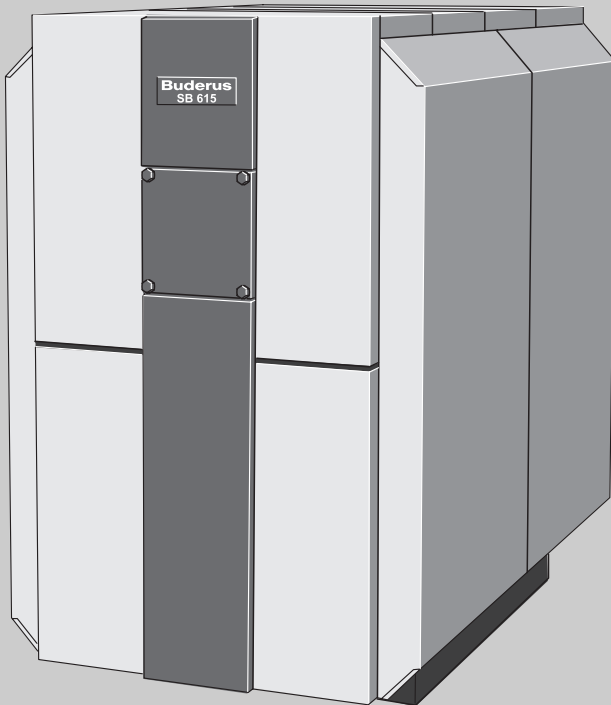


Installation and Servicing Instructions

Condensing boiler for operation with fan-assisted gas burner



7 747 015 037-00.1RS



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. Contact a qualified service company, service provider or the gas company if support or additional information is needed.

NOTICE!

The operating manual is 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.

In the Commonwealth of Massachusetts this boiler must be installed by a licensed plumber and gasfitter.

Logano plus SB615

For heating contractors

Please read carefully before installing and servicing.

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1 General safety instructions and explanation of symbols

Read and follow the safety instructions and rules and bring them to the attention of the customer.

1.1 Safety instructions

Failure to consider your own safety in an emergency such as a fire can be fatal.

- Never put yourself at risk of fatal injury. Your own safety must always take the highest priority.

Risk of explosion if you smell gas

- Turn off the main gas valve.
- Open windows and doors.
- Do not operate any electrical switches or equipment such as telephones, power plugs and doorbells.
- Extinguish all open flames. Do not smoke. Do not use lighters of any kind.
- Warn all occupants of the building, but do not ring doorbells.
- If you can actually hear gas escaping, leave the building immediately. Prevent others from entering and notify the police and fire department **from outside** the building.
- **From outside the building:** call gas supplier and authorized heating contractor.

Risk of poisoning if you smell flue gases

- Switch off the boiler.
- Open windows and doors.
- Inform an authorized heating contractor.

Risk of poisoning from escaping flue gases when combustion air supply is inadequate

- 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.

Danger of explosion of flammable gases.

- Any work on components that carry gas may only be carried out by a certified gas fitter.

Risk of fire from explosive and combustible materials

- Do not use or store combustible materials (paper, lace curtains, clothing, thinners, paints, etc.) in the boiler room.

Risk of system damage due to contaminated combustion air supply

- Keep the supply of air for combustion free of corrosive substances (e.g. halogenated hydrocarbons that contain chlorine or fluorine compounds).
- Prevent heavy contamination of the combustion air/ambient air by dust, airborne particles, etc.

Danger from electric shock when the boiler is open.

- Before opening the boiler:
Disconnect the heating system from the electrical power supply by means of the emergency shut-off switch or the heating system circuit breaker on the main fuse panel.
- It is not sufficient just to switch off the control unit.
- Take measures to ensure the heating system can not be switched on again unintentionally.

Danger due to short-circuits

To prevent short circuits, only:

- use genuine Buderus wiring.

Installation, conversion and operation

- Only use the boiler for its intended purpose.
- Observe all regulations and standards applicable to installation and operation of the system in your country and local jurisdiction. Those include local requirements in respect of positioning, the air inlet and outlet vents and chimney flue, as well as fuel and electrical connections.
- The boiler may only be installed or converted by a certified and experienced heating contractor.
- Do not modify any parts that carry flue gas.
- Work on gas components must be carried out by qualified and certified personnel only.
- Only qualified electricians are permitted to carry out electrical work.
- **Never disable safety relief valves.**
Water may escape from the safety relief valve for the heating system when it is being heated up.

Maintenance and servicing

Heating systems should be regularly maintained for the following reasons:

- to maintain 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.
- **Recommendation for users:**
Sign a maintenance and servicing contract with an approved heating contractor covering annual servicing and condition-based maintenance.
- Servicing and repairs may only be carried out by a certified heating engineer.
- Have any faults immediately repaired in order to prevent further damage to the system.
- The operator is responsible for the general and environmental safety of the heating system.
- Use only genuine spare parts. Damage caused by the use of parts not supplied under Buderus is not covered under the Buderus warranty.

Instructing the customer

- Explain to the customer how the boiler works and how to operate it.
- Inform the customer that he/she must not carry out any alterations or repairs.

1.2 Explanation of symbols



Warnings are indicated by a warning triangle and a grey background.

Signal words are used to indicate the seriousness of the ensuing risk if measures for minimizing damage are not taken.

- **Caution** indicates that minor property damage may occur.
- **Warning** indicates that minor personal injury or severe property damage 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 and framed by horizontal lines above and below the text.

Notes contain important additional information.

Notes do not contain any warnings or information about hazards or risks.

2 Intended use

The Buderus Logano SB615 steel boiler is a condensing boiler for operation with a fan-assisted gas burner. The boiler may only be used for heating central heating system water and indirect heating of domestic hot water (using a heat exchanger or indirect fired hot water tank), for instance in apartment buildings.

3 Regulations and guidelines

3.1 National regulations

The heating system must comply with the requirements of the relevant regulatory authorities or otherwise of the National Fuel Gas Code, ANSI Z 223.1. In Canada, the requirements of CAN/CGA-B.149.1 and 2, Installation Code for Gas Burning Appliances and Equipment, must be observed.

If specified by the relevant regulatory authorities, the heating system must comply with the regulations of the Standard for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1.

Carbon monoxide detectors must be installed as specified by the local regulations. The boiler must be serviced annually.

3.2 Compliance with standards and regulations

Installation of the boiler must comply with all applicable codes and regulations imposed by the national, Federal or local authorities and bodies. If no specific requirements are defined, in the USA, the latest edition of the National Fuel Gas Code ANSI Z223.1/NFPA 54 must be complied with.

In Canada, installation must comply in all respects with the latest edition of the Installation Code for Gas Burning Appliances and Equipment, CAN/CGA-B.149 and the applicable local regulations and requirements for the appliance category. The relevant authorities and regulatory bodies must be informed before installation starts.

Where required by local regulations, the system must comply with the American Society of Mechanical Engineers Safety Code for Controls and Safety Devices for Automatically Fired Boilers (ASME CSD-1).

For boiler rating plate remove left front panel.

In the Commonwealth of Massachusetts, this appliance must be installed by a licensed pipe fitter, taps external to the boiler must be fitted with T-handles and condensate piping must be fitted in accordance with the State Plumbing Code.



WARNING!

RISK OF FATAL INJURY

from explosion of flammable gases.

- Installation, connection of the fuel supply and flue pipe, commissioning, connection of the electrical power supply, servicing and repair may only be carried out by an authorized heating engineer.
- Any work on gas-carrying components may only be carried out by an authorized gas installer.

The local regulations regarding minimum pressure detectors and low-water safety cutouts must be observed. Installation and operation must comply with the device manufacturer's technical documentation.

We recommend fitting an 80 mesh dirt filter externally to the boiler return to prevent contamination of the boiler by the water.

Leak test

- A leak test must be carried out. The testing pressure is based on the normal operating pressure of the heating system and should be 1.3 times that pressure, and in any case no less than 14 psi (1 bar).



USER NOTE

The details on the boiler rating plate are definitive and must be observed.

Safety limits

Safety limits		
Maximum flow temperature:		208 °F (98 °C)
Permissible operating pressure:	500,000 - 630,000 BTU/hr (145–185 kW)	30 psi (2.0 bar)
	820,000 - 106,000 BTU/hr (240–310 kW)	
	1,360,000 - 2,180,000 BTU/hr (400–640 kW)	
Maximum cycle time for:		
Safety temperature limiter:		40 s
Temperature control:		40 s

Tab. 1 Safety limits

Fuels

Logano plus SB615: LPG or natural gas.

Observe information provided by burner manufacturer.

4 Pack contents

- Boiler mounted on pallet
- Supply manifold, packaged with hydronic control package
- Technical documents, attached to boiler heat exchanger
- Spare gasket, attached to boiler heat exchanger
- Boiler jacket panels and installation components, packaged in a wooden crate and cardboard. The assembly components are located in Pack A
- Controller with wiring diagram and operating instructions for electronic control of boiler and heating system, packed in box (optional)
- Neutralizer unit, packed in box (special-order option)
- Hydronic control package, consisting of aquastat, low water cut-off, relief valve and temperature pressure gauge (when ordered from Buderus)

Some of the accessories supplied as standard may not be required for all boiler models.

5 Specifications, dimensions and connections

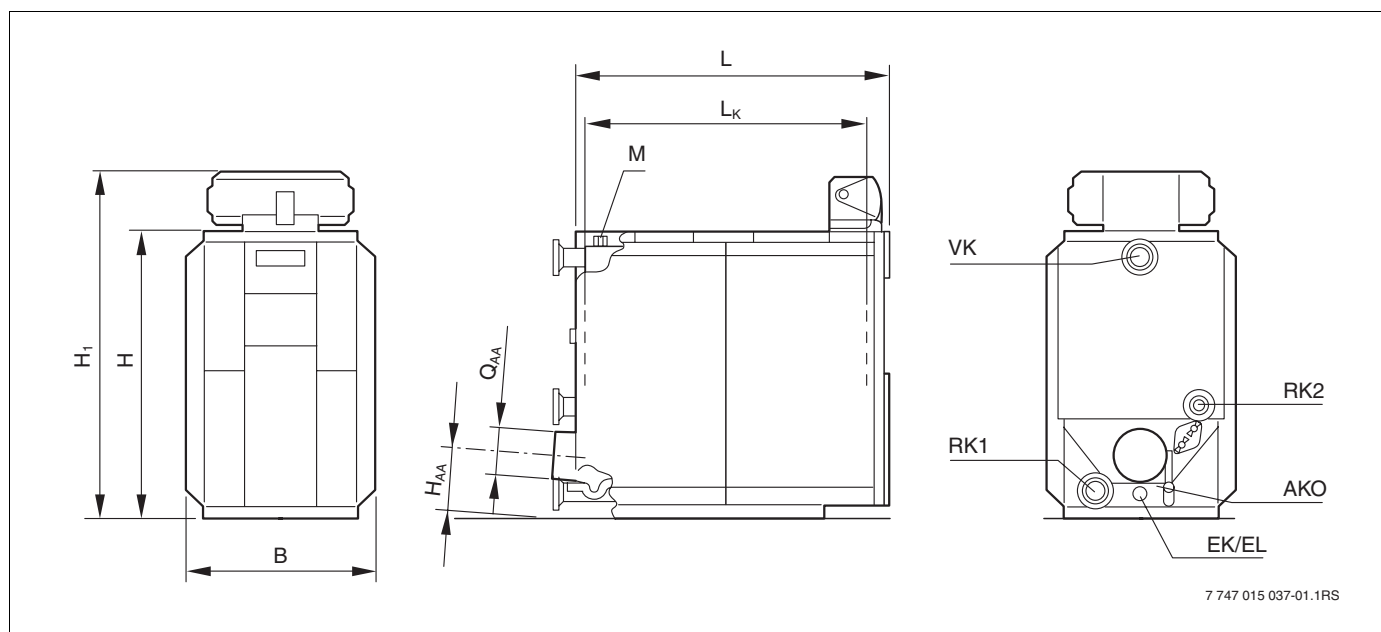


Fig. 1 Specifications, dimensions and connections

ØAA	Boiler breech inner diameter
AKO	Condensate outlet
EK/EL	Cold water inlet/drain
H	Boiler height excluding controller
H ₁	Boiler height including controller Logamatic 4311/12 controller = H + 10" (235mm)
H _{AA}	Flue socket height
RK1	Boiler return
RK2	Boiler return
VK	Boiler flow
M	Sensing point for temperature sensor/immersion sleeve
L	Boiler length inc. outer casing
L _K	Boiler heat exchanger length
B	Boiler width inc. outer casing

Tab. 2

	Unit	145	185	240	310	400	510	640
Max. gas input	[MBtu/h]	506	644	835	1080	1393	1776	2228
Rated output (gross output)	[MBtu/h]	484	612	791	1022	1317	1678	2104
IBR Net	[MBtu/h]	421	532	688	889	1145	1459	1830
Thermal efficiency	[%]	95.6	95.0	94.8	94.6	94.5	94.5	94.4
Combustion efficiency	[%]	97.1	96.7	96.5	96.4	96.3	96.2	96.2
Length	L	[inch]	68 3/4	68 3/4	70	70	75-1/4	
Length	L_K	[inch]	60		61	61	66-1/2	
Height	H	[inch]	54-1/4		55-1/2	63-1/2	69-1/2	
Width	B	[inch]	35-1/2		38-1/2	38-1/2	43-1/2	
Boiler breech inner diameter ØAA	[inch (mm)]	7" (183)		8" (203)		10" (253)	12" (303)	
Height	H_{AA}	[inch]	12		12	13	15	
Weight approx.	[lbs]	1709	1725	1866	1914	2154	2845	2900
Boiler return	RK1	[°F]	149		176	212	212	
Boiler return	RK2	[°F]	104		149	149	176	
Flue gas temperature	[°F] ¹	104	104	115	115	108	111	111
	[°F] ²	151	151	160	160	154	156	160
Available flue pressure	[inch W.C.]	Varies depending on burner						
Flue gas back-pressure	[inch W.C.]	0,48	0,62	0,88	0,96	1,20	1,43	1,77

Tab. 3 Specifications

¹ Flow/return temperature 40 °C/30 °C.

² Flow/return temperature 75 °C/60 °C.

**NOTE**

The SB 615/145 and SB 615/185 boilers are factory-fitted with a stainless steel flue pipe reducer made by Heat Fab. The flue connection is reduced from 7" to 6".

All other models require a flue pipe connector approved for the installation site.

6 Boiler Installation

It is useful if there is a waste water drain near the installation site. Refer to page 29 for information on transporting the boiler.

The boiler should be placed on a foundation approx. 2 - 4" (50 - 100 mm) high. Refer to dimensions B and L (Tab. 4) for sizing the foundation.

The base must be flat and level and able to support the boiler gross weight.

Observe the recommended minimum clearances (indicated in brackets) for installation and servicing when positioning the boiler (Fig. 2 or Tab. 4).

The boiler body must be aligned horizontally.

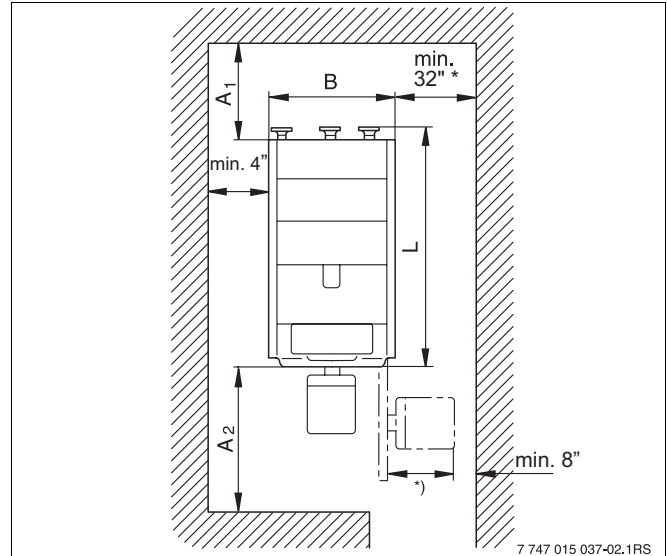


Fig. 2 Boiler room (for dimensions see Tab. 4)
*) Take burner size into account.

Recommended and minimum wall clearances in inch (mm)								
		Boiler rating	Clearance A ₁	Clearance A ₂ ¹⁾	Length L	Width B	Width/Height Delivered	
recomm	inch (mm)	145	36" (914)	72" (1829)	72" (1816)	36" (900)	29" (720)	53" (1340)
minimum	inch (mm)		24" (610)	48" (1290)				
recomm	inch (mm)	185	36" (914)	72" (1829)	72" (1816)	36" (900)	29" (720)	53" (1340)
minimum	inch (mm)		24" (610)	48" (1219)				
recomm	inch (mm)	240	36" (914)	72" (1829)	73" (1845)	38" (970)	32" (790)	54" (1370)
minimum	inch (mm)		24" (610)	48" (1219)				
recomm	inch (mm)	310	36" (914)	72" (1829)	73" (1845)	38" (970)	32" (790)	54" (1370)
minimum	inch (mm)		24" (610)	48" (1219)				
recomm	inch (mm)	400	36" (914)	72" (1829)	73" (1845)	38" (970)	32" (790)	62" (1570)
minimum	inch (mm)		24" (610)	54" (1372)				
recomm	inch (mm)	510	42" (1067)	78" (1981)	78" (1981)	44" (1100)	37" (920)	69" (1730)
minimum	inch (mm)		36" (914)	60" (1524)				
recomm	inch (mm)	640	42" (1067)	78" (1981)	78" (1981)	44" (1100)	37" (920)	69" (1730)
minimum	inch (mm)		36" (914)	60" (1524)				

Tab. 4 Wall clearances

¹⁾ Take burner size account

7 Installation



USER NOTE

Except when fitting the front thermal insulation pad, the combustion chamber must remain sealed by the burner door so that the stainless steel combustion chamber is not damaged by any welding or grinding work.

7.1 Thermal insulation and outer jacket panels



USER NOTE

When fitting the thermal insulation jacket, make sure that the woven fabric is on the outside and the cutouts are at the rear.

- Slide the thermal insulation jacket underneath the boiler



RISK OF INJURY

due to burner door falling off when opened.

WARNING!

- Make sure that both hinge bolts (Fig. 3, **Item 1**) are inserted.

- Wrap thermal insulation jackets overlapping around the boiler and fix at the top with 5 spring clips (Fig. 4, **Item 1**). Ensure that both door hinge bolts are installed properly.
- Open burner door.
- Place lower thermal insulation pad (Fig. 4, **Item 2**) against boiler body front panel and fix to the thermal insulation jacket with 2 spring clips on each side.
- Place thermal insulation strip (Fig. 4, **Item 3**) around the cylindrical section of the boiler body at the top and fix to the lower insulation pad with 2 spring clips, one each side.
- Place top thermal insulation pad against front of boiler body (Fig. 4, **Item 4**).



USER NOTE

Take care to correctly position cutouts for door hinges and threaded hinges of the burner door.

- Close burner door and secure in position with hex-bolts.

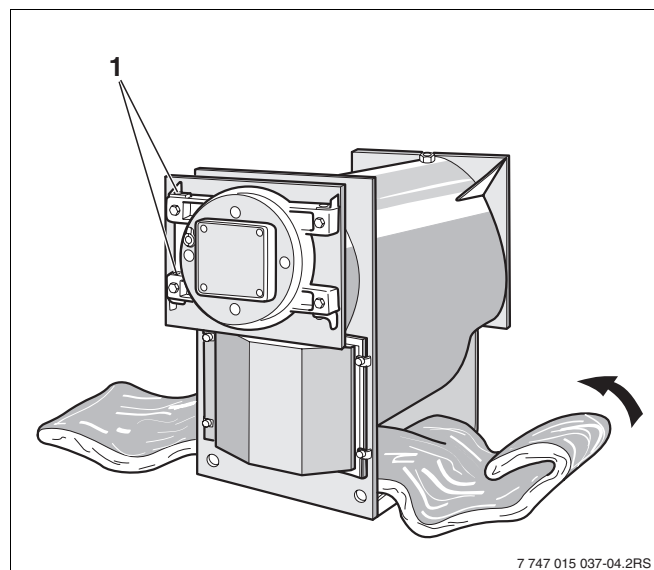


Fig. 3 Sliding the thermal insulation jacket underneath the boiler

Item 1: Hinge bolt

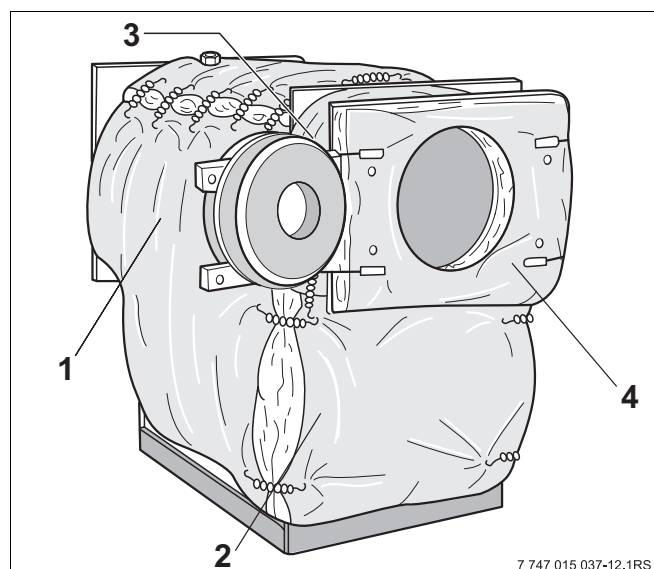


Fig. 4 Wrapping thermal insulation jacket around boiler and fixing

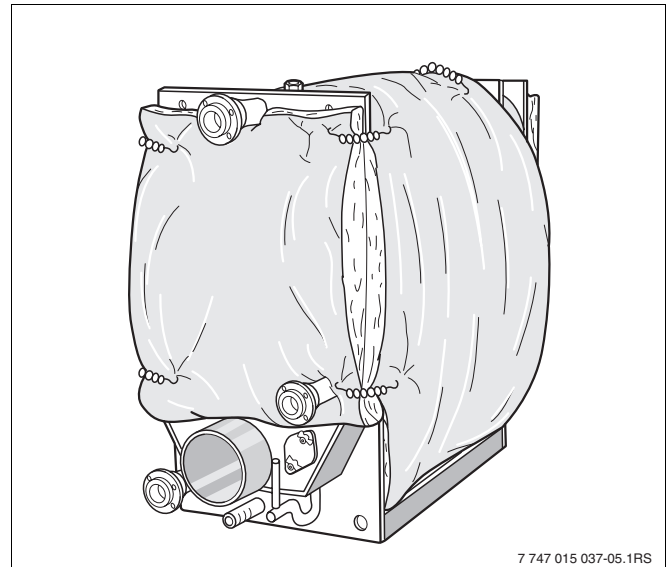
Item 1: Insulating boiler jacket

Item 2: Lower thermal insulation pad

Item 3: Thermal insulation strip

Item 4: Top thermal insulation pad

- Place rear thermal insulation panel against rear of boiler to fit over protrusions and fix to side thermal insulation jacket on both sides using 4 spring clips.



7 747 015 037-05.1RS

Fig. 5 Fixing rear thermal insulation

- Fit front cross-member (with trapezoid cutout facing down) so that the 2 holes match up with the bolts at the top and fix with nuts.
- Fit rear cross-member (with trapezoid cutout facing down) so that the 2 holes match up with the bolts at the top and fix with nuts.

**USER NOTE**

The edge flanges on the cross-members must face outwards and the front and rear cross members must be horizontal and level with each other.

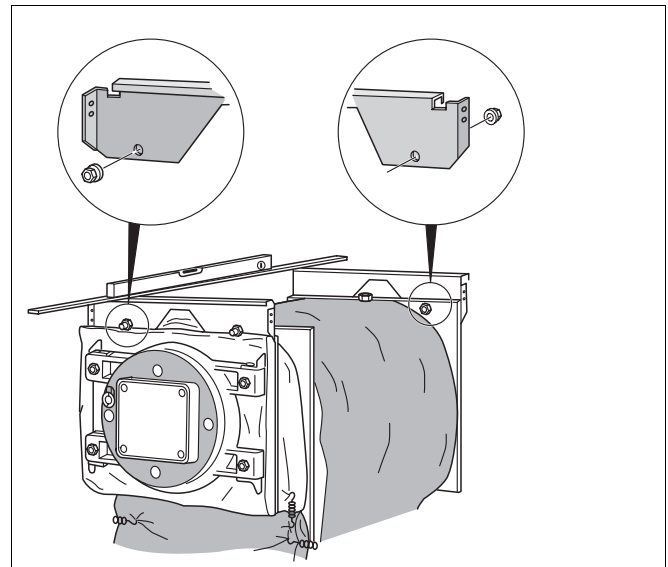
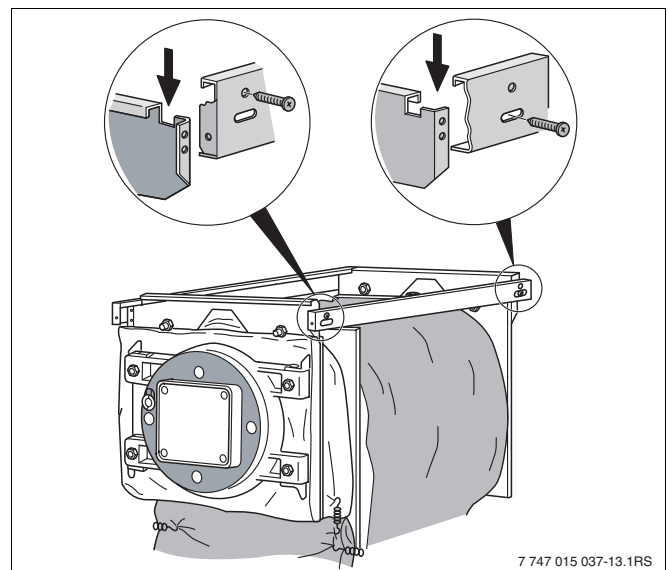


Fig. 6 Positioning and fixing front and rear cross-members

- Position the top flange of the side members in the cut-out in the front and rear cross-members. Fix with 2 self-tapping screws, placed through the hole at the front and the slot at the rear.



7 747 015 037-13.1RS

Fig. 7 Locating and fixing the side members

**USER NOTE**

The cutout in the flange of each side panel section must be in the center of the boiler.

- Insert side panels with the flange behind the boiler frame at the bottom and in the slot in the center.

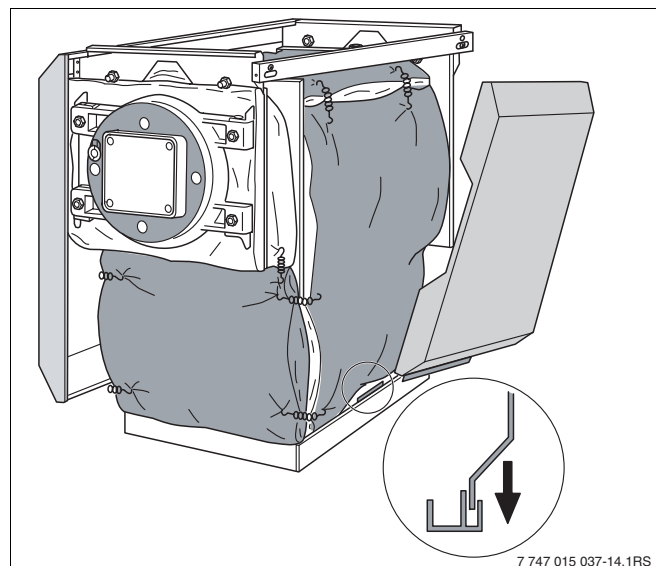


Fig. 8 Fitting side panels

- Lift side panels slightly and hook the top flanges over the side members.
- Push ends of thermal insulation jackets behind side panel flanges.
- Insert the two bosses of the cable strain relief for the burner cable into the holes in the left or right side panel flange.
- Cut burner cable to required length, place in cable strain relief, close tab and secure with 2 self-tapping screws.

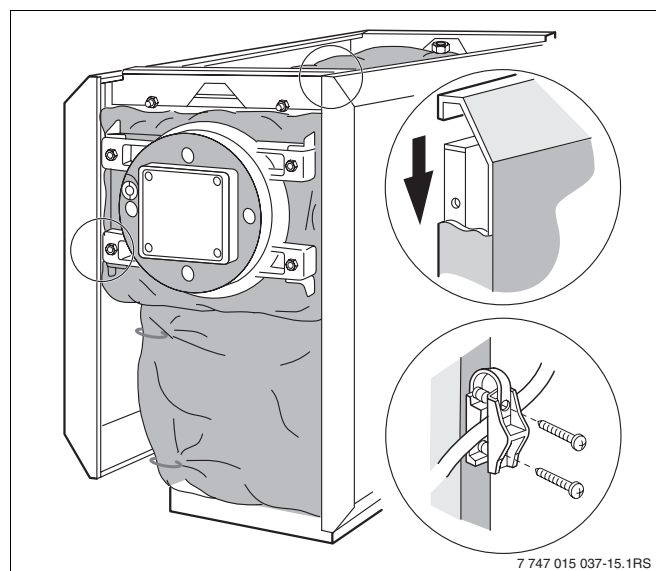


Fig. 9 Inserting side panels and attaching burner cable

**USER NOTE**

On the SB615/145 to 310 boilers, the rear panel consists of 2 sections (Fig. 10), whereas on the SB615/400 to 640 boilers use only one piece (Fig. 11).

- Screw lower rear panel section (on SB615/145 to 310 boilers) to the side panel flanges using 5 self-tapping screws.
- Locate Z-section edge of upper rear panel behind the lower rear panel, hold panel against side panel flanges and attach with 4 self-tapping screws.

**USER NOTE**

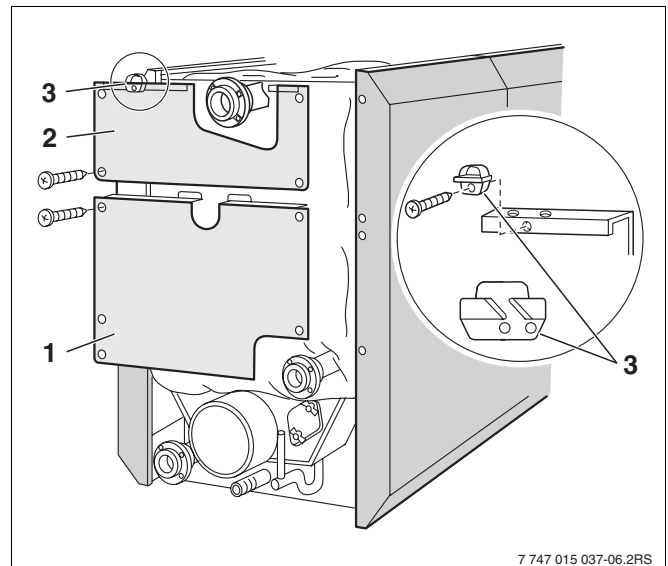
Screw top self-tapping screws into holes in cross-member.

- Screw 1 or 2 cable clips or cable guide to top section of rear panel (Fig. 10).
- Screw rear panel to side panel flanges using 4 self-tapping screws on each side (on SB615/400 to 640 boilers) (Fig. 11).

**USER NOTE**

Screw top self-tapping screws into holes in cross-member.

- Screw 1 or 2 cable clips or cable guide to top flanged edge.



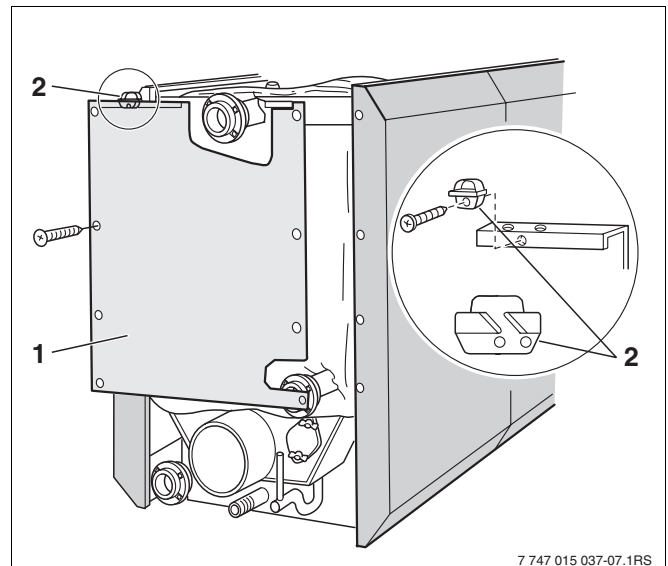
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Fig. 10 Screwing rear panel sections in place (boiler SB615/145 to 310)

Item 1: Lower rear panel

Item 2: Upper rear panel

Item 3: Cable clamp



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Fig. 11 Screwing rear panel in place (boiler SB615/400 to 640)

Item 1: Rear panel section

Item 2: Cable clip

- Place front boiler top panel on the side panel flanges and pull forward until the hooks match up with the slots on each side.
- Insert 2 self-tapping screws through the tabs on the front boiler top panel and the side panel flanges and screw to the side members.

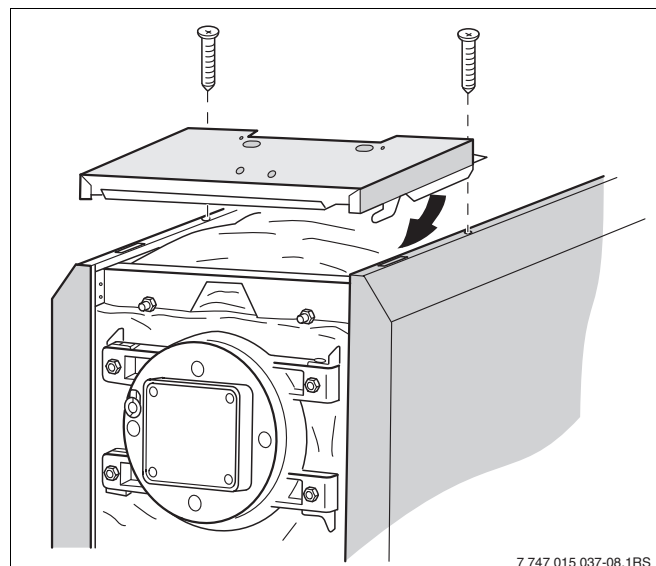


Fig. 12 Positioning and fixing front boiler top panel

7.2 Mounting and wiring the Logamatic controls



WARNING!

Danger: Risk of fatal injury from electric shock!

- Electrical work may only be carried out by properly qualified technicians.
- Before opening any electrical equipment, isolate it from the power supply and take steps to ensure the equipment can not be switched on again unintentionally.
- Observe the local regulations.

The controls is mounted on top of the boiler and held in place by 4 tabs and 2 screws.

- Unscrew the two self-tapping screws (Fig. 13, **Item 1**) from the top of the terminal cover plate and remove cover plate.
- Feed capillary tubes through the cable entry and unroll to required length to reach the boiler well.
- Fit controls in position by locating the front catches in the oval slots, pulling the controller forward and then tipping backward until the flexible catches on each side snap into place (see arrows in Fig. 13).
- Secure the controls to the boiler using the two screws (Fig. 13, **Item 3**).

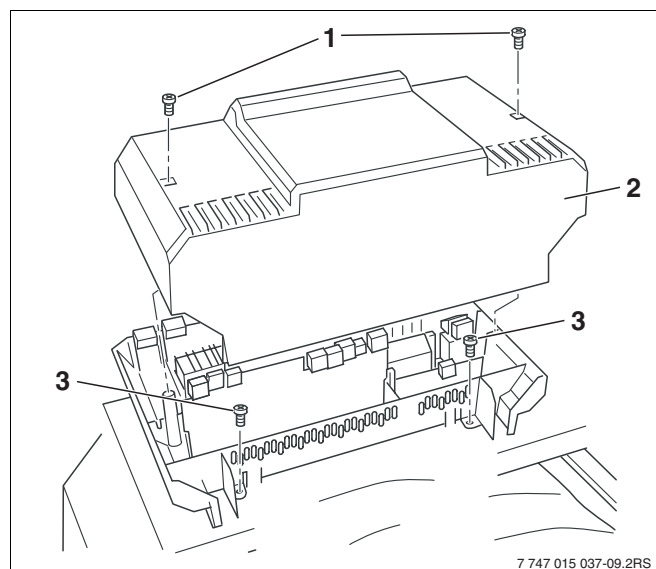


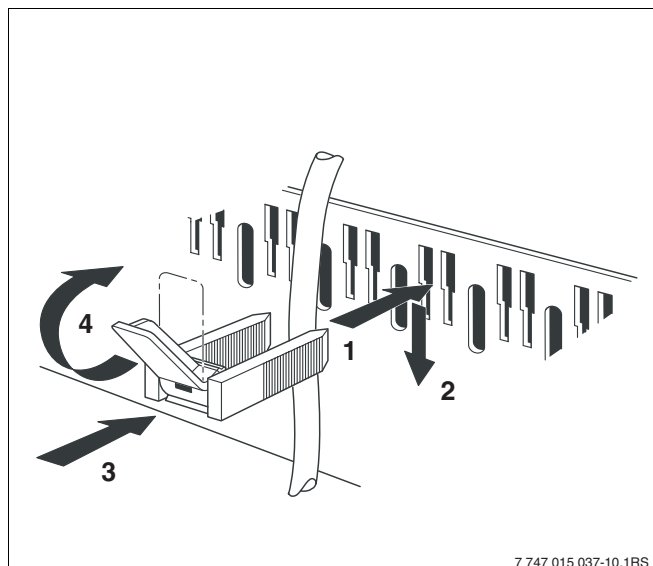
Fig. 13 Fitting the Logamatic controls

Item 1: Self-tapping screws

Item 2: Top cover

Item 3: Screws

- Wire up the electrical connections as shown in the wiring diagram enclosed with the controls.
- Use the plastic clips (Fig. 14, **Item 1**) to fix the cable. They provide strain relief on the cables.
- Fit cover plate to controller and secure with the two screws (Fig. 13, **Item 1**).



7 747 015 037-10.1RS

Fig. 14 Cable strain relief

Item 1: Plastic clip**Item 2:** Rear panel**USER NOTE**

Take care to ensure correct cable and capillary tube routing. Do not kink capillary.

Observe the local regulations.

- Route capillary tubes with temperature sensors to boiler well, insert and push fully home.

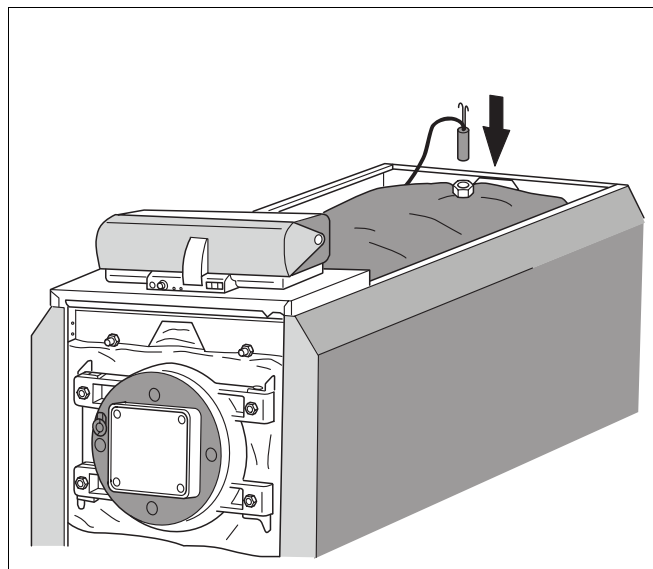


Fig. 15 Inserting temperature sensor in boiler well

- The plastic coil (Fig. 16, **Item 2**) for holding together the temperature sensor is pushed back automatically when it is inserted.



USER NOTE

To ensure good contact between the well (Fig. 16, **Item 4**) and the sensor surfaces and thus establish reliable heat transfer, the wavy spring (Fig. 16, **Item 1**) must be placed between the temperature sensors.

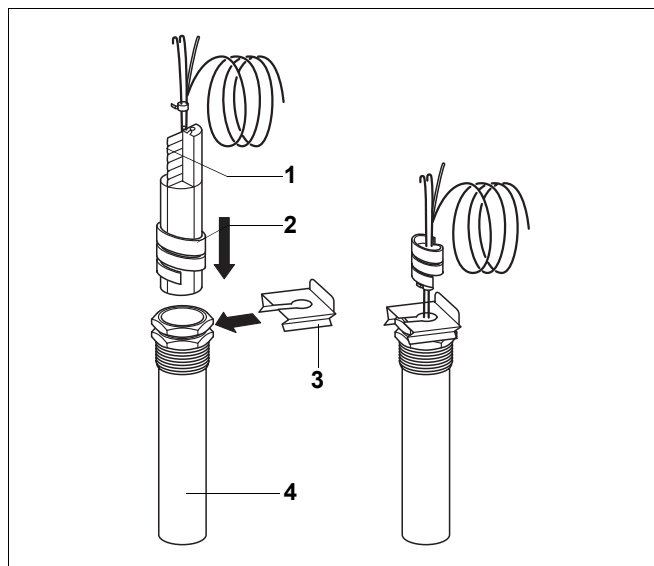


Fig. 16 Inserting plastic coil in immersion sleeve

- Item 1:** Balancing spring
- Item 2:** Plastic coil
- Item 3:** Sensor retaining clip
- Item 4:** Well

7.3 Burner door and burner

The burner door can be hung on either side.



USER NOTE

To reverse the door swing, bolt the burner door shut and swap the hinges.

- Push the hinge bolts out of the hinges from underneath (Fig. 17, **Item 1**).
- Refit the washer and the two hinge pins on the other side (Fig. 17, **Item 2**). Remember the washer!

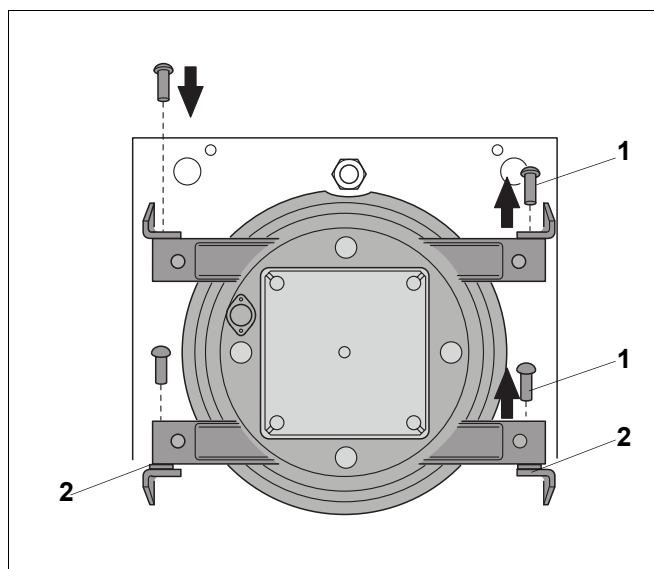


Fig. 17 Reversing the door hinges

- Item 1:** Hinge bolt
- Item 2:** Washer

**USER NOTE**

Follow the burner manufacturer's instructions when fitting the burner.

The appropriate burner plate must be used/modified according to the make/model of the burner.

The gap between the burner tube and the thermal insulation must be sealed by the installer (Fig. 18).

Refractory is supplied with the boiler. It must be cut to the right size to fit.

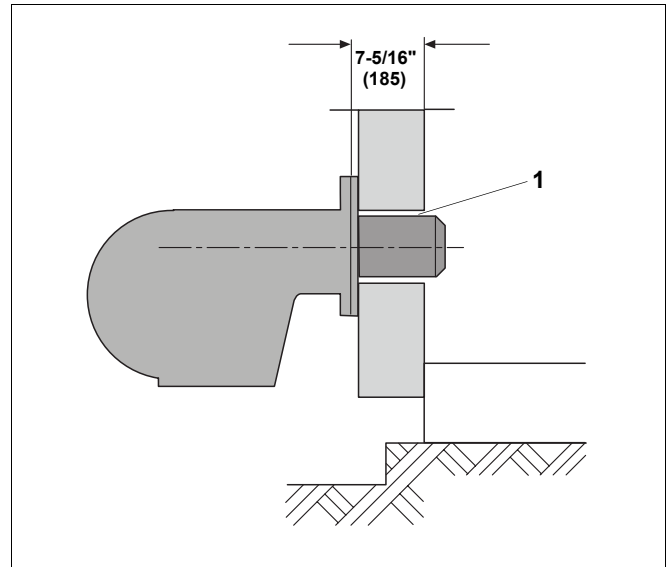


Fig. 18 Sealing the gap between burner and insulation. Refractory may have to be cut to size depending on burner make and model.

Item 1: Gap between burner tube and insulation

7.4 Boiler jacket

**USER NOTE**

On the SB615/400 and larger boilers, the second top panel section has a cutout (Fig. 19, **Item 1**); the rear sections are identical and are positioned with the flanged edge to the front.

SB615/145 to 400 boilers

4 top panel sections

SB615/510 to 640 boilers

5 top panel sections

- Position top panel sections loosely on side panels at each side.

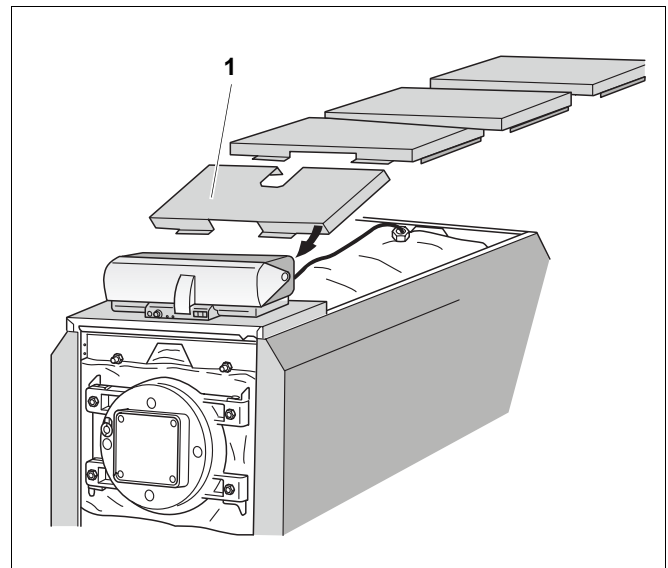


Fig. 19 Fitting boiler top panel sections – general principle

Item 1: Cutout on SB615/400 and up.

- From underneath, locate the vertical tabs on the bottom cross-member in the slots at the front of the side panel flanges and fix the cross-member to the front of the boiler body with the 2 self-tapping screws.

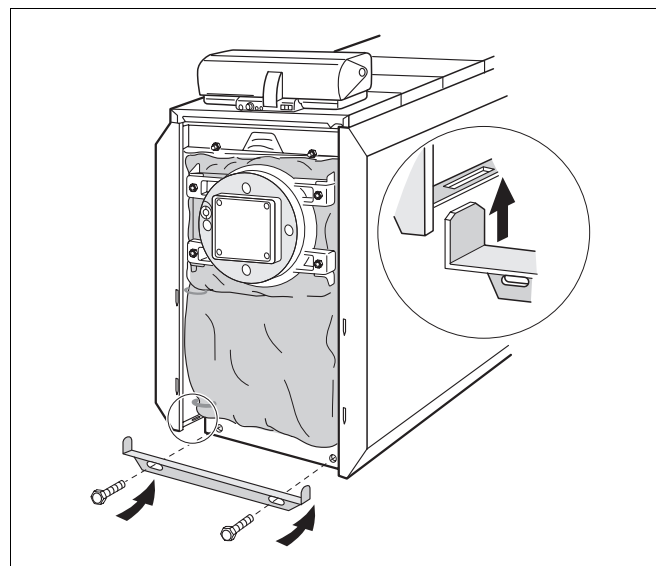


Fig. 20 Fixing the bottom cross-member

- Locate 4 vertical hooks (Fig. 21, **Item 1**) on lower front panel in the slots in the side panel flanges.
- Locate the rail on the front top panel and lower the top edge of the top front panel down onto the rail (Fig. 21, **Item 2**).
- Position hooks (Fig. 21, **Item 3**) on top and bottom fascia panels into the front panels.
- Fix appliance insignia plate (Fig. 21, **Item 4**) to front panel.

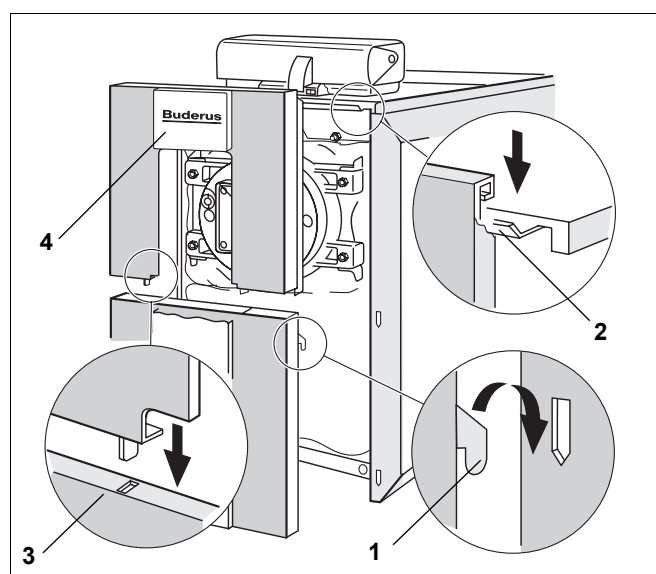


Fig. 21 Fixing upper and lower front panel sections

Item 1: Hook

Item 2: Top rail to support upper front panel

Item 3: Hooks on top and bottom fascia panels

Item 4: Appliance insignia plate

7.5 Nameplate

- Attach paper rating plate (Fig. 22, **Item 1**) to left or right side panel according to boiler room situation.



NOTICE:

The metal boiler plate is attached to the steel boiler vessel behind the left front jacket panel.

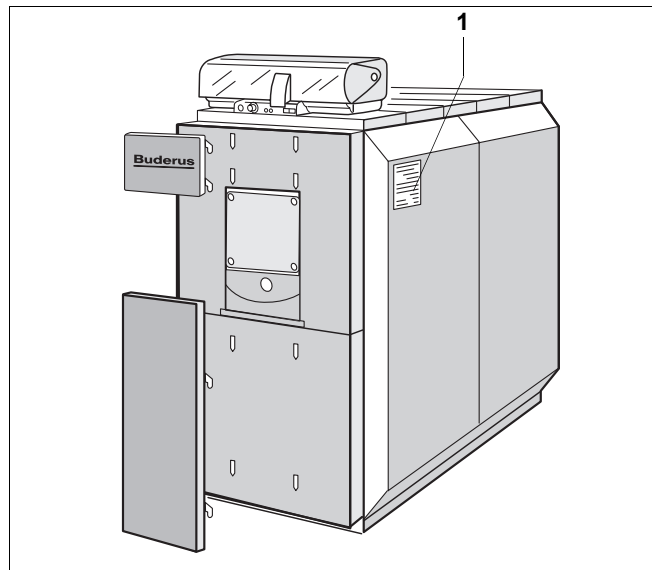


Fig. 22 Attach paper rating plate

Item 1: Rating plate

7.6 Flue systems

- The flue gases produced must be transported to the outside via flue pipes and chimney flues.
- Building code approved, moisture and condensate resistant flue pipes and chimney flues must be used.
- Before commissioning the heating system, check that the flue system used is suitable for the boiler.
- Follow guidelines in planning instructions.
- Check the flue connection for leaks.
- Follow the installation instructions of the flue system manufacturer.

SB boiler combustion air supply requirements

The SB boiler is a Category II or IV appliance and the flue system components must be approved for use with UL Category IV appliances: operating temperatures up to 239°F (115 °C), positive pressure, condensation-resistant. At present, UL-listed flue systems made of AL29-4C or 316L stainless steel must be used with SB boilers. Use only fuels permitted under UL approval. Consult vent system manufacturer for further information.

UL, NFPA 211 and NFPA 54 (National Flue Gas Code ANSI Z223.1) guidelines are often the basis for national and local regulations. You must follow the guidelines in this manual unless local rules and regulations are stricter. In that case follow those. The flue and air supply systems must comply with all applicable requirements.

Code requirements for flue systems

Horizontal flues

- The flue terminal should be at least 48" (1200 mm) below, 12" (300 mm) above or 48" (1200 mm) to the side of any window, door or ventilation device.
- The flue terminal should be at least 36" (1000 mm) from any other openings, gas meters, servicing equipment or the like.
- The flue terminal must be at least 12" (300 mm) above the high snow mark.
- Flue outlets must not be installed over public footways or areas where condensation or steam would be a nuisance or where they would affect the operation of controls, gas meters or other equipment.
- Flue gas should not be discharged directly into areas sheltered from the wind, corners or directly behind trees or bushes.

Vertical flues

- Roof penetrations should follow all applicable codes and the vent manufacturer's instructions. The vent should never be installed at less than the required clearances to combustible materials per UL, NFPA, and local codes. "Double-wall or thimble" assemblies are required when penetrating combustible walls and roofs.
- Vertical discharges should extend at least 2 feet (60 cm) above the roof through properly flashed penetrations and at least 2 feet (60 cm) above anything within a 10 foot (3 m) horizontal diameter. Discharges that extend more than 2 feet (60 cm) above the roof must be laterally supported.
- If the vent system is to be connected to an existing stack, the stack must be UL Listed for Category II or IV appliances (capable of 240 °F, positive pressure and condensing flue gas operation).
- Masonry stacks must be lined and the vent penetration must terminate flush with and be sealed to this liner. Vents may enter the stack through the bottom or side.
- SB Boilers vent systems must not be interconnected to any other venting system; The SB Boiler is designed to maintain its own vent system.
- The flue pipe must slope upwards towards the end pipe at least 1/4" (6 mm) per foot (30 cm). The condensate must be able to run back to the SB boiler without obstruction and without collecting in the flue pipe.

Air supply for combustion from outside the building

If the combustion air supply is brought in from outside, the room should have two permanent air vents to the outside. Each vent should have a clear aperture of at least 30 in² per 10,000 BTU/hr (80 cm² per 1.2 kW) of maximum rated output of all combustion devices in the boiler room.

If the air is supplied via air ducts, two ducts must be used. Vertical ducts and openings must have a clear aperture of at least 2.5 in² per 10,000 BTU/hr (6 cm² per 1.2 kW) of maximum rated output of all combustion devices in the boiler room. Horizontal ducts and openings must have a clear aperture of at least 1-1/4" per 10,000 BTU/hr (6 cm² per 0.6 kW) of maximum rated output of all combustion devices in the boiler room.

When calculating the clear aperture of the vents, restrictions due to screens and guards must be taken into account. The advice of the air screen manufacturer should be sought with regard to the percentage of net air space. If the net air space is not known, the following figures can be taken as a general guide: metal air screens have a net air space of approx. 60-70% and wooden air screens approx. 20-25%. Air screens should be permanently fixed or linked to an opening device so that they automatically open when the system is started up. The air supply vents should be arranged as follows: the upper opening should be within 9' (300 cm) of the ceiling and the lower opening within 9' (300 cm) of the floor as specified in NFPA 54.

Air supply for combustion from adjacent room

Where the air supply for combustion is drawn from within the building, the air in the boiler room must be supplied by two vents from inside the building. Each vent must have a clear aperture of at least 1-1/4" per 10,000 BTU/hr (6 cm² per 0.6 kW) of maximum rated output of all combustion devices in the boiler room. The air supply vents should be arranged as follows: the upper opening should be 9' (within 300 cm) of the ceiling and the lower opening 9' (within 300 cm) of the floor as specified in NFPA 54.

Flue systems

The flue system is designed as a positive pressure system. The minimum diameter of the flue pipe is 6" (150 mm). Horizontal flues must be supported at least every 6 feet (160 cm) by wall brackets and vertical flues must be supported along their horizontal runs to prevent heavy stresses in those places.



WARNING

Use only approved flue pipe connections and flue pipes made by the same manufacturer for Buderus SB boilers. Never mix components from different systems. Doing so could cause the flue system to fail resulting in the escape of flue gases leading to injury or even death.

Permissible flue pipe lengths for SB615 boiler

Maximum height of flue pipe for SB615 boiler (in feet)							
Model	Diameter	150	150	180	200	250	300
145	6"	30	124	144	165		
185	6"		60	132	165		
240	8"			120	165		
310	8"			27	132	165	
400	10"				14	165	174
510	12"					165	174
640	12"					75	174

Tab. 5 Maximum height of flue pipe



USER NOTE

All lengths quoted are for horizontal and vertical flues and an angle of 87° for condensate to flow back to the boiler. For every additional 45° the length of the flue pipe reduces by 4' (1200 mm) (1.2 m) and by 6' (2000mm) (2.0 m) for every additional 87°.

The flue system operates at a pressure of 0.06" W.C. (15 Pa).

Condensate drainage



NOTICE:

Condensate has to be disposed off according to local regulations. Condensate neutralization may be required.

- Ensure that untreated condensate is only passing through hoses and pipening suitable for very low pH-levels.
- If the building is connected to a municipal sewage system, observe the rules and regulations for disposal into the system.
- If the building is connected to a septic system, a neutralizer is recommended to avoid damage to the system.

The flue system must be supported at least once every 3' (1,000 mm). This allows the condensate to run back to the boiler. Low points in the flue system where condensate could collect must be avoided. The condensate can be drained off using a plastic hose or PVC drain pipe. The condensate drain should be installed in such a way that kinking of the drain hose is not possible. The condensate neutralizer must be installed below the level of the drain. If there is no floor drain and the condensate has to be pumped away, run it through the neutralizer on gravity first, then collected in a container and pumped away.

7.7 Neutralizer unit

For details of installing and servicing the neutralizer unit (special-order option), please refer to the separate installation instructions (supplied with neutralizer unit).

- Attach drain hose to condensate outlet (trap) (Fig. 23, **Item 2**) using hose clamp.

7.8 Water connections

- The supply manifold must be fitted to the boiler flow connection.
- The safety valve is fitted to the supply manifold and the blow-off pipe fitted next to the condensate outlet.
- The temperature and pressure gauges are fitted to the 1/2" connection on the supply manifold.
- All unused connections on the flow header must be capped.
- With reference to Section 7.2 the connection M (Fig. 15, page 16) must be sealed off with a 3/4" cap if no controller is used.



USER NOTE

The return connection RK1 (Fig. 1, page 6) must **always** be used. The heating circuit with the lowest temperature must be connected to RK1. Circuits running at higher temperatures should be connected to return connection RK2.

If the second return connection RK2 is **not** used, it is imperative that it is capped.

- Check all connections for leaks.



USER NOTE

The vent pipes must be installed in a way that the condensate can freely drain from the flue pipe into the boiler.

If that is not possible, install drain-tees in the vent pipe to drain away the condensate. Use only stainless steel or plastic parts.

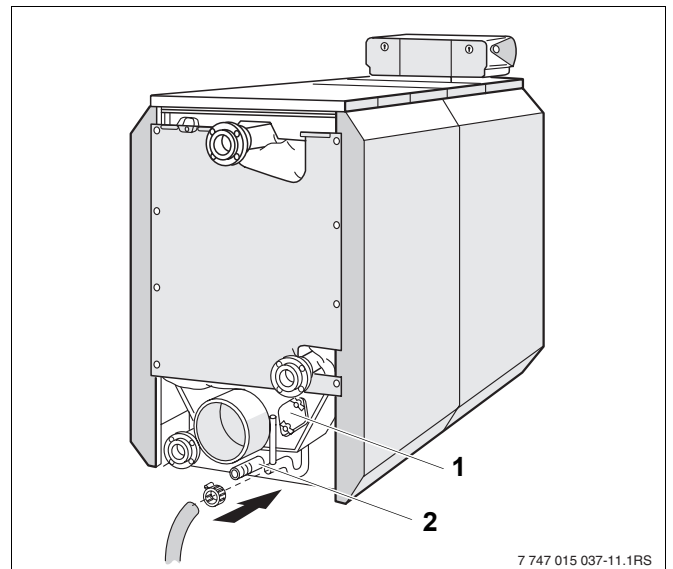


Fig. 23 Installing neutralizer unit

Item 1: Cleaning access cover

Item 2: Condensate outlet

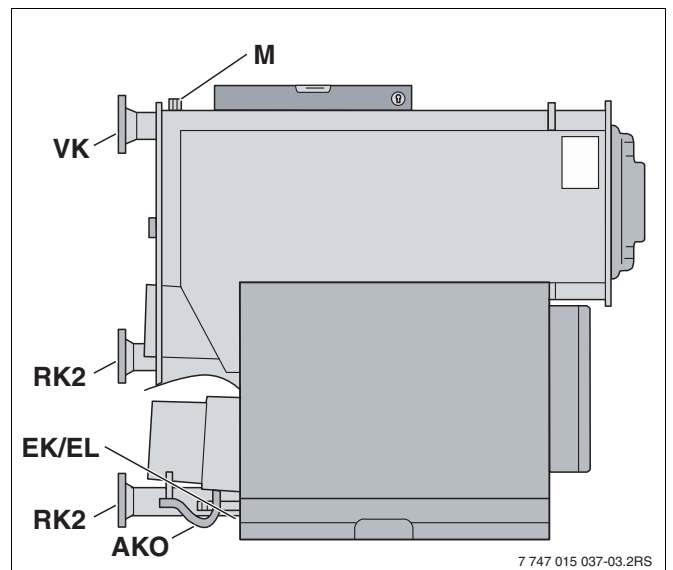


Fig. 24 Legend see Tab. 2, page 8

8 Commissioning



RISK OF FATAL INJURY

from escaping flue gases.

WARNING!

- Before commissioning the boiler or the neutralizer unit, pour approx. 3 gal (10 liters) of water into the boiler cleaning access port or combustion chamber so as to fill the neutralizer unit and prevent escaping of flue gases through the boiler condensate trap.



RISK OF BOILER DAMAGE

from corrosion and sludge.

CAUTION!

- Before filling, is essential to flush the entire heating system. In order to prevent sludge and corrosion, the quality of the first-fill and replenishment water must be tested (refer to supplementary sheet "Water treatment...").



USER NOTE

Follow the installation instructions for the neutralizer unit.

Commissioning should be carried out according to the operating instructions for the boiler, the burner and the electronic heating system controls.

When commissioning the system and handing it over to the operator, explain how the system works and how to operate it, and hand over all technical documentation.

Draw attention to special servicing considerations and recommend that a maintenance contract is signed.

9 Servicing

9.1 General information



RISK OF FATAL INJURY

from incorrect servicing.

WARNING!

- Any servicing work on gas-carrying components may only be carried out by a certified gas installer.



USER NOTE

The operator is required to have the heating system regularly serviced and cleaned. The entire heating system including the neutralizer unit should be serviced once a year.

We recommend that a maintenance contract is signed.

The servicing work carried out should be recorded on the checklist (see section 9.3 "Checklist").

Burner servicing should be carried out in accordance with the instructions of the burner manufacturer.

9.2 Cleaning the boiler



WARNING!

RISK OF FATAL INJURY

from touching components carrying live electrical current.

- Always isolate the system from the electrical power supply before carrying out any servicing work.
- Prior to opening the control: shut down the power supply by turning off the emergency shut-off switch or disengaging the heating system circuit breaker, and prevent from accidental reactivation.



CAUTION!

RISK OF BOILER DAMAGE

from use of incorrect cleaning equipment.

- Only Buderus cleaning equipment may be used for cleaning.



USER NOTE

For wet cleaning, the use of a high-pressure washer is recommended.

Cleaning residues must not be discharged via the neutralizer unit.

The condensate outlet (Fig. 23, page 23) must not be allowed to clog up when cleaning the boiler.

- Inspect and, if required, clean the combustion chamber and condensate drain via the cleaning access port (Fig. 23, page 23).
- Remove upper and lower front panels (Fig. 24).
- Remove thermal insulation (Fig. 24).
- Undo nuts from angle brackets, twist angle brackets clear and remove baffle plate (Fig. 26).
- Unscrew hex-bolts from boiler door and open boiler door (Fig. 26).
- Clean the combustion chamber and heat exchanger surfaces.
- Brush out the secondary heat exchange pipes (Fig. 27).

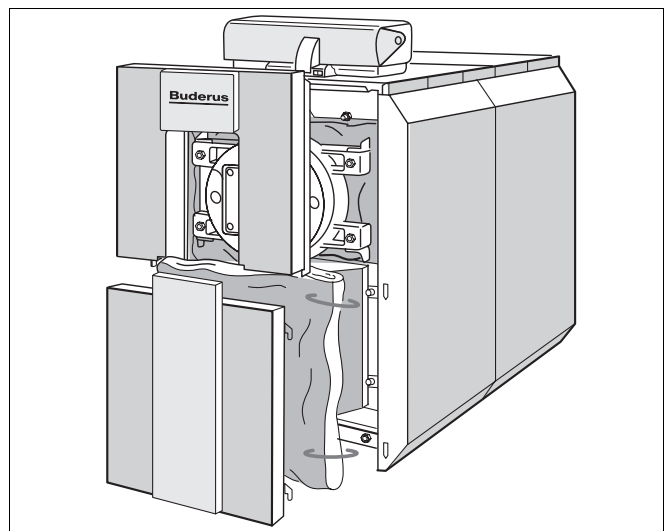


Fig. 25 Removing front panels and thermal insulation pads



USER NOTE

When cleaning the secondary heat exchange pipes, the entire bristle part of the brush must go right through the pipe and out the back before the brush is pulled back again.

- Remove any cleaning residues with a vacuum cleaner.
- Check seals on boiler door and baffle plate and renew if necessary.

If spray-cleaning, follow the instructions of the cleaning appliance.

No spray mist must be allowed to enter the controller.

- Close burner door and screw down with bolts.
 - Place baffle plate in position and fix and seal with angle brackets (Fig. 26). Ensure it is tight all around.
 - Attach thermal insulation with clips.
 - Refit lower and upper front panels (Fig. 24).
-
- Start up the system.

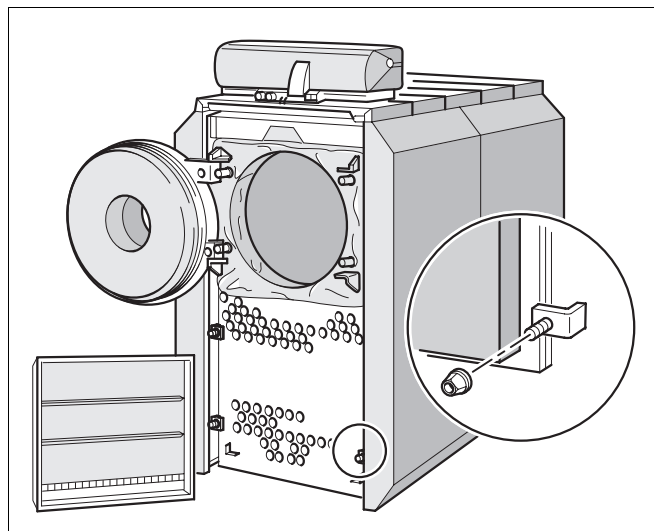


Fig. 26 Removing the baffle plate and opening the boiler door

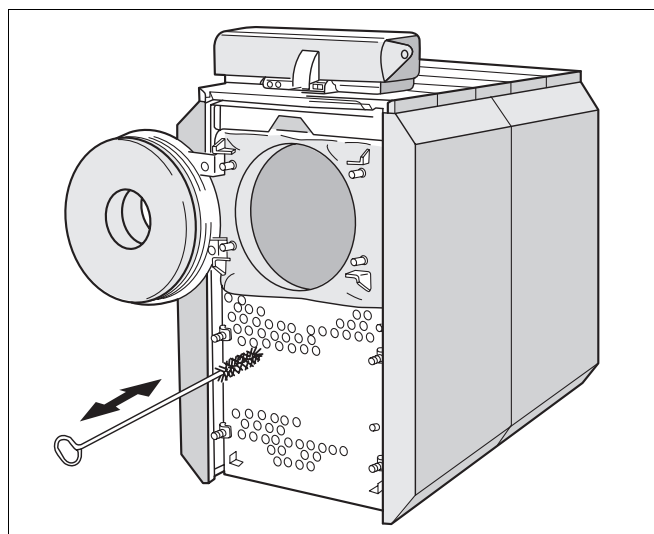


Fig. 27 Brushing out the secondary heat exchange pipes

9.3 Checklist

- Servicing work carried out must be marked with an "X" in the appropriate column and confirmed by signing and dating the box underneath with the matching number.
- Servicing work on the burner and boiler must be carried out in accordance with the relevant servicing instructions.

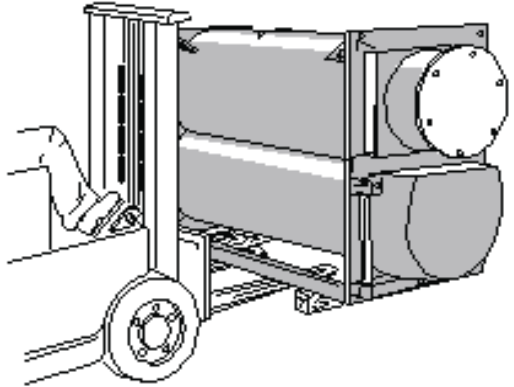
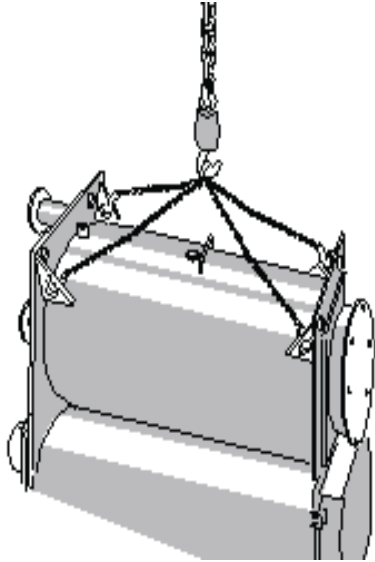
Heating system		01	02	03	04	05	06	07	08
1	Isolate heating system from power supply								
2	Close main gas isolating valve								
3	Disconnect gas pipe from burner								
4	Remove front boiler panels, open burner door (Fig. 24, page 23)								
5	Remove baffle plate (Fig. 26, page 27)								
6	Unscrew neutralizer drain hose (condensate outlet) (Fig. 23, page 23)								
7	Inspect/clean combustion chamber								
8	Inspect/clean secondary heat exchange pipes								
9	Flush out condensate outlet (trap) (Fig. 23, page 23)								
10	Inspect/clean flue box								
11	Inspect/replace boiler door seal								
12	Inspect/replace silicon seal on baffle plate								
13	Screw drain hose back onto condensate outlet								
14	Refit and secure baffle plate, refit outer casing panels								
15	Pour water approx. 3 gal (10 liters) into heat exchanger through combustion chamber								
16	Close burner door and screw down with bolts								
17	Reconnect gas pipe to burner								
18	Check gas-carrying components for leaks								
19	Check flue pipe for leaks								
20	Check function of safety devices								
21	Check function of control devices								
22	Start up heating system according to operating instructions								
23									
24									

For details of servicing the neutralizer unit, refer to the separate instructions (supplied with neutralizer unit)

Authorized installer 01	Authorized installer 02	Authorized installer 03	Authorized installer 04
Date:	Date:	Date:	Date:
Authorized installer 05	Authorized installer 06	Authorized installer 07	Authorized installer 08
Date:	Date:	Date:	Date:

9.4 Transport Note for Logano SB615

Please read carefully prior to moving the SB615 boiler

		Weight							
Series	Logano plus SB615								
Model		145	185	240	310	400	510	640	
Weight	Lbs	1709	1725	1866	1914	2156	2844	2900	
		<p>The boiler body can be moved with a fork lift by placing the forks under the boiler supporting framework.</p>							
		<p>For lifting using a rigging crane, use only the lifting provisions supplied near the front and rear of the boiler.</p> <p>When lifting the boiler using chains, make sure that at least two chains are load-bearing. Lift up very carefully.</p> <p>Maintain less than a 45 degree angle with the vertical when lifting the boiler with chains or cables.</p>							
		<p>The rigging crane must be operated by trained personnel.</p>							
		<p>Make sure to secure the boiler body to the truck floor using straps.</p>							

United States

Bosch Thermotechnology Corp.
50 Wentworth Avenue
Londonderry, NH 03053
Tel. 603-552-1100
Fax 603-584-1681
www.buderus.net

Products manufactured by
Bosch Thermotechnik GmbH
Sophienstrasse 30-32
D-35576 Wetzlar
www.buderus.de

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