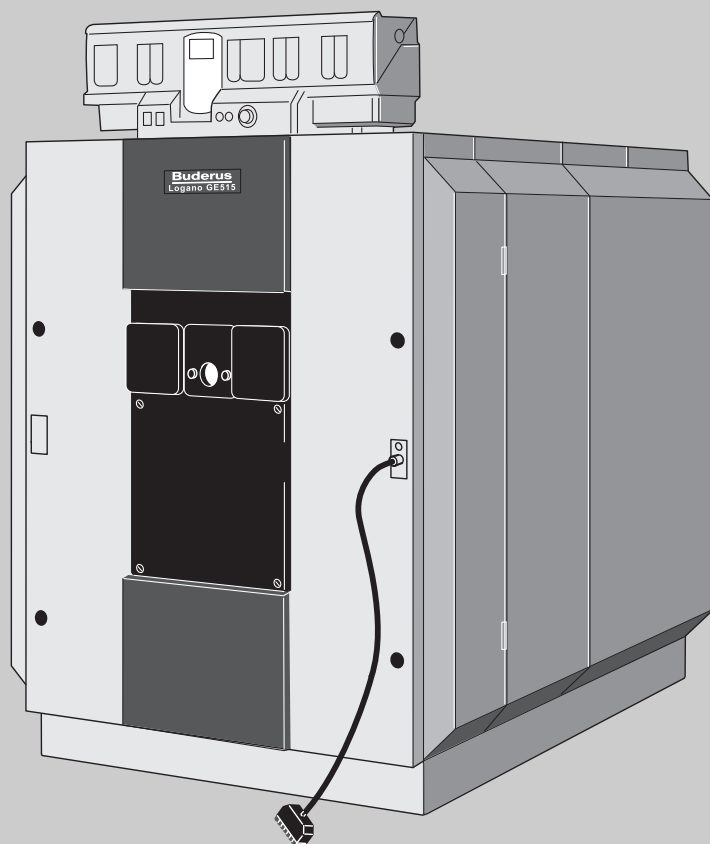


Installation and maintenance instructions

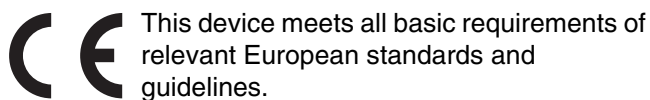
Oil- and gas-fired
boilers



Logano GE515

For heating engineers

Please read carefully prior
to installation and
maintenance.



This device meets all basic requirements of relevant European standards and guidelines.

Its conformity has been verified. All associated documents and the original of the Declaration of Conformity are available from the manufacturer.

Regarding these instructions

These installation and maintenance instructions contain important information for the safe and correct installation, initial start-up and maintenance of the Logano GE515 oil- and gas-fired special boiler.

These installation and maintenance instructions are designed for specialists, who, due to their vocational training, are knowledgeable and experienced in handling heating systems and oil/gas installations.

The Logano GE515 oil- and gas-fired special boiler may be supplied as one of two versions (in loose sections or pre-assembled).

These installation and maintenance instructions explain the installation and maintenance on the example of boilers supplied as loose sections and as pre-assembled blocks.

Subject to technical modifications.

Constant development may lead to minor deviations in the illustrations, functional steps and specifications described/shown.

Updating your documentation

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

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1 General



USER NOTE

Observe any standards and guidelines applicable to the installation and operation of this system, as may apply in your country.

Please note the details on the boiler rating plate. These are decisive and must be observed.

Operating conditions and time constants		Switzerland	All other countries
Maximum flow temperature	°C	110	100–120 ¹
Maximum operating pressure	bar	6	6
Control thermostat	s	40	40
Contactor/limiter	s	40	40

Fuels				
Logano GE515	Fuel oil EL	LPG	Natural gas	Bio gas (special operating conditions)
Comments	The Logano GE515 boilers can be operated with the indicated fuels. Select a burner which operates with one of the fuels listed as suitable for the Logano GE515 boiler. The rated output details listed in the "Specification" table are nominal ratings.			
Please note for Switzerland	In reality the stated values will – regarding compliance with the LRV – not always be achieved.			
Please note for Poland	In accordance with PN-91/B-2414 (p.2.5), boilers with a rated output higher than 100 kW should be equipped with a low water indicator (SYR type 933.1) on site.			

¹ In accordance with national standards and guidelines.

2 Safety

For your own safety, observe these safety instructions.

2.1 Correct use

The Logano GE515 oil- and gas-fired special boiler was designed for the heating of central heating water. You may use any type-tested oil-fired or gas-fired burners acc. to EN 267 or EN 676 provided their operating range correlates with the boiler specification.

These boilers are operated with the 4000 series control systems.

2.2 Notes structure

Two levels are identified and identified by signal terms:



WARNING!

DANGER TO LIFE

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



CAUTION!

DANGER OF INJURY/ SYSTEM DAMAGE

Identifies potentially dangerous situations, which might lead to medium or slight injuries or to material losses.

Further symbols identifying dangers and user notes:



WARNING!

DANGER TO LIFE

from risk of electric shock.



USER NOTE

User tip for the optimum utilisation and setting of the device(s) plus useful information.

2.3 Please observe these notes



WARNING!

DANGER TO LIFE

through the explosion of volatile gases.

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



WARNING!

DANGER TO LIFE

from risk of electric shock.

- Before work is undertaken on the heating equipment, isolate the system from the mains supply, e.g. by switching the off the emergency stop switch outside the boiler room.
- Switching off control devices does not provide sufficient isolation.



CAUTION!

SYSTEM DAMAGE

through inadequate cleaning and maintenance.

- Carry out cleaning and maintenance annually. In the course of this work, check the entire system for perfect function.
- Immediately remedy all faults to prevent damage to the system.



USER NOTE

To prevent boiler contamination, we strongly recommend the installation of a dirt trap on the water supply side.



CAUTION!

SYSTEM DAMAGE

through deposits, local overheating, noise and corrosion.

- Flush existing systems before connecting the boiler.
- Prevent boiler damage by installing de-sludging equipment into the system return.

3 Product description

The special Logano GE515 oil- and gas-fired boiler may be supplied with or without burner. The burner plate is supplied without holes. However, Buderus can supply drilled burner plates (hole pattern subject to burner) as accessory.

For Logano GE515 with pressure jet oil or gas burner, a drilled burner plate is part of the standard delivery.



SYSTEM DAMAGE

through incorrect burner.

CAUTION!

- Only use burners which meet the technical preconditions of the Logano GE515 oil- and gas-fired special boiler (see chapter 4 "Specification", page 10).

The main components of the Logano GE515 oil- and gas-fired special boiler are:

- Boiler block (Fig. 1, [3]).
The boiler block transfers the heat generated by the burner to the heating water.
- Boiler shell (casing, Fig. 1 and Fig. 2, [1]), thermal insulation (Fig. 1, [2]).
Boiler shell and thermal insulation prevent energy loss.
- Control device (Fig. 1, [4]).
The control device is designed to monitor and control all electrical components of the Logano GE515 oil- and gas-fired special boiler.

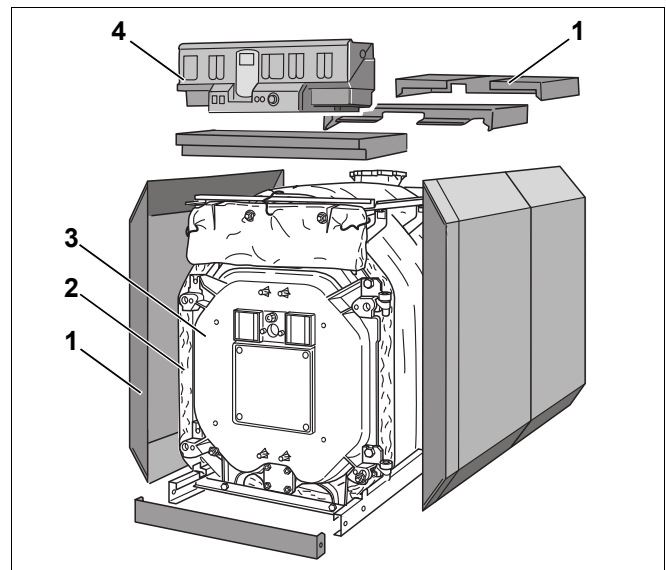


Fig. 1 Logano GE515 oil- and gas-fired special boiler

- 1 Boiler shell (casing)
- 2 Thermal insulation
- 3 Boiler block
- 4 Control device

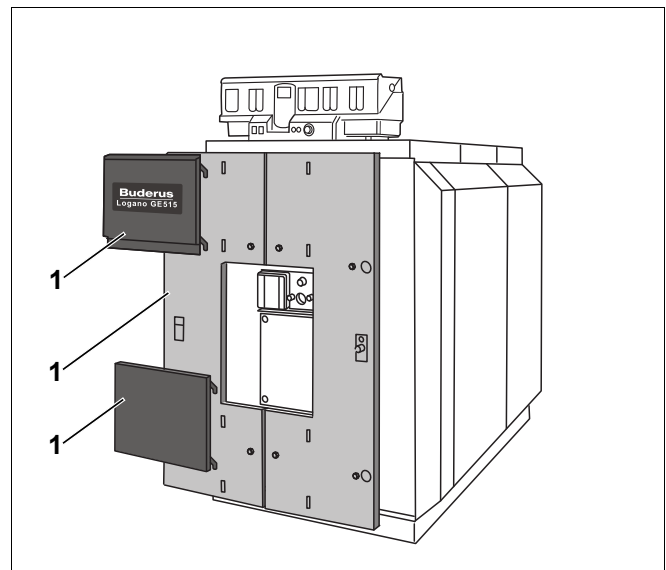


Fig. 2 Logano GE515 oil- and gas-fired special boiler

- 1 Boiler shell (casing)

3.1 Operating conditions for Buderus G and GE cast iron boilers

Thermostream technology is a unique feature of Buderus cast iron boilers. Return water is preheated and mixed within the boiler before it comes in contact with the heated surface of the combustion chamber. The Thermostream technology ensures there is an even temperature distribution in the boiler and avoids condensate forming within the combustion chamber. This reduces thermal stress, the main cause of failure of normal cast iron boilers. The benefit of this technology is that if the minimum boiler operating temperature of the boiler is maintained (→ table below), there is no need for a conventional shunt pump to be installed, saving the cost of a pump, the electricity it consumes and the breakdown it can cause. The minimum boiler operating temperature as shown in the table below must be reached within 10 minutes and then be maintained while the burner is running.

3.2 Operating conditions GE 515

Boiler controls	Minimum flow rate through the boiler	Minimum return water temperature	Minimum boiler operating temperature for oil	Minimum boiler operating temperature for gas	Other conditions
Buderus 4000 with control over all heating circuits	none	none	50 degrees ¹⁾	50 degrees ¹⁾	none
Where the Buderus control is not controlling the heating circuits ie External control (BMS) or Constant temperature control with Buderus 4212 with ZM427	none	none	50 degrees ¹⁾	60 degrees ¹⁾	none

1) This temperature has to be reached within ten minutes of the burner starting and has to be maintained whilst the burner is firing.

This operating condition can be easily achieved by the controls monitoring the boiler temperature and reducing the flow rate through the boiler until the required temperature is reached. This is then maintained by continuing to control flow based on the boiler temperature. The controls can reduce the flow rate by closing the valves on the mixed heating circuits or by modulating the boiler primary pumps or by closing the motorised butterfly valves or by having a motorised valve in the boiler return on a single boiler installation. The Buderus 4000 series controls can manage this process or it can be done by the BMS.

If it is not possible for the controls to regulate the flow sufficiently to meet this operating condition then a shunt pump circuit must be fitted to avoid the type of thermal stress that all boilers would experience in these conditions. This shunt pump circuit can be controlled either with a Buderus 4000 control or with a Buderus 4212 fitted with a ZM427 module. Failure to ensure that the operating condition is maintained may lead to thermal stress in the boiler and eventual failure of the sections which would be outside the scope of the warranty.

4 Specification

The specification provides information about the Logano GE515 output profile.

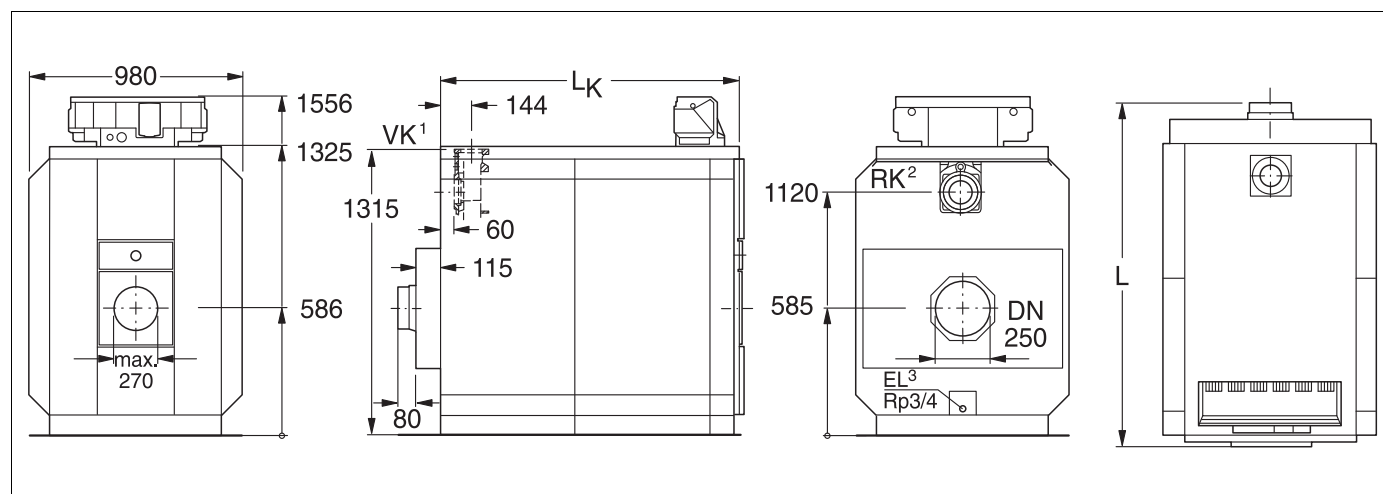


Fig. 3 Logano GE515 specification (dimensions in mm)

- 1 Connection flange reduced in accordance with order to DN 100, DN 80 or DN 65.
- 2 Fill the boiler and the system via a separate connector in the return pipe.
- 3 The drain cock (EL) is only suitable for draining the system, not for filling.

EL	= Drain connection (Rp 3/4")
L _K	= Length of boiler block
L	= Overall boiler length
RK	= Boiler return connection
VK	= Boiler flow connection

Logano GE515							
Boiler size		240	295	350	400	455	510
Boiler sections	Number	7	8	9	10	11	12
Rated output	kW	201–240	241–295	296–350	351–400	401–455	456–510
Combustion output	kW	215.6–259.7	257.8–319.0	316.6–377.1	374.6–429.6	428.4–489.2	488.2–547.8
Overall boiler length (L)	mm	1580	1750	1920	2090	2260	2430
Length of boiler block (L _K)	mm	1360	1530	1700	1870	2040	2210
Boiler section transport dimension	mm	width 835 / height 1315 / depth 170					
Boiler block handling	mm	width 835 / height 1315 / length L _K					
Length of combustion chamber	mm	1165	1335	1505	1675	1845	2015
Diameter of combustion chamber	mm	515					
Depth of burner door	mm	142					
Net weight ¹	kg	1270	1430	1590	1753	1900	2060
Boiler water content	l	258	294	330	366	402	438
Gas capacity	l	421	487	551	616	681	745

¹ Weight incl. packaging approx. 6–8% higher.

Logano GE515							
Boiler size		240	295	350	400	455	510
Flue gas temperature ² , part load (60 %)	°C	138	138	140	129	130	140
Flue gas temperature ² , full load	°C	164–183	161–183	161–177	157–171	159–172	164–174
Flue gas volume flow, oil, part load (60 %)	kg/s	0.0647	0.080	0.094	0.108	0.123	0.137
Flue gas volume flow, oil, full load ³	kg/s	0.092–0.110	0.109–0.135	0.134–0.160	0.159–0.182	0.182–0.208	0.207–0.233
Flue gas volume flow, gas, part load (60 %)	kg/s	0.065	0.080	0.095	0.108	0.123	0.138
Flue gas volume flow, gas, full load ³	kg/s	0.092–0.111	0.110–0.136	0.135–0.161	0.160–0.183	0.183–0.208	0.208–0.233
CO ₂ content, oil	%	13					
CO ₂ content, gas	%	10					
Required pressure (draught)	Pa	0					
Flue gas resistance	mbar	0.5–0.6	1.0–1.4	1.1–1.6	2.1–2.9	2.5–3.3	2.4–3.1
Maximum permissible flow temperature ⁴	°C	100–120 ⁵					
Maximum permissible operating pressure	bar	6					
Type approval number, boiler		06-226-640					
CE designation, boiler		CE - 0461 AR 6154					

2 Acc. to DIN 303. The minimum flue gas temperature for the chimney calculation is approx. 12 K lower.

3 Full load details relate to the upper and lower rated output range.

4 High limit safety cut-out (safety limit thermostat). Max. possible flow temperature = safety limit (STB) – 18 K. Example: Safety limit (STB) = 100 °C; max. possible flow temperature = 100 – 18 = 82 °C.

5 In accordance with national standards and guidelines.

5 Standard delivery

The Logano GE515 boiler can be supplied as ready assembled block or in individual boiler sections.

- Upon receipt, check the boiler is in perfect condition.
- Check the delivery for completeness.

5.1 Logano GE515 – delivery as ready assembled unit

Component	Piece	Packaging
Boiler block with burner door and flue gas collector	1	Pallet
Assembly components (longitudinal rails and feed pipe)	1	Carton
Casing pack A, B, C (depending on boiler size)	1–3	Cartons
Thermal insulation	1	PU sack

5.2 Logano GE515 – delivery in sections

Component	Piece	Packaging
Front and rear section plus burner door	1	Pallet
Central sections – depending on boiler size	1–2	Pallet
Furniture	1	Carton
Flue gas collector	1	Carton
Anchor rods	1	Bundle
Assembly components (longitudinal rails and feed pipe)	1	Carton
Casing pack A, B, C (depending on boiler size)	1–3	Cartons
Thermal insulation	1	PU sack

6 Boiler handling

Handle the individual boiler sections (loose delivery) plus other individual components with suitable means of transportation.



CAUTION!

DANGER OF INJURY

through inadequately secured boiler sections.

- For your own safety, use only suitable means of transportation when handling individual boiler sections, e.g. a sack truck with strap or a stair truck, etc.
- When handling, secure the boiler sections to the means of transport to prevent them slipping.



CAUTION!

SYSTEM DAMAGE

through impact.

The standard delivery of the Logano GE515 oil- and gas-fired special boiler comprises components which are sensitive to impact.

- When handling the boiler (sections), protect electronic and other components against impact.
- Please note the handling references on the packaging.



CAUTION!

SYSTEM DAMAGE

through contamination.

Note the following if the boiler is to be stored in its assembled condition:

- Protect boiler connections by closing or sealing them off.



USER NOTE

Dispose of packaging in an environmentally responsible manner.

7 Boiler positioning

In this chapter you will learn how to correctly position the Logano GE515.



SYSTEM DAMAGE

through frost.

CAUTION!

- Install the system in a room which has been protected from frost.

7.1 Tools and accessories

The following tools and auxiliary materials are required for the boiler assembly (the listed items must be provided by the installer):

- Boiler compression tool 2.2 (Fig. 4, page 15) or 2.3 (Fig. 5, page 15)
- Boiler installation template for fitting the boiler sections together
- Steel hammer and wooden or rubber mallet
- Half-round bastard file
- Screwdrivers (Philips and flat bladed)
- Flat chisel
- Spanner SW 13, 19, 24, 36 and Allen key SW 19
- Support wedge, flat iron
- Cleaning rags and cloth
- Fine emery cloth
- Wire brush
- 3-in-1 oil
- Solvent (petrol or solution)
- Spirit level, ruler, chalk, straight edge
- Blanking flange with vent facility (for pressure test)

7.1.1 Boiler compression tool size 2.2

Boiler sections	Compression tool per boiler hub	Extension piece per boiler hub	Dimensions (overall) in mm
7–10	1	0	2160
11–12	1	1	2760

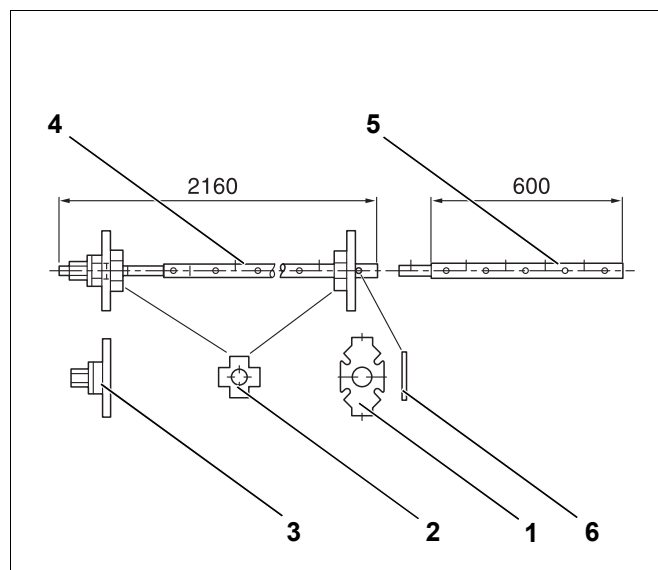


Fig. 4 Boiler compression tool size 2.2 (dimensions in mm)

- 1 Mating flange
- 2 Additional flange
- 3 Compression unit
- 4 Pull rod
- 5 Extension
- 6 Cylindrical pin (size 2.2)

7.1.2 Boiler compression tool 2.3 (complete in the toolbox)

Boiler sections	Compression tool per boiler hub	Extension piece per boiler hub	Dimensions (overall) in mm
7–12	1	3	3080

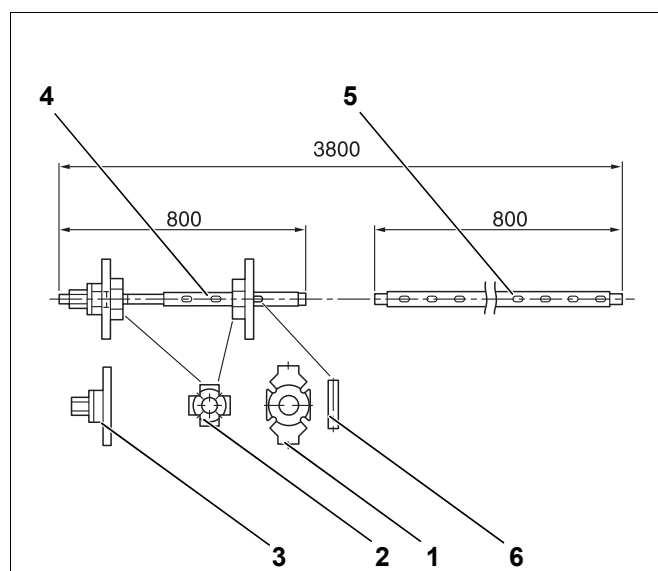


Fig. 5 Boiler compression tool size 2.3 (dimensions in mm)

- 1 Mating flange
- 2 Additional flange
- 3 Compression unit
- 4 Pull rod
- 5 Extension
- 6 Wedge (size 2.3)

7.2 Recommended wall clearances



USER NOTE

- We recommend you maintain the indicated clearance between boiler and walls, which is required in order to be able to install the boiler and for opening the burner door, as well as for cleaning and maintaining your system (→ Fig. 6 and table below).

You may hang the burner door for l.h. or r.h. opening (in the "as delivered condition" the door will be hinged on the r.h. side).

When installing your boiler, please maintain the recommended minimum dimensions (shown in brackets). Select the recommended clearances between wall and boiler to enable easy access during installation, maintenance and service work.

The distance from the wall on the hinge side must at least permit the burner withdrawal (AB). We recommend a distance between wall and boiler of AB + 100 mm.

Boiler size		Clearance A in mm	
kW	Boiler sections	Recommendation	There follows
240–350	7–9	1700	1000
400–510	10–12	2200	1000

If a front clearance less than the recommended dimension A (Fig. 6) is chosen, you will not be able to clean the boiler with the optional cleaning kit. As an alternative we would recommend the use of shorter (length approx. 1 m) cleaning devices or wet cleaning.

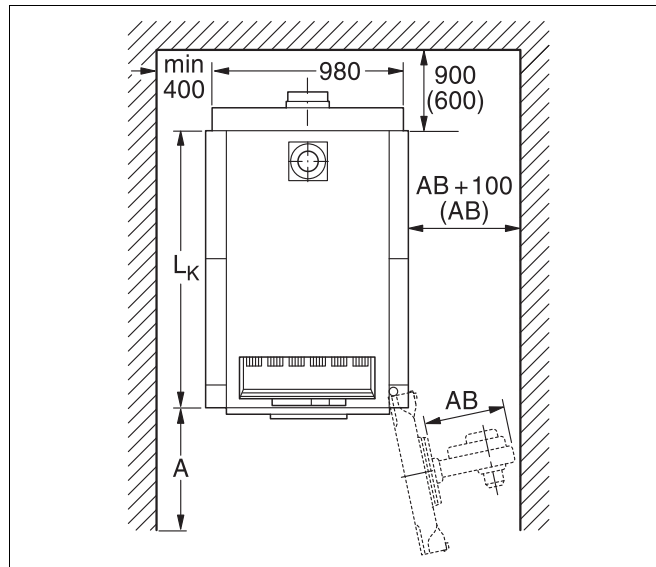


Fig. 6 Boiler room with boiler (dimensions in mm)

7.3 Positioning the boiler on a sub-structure or on foundations



USER NOTE

As accessory Buderus offers a boiler plinth designed to reduce body resonance.

You can cast a concrete plinth if the optional boiler plinth is not used. When casting the plinth, you must incorporate a steel angle with the dimensions 100 x 50 x 8 mm or a steel strip with the dimensions 100 x 5 mm (→ Fig. 7 and the following table), to ensure the boiler sections will slide into position during installation.



USER NOTE

- When casting the foundation, note the side to which the burner will be pivoted (burner door hinged on the r.h. or l.h. side, Fig. 6, page 16).

It is advantageous to position the boiler on a plinth 50 - 80 cm high (Fig. 7, [1]). The support surface must be perfectly flat and level. The front edge of the boiler should be flush with the edge of the foundation.

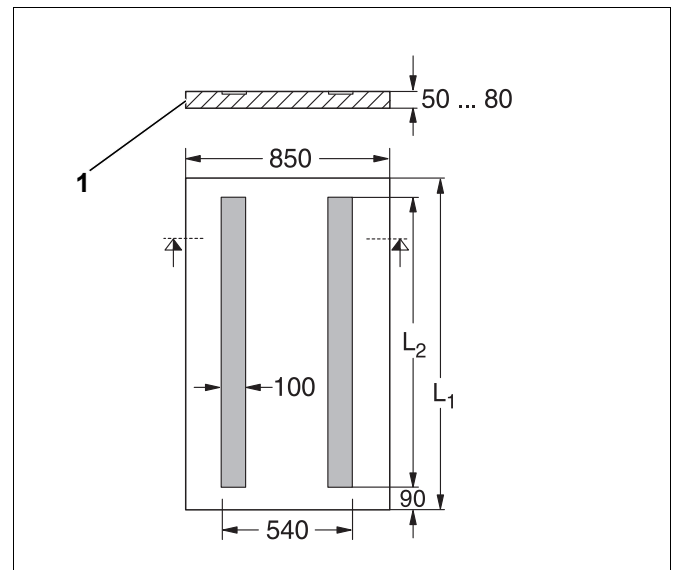


Fig. 7 Foundation dimensions in mm

Number of boiler sections	L ₁ (foundation) in mm	L ₂ (length of steel section) in mm
7	1360	1190
8	1530	1360
9	1700	1530
10	1870	1700
11	2040	1870
12	2210	2040

8 Boiler block assembly

Depending on the type of delivery, we distinguish between delivery in loose sections and as ready assembled block. For a delivery as block, the boiler sections are pre-assembled and checked for leaks prior to despatch. If, because of physical limitations, a boiler block cannot be assembled as a complete unit, the on site installation is carried out using loose components.

For the further installation of pre-assembled boiler sections, → chapter 8.3 "Positioning the boiler block – for pre-assembled deliveries", page 26.



CAUTION!

DANGER OF INJURY

through inadequately secured boiler sections.

- Use only suitable means of transportation when handling individual boiler sections, e.g. a sack truck with strap or a stair truck, etc.
- When handling, secure the boiler sections to the means of transport to prevent them slipping.

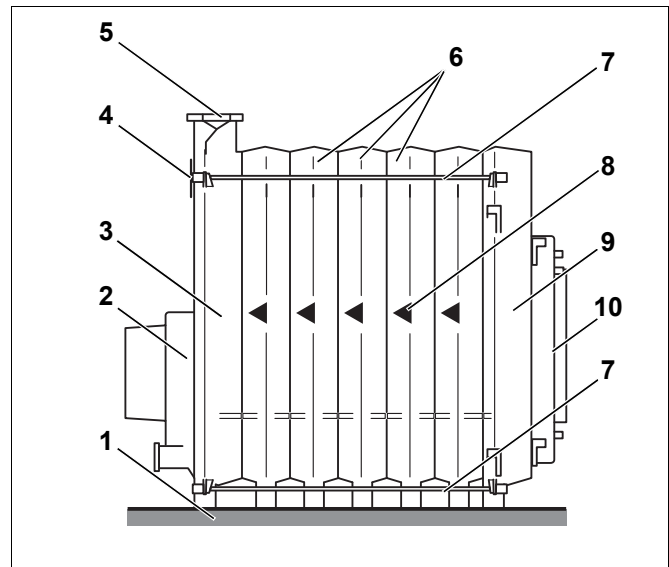


Fig. 8 Boiler block

- 1 Plinth or vibration absorbing boiler plinth
- 2 Flue gas collector
- 3 Rear section
- 4 Return connection
- 5 Flow connection
- 6 Centre section
- 7 Anchor rod
- 8 Arrow – assembly direction
- 9 Front section
- 10 Burner door with burner plate

8.1 Arrangement of boiler sections within the boiler block

The boiler block is assembled from the rear to the front, commencing with the rear section (Fig. 8, [3], page 18). Always assemble the front section (Fig. 8, [9], page 18) last.

During assembly please observe the arrows denoting the direction of installation (Fig. 8, [8]) and proceed according to the following instructions and illustrations.



CAUTION!

DANGER OF INJURY

through inadequately secured boiler sections.

- With the installation template, secure the rear/end section against tipping. Buderus supplies the installation template (accessory) on request.

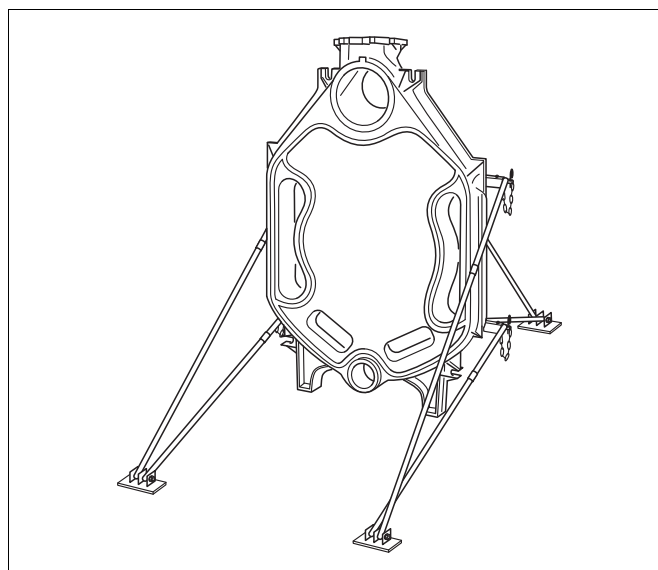


Fig. 9 Rear section with mounted installation template

8.2 Joining the boiler block assembly

Prior to fitting the front and rear sections, remove the nuts and washers from the bolts on the boiler section hubs.



USER NOTE

- Remove the clean-out cover from the rear section, if you are using the installation template, to secure the template.
-
- Remove the clean-out covers on the rear section (Fig. 10, [1] and [2]).

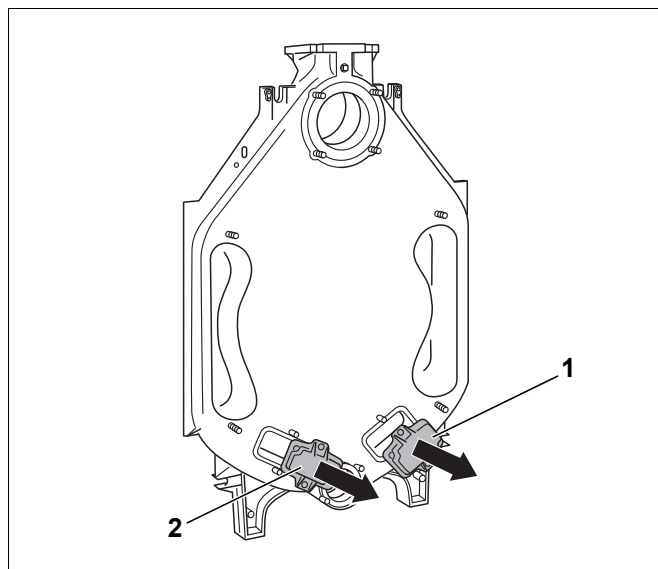


Fig. 10 Remove the clean-out covers

- Position the rear section and secure against tipping over with the installation template (Fig. 11 and Fig. 9 as well as the separate installation instructions for the installation template).

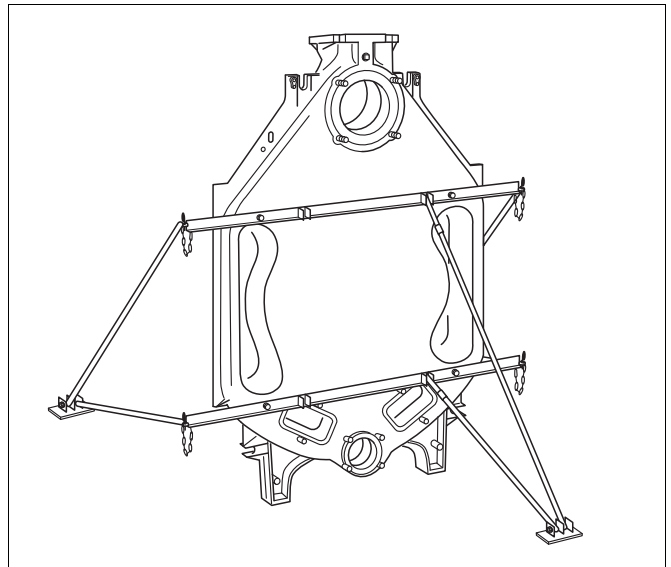


Fig. 11 Secure the installation template

- Remove possible burrs from the hub using a file (Fig. 12).
- Clean the packing groove (Fig. 13, [3]) where necessary using a wire brush and cloth.

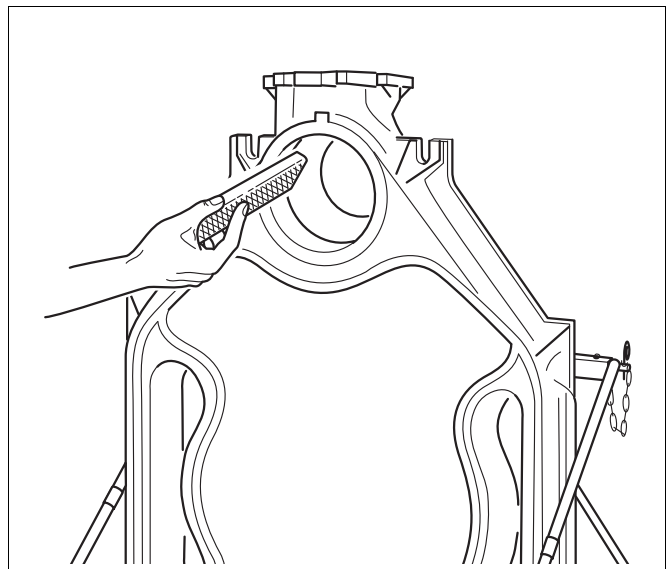


Fig. 12 Remove burr

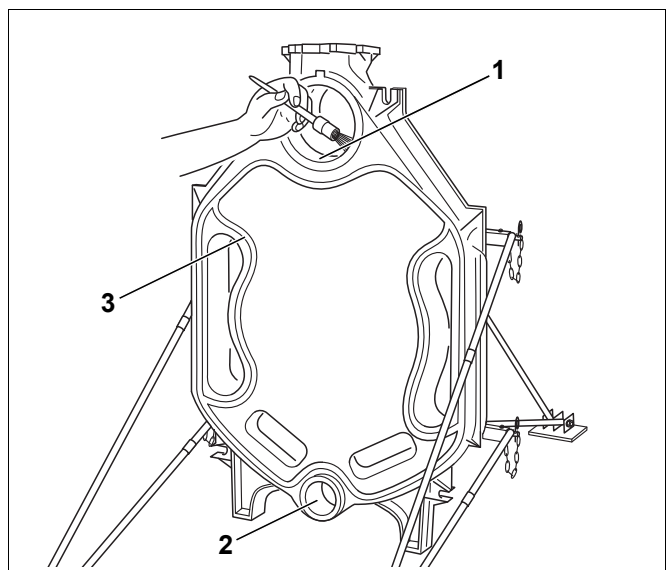


Fig. 13 Prepare packing grooves and hubs



DANGER OF BURNING

through flammable solvents.

CAUTION!

- When using solvents, avoid naked flames, incandescence and sparks.
 - Please observe the safety instructions regarding any solvents used.
- Clean the hub sealing faces (Fig. 13, [1] and [2]) with a cloth soaked in white spirit.
 - Coat the hub sealing faces evenly with jointing compound.

- During the next step, the nipples are prepared for the closing up of the boiler sections.
- Clean nipples with a cloth soaked in white spirit and coat evenly with jointing compound.
- Fit the nipples straight into the upper (size 4, 181/70) and lower (size 1, 82/50) hub of the rear section and hammer home securely with alternate heavy blows. Afterwards, the upper nipple (Fig. 14, **[1]**) should protrude approx. 45 mm, and the lower nipple approx. 35 mm from their respective hubs.
- Remove any burrs which might have been created with a file.

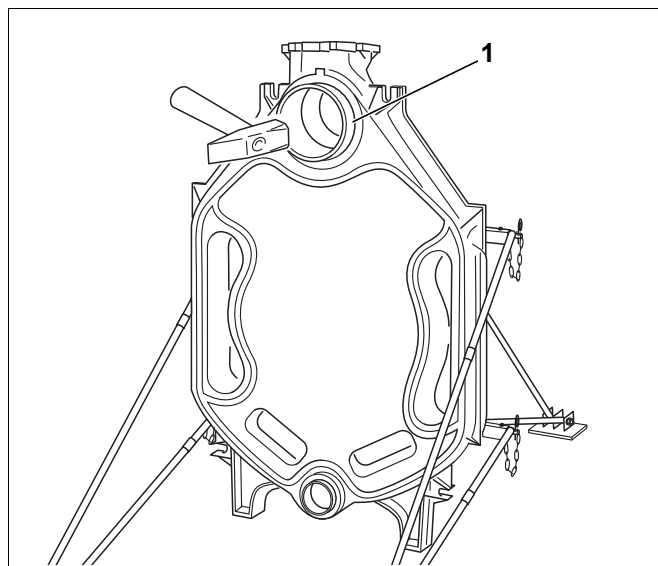


Fig. 14 Drive nipples home.

Keep the packing grooves (Fig. 15, **[1]**) clean and dry to enable the packing cord (KM cord) to adhere to the groove.

- Coat the packing groove with adhesive (adhesive base).



WARNING!

RISK TO HEALTH

through dangerous vapours released during the processing of materials, such as adhesives, adhesive bases or red lead putty.

- Ensure a good ventilation of the installation area.
- Please note the handling and safety instructions on the material packaging.

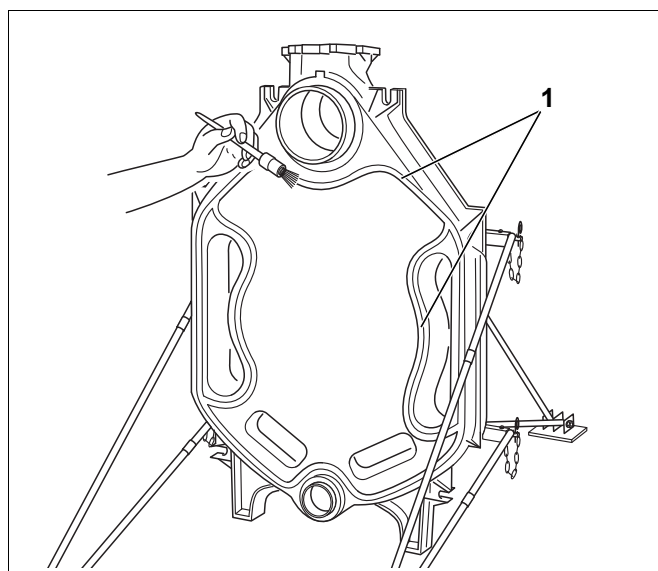


Fig. 15 Coat the packing grooves with adhesive

- Insert and lightly press home the packing cord (KM cord: Fig. 16, **[2]**) into packing grooves (Fig. 16, **[1]**) on the face of the rear section, beginning in the upper hub area. At the butt joints, overlap the packing cord by 2 cm and press firmly together.

Unroll the required length of packing cord (KM cord) from the roll supplied. Peel the backing paper from the packing cord (but do not stretch), as you insert the cord into the packing groove.

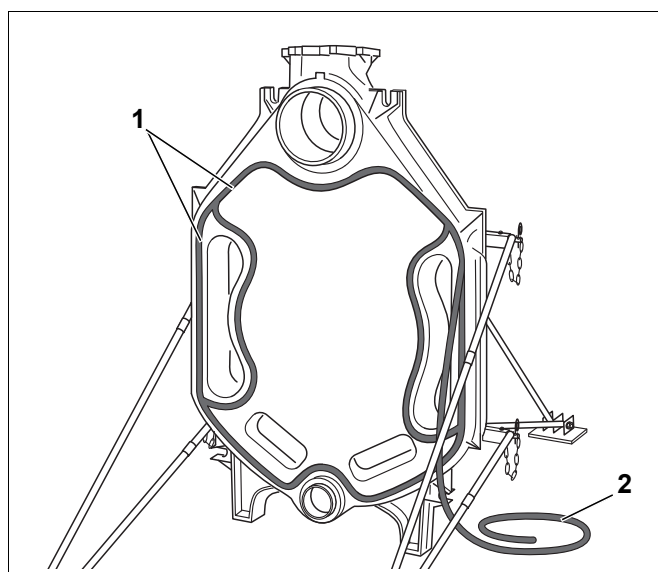


Fig. 16 Insert the packing cord (KM cord)

Preparation of the first central section:

- Remove any burrs from the hub using a file (→ Fig. 12, page 20).
- Ensure the sealing springs are clean and dry; clean if necessary.
- Clean the hub sealing faces with a cloth soaked in white spirit.
- Coat the hubs with jointing compound (Fig. 17, [1]).
- Coat the sealing springs with adhesive (adhesive base) (Fig. 17, [2]).

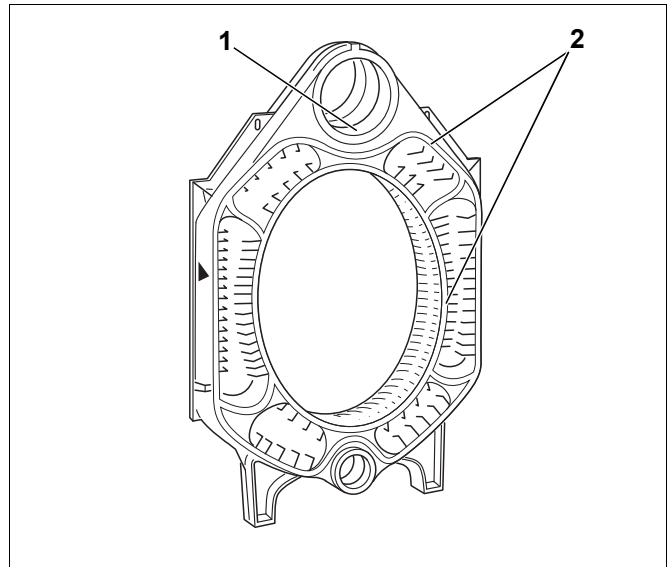


Fig. 17 Prepare the central section

- Set the centre section with the upper and lower hubs (Fig. 18, [2] and [4]) onto the nipples in the rear sections. Please note: the assembly arrow (Fig. 18, [3]) must point to the rear.

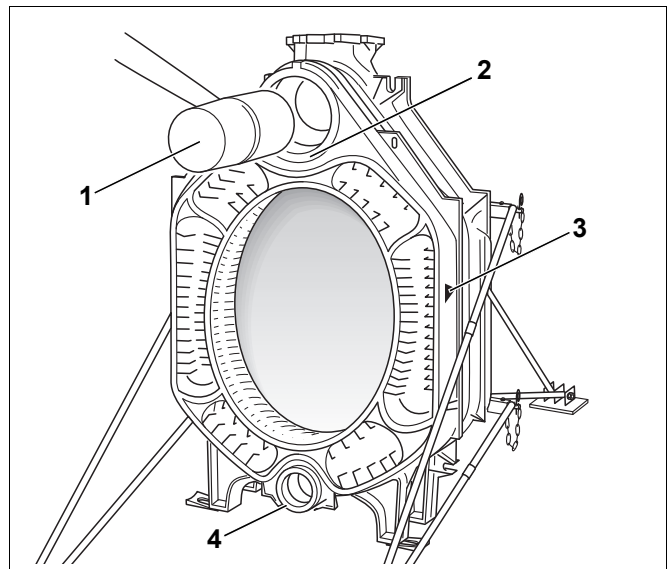


Fig. 18 Knock the central section into place



USER NOTE

- For easier assembly, first locate the boiler section to be fitted onto the nipple of the upper hub. Then align the boiler section on the lower hub.
- Drive the centre section onto the rear section using a wooden or a rubber mallet (Fig. 18, [1]).

Pull the partial boiler block together using the boiler compression tool, before you insert the nipples for the next centre section.

Use the boiler compression tool size 2.2 or 2.3 (Fig. 4 or Fig. 5 and Fig. 19, [1] and [2]).

- Push the compression flanges (Fig. 19, [3]) onto the pull rods (Fig. 4, page 15 or Fig. 5, page 15, [4]).
- Insert one pull rod through the upper and one through the lower boiler hub.
- Push the counter flanges onto the pull rods, and secure each with a wedge (cylindrical pin for compression tool 2.2).
- Hold the pulling rod at the centre of the boiler hubs and, with the clamping nut, lightly draw together the compression tools.



CAUTION!

BOILER DAMAGE

through incorrect pulling together of the boiler sections or too much pressure.

- Ensure that the nipples are undamaged by being knocked into position and that they are properly aligned.
- Never pull more than one nipple connection per compression process together.
- Stop pressing the sections together when the boiler hubs meet.

- Set both ratchet spanners onto the clamping nuts and press the boiler sections evenly together by tightening the nuts equally.



CAUTION!

DANGER OF ACCIDENTS

through material fatigue. Incorrectly used or poorly maintained compression tools may strip.

- Never work directly in front of a compression tool which is under tension.
- Ensure that no other person is in front of the compression tool.

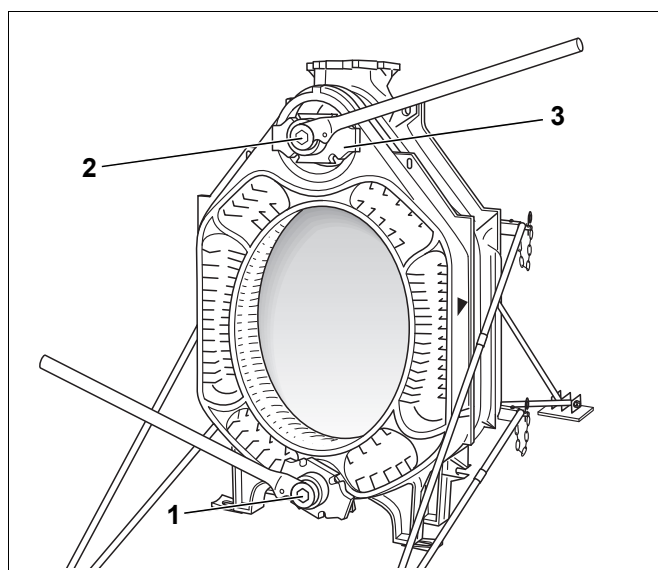


Fig. 19 Use the boiler compression tool

- Loosen and remove boiler compression tool.
- Check nipples for correct seating.

**CAUTION!****COMPRESSION TOOL DAMAGE**

The compression tool may be damaged or destroyed, if you compress pull rods with loose threaded connections.

- Before every use of the pull rods, check and, if necessary, tighten them. The pull rod is correctly positioned if it is fully inserted and no thread is showing (Fig. 20, [2]).
- Keep the thread (Fig. 20, [1]) clean. Contaminated threads can damage the compression tool during tightening.

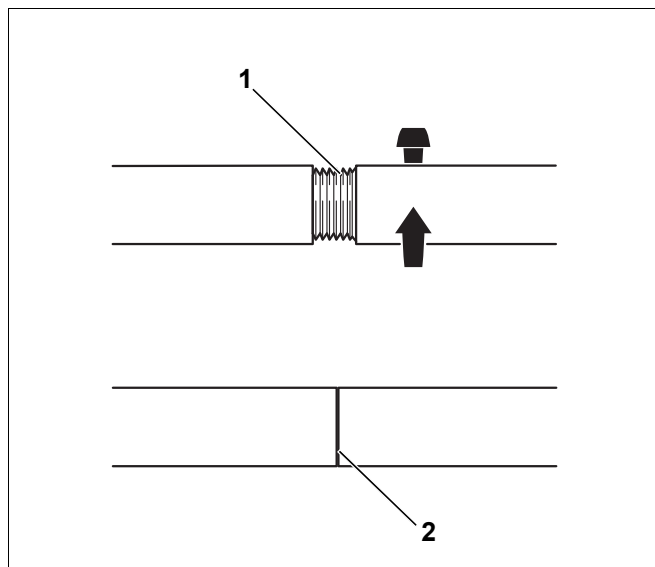


Fig. 20 Boiler compression tool size 2.3

Fig. 21 shows the rear section with a fitted centre section. The assembly is already prepared for the installation of the next centre section.

The boiler section was levelled with boiler section base wedges (Fig. 21, [1]) to simplify the installation. The boiler section base wedges are later used for final levelling the completed boiler block.

Assemble all other boiler sections as described. The front section is assembled last.

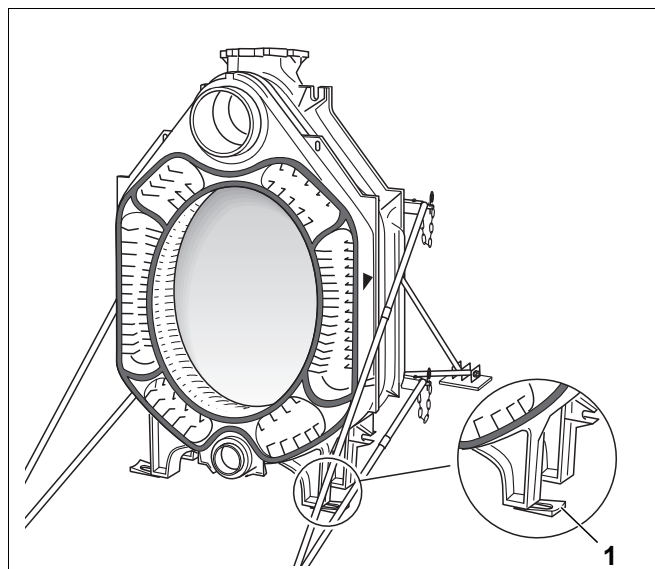


Fig. 21 Use boiler section base wedges

**CAUTION!****DANGER OF INJURY**

through falling boiler sections.

- Only remove the installation template when at least three boiler sections have been assembled.

**USER NOTE**

- Loosen the compression tool – but do not remove - after the front section has been assembled. First inset the anchor rods.

- Insert the anchor rods with fitted spring kits on the l.h. and r.h. sides, on the top and bottom adjacent to the boiler hubs, into the cast lugs (Fig. 22, [1] to [4]).

**SYSTEM DAMAGE**

through inadequate compression force.

CAUTION!

- Do not unwind the spring kit. Use it only in its original state.

- Tighten the nuts by hand.
- Now tighten the nuts on each anchor rod by 1 to 1½ turns.
- Align the boiler on the plinth or vibration absorbing plinth in the horizontal and vertical plane (→ chapter 7 "Boiler positioning", page 14).
- Remove the boiler compression tool.

Install the feed pipe in the next installation step (→ chapter 8.4 "Sliding the feed pipe into place (carton of installation components)", page 27).

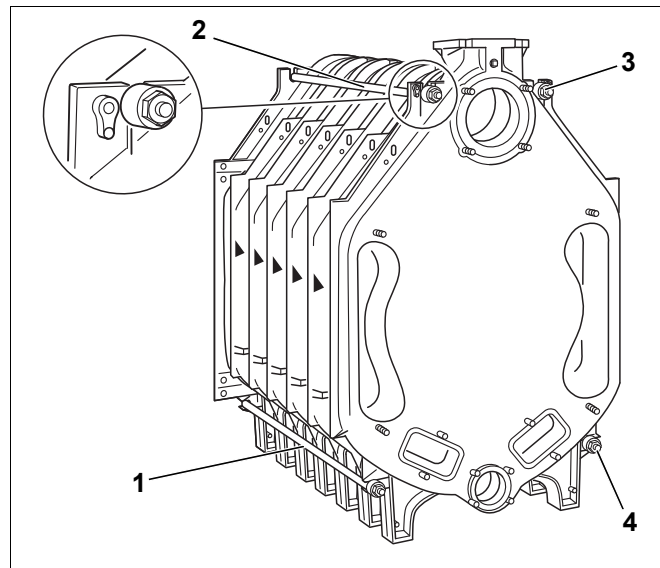


Fig. 22 Install the anchor rods

8.3 Positioning the boiler block – for pre-assembled deliveries

- Cut through the strapping bands (Fig. 23, [1]).
- Remove the pallet prior to positioning the boiler (Fig. 23, [2]).



DANGER TO LIFE

from falling material.

CAUTION!

- Ensure a suitable means for bearing the load is available.
 - Observe the safety regulation VBG9a "Load bearing equipment when using lifting gear" or local regulations.
- Align the boiler block on the plinth or anti-vibration base in the horizontal and vertical plane (→ chapter 7.3 "Positioning the boiler on a sub-structure or on foundations", page 17). To do this use the boiler section base wedges supplied

The feed pipe and sensor well installation is described on the following pages. Install both with pre-assembled boilers and those supplied as loose sections.

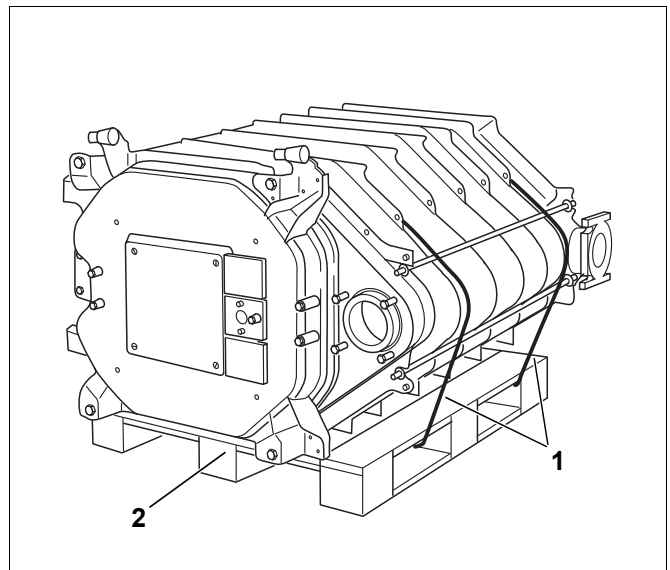


Fig. 23 Boiler block on pallet

8.4 Sliding the feed pipe into place (carton of installation components)

The feed pipe (Fig. 24, [4]) comes in two parts for boilers with 10 to 12 sections.

- Pull the flat seal over the feed pipe (Fig. 24, [1]).
- Insert the feed pipe from the front into the upper boiler hub.
- Close the pipe with a blanking flange (Fig. 24, [2]).



USER NOTE

The feed pipe must be correctly secured, so that its exit ports are positioned at the correct angle. This ensures optimum water distribution in the area of the upper boiler hub.

- Ensure that the lugs (Fig. 24, [3]) on the end plate of the feed pipe engage into the recess of the upper boiler hub (Fig. 24, [5]).

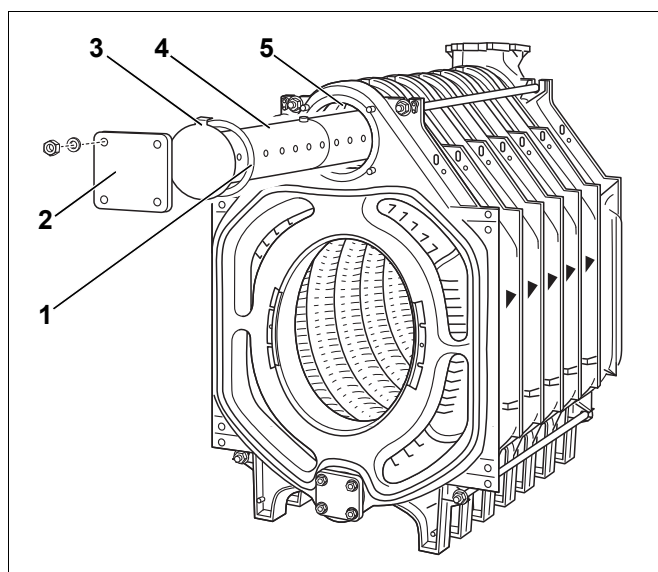


Fig. 24 Install the feed pipe

8.5 Seal-in the sensor well

- Seal the sensor well R $\frac{3}{4}$ " from the rear of the boiler (length: 110 mm) into the R $\frac{3}{4}$ " thread of the flow connector (Fig. 25, [1]).

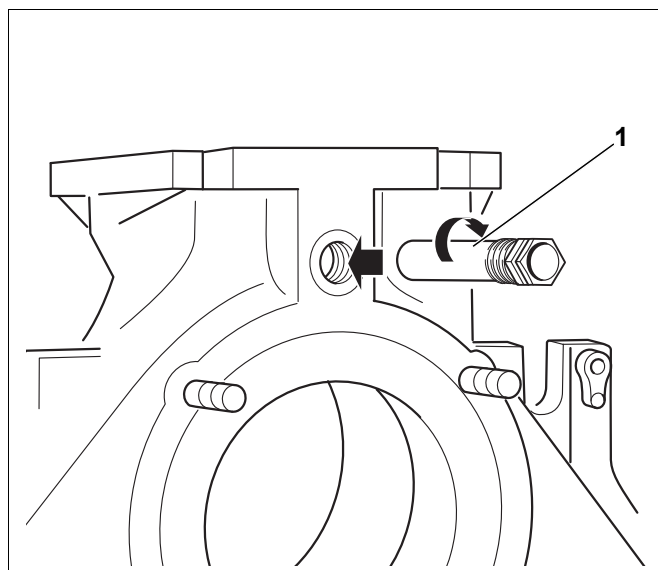


Fig. 25 Install the sensor well

8.6 Leak test

Carry out a boiler block leak test if the sections were delivered loose. Pre-assembled sections are leak tested in the factory.

For the further installation of pre-assembled boiler sections (→ chapter 11 "Burner installation", page 49).

8.6.1 Preparing the leak test

- Close the lower boiler hub (Fig. 26, [3]) at the front and rear. To do this, set the corresponding gasket (Fig. 26, [1]) onto the respective boiler hub and secure the blanking flange with 110 mm edge length. The flange with internal thread (R ¾") for the fill and drain connection (Fig. 26, [2]) is installed at the rear of the boiler.
- Fit the fill/drain cock (customer to flow).
- Close the flow and return connections (install the flange with vent screw on the flow connections).



SYSTEM DAMAGE

through overpressure.

CAUTION!

- Ensure that no pressure, control or safety equipment is fitted.

- Slowly fill the boiler with water through the fill/drain cock. Vent simultaneously at the air vent valve on the boiler flow connection.

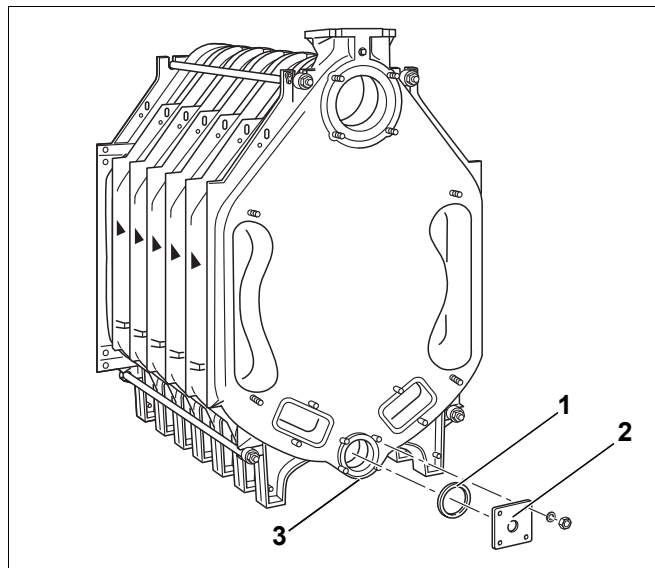


Fig. 26 Install the flange

8.6.2 Leak test

Carry out a leak test with a pressure of 8.6 bar (in accordance with the requirements of the European Pressure Vessel Guideline).

Use a pressure gauge class 1.0 for measuring the pressure.

- If a hub connection is leaking, first drain the water through the fill/drain cock.
- Remove the feed pipe.
- Remove the nuts from the four anchor rods and then the rods themselves.
- Separate the boiler sections where the leak occurred by driving (hammering) flat wedges or chisel at the points provided (Fig. 27, [1] and [2] at the top and bottom).



USER NOTE

- Use new nipples and new packing cord for the re-assembly.
- Re-compress the boiler and repeat the leak test.

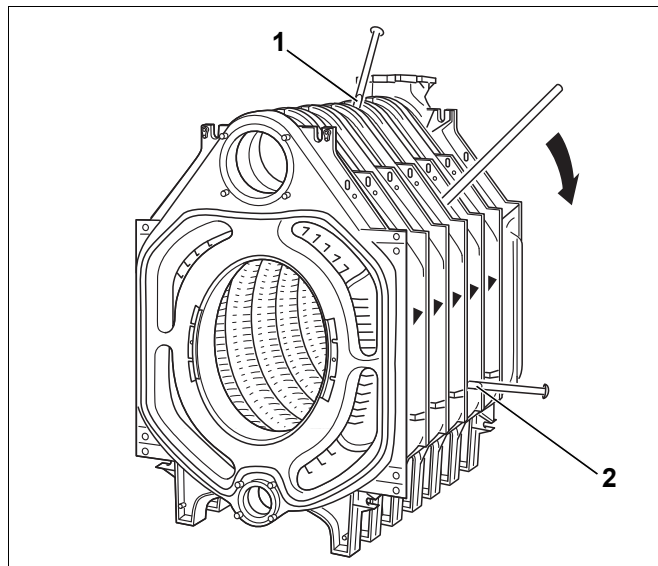


Fig. 27 Separate the boiler block

8.7 Boiler water connections

Please observe the following notes regarding the boiler connection to the pipework. These notes are important for fault-free operation.



SYSTEM DAMAGE

through leaking connections.

CAUTION!

- Connect the pipes without stress to the boiler connections.

**CAUTION!****SYSTEM DAMAGE**

through deposits, local overheating, noise and corrosion.

- Flush existing systems before connecting the boiler.
- Prevent boiler damage by installing de-sludging equipment into the system return.

The weld neck flange is fitted to the upper boiler hub (Fig. 28, [3] – return connection) when the return is installed later.

The illustration shows the weld neck flange and the flat gasket (Fig. 28, [4] and [5]).

- The flow connection flange (Fig. 28, [1]) and the flat gasket (Fig. 28, [2]) are required for the flow connection which is fitted later.

**USER NOTE**

You may order the boiler safety equipment assembly (accessory) separately from Buderus.

**CAUTION!****SYSTEM DAMAGE**

through temperature stresses.

- Never fill the heating system during operation via the KFE tap on the boiler. Instead use only the fill cock in the pipework (return) of the heating system.
- Install a fill cock into the heating system pipework (return).

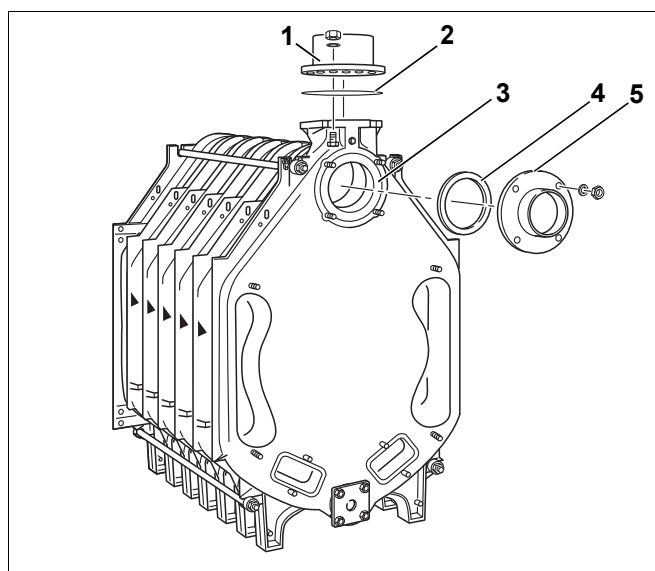


Fig. 28 Install the connection flanges

8.8 Installing boiler fittings and the burner door

In contrast to the delivery in sections, the burner door and the flue gas collector are already fitted to the boiler in the factory, if the boiler is supplied as pre-assembled block.

8.8.1 Positioning the flue gas collector

The GP packing cord (glass fibre cord with silicone sheath) is already inserted into the flue gas collector at the factory.

- Position the flue gas collector onto the four studs at the rear section (Fig. 29, [1] to [4]) and secure with washers and nuts.

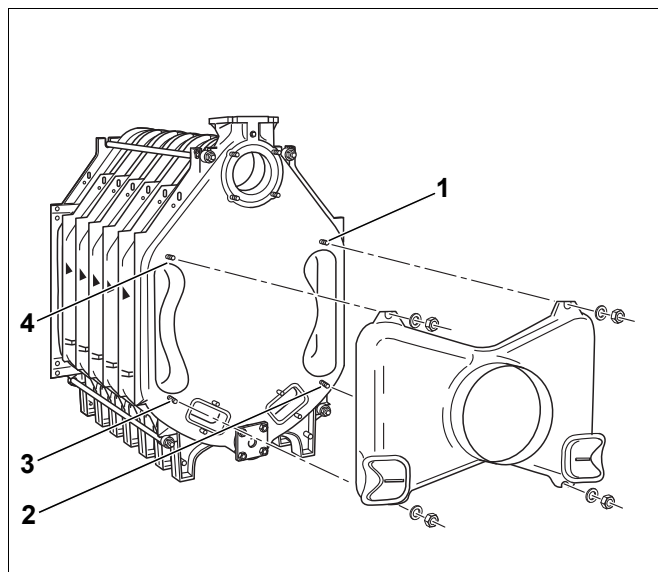


Fig. 29 Install the flue gas collector

8.8.2 Securing the clean-out cover at the rear section

If the clean-out covers were removed to secure the installation template on the rear section:

- Re-connect the clean-out covers together with washers and nuts to the rear section (Fig. 30, [1] and [2]).

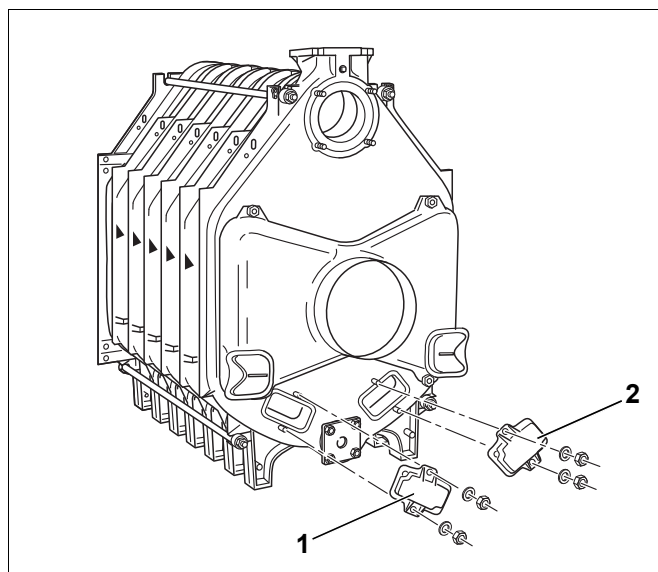


Fig. 30 Install the clean-out covers

8.8.3 Installing the burner door

- Insert a few drops of silicone adhesive every 15 to 20 cm into the packing grooves (Fig. 31, [2]) on the front section (Fig. 31).
- Insert the GP cord into the packing groove on the front section. Position the butt ends of the packing cord on the side of the section (Fig. 31, [2]).

At the factory, both hinge eyes are fitted to the r.h. side of the burner door (Fig. 32, [1] and [2]). To convert to l.h. hinges, remove the hinge eyes and fit them to the l.h. side of the burner door.

- Secure each hinge pin (r.h. fitting) with 2 x M12 x 55 to the front section (Fig. 31, [1] and [3]). Fit to the l.h. side for l.h. hinges.
- Secure the closure bars with leading edge for the burner door (r.h. mounting) with 2 x M12 x 55 each to the front section (Fig. 31, [4] and [5]). Fit likewise to the r.h. side for l.h. mounting.

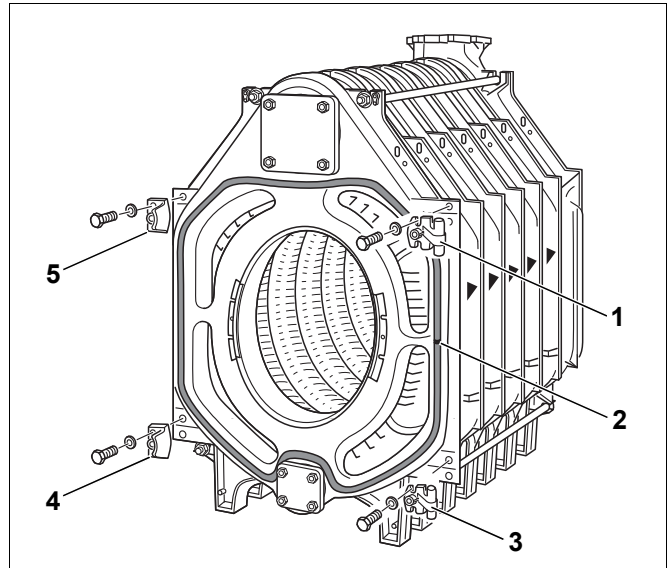


Fig. 31 Installing the hinge hooks and the closure bars

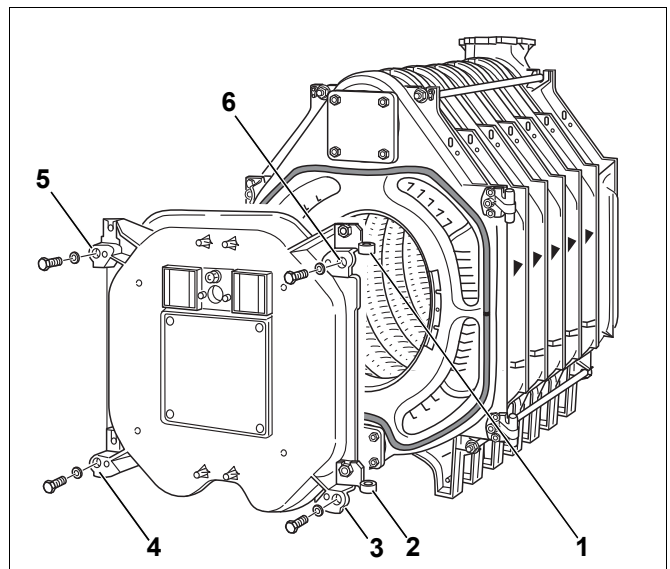


Fig. 32 Hooking in the burner door



USER NOTE

- Ensure that the leading edge of the closure bars are located on the inside of the boiler.
- Hook the burner door with the hinge rings onto the hinge pins.

8.8.4 Hot gas check plate on the front section

At the factory, the hot gas check plates (Fig. 33, [1] and [2]) are secured to the front section with one Allen screw each.

8.8.5 Insert the hot gas baffle plates



USER NOTE

The hot gas baffles are already fitted if the boiler is supplied as pre-assembled unit.

- You need only remove the corrugated cardboard packaging used to secure the baffles in transit.

- Remove the hot gas baffle plates from the fitting crate and insert it into the hot gas ways according to the instructions cast into the body (→ Fig. 34 and the following table).

Boiler size	Number of boiler sections	Length of the hot gas baffle plate in mm	Fitting instructions on the hot gas baffle plate (Fig. 34)
240	7	680	oben rechts (r.h. top)
295	8		oben links (l.h. top)
350	9		unten rechts (r.h. bottom)
400	10		unten links (l.h. bottom)
455	11	425	oben rechts (upper r.h.) oben links (top l.h.) unten rechts (r.h. bottom) unten links (l.h. bottom)
510	12	—	—

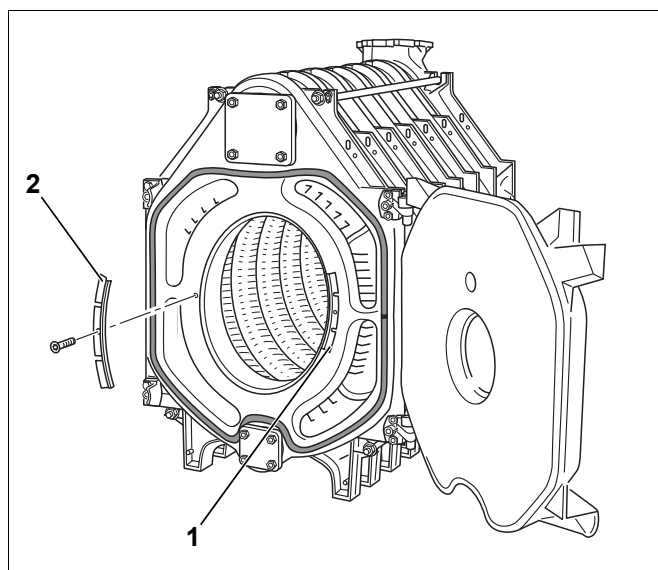


Fig. 33 Location of the hot gas check plates

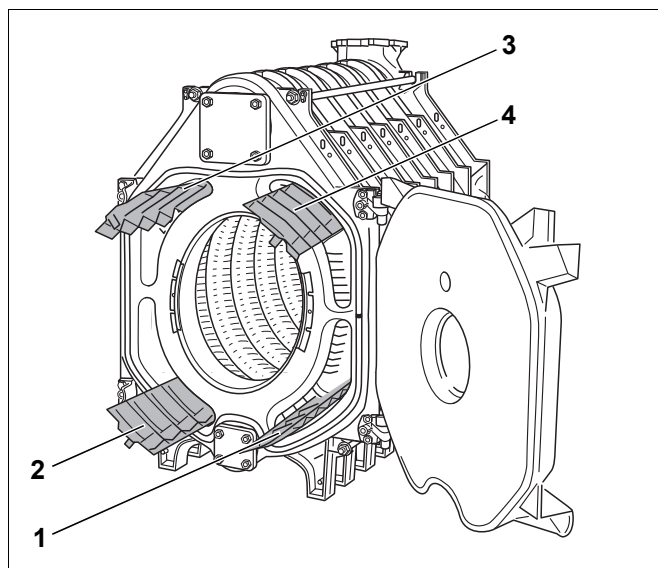


Fig. 34 Hot gas baffle plates

- Hot gas baffle plates (unten rechts)
- Hot gas baffle plates (unten links)
- Hot gas baffle plates (oben links)
- Hot gas baffle plates (oben rechts)

8.9 Installing the boiler shell

This section describes how to fit thermal insulation and casing components.



USER NOTE

Fit the cross and longitudinal rails before the thermal insulation to enable you to correctly align the mounting brackets.

You should first remove the longitudinal rail in the following step to enable the thermal insulation to be fitted.

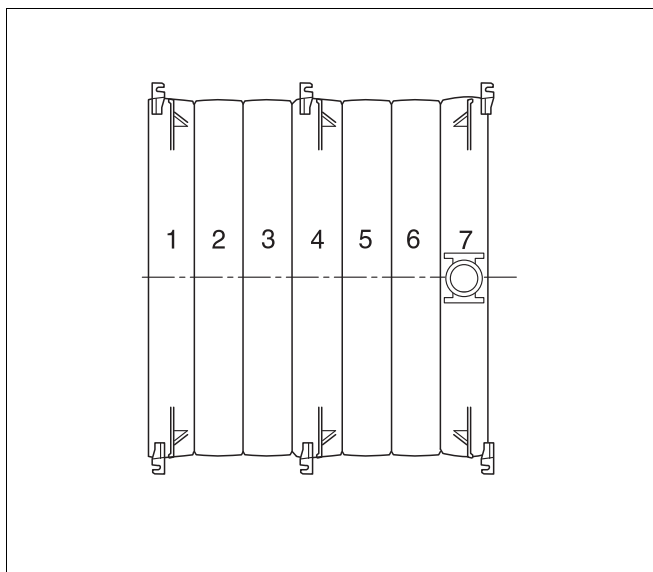


Fig. 35 Plan view: Boiler block (7 boiler sections) with mounting brackets

8.9.1 Installing the mounting brackets

- Loosly fit the mounting brackets for the boiler shell in accordance with drawing 35 and 36 to the top l.h. and r.h. fins of the boiler sections.



USER NOTE

- Secure the mounting brackets with screws to the rear section (Fig. 36, [2]) from the rear through the fins.
- Secure the mounting brackets on the front and centre sections (Fig. 36, [1]) exclusively from the front.

Total number of boiler sections	Installation on the r.h. and l.h. side of		
	Front section no.	Centre section no.	Rear section no.
7	1	4	7
8	1	4	8
9	1	5	9
10	1	5	10
11	1	4 and 7	11
12	1	4 and 8	12

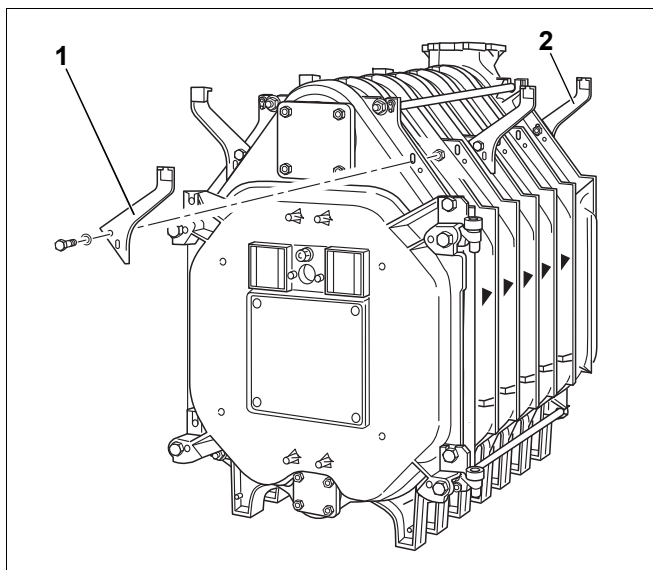


Fig. 36 Install the mounting brackets

8.9.2 Installing the tie-bars

- Secure the upper front cross tie-bars (Fig. 37, [2]) by hand on the cast lugs (Fig. 37, [1] and [4]) using hexagon screws (M8 × 16). The edge of the front tie-bar must point to the front.
- Secure the upper rear cross tie-bars (Fig. 37, [3]) on the cast lugs using hexagon screws (M8 × 16). The edge of the rear tie-bar must point to the rear.



USER NOTE

You can only align the longitudinal rails or mounting brackets before locating the thermal insulation.

- Correctly align the longitudinal rails or mounting brackets for the later installation of the side panels, covers and the thermal insulation.
-
- Locate the longitudinal rails (Fig. 38, [1] and [2]) on both mounting brackets on the rear and front sections.
 - Push the longitudinal rails with pre-fitted screws (Fig. 38, [3]) into the mounting bracket recesses (Fig. 38, [4]) and secure using these screws.

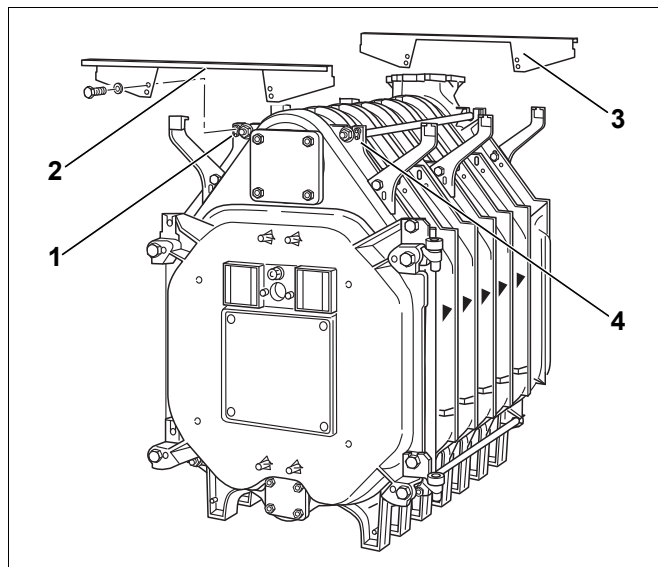


Fig. 37 Installing the cross tie-bars

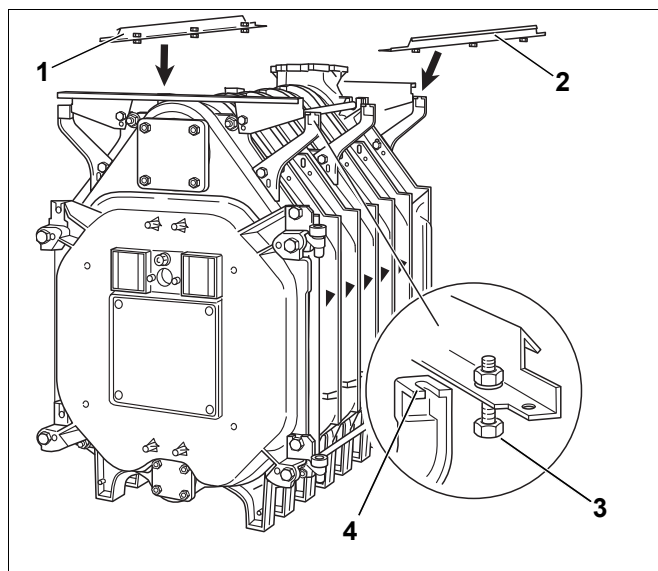


Fig. 38 Installing the longitudinal rails

- Locate the longitudinal rail (Fig. 39, [1]) with the front notch on the notch in the cross tie-bar (Fig. 39, [2]).
- At the rear of the boiler, push the longitudinal rail from below against the cross tie-bar.

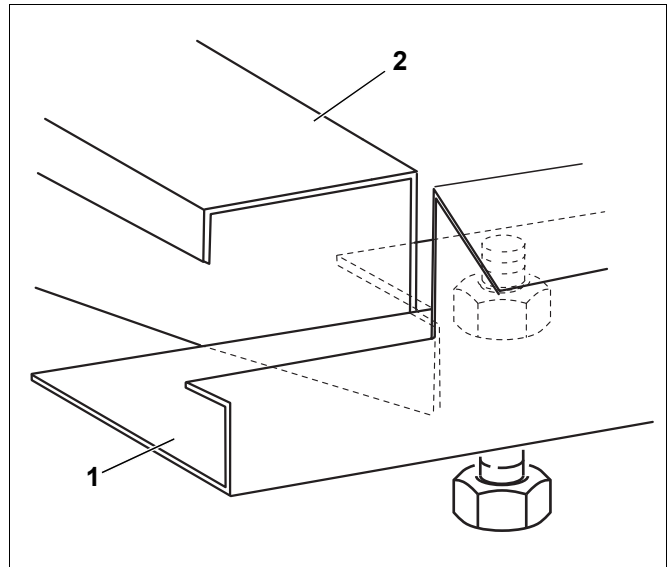


Fig. 39 Locating the longitudinal rail on the cross tie bar

- Align the longitudinal rails and the mounting brackets on the front and the rear sections (Fig. 40, [1] and [3]) secure tightly.
- Push the central mounting brackets (Fig. 40, [2]) from below against the longitudinal rails and tightly secure on the boiler block.

8.9.3 Installing the thermal insulation



USER NOTE

- Remove the longitudinal rails before installing the thermal insulation.

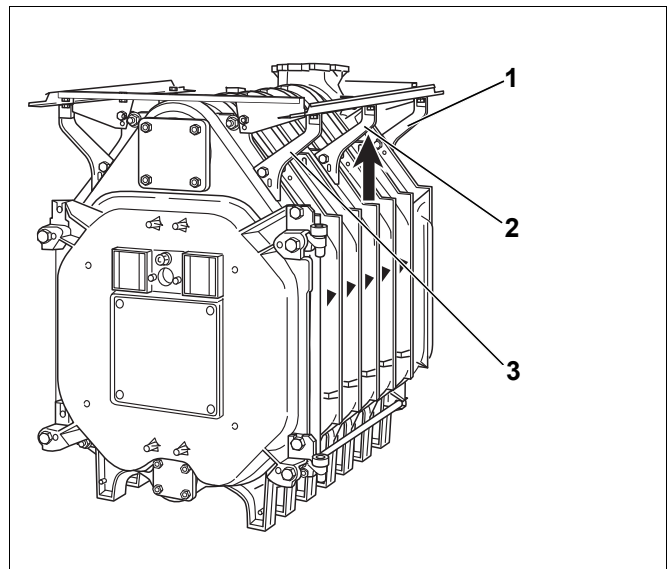


Fig. 40 Aligning the longitudinal rails

- The thermal insulation supplied (Fig. 41, [1]) corresponds to the respective boiler size. Arrange the thermal insulation in accordance with the diagram shown on drawing 42 on the boiler block (the figures above the thermal insulation shown unfolded correspond to the number of boiler sections).
- Insert the mounting brackets through the cut-outs into the thermal insulation.
- Push the thermal insulation in the lower area under the boiler block. The boiler section feet are set into the cut-outs of the thermal insulation.

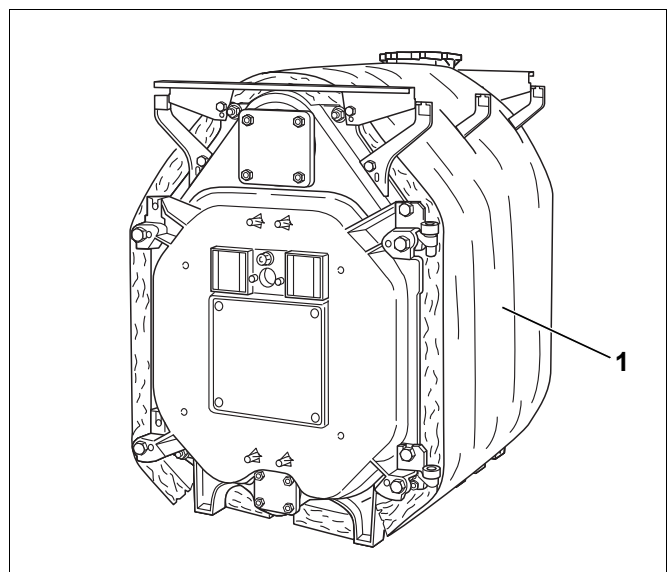


Fig. 41 Boiler block with thermal insulation

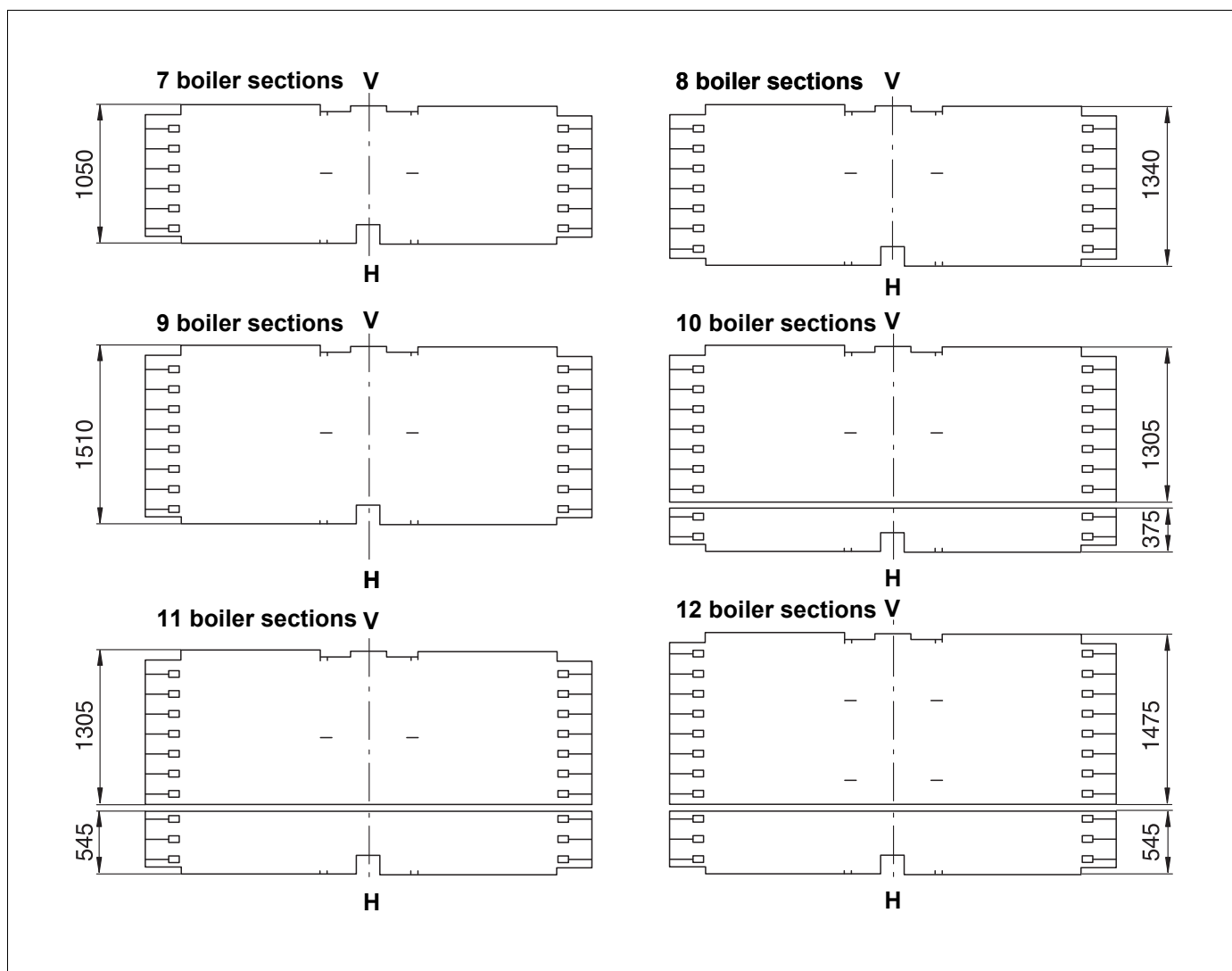


Fig. 42 Thermal insulation for various boiler sizes (dimensions in mm)

V = front (boiler front)

H = rear (rear of the boiler)

- Secure the cross tie-bars at the lower front (Fig. 43, [1]) with two hexagon screws each on the respective boiler section feet. The edges of these tie-bars must point outwards.

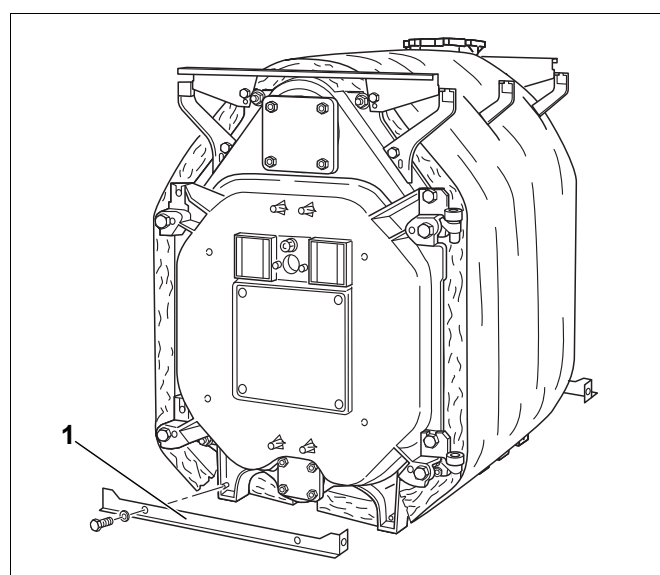


Fig. 43 Installing the lower cross tie-bars

- Fit the rectangular thermal insulation (Fig. 44, **[1]**) with cut-outs to the top front above the door.
- Secure the thermal insulation with three spring clips (Fig. 44, **[2]**) to the block thermal insulation.

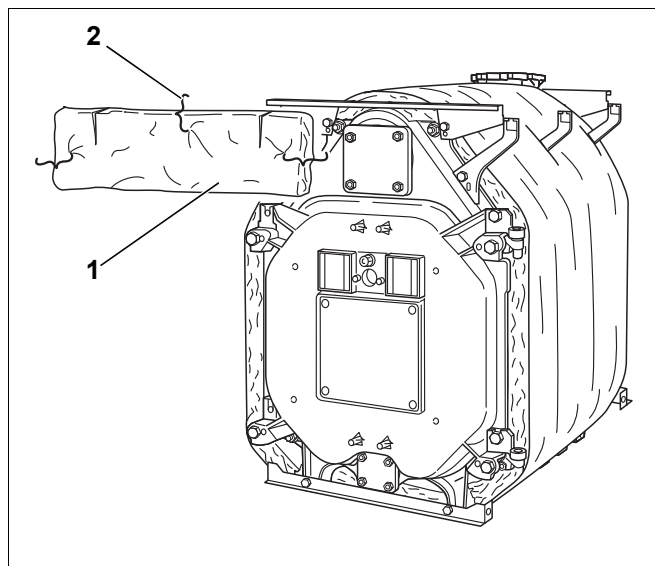


Fig. 44 Installing the front thermal insulation

- Push the longitudinal rails (Fig. 45, **[1]** and **[2]**), as already described, with pre-fitted screws into the mounting bracket recesses, and tightly secure using these screws.

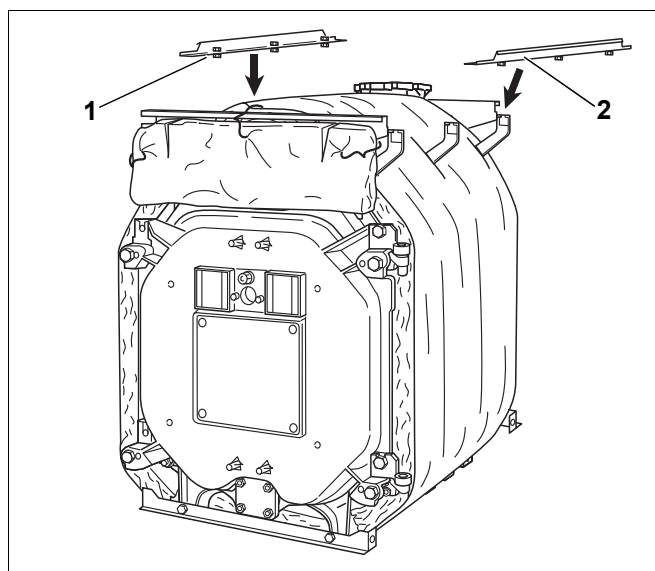


Fig. 45 Installing the longitudinal rails

- Slide the thermal insulation for the rear section (Fig. 46, **[1]**) onto the flue outlet. Ensure that the cut-out for the boiler return (Fig. 46, **[2]**) points upwards.
- Hook the thermal insulation of the rear section with four spring clips onto the boiler block thermal insulation.
- Close the gap below the flue outlet with a spring hook (Fig. 46, **[3]**).

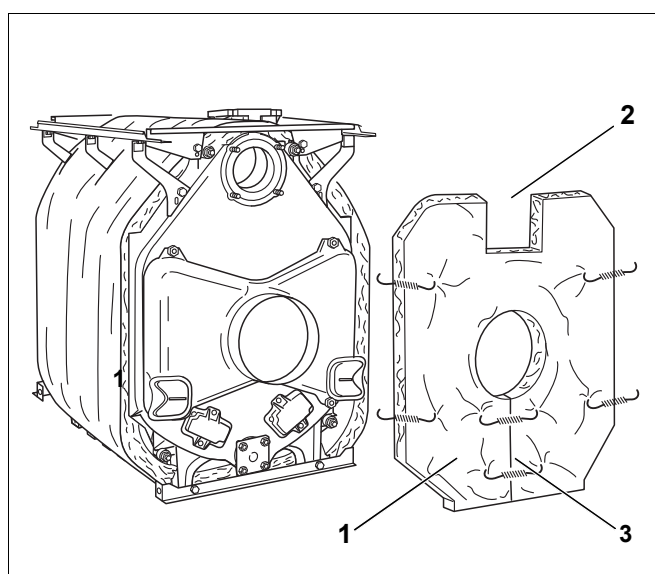


Fig. 46 Installing the thermal insulation on the rear section

- Hook the lateral plinth rails (Fig. 47, [1] and [3]) respectively with the long overhang forward (Fig. 47, [2]) into the lower cross tie-bars.
- Initially secure the sides of the plinth rails loosely to the cross tie-bars using self-tapping screws.

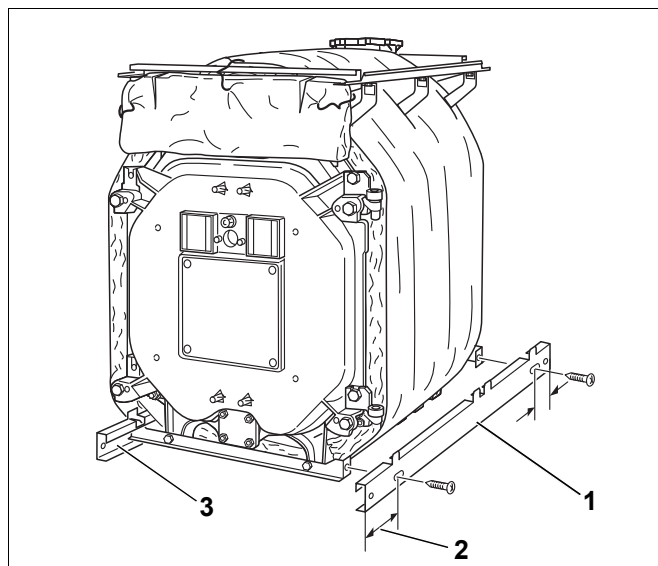


Fig. 47 Installing the lateral plinth rail

8.9.4 Installing side panels and covers

- Fit all side panels in accordance with the general arrangement drawing (Fig. 48).

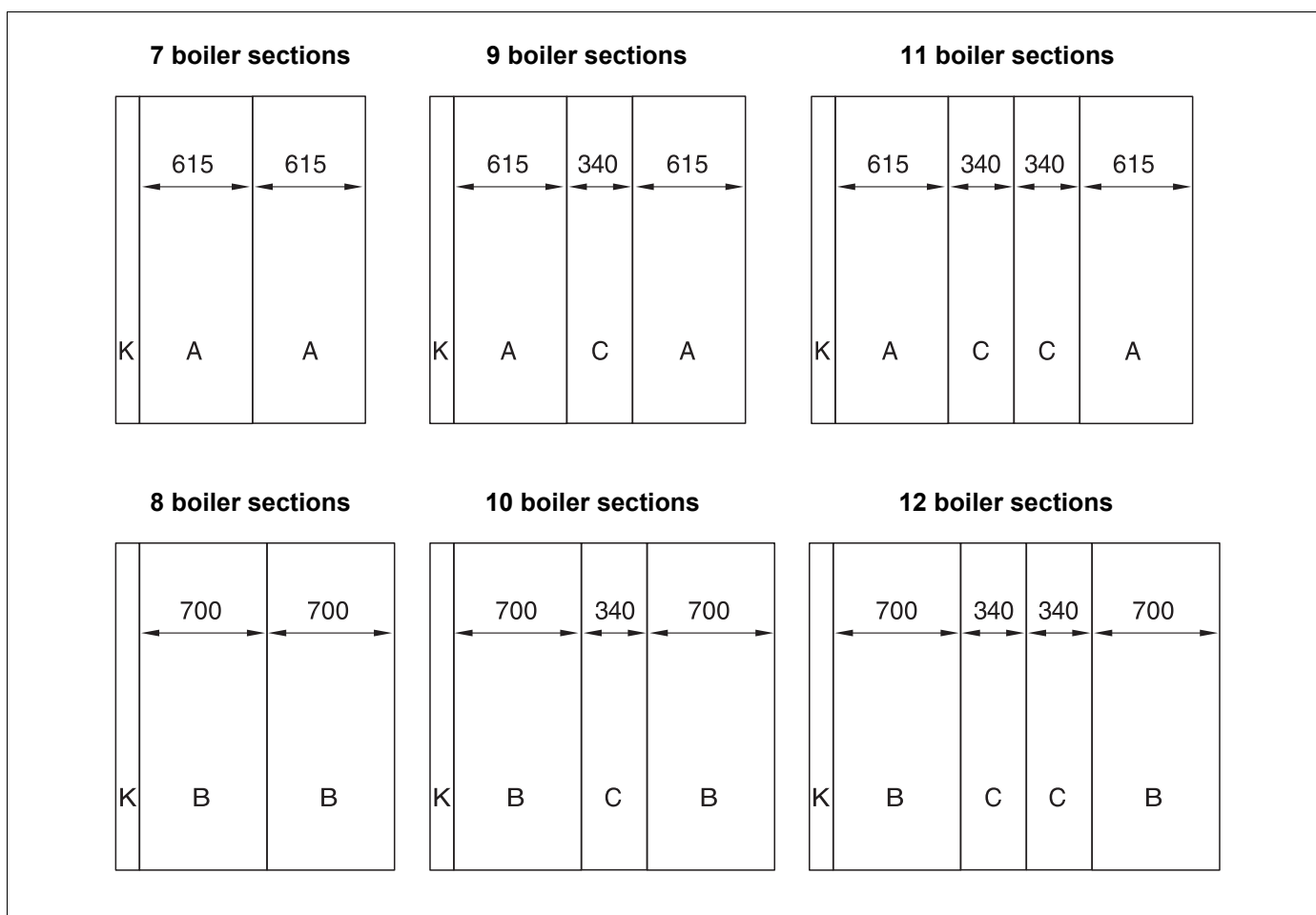


Fig. 48 Arrangement of the side panel components for various boiler sizes (dimensions in mm)

K = hinged cover (110 mm)

Prepare the installation of side panels by initially fitting the hinged covers (front) of the side panels.

- Pre-assemble the hinges of the hinged covers of the side panels using 2 self-tapping screws each.
- Hook the hinge hooks (Fig. 49, **[1]**) on the hinged cover of the side panel into the cut-out of the front side panel and secure with self-tapping screws.
- Hook the tensioning spring (Fig. 49, **[2]**) into the side panel and the hinged cover of the side panel.

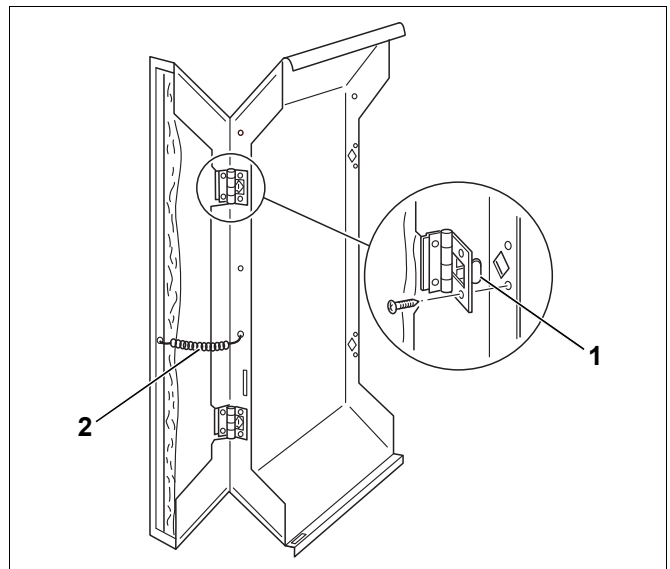


Fig. 49 Install the hinged covers to the side panels

- Hook the front side panels (Fig. 50, **[2]**) into the l.h. and r.h. bottom of the angled tabs on the plinth rails (Fig. 50, **[1]**), then push them at the top over the angled part of the longitudinal rails.

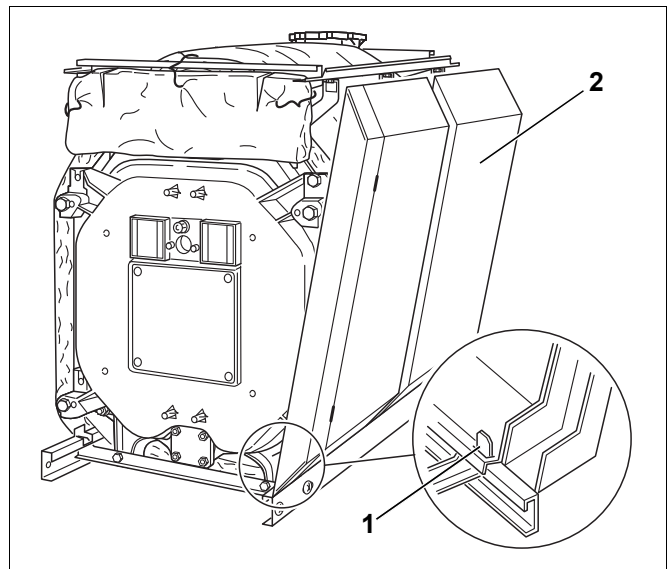


Fig. 50 Hook in the side panel components

- When the side panels (Fig. 51, **[2]**) are vertically aligned, tighten the self-tapping screws (Fig. 51, **[4]**).
- Push the cross plinth rails (Fig. 51, **[1]** and **[3]**) from the front and rear into the longitudinal plinth rails. The angled part of the cross plate must always be down and point towards the boiler (Fig. 51).

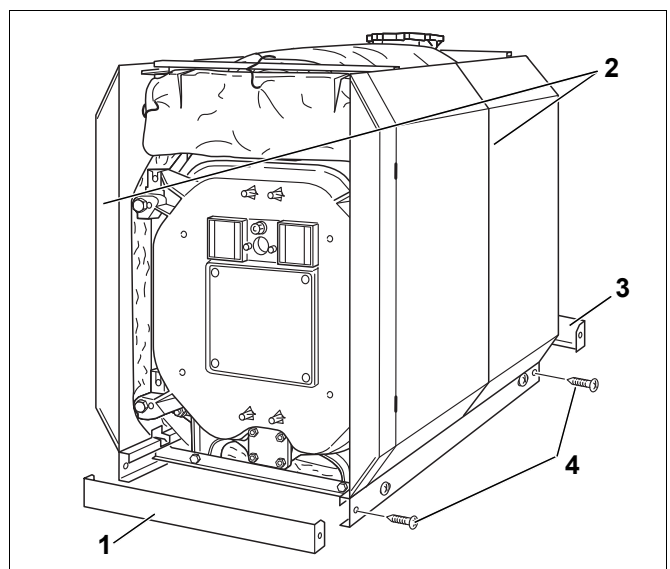


Fig. 51 Install the plinth rails

- Hook the front cover (Fig. 52, **[1]**) with both hooks (Fig. 52, **[3]**) into the front side panels.
- Secure the front cover with two self-tapping screws (Fig. 52, **[2]**) from below with the longitudinal rails.



USER NOTE

Install the control unit, route the capillary tubes to the sensor well and insert the sensors into the well, before positioning any other hood components (→ chapter 10 "Installing the control device", page 46).

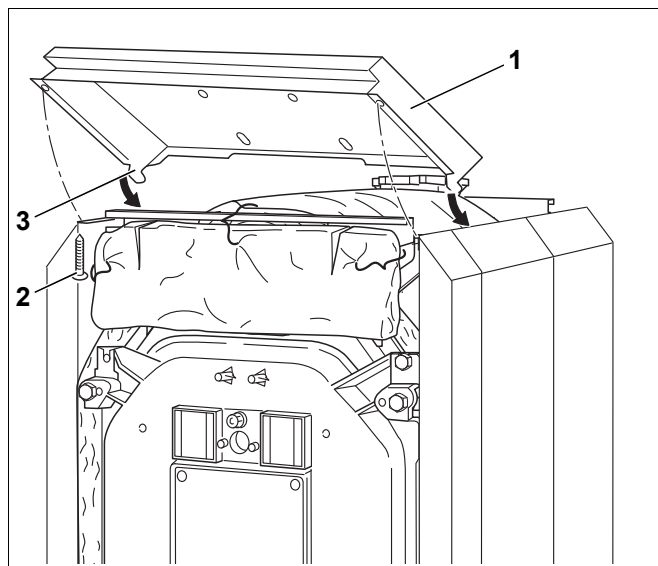


Fig. 52 Installing the front cover

- Slide the edges of the central boiler cover (Fig. 53, **[1]**) underneath the front boiler cover and insert into the flange of the side panels.

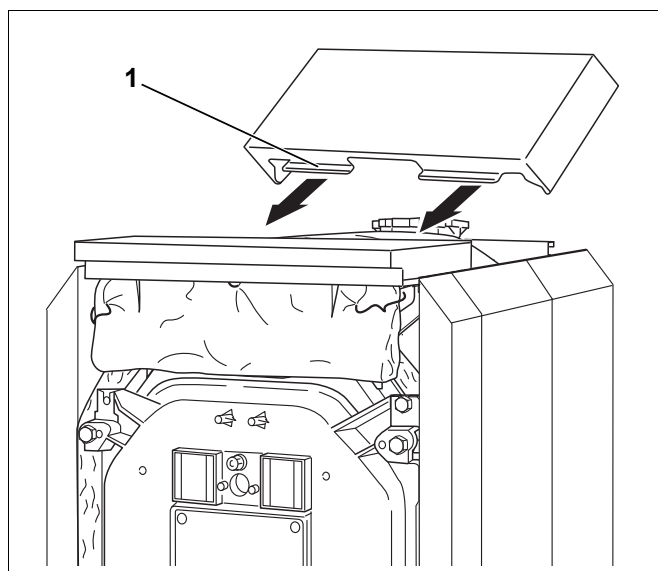


Fig. 53 Installing the central cover

- Locate the edges and the notch for the boiler flow of the rear boiler cover (Fig. 54, **[1]**) forward onto the side panels.

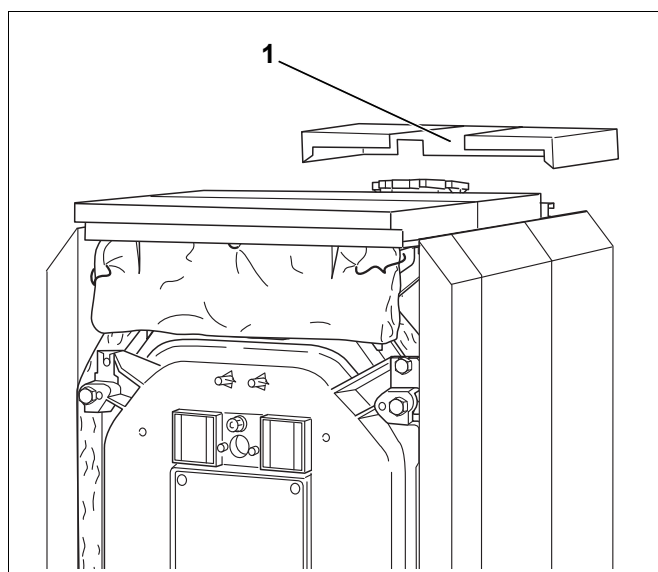


Fig. 54 Installing the rear cover

- Push the upper rear boiler panel underneath the rear boiler cover (Fig. 55, [1]) and secure with four self-tapping screws from the rear on the side panels (Fig. 55, [2]).

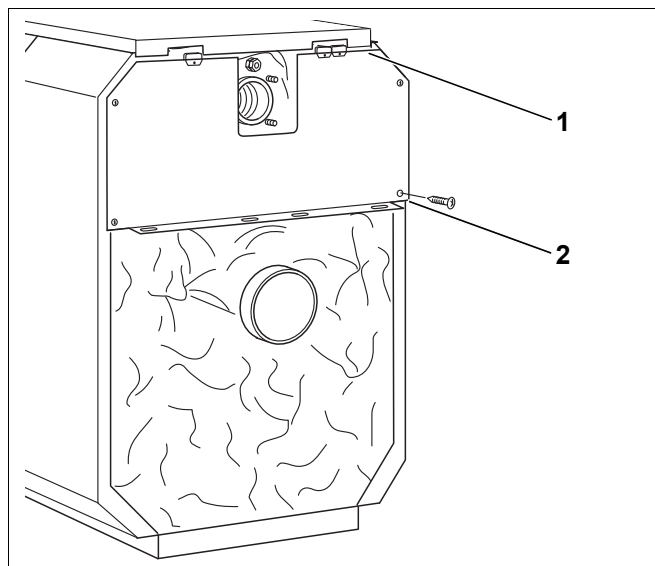


Fig. 55 Installing the upper rear boiler panel

- Insert the snap nuts into the l.h. and r.h. side panels and into the rear boiler panel components (Fig. 56, [1], [3], [4] and [8]).
- Hook the lower boiler panel sections on the left and the right into the slots of the edge of the upper rear boiler panel and the side panel (Fig. 56, [5]).
- Secure the boiler rear panel components with self-tapping screws to the side panels.
- Secure the link plate (Fig. 56, [2]) below the flue outlet on the rear boiler panel components using self-tapping screws.
- Secure the plastic cable glands either on the l.h. or r.h. side of the upper rear boiler panel (Fig. 56, [5] and [6]).

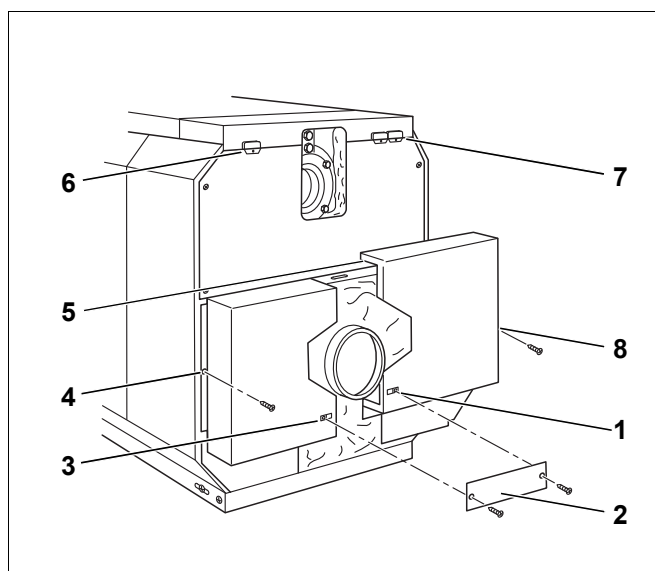


Fig. 56 Installing rear boiler panel components

- Hook the burner cable with strain relief into the cable gland (Fig. 57, [1]).
- Insert the burner cable with strain relief into the burner door casing.
- Route the burner cable inside the burner door casing return upwards and secure with a fixing bracket, so that the burner cable avoids touching any hot boiler parts.
- Push the burner door casing from the front onto the burner door, and secure with four bolts on the door (Fig. 57, [2] to [5]).
- Route the burner cable to the control device cable gland.

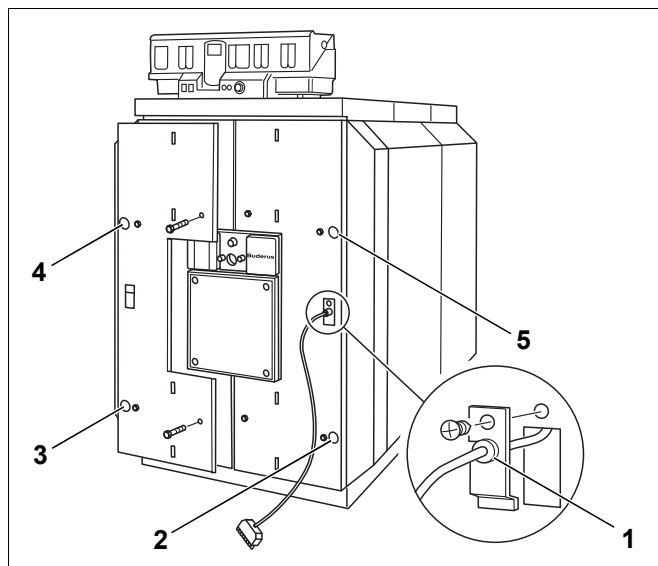


Fig. 57 Install the burner door casing

- Hook in the burner door facia panels into the burner door casing (Fig. 58, [1] and [2]).
- Place the type plate clearly visible and according to boiler location on the r.h. or the l.h. side panel.



USER NOTE

For boilers delivered as pre-assembled blocks you will find the type plate together with the installation and maintenance instructions inside the combustion chamber; if you receive loose components you will find it inside a clear bag on the burner door.

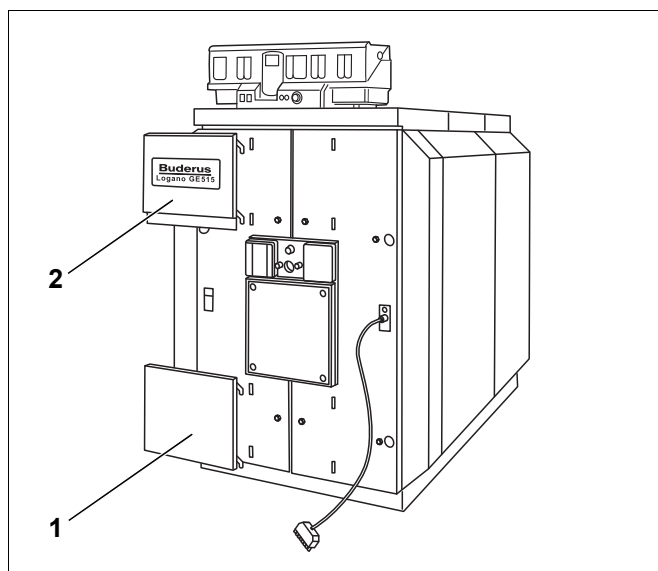


Fig. 58 Hook in the burner door facia panels

9 Boiler flue connection

This chapter informs you of how you make the boiler flue connections.

9.1 Fit the flue pipe sealing collar (accessory)



USER NOTE

We recommend you use a flue pipe sealing collar (Fig. 59, [1]).

- Insert the flue pipe (Fig. 59, [4]) until it contacts the flue gas collector outlet (Fig. 59, [6]).
- Place the flue pipe sealing collar (Fig. 59, [1]) on the top so that it overlaps the flue pipe (Fig. 59, [4]) and the flue gas collector outlet (Fig. 59, [6]).
- Place the jubilee hose clips (Fig. 59, [5]) over the flue pipe sealing collar (Fig. 59, [1]). One of the hose clips (Fig. 59, [5]) must clamp on the flue gas collector outlet (Fig. 59, [6]) and the other onto the flue pipe (Fig. 59, [4]).
- Tighten the jubilee hose clips (Fig. 59, [5]). The flue pipe sealing collar (Fig. 59, [1]) must fit smoothly and closely.



USER NOTE

- Re-tighten the jubilee hose clips if necessary.

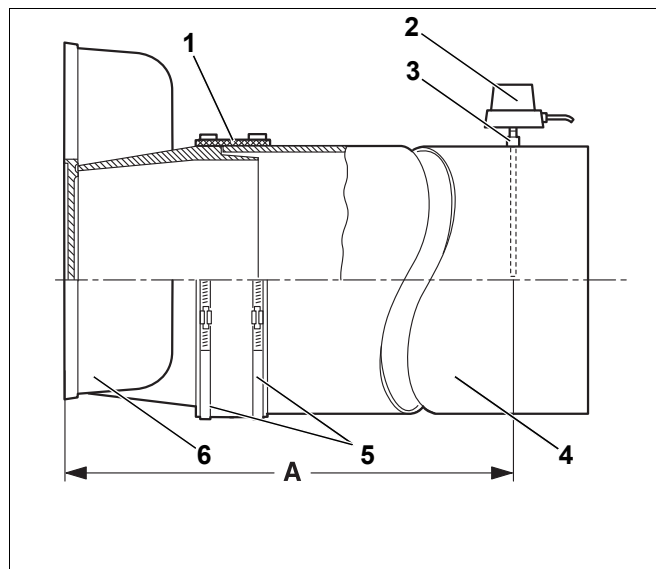


Fig. 59 Install the flue pipe

- 1 Flue pipe sealing collar
- 2 Flue gas temperature sensor
- 3 coupling
- 4 Flue pipe
- 5 Jubilee hose clip
- 6 Flue gas collector

9.2 Fitting the flue gas temperature sensor (accessory)

- Weld the coupler (Fig. 59, [3]) at a distance of 2 x flue pipe diameter (A) from the flue gas collector (Fig. 59, [6]) into the flue pipe (Fig. 59, [4]).
- Install the flue gas temperature sensor (Fig. 59, [2]) in accordance with disconnect installation instructions.

10 Installing the control device

This chapter explains how to install a series 4000 control device, plus a temperature sensor set.

10.1 Installing the control device

Figure 60 shows the control unit and the front cover "A" as viewed from the rear.

- Loosen both screws (Fig. 60, [1]) securing the terminal cover. Remove the terminal cover by pulling it upwards.
- Mount the control unit. Insert the control unit at the front of the boiler with the locating tabs (Fig. 60, [4]) into the oval apertures of the front boiler hood (Fig. 60, [5]). Pull the control unit forward and then pivot it back. Ensure that the resilient hooks (Fig. 60, [2]) engage at the rear into the rectangular apertures of the front boiler hood (Fig. 60, [3]).
- Secure the control unit base on the r.h. and l.h. side of the cable way (Fig. 60, [6]) in the front boiler hood with two self-tapping screws (Fig. 60, [7]).

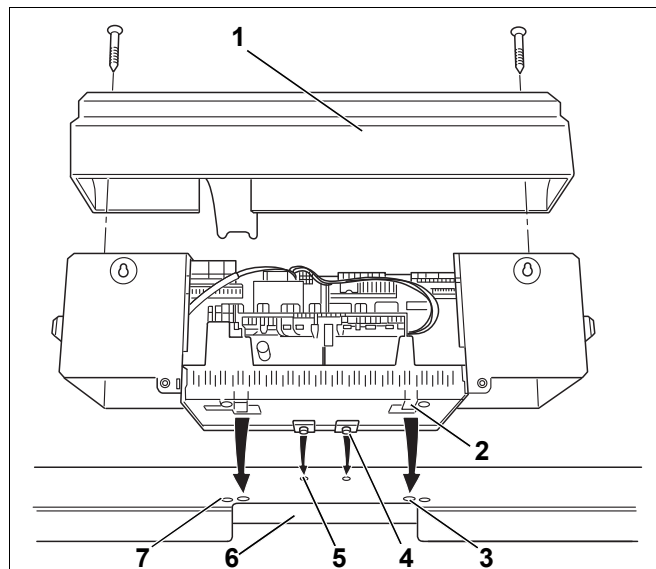


Fig. 60 Installing the control device

10.2 Installing the temperature sensor set and burner cable



USER NOTE

Observe the following when connecting the control device:

- Carefully route the cable ducts and capillary pipes.
- Never kink capillary pipes during installation.
- Work on heating systems must only be carried out by qualified personnel. If you are not suitably qualified, let an electrical contractor carry out the electrical connections.
- Observe all local regulations.

- Where necessary remove any knockouts (Fig. 61, [1]) in the back of the cable duct (Logamatic 33xx) or from the rear wall (Logamatic 43xx) (Fig. 61, [2]).
- Insert the capillary pipes through the cable gland and unroll to the required length.

The sensor well has already been sealed into the flow connection coupler (see chapter 8.5 "Seal-in the sensor well", page 27).

The temperature sensor set (three sensors, one sensor blank Fig. 62, [1]) connected to the control unit is fitted into the R 3/4" sensor well.

- Route the capillary sensor to the measuring point on the boiler and insert it into the sensor well as far as it will go (Fig. 62, [2]); then secure the assembly with a sensor securing device (Fig. 62, [3]).

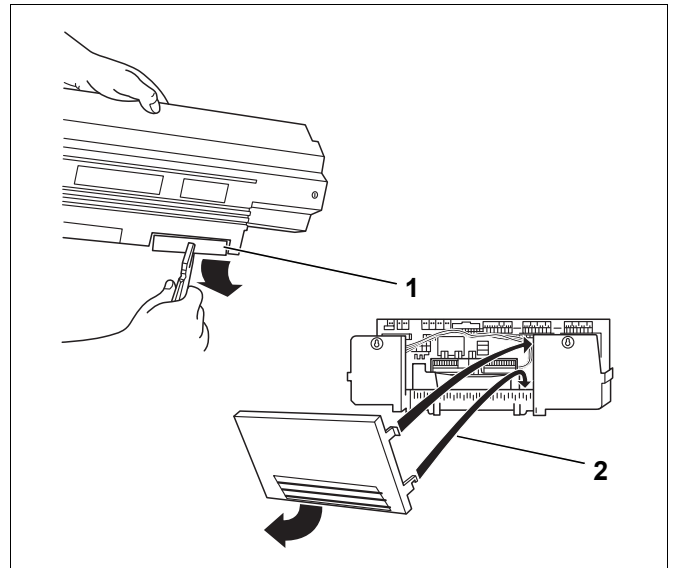


Fig. 61 Prepare the cable duct

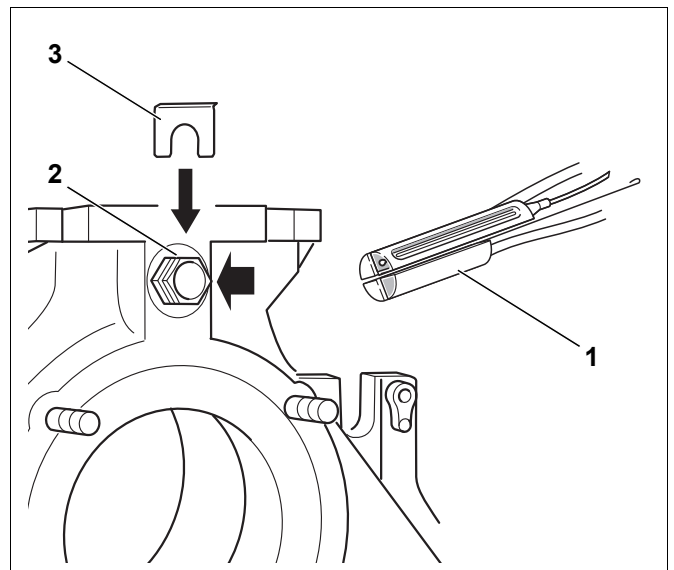


Fig. 62 Install the temperature sensor set

- Secure the cable duct (Fig. 63, **[1]** and **[2]**) on the l.h. and r.h. side to the rear of the boiler.

Provide a permanent connection acc. to EN 50165 or in accordance with the relevant national regulations.

- Make all electrical connections in accordance with the wiring diagram. Pay particular attention to the cable and capillary pipe runs!



USER NOTE

- Secure all cable runs with cable ties.

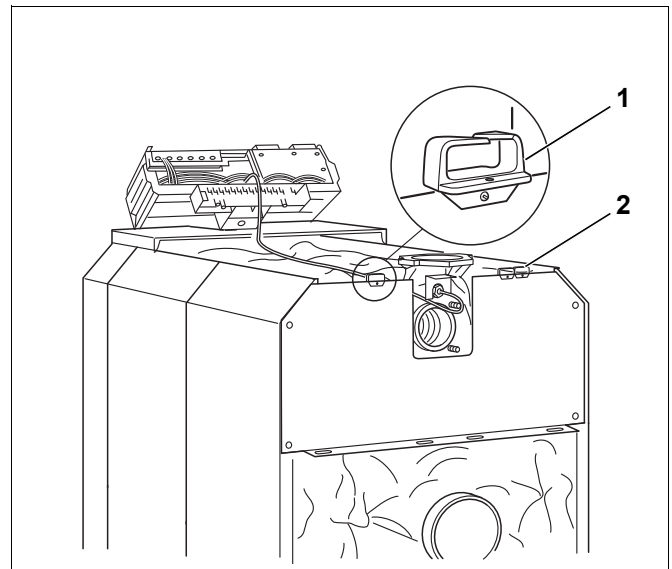


Fig. 63 Electrical connection

- Insert cable clips with fitted cables into the clip frame and secure by pivoting the lever (Fig. 64, **[1]**).

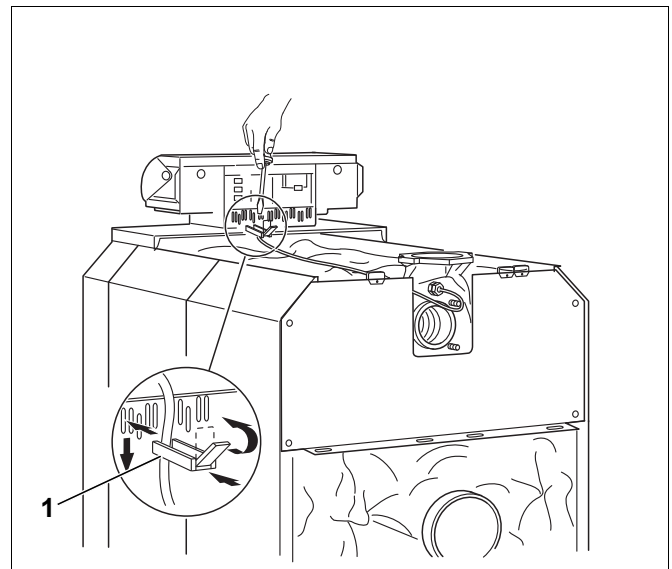


Fig. 64 Secure all electrical cables

- Hook the rear wall part (Logamatic 43xx) with the lower hooks into the clip frame and push the top part home, until the lateral hooks engage (Fig. 61, **[2]**).
- Fit the terminal cover (Fig. 60, **[1]**) with two self-tapping screws and secure on the control unit base (Fig. 65).

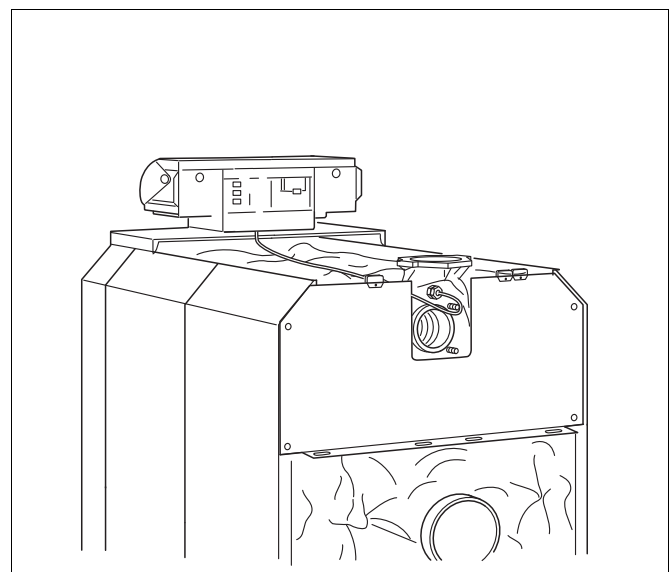


Fig. 65 Boiler with installed control device

11 Burner installation

This chapter explains the main installation steps for burners.



SYSTEM DAMAGE

through incorrect burner.

CAUTION!

- Only use burners which meet the technical preconditions of Logano GE515 (→ chapter 4 "Specification", page 10).

- Close the burner door and secure with 4 bolts (M16 x 140) (→ chapter 8.8 "Installing boiler fittings and the burner door", Fig. 32, [3] to [6]). Tighten the screws alternately in a cross pattern.
- Cut the steel insert plate (Fig. 66, [1]) on site using oxy-acetylene or a drill according to the required blast tube diameter (Ø max. 270 mm). Drill the burner mounting holes according to the hole pattern of the burner connection flange.



USER NOTE

Upon request, you may order pre-drilled burner plates (accessory) from Buderus.

- Secure the burner plate on the burner door with screws provided (seal with GP packing cord Ø 10 mm).
- Screw the burner to the burner plate.
- Cut out insulating rings according to the burner pipe diameter (Fig. 66, [2]).
- Fill the remaining gap between the thermal insulation on the burner door and the blast tube (Fig. 66, [4]) with suitably adapted insulating rings (Fig. 66, [3]).
- Connect the breather tube on the sight glass with the burner to keep the glass free from condensation.

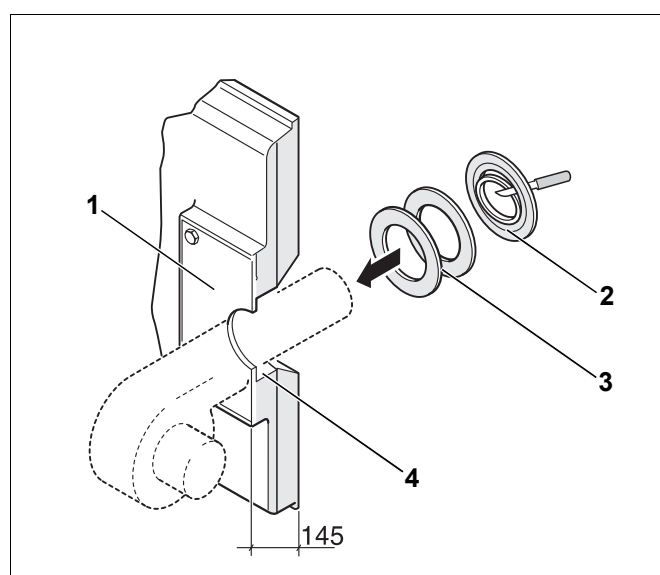


Fig. 66 Install the burner (dimensions in mm)

12 System start-up

You can connect series 4000 control devices to Logano GE515 boilers. These control devices are commissioned through identical steps.



BOILER DAMAGE

through heavy dust deposits.

CAUTION!

- Do not operate the boiler where heavy dust contamination persists, e.g. through building work inside the boiler room.

- Complete the commissioning report (→ chapter 12.6 "Commissioning report", page 54).

12.1 Filling the system



SYSTEM DAMAGE

through temperature stresses.

CAUTION!

- Fill the heating system only via the fill cock in the pipework (return) of the heating system.

Observe the following table regarding the appropriate use and preparation of the fill and make-up water.

This table is an extract from the Code of Practice K8 "Water treatment for hot water heating systems" in the Buderus sales catalogue.

The pH value of the heating water increases after the system has been filled. Check after the first three to six months (during the first maintenance), whether the pH value of the heating water has settled down.

Total boiler output in kW	Ca (HCO ₃) ₂ concentration of the fill and make-up water in mol/m ³	Maximum fill and make-up water volume V _{max} in m ³	Heating water pH value
100 < Q ≤ 350	≤ 2,0	V _{max} = three times the system volume	8.2–9.5
350 < Q ≤ 1000	≤ 1.5		
100 < Q ≤ 350	> 2.0	$V_{\max} = 0,0313 \cdot \frac{Q(\text{kW})}{\text{Ca}(\text{HCO}_3)_2 \left(\frac{\text{mol}}{\text{m}^3} \right)}$	8.2–9.5
350 < Q ≤ 1000	> 1.5		

Tab. 2 Requirements of filling, make-up and heating water

12.2 Making the system operational

Observe the following during commissioning:

- Prior to commissioning vent the heating system via radiators and air vents.
- Check, whether the hot gas baffle plates have been correctly inserted (→ chapter 8.8.5 "Insert the hot gas baffle plates", page 33).

12.3 Commissioning the control device

Please check in the documentation of the series 4000 control device, which you are using, how to commission the control device.

12.4 Start up the burner

- Proceed with the commissioning of the burner in accordance with the installation and maintenance instructions included with the burner.
- Complete the commissioning report included in the burner documentation.

You may raise the flue gas temperature, if you discover during measurements for the commissioning report, that the flue gas temperature is too low for the type of chimney used (danger of condensation) (→ chapter 12.5 "Raising the flue gas temperature", page 52).

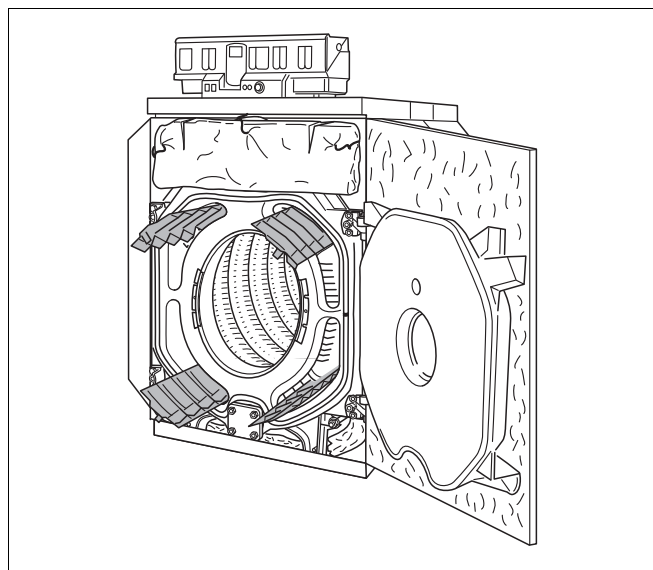


Fig. 67 Check the location of the hot gas baffle plates

12.5 Raising the flue gas temperature

Depending on boiler size and setup (related to the rated output), the flue gas temperature of a new boiler with a boiler water temperature of 80 °C is approx. 160 – 180 °C.

The flue gas temperature is correspondingly lower in a two stage operation.

If necessary, you may increase the flue gas temperature further by individually removing hot gas check plates or hot gas baffle plates.



USER NOTE

When taking these steps you should consider changes in the hot gas check plates as a last option, since a reduction in the size of the hot gas check plates is irreversible.

- Shut down the boiler in accordance with operating instructions.

The flue gas temperature can be raised through the following measures.

12.5.1 Removing hot gas baffle plates

For boiler size 7–11 (240–455 kW), the flue gas temperature can be raised by removing top or bottom hot gas baffle plates **in pairs**.

12.5.2 Removing hot gas check plates

You can significantly raise the flue gas temperature by removing hot gas check plates.

- Remove the Allen screws inside each hot gas check plate and remove the l.h. and r.h. hot gas check plates (Fig. 68, **[1]** and **[2]**).

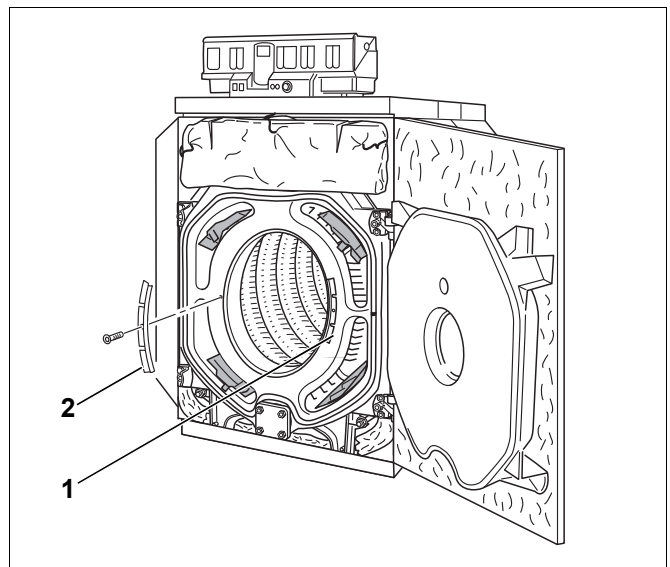


Fig. 68 Location of the hot gas check plates

12.5.3 Slightly raising the flue gas temperature

- Remove the Allen screw (Fig. 69, **[3]**) inside each hot gas check plate and remove the l.h. and r.h. hot gas check plates (Fig. 68, **[1]** and **[2]**).
- Position the hot gas check plate onto the support, so that the notches (Fig. 69, **[1]** and **[2]**) are hollow to the bottom. With a hammer knock one segment each off the l.h. and r.h. hot gas check plate.
- With the Allen screw, reinstall the hot gas check plate on the front section.
- The second segment of the hot gas check plates may be separated in the same way, if the resulting flue gas temperature rise is insufficient; otherwise you may remove the complete hot gas check plates as described above.

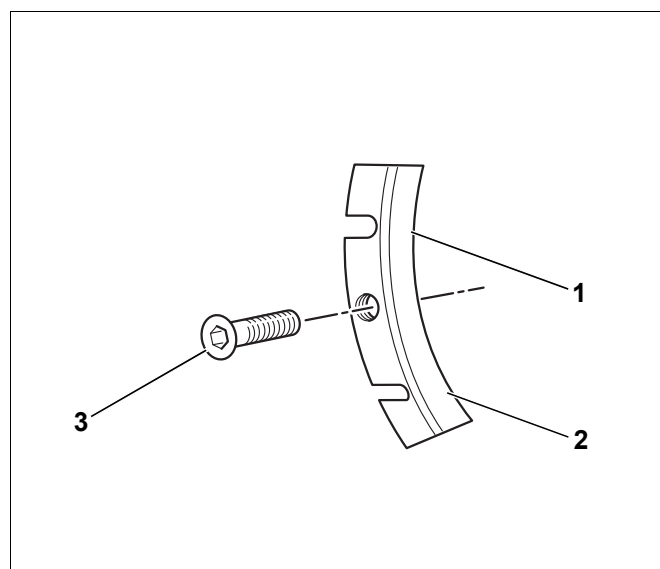


Fig. 69 Hot gas check plate

12.6 Commissioning report

Logano GE515 boilers can be operated with an oil or a gas burner. During commissioning, carefully complete the commissioning report for either the oil or gas burner.

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

Commissioning work	Page (individual steps)	Comments (signature)
1. Fill the heating system with water	Page 50	
2. Vent the heating system via radiators and air vents		
3. Leak test carried out?	Page 28	
4. Check the location of the hot gas baffle plates	Page 51 Page 33	
5. Commission the control device	Page 51	
6. Start up the burner	→ burner documentation	
7. Check the flue gas temperature	Page 52	
8. Inform the system user and hand over all relevant technical documentation		
9. Confirm professional commissioning		
company stamp/signature/date		



USER NOTE

- Enter the fuel to be used into the table (→ operating instructions "Preamble", page 2).

13 System shutdown

You can connect control devices series 4000 to Logano GE515 boilers. These control devices are shut down through identical steps.

**CAUTION!****SYSTEM DAMAGE**

through frost.

The heating system can freeze up if it is not in use, e.g. through a shut-down because of fault(s).

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

13.1 Shutting down the system via the control device

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

- Isolate the main fuel valve.

13.2 Shutting down the system in an emergency

**USER NOTE**

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

In other dangerous circumstances, isolate the main fuel shut-off valve and the electrical power supply of the system via the boiler room main fuse or the emergency stop switch for the boiler room.

- Isolate the main fuel valve.

14 System inspection and maintenance

14.1 General notes

Offer an annual inspection and maintenance contract (depending on requirements) to your customer. You can check under chapter 14.6 "Inspection and maintenance reports", page 63 what is required for an annual inspection and demand-dependent maintenance contract.



DANGER TO LIFE

through the explosion of volatile gases.

WARNUNG!

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



USER NOTE

You may order spare parts from the Buderus spare parts catalogue.

14.2 Why is regular maintenance important?

You should service your client's system for the following reasons:

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

14.3 Cleaning the boiler with cleaning brushes

- Disconnect your system from the mains electricity supply (→ chapter 13 "System shutdown", page 55).
- Switch the On/Off switch (Fig. 70, **[1]**) on the control unit to "0" (OFF).
- Isolate the main fuel valve.

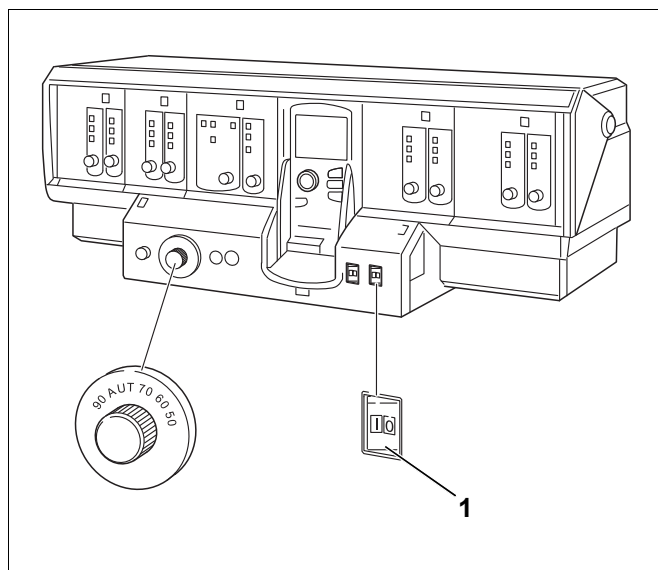


Fig. 70 Example: Logamatic 4311

- Loosen the four bolts securing the burner door on the front sections (Fig. 71, **[1]** to **[4]**).
- Open the burner door.

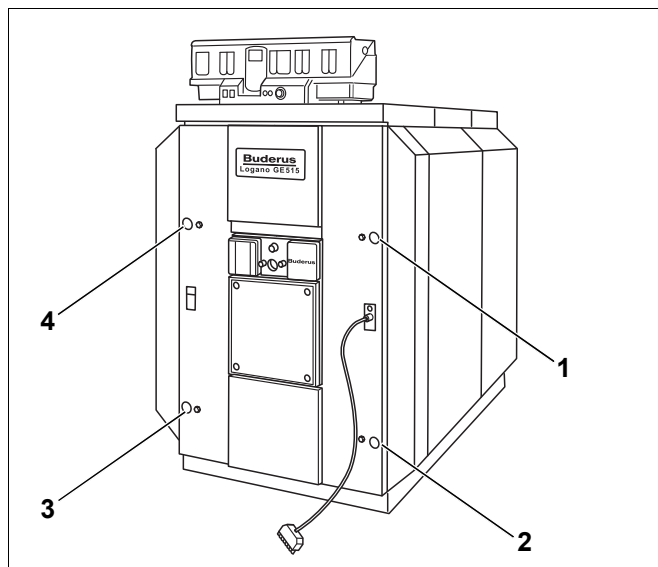


Fig. 71 Burner door fixing

- Remove the hot gas baffle plates by pulling them forward out of the hot gas flues (Fig. 72, [1] to [4]).

**USER NOTE**

The boiler size 510 with 12 boiler sections is not equipped with hot gas baffle plates. Hot gas baffle plates are used in boiler sizes 240–455 with 7–11 boiler sections (→ chapter 8.8.5 "Insert the hot gas baffle plates", page 33).

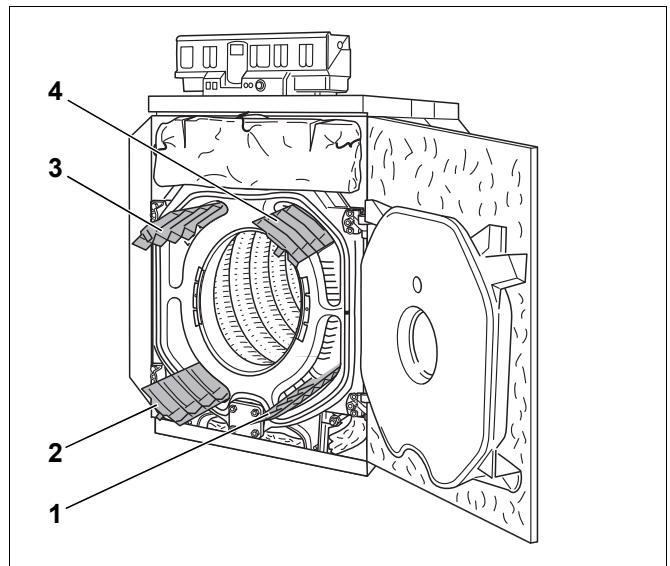


Fig. 72 Remove the hot gas baffle plates

You will find an illustration of the various types of brushes offered by Buderus (accessory) in Fig. 73.

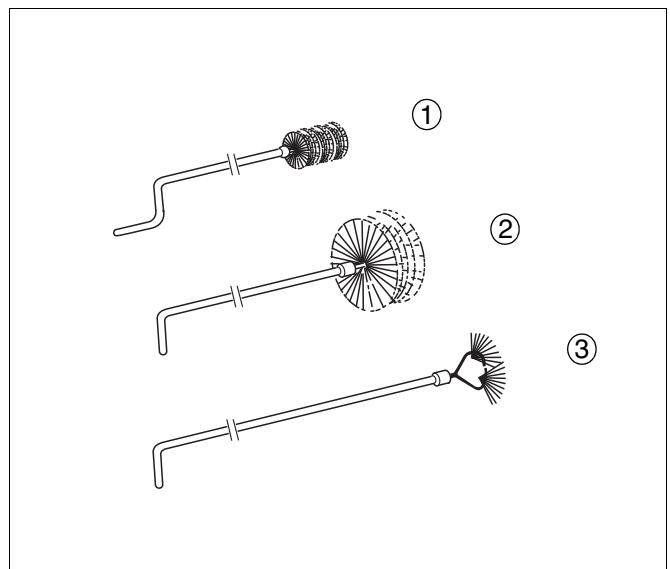


Fig. 73 Cleaning brushes

- Clean the hot gas flues with cleaning brushes 1 and 2 from the front to the back (Fig. 74, [1] and [3]).
- Clean the combustion chamber with cleaning brush 3.
- Clean the remainder of the combustion chamber (Fig. 74, [2]) with cleaning brush 2.

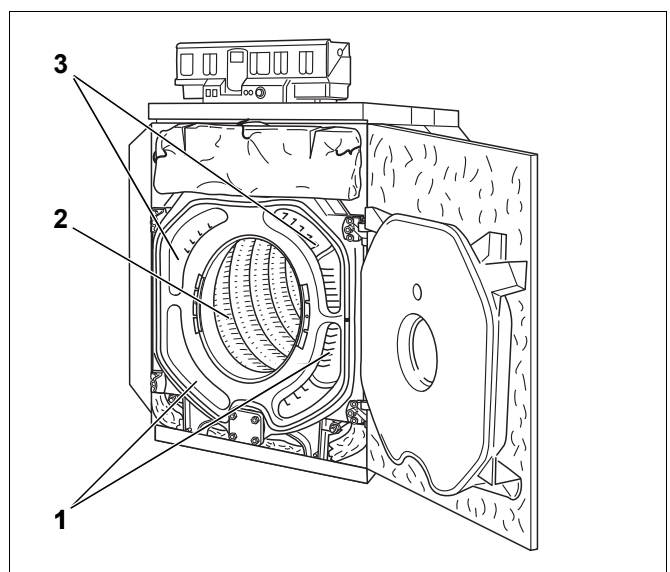


Fig. 74 Clean the hot gas flues

- Slacken both self-tapping screws on the connection plate and remove the plate.
- Remove both self-tapping screws on the l.h. and r.h. side of the boiler rear panel section.
- Slightly lift the lower rear boiler panel section and remove towards the back.
- Slacken the spring hook below the flue outlet, flip the thermal insulation upwards, and hook in using the spring hook (Fig. 75, [1]).
- Remove the clean-out cover on the rear section (Fig. 75, [2]) and on the flue gas collector (Fig. 75, [3]).
- Remove all loose combustion residues from the combustion chamber, the hot gas flues and the flue gas collector.
- Check the packing cord on the clean-out covers and the burner door. Replace damaged or hardened packing cord.



USER NOTE

You can obtain suitable packing cord from your local Buderus sales office.

- Clean the hot gas baffle plates with the cleaning brushes.
- Inserting the hot gas baffle plates into the hot gas flues (→ chapter 8.8.5 "Insert the hot gas baffle plates", page 33).
- Close the clean-out cover and the burner door. Tighten all screws equally.
- Pivot the thermal insulation on the rear section down and draw together below the flue outlet using a spring hook (Fig. 76, [1]).
- Hook the lower rear boiler panel sections on the left and the right into the slots of the edge of the upper rear boiler panel and the side panel, and secure the connecting plate below the flue outlet on the lower boiler back panel sections.

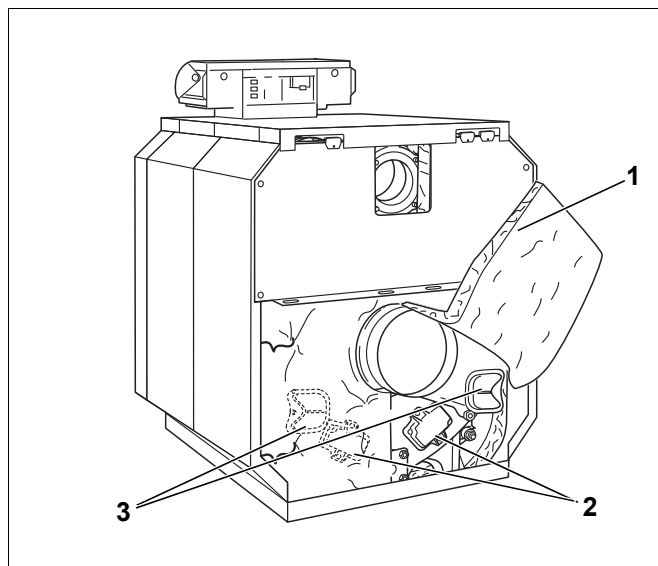


Fig. 75 Remove the clean-out covers

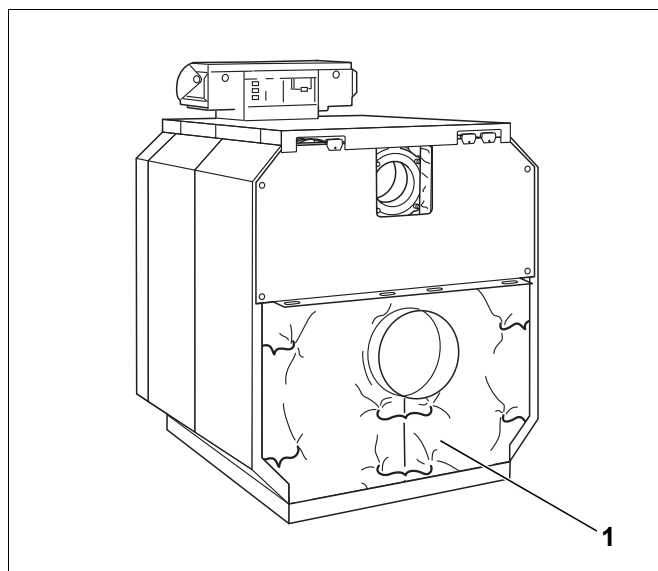


Fig. 76 Draw the thermal insulation on the rear section together

14.4 Wet-cleaning the boiler

When wet-cleaning, use a cleaning agent appropriate for the level of contamination.

Proceed with the wet cleaning in the same order as for cleaning with brushes (→ chapter 14.3 "Cleaning the boiler with cleaning brushes", page 57).



USER NOTE

- For wet-cleaning (chemical cleaning), observe the operating instructions of the relevant cleaning equipment and the cleaning agent.
It may be necessary to vary the wet-cleaning process from that described here.

-
- Select a cleaning agent in accordance with the level of contamination (soot level or encrustation).
 - Cover the control device with foil; spray must not enter into the control device.
 - Spray cleaning agent evenly from the top into the hot gas flues.
 - Heat up the boiler water temperature to at least 70 °C.
 - Brush out the hot gas flues.

14.5 Checking the system water pressure

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

Open systems

On open systems the pressure gauge needle (Fig. 77, [1]) must be within the red range (Fig. 77, [3]).

Sealed systems

On sealed systems the pressure gauge needle (Fig. 78, [2]) must be within the green range (Fig. 78, [3]). Set the red needle (Fig. 78, [1]) on the pressure gauge to the required system pressure.



USER NOTE

- Create the operating pressure required for the system.

- Set the pressure gauge needle accordingly.
- Check the system water pressure.



CAUTION!

SYSTEM DAMAGE

through frequent re-filling.

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

- Ensure that your heating system is adequately vented.
- Check the heating system for leaks and the function of the expansion vessel.

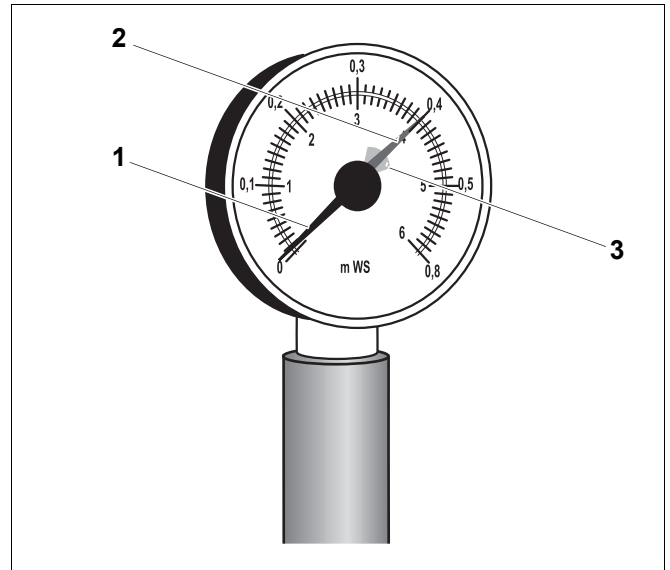


Fig. 77 Pressure gauge for open systems

- 1 Pressure gauge needle
- 2 Green needle
- 3 Red range

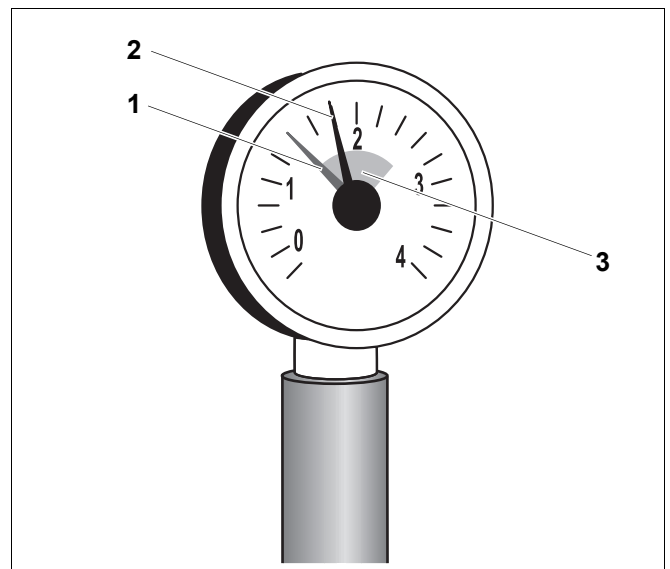


Fig. 78 Pressure gauge for sealed systems

- 1 Red needle
- 2 Pressure gauge needle
- 3 Green range

The water pressure in the system is too low, if the pressure gauge needle falls below (Fig. 78, [2]) the green range (Fig. 78, [3]). You then need to re-fill the heating system with make-up water (→ chapter 12.1 "Filling the system", page 50).

**SYSTEM DAMAGE**

through temperature stresses.

CAUTION!

- Never fill the heating system during operation via the KFE tap on the boiler. Instead use only the fill tap in the pipework (return) of the heating system.

- Fill make-up water through the fill tap in the heating system pipework (return).
- Vent the heating system.
- Check the water pressure once more.

14.6 Inspection and maintenance reports

The inspection and maintenance reports provide an overview of the required inspection and maintenance work.

Complete the reports during inspection and maintenance.

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

Inspection work	Page (individual steps)	Comments
1. Check the general system condition		
2. Check the system visually and for function		
3. Check the fuel and water components of the system for: <ul style="list-style-type: none"> – leaks – visible signs of corrosion – signs of ageing 		
4. Check the combustion chamber and the heating surface for contamination; shut-down the system for this step	Page 57	
5. Check the burner function	→ burner documentation	
6. Check the flue gas routing for function and safety	→ burner documentation	
7. Check the water pressure and inlet pressure of the diaphragm expansion vessel in sealed systems	Page 61	
8. Check the water pressure and the inlet pressure in open systems	Page 61	
9. Check the function of the DHW cylinder and that of the corrosion protection anode	→ DHW cylinder documentation	
10. Check the control device settings	→ control device documentation	
11. Final check of the inspection work; document the measurement and test results		

Confirm the professional inspection with signature, date and company stamp

Demand-dependent maintenance work	Page (individual steps)	Comments
1. System shutdown	Page 55	
2. Remove and clean the hot gas baffle plates	Page 58	
3. Clean the hot gas flues (heating surfaces)	Page 58	
4. Clean the combustion chamber	Page 58	
5. Clean the flue gas collector	Page 58	
6. Install the hot gas baffle plates	Page 33	
7. Check and, if required, replace gaskets/packing cord on burner and burner door	→ burner documentation	
8. System start-up	Page 50	
9. Final check of the maintenance work; document the measurement and test results	→ burner documentation	
10. Check the function and safety in operation	→ burner documentation	

Confirm the professional maintenance with signature, date and company stamp

15 Correcting burner faults

Heating system faults are indicated in the control device display. You will find detailed information regarding fault displays in the service instructions of each respective control device. In addition any burner fault is indicated by a fault lamp on the burner.

**CAUTION!****SYSTEM DAMAGE**

through frequent activation of the reset button.

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

- Do not attempt to clear a fault more than three times in succession by using the reset button.

- Press the burner reset button (→ burner operating instructions).

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

16 Index

B

Boiler block	26
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