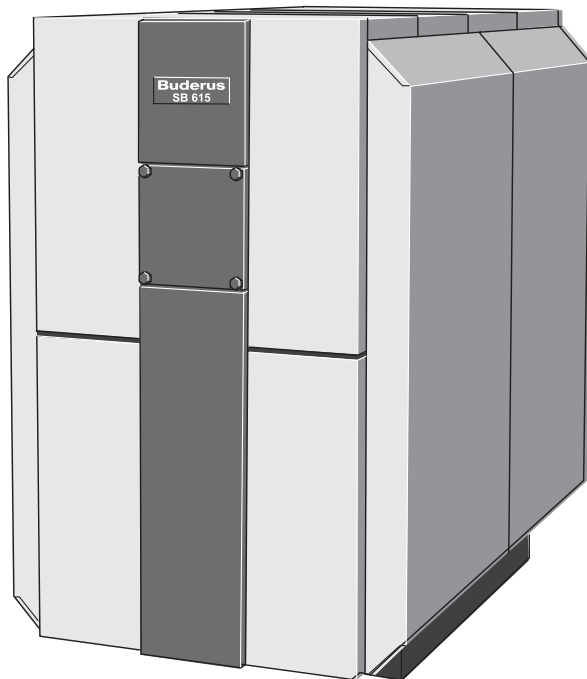


Boiler Installation and Maintenance Manual

Condensing Gas Boiler SB615 Series



Buderus



This equipment conforms to the following European and US requirements:

- 90/396/EWG European gas fired guidelines
- Standards: EN 677, EN 303-1, EN 303-3, DIN 4702-6
- 92/42/EWG European efficiency guidelines
- 73/23/EWG European low voltage guidelines
- 89/336/EWG EMV-European electro-mechanical code guidelines
- 97/23/EG European Pressure vessel guidelines
- ASME Boiler Pressure Code

Conformation regarding conformity with respect to these guidelines can be obtained upon request from Buderus Hydronic Systems.

Technical Changes!

Buderus Hydronic Systems, Inc. reserves the right to make changes due to continued technological and engineering improvements.

Updating Technical Information

Please contact us if you have suggestions for improving this manual or when you have noticed incorrect information.

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TABLE OF CONTENTS

1	Regulations and Guidelines4
2	Packaging and Components5
3	Technical Data, Dimensions and Water Connections6
4	Boiler Installation8
5	Boiler Assembly9
5.1	Installation of Insulation and Jacket Panels9
5.2	Installation and Wiring of Logamatic Controls (optional)	13
5.3	Burner Door and Burner Installation	15
5.4	Additional Jacket Panel Installation	16
5.5	Rating Label	18
5.6	Venting System	18
5.7	Condensate Neutralization System and Water Connection Installation	22
6	Placing the Boiler in Operation23
7	Maintenance24
7.1	General information24
7.2	Cleaning of the boiler24
7.3	Check List26

1 Regulations and Guidelines

The installation must conform to the requirements of the authority having jurisdiction or, in absence of such requirements, to the latest edition of the National Fuel Code, ANSI Z223.1.



WARNING!

DANGER

Explosion danger due to the presence of gas.

- Only a qualified installing contractor may carry out the installation, the initial start-up, the electrical work, maintenance and gas connections.
- Any work on gas components must be carried out by a qualified gas service technician.

The Buderus SB615 boiler is a condensing boiler suitable for firing with natural gas or propane only.

The installation of a low water cut-off and pressure relief valve must be based on local code requirements. Please install these components per manufacturer's instructions and per details on page 22.

Hydrostatic Test

- To avoid build-up of debris inside the heat exchanger of the boiler, it is recommended to install a filter on the boiler return connection(s).



NOTICE

Observe the listed boiler output ratings as shown on the boiler rating plate.

Maximum Temperature and Pressure Ratings

Maximum Temperature and Pressure Ratings		
Maximum Supply Temperature:		210 °F
Allowed System Pressure (Models)	145 and 185	36 psi
	240 and 310	36 psi
	400, 510 and 640	36 psi
Maximum Time constant:		
- Manual Reset High Limit		40 sec
- Adjustable High Limit		40 sec

Table. 1 Maximum Temperature and Pressure Ratings

Permissible Fuels:

Logano plus SB615: Natural Gas or L.P
Please observe the guidelines of the gas supply company!

2 Packaging and Components

The complete product is shipped in the following components:

- Boiler vessel, packaged on a pallet
- Supply manifold, relief valve and temperature/pressure gauge
- Technical documentation, secured to the boiler
- Spare gasket, secured to the boiler
- Boiler jacket panels, insulation and installation components, packaged in a wooden crate
- Electronic control panel, in cardboard box (optional)
- Condensate neutralization package (in cardboard box) (optional)
- Hydronic control package, consisting of aquastats and low water cut-off (when ordered from Buderus)

Above mentioned components may differ slightly based on the particular boiler model.

3 Technical Data, Dimensions and Water Connections

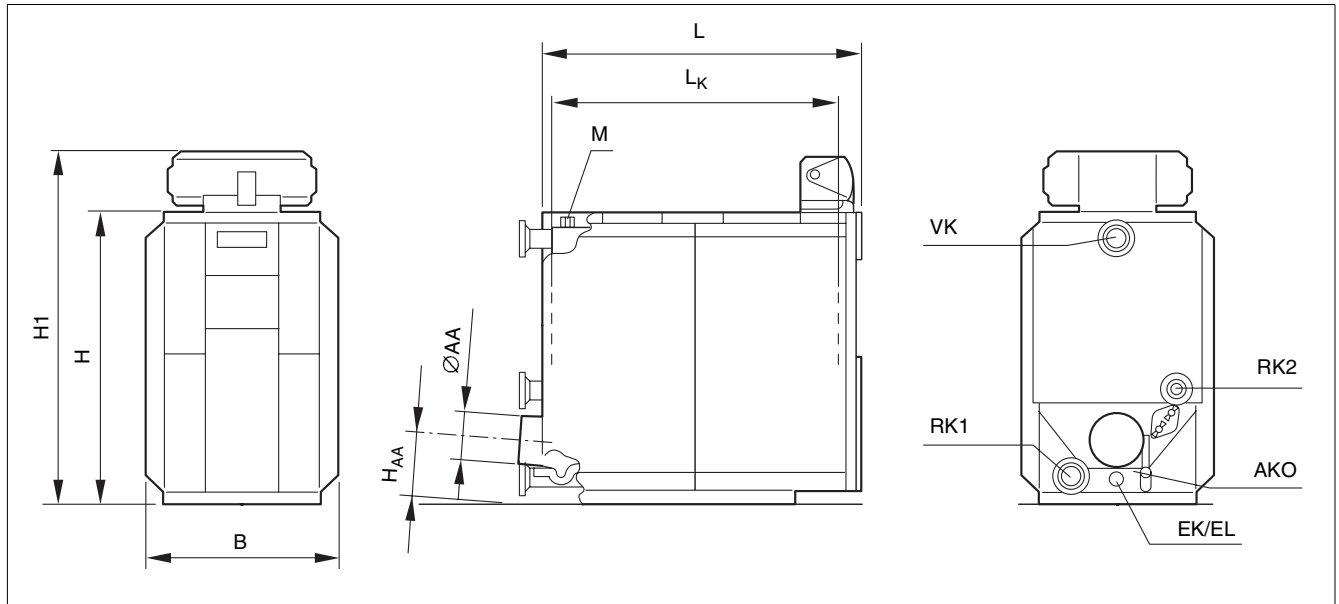


Fig. 1 Technical Data, Dimensions and Water Connections

Legend Fig. 1	
ØAA	Vent Pipe Diameter (inside)
AKO	Condensate Drain
EK/EL	Water Feed/Boiler Drain
H	Boiler Height (without Control)
H ₁	Boiler Height with Control Regelgerät Logamatic R2107 = H + 6 inch
H _{AA}	Centerline Height of Vent Connection
RK1	Low Temperature Return Connection
RK2	Higher Temperature Return Connection (optional use)
VK	Boiler Supply Connection
M	Sensing Port for Temperature Sensor of Logamatic control
L	Boiler Length with Jacket
LK	Boiler Block Length
B	Boiler Width with Jacket

Boiler Model		Unit	145	185	240	310	400	510	640
Input		[MBH]	506	644	835	1080	1393	1776	2228
Output		[MBH]	484	612	791	1022	1317	1678	2104
IBR Net		[MBH]	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	61	66 ¹ / ₄		
Height	H	[inch]	54 ¹ / ₄	55 ¹ / ₂	63 ¹ / ₂	63 ¹ / ₂	69 ³ / ₄		
Width	B	[inch]	35 ¹ / ₂	38 ¹ / ₄	38 ¹ / ₄	43 ¹ / ₄			
Vent Pipe Diameter (inner) ØAA		[inch]	6	8	10	12			
Vent Conn. Height	H _{AA}	[inch]	11 ³ / ₄	12	13	14 ¹ / ₂			
Weight		[Lbs]	1690	1700	1950	2030	2600	2970	3020
Boiler Supply Conn.	VK	Inch	2 ¹ / ₂	3	4	4			
1. Boiler Return	RK1								
2. Boiler Return	RK2	Inch	2	2 ¹ / ₂	2 ¹ / ₂	3			
Stack Temperature	[°F] ¹		104	104	115	115	108	111	111
	[°F] ²		151	151	160	160	155	156	160
Available Breeching Pressure	[Inch WC]	dependent on burner							
Fireside Pressure Drop	[Inch WC]		.47	.61	.87	.95	1.18	1.40	1.73

Table 2 Technical Data


NOTE

SB615/145 and SB615/185 models are standard supplied with a 7" to 6" Heat Fab stainless steel vent reducer.

Other models require the use of an approved vent starter coupling.

4 Boiler Installation

It is required to have a floor drain available near the boiler.

It is recommended to place the boiler on solid foundation of 2" to 4" height. Use dimension B and L (Table 3) to size this foundation.

The supporting floor must be level and of sufficient strength.

Observe the indicated side clearances when placing the boiler (Fig. 2 and Table 3). Dimensions in brackets show minimum clearances to combustibles.

Place the boiler horizontally on the supporting foundation (Fig. 3).

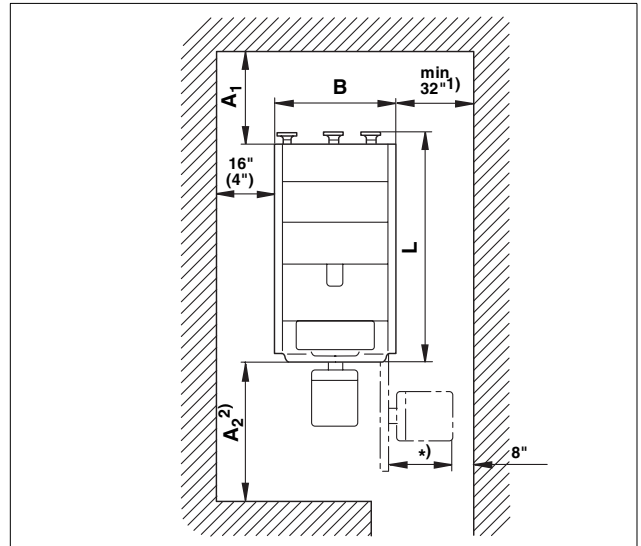


Fig. 2 Clearance Dimensions (see Table 3 for details)
*) Note burner length dimension

Recommended and Minimum (in brackets) Clearances in Inches					
Boiler model	Distance (Rear) A ₁	Distance (Front) A ₂ ¹⁾	Length L	Width B	Width/Height Doorway Entrance
145	30" (18")	66" (48")	72"	36"	29"/53"
185	30" (18")	66" (48")	72"	36"	29"/53"
240	32" (20")	66" (48")	72"	38"	32"/54"
310	32" (20")	66" (48")	72"	38"	32"/54"
400	36" (24")	70" (50")	72"	38"	32"/62"
510	40" (28")	80" (60")	78"	43"	37"/69"
640	40" (28")	80" (60")	78"	43"	37"/69"

Table 3 Minimum Clearance

¹⁾ Please observe the burner length with respect to the front clearance

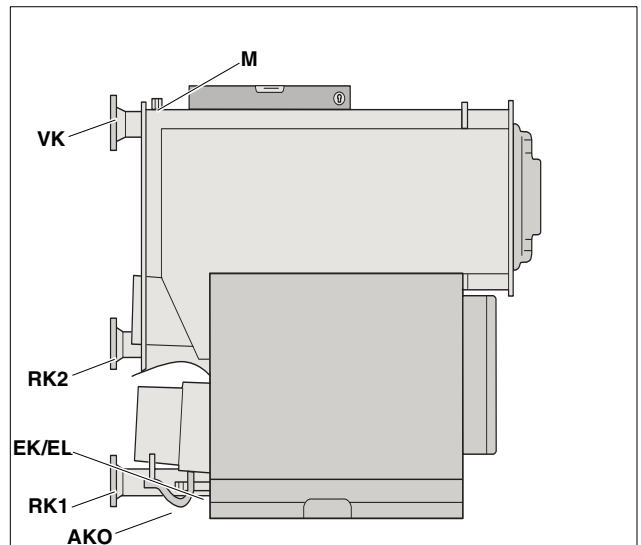


Fig. 3 Refer to table 1, see page 6 for legend

5 Boiler Assembly



NOTICE

It is required to have the combustion chamber sealed off with the burner door so that no damage can occur to the stainless steel chamber as a result of welding or metal grinding during boiler installation.

5.1 Installation of Insulation and Jacket Panels



NOTICE

When fitting the thermal insulation, ensure that the textile web backing is arranged on the outside and the cut-outs towards the rear (Fig. 4).

- Slide the insulation blanket underneath the boiler (Fig. 4).
- Wrap the insulation blanket over the top of the boiler body, overlap and secure with 5 springs (Fig. 5).
- Open the burner door.
- Install the lower front insulation piece and secure with 2 springs on left and right side to the wrap-around insulation blanket (Fig. 5).
- Wrap narrow insulation piece around top of boiler chamber and secure with a spring on left and right sides to the lower front insulation blanket (Fig. 5, **Item. 1**).
- Install upper insulation piece on front of boiler.

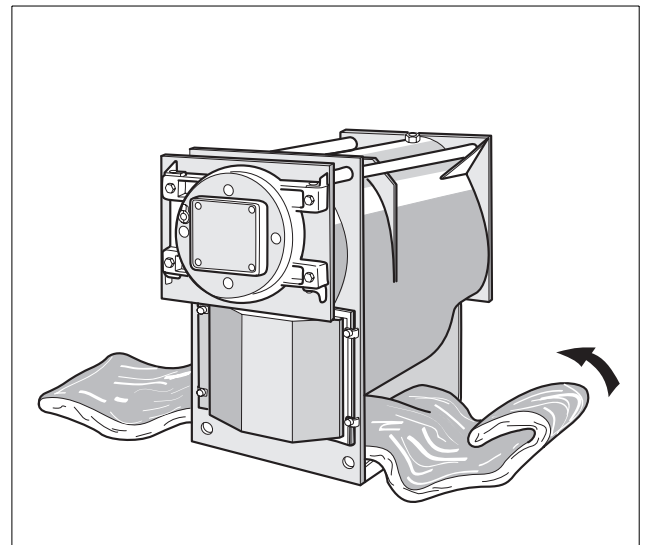


Fig. 4 Slide the insulation blanket underneath the boiler

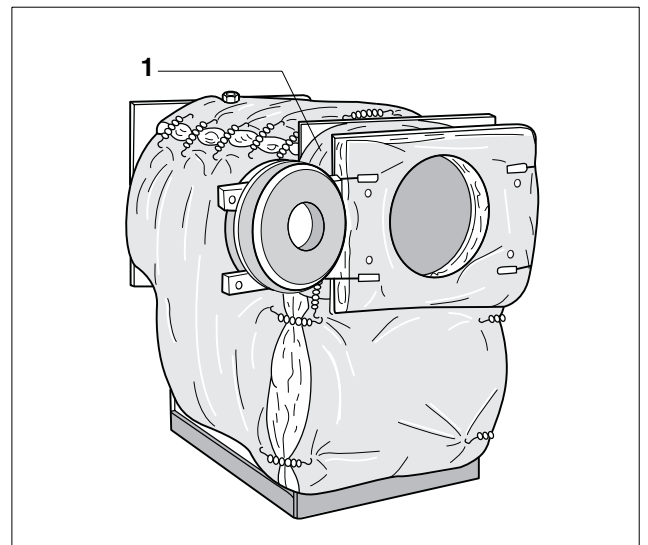


Fig. 5 Installation and securing of the insulation blankets
Item. 1: Narrow insulation strip

**NOTICE**

Observe the cut-outs for burner door hinges and burner door bolts!

- Close the burner door and secure evenly with the furnished burner door bolts.
- Place the rear insulation blanket according to the cut-outs and secure with 2 springs on left and right sides to the wrap-around blanket (Fig. 6).

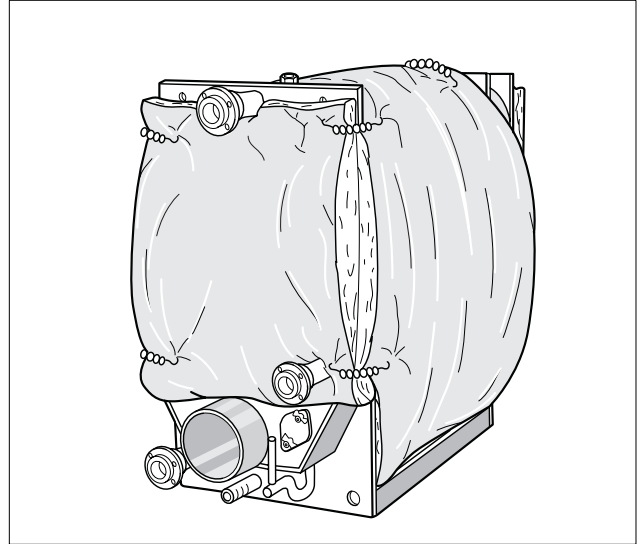


Fig. 6 Securing the rear insulation blanket

- Secure front cross bracket (wider sections pointing down) at the holes to the threaded studs and secure in place with nuts (Fig. 7).
- Secure rear cross bracket (wider sections pointing down) at the holes to the threaded studs and secure with nuts (Fig. 7).

**NOTICE**

The edged surface of the cross brackets must point outward and both brackets must be placed horizontally (Fig. 7).

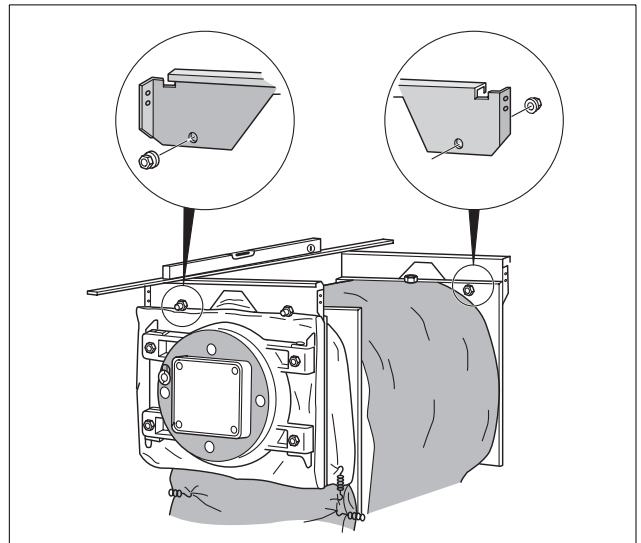


Fig. 7 Installation of front and rear cross brackets

- Install top side rails with the U profile in the knock-out of the front and rear cross bracket. Secure with a screw through the round hole in the front, and with a screw through the long slot in the back to the cross brackets (Fig. 8).

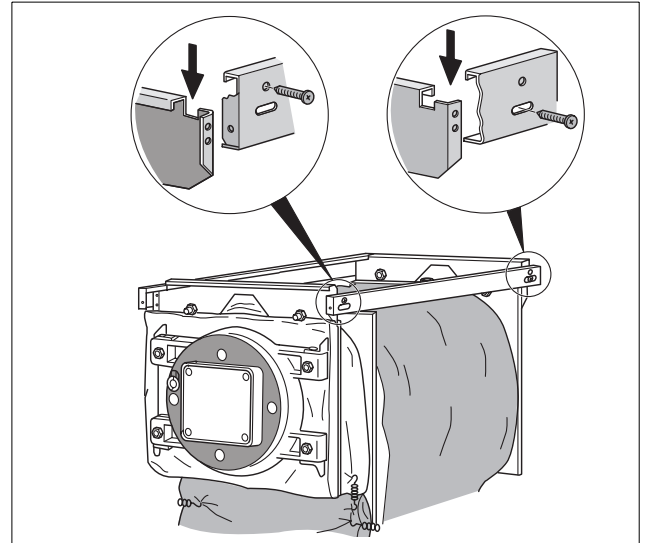


Fig. 8 Installation and securing of top side rails



NOTICE

The knock-out section of the side panel edge must be oriented towards the middle of the boiler.

- Insert the side jacket panels into the narrow edge of bottom rail (Fig. 9).

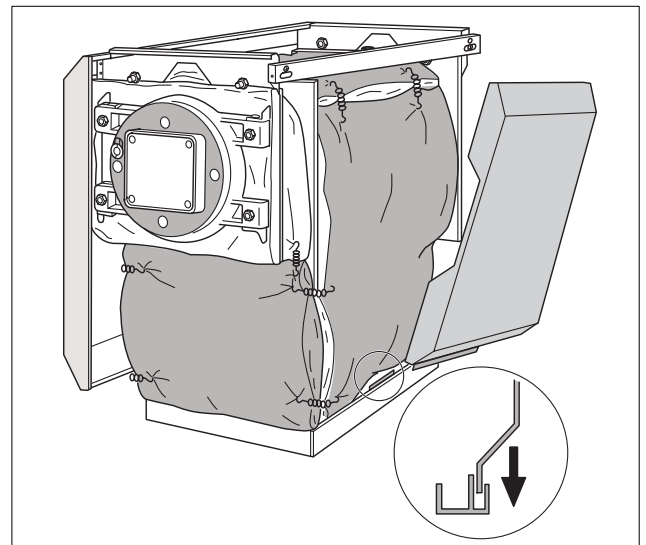


Fig. 9 Installation of side jacket panels

- Slightly lift up the top side jacket panels and hang over the edge of the side rails (Fig. 10).
- Push the edges of the insulation blankets behind the side panels (Fig. 10).
- Secure strain relief for the burner cable with two studs into the holes on the left or right side jacket panels. Allow enough length for burner cable, place cable in strain relief, close relief clip and secure strain relief with two screws (Fig. 10).

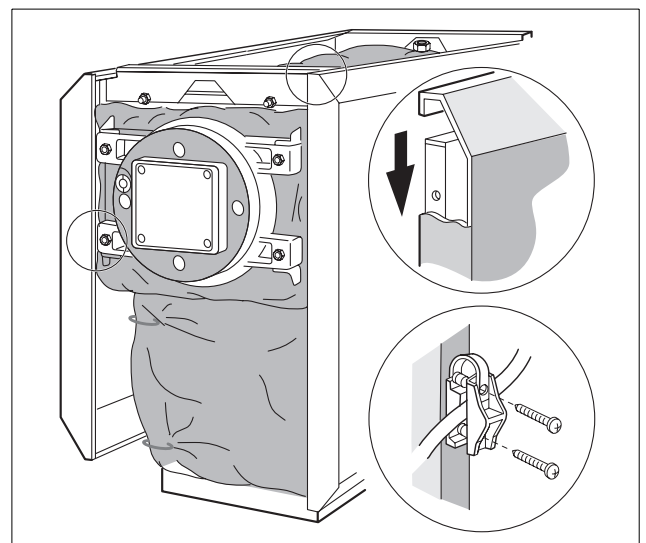


Fig. 10 Hanging of side panels and securing of burner cable.

**NOTICE**

The rear panel consist of 2 pieces for models /145 through /310 (Fig. 11). Rear panel for models /400 through /640 is a single piece (Fig. 12).

- Secure lower rear panel with 5 screws to the side panels (Models /145 through /310) (Fig. 11).
- Secure upper rear panel with 4 screws to the side panels (Fig. 11).

**NOTICE**

Top screws must be secured to the rear cross bracket!

- Secure 1 or 2 cable raceways to the upper rear panel (Fig. 11).
- Secure rear panel with four screws on each side to the side panels (Models /400 through /640) (Fig. 12).

**NOTICE**

Top screws must be secured to the rear cross bracket!

- Secure 1 or 2 cable raceways to the upper rear panel (Fig. 12).

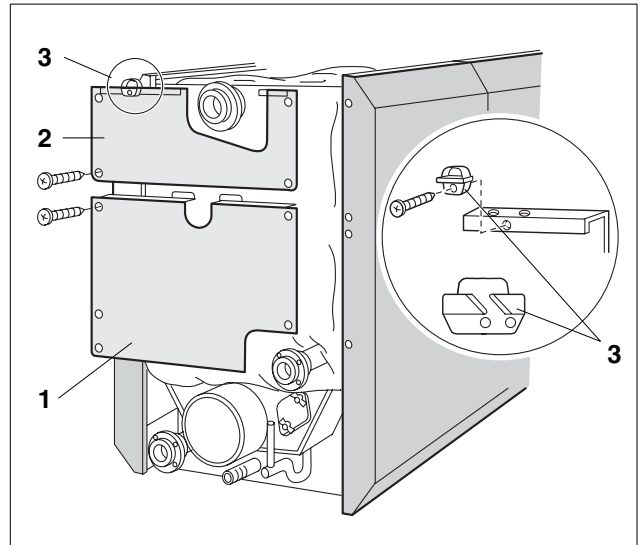


Fig. 11 Securing rear panels (Models /145 through /310)

Item. 1: Lower rear panel

Item. 2: Upper rear panel

Item. 3: Cable raceway

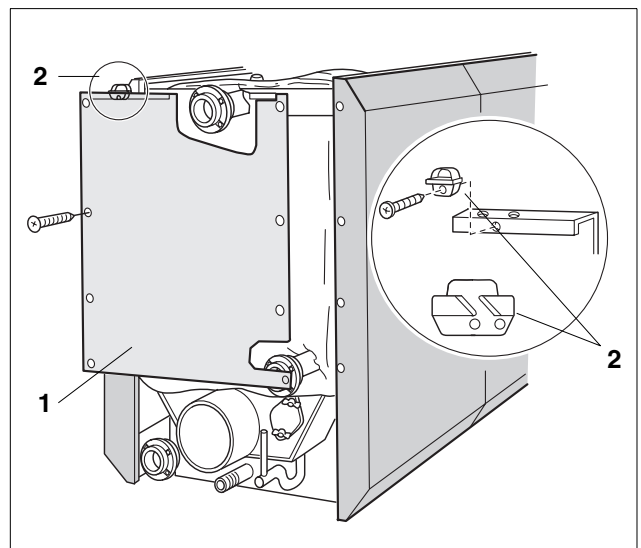


Fig. 12 Securing single rear panel (Models /400 through /640)

Item. 1: Rear panel

Item. 2: Cable raceway

- Place front top cover on top of side jacket panels and slide forward, until tabs engage into the slots on left and right side (Fig. 13).
- Secure front top cover with two screws to the side jacket panels (Fig. 13).

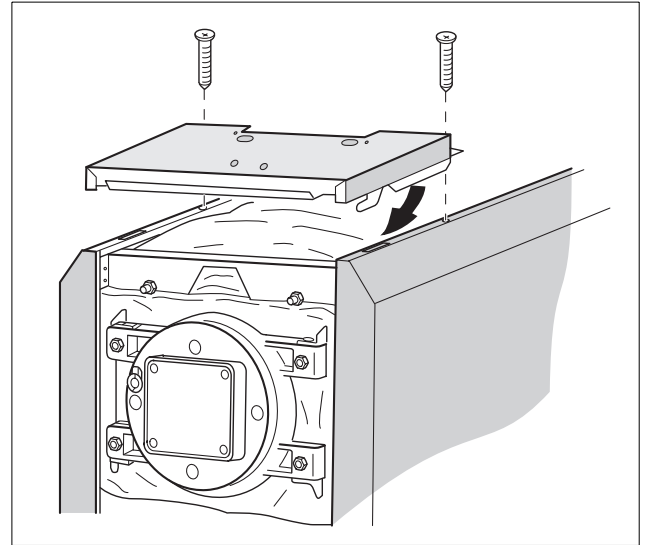


Fig. 13 Engaging and securing front top cover

5.2 Installation and Wiring of Logamatic Controls (optional)

Align the four tabs of the control with the four holes in the front top cover.

- Remove the two screws from the control housing (Fig. 14, **Item. 1**). Remove top cover.
- Guide capillaries through the cutaway in the front top cover and uncoil desired length. Do not kink capillaries
- Place the control on top of the front top cover, so that the protruding tabs engage into the oval openings. Slide the control panel forward, then rotate slightly back to engage both plastic tabs on the right and left side.

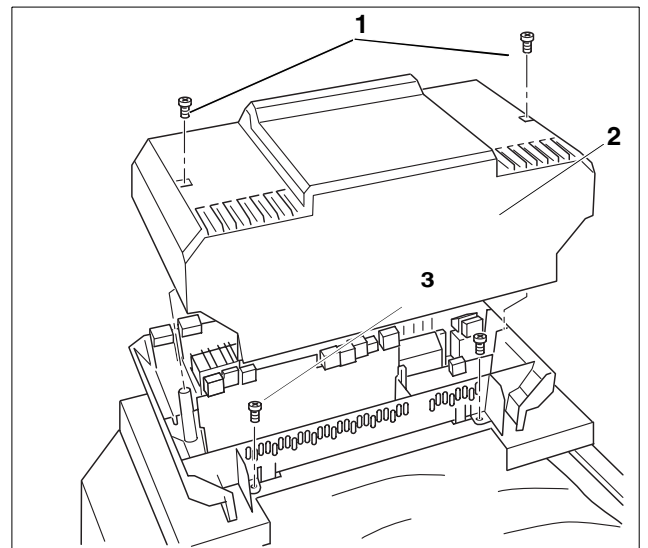


Fig. 14 Installation of Logamatic control

Item. 1: Screws

Item. 2: Top housing of the control panel

Item. 3: Screws

- Fasten the control to the boiler jacket top cover using the two screws as shown (Fig. 14, **Item. 3**).
- Wire the control per furnished schematics.
- Install electrical wiring using the plastic clips and secure wiring by latching in the lever of the plastic tabs (Fig. 15, **Item. 1**).
- Install the top housing of the control and secure with two furnished screws (Fig. 14, **Item. 1**).



NOTICE

Please observe careful installation of capillary tubes and electrical wiring

Please observe and install all electrical wiring per local code!

- Route the capillaries and electronic sensor to the immersion well supplied with the control. Install Logamatic well into rear boiler tapping.

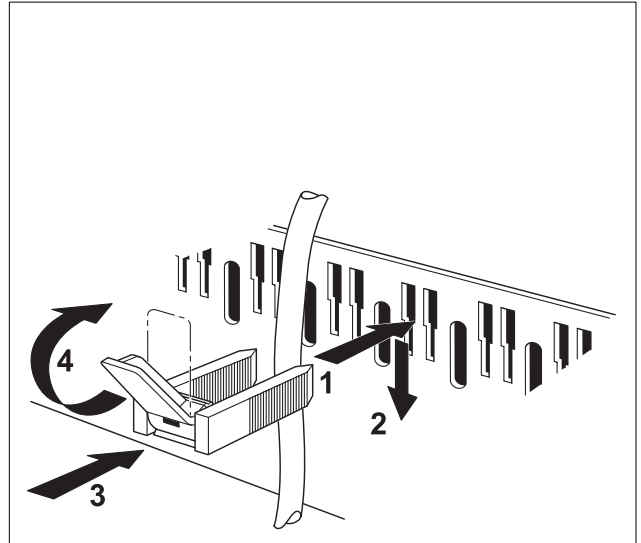


Fig. 15 White strain reliefs

Item. 1: Plastic clip

Item. 2: Control panel rear side

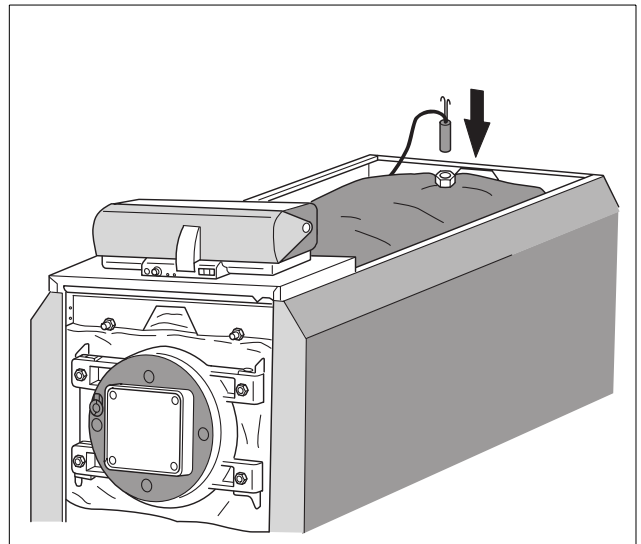


Fig. 16 Install sensor bundle into immersion well

- Carefully slide the plastic holding spiral from the sensor bundle as this package is pushed into the well (Fig. 17, **Item. 2**).



NOTICE

To ensure proper contact between immersion well (Fig. 17, **Item. 4**) and sensor/capillary surfaces, it is important to install the tension wafer plate (Fig. 17, **Item. 1**).

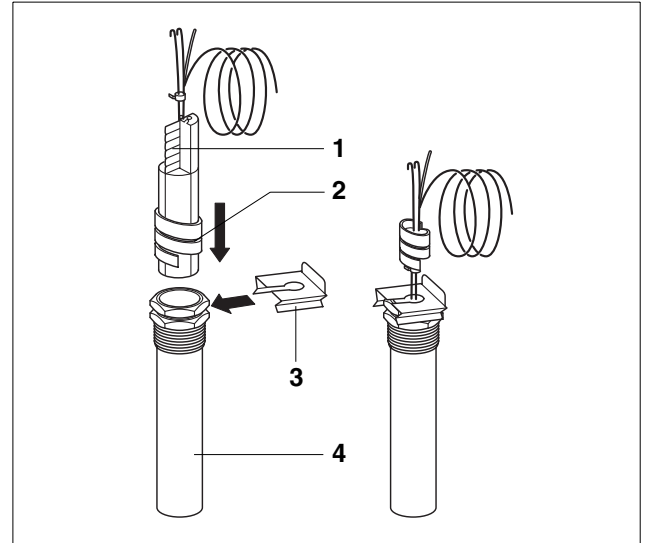


Fig. 17 Insert the sensor bundle into well

Item. 1: Tension wafer

Item. 2: Plastic spiral

Item. 3: Locking clip

Item. 4: Immersion well

5.3 Burner Door and Burner Installation

The burner door can be installed to swing to the left or right.



NOTICE

The swing direction of the burner door can only be changed when the door is fully closed and bolted down.

- Remove the hinging bolts and washers from the hinges by moving them upward (Fig. 18, **Item. 1**).
- Install the washers and hinging bolts on the opposite side (Fig. 18, **Item. 2**). Make sure to install the washers!

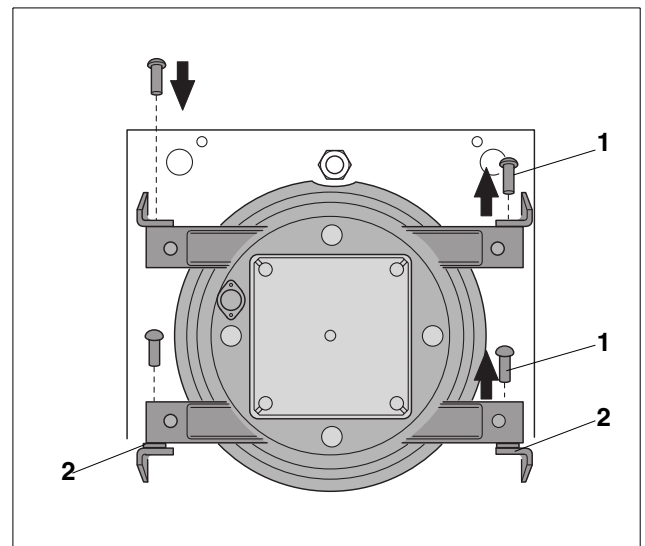


Fig. 18 Changing the swing direction of the burner door

Item. 1: Hinging bolt

Item. 2: Washers

**NOTICE**

Observe burner manufacturers recommendations regarding the burner installation procedures!

A pre-cut burner plate will be supplied by Buderus Hydronic Systems, Inc. if the burner is purchased from Buderus. If not, a properly cut burner plate must be fabricated.

The space between burner blast tube and burner door insulation must be closed off with suitable material (Fig. 19, **Item. 1**)!

Use blast tube refractory material supplied with the boiler. Cut material to proper size.

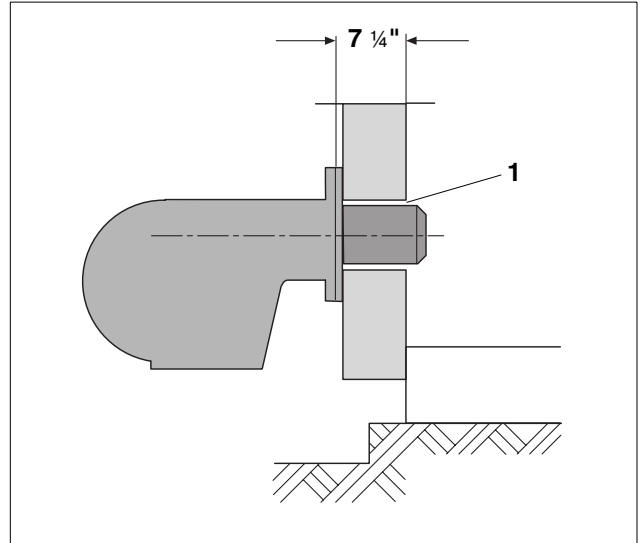


Fig. 19 Blast tube clearance space

Item. 1: Clearance between blast tube and burner door insulation

5.4 Additional Jacket Panel Installation

**NOTICE**

The second top cover panel has, starting with model /400, a cut-out (Fig. 20, **Item. 1**). The other top cover panels are the same and are to be oriented with the edge forward.

Models /145 to /400

4 top cover panels

Models /510 to /640

5 top cover panels

- Place top cover panels loose on top of the right and left hand side panels (Fig. 20).

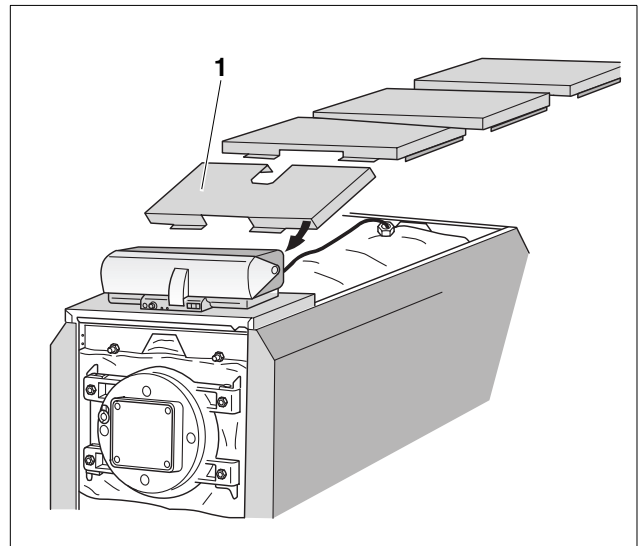


Fig. 20 Placement of top cover panels

Item. 1: Cut-out location

- Insert the tabs of the lower front cross bracket into the slots of the side jacket panels and secure the cross bracket with 2 screws to the front of the boiler (Fig. 21).

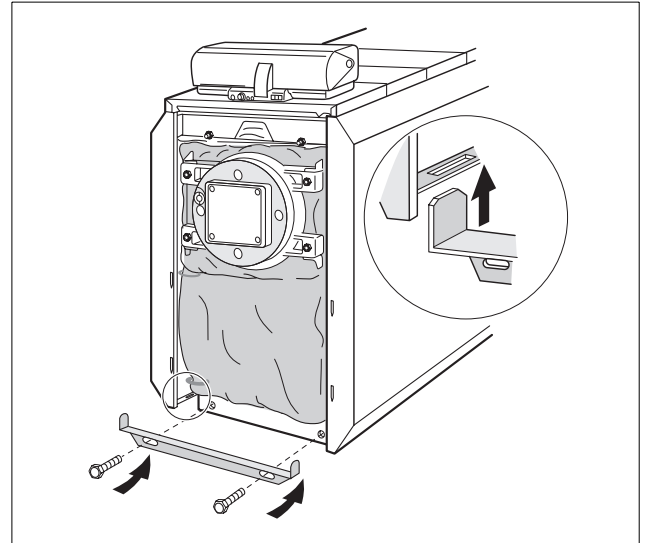


Fig. 21 Securing the lower front cross bracket

- Hang the lower front panel with the four tabs (Fig. 22, **Item. 1**) into the slots of the side jacket panels.
- Latch the tabs of the top front panel into the side jacket panel slots and rest the top part into the top front cover (Fig. 22).
- Hang the top and bottom front cover pieces at the tabs on the front panels (Fig. 22).
- Affix the name plate cover (Fig. 22, **Item. 2**) on the front panel.

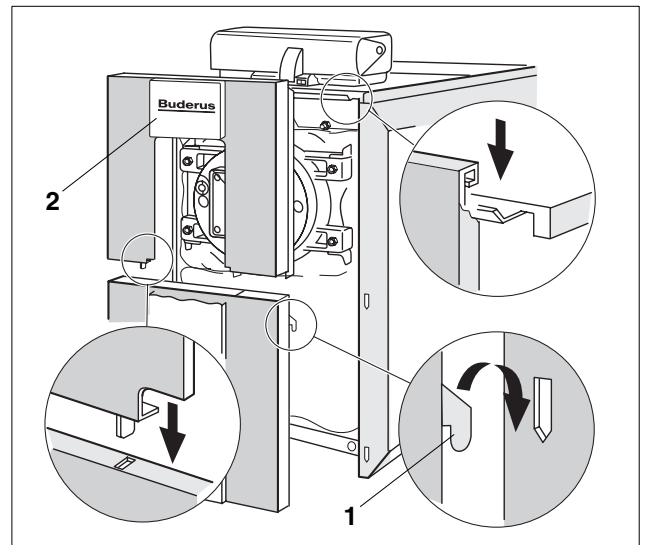


Fig. 22 Upper and lower front jacket panels

Item. 1: Tabs

Item. 2: Name plate cover

5.5 Rating Label

- Secure the rating label to the left or right side of the boiler based on local requirements (Fig. 23, **Item. 1**).

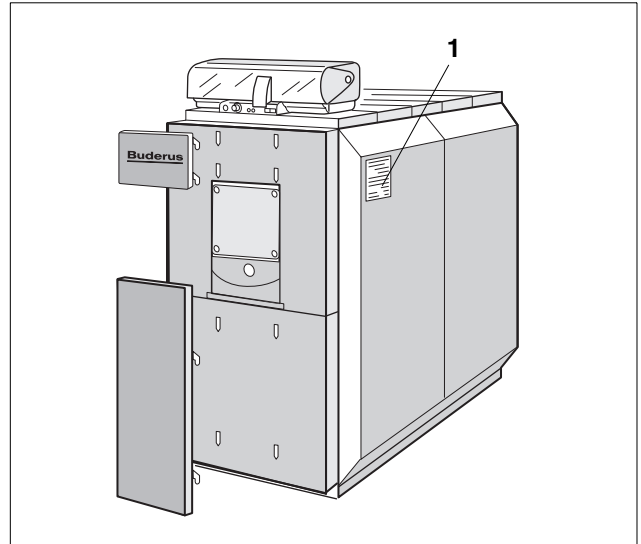


Fig. 23 Securing the rating label

Item. 1: Rating label

5.6 Venting System

- The resulting combustion products must be transported through a chimney system to the outside.
- It is required to use venting systems approved for use with condensing, gas-fired equipment.
- Prior to placing the boiler in operation, it is required to verify compatibility between boiler and venting system.
- Check the venting system for air tightness!
- Install the venting system per manufacturer's instructions.

SB Boiler Venting Requirements

The SB Boiler is a category II or IV appliance and the exhaust vent materials must be UL listed for use with a category IV appliance: operating temperatures of up to 240° F, positive pressure, condensing flue gas service. Currently, UL Listed vents of AL29-4C Stainless steel and/or CPVC must be used with the SB Boiler. Proper clearances to combustibles must be maintained per UL and vent manufacturer.

UL, NFPA 211 and NFPA 54 (National Flue Gas Code ANSI Z223.1) guidelines are often the basis for state and local codes. Buderus Hydronic Systems recommendations follow the guidelines of these recognized agencies unless there codes applicable to the installation site that are more stringent. The venting and combustion air systems must meet all applicable code requirements.

Code Required Vent Terminations:

Horizontal Terminations:

- Vent terminations should be at least 4 feet below, 1 foot above or 4 feet horizontally from any window, door or gravity air inlet of a building.
- The termination shall be at least 3 feet away from any other building opening, gas utility meter, service regulator or the like.
- The termination shall be at least 6 feet away from the combustion air intake of any other appliance.
- The bottom of the vent terminal should be at least 12 inches above both finished grade and any snow accumulation point.
- Vent should not terminate over public walkways or over an area where condensate or vapor could create a nuisance or be detrimental to the operation of regulators, meters and other equipment.
- Discharges should not be in wind-blocked areas, corners, or directly behind vegetation.

Vertical Terminations:

- 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 above the roof through properly flashed penetrations and at least 2 feet above anything within a 10 foot

horizontal diameter. Discharges that extend more than 2 feet 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 exhaust vent must be pitched up toward the termination a minimum of ¼" in. per foot of length. Condensate must flow back to the SB Boiler freely, without accumulating in the vent.

Combustion Air from outside the building

If outside combustion air is required, the room shall have two permanent louvered openings to the outdoors. Each opening must have a minimum free area of 1 square inch for each 4,000 Btu/hr of total input rating of all fuel burning equipment in the space.

When the air is supplied to the room via ducts, two ducts must be used. Vertical ducts and openings must have a minimum free area of 1 square inch for each 4,000 Btu/hr of the total input rating of all fuel burning equipment in the space. Horizontal ducts and openings must have a minimum free area of 1 square inch for each 2,000 Btu/hr of the total input rating of all fuel burning equipment in the space.

The free area of the openings must be taken into account restrictions from the louvers and screens. The louver manufacturer should be consulted for the percentage of free area available. When free area is not known, metal louvers typically have 60 - 70% of free area, wooden louvers have between 20 - 25% of free area. Louvers should be in a fixed position or interlocked with equipment so that they open automatically during equipment operation. The combustion air damper opening shall be located as follows: top louver shall be within 12" of the ceiling and the bottom louver within 12" of the floor as prescribed in NFPA 54.

Combustion Air from an adjacent room

Where combustion air is to be used from within the building, air must be provided into the equipment room through two permanent openings into the interior building. Each opening must have a minimum free area of 1 square inch for each 1,000 Btu/hr of the total input rating of all fuel burning equipment in the space. The louvers shall be located as follows: top louver shall be within 12" of the ceiling and the bottom louver within 12" of the floor as prescribed in NFPA 54.

Exhaust Vent Systems

Positive-Pressure - The vent system is designed to be under positive pressure at all firing rates. The minimum vent size is 6" diameter. Horizontal vent pipe should be supported at least every 6 feet and vertical vent should be supported to prevent excessive weight on the horizontal runs.



WARNING

Use only an approved vent starter coupling and approved vent pipe from the same manufacturer for Buderus SB boilers. Do not mix components from different systems. The vent system could fail, causing flue gas spillage, resulting in severe personal injury or death.

Condensate Removal

The exhaust vent pipe must be pitched at least ¼" per foot of length back to the boiler. This will allow condensate to drain back to the unit to be disposed. Low spots in the venting where condensate may collect should be avoided. A plastic hose or PVC drain pipe may be used to remove discharge to a floor drain. Care should be taken to avoid kinks and from raising the drain line above the trap assembly. If the condensate must be lifted above trap assembly to a drain, it should be drain into a sump then it can pump away to a drain.

Permissible Equivalent Venting Length Configurations for SB615 boilers

Permissible Equivalent Venting Length Configurations for SB615 boilers (in ft)							
Model	Nom. Vent Size	5"	6"	7"	8"	10"	12"
145	6"	35	140	160	180		
185	6"		65	145	180		
240	8"			130	180		
310	8"			30	145	180	
400	10"				45	180	195
510	12"					180	195
640	12"					75	195

Table 4 Maximum venting length for SB615 boilers



NOTE

Above lengths represent total equivalent vent length combining horizontal and vertical runs and any elbow. For each 45° elbow, deduct 4 ft, for each 90° elbow, deduct 7 ft.

A positive breeching draft is not to exceed positive + 0.2 Inches WC.

5.7 Condensate Neutralization System and Water Connection Installation

If a condensate neutralization system is installed, please follow its installation instructions (Available as an accessory).

- Secure a hose to the condensate drain with a clamp (Fig. 24, **Item. 2**).



NOTICE

Typically the condensate will drain back to the boiler from the venting system. If this is not feasible, use only a stainless steel or plastic tee with a drain connection in the venting system.

- Secure finished supply manifold and gasket to upper water connection.
- Install furnished relief valve in supply manifold and pipe discharge full port to nearby floor drain.
- Install low water cut-off and Honeywell aquastat(s) in available 3/4" manifold tapplings.
- Install pressure and temperature gauge in 1/2" tapping.
- Plug any unused tappings.
- Refer to section 5.2 when installing Logamatic control. Plug sensor port M (Fig. 16 page 14) with 3/4" plug when not using a Logamatic control.



NOTICE

Lower return connection RK1 (Fig. 1, page 6) must **always** be used. Connect coldest return zone (s) to RK1. Connect higher temperature return zone (s) to RK2 if called for by engineering firm. If RK2 connection is **not** used, close off with a blanking flange.

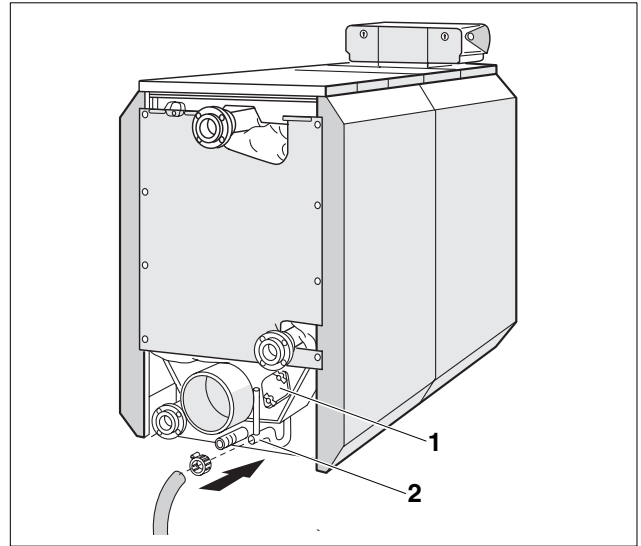


Fig. 24 Installation of neutralization system

Item. 1: Clean-out opening

Item. 2: Condensate drain connection

6 Placing the Boiler in Operation



DANGER

due to combustion products.

WARNING!

- Prior to placing the boiler in operation, put 3 or 4 gallons of water in the clean-out opening or combustion chamber to fill the drain in the condensate drain line.



BOILER DAMAGE

due to corrosion and debris build-up.

CAREFUL!

- Flush the entire heating system prior to firing the boiler. To avoid corrosion and debris build-up on the water side of the boiler. It is required to test the fill and make-up water per Instructions for Water Preparation for Boiler.



NOTICE

Observe the installation instructions for the neutralization system!

Follow the instructions supplied with boiler, burner, controls and low water cut-off components during the start-up of the system.

Make the end user familiar with the function and operation of the entire system and sign over the technical documentation.

It is recommended to instruct the end user regarding maintenance requirements and procedures. An annual service contract is recommended.

7 Maintenance

7.1 General information



DANGER

due to unauthorized service work.

WARNING!

- Maintenance work on gas components can only be carried out by a gas certified service company.



NOTICE

The end user or operator is required to have regular scheduled maintenance performed. An annual maintenance procedure on the entire system is required.

We recommend an annual service contract for the maintenance.

The factory required maintenance steps are outlined in the check list (see section 7.3 „Check List“).

Follow the burner manufacturer's instructions regarding burner maintenance!

7.2 Cleaning of the boiler



DANGER

due to current carrying wires.

WARNING!

- Prior to maintenance shut down the electrical power supply and pad lock!



BOILER DAMAGE

due to incorrect boiler brushes.

CAREFUL!

- Use only brushes made available through Buderus Hydronic Systems, Inc..



NOTICE

A high pressure washer is recommended for a wet cleaning of the heat exchanger.

Boiler debris should not be sent through the neutralization system.

Check to make sure the condensate drain does not get plugged (Fig. 24, page 22).

- Check and possibly clean the flue collector and condensate drain through the rear clean-out opening (Fig. 24, page 22).
- Remove upper and lower front panel (Fig. 25).
- Remove insulation blanket (Fig. 25).
- Remove nuts from holding bracket and remove front reversing cover (Fig. 26).
- Remove hexhead nuts from burner door and open burner door (Fig. 26).
- Clean and brush out combustion chamber and surfaces.
- Brush out secondary flue passages (Fig. 27).

**NOTICE**

When cleaning the second and third passages, make sure that the brush has fully traveled the length of the tubes to the rear of the boiler and is sticking outside of the tube before pulling the brush forward.

- Remove any debris with a vacuum cleaner from the surfaces.
- Check for air leaks around the burner door and other openings. Replace gaskets where necessary.

Follow the instructions of the power cleaning equipment!

Keep moisture away from all electrical components!

- After cleaning, close burner door and secure.
- Reinstall reversing cover and secure with holding bracket (Fig. 26).
- Secure insulation blanket with spring clips.
- Install upper and lower boiler front panels (Fig. 25).
- Put the system back in operation.

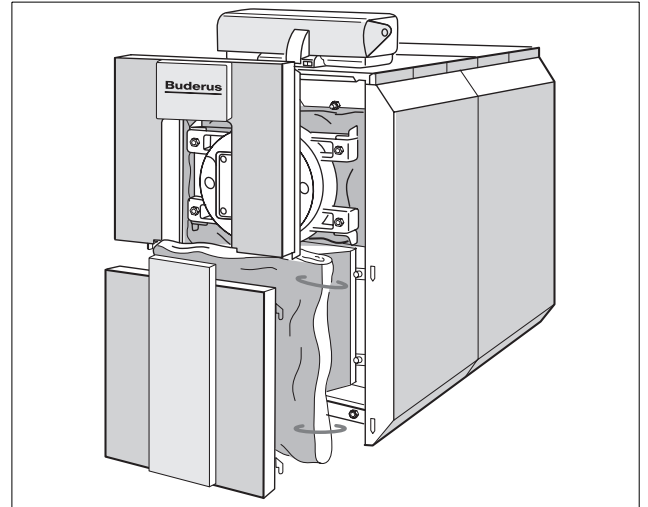


Fig. 25 Removal of front panels and insulation blankets

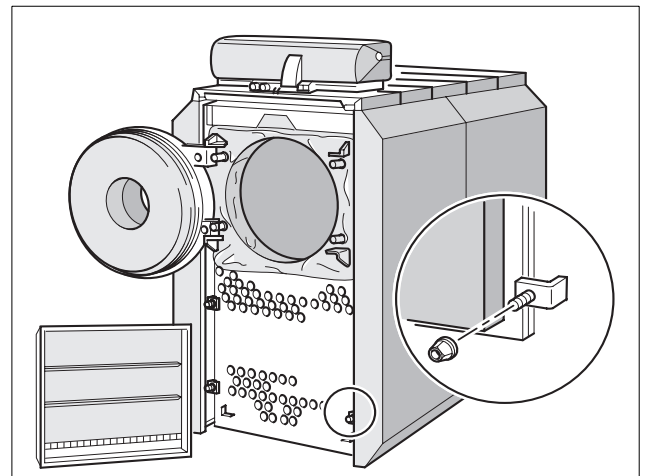


Fig. 26 Remove the reversing cover and open the burner door

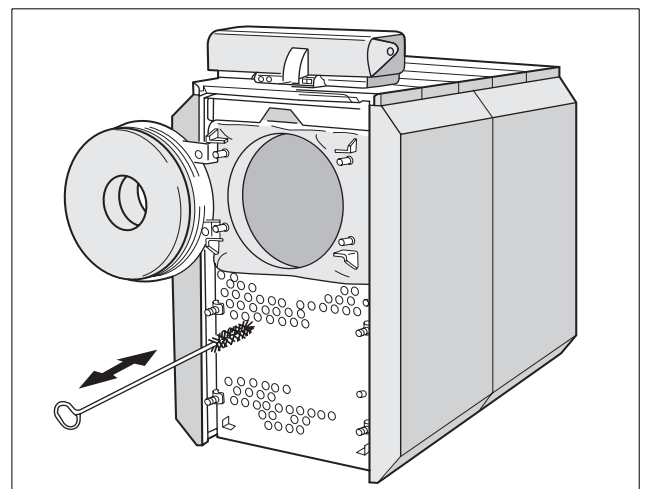


Fig. 27 Brushing of fire tubes

7.3 Check List

- Check off the different maintenance steps, place an "x" in the corresponding box and list date and service company name below.
- Follow recommended time frame for boiler and burner maintenance work.

Heating System		01	02	03	04	05	06	07	08
1	Disconnect electrical supply to system								
2	Shut off gas supply								
3	Disconnect gas supply from burner								
4	Remove front jacket panels, open burner door (Fig. 25, page 25)								
5	Remove reversing cover (Fig. 26, page 25)								
6	Remove condensate drain hose from neutralization system (Fig. 24, page 22)								
7	Check and clean combustion chamber								
8	Check and clean out fire tube passages								
9	Flush condensate drain connection at boiler (Fig. 24, page 22)								
10	Check and clean flue collector								
11	Check burner door gasket, replace if necessary								
12	Check silicone gasket on reversing cover, replace if necessary								
13	Reattach condensate drain hose								
14	Close off the reversing cover, bolt down and assemble jacket panels								
15	Pour 3 gals. of water into the combustion chamber								
16	Pour 3 gals. of water into the combustion chamber								
17	Reattach the gasline to the burner								
18	Check gas components for leaks and correct if necessary								
19	Check venting system for leaks, repair when needed								
20	Check operation of all safety controls								
21	Check operation of all operating controls								
22	Bring the system back into regular operation								
23									
24									

Follow the instructions for the neutralization system regarding maintenance

Service Company 01	Service Company 02	Service Company 03	Service Company 04
Date:	Date:	Date:	Date:
Service Company 05	Service Company 06	Service Company 07	Service Company 08
Date:	Date:	Date:	Date:

Heating Contractor:

PRODUCTS MANUFACTURED BY

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