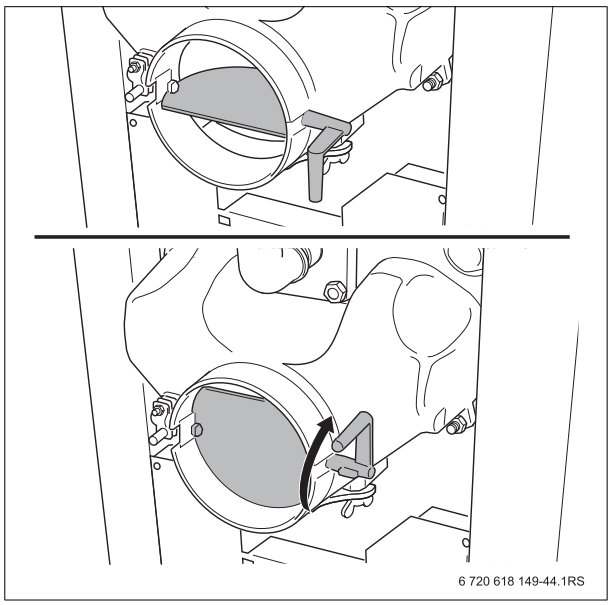

Fig. 37 Exhaust flap (top: open; bottom: closed)

8.6 Commissioning log

	Commissioning work	Page	Readings taken	Comments
1.	Fill heating system and check for leaks – Heating system filling pressure	29	☐ _____ psi	
2.	Bring the system up to operating pressure – Bleed heating system – Test pressure relief valve – Adjust the expansion vessel pressure (→ expansion vessel documentation)		☐ _____ psi	
3.	Check combustion air supply and flue system	26	☐	
4.	Inform operator, hand over technical documentation		☐	
5.	Confirm properly-completed commissioning, flue gas temperature and draft		Company stamp/signature/date	

9 Shutting down the boiler

Warning: Risk of system damage due to frost!
If the heating system has been shut down, it may freeze up in cold weather conditions.

- When there is a risk of frost, protect your heating system against freezing up.
- If there is risk of frost and you are not operating the boiler, empty the system.

To shut the boiler down, let it burn off everything without artificially accelerating the combustion process.

- When shutting down the boiler for a long period (e.g. at the end of the heating season) carefully clean it, since the humidity content of the ashes can cause corrosion.
- When there is a risk of frost, protect your heating system against freezing up. Either empty the water-carrying lines or fill up the system with anti-freeze (follow the manufacturer's instructions).

9.1 Shutting down the boiler temporarily

- Allow the boiler to cool.
- Open the fuel fill door and clean the ignition chamber.
- Open the ash pan door and remove the ash shovel.
- Ashes should be placed in a steel container with a tightly fitting lid, and moved outdoors. Other waste must not be placed in this container.
- Clean the ash pan.
- Insert the ash shovel and close the ash pan door.
- Close the fuel filler door.

9.2 Shutting down the boiler for a long period

When shutting down the boiler for a long period (e.g. at the end of the heating season) carefully clean it.

9.3 Shutting down the boiler in an emergency

Explain to the customer what to do in an emergency, e.g. in case of an explosion or fire.

- Never put yourself at risk of fatal injury. Your own safety must always take the highest priority.
- Carefully open the fuel filler door.
  Carefully opening the fuel filler door prevents the flames from leaping out towards you.
- Extinguish the fire with water.

10 Cleaning and maintenance

Warning: Damage to system due to improper maintenance!

Insufficient or improper maintenance of the boiler can cause damage and void warranty claims.

- Carry out regular, extensive, and professional maintenance of the heating system.

The regular professional maintenance of the heating system maintains its efficiency, guarantees high reliability, and environmentally-friendly combustion.

The cleaning of the heating system depends on the wood quality and the environmental conditions.

There is an inspection and maintenance log attached to these instructions on page 42.

- Offer your customer an annual contract covering inspection and demand-dependent service. The work that needs to be included in a maintenance contract is detailed in the inspection and maintenance logs.

Only use original Buderus spare parts. Buderus assumes no liability for damage caused by the use of parts not supplied by Buderus.

10.1 Cleaning the boiler

Soot and ash accumulations on the interior walls of the boiler reduce the heat transfer. Insufficient cleaning increases fuel consumption and can cause undesirable pollution of the environment.

Danger: Risk of environmental damage due to improper operating state!

- Clean the boiler regularly depending on fuel consumption.

The ashes that are created during combustion accumulate primarily in the fuel space.

- Clean the fuel space regularly every 1 to 3 days.

Warning: Risk of system damage due to insufficient maintenance and cleaning!

Larger quantities of ashes in the fuel space can cause overheating of and damage to the boiler.

- Remove the ashes from the boiler regularly.

Do the cleaning before you begin to heat and only when the combustion chamber has cooled off.

Warning: Risk to health due to incorrect operation!

Opening the fuel filler door while heating causes pressure fluctuations in the boiler and the uncontrolled escape of flue gases.

- Only open the fuel filler door when the boiler is not lit and it has cooled off.

10.1.1 Frequent cleaning

The ashes must be removed from the combustion chamber/ash pan every 1 – 3 days.

- Open the ash pan door [2].
- Fold the front grate downwards and remove the segment plate (→ Fig. 30, page 33, and Fig. 31, page 33).
- Tip the combustion residues into the ash pan.
- Insert the segment plate and fold the front grate upwards.
- Remove the combustion residues from the ash pan with the ash shovel [1].

Do not place hot ashes in plastic and waste containers.

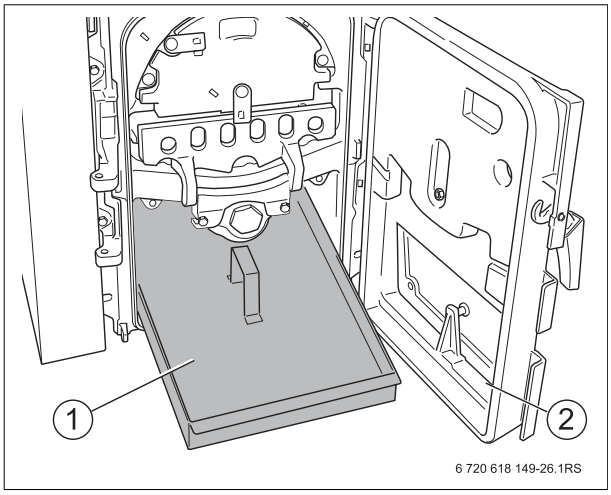

Fig. 38 Cleaning the ash pan

1 Ash shovel
2 Ash pan door

10.1.2 Monthly cleaning

The flue gas collector and the collector cleanout (→ Fig. 40, page 40) must be checked monthly and cleaned if necessary. Insufficient cleaning can cause damage to the boiler and the voiding of warranty claims.

Warning: Risk of system damage due to insufficient maintenance and cleaning!

- Clean the heat exchanger heat flues and the flue gas header regularly.

Hot gas flue, cleaning

- Open the fuel fill door [2] and remove the waste steam plate [1].
- Clean ash residues from the hot gas flues with a brush.
- Insert the waste steam plate [1] and close the fuel filler door [2].
- Take the steps described under 9.1.1.

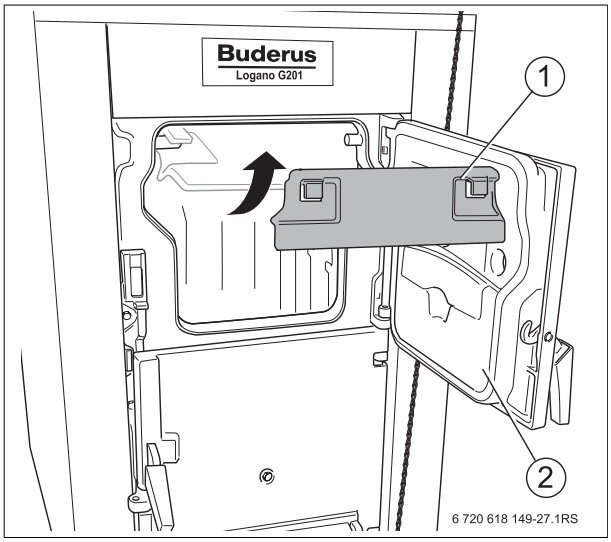

Fig. 39 Hot gas flue, cleaning

1 Waste steam plate
2 Fuel filler door

Cleaning the flue gas header

The flue gas collector [2] is cleaned via the inspection aperture. The inspection aperture is on the bottom of the flue gas collector and is sealed with the cleaning cover [1].

- Unscrew the two wing nuts on the cleaning cover.
- Carefully remove the cleaning cover [1].
- Remove the combustion residues via the inspection aperture.
- Close the inspection aperture with the cleaning cover [1]. Check that the gasket is seated correctly.
- Screw the cleaning cover [1] back on with two wing nuts.

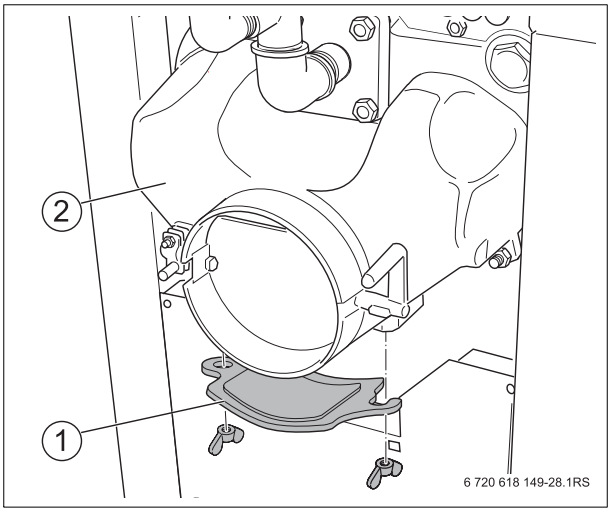

Fig. 40 Cleaning the flue gas header

1 Cleaning cover
2 Flue gas header

10.2 Checking the operating pressure

Warning: Risk to health due to pollution of drinking water!

- Always observe the regulations and standards applicable in your jurisdiction for the prevention of contamination of drinking water (e.g. by water from heating systems).

Warning: Risk of system damage due to frequent topping up!

Depending on water quality, the heating system may be damaged by corrosion or scaling if you frequently top up the heating water.

- Notify your heating contractor if you find you need to top up your heating system frequently.
- Check the heating system for leaks and proper operation of the expansion vessel.

Establish an operating pressure of at least 15 psi, depending on the system height!

- Checking the operating pressure. If the pressure of the system sinks below 15 psi (1 bar), water must be topped up.
- Add water to the system.
- Bleed the heating system.
- Check the operating pressure again.

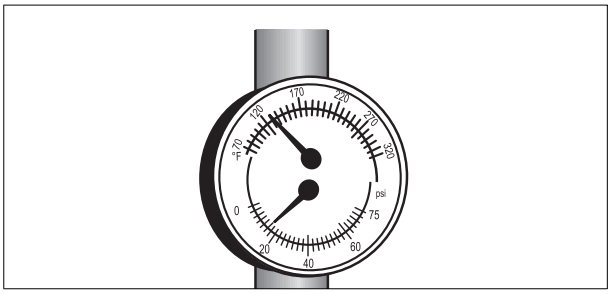

Fig. 41 Pressure/temperature gauge

10.3 Checking the flue gas temperature

If the flue gas temperature is higher than stated in the specifications, the system must be cleaned again. It is also possible that the flue draft of the flue gas system is too high (→ Chapter 2.11.1, page 9).

10.4 Inspections and maintenance log

Carry out maintenance when the inspection of a system state indicates that this is necessary.

The inspection and maintenance log also serves as a copying template.

- Initial and date the servicing operations completed.

	Inspection and condition-based maintenance	Page	Date:____	Date:____	Date:____
1.	Check general condition of heating system		☐	☐	☐
2.	Visual inspection and function check of the heating system		☐	☐	☐
3.	Checking the water-bearing system components for: – Operational tightness – Leakage test – Visible signs of corrosion – Signs of aging	29	☐	☐	☐
4.	Check heat-conducting surfaces and flue gas header for dirt contamination and clean as required	38ff.	☐	☐	☐
5.	Check the combustion air supply and flue gas pipe for: – Function and safety – Operational tightness – Leakage test – Proper sealing of fuel filler and ash pan doors	26	☐	☐	☐
6.	Check the flue gas temperature and check the flue gas draft of the flue gas system	41	☐ F° ____in. W/C	☐ F° ____in. W/C	☐ F° ____in. W/C
7.	Record the final checks of the inspection work, incl. measurements and test results		☐	☐	☐
8.	Confirmation of properly completed servicing		Company stamp/signature	Company stamp/signature	Company stamp/signature

	Date:_____	Date:_____	Date:_____	Date:_____	Date:_____	Date:_____	Date:_____
1.	☐	☐	☐	☐	☐	☐	☐
2.	☐	☐	☐	☐	☐	☐	☐
3.	☐	☐	☐	☐	☐	☐	☐
4.	☐	☐	☐	☐	☐	☐	☐
5.	☐	☐	☐	☐	☐	☐	☐
6.	☐	☐	☐	☐	☐	☐	☐
7.	☐	☐	☐	☐	☐	☐	☐
8.	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature	Company stamp/signature

Tab. 10 Inspection and maintenance log (continued)

11 Troubleshooting

Only use original Buderus components for repairs.

Fault	Cause	Remedy
Boiler output too low	Calorific value of the fuel used is too low, humidity of the fuel is higher than 20 %	Use prescribed fuel with prescribed humidity
	Operating conditions not adhered to	Check flue draft, return temperature. If the flue draft is not sufficient, adjust chimney
	Soot deposits on the heat exchanger baffles and/or the flue gas header	Clean the hot gas flues and the flue gas header regularly
Too much condensate forms in the fuel space of the boiler, black liquid leaks out of the fuel filler door	Boiler output too high	Insert less fuel. Check possible heat loss in the object
	Incorrect or too-humid fuel	Use prescribed fuel with prescribed humidity
	Low boiler water temperature	Check/increase minimum boiler water temperature and ensure a minimum temperature of 131 °F for the return due to a suitable setting of the mixing valve
Boiler cannot be regulated	The ash pan door is not sealing properly when closed	Check the door gasket and re-align or replace
	Flue draft too strong	Reduce the draft using the exhaust flap; modify chimney flue if necessary. Install a draft limiter or change the setting of the draft limiter
Boiler water temperature is high but radiator temperatures are low	Water flow resistance is too great, especially in systems without active circulation	Overcome the flow resistance, e.g. by installing a circulation pump
	Flue draft is too strong or calorific value of fuel is too high	Reduce the draft using the exhaust flap; modify chimney flue if necessary. Install a draft limiter or change the setting of the draft limiter

Tab. 11 Overview of faults

12 Parts lists

Boiler block G201W US (→ Fig. 42)

Item	Description	Ordering no.	G201W US 27/5	G201W US 35/6	G201W US 40/8	Remarks
1	Boiler block assembled 5 Sections G201	63022807	X			
1	Boiler block assembled 6 Sections G201	63022808		X		
1	Boiler block assembled 8 Sections G201	63022809			X	
3	Dummy plug G 1 ½ "	5317544	X	X	X	
4	Gasket D48x63x1,5 mm C 4400 Klinger Sil	2528162	X	X	X	
11	Plug G ¾	5317714	X	X	X	
12	Sealing D26,5x34x2	5959550	X	X	X	
13	Universal draft regulator ¾ ", chain 1.2 m	7747105215	X	X	X	
18	Waste steam plate GK201	5356140	X	X	X	
19	Segment plate G201	5319730	X	X	X	
20	Grate fall G201	5341187	X	X	X	
21	Oval head screw 8x2	3613160	X	X	X	
22	Washer DIN125 A8,4 A3K	5883290	X	X	X	
23	Brick holder for ash door G201	5336150	X	X	X	
24	Segment plate G201	5319735	X	X	X	
25	Refractory stone 214 K	5362062	X	X	X	
26	Grating support G201	5341186	X	X	X	
29	Front grate G201	5341185	X	X	X	
30	Hinge strip G201	5327132	X	X	X	
31	Closing strip G201	5427752	X	X	X	
32	Hex bolt M8x30, kit 10 Piece	63027500	X	X	X	
33	Hinge pin 7x36	5327356	X	X	X	
35	Fill and clean-out door G201	63015189	X	X	X	
36	Door closer m. plastic handle	5328040	X	X	X	
37	Viewing hole cover for filling door	5438090	X	X	X	
38	Cyl-head screw DIN84 M6x20 10x	7747030825	X	X	X	
39	Hex bolt M8x30, kit 10 Piece	63027500	X	X	X	
40	Split pin DIN1481 10x40 10x everp	7747030826	X	X	X	
41	Thermal insulation filling and clean	63021944	X	X	X	
42	Protective plate for filling door G201	5356150	X	X	X	
44	Insulating plate for fill and clean-out	5356065	X	X	X	

Tab. 12 Boiler block G201W US

Item	Description	Ordering no.	G201W US 27/5	G201W US 35/6	G201W US 40/8	Remarks
45	Sealing twine D12x3100 CS,	63031770	X	X	X	
46	Hex nut DIN6923 M8-A3K with locking gear	5834410	X	X	X	
50	Ash door G201	63015191	X	X	X	
51	Control chain rods M6	63021946	X	X	X	
52	Adjusting bolt for air flap	5337105	X	X	X	
53	Air flap 310 wide for ash door	5337100	X	X	X	
54	Packing cords 6x11x870 Al	63025706	X	X	X	
55	Hinge pin-5 x315	7747105216	X	X	X	
56	Thermal insulation 20x300x320	63021945	X	X	X	
57	Sealing twine D12x3100 CS,	63031770	X	X	X	
58	Protective plate for ash door Log.02.2	5356245	X	X	X	
60	Ash spade 400mm long G201	63018634	X			
60	Ash spade 600mm long G201	63018635		X	X	
	Sealing material brown (cartridge 310 ml)	63014361	X	X	X	

Tab. 12 Boiler block G201W US

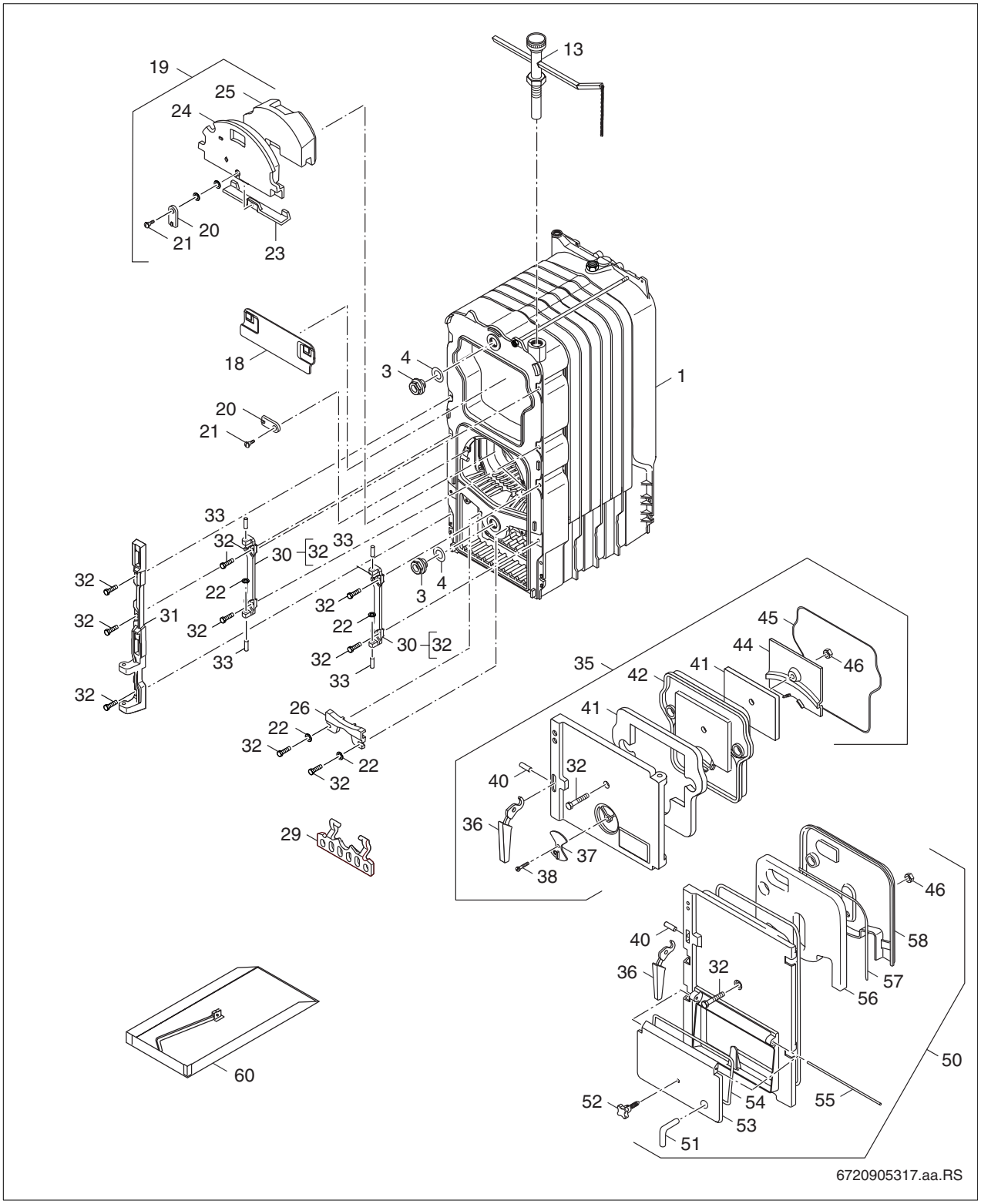

Fig. 42 Boiler block G201W US

Fittings rear (→ Fig. 43)

Item	Description	Ordering no.	G201W US 27/5	G201W US 35/6	G201W US 40/8	Remarks
1	Flue gas header 180D G201	5321032	X	X	X	
2	Flue gas cover 180D	5322010	X	X	X	
3	Installation material flue gas cover	63027498	X	X	X	
4	Bearing clamp for Flue gas header G201	9523500	X	X	X	
5	Clean-out cover	5371220	X	X	X	
6	Wing nut DIN315-C M8 CUZn	2915190407	X	X	X	
7	Washer DIN125 A8,4 A3K	5883290	X	X	X	
8	Packing cords GP 7x1000	63020960	X	X	X	Cut to length of 405 mm
9	Stud DIN939-M8x25-5.6	3719060	X	X	X	
10	Sealing 7x2000 GP	7747031101	X	X	X	Cut to length of 1140 mm
13	Flange 1 1/4 NPT square110 everp	7747030510	X	X	X	
14	Gasket D 72x96x1.5 mm	2515124	X	X	X	
15	Stud DIN939 M10x35 5.6	5555060	X	X	X	
16	Hexagon nut DIN6923 M10 8,8 A3K SW16 mm	5834414	X	X	X	
17	Washer DIN125-st 10,5x2,0 mm	82867140	X	X	X	
18	Stud DIN939 M10x40 5.6	3719128	X	X	X	
20	Blind plug G1 1/4 rh, forged version	6073312	X	X	X	
21	Sealing d41,7x55x1,5 4x everp	7747030780	X	X	X	
25	Plug 1/2" 2x everp	7747030774	X	X	X	
26	Reducing nipple G1"xG3/4" everp	7747030786	X	X	X	
27	Gasket D33x44x2 mm	63005462	X	X	X	
29	Feed pipe G201	5436050	X	X	X	
	Fixing clamp P 168 /Mecano/	5436080	X	X	X	
	Sealing material brown (cartridge 310 ml)	63014361	X	X	X	

Tab. 13 Fittings rear

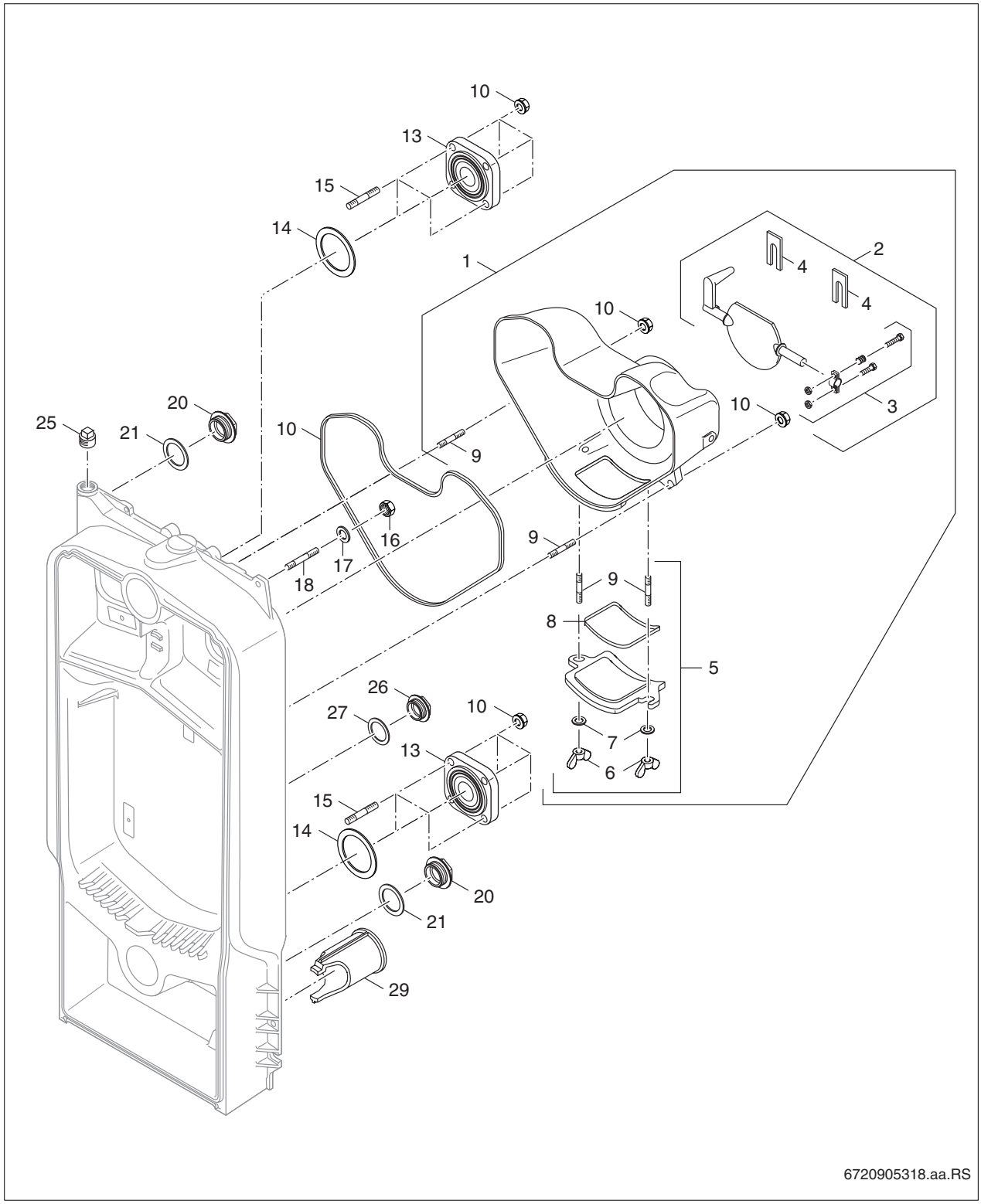

Fig. 43 Fittings rear

Tank jacket (Fig. 44)

Item	Description	Ordering no.	G201W US 27/5	G201W US 35/6	G201W US 40/8	Remarks
1	Side panel L.h. 615 long	63021709	X			
1	Side panel L.h. 715 long	63021710		X		
1	Side panel L.h. 915 long	63021711			X	
2	Side panel R.h. 615 long	63021704	X			
2	Side panel R.h. 715 long	63021705		X		
2	Side panel R.h. 915 long	63021706			X	
3	Tie-bar front G201	63024310	X	X	X	
4	Rear panel	63021712	X	X	X	
5	Tie-bar rear	63021713	X	X	X	
6	Single membrane nipple S4-390	5317684	X	X	X	
7	Hood front 3-8 Sections	63021714	X	X	X	
8	Hood rear 357 long 5 Section	63021717	X			
8	Hood rear 457 long 6 Sections	63021718		X		
8	Hood rear 657 long 8 Sections	63021719			X	
9	Cover G201	63021720	X	X	X	
10	Device label Logano G201	63018113	X	X	X	
11	Protect border G201	7747105214	X	X	X	
13	Installation material for Casing G201	9523818	X	X	X	
	Insulating felt 40 mm/2 qm RG15	63020656	X	X	X	for the screen
	Insulating felt 60 mm/1 qm RG18	63020657	X	X	X	for the rear panel and hood
	Insulating felt 80 mm/1 qm RG18	63020659	X	X	X	for the side panels
	Insulating felt 80 mm/2 qm RG18	63020660	X	X	X	for the side panels

Tab. 14 Boiler jacket

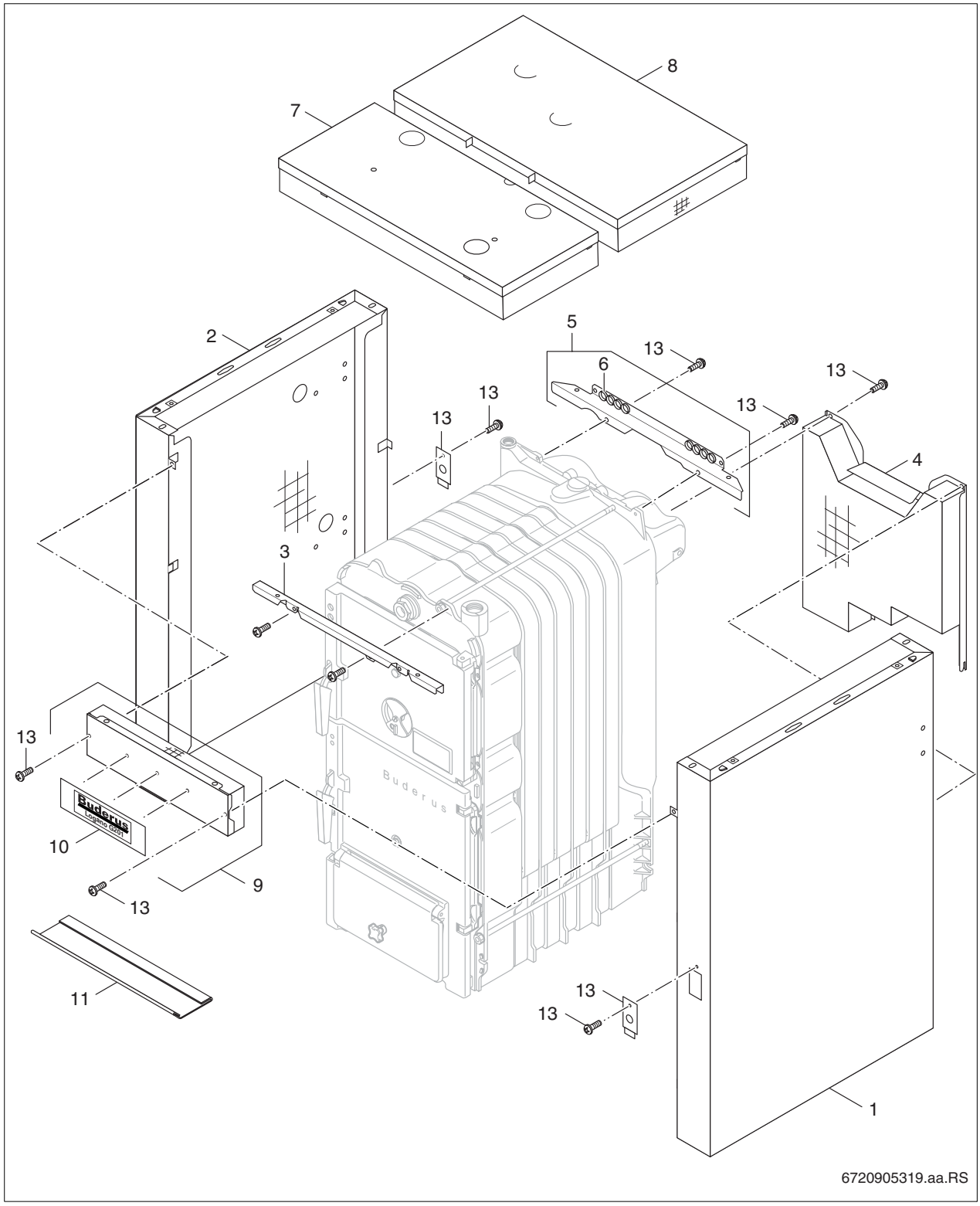

Fig. 44 Tank jacket

13 Installation examples and electrical connection schemes

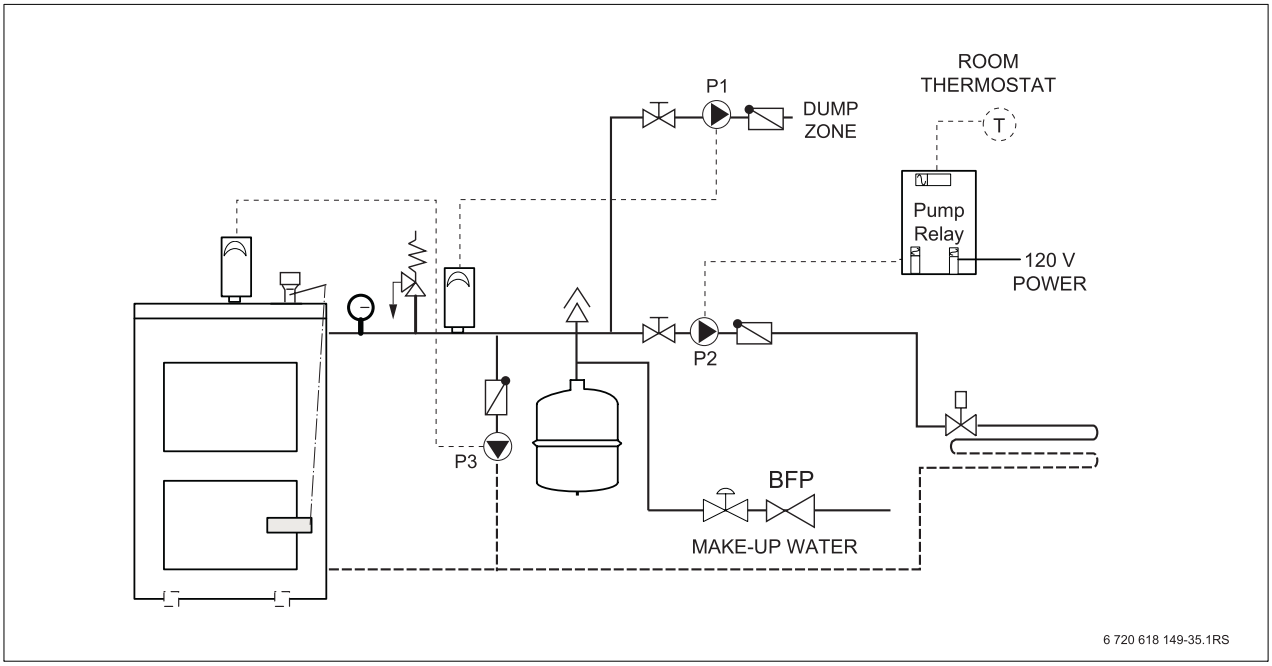

Fig. 45 Wood coal boiler with optional dump zone (installation example)

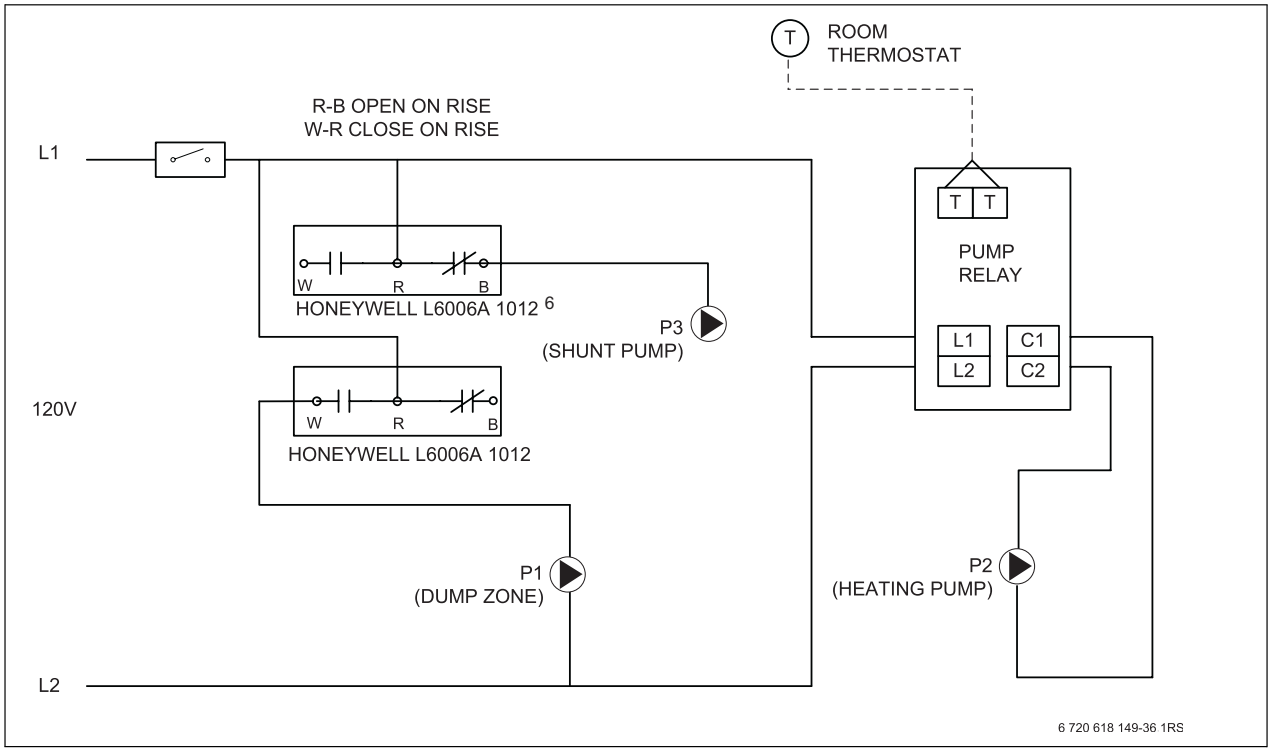

Fig. 46 Wood coal boiler with optional dump zone (example, connection schemes)

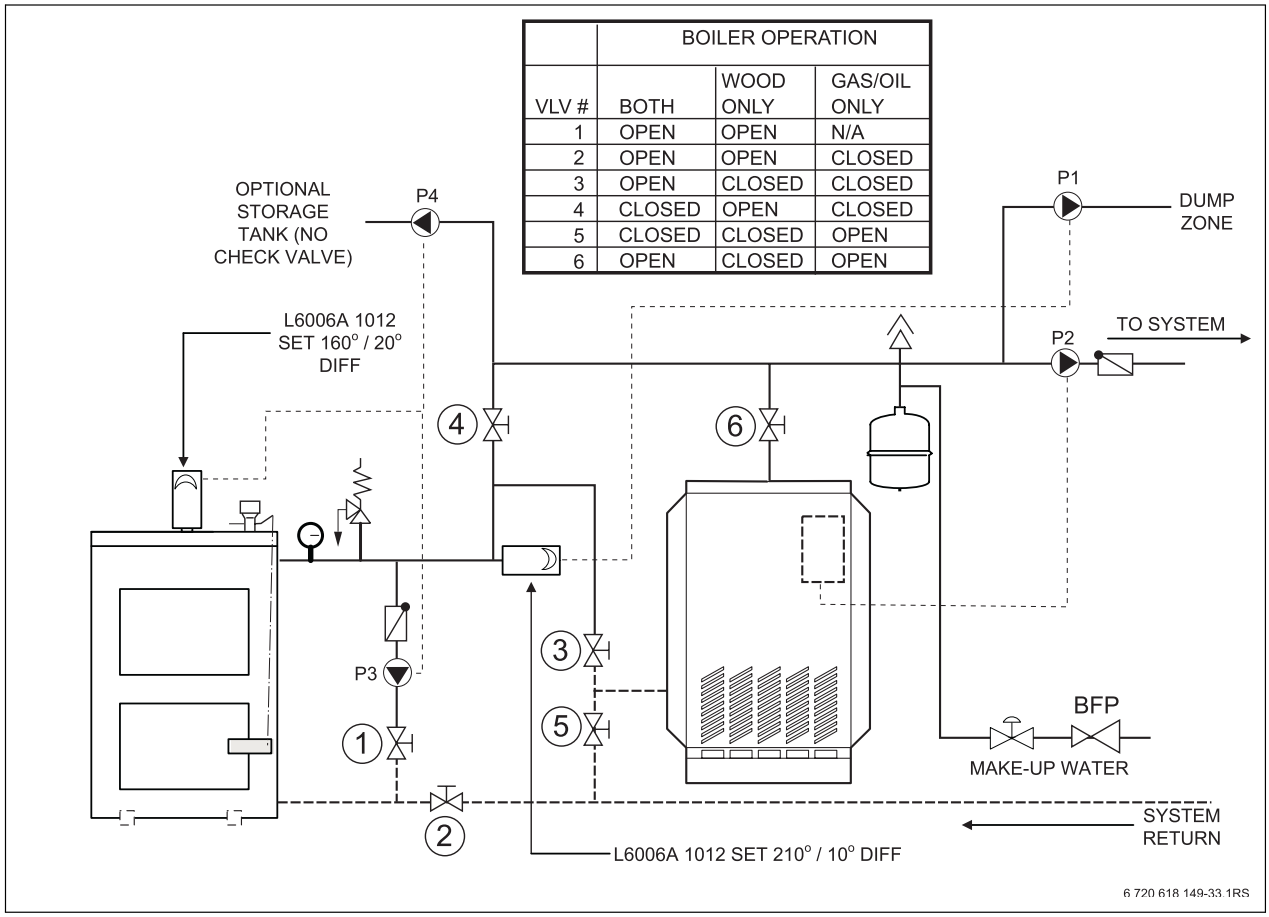

Fig. 47 Wood coal boiler with gas/oil boiler (installation example)

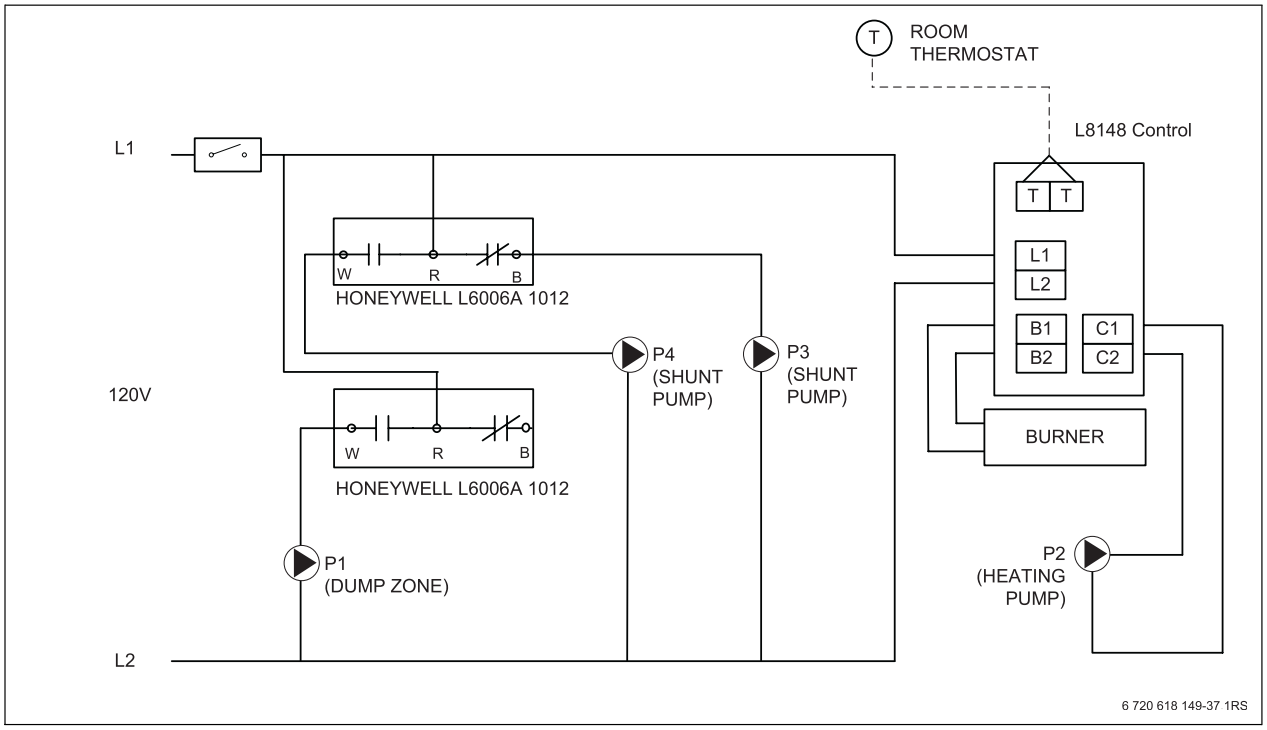

Fig. 48 Wood coal boiler with gas/oil boiler (example, connection schemes)

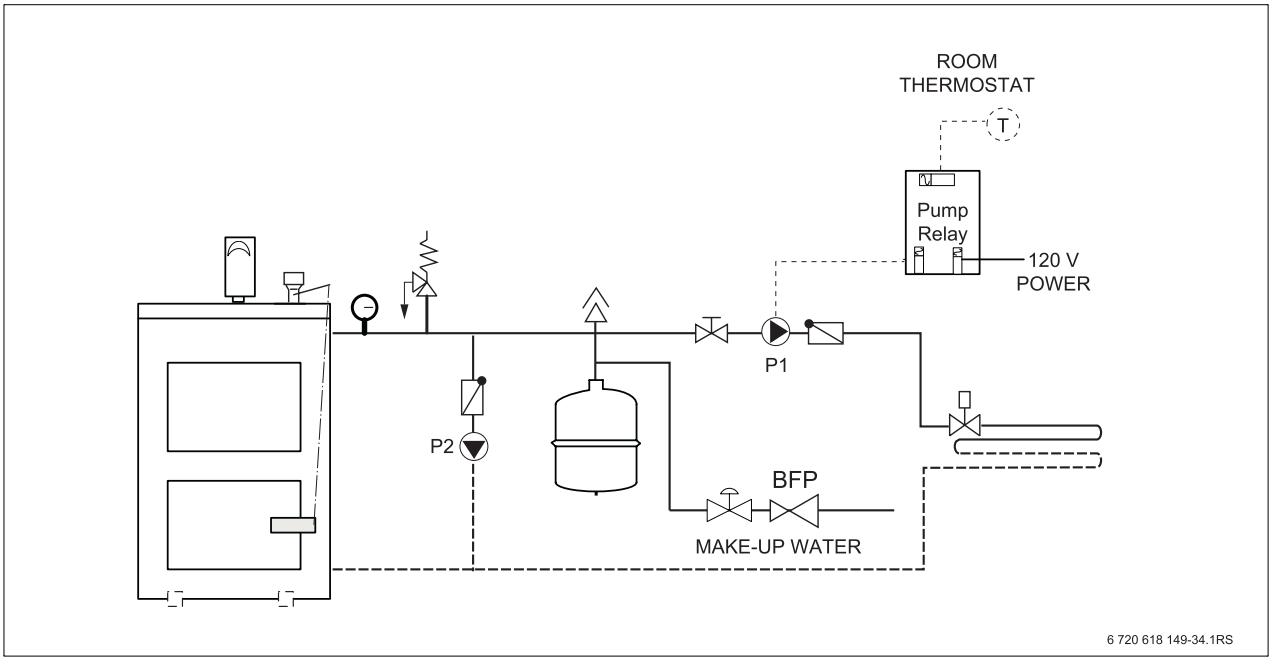

Fig. 49 Wood coal boiler with shunt pump (installation example)

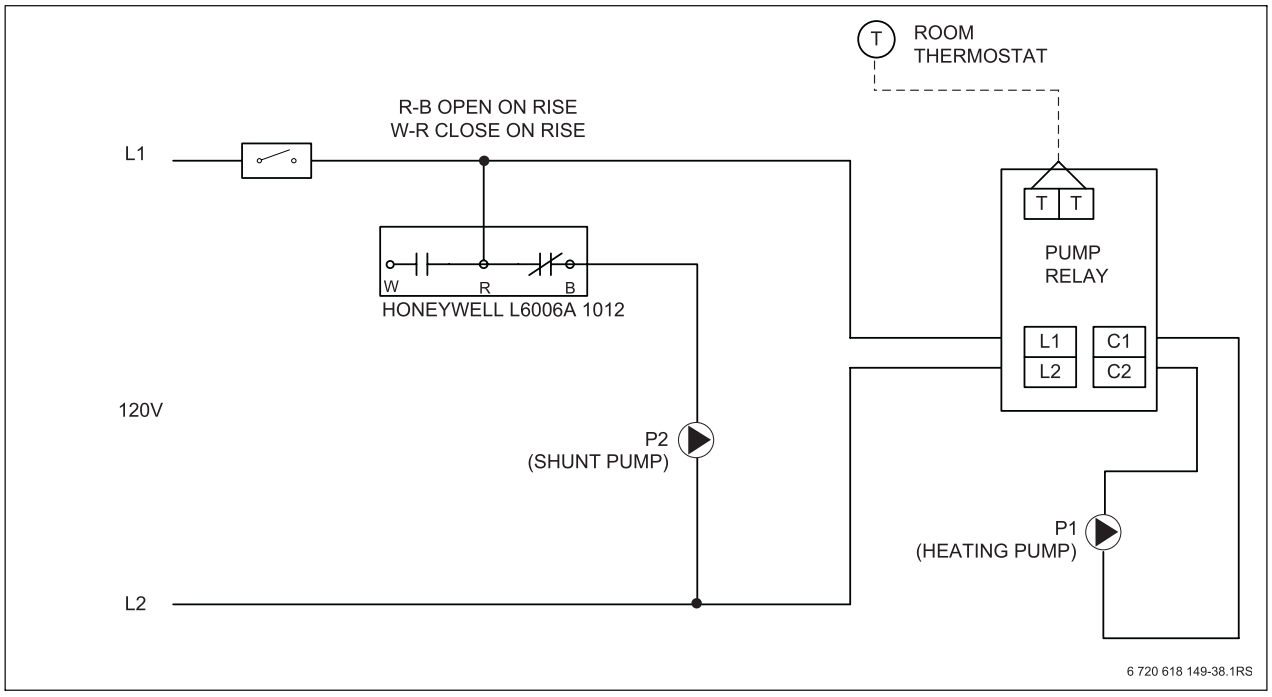

Fig. 50 Wood coal boiler with shunt pump (example, connection schemes)

Notes

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