STRATTON SERIES BOILERS

**Wall Hung, Condensing, Room Sealed,
Fully Modulating, Pre-Mix,
Gas Fired Boilers for Heating & Domestic
Hot Water Installations**

Installation, Commissioning and Operating Instructions

Models: STW45, STW60, STW85 & STW100

NATURAL GAS & PROPANE II_{2H3P}

IMPORTANT NOTE

THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE INSTALLING, COMMISSIONING, OPERATING OR SERVICING EQUIPMENT

Hamworthy

Heating *at work.*

Customer After Sales Services

Telephone: **0845 450 2866** E-mail: **aftersales@hamworthy-heating.com** Fax: **01202 662522**

Technical Enquiries

To supplement the detailed technical brochures, technical advice on the application and use of products in the Hamworthy Heating range is available from our technical team in Poole and our accredited agents.

Site Assembly

Hamworthy offer a service of site assembly for many of our products in instances where plant room area is restricted. Using our trained staff we offer a higher quality of build and assurance of a boiler built and tested by the manufacturer.

Commissioning

Commissioning of equipment by our own engineers, accredited agents or specialist sub – contractors will ensure the equipment is operating safely and efficiently.

Maintenance Agreements

Regular routine servicing of equipment by Hamworthy service engineers inspects the safety and integrity of the plant, reducing the risk of failure and improving performance and efficiency. Maintenance agreements enable our customers to plan and budget more efficiently.

Breakdown service, repair, replacement

Hamworthy provide a rapid response breakdown, repair or replacement service through head office at Poole and accredited agents throughout the UK.

Spare Parts

A comprehensive spare parts service is operated from our factory in Poole, providing replacement parts for both current and discontinued products. Delivery of parts and components is normally from stock within seven days. However, a next day delivery service is available for breakdowns and emergencies.

Appliance complying with European Community directives:

- Low Voltage 2006/95/CE,
- Electromagnetic compatibility 2004/108/CEE,
- Efficiency 92/42/CEE,
- Gas appliances 2009/142/CE,

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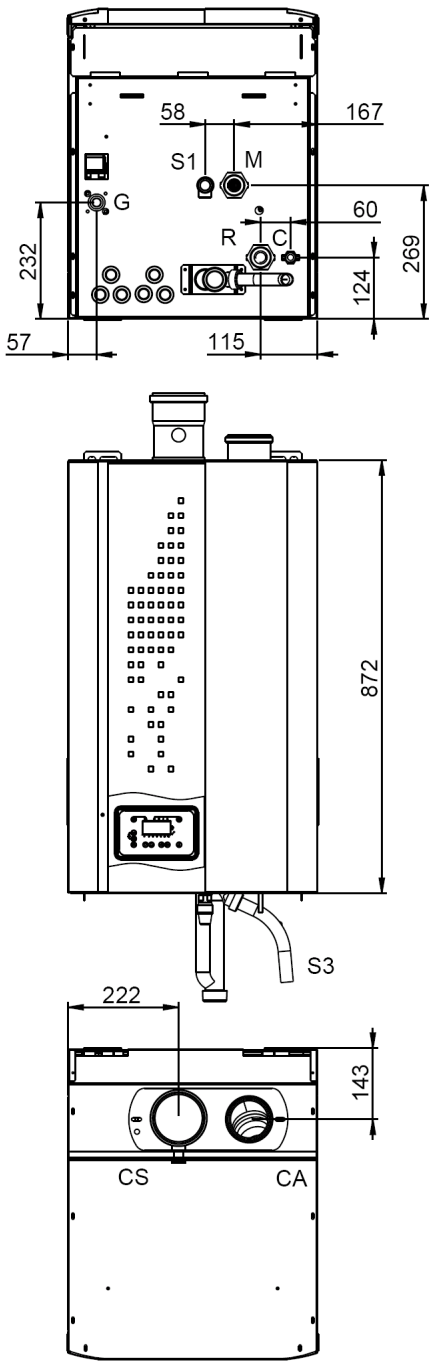
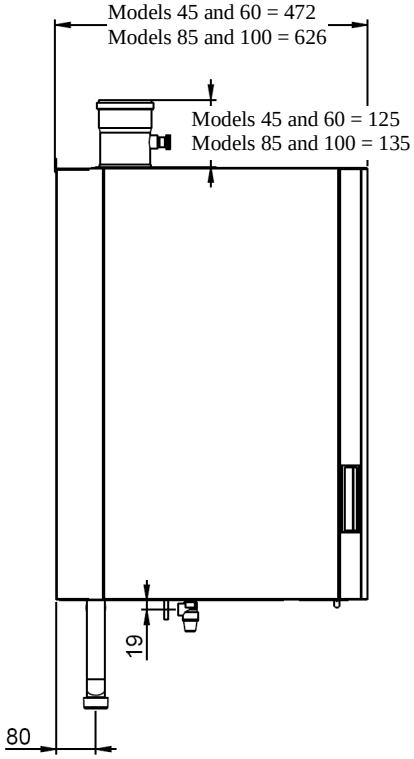
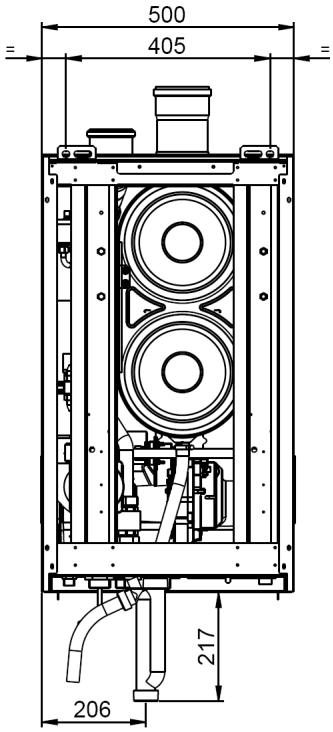
1. Dimensions and components

1.1. Dimensions

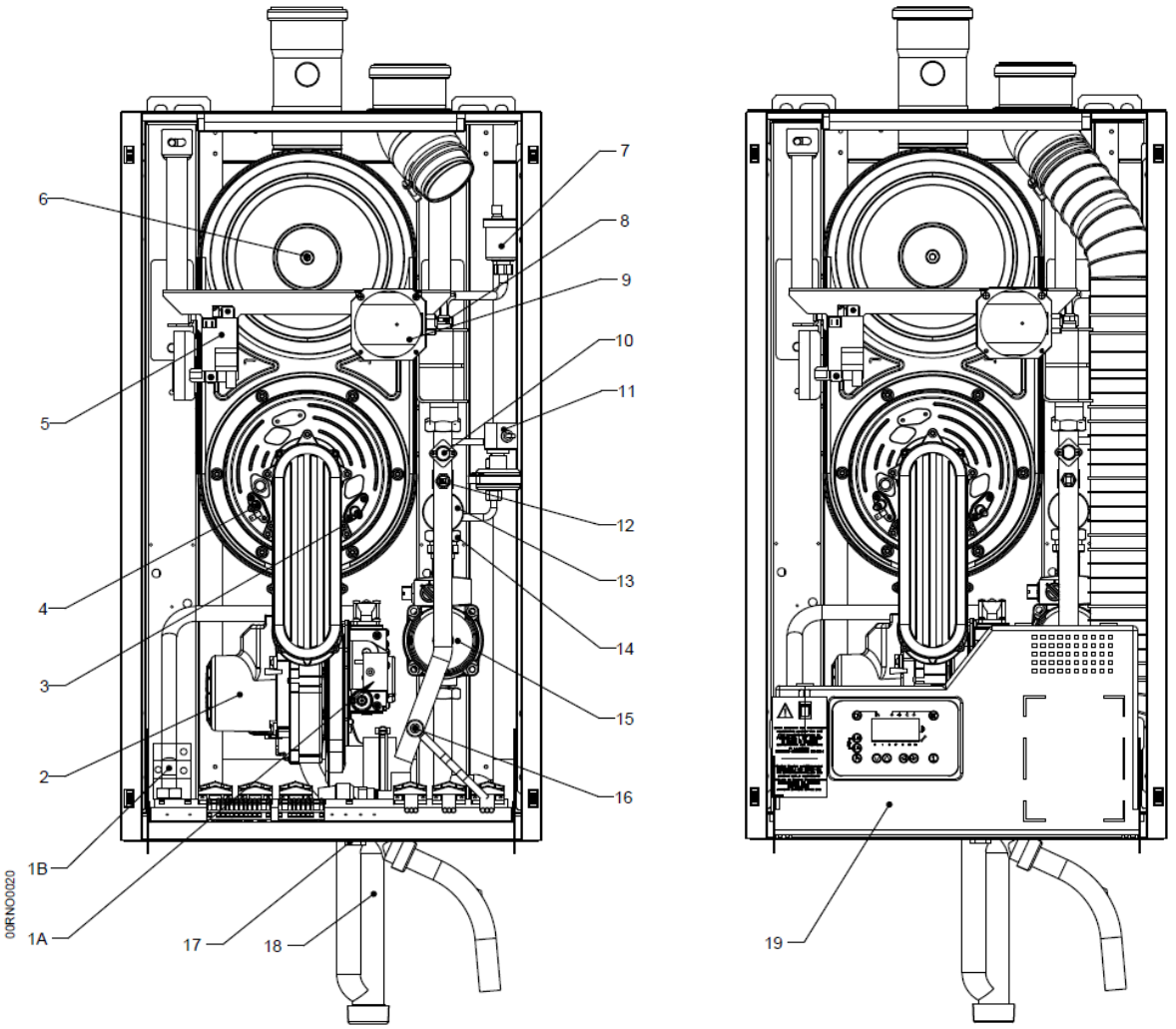






	STRATTON STW 45 / STW 60	STRATTON STW 85 / STW 100
R Heating return	G 1''	G 1'' 1/4
M Heating outlet	G 1''	G 1'' 1/4
G Gas supply	G ¾''	G ¾''
C Water filling	G ½''	G ½''
S1 Safety valve	½''	½''
CA Air inlet	Ø 80	Ø 80
CS flue outlet	Ø 80	Ø 100
S3 Condensate drain	Ø 22	Ø 22

1.2. STRATTON components



1A – Gas valve 45 / 60

1B – Gas valve 85 / 100

2 – Fan

3 – Ionisation electrode

4 – Ignition electrode

5 – Ignition transformer

6 – Flue temperature sensor

7 – Automatic air vent

8 – Water return temperature sensor

9 – Differential air pressure switch

10 – Safety thermostat

11 – Differential water pressure switch

12 – Water outlet temperature sensor

13 – Water pressure switch

14 – Check valve

15 – Pump

16 – Bleed / Drain valve

17 – Safety valve (supplied, not installed)

18 – Condensate siphon (supplied, not installed)

19 – Control panel

2. Technical characteristics

This **STRATTON** boiler has been adjusted in the factory to work with **group H (type G20) natural gas with a supply pressure of 20 mbar**.
See chapter 6.2 for how to change the gas, and use a qualified professional.

Any work on a sealed component will lead to loss of the guarantee.
(Except for a gas change performed by a qualified professional)

2.1. Gas category

	Category
STRATTON STW 45	II_{2H3P}
STRATTON STW 60	
STRATTON STW 85	
STRATTON STW 100	

2.2. Nominal, maximum and minimum gas supply pressures

	Natural gas H G20	Propane G31
Nominal pressure (mbar)	20	37
Minimum pressure (mbar)	17	25
Maximum pressure (mbar)	25	45

2.3. Combustion characteristics (at 15°C and 1013 m bar)

			STRATTON			
			STW 45	**STW 60**	**STW 85**	**STW 100**
Nominal power Pn (80/60°C)		kW	40,0	56,5	80,0	92,6
Nominal power when condensing Pn (50/30°C)		kW	44,0	61,8	87,0	100
Rated heat input Qn (net)		kW	41,6	58	83,0	95,1
Min heat input Qmin	**G20**	kW	12,6	14,5	25,5	25,5
	G31	kW	17,5	26,1	36,1	36,1
Gas flow rate G20 at Pn		m^3/h	4,4	6,1	8,8	10,1
Gas flow rate G31 at Pn		kg/h	3,2	4,5	6,5	7,4
CO_2 value ranges		%	See chapter 6.2			
Exhaust mass flow rate at Qn / Qmin (80/60°C) *		m^3/h	19 / 5,7	27 / 6,1	39 / 11,8	44 / 12
Exhaust mass flow rate at Qn / Qmin (50/30°C) *		m^3/h	17,7 / 5,3	25,3 / 5,7	35,4 / 10,8	39,6 / 10,4
Exhaust temperature at Qn / Qmin (80/60°C) *		°C	67 / 57,5	70 / 55	68 / 60	76 / 60
Exhaust temperature at Qn / Qmin (50/30°C) *		°C	45,7 / 31,2	46 / 32	45 / 32	56 / 32
Exhaust circuit pressure loss at Qn *		Pa	47	75	50	74
Exhaust outlet diameter		mm	80	80	100	100
Maximum allowable nozzle pressure (B23P) **at Qn / Qmin (80/60°C) ***		Pa	85 / 8	150 / 8	80 / 5	110 / 6
Maximum allowable nozzle pressure (B23P) **at Qn / Qmin (50/30°C) ***		Pa	70 / 6	123 / 3	63 / 5	97 / 5
Flue and air inlet type classifications			B23, B23P, C13, C33, C53			

***** values corresponding to a G20 setting.

2.4. Operating conditions

		STRATTON			
		STW 45	**STW 60**	**STW 85**	**STW 100**
Maximum flow temperature setting	℃	80			
Maximum safe temperature	℃	100			
Max service pressure	hPa (bar)	4000 (4,0)			
Minimum cold pressure	hPa (bar)	1000 (1,0)			
Nominal water flow rate: On primary circuit / on secondary circuit (P/20)	m^3/h	2,1 / 1,7	2,4 / 2,4	4,0 / 3,4	4,0 / 4,0
Water content (excluding hydraulic kit, code 059515)	l	4,6	6,1	9,4	9,4
Weight without water	kg	66	73	88	88

Health and safety. Due to the weight of the boiler, care must be taken when lifting onto the mounting bracket and we suggest the use of a hydraulic or cable genie lift.

2.5. Electrical connection characteristics

		STRATTON			
		STW 45	**STW 60**	**STW 85**	**STW 100**
Electrical supply	V	230 V AC (+10% -15%), 50Hz			
Electrical power consumption at Qn (excluding accessories)	W	160	190	270	300
Electrical power consumption in standby mode	W	7			
Max length of sensor cables	m	DHW sensor: 10 External sensor: 40 Remote On/Off: 40 Room sensor: 50			
Power terminal output	V A	230V AC (+10%, -15%) 5 mA at 1 A			

Temperature in ℃	**Resistance values Flow/return sensors QAL36.225 and Flue sensor QAK36.670/109 NTC 10 KΩ at 25℃**
0℃	32 555 Ω
10℃	19 873 Ω
20℃	12 488 Ω
25℃	10 000 Ω
30℃	8 059 Ω
40℃	5 330 Ω
50℃	3 605 Ω
60℃	2 490 Ω
70℃	1 753 Ω
80℃	1 256 Ω
90℃	915 Ω
100℃	677 Ω
110℃	508 Ω
120℃	387 Ω

3. Installation

This boiler must be installed by a competent person. All installations MUST conform to the relevant Gas Safety and Building Regulations. Health & Safety requirements must also be taken into account when installing any equipment. Failure to comply with the above may lead to prosecution.

Health and safety. Due to the weight of the boiler, care must be taken when lifting onto the mounting bracket and we suggest the use of a hydraulic or cable genie lift.

3.1. Site location

Wall mounting

- The wall must be flat, solid and capable of supporting the weight of the boiler
- The boiler is heavy. Care must be taken when lifting the boiler

Floor standing frame mounting

- The floor or plinth for the boilers, frame and pipe work kit must be both flat and level to ensure correct alignment of fittings and connections.
- The floor or plinth must be sufficiently strong to support the weight of both the boilers and pipe work kit where used.
- The floor or plinth must be fireproof in accordance with BS 6644.
- The plant room must have sufficient space for installation of boilers, pipe work, pumps controls, flues ventilation, access and servicing and other items of plant.

3.2. Gas supply

- Gas supply pipes must be in accordance with BS 6891 or IGE/UP/2.
- Gas supply connections to the boiler must not be smaller than the connection on the boiler.
- Gas installation must be soundness tested to BS 6891 or IGE/UP/1 & IGE/UP/1A.
- Gas installation must be purged to BS 6891 or IGE/UP/1 & IGE/UP/1A.

3.3. Boiler room

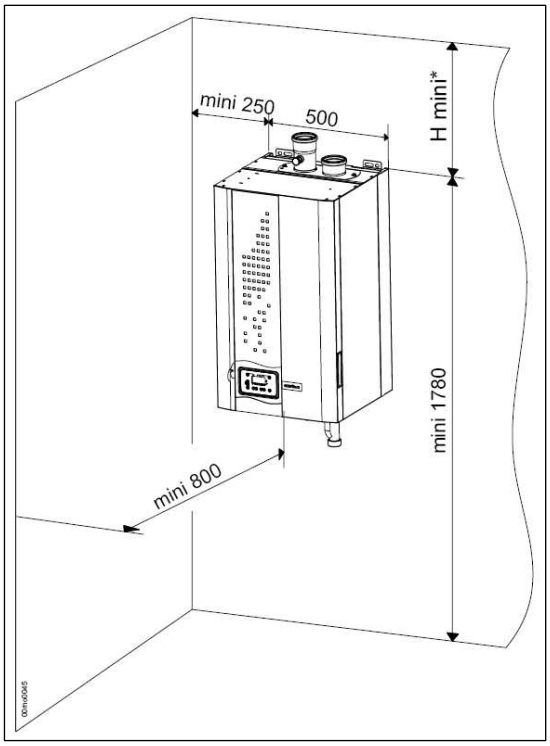
The **STRATTON** boiler must not be installed on a wall covered with a flammable material (plastic, wood, etc.).

The combustion air must be free of chlorinated, ammoniac, fluorinated and alkaline agents. These components are found in spray cans, paints, cleaning products, washing products, detergents, glues, snow-removal salt, etc.
Do not suck in air evacuated from places using products of this type : pool, washing machine room, laundry, hair dressing shop or refrigerator room as these places may introduce one or several of these components into the combustion air.

Recommended distances relative to walls:
Sufficient clearances must be provided to permit easy maintenance operations on the boilers. The **minimum** values are indicated in the opposite diagram.

These values cannot be substituted for the specific regulatory requirements.

*The minimum H dimension corresponds to the space required for installation of the flue exhaust accessories. This dimension takes account of the dimensions of the 87° elbow of a horizontal duct independent of the length and of the slope of the latter.

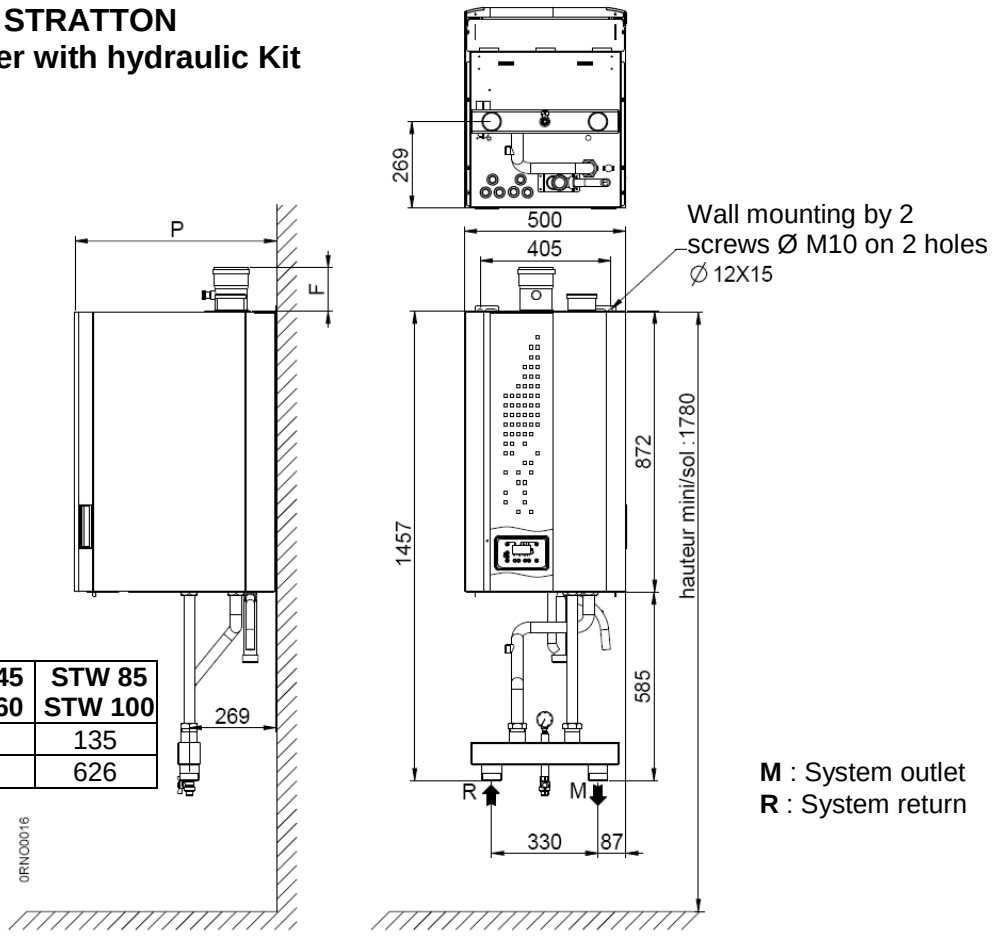


3.4. Installing the boiler

Before installing, place the wall mounting template on the wall, to locate the boiler and drill and fit the necessary wall fixings (not HHL supply)

Caution: Whether you are installing a standalone boiler or several boilers in a cascade configuration, you must in all cases install a hydraulic kit. The weight of the hydraulic kit must not be supported by the boiler.

Installation of a STRATTON standalone boiler with hydraulic Kit code 059515



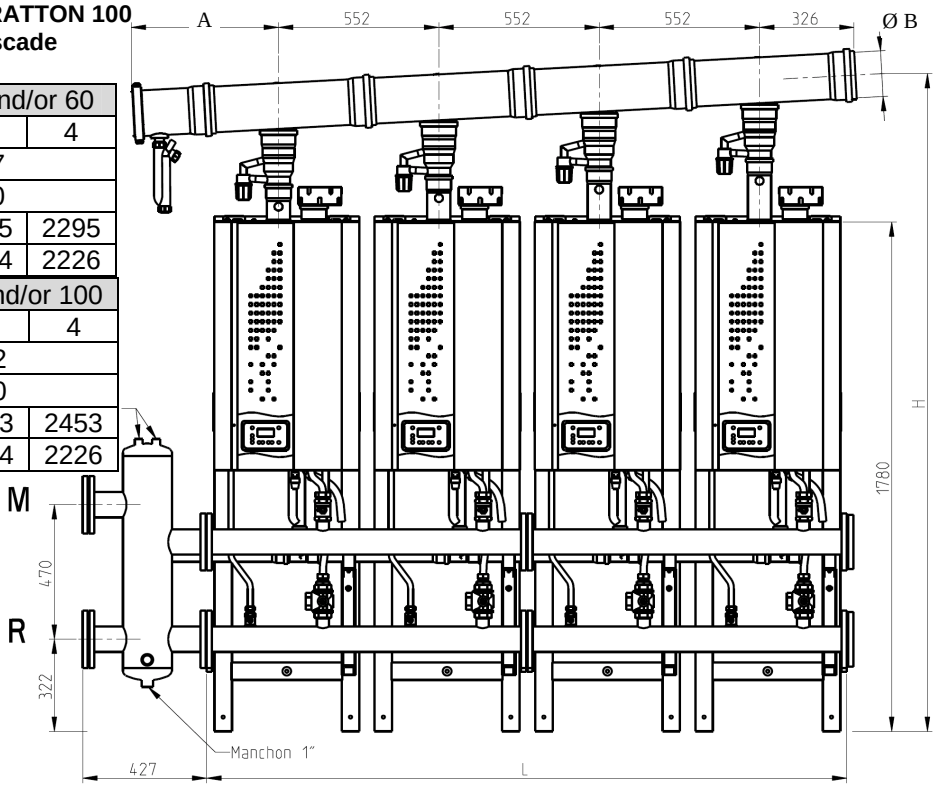
STRATTON	STW 45 STW 60	STW 85 STW 100
F	125	135
P	472	626

M : System outlet
R : System return

Installation of 4 STRATTON 100 boilers (max.) in cascade configuration.

Models STW 45 and/or 60			
Nbre	2	3	4
A	507		
Ø B	160		
H	2235	2265	2295
L	1122	1674	2226

Models STW 85 and/or 100			
Nbre	2	3	4
A	532		
Ø B	200		
H	2393	2423	2453
L	1122	1674	2226



M : System outlet
R : System return

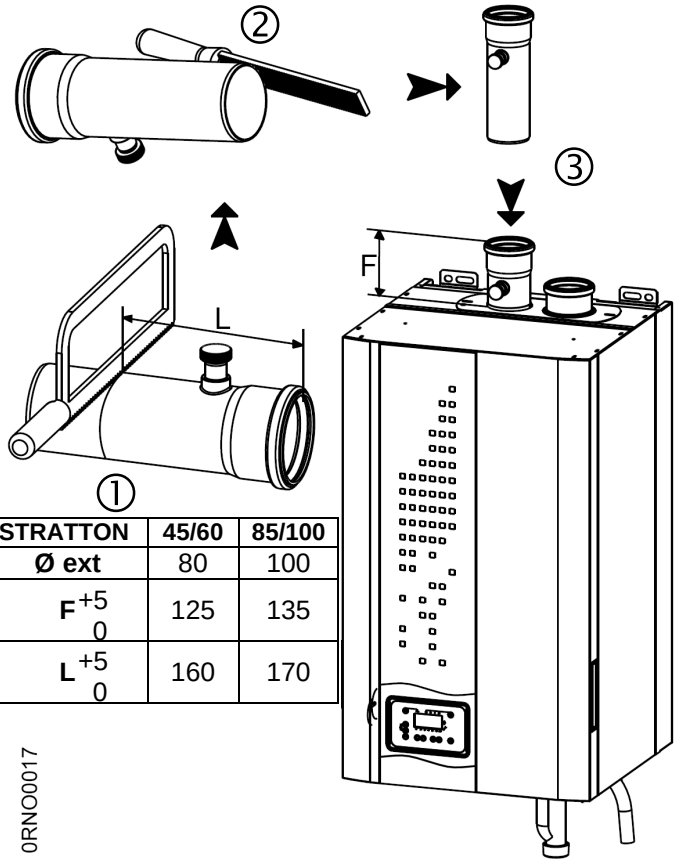
3.5. Exhaust connection

Important: Regardless of the type of flue system used, the boiler must not support the weight of the flue and air ducts.

Regardless of the type of Flue system. you must install, on the boiler flue outlet connection, the straight section equipped with a connection for flue gas analysis (supplied with boiler).

When installing a single boiler only, the straight section must be reduced to the value given in the table opposite.

For this operation, proceed as described in the diagram opposite.



STRATTON	45/60	85/100
Ø ext	80	100
F $^{+5}_{0}$	125	135
L $^{+5}_{0}$	160	170

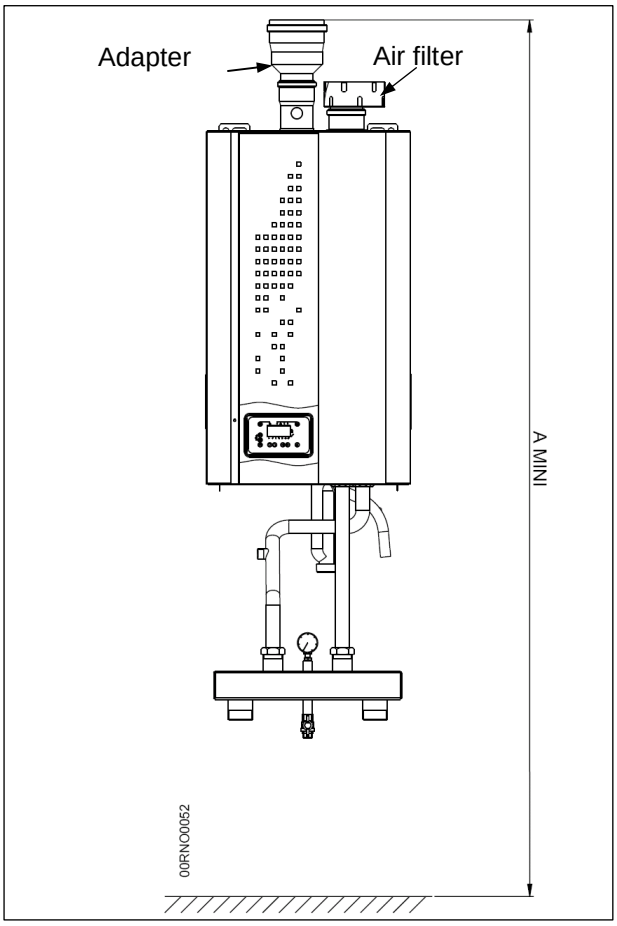
3.5.1. Connection to a B23 and B23P flue

You must use the connection accessories for STRATTON when connecting a STRATTON boiler to a B23 or B23P flue (see list in table on next page).

With a B23 configuration, the flue ducts must be sized for a combustion gas pressure at the boiler outlet of 0 Pa.

The exhaust extraction ducts must be made in a material resistant to the condensate that can form when the boiler is operating.
These materials must also be capable of supporting temperatures up to 120°C.

STRATTON boilers are high performance boilers with very low exhaust temperatures; consequently to retain a favourable draft the ducts must run upwards from the boiler outlet.



Horizontal duct runs must be avoided so as not to cause condensate retention. To do this use a minimum slope of 3 % towards the boiler in the horizontal parts. A bleed Tee is not required since condensate recovery is incorporated in the boiler.
To ease fitting coat the joints with liquid soap or an appropriate grease.

It is necessary to comply with the rules of the national and prefectoral regulations.

IMPORTANT:
In the case where several boilers are connected to a single flue, check:
- by calculation, that the flue is not under pressure, with all the boilers operating.
- if one of the boilers is stopped or operating at minimum power, that the others do not discharge into it.

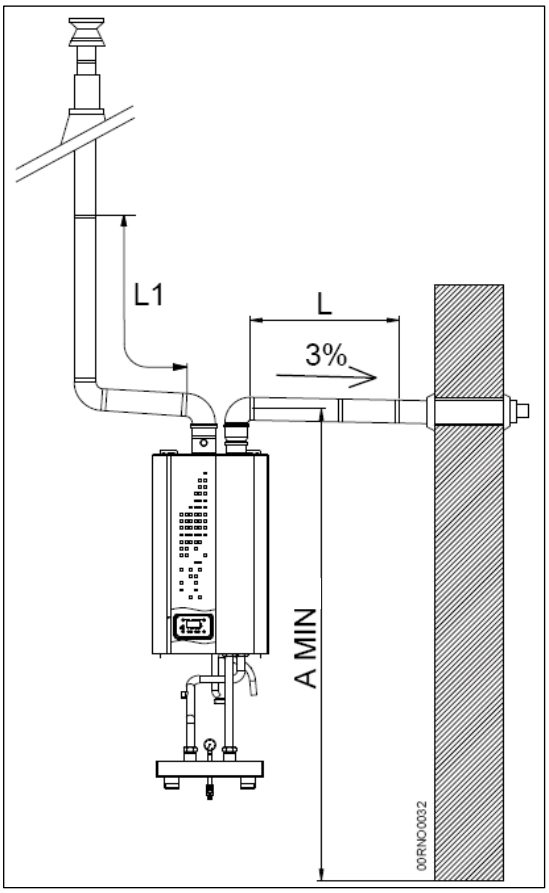
B23-B23P accessories	**Reference**			
STRATTON	**STW 45 / STW 60**	**A min.**	**STW 85 / STW 100**	**A min.**
Flue duct adapter + Air filter Ø 80	Ø80M / Ø110F : **059499** Ø80M / Ø125F : **059500**	2000 2055	Ø100M / Ø110F : **059501** Ø100M / Ø125F : **059502** Ø100M / Ø160F : **059503**	2060 2030 2195

For the B23P connection, you must use ducts which are certified for the application.

The combustion product flue duct must be sized using the parameters given in the table in chapter 2.3.
In accordance with the actual configuration of the duct, you will need to perform a calculation to check that the pressures at the boiler outlet do not exceed the maximum values authorised in the table.
The values corresponding to the 50/30℃ mode should be used for this calculation.

3.5.2. Room sealed, twin duct connection C53

	STRATTON			
	STW 45	STW 60	STW 85	STW 100
Separate balanced flue kit C53	Vertical terminal 80/125 + Combustion air terminal 80		Vertical terminal 100/150 + Combustion air terminal 100 + step-down 80/100	
Reference	059510		059513	



The approved ducts are **Ubbink Rolux Condensation** 80/80 ducts for 45 and 60 kW models and **Ubbink Rolux Condensation** 100/100 for 85 and 100 kW models.

The location of flue and air terminals must comply with the rules on the page 14.

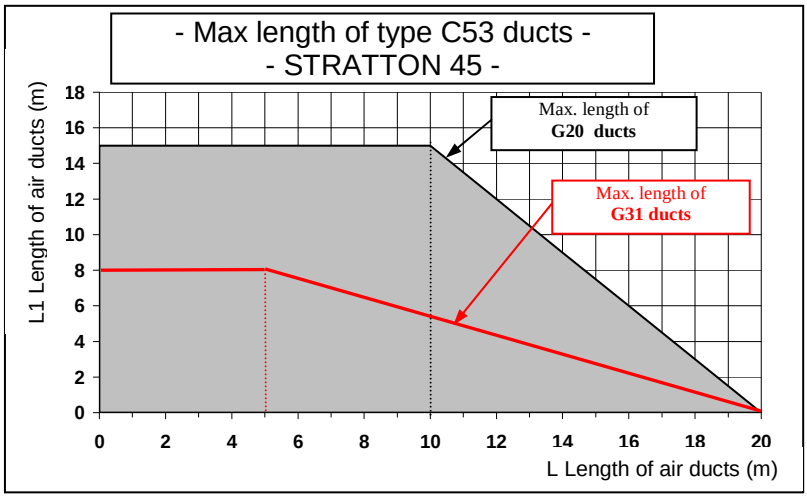
In calculating the duct length take the following rules into account:

- 90°elbow = 1 m of straight duct.
- 45°elbow = 0.5 m of straight duct.

For the flue duct, use a minimum slope of 3% towards the boiler in the horizontal parts.

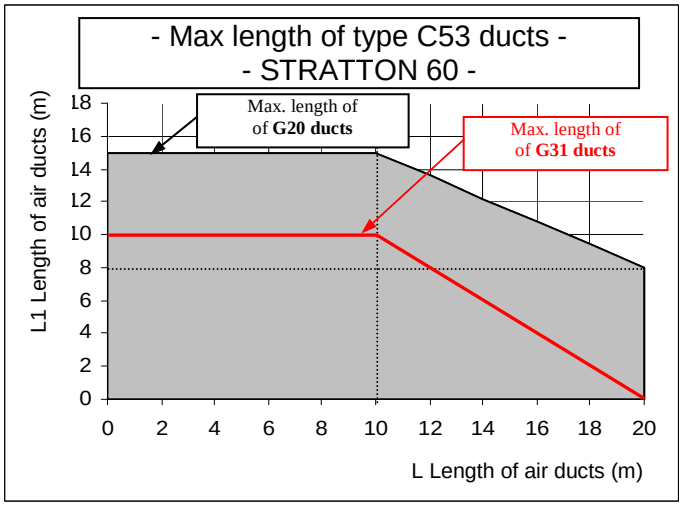
Caution : For the horizontal air supply duct, you must have a minimum slope of 3% toward the outside to prevent rain water infiltration (see diagram opposite).

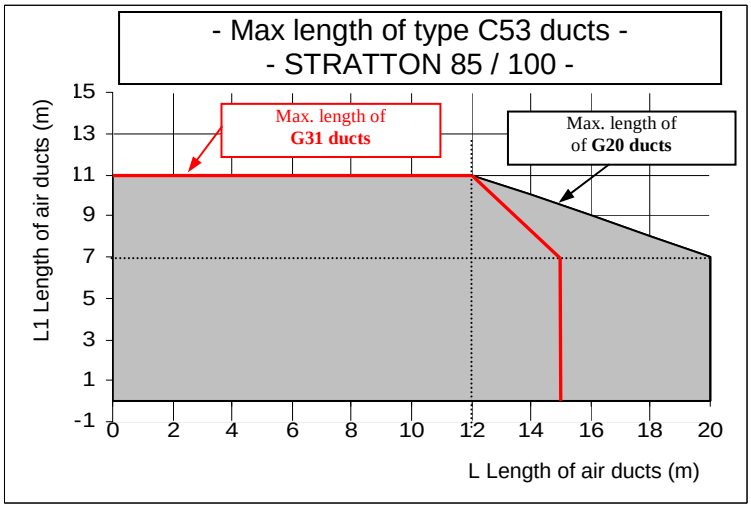
To ease fitting, coat the joints with liquid soap or an appropriate grease.



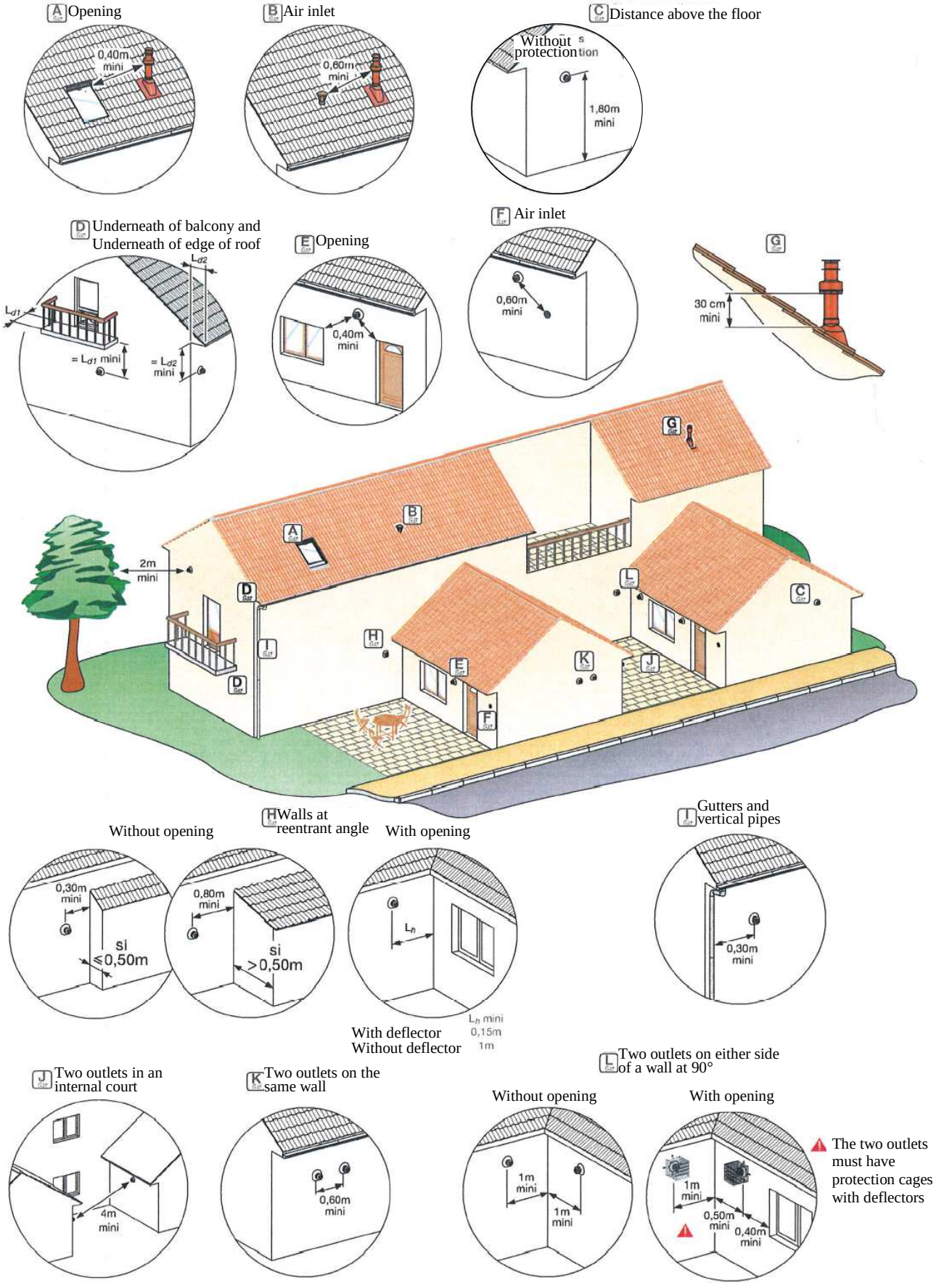
	STRATTON			
	STW 45	STW 60	STW 85	STW 100
A (mm)	1890		2005	

Maximum combined length of ducts (terminal not included):
L + L1 : located in grayed areas of charts shown opposite and limited by curves linked to type of gas used.





Terminal location rules for balanced flue gas boilers



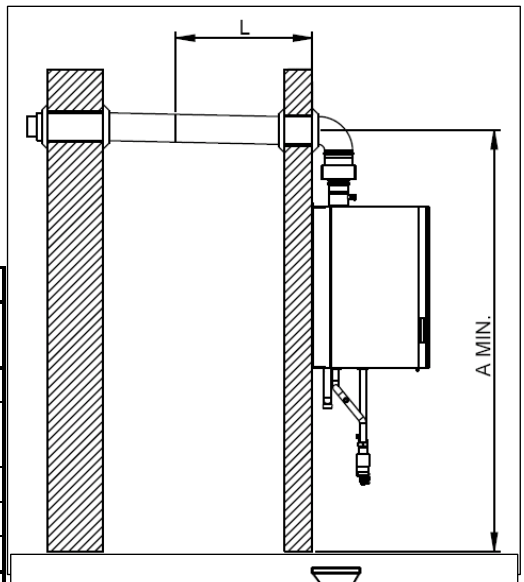
The distances of the air vent terminals from openings are the minimum values to be used to comply with BS5440- pt1
Nevertheless it is desirable to avoid terminals and openings being near to each other to ensure greater everyday comfort.

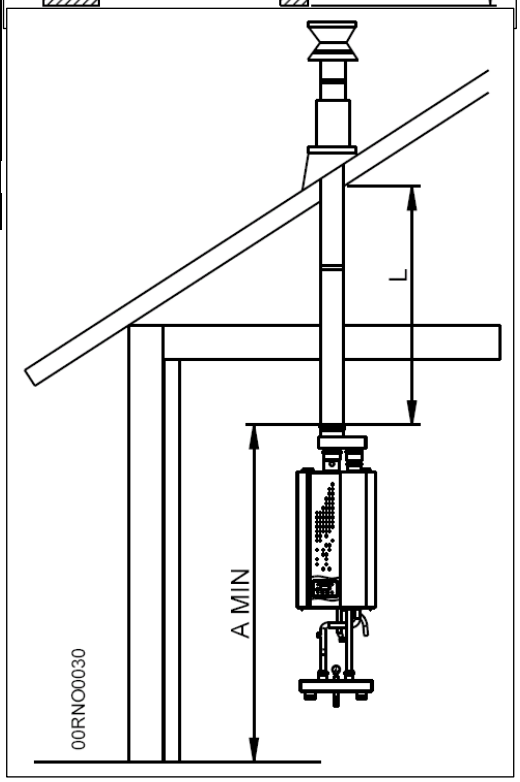
3.5.3. Room sealed, concentric connection C13 and C33

The use of the boiler flue outlet connection is mandatory to connect a STRATTON boiler to a C13 air vent or to a C33 concentric air vent.

The table below presents the accessories available for each boiler type, duct diameters and maximum straight lengths.

The approved ducts are Ubbink Rolux Condensation Concentric ducts.





		STRATTON			
		STW 45	**STW 60**	**STW 85**	**STW 100**
Air Vent horizontal type C13	**Terminal C13**	Code 059506		Code 059507	
	Ø duct	Concentric 80/125		Concentric 100/150	
	A min (mm)	2125		2165	
	Lmax* G20	9 m	9 m	9** m	9** m
	Lmax* G31	9 m	8 m	9** m	9** m
Air Vent vertical type C33	**Terminal C33**	Code 059508		Code 059512	
	Ø duct	Concentric 80/125		Concentric 100/150	
	A mini (mm)	2035		2060	
	Lmax* G20	9 m		9 m	
	Lmax* G31	9 m	8 m	9** m	9** m

*** The lengths Lmax indicated are lengths excluding terminal and 90° elbow for type C13 and excluding terminal for type C33.**

In addition, in calculating the duct length, take the following rules into account:
- 90°elbow = 1 m of straight duct.
- 45°elbow = 0.5 m of straight duct.

The terminal location must comply with the rules on the previous page.
Use a minimum slope of 3% towards the boiler.
For type C13, drill a 150mm hole in the wall for the 80/125 terminal and a 180 diameter hole for the 100/150 terminal. Seal the air vent terminal into the wall with polyurethane foam to allow for removal if necessary.
To ease fitting, coat the joints with liquid soap or an appropriate grease.

**** The STRATTON STW 85 and STW 100 units are configured in factory for a balanced flue length of between 0 and 5m. For a longer balanced flue length of between 5 and 9 m, certain parameters of the boiler controller must be modified to the value indicated in the table in the following page.**

STRATTON STW 85 / STW 100 installed with balanced flue length of between 5 and 9 m : The LMU parameters must be adjusted:

- Place the boiler in standby mode using the button (see §4.3).
- Simultaneously press the ▽ and △ buttons to enter the installer configuration mode (see § 4.6). The display should indicate type Hxxx parameters.
- Scroll the parameters using the ▽ and △ buttons up to parameter H608.
- Using the ⊖ and ⊕ buttons, change the value of the parameter in accordance with the table of parameters below.
- Validate the new parameter by pressing the ▽ button
- Scroll the parameters using the ▽ button up to the next parameter indicated in the table below.
- Repeat the last 3 steps for all the parameters of the table.
- After you have validated the last parameter, press the button to exit the configuration mode.
- Shut down the boiler using the boiler switch, then start up the boiler again.

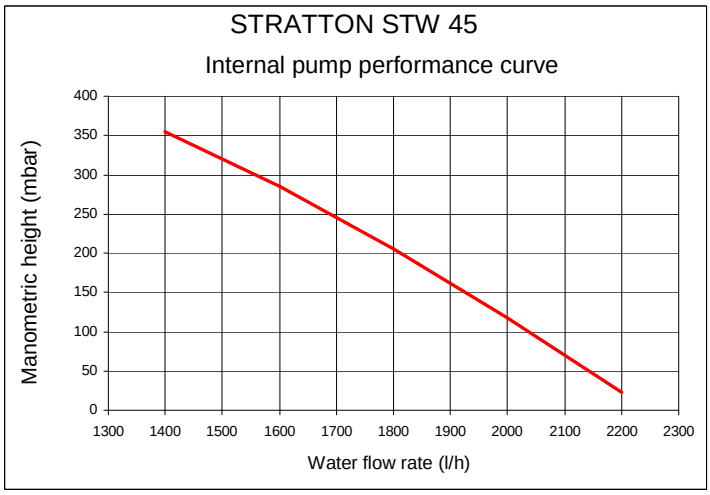
STRATTON STW 85 / STW 100 (G20)*	Air vent length L	LMU parameters				
		H608 Ignition pwm	**H609** pwm mini	**H611** ignition speed	**H612** speed mini	**H613** speed maxi
	0 to 5 m	22,5 / 22,5	10,5 / 10,5	3500 / 3500	1750 / 1750	5200 / 5900
	5 to 9 m	23 / 23	11,5 / 11,5	3600 / 3600	1850 / 1850	5450 / 6400

*** For operation with G31, the values for the gas valve settings are given in chapter 6.2 « Procedure for transition from G20 to G31 ».**

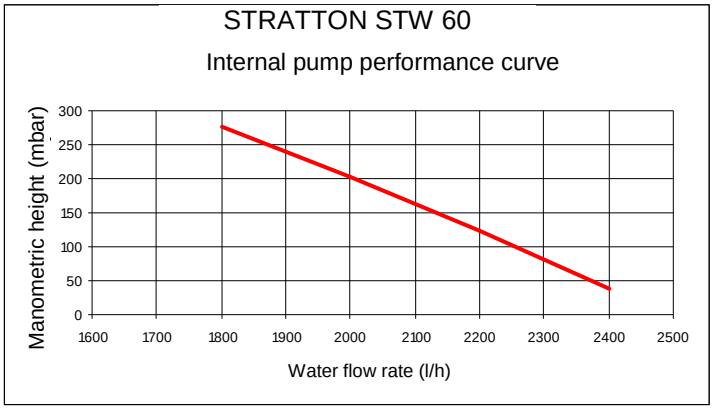
3.6. Hydraulic connection

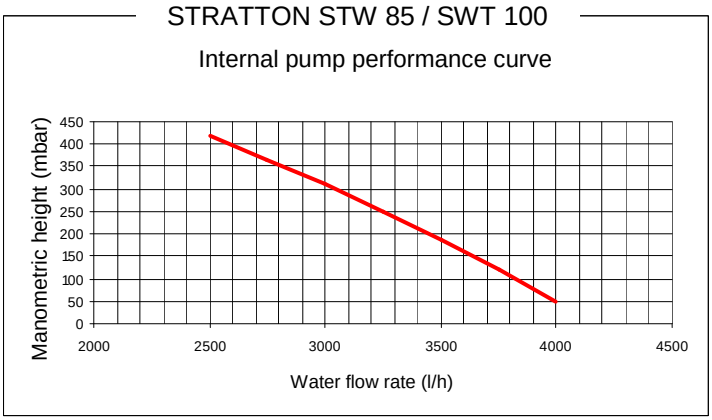
3.6.1. Available residual pressure

Reminder : When installing a standalone boiler, you must **install** a hydraulic kit.



Residual pressure between outlet M and return R couplings of boiler (see figure in chapter 1.1)





Filling the installation:

The system must first be properly bled. This will be more efficient if the boiler is filled slowly while keeping the bleed valve on the outlet pipe open (item 16, chapter 1.2). Once the valve bleeds a continuous stream of water with no air bubbles, close the valve and stop the filling operation**.**

With the boiler pressurised (1 bar min. cold ; 4 bars max. hot), perform a few on/off cycles with the internal circulator. On startup of the boiler, if error code « **E164** » is displayed, there may be some air remaining in the circuit. In this case, you may need to manually trigger the bleeder (item 7, chapter 1.2) by removing the black plastic cover and applying pressure to the membrane.

After filling with water:

- Check the water pressure on the manometer. This must be a minimum of 1 bar when cold.
- Check that the boiler and its installation are completely bled (check the boiler levelling with a spirit level).

3.6.2. Water quality

The following rules apply once the boiler is put into service and remain valid until the end of life of the product.

Preparing the water system before putting the boiler into service

For any installation (new or renovation), the water system pipes must be thoroughly cleaned. The purpose of this initial cleaning is to eliminate germs and residue that can cause deposits to form.
In **new installations** in particular, residue from grease, oxidised metal, and even copper microdeposits must be removed.
In **renovated installations**, cleaning should focus on removing sludge and the products of corrosion formed when the unit was last in operation.
There are two types of methods for cleaning and removing sludge: a high intensity approach that takes a few hours and a slower, more gradual approach that takes several weeks. This first type of cleaning must be done **before connecting the new boiler**, and with the second type, a filter should be installed on the back of the boiler to capture loosened deposits.
The cleaning performed prior to installation improves performance, reduces energy consumption, and resists scaling and corrosion on the unit. A professional (water treatment) should carry out the cleaning.

Protecting the unit against scaling

Water naturally contains dissolved calcium ions and carbonates that cause scaling (calcium carbonate) to form. To prevent excessive deposits, take precautions with regard to the **water used to fill the unit: TH < 100mg/l $CaCo_3$**
Water must be added during the life of the boiler. The new water adds scaling to the water system. **The amount of fill water plus the amount of make-up water added during the life of the unit should not be more than three times the water capacity of the heating system.** Also, the hardness of the make-up water must be controlled.
Make-up water: TH < 10mg/l $CaCo_3$

Adding a large amount of untreated water always contributes a significant amount of scaling. To monitor this and to detect problems, **a system water meter must be installed.**
Failure to comply with these guidelines (such that the fill water plus the make-up water is more than three times the water capacity of the heating system) requires a full cleaning (to remove sludge and scaling) to be performed.

Additional precautions are required for operation:

- ✓ When the unit has a water softener, the equipment must be inspected on a regular basis in order to ensure that it is not outputting chloride-rich water into the system. The concentration of chlorides must always remain below 50 mg/l.
- ✓ To prevent the build-up of calcium deposits (such as on exchange surfaces), the unit should be brought into service slowly, starting by operating at a low power with high primary water flow.
- ✓ When the tap water lacks the desired qualities, **water treatment is required**. The fill water must be treated, and whenever new water is added, the make-up water must also be treated.
- ✓ Installations with multiple boilers require all of the boilers to be brought up simultaneously at minimal power. Doing this prevents the calcium in the water from depositing on the exchange surfaces of the first boiler.
- ✓ When working on the unit, avoid draining it completely; only the required parts of the system are to be drained.

The rules listed above are designed to minimise scaling on the exchange surfaces and thus to increase the life of the boilers.
To optimise how the equipment operates, plan to remove its calcium deposits. This must be done by a specialized company. Also, before putting the unit into service, verify that the heating system is not damaged (ex. leaks). If it has excessive scaling, the unit's settings for operation and for water treatment must be adjusted.

Protecting steel and stainless steel boilers against corrosion

Corrosion can affect the iron components used in boilers and heating systems, which is directly related to the presence of oxygen in the water heater's water. Dissolved oxygen that enters the unit when it is being filled for the first time reacts with the equipment materials and quickly disappears. Without refreshing the oxygen through significant contributions of water, the unit might not experience any damage whatsoever.
However, it is important to follow the sizing rules and installation guidelines in order to prevent oxygen from continuously flowing into the heating water. From these rules, we have:

- ✓ Preferably an expansion vessel with a membrane rather than an open expansion vessel that allows direct passage
- ✓ Internal pressure with the unit of more than 1 bar cold
- ✓ Remove leaky (permeable) components that are letting out more gas than as if they were sealed.

If the guidelines above are followed, the unit's system water has the proper characteristics to last a long time: **8.2 < pH < 9.5 with a water concentration of < 0.1 mg/l.**

If there is a chance that oxygen could enter the unit, you must take additional precautions. Adding an

oxygen scavenger (ex. sodium sulphite) is highly recommended. We recommend directing any water treatment questions to specialists, which can provide:

- The appropriate treatment based on the characteristics of the unit
- A monitoring agreement with a guarantee as to the results

For units in which **the water comes into contact with heterogeneous materials**, such as copper or aluminium, **appropriate treatment is recommended** in order to ensure that the unit will last. In most cases, this consists of adding corrosion inhibitors (in the form of chemical solutions) to the unit. Referring to a water treatment specialist is recommended.

Unit monitoring

If the recommendations listed above (new installation or renovation) have been followed, the unit monitoring is limited to:

- Checking the amount of make-up water (fill water volume + make-up water volume < 3 times the unit volume)
- Checking the pH level (stable or slightly increasing)
- Checking the total hardness (stable or slightly decreasing)

We recommend monitoring these parameters two to three times a year. Note: Monitoring the quantity of make-up water is critical to the long life of the unit.
If any of these parameters deviates from the above recommendations, refer to a water treatment specialist to correct the problem.

Setting up a plate exchanger

If the recommendations listed above cannot be met, you can set up a plate exchanger to separate the primary system from the secondary system, which protects the boiler from undesirable effects.

Setting up a filtration system

A filtration system on the return to the boiler is recommended in order to remove suspended particles from the unit.

3.6.3. Condensate removal

Removal to the drains, via a drain hopper, using a P.V.C tube (minimum diameter 32 mm) is mandatory because the condensates are acid and thus aggressive (pH between 3 and 5).

Use a sufficient slope of the order of 3% to ensure correct flow of the condensates.

Neutralise these condensates before removal according to the current regulations.

3.7. Gas supply

The gas valve is fitted with an integrated filter (125µm), but this is not able to retain all the impurities contained in the gas and in the mains pipes.

Before feeding gas to the installation, ensure that the different connections are correctly made and gas tight.

In particular check the presence of a removable connector between the isolating valve and the boiler gas supply tapping.
The value read at the gas valve input (upstream pressure tapping) must be between 17 and 25 mbar depending on the maximum pressure (Group H and type G20 natural gas).

The gas line connection must not be subject to any mechanical stress (risk of loss of gas tightness of the gas valve).
Check that the natural gas supply corresponds to the nominal boiler pressure, stated on the name plate.

3.8. Electrical connection

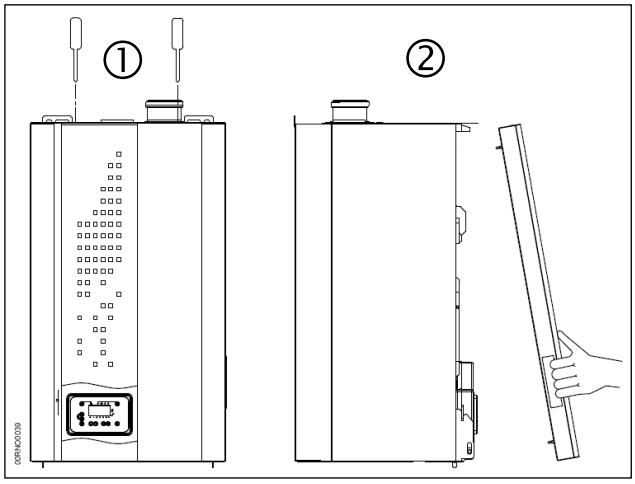
To access the electrical connection terminal strips:

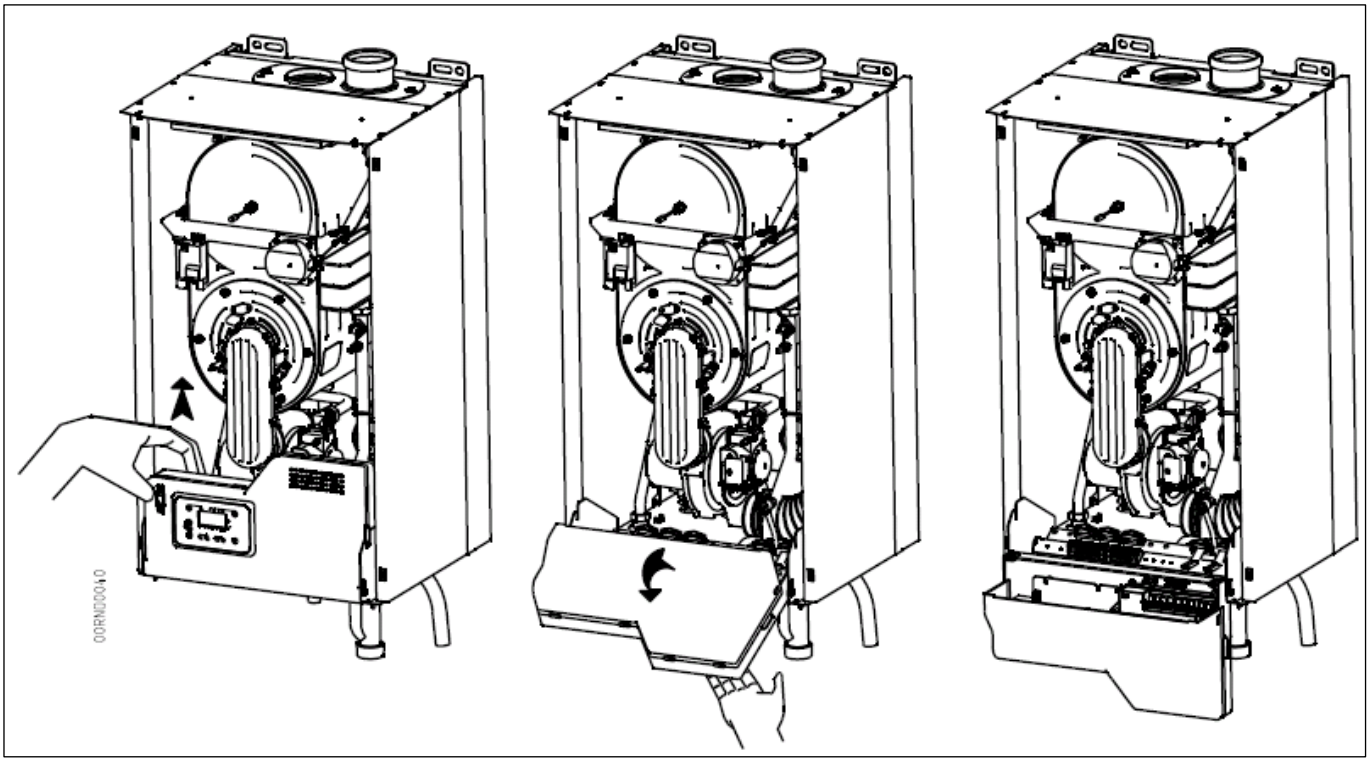
- Unscrew the two cross-head screws (Pozidrive) securing the front door on the upper jacket.

- Unclip the front door by pulling it with its two side handles.

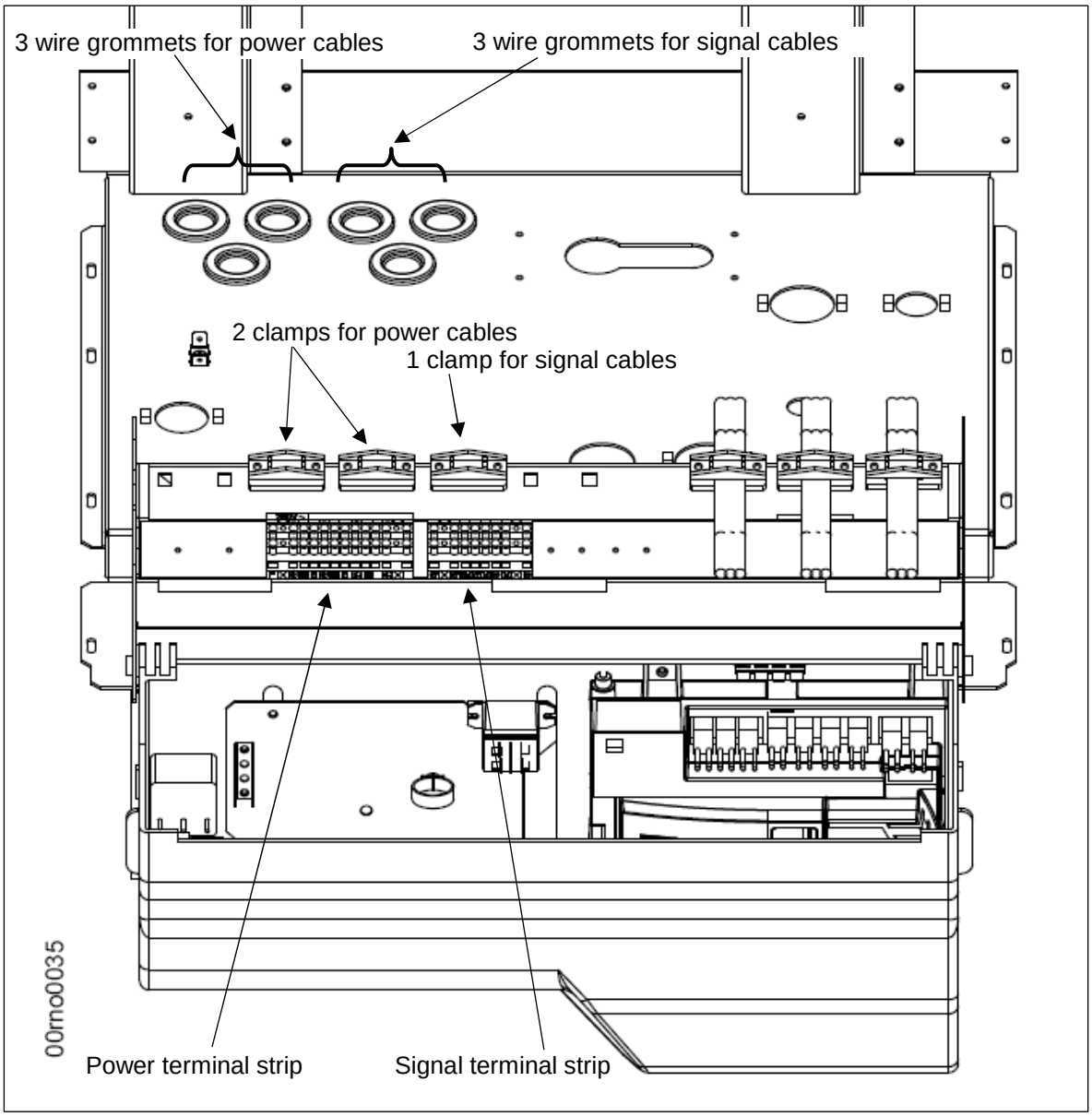
- **After removing the adhesive tape securing it for transport**, lift the control panel and swivel it forward by 180°.

- The terminal strips are now accessible.





Use the cable grommets and the cable clamps secured to the lower panel of the boiler for the electrical connection. You should separate the power cables from the signal cables to ensure correct operation of the boiler: see diagram below.



For connection, comply with the wiring diagram, in particular the phase, neutral and earth polarities (see figure on following page).

It is mandatory to connect this boiler correctly to earth and to comply with IET regulations.
Provide a two pole circuit breaker upstream of the boiler (distance between contacts: 3.5 mm minimum).

In addition, compliance with CE standards for electrical connection is mandatory, and in particular, the earth connection.

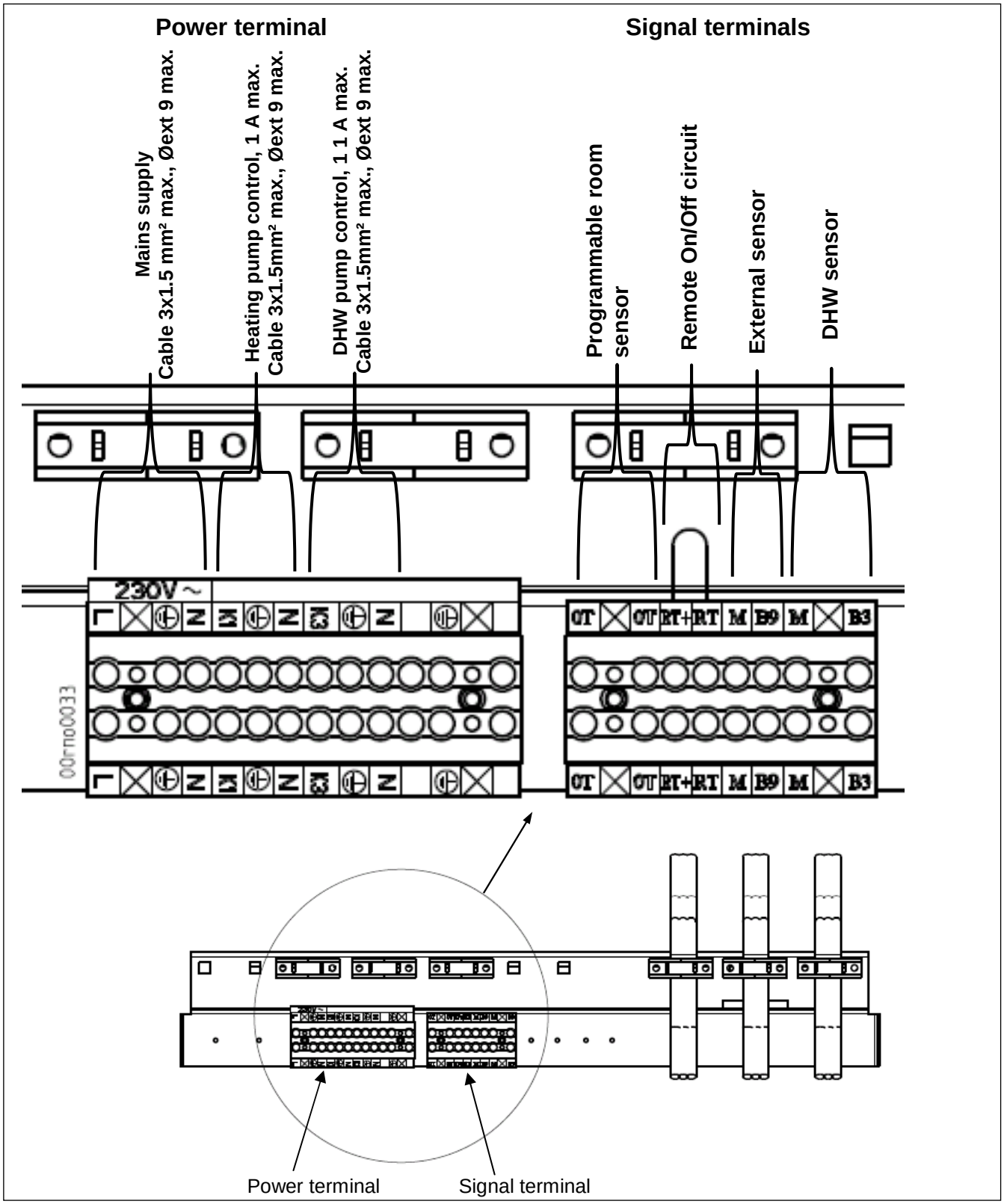
Fitting the electrical installation with a 30 mA differential protective device is strongly advised.

The electrical connection characteristics are indicated in chapter 2.5.

3.9. Custom connection to the boiler terminals

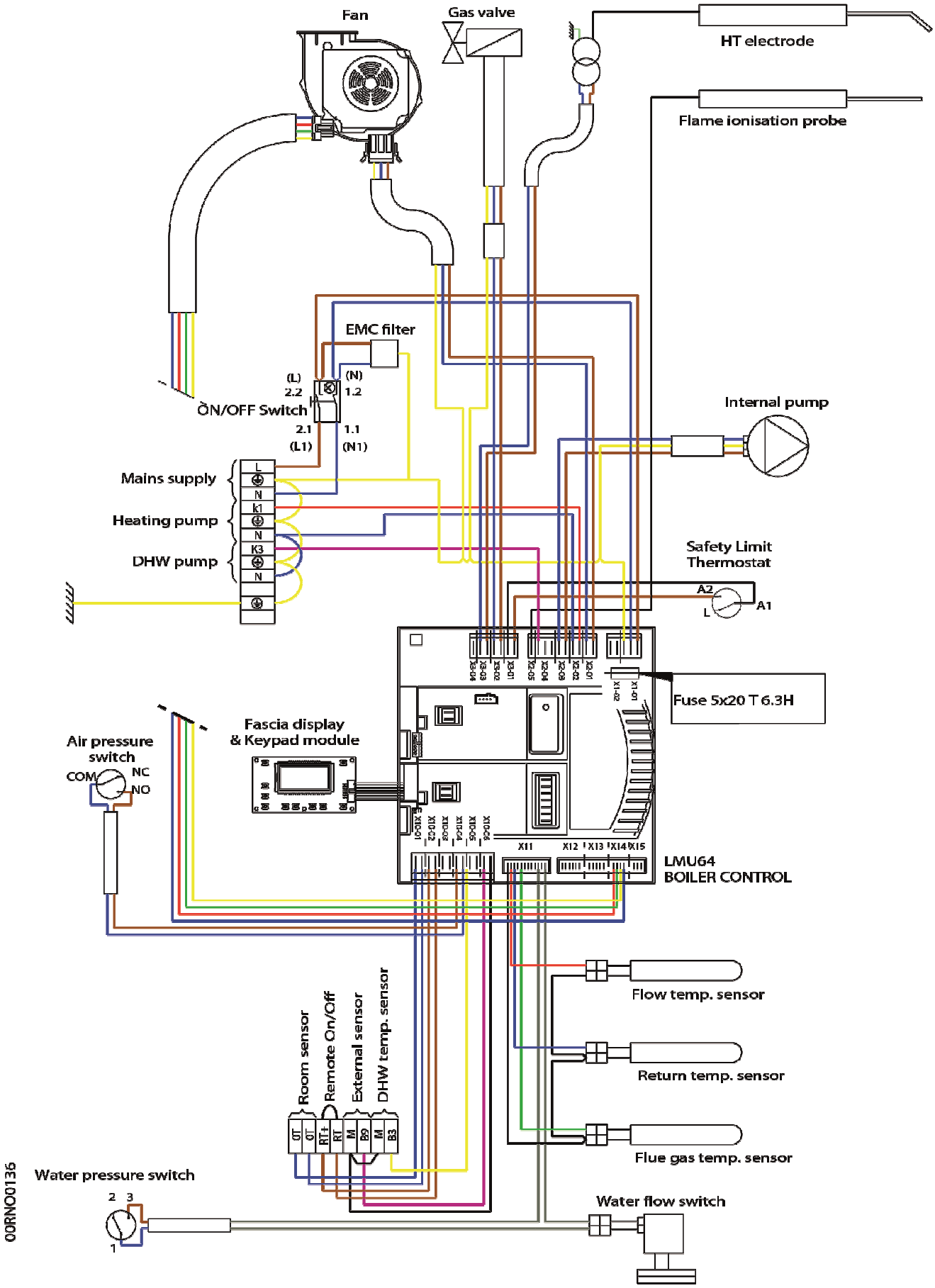
The boiler electrical power supply must be connected using a permanent connection. A bipolar switch with contact opening of at least 3.5 mm must be installed upstream of the boiler.
The rigid or flexible power supply cable must have wires with cross-sections areas of at least 3 x 1.0mm².
Comply with the polarity of the boiler electrical power supply:

Phase: L, (Brown, black or red wire),
Earth: ⏚ (green and yellow wire),
Neutral: N, (blue wire).

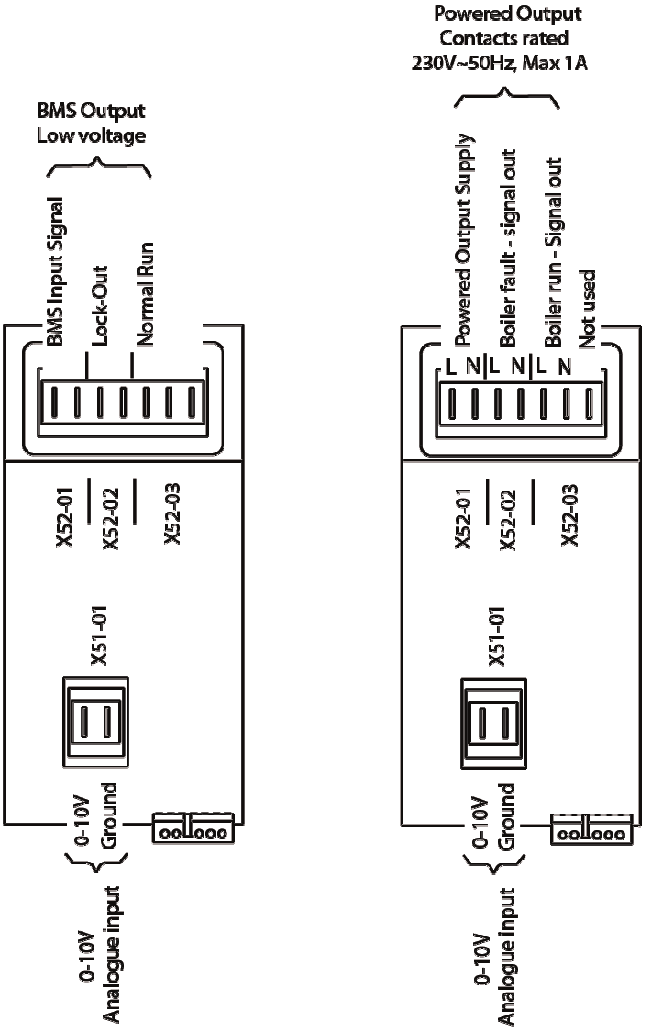


Once you have completed the electrical connection, place the control panel in position.

3.10. Electrical wiring diagrams



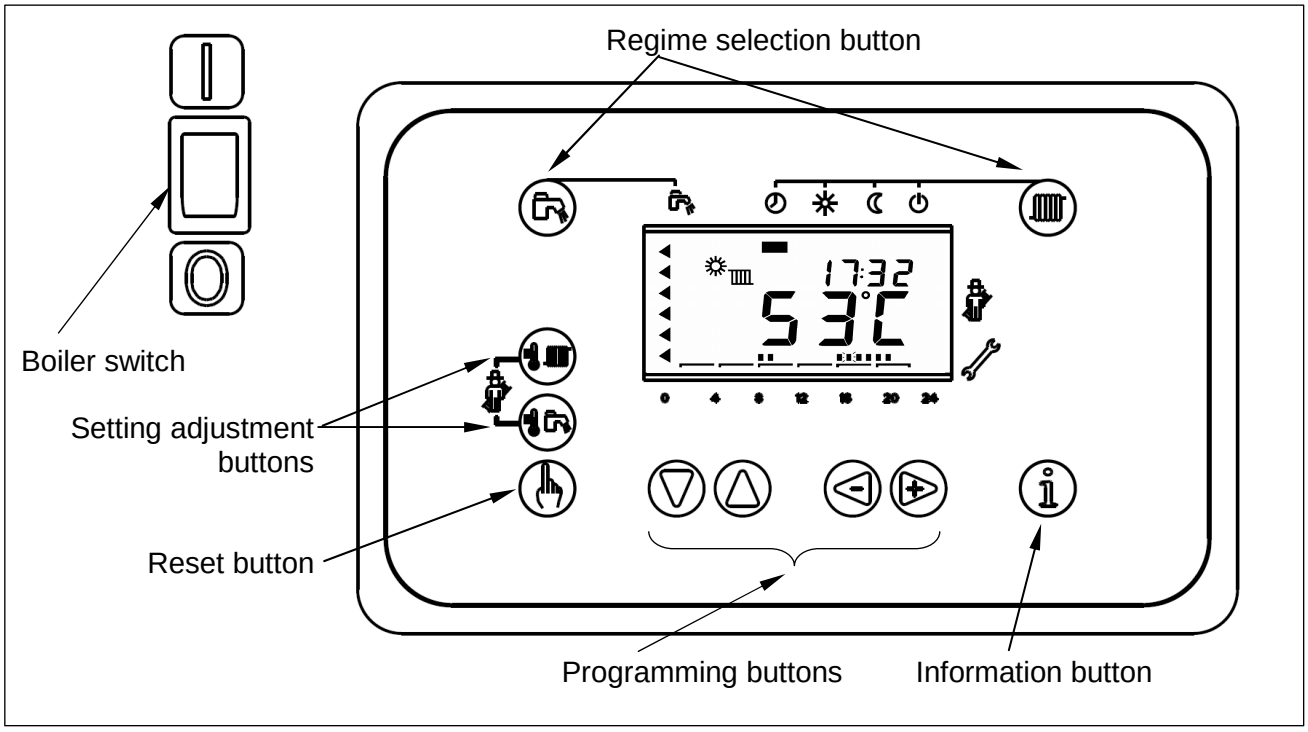
TERMINAL MARKING
OF AGU2.511



4. Control operation

4.1. User instructions

When the boiler is fully commissioned, the owner or their representative should be made aware of the lighting-up and operating instructions. A practical demonstration should be given describing each functional step. This Installation and Commissioning guide, the servicing instructions manual and the user's instructions should then be handed over and be kept in a safe place for future reference.



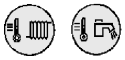
4.2. Info button

A change on the information level can be made at any time by pressing the Info button.
Additional pushes of the Info button will deliver the following data sequence provided by the information level.

	dhw temperature
◀ ◀ ◀ ◀	Not used
X	Operating phase
	Outside temperature
Ex	Error code
	Boiler temperature
	Press one of these buttons to return to the default display

Extended Info mode - when on the information level, extended info mode levels b, c & d can be displayed.

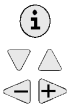
	Press both line selection buttons simultaneously for at least 3 seconds
	Press one of these buttons to select the required display level
	Press one of these buttons to select the required display value of the level
	Press the Info button to switch to the info display
	Press one of these buttons to return to the default display

Button	*Operation*	*Function*
	Lockout reset	Resetting the LMU
	Enable dhw mode	Dhw on/off
	Enable heating circuit Mode	Selection of operating mode:  Automatic operation  Continuous ‘Normal’ Operation  Continuous ‘Reduced’ Operation  Standby
	Heating circuit temperature setpoint	Adjustment of boiler or room temperature setpoint
	dhw temperature setpoint	Adjustment of dhw temperature setpoint
	Line selection (down / up)	Selection of operating parameter
	Adjustment of settings	Adjustment of parameter settings
	Information	Select information display screens
	Enable Maintenance mode	Press buttons simultaneously to select

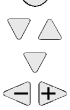
The parameters of groups **b,C** and **d** can only be displayed.

Display level	Name of LMU... variable	Description		
General information (Enduser level)				
Temperatures (Service level) [1])				
b 0	DiagnoseCode	LMU...-internal software diagnostic code		
b 1	TkRuec	Boiler return temperature		
b 2	TbwIst2	DHW temperature sensor 2		
b 3	Tabgas	Flue gas temperature		
b 4	TiAussen	Outside temperature		
b 5	TaGem	Composite outside temperature		
b 6	TaGed	Attenuated outside temperature		
b 7	TvIst	Flow temperature AGU2.500...		
b 8/ b9	Reserved			
Process values (Service level) [2])				
C 0	Reserved			
C 1	IonStrom	Ionization current		
C 2	Gebl_Drehz	Fan speed		
C 3	Gebl_PWM_AusAkt	Current fan control (PWM)		
C 4	RelModLevel	Relative output		
C 5	Pumpe_PWM	Pump setpoint (PWM)	**Not used**	
C 6	ek0	Control differential		
C 7/ C8/ C9	Reserved			
Setpoints (Service level) [3])				
d 0	Reserved			
d 1	Tsoll	Setpoint of 2-position or modulating controller (PID)		
d 2	TkSoll	Current boiler temperature setpoint		
d 3	TsRaum	Room temperature setpoint		
d 4	TbwSoll	DHW temperature setpoint		
d 5	PhzMax	Maximum degree of modulation in heating mode		
d 6	NhzMax	Maximum speed at maximum output in heating mode		
d 7/ d8/ d9	Reserved			

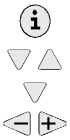
Note [1)]
1 Press Info button
2 Press buttons for at least 3 seconds
3 Choose the relevant parameter with buttons



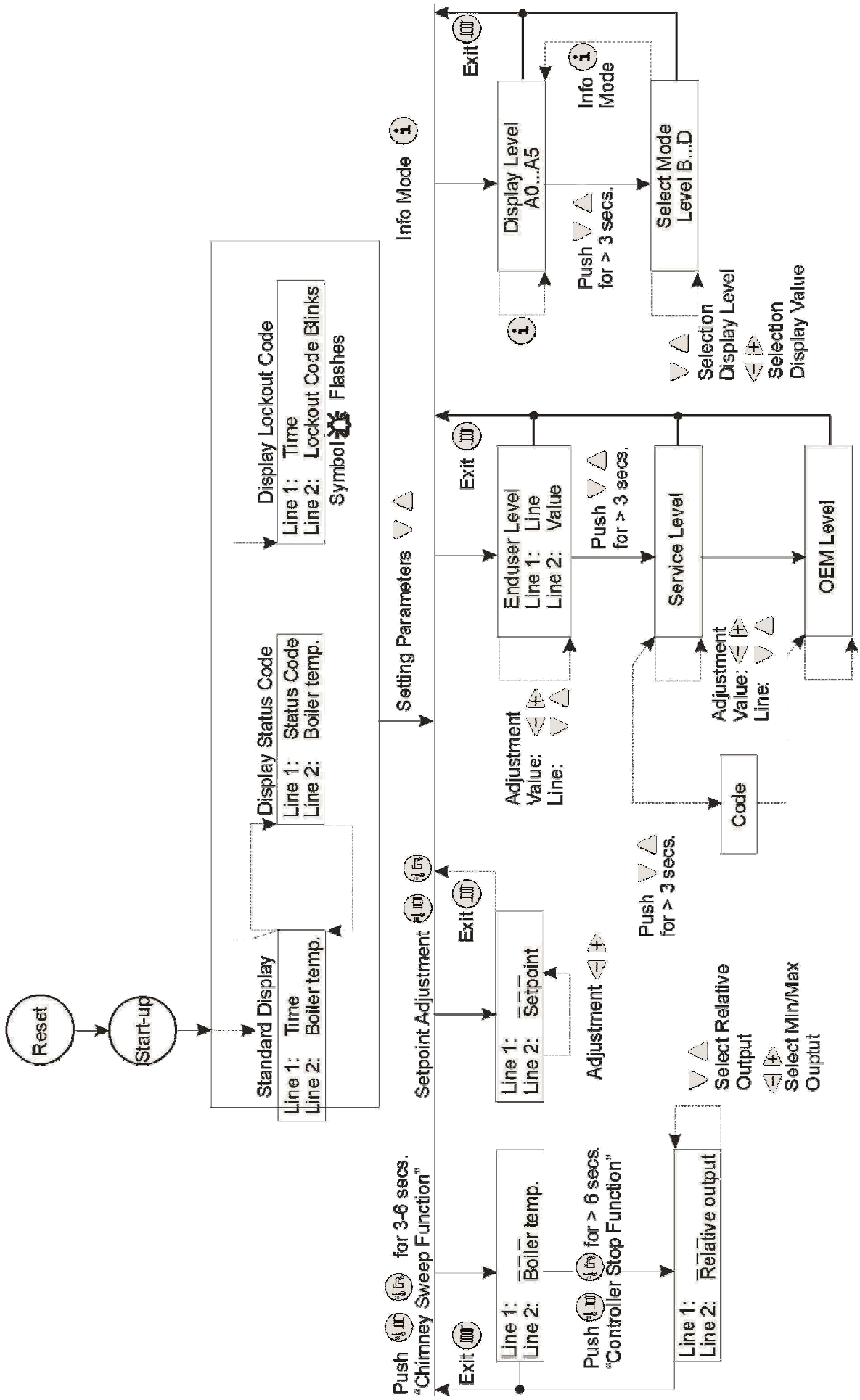
Note [2)]
1 Press Info button
2 Press buttons for at least 3 seconds
3 Press button
4 Choose the relevant parameter with buttons



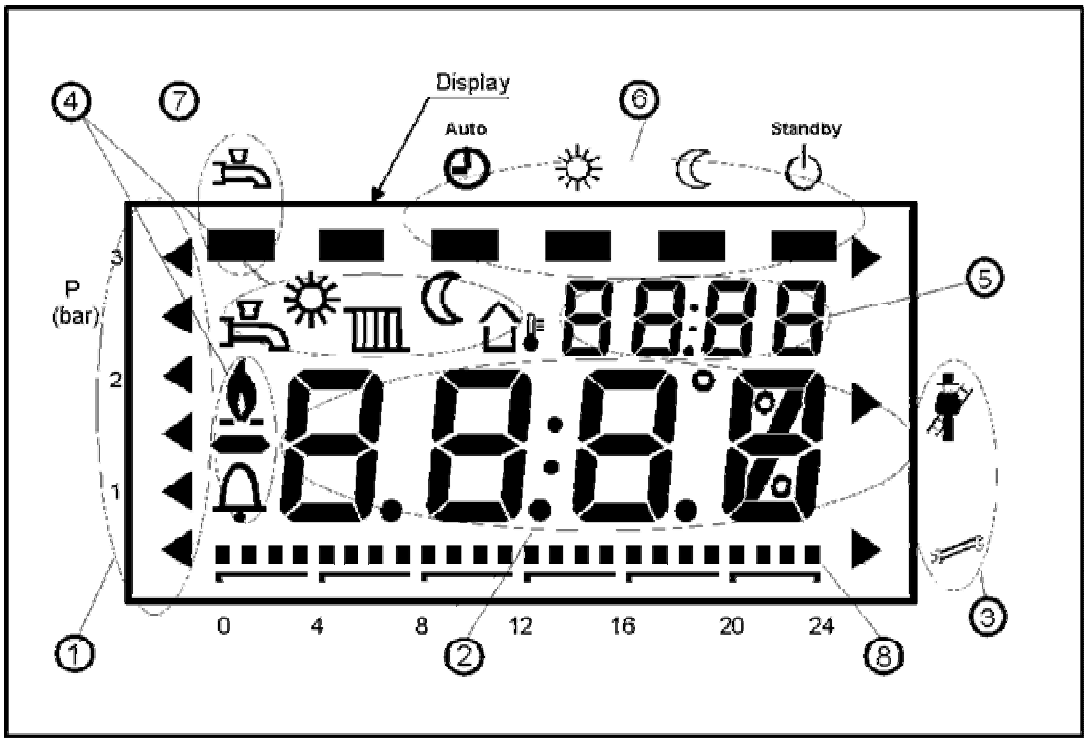
Note [3)]
1 Press Info button
2 Press buttons for at least 3 seconds
3 Press button twice
4 Choose the relevant parameter with buttons



Note: after about 8 minutes, the display will automatically change to the default display


Reset
Start-up
Standard Display
Line 1: Time
Line 2: Boiler temp.
Display Status Code
Line 1: Status Code
Line 2: Boiler temp.
Display Lockout Code
Line 1: Time
Line 2: Lockout Code Blinks
Symbol Flashes
Setting Parameters
Info Mode
Exit
Display Level A0...A5
Select Mode Level B...D
Push for > 3 secs.
Info Mode
Selection Display Level
Selection Display Value
Enduser Level
Line 1: Line
Line 2: Value
Service Level
OEM Level
Adjustment Value: Line:
Push for > 3 secs.
Code
Setpoint Adjustment
Line 1:
Line 2: Setpoint
Adjustment
Push for 3-6 secs. "Chimney Sweep Function"
Line 1:
Line 2: Boiler temp.
Push for > 6 secs. "Controller Stop Function"
Line 1:
Line 2: Relative output
Select Relative Output
Select Min/Max Ouptut

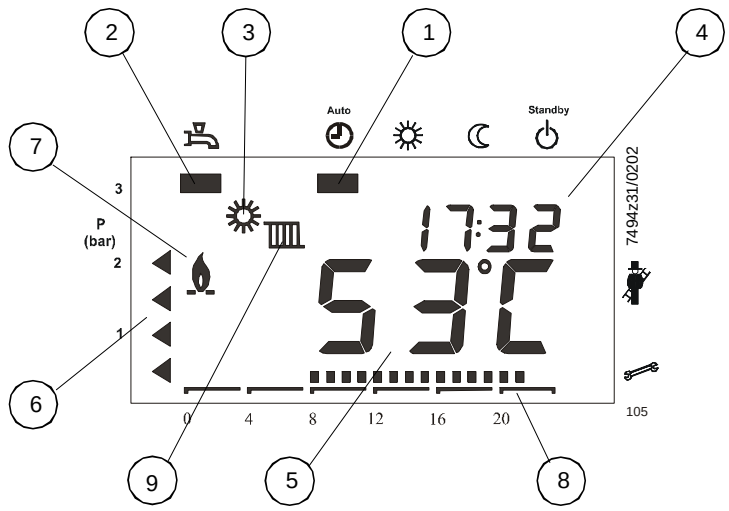
4.3. Screen legend



Character	*Display*	*Function*
1	Water pressure sensor signal	Not used
2	Display (2) 4 x 7 large segments	Display of current value
3	Maintenance indicator flashing	Upper arrow - Chimney Sweep active Lower arrow - Controller Stop active
4	Display symbols	Meaning of symbols: Display of dhw temperature or dhw heating active Display of boiler or room temp. setpoint, or space heating active. Display of outside temperature. Operational level 'Normal' Operational level 'Reduced' Display of flame Display of fault
5	Display (1) 4 x 7 small segments	Adjustment of boiler or room temperature setpoint
6	Operating mode of heating circuit	Operating mode is, or changes to: Automatic operation Continuous 'Normal' Operation Continuous 'Reduced' Operation Standby
7	Operating mode of dhw	On or Off
8	Time bar	Display of time program of heating circuit

4.4. Display

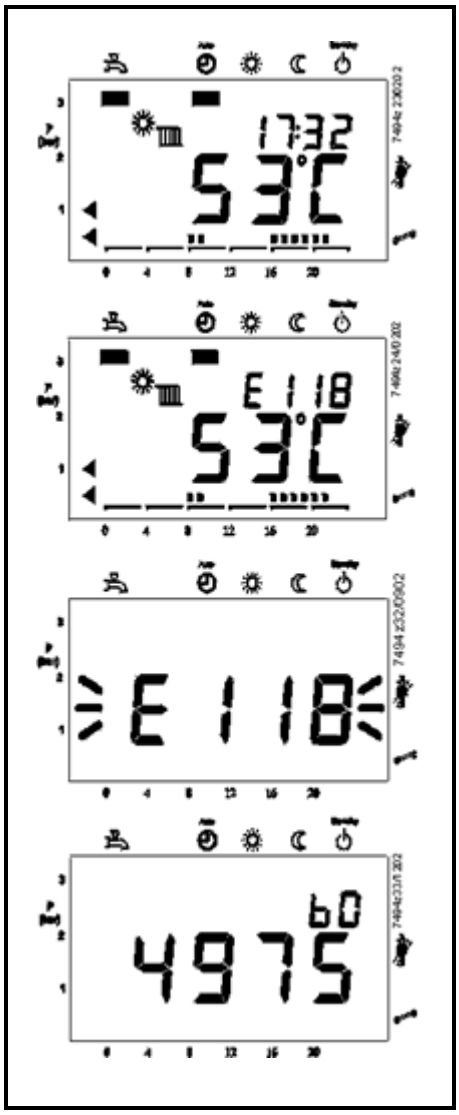
4.4.1. Default display



1	Operating mode of heating circuit
2	Operation of dhw circuit
3	Operational level of heating circuit
4	Time of day
5	Actual value of boiler temperature
6	Not used
7	Flame status
8	Time pointer
9	Operating mode of boiler

If no button is pressed for about 8 minutes, the screen will automatically return to the default display.

4.4.2. Display of Status Code



When a status code is displayed, the display (1) shows alternatively the time of day and the error code.

(1)

Press the Info button (i) for the display of the error code.

(2)

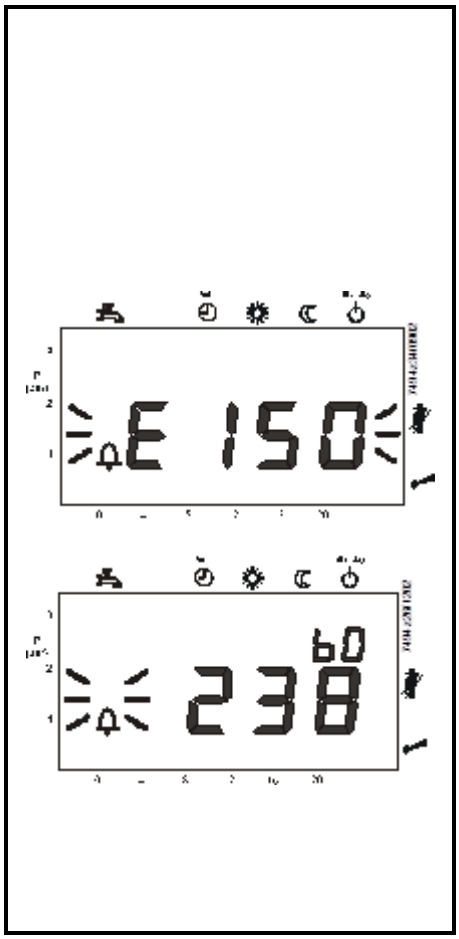
Press simultaneously both line selection buttons ▽ △ for 3 seconds. The internal error code will be displayed.

Example "4975"

Press the info button (i) to return to the info display.

Press (|||) to return to the default display.

4.4.3. Lockout display



In the case of a lockout code, the error code display flashes together with an 'Alarm symbol';

The LMU will go to lockout

(1)

Example: "E150"

Press the Info button (i) to switch to the error code

(2)

Press both line selection buttons ▽ △ simultaneously for 3 seconds. The internal error code will be displayed

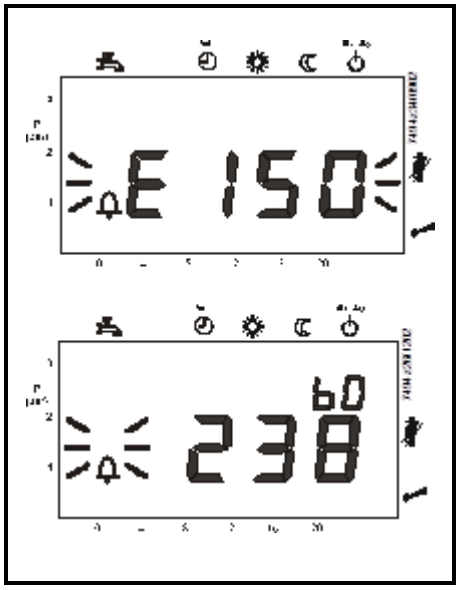
Example "238"

Press the Info button (i) to switch to the Info display

Press (⏻) to return to the default display

Note: After rectification of the fault, press the reset button (✋) (>0.6 seconds) to reset the LMU.

4.4.4. Adjusting the heating circuit setpoint temperature



Press the flow temperature button (⏻) to adjust the heating circuit setpoint

Press (−) (+) to adjust the required setpoint

(1)

Press (⏻) to return to the default value

Changes will be stored.

The room temperature setpoint or boiler temperature setpoint will be changed depending on the plant's configuration (with or without outside sensor).

If no button is pressed for about 8 minutes, the screen will automatically return to the default display. Changes will be stored.

4.4.5. Parameter settings for the Enduser

The boiler is supplied with default settings. These must be modified to suit individual Enduser needs.

	Press one of the line selection buttons. This will take you to programming level <<Enduser>>
	Press the line selection button to choose the relevant line. The display shows <<Pxxx>>
	Adjust the required value with one of these buttons. The adjustment is stored as soon as you change to some other line (to alter individual items, a change of parameter is required). The Enduser Parameter list details all possible settings.
	Press button to leave the programming level. Changes will not be stored
	Press the Info button to leave the programming level. Changes will be stored

Note: If no button is pressed for about 8 minutes, the screen will automatically return to the default display. Changes will not be stored. When switching to another level, changes will be stored.

4.4.6. Overview of Enduser parameters

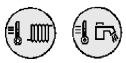
Refer to the table page 51.

The Enduser parameters are the parameters named “Pxxx”.

4.4.7. Start-up / initialisation

On startup after power-On, or after a lockout reset, the setpoints will be initialized.
These setpoints apply until a first adjustment is made (e.g. via the screen display or PC parameterization):
After a readjustment, these values will be overwritten with the new value and permanently stored in the LMU.
When a new startup is made, or after power-On, the previous settings will be stored in the LMU.
Also, the software version number of the operator module and that of the connected type of LMU... will be delivered.

Chimney Sweep function

The chimney sweep function enables the boiler to be started up in heating mode by pressing both buttons  simultaneously for more than 3 seconds but for no more than 6 seconds.

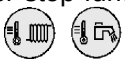
On the display, the upper arrow of the maintenance function flashes and the currently selected temperature appears. This function serves for making measurements on the boiler. When the chimney sweep function is activated, the boiler will deliver maximum output until the limit thermostat cuts out.

To ensure maximum supply of heat, the chimney sweep function generates the forced signal for heat supply.

During the time that the Chimney Sweep is activated, an appropriate status code is delivered.

To close the function, press button  .

Controller Stop function

The controller stop function enables the boiler's heat output to be adjusted manually in heating mode by pressing both buttons  simultaneously for more than 6 seconds.

On the display, both arrows of the maintenance function flash and the currently selected temperature appears and the display shows the adjusted relative boiler output.

The function serves for making measurements on the boiler and allows the boiler output to be increased / decreased by pressing buttons .

Minimum and maximum output can be directly selected by pressing the line selection buttons

Note: If the controller stop function is triggered via PC tool ACS420, the current setpoint of burner output will appear on the display, but the settings are locked.

To close the function, press button  .

Time of day function

To ensure that this function operates, the time of day and time settings must be correctly set. Refer to section, Parameter settings for Enduser, to setup the program.

Note: Each time button  is pressed during the time setting, the seconds are set to 0 and the clock continues to run while making the setting.

4.4.9. Heating circuit operating modes

The control provides 4 different heating circuit operating modes for LMU... heating circuit 1. They can be directly selected depending on the requirements - see following table.

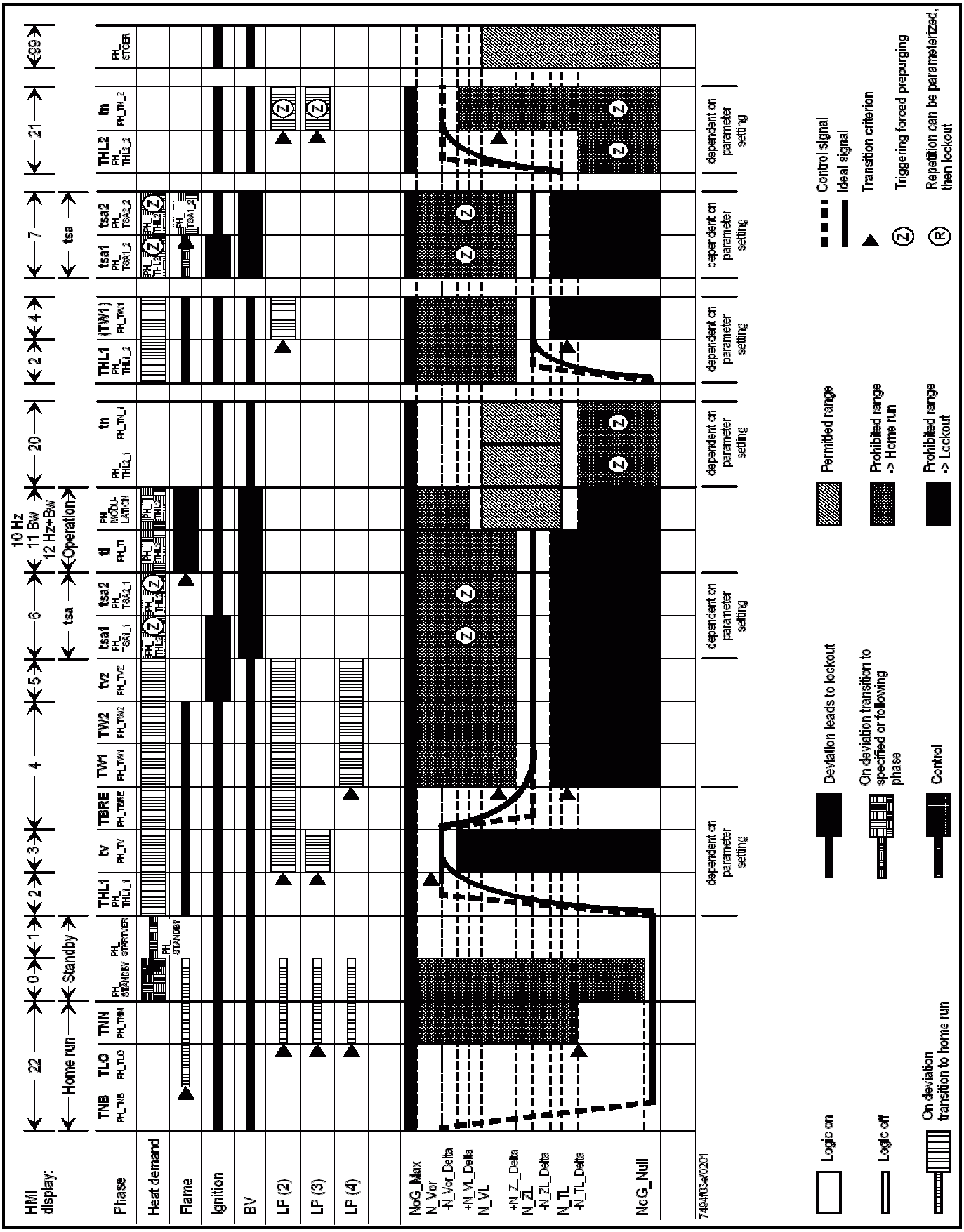
The operating modes are selected by pressing button  .

On the LCD, a pointer below the respective symbol points to the selected heating circuit operating mode.

Operating mode	Designation	Effect of selection
	Automatic operation	Heating circuit 1 (HC1) according to time switch program 1
	Standby	Heating circuit 1 switched off Frost protection functions active
	Continuous 'Normal' operation	Heating circuit 1 continuously on according to the adjusted nominal room temperature setpoint or heating circuit setpoint
	Continuous 'Reduced' operation	Reduced room temperature set point or heating circuit frost protection setpoint

4.4.11. **Display of operating phases** (display level A4)

The operating phases according to the LMU…'s sequence diagram can be displayed (display level A4 press Info button 3 times).
Assignment of the display code and the LMU...'s phase designation is as follows:



Display	Meaning	Internal operating phases of the LMU...
00	Standby (no demand for heat)	PH_STANDBY
01	Prevention of startup	PH_STARTVER
02	Fan runup	PH_THL1_1 PH_THL1_2
03	Prepurging	PH_TV
04	Waiting time	PH_TBRE PH_TW1 PH_TW2
05	Preignition time	PH_TVZ
06	Safety time, constant	PH_TSA1_1 PH_TSA2_1
10	Heating operation	PH_TI PH_MODULATION Heating mode
11	DHW operation	PH_TI PH_MODULATION DHW mode
12	Parallel operation of space heating and DHW heating	PH_TI PH_MODULATION Heating and DHW mode
20	Postpurging with the last control of operation	PH_THL2_1 PH_TN_1
22	Home run	PH_TNB PH_TLO PH_TNN
99	Lockout position (display of the current error code)	PH_STOER

Note: If operating phases are passed very quickly or skipped, the relevant display code will not appear.

4.5. Functions

4.5.1. Frost protection

Note: to access this function, the circulating pump must be wired to the LMU through a suitable contactor.

There are two levels of frost protection available dependent on the sensor options used.

1st stage - When the boiler water temperature is below 5℃, the burner and the heating pump are switched on. When the temperature increases and exceeds 13℃, the burner stops and the pump continues for the duration of the pump overrun.

2nd stage - This additional function uses the outside air temperature (if a sensor has not been fitted, the function is blocked) and provides three levels of activation.

- If the outside temperature is less than or equal to –5℃, the pump operates continuously
- If the outside temperature is between –4 & 1.5℃, the pump operates for 10 minutes every 6 hours.
- If the outside temperature is greater than 1.5℃, the pump is switched off.

Note: any demand for dhw is given priority.

Should protection be required for the building fabric, then a QAA73 programmable room sensor must be used to maintain the internal building temperature.

4.5.2. Anti Legionella

To prevent the development of pathogenic bacteria in the domestic hot water tank during prolonged shut downs or low storage temperatures, the dhw must be heated once a week to a temperature greater than 60℃.

The anti legionella function is not activated by default.

4.5.3. Pump overrun

When the heating mode ends, the heating circuit pump remains on for a period (depending on the settings used - QAA73: 544).

In dhw systems, when the dhw heating period ends, the heating pump remains on until the return temperature drops below 70℃. During this period, the dhw selector valve (if fitted) is in the open position.

4.5.4. Pump or selector valve kick

If either the heating circuit pump or dhw selector valve have not been activated for more than 24hours, then during an off period the pump or valve is activated for 30 seconds.

4.5.5. Boiler overheat protection

The boiler flow sensor in combination with the return sensor, provide overheat protection as follows:

- If the first level temperature is exceeded, a fault code is displayed.
- If the second level temperature is exceeded, an alarm code is displayed and the boiler will switch off. The boiler must be reset to restart.

To restart the boiler, the temperature must fall, accordingly the fan and pump will continue to operate until the boiler heat exchanger temperature drops.

Additionally, should the ΔT across the boiler heat exchanger exceed:

25℃, the burner will reduce output to 80%,
33℃, the burner will reduce output to minimum rate,
41℃, the burner will shutdown.

4.5.6. Anti-cycling

Dependent on the installation and the minimum firing rate of the boiler, the control monitors the heating temperature curve and will hold off a boiler from firing and thus reduce the number of operations.

4.5.7. Automatic summer / winter switching

Note: This function is only available when an outside sensor is fitted.

The automatic summer / winter switching function enables the summer mode to be switched to winter mode (vice versa) throughout the year, without the need for manual intervention.

The heating is shut down when the average outside temperature measured over the preceding 24hours is greater than 1℃ above the set point (20℃).

The heating is automatically started up again when the average outside temperature measured over the preceding 24hours is less than 1℃ below the lower limit of the hysteresis threshold of the set point (18℃).

Note: The switch over setting is set to 19℃ and c an only be changed using the QAA73 room sensor.

The automatic mode must obviously be activated on the boiler as well as on the QAA73, for the function to operate. The function is automatically activated by a default setting in the QAA73.

4.5.8. Start-up / initialisation

On startup after power-On, or after a lockout reset, the setpoints will be initialized.

These setpoints apply until a first adjustment is made (e.g. via the display or PC parameterization):

After a readjustment, these values will be overwritten with the new value and permanently stored in the LMU.

When a new startup is made, or after power-On, the previous settings will be stored in the LMU.

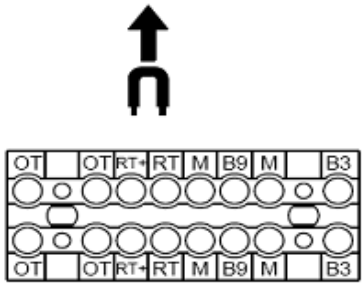
Also, the software version number of the operator module and that of the connected type of LMU... will be delivered to the display.

4.5.9. BMS 0~10v DC control of LMU

Note: If it is used in combination with a Merley Sequence Controller and an OCI 420, the 0…10 V input function will not be available to the LMU.

To ensure the good performance of the installations using interface AGU 2.511 the shunt RT/RT+ from the signal terminal strip of the LMU has to be removed (the contact RT/RT+ should not be used in the case of an order 0-10V).

SIGNAL TERMINAL OF LMU



Before programming changes are made, ensure the boiler is set to standby mode.

The following parameters need to be changed on the boiler LMU when a BMS 0-10 V signal is being used to control the boiler modules directly. All parameters can be changed using the keypad on the boiler display panel or via the computer link using the Siemens software.

Press and hold both up and down arrow keys for at least five seconds to enter advanced parameter list H90 displayed top right of HMI screen.

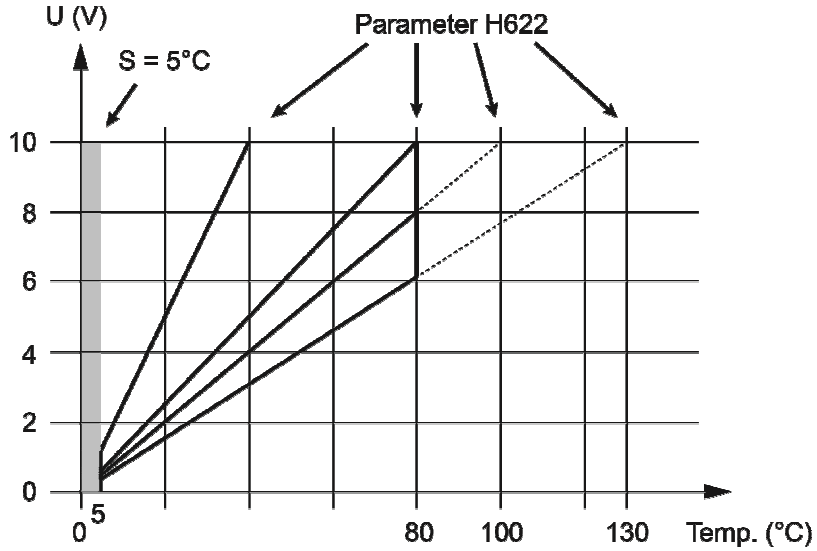
Use either up or down arrow key to scroll through the parameter list and stop at H618 - Default value is 0

Two options for control are available:

Option 1 (preferred option for multiple boilers on a modulating 0-10V signal controlling the load)

To enable 0-10v control over the boiler power range, change the setting by using the + or – key and set value to 5. Press mode button to store change and return to home screen.

Option 2 (if the 0-10V signal is only being used to enable the boilers and is not modulating)
To enable 0-10v control over the boiler temperature set point, change the setting by using the + or – key and set value to 4. Press mode button to store change and return to home screen
Press and hold both up and down arrow keys for at least five seconds to enter advanced parameter list H90 displayed top right of HMI screen.
Use either up or down arrow key to scroll through the parameter list and stop at H622 - Default value is 100
Change this value to match the required flow temperature set point at maximum (10v) e.g. 100 = 100℃ max set point. Press mode button to store change and return to home screen.



0-10v signal wiring can now be connected to connections X51-01 on the AGU2.511 clip-in.

Boiler	PC	Req'd setting	Function
618	526	4	0–10 V - temperature
618	526	5	0–10 V - load (preferred option for modulating load)
622	528	As req'd (100℃)	Max temp = 10 V
623	529	As req'd (20%)	Min % load = 20 %

It may be necessary, depending on the operating temperature required, to raise the maximum operating temperature possible from the individual boiler modules. As standard the boiler modules leave the factory with a maximum operating temperature of 80℃.

4.5.10. Access to LMU Fault Log

The LMU control retains historical fault information of the last 6 faults, as read only via the Engineer level access.
The current fault relates to the actual lockout at the time of the visit. Once reset, the current fault becomes the 1st fault and the remaining history is shifted back to the 5th fault, losing the previous 5th fault history.

The Albatros code is the 'E' display code supported by the internal code

Note:
When connecting to a QAA73 unit refer to
Hamworthy OEM manual 500001140

When connecting to a Merley control unit refer to
Hamworthy OEM manual 500001210

No QAA73... AGU2.310	Function	Level QAA73... AGU2.310
700	1st past value of lockout code counter	Engineer
701	1st past value of lockout phase	Engineer
702	1st past value of internal diagnostic code	Engineer
728	1st past value of ALBATROS error code	Engineer
703	2nd past value of lockout code counter	Engineer
704	2nd past value of lockout phase	Engineer
705	2nd past value of internal diagnostic code	Engineer
729	2nd past value of ALBATROS error code	Engineer
706	3rd past value of lockout code counter	Engineer
707	3rd past value of lockout phase	Engineer
708	3rd past value of internal diagnostic code	Engineer
730	3rd past value of ALBATROS error code	Engineer
709	4th past value of lockout code counter	Engineer
710	4th past value of lockout phase	Engineer
711	4th past value of internal diagnostic code	Engineer
731	4th past value of ALBATROS error code	Engineer
712	5th past value of lockout code counter	Engineer
713	5th past value of lockout phase	Engineer
714	5th past value of internal diagnostic code	Engineer
732	5th past value of ALBATROS error code	Engineer
715	Current value of lockout code counter	Engineer
716	Current value of lockout phase	Engineer
717	Current value internal diagnostic code	Engineer
733	Current value of ALBATROS error code	Engineer

4.5.11. Error code display

In the event of a nonvolatile LMU... lockout position, fault is continually displayed. In addition, the diagnostic code on the display flashes (refer to paragraph 4.4.3 and following table).

To cancel the lockout position, press lockout reset button for at least 2 seconds.

Error code	Internal ErrorCode	Potential cause	Actions
0		No entry in code	
10		Fault outside sensor	
20	142	Short Circuit Boiler Flow Sensor	Check temp sensor in water flow pipe & replace if necessary
	143	Open Circuit Boiler Flow Sensor	Check connections to temp sensor in water flow pipe Check temp sensor in water flow connection & replace if necessary
28		Fault flue gas sensor	
32		Fault flow temperature sensor 2	
40	144	Short Circuit Boiler Rtn Sensor	Check temp sensor in water rtn pipe & replace if necessary
		Open Circuit Boiler Rtn Sensor	Check connections to temp sensor in water rtn pipe Check temp sensor in water rtn connection & replace if necessary
50		Fault DHW temperature sensor 1	
52		Fault DHW temperature sensor 2	
61		Fault room unit 1	Check room device
62		Wrong room unit 1 or wrong radio clock connected	Connect compatible room control unit
77		Fault air pressure sensor	
78		Fault water pressure sensor	
81	518	LPB Short Circuit or no power supply	Check connections to clip in (switch off and isolate boiler before working on mains wiring)
82		Address collision on LPB...	Check addresses of connected modules
91		Data overflow in EEPROM	
92		Hardware fault in electronics	
95		Invalid time of day	Set correct time
100		2 clock time masters	
105		Maintenance message	P629 to reset : change from 0 to 1
110/111		Limit thermostat has cut out	Allow the boiler to cool and reset thermostat Investigate cause of overheating (see section 9.3)
113		Flue gas supervision equipment has cut out	
117		Water pressure too high	
118		Water pressure too low	
119		Water pressure switch has cut out	Check water pressure
128		Loss of flame during operation	Check connections to flame probe Investigate flame probe condition Check combustion when boiler is firing
130		Flue gas limit temperature exceeded	
132		Safety shutdown	Check gas pressure Check flue & condensate trap for blockages Check safety switches
133		No flame on completion of safety time	Check operation of gas valve. Check HSI
134		Loss of flame during operation	
140		Inadmissible LPB segment number/device N°	
148		Incompatibility LPB... interface / basic unit	
151	552	Relay clip in faulty	Check connections to clip in Check and replace clip in module (switch off and isolate boiler before working on mains wiring)
152		Fault in connection with LMU settings	
153		LMU has locked out	Press reset button (code appears if reset button is pressed when there are no faults)
154		Flow Problems	Check water flow through the boiler & Check the pumps
160		Fan speed threshold not reached	Check obstructions in fan, burner & flue. Check non-return valve operates Check heat exchanger for debris
161		Maximum fan speed exceeded	Check parameters
162		Fault air pressure switch (does not close)	
164		Fault heating circuit flow switch / pressure switch	
166		Fault air pressure switch (does not open)	
180		Chimney sweep function active	
181		Controller stop function active	
183		LMU... in parameter setting mode	

5. Commissioning

5.1. Checks before commissioning the boiler

For a cascade installation, check the hydraulic balancing of the boilers.

Check that the cold pressure is a minimum of 1 bar.

If this is a boiler house renovation, ensure that flushing and if necessary silt removal from the installation have been correctly done (see the "Water quality" chapter of this manual).

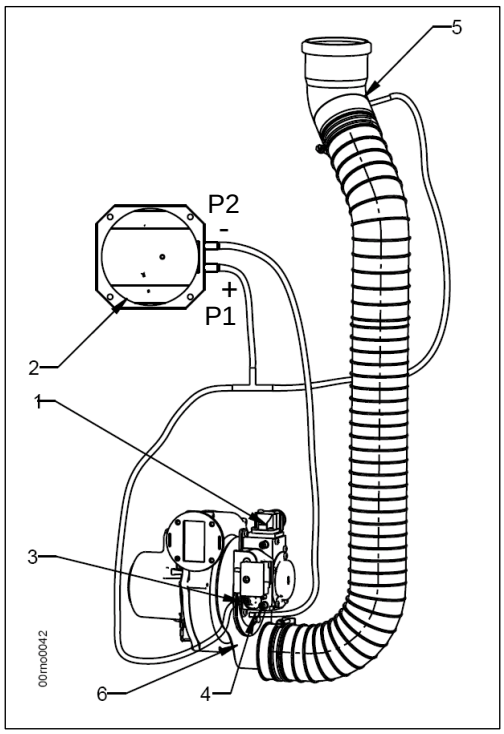
5.2. Changing the type of gas

This **STRATTON** boiler is adjusted in the factory to operate on **group H**

(type G20) natural gas with a 20 mbar supply pressure

Any operation involving a change of gas type must be done by a qualified professional.

Controlling air/gas ratio



1 – Gas valve

2 – Differential air pressure switch

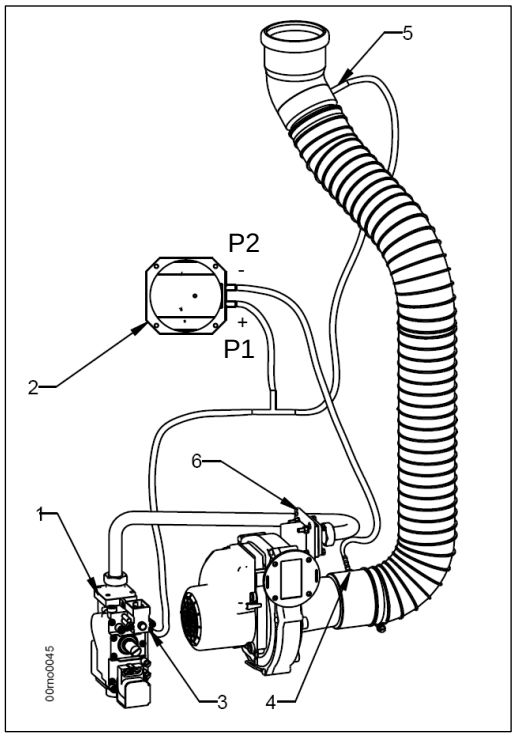
3 – Air signal on valve

4 – Air signal on mixer

5 – Air signal on elbow

6 - Mixer

STRATTON STW 45 / STW 60



STRATTON STW 85 / STW 100

Valve adjustment must be done on the boiler in operation at maximum power and minimum power. To do this use the 'Controller stop mode' (chapter **4.4.7**), which allows direct change to minimum or maximum setting (0% or 100%).

Attention, the setting values have been validated for the gas supply pressure values at the valve inlet (upstream pressure measurement point, burner operating) given by the data in the following table:

Gas type	**G20**	**G31**
Supply pressure (mbar)	20	37

Procedure for change from G20 to G31

Phase 1 - Procedure for changing the ignition power and min. power for B23 or B23P:

- Set the boiler to standby mode using the key (see §4.3).
- Press the and keys simultaneously to enter configuration mode at installer level (see § 4.6). The display must show type Hxxx parameters.
- Using the and keys, scroll through the parameters to parameter H608 (H609 for 45 model).
- Using the and keys, modify the parameter value according to the table of parameters opposite.
- Confirm the parameter change by pressing the key.
- Using the key scroll through the parameters to the next parameter that is to be modified shown in the table opposite.
- Repeat the last 3 operations for all parameters in the table.
- After confirming the last parameter, press the key to exit configuration mode.
- Turn the boiler off using the boiler switch and then turn it back on again.

Model	Gas type	Parameter value			
		H608	H609	H611	H612
STW 45	G20		15		1450
	G31		19		1900
STW 60	G20	19	18,5	1750	1600
	G31	27	27	2750	2750
STW 85	G20	22,5	10,5	3500	1750
	G31	12,5	12,5	2400	2400
STW 100	G20	22,5	10,5	3500	1750
	G31	12,5	12,5	2400	2400

When changing from G31 to G20, reset the parameters H608, H609, H611, H612 and H613 to their initial value.

Phase 1 - Procedure for changing the ignition power and min. power for C13 or C33:

- Set the boiler to standby mode using the key (see §4.3).
- Press the and keys simultaneously to enter configuration mode at installer level (see § 4.6). The display must show type Hxxx parameters.
- Using the and keys, scroll through the parameters to parameter H608 (H609 for 45 model).
- Using the and keys, modify the parameter value according to the table of parameters opposite.
- Confirm the parameter change by pressing the key.
- Using the key scroll through the parameters to the next parameter that is to be modified shown in the table opposite.
- Repeat the last 3 operations for all parameters in the table.
- After confirming the last parameter, press the key to exit configuration mode.
- Turn the boiler off using the boiler switch and then turn it back on again.

Model	Gas type	Parameter value				
		H608	H609	H611	H612	H613
STW 45	G20		15		1450	
	G31		19		1900	
STW 60	G20	19	18,5	1750	1600	
	G31	30	27	3050	2750	
STW 85	G20	22,5	10,5	3500	1750	
with: L*= 0 at 5 m	G31	12,5	12,5	2400	2400	
STW 85	G20	23	11,5	3600	1850	5200
with: L*= 5 at 9 m	G31	13,5	13,5	2500	2500	5450
STW 100	G20	22,5	10,5	3500	1750	
with: L*= 0 at 5 m	G31	12,5	12,5	2400	2400	
STW 100	G20	23	11,5	3600	1850	5900
with: L*= 5 at 9 m	G31	13,5	13,5	2500	2500	6400

* L: Balanced flue duct length (see paragraph 3.4.2).

When changing from G31 to G20, reset the parameters H608, H609, H611, H612 and H613 to their initial value.

Phase 1 - Procedure for changing the ignition power and min. power for C53:

- Set the boiler to standby mode using the key (see §4.3).
- Press the and keys simultaneously to enter configuration mode at installer level (see § 4.6). The display must show type Hxxx parameters.
- Using the and keys, scroll through the parameters to parameter H608 (H609 for 45 model).
- Using the and keys, modify the parameter value according to the table of parameters opposite.
- Confirm the parameter change by pressing the key.
- Using the key scroll through the parameters to the next parameter that is to be modified shown in the table opposite.
- Repeat the last 3 operations for all parameters in the table.
- After confirming the last parameter, press the key to exit configuration mode.
- Turn the boiler off using the boiler switch and then turn it back on again.

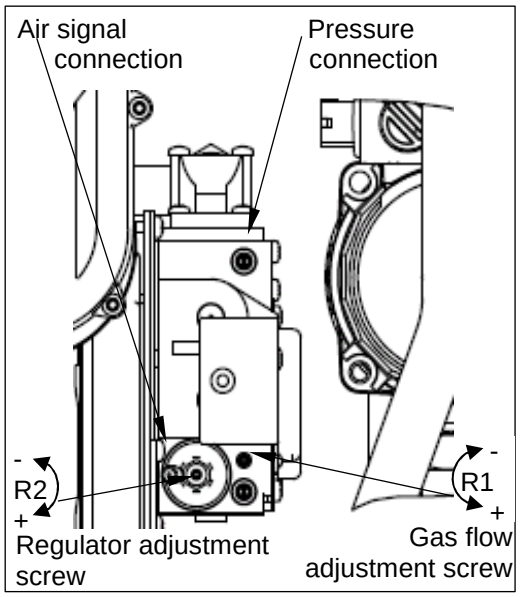
Model	Gas type	Parameter value			
		H608	H609	H611	H612
STW 45	G20		15		1450
	G31		19		1900
STW 60	G20	19	18,5	1750	1600
	G31	30	27	3050	2750
STW 85	G20	22,5	10,5	3500	1750
	G31	12,5	12,5	2400	2400
STW 100	G20	22,5	10,5	3500	1750
	G31	12,5	12,5	2400	2400

When changing from G31 to G20, reset the parameters H608, H609, H611, H612 and H613 to their initial value.

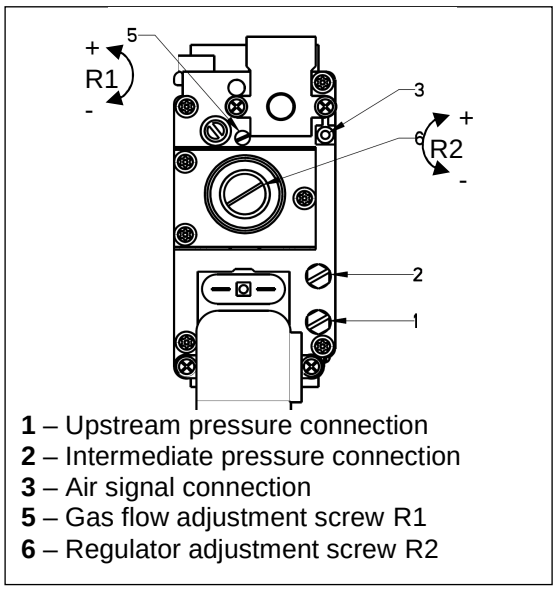
Phase 2 - Modifying the valve setting and checking the combustion parameters for chimney and balanced flue configurations:

- Before starting the burner, on the gas valve, preset the gas flow rate, using the gas flow rate adjustment screw R1, to the appropriate value given in the following table and as represented below.
- Start the burner at maximum power. (Press and simultaneously for about 6 seconds; the display screen indicates 100%)
- Using a combustion analyser, measure the CO_2 ratio in the exhaust gases: on the concentric adapter, remove the plug from the lower opening and insert the CO_2 measurement sensor into the centre of the flow in the exhaust duct.
- Check the CO_2 value at maximum power Qmax and if necessary, use the valve gas flow rate adjustment screw R1 to obtain the values of CO_2 in the following table.
- Change to minimum power Qmin (press ; the display screen indicates 0%) and check that the CO_2 value is within the range in the following table. If necessary, use the setting adjustment screw R2
- If the setting is adjusted at minimum power, go back to maximum power Qmax (press) and recheck the CO_2 value. Repeat the operation until both values comply with the following table.
- Return to the standard operating mode (press).

After making the gas change settings, stick the label corresponding to the new gas type in place of the old one. The new labels are stapled to this page of the manual.



STRATTON STW 45 / 60



STRATTON STW 85 / 100

STRATTON	Gas valve	Gas	Presetting gas flow adjustment screw R1 and regulator adjustment screw R2 / G20	CO_2 Pmax	Indicative CO_2 Pmin
45	GB-WND 055 D01 S20	G20	-	8,7 - 8,9	8,4 - 8,6
		G31	Screw R1 (- direction) 2.25 turns Screw R2 (+ direction) 0,25 turn	9,7 - 9,9	9,4 - 9,6
60	GB-WND 055 D01 S20	G20	-	8,7 - 8,9	8,4 - 8,6
		G31	Screw R1 (- direction) 1,75 turns Screw R2 (+ direction) 0,5 turn	9,6 - 9,8	9,4 - 9,6
85	SIT 822 Novamix	G20	-	8,7 - 8,9	8,4 - 8,6
		G31	Screw R1 (- direction) 1 turn	9,6 - 9,8	9,4 - 9,6
100	SIT 822 Novamix	G20	-	8,7 - 8,9	8,4 - 8,6
		G31	Screw R1 (- direction) 1 turn	9,6 - 9,8	9,4 - 9,6

5.3. Commissioning

Before packing all boilers are subjected to a factory test using group H (type G20) natural gas during which all the settings are done.
For commissioning perform the following operations:

1. Switch on the main circuit breaker.
2. Create a request for heat via the comfort mode using the customer interface (see chapter 4 “Boiler command table”).
3. After starting the burner, check the gas tightness of the gas line connections using a foaming product. Check combustion health using an exhaust gas analyser.
4. Adjust the boiler setting (refer to the table summarising customer parameters at the end of this manual).

Any work on a sealed component will lead to loss of the guarantee.

6. Checks after commissioning

6.1. Condensate removal

Check that the removal of condensates is not obstructed, on both the boiler side and the pipe side.

6.2. Gas supply

Check that the gas pipe diameter is correctly sized.

7. Maintenance operations

Maintenance operations must be done annually by a qualified professional.

Before performing the following operations:

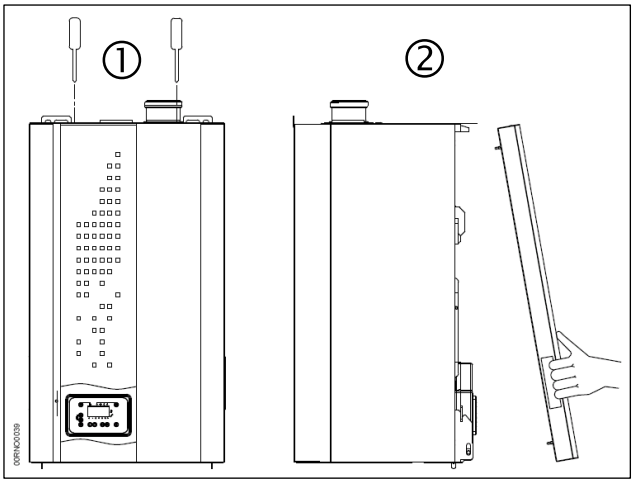
- Switch off the main circuit breaker.
- Close the gas supply isolation valve
- Isolate the boiler hydraulically.

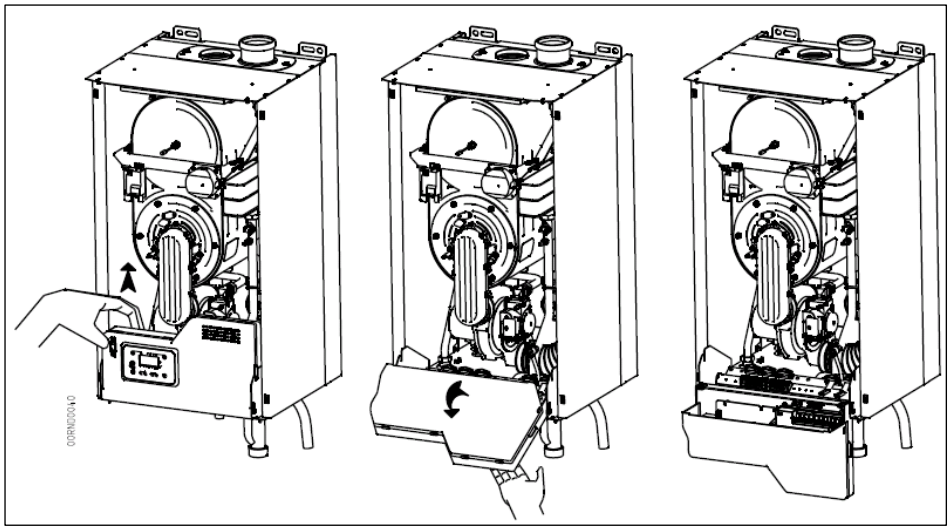
Cleaning the exchanger (see details on the following paragraphs)
Check tube sooting visually.
If necessary, clean the tubes using a **non-metallic brush (chemical cleaning is prohibited)**.
Ignition / ionisation electrodes (see details on the following paragraphs)
Check the geometry of the ignition electrode (gap distance) and the ionisation electrode.
If necessary, replace the electrode unit
Condensate removal siphon
Clean the removal siphon and check that the condensates flow correctly (replace the water after checking).
Check the correct condition and connection of the pressure transfer pipes between the air elbow, the gas valve and the differential air pressure switch.
Perform a combustion analysis check.

7.1. Annual inspections

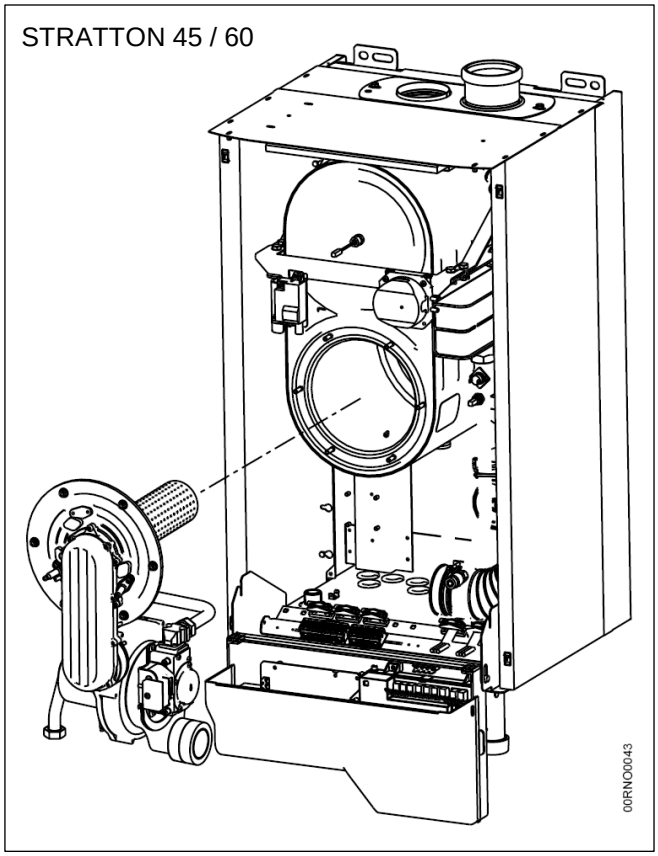
- Switch off the electrical power supply to the boiler,
- Close the gas supply,
- Unscrew the two cross-head screws (Pozidrive) securing the front door on the upper jacket.
- Unclip the front door by pulling it using the two side handles.
- Lift the control panel and swivel it by 180°.

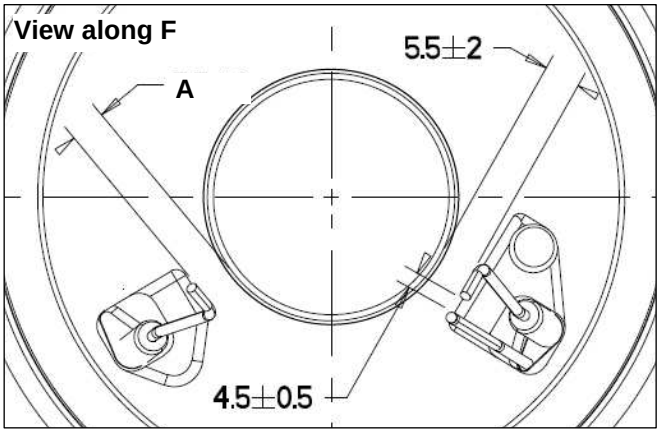
Protect all of the internal electrical connections of the control panel if intervening on the hydraulic system of the boiler (risk of water projection).





- Disconnect the LH gas tube inside the boiler, the air supply hose at the lower part and the pressure remote indication tubes of the gas valve and mixer.
- Disconnect the electrodes, the fan and the gas valve,
- Remove the 6 nuts M6 securing the door,
- Remove the assembly formed by the burner door, the fan and the gas valve and set it down carefully on a clean location.
- If deposits are observed in the combustion chamber, brush the exchanger tubes using a **non-metallic brush. Chemical cleaning of the combustion chamber using an acid or alkaline product is prohibited.** Vacuum out the deposits.
- If the refractory insulation of the back of the combustion chamber and of the burner door is damaged, these must be replaced.
- If, due to poor draining of the condensates, the condensate level has increased in the combustion chamber, the refractory insulation of the combustion chamber back and of the burner door must be replaced.
- If the seals of the burner door show damage, replace the seals.
- The burner manifold does not require any servicing. If any damage is observed on it, replace it.
- Be sure to check the geometry of the electrodes; also check for any signs of alumina deposits, and the visible aspect of the ceramic and seals. If any damage is observed on the electrodes or seals, replace them.
- Clean the siphon and check that the condensate flows correctly through the siphon. The siphon must be filled with water after the servicing procedure.
- Reinstall the burner door and torque-tighten the 6 nuts working crosswise: tightening torque: 5 Nm max.
- When reinstalling the burner on the exchanger of the STRATTON 85 and 100 units, check that the orientation of the diaphragm pressure connection (mounted on end of mixer) is within its 45° orientation range. See diagram below
- Connect the gas supply, the air supply hose and the air pressure remote indication tubes (see connection diagram in chapter 6.2).
- Check the tightness of the gas circuit using a leak detection fluid.
- Place the control panel in position.
- Switch on the electrical power supply.
- Switch on the STRATTON; check the air tightness of the burner door and check the combustion analysis: CO2 rate compliant with values given in table in paragraph 6.2.

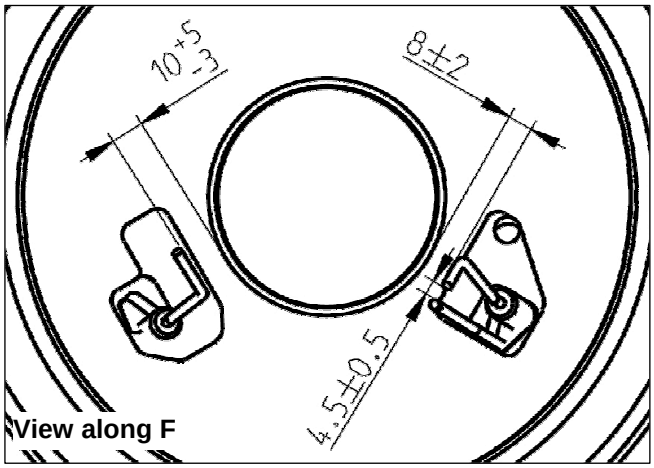




Position of burner electrodes

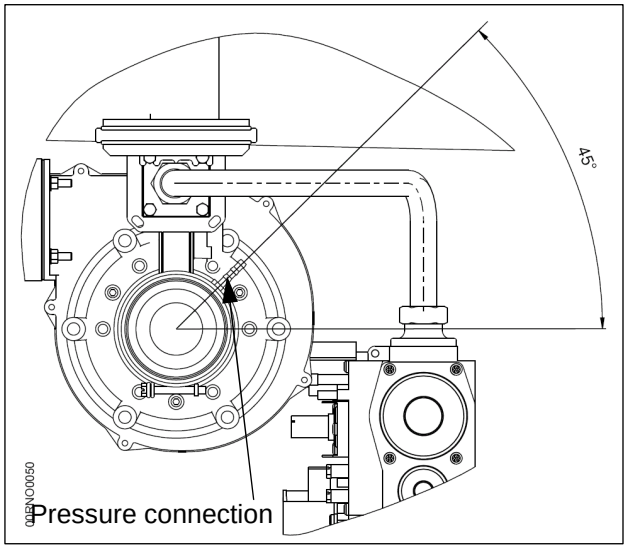
STRATTON 45 → **A = 11 +5/-3**

STRATTON 60 → **A = 5,5 +/- 2**

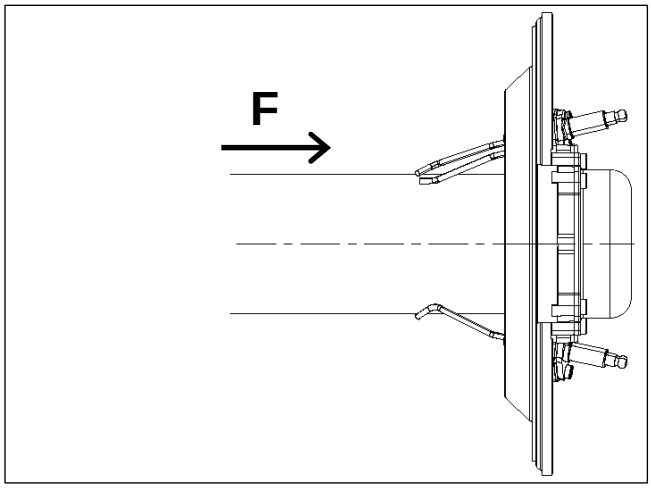


Position of burner electrodes STRATTON 85 / 100

- Install the front jacket and secure it with its two screws located at the upper part.



Acceptable orientation range for air diaphragm pressure connection on STRATTON STW 85 / STW 100



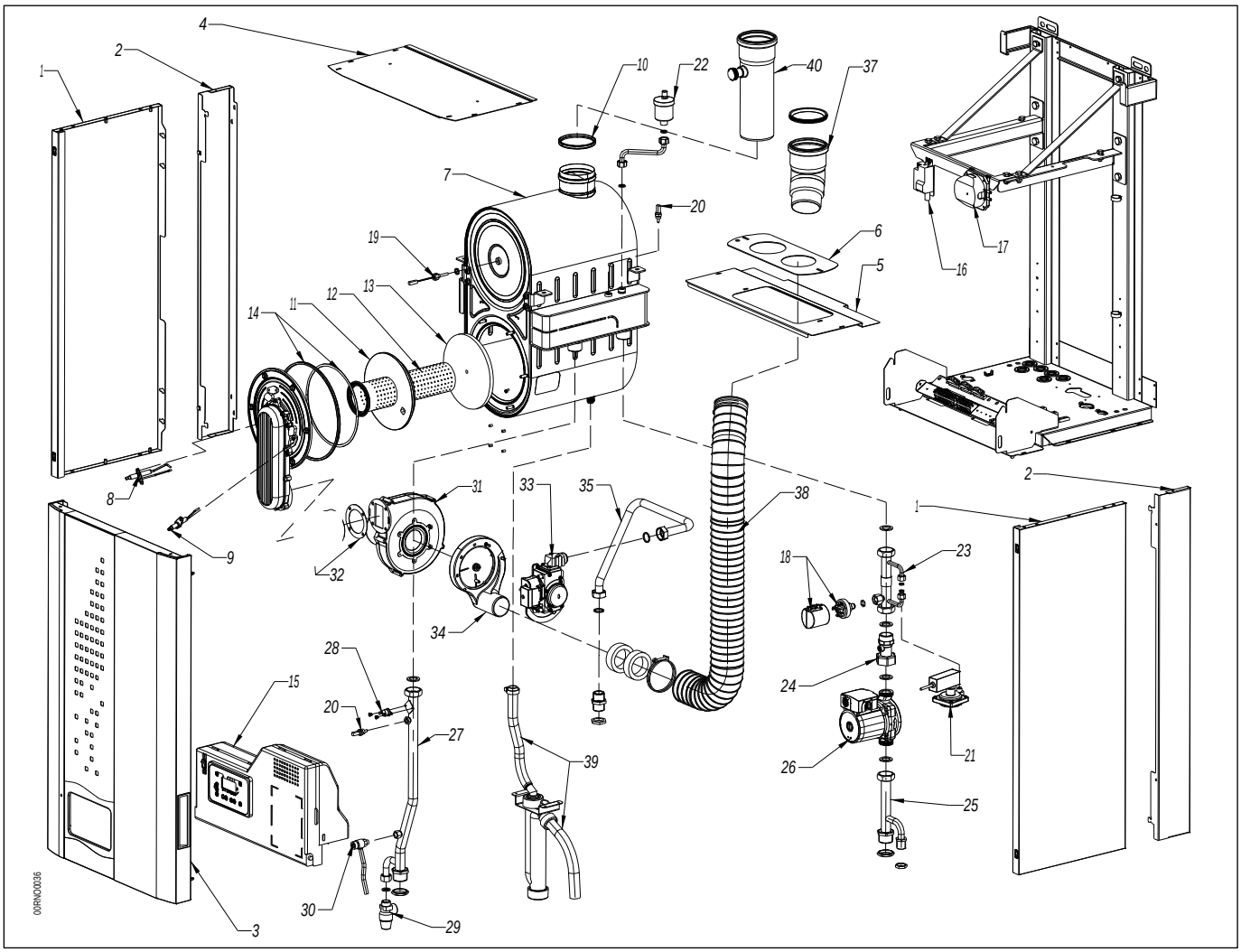
STRATTON burner, top view

7.2. Draining the boiler

- Close the isolating valves at the outlet and return collectors,
- Actuate the safety valve to bring the pressure down,
- Create an air intake on the exchanger water box (by loosening the automatic air vent),
- Open the boiler drain valve placed on the outlet tube.

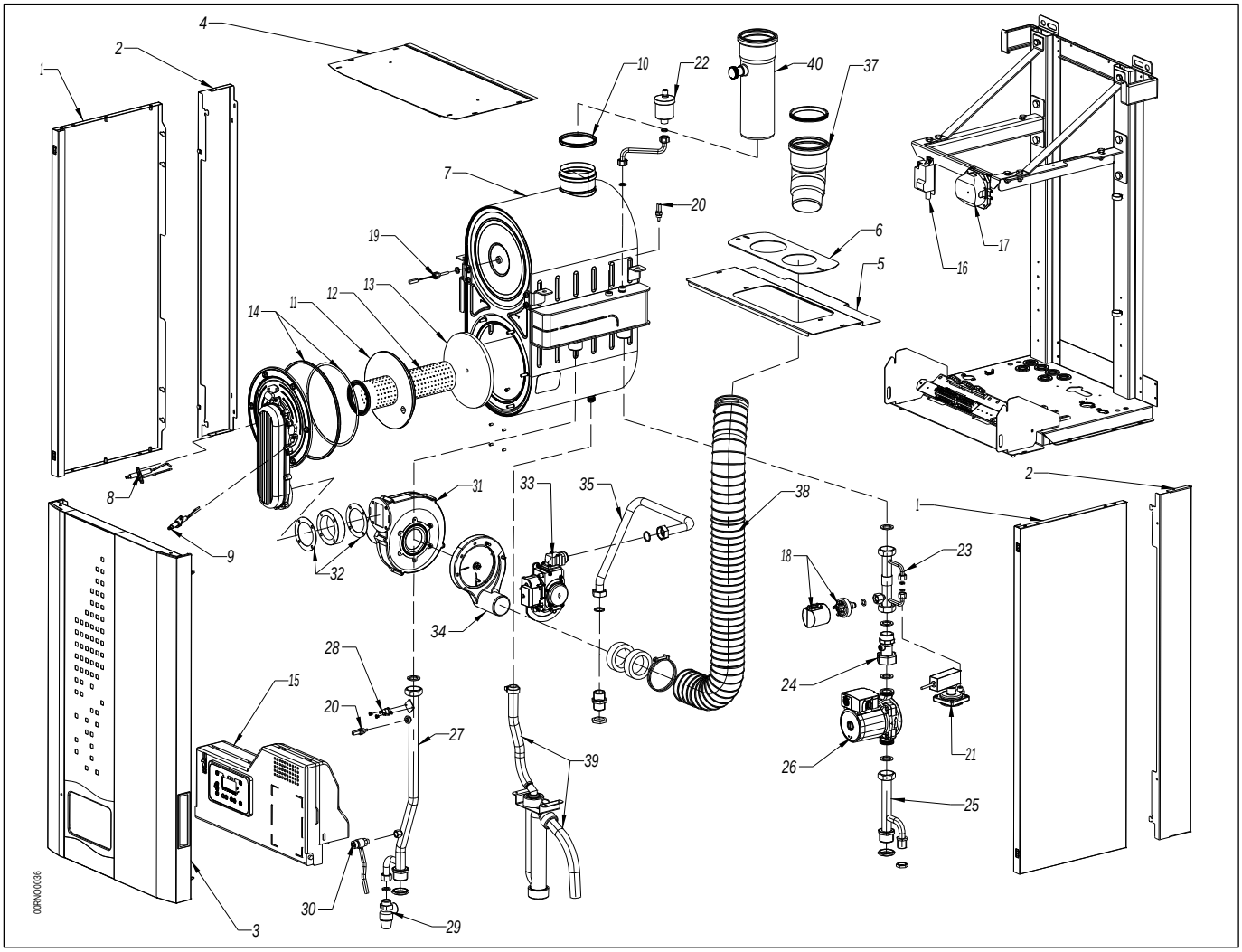
8. Spare parts list

8.1. STRATTON STW 45



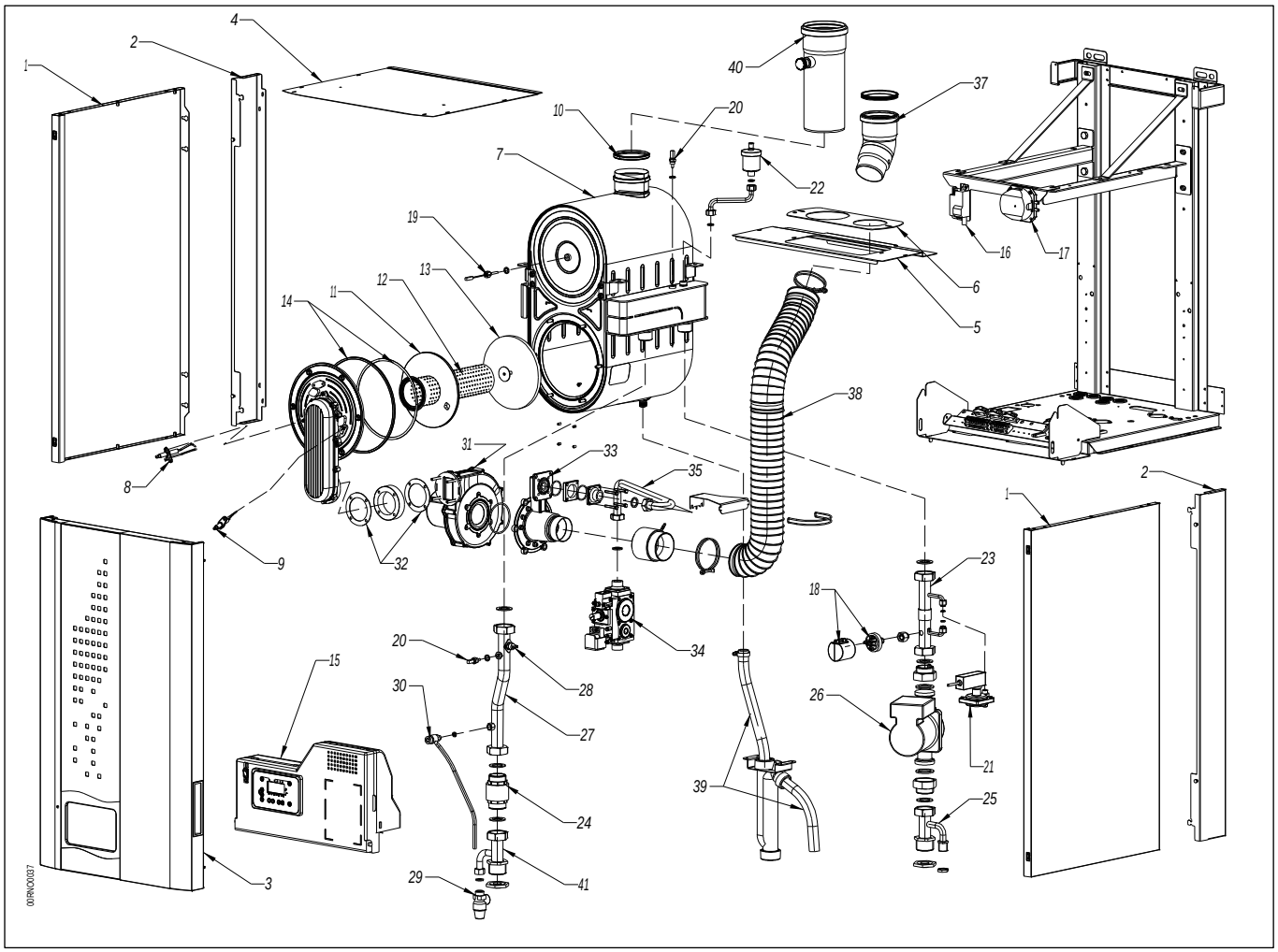
Item	Designation	Ref.	Item	Designation	Ref.
1	Right and left side jacket	072139	**21**	Differential water pressure switch	072166
2	Right and left side panel	072849	**22**	Automatic bleed valve	072164
3	Casing front door	073814	**23**	Diaphragm return tube	073036
4	Front upper jacket	072881	**24**	Check valve	072167
5	Rear upper jacket	072852	**25**	Customer return tube	073037
6	Air elbow bracket	072882	**26**	Circulator	072168
7	Exchanger	073033	**27**	Body outlet tube	073038
8	Ignition electrode	072146	**28**	Safety thermostat	072169
9	Ionisation electrode	072856	**29**	Safety thermostat	072165
10	Exhaust duct seal Ø 80	072148	**30**	Bleed / draining valve	072171
11	Burner door refractory disk	072150	**31**	Fan	073039
12	Burner manifold	073035	**32**	Fan seal	072145
13	Combustion chamber bottom refractory disk	072152	**33+34**	Gas valve + air/gas mixer	072874
14	Burner door seal	072153	**35**	Gas tube	073040
15	Control panel	072857	**37**	Air elbow	072867
16	Ignition transformer	072131	**38**	Air hose	072868
17	Differential air pressure switch	072573	**39**	Condensate removal siphon	072875
18	Water pressure switch	072300	**40**	Flue outlet sleeve	072876
19	Flue temperature sensor	072158			
20	Water temperature sensor, outlet/return	072859			

8.2. STRATTON STW 60



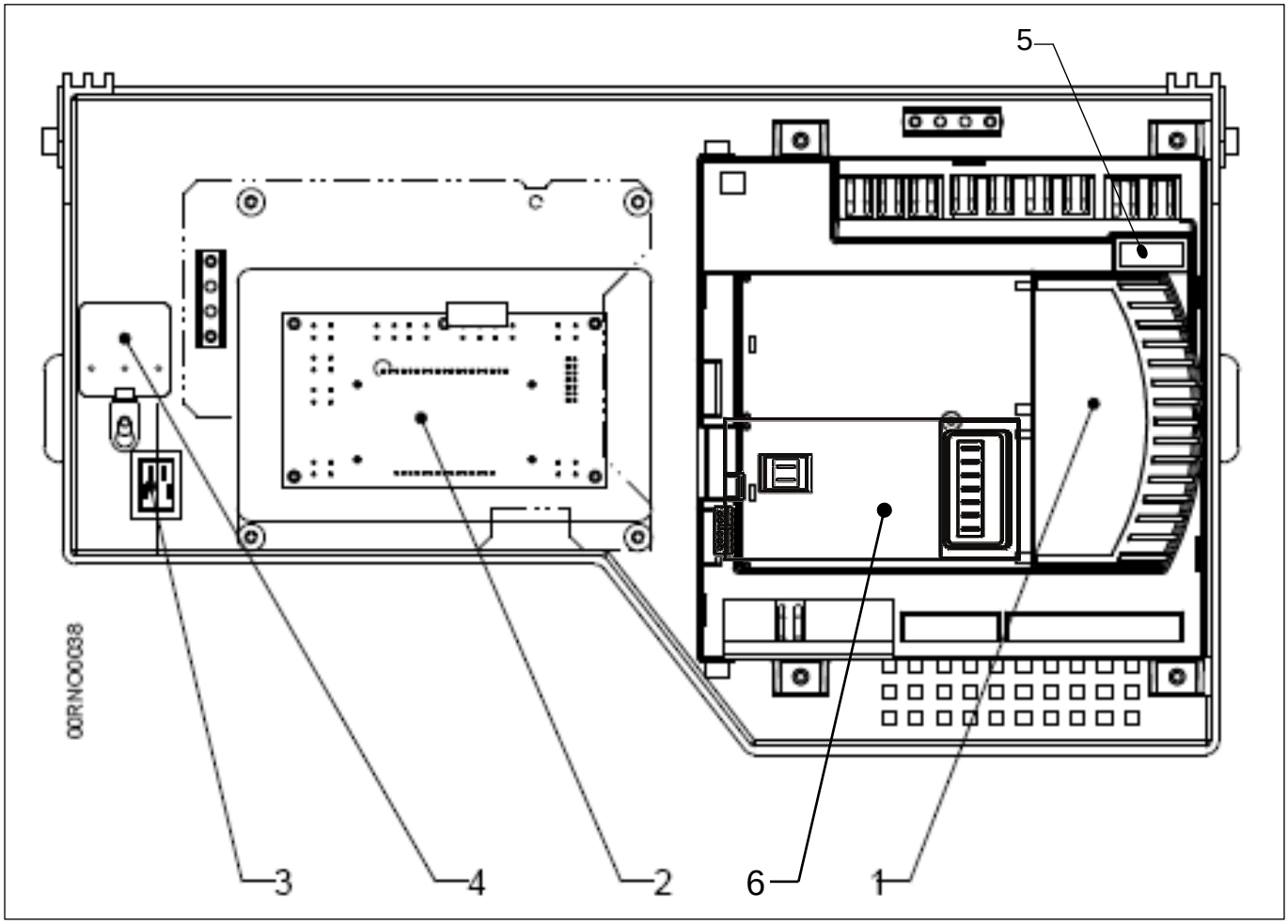
N°	Désignation	Code	N°	Désignation	Code
1	Right and left side jacket	072139	**21**	Differential water pressure switch	072166
2	Right and left side panel	072849	**22**	Automatic bleeder	072164
3	Casing front door	073814	**23**	Diaphragm return tube	072871
4	Front upper jacket	072881	**24**	Check valve	072167
5	Rear upper jacket	072852	**25**	Customer return tube	072622
6	Air elbow bracket	072882	**26**	Circulator	072168
7	Exchanger	072144	**27**	Body outlet tube	072872
8	Ignition electrode	072146	**28**	Safety thermostat	072169
9	Ionisation electrode	072147	**29**	Safety valve	072165
10	Exhaust duct seal Ø 80	072148	**30**	Bleed / draining valve	072171
11	Burner door refractory disk	072150	**31**	Fan	072512
12	Burner manifold	072151	**32**	Fan seal	072145
13	Combustion chamber bottom refractory disk	072152	**33+34**	Gas valve + Air/gas mixer	072874
14	Burner door seal	072153	**35**	Gas tube	072883
15	Control panel	072857	**37**	Air elbow	072867
16	Ignition transformer	072131	**38**	Air hose	072868
17	Differential air pressure switch	072573	**39**	Condensate drain siphon	072875
18	Water pressure switch	072300	**40**	Flue outlet sleeve	072876
19	Flue temperature sensor	072158			
20	Water temperature sensor, outlet/return	072859			

8.3. STRATTON STW 85 / STW 100



N°	Désignation	Code	N°	Désignation	Code
1	Right and left side jacket	072502	**21**	Differential water pressure switch	072166
2	Right and left side panel	072849	**22**	Automatic bleeder	072164
3	Casing front door	073814	**23**	Diaphragm return tube	072860
4	Front upper jacket	072851	**24**	Check valve	072509
5	Rear upper jacket	072852	**25**	Customer return tube	072625
6	Air elbow bracket	072853	**26**	Circulator	072510
7	Exchanger	072854	**27**	Body outlet tube	072627
8	Ignition electrode	072505	**28**	Safety thermostat	072169
9	Ionisation electrode	072856	**29**	Safety valve	072165
10	Exhaust duct seal Ø 100	072519	**30**	Bleed / draining valve	072171
11	Burner door refractory disk	072517	**31**	Fan	072862
12	Burner manifold	072941	**32**	Fan seal	072145
13	Combustion chamber bottom refractory disk	072152	**33**	Air/gas mixer	072863
14	Burner door seal	072153	**34**	Gas valve	072864
15	Control panel	072858	**35**	Gas tube	072938
16	Ignition transformer	072131	**37**	Air elbow	072867
17	Differential air pressure switch	072573	**38**	Air hose	072865
18	Water pressure switch	072300	**39**	Condensate drain siphon	072869
19	Flue temperature sensor	072158	**40**	Flue outlet sleeve	072870
20	Water temperature sensor, outlet/return	072859	**41**	Customer outlet tube	072861

8.4. Control panel STRATTON



Item	Designation	Reference
1	Boiler controller LMU 64 **STRATTON STW 45**	073041
	Boiler controller LMU 64 **STRATTON STW 60**	072877
	Boiler controller LMU 64 **STRATTON STW 85**	072873
	Boiler controller LMU 64 **STRATTON STW 100**	072878
2	LCD HMI Interface/ Display	060430
3	Stop / start switch	070385
4	EMC filter	071487
5	Fuse T6,3 H	071898
6	AGU 2.511	059264

9. Customer parameters table

Boiler: ..... site: .....
serial no: ....

Please transfer all parameter modifications into this document!

Setting line	Function	Adjustment range	Default value	Customer setting
	Update			
P 1	Time (current)	00 :00 … 23 :59	00 :00	
P 2	Day (current)	1:Monday … 7:Sunday	1	
P 5	Reduced flow setting / Reduced ambient setting (depending on mode)	20…80 / 10…26 ℃	40 / 15	
	Direct heating circuit schedule programming			
P 10	Preselection of / day(s) to be programmed: 1-7 Complete week 1-5 Monday to Friday 1…7 Day of week 6-7 Saturday and Sunday		1-7	
P 11	1st period start time	0 :00 … 24 :00	06 :00	
P 12	1st period stop time	0 :00 … 24 :00	22 :00	
P 13	2nd period start time	0 :00 … 24 :00	24 :00	
P 14	2nd period stop time	0 :00 … 24 :00	24 :00	
P 15	3rd period start time	0 :00 … 24 :00	24 :00	
P 16	3rd period stop time	0 :00 … 24 :00	24 :00	
	Mixed heating circuit schedule programming			
P 20	Preselection of / day(s) to be programmed: 1-7 Complete week 1-5 Monday to Friday 1…7 Day of week 6-7 Saturday and Sunday		1-7	
P 21	1st period start time	0 :00 … 24 :00	06 :00	
P 22	1st period stop time	0 :00 … 24 :00	22 :00	
P 23	2nd period start time	0 :00 … 24 :00	24 :00	
P 24	2nd period stop time	0 :00 … 24 :00	24 :00	
P 25	3rd period start time	0 :00 … 24 :00	24 :00	
P 26	3rd period stop time	0 :00 … 24 :00	24 :00	
	Domestic hot water (DHW) production schedule programming			
P 30	Preselection of / day(s) to be programmed: 1-7 Complete week 1-5 Monday to Friday 1…7 Day of week 6-7 Saturday and Sunday		1-7	
P 31	1st period start time	0 :00 … 24 :00	06 :00	
P 32	1st period stop time	0 :00 … 24 :00	22 :00	
P 33	2nd period start time	0 :00 … 24 :00	24 :00	
P 34	2nd period stop time	0 :00 … 24 :00	24 :00	
P 35	3rd period start time	0 :00 … 24 :00	24 :00	
P 36	3rd period stop time	0 :00 … 24 :00	24 :00	
P 45	Return to standard heating and DHW time programme. (Press the – and + buttons simultaneously for 3 sec.)		0	
H 90	Reduced DHW temperature setting	50…65 ℃	60	
H 91	DHW production release: 0 DHW time programme 1 24h/24		0	
H 93	Not used		0	
H 94	Not used		0	
	Heating circuit setting			
H 503	Minimum direct circuit temperature setting	20…80 ℃	20	
H 506	Minimum mixed circuit temperature setting	20…80 ℃	20	
H 507	Maximum mixed circuit temperature setting	20…80 ℃	80	
H 510	Domestic hot water load flow temperature over value	0 ... 30 K	15	
H 514	Boiler / mixed circuit setting over value	0 ... 30 K	2	
P 516	Non heating temperature (30℃ = continuous heating)	8 … 30 ℃	19	
P 532	Direct circuit heating characteristic slope	1 … 40	15	
P 533	Mixed circuit heating characteristic slope (active depending on configuration)	1 … 40	15	
H 534	Direct circuit ambient setting correction	-31 … 31 K	0	
H 535	Mixed circuit ambient setting correction (active depending on configuration)	-31 … 31 K	0	

Setting line	Function	Adjustment range	Default value	Customer setting
	Boiler configuration			
H 536	Maximum fan speed in (40 / 60 / 80 / 100) heating mode	0 … 9950 rev/min	6700 / 7700 / 6300 / 7550	
H 542	Minimum boiler power (40 / 60 / 80 / 100)	0 … 9999 kW	8 / 12 / 16 / 20	
H 543	Maximum boiler power (40 / 60 / 80 / 100)	0 … 9999 kW	40 / 60 / 80 / 100	
H 544	Timed pump stoppage, max. 218 min. (255 = continuous operation of Q1)	0 … 255 min	5	
H 545	Minimum burner pause time	0 … 3600 sec	300	
H 551	Accelerated lowering constant without ambient influence	0 … 20	0	
H 552	Installation hydraulic configuration setting: 66 Boiler only 80 Boiler integrated in a cascade 85 DHW boiler integrated in a cascade		66	
H 553	Effect of ambient sensor on heating circuits (with ambient sensor only): Tens: influence on mixed circuit (MC) — Units: influence on direct circuit(CD) 0 Mixed circ. Not influenced by QAA 73 — 0 Direct circ. not influenced by QAA 73 1 Mixed c. managed by QAA 73 main channel — 1 Direct c. managed by QAA 73 main channel 2 Mixed c. managed by QAA 73 secondary channel — 2 Direct c. managed by QAA 73 secondary channel e.g.: 12 corresponds to CD controlled by 2ndary channel of QAA 73 and MC controlled by main channel of QAA 73		0	
H 555.b0	Not used		0	
H 555.b1	Domestic priority type: 0 Absolute priority — 1 No priority		0	
H 555.b2	Not used		0	
H 555.b3	Not used		0	
H 555.b4	Installation frost protection 0 Out of service — 1 In service		1	
H 555.b5	Not used		0	
H 555.b6	Not used		0	
H 558.b0	Not used		0	
H 558.b1	Building type: 0 Light — 1 Heavy		0	
H 558.b2	DHW control unit type: 0 Sensor — 1 Thermostat		0	
H 558.b3	Not used		0	
H 558.b4	Not used		0	
H 558.b5	Not used		0	
H 558.b6	Not used		0	
H 558.b7	Not used		0	
H 596	Mixed circuit 3 way valve open / close time	30 … 873 sec	150	
H 597	Mixed circuit 3 way valve proportional band	1 … 100 K	24	
	LPB bus communication			
H 604.b0 H 604.b1	Local / system clock synchronisation: b1 b0 0 0 Independent clock 0 1 Unadjusted system time 1 0 System master clock		0 0	
H 604.b2	Bus supply setting: 0 Centralised supply — 1 Automatic supply by controllers		1	
H 604.b3	Bus supply display: 0 OFF — 1 ON		0	
H 604.b4	Not used		1	
H 604.b5 H 604.b6	DHW allocation to consumers: b6 b5 0 0 Local consumers only, 0 1 Consumers on the same segment, 1 0 All system consumers		0 0	
H 604.b7	LPB bus priority on a power request via 0 … 10 V input: 0 external power request priority 1 LPB bus priority		0	
H 605	Appliance address	0 … 16	1	
H 606	Segment address: 0 Generator segment 1 … 14 consumer segments	0 … 14	0	
	Fan settings			
H 608	Fan control signal, ignition speed (**45** / **60 / 85 / 100**)	0...100 %	21/19/22,5/22,5	
H 609	Fan control signal, minimum speed (**40** / **60 / 85 / 100**)	0...100 %	15/18,5/10,5/10,5	
H 611	Fan speed at ignition speed (**45** / **60 / 85 / 100**)	rpm	2200/1750/3500/3500	
H 612	Fan speed at minimum speed (**45** / **60 / 85 / 100**)	rpm	1450/1600/1750/1750	
H 613	Fan speed at maximum speed (**45** / **60 / 85 / 100**)	rpm	4300/5650/5200/5900	
	Clip-ins Input / Output to relays (AGU2.51x)			
H 618	Clip-in programmable input function: 0 No function — 3 Hot air curtain 1 Modem — 4 Specified setting 2 Modem inverter — 5 Specified power		0	

Setting line	Function	Adjustment range	Default value	Customer setting
H 619	Clip-in 1st programmable output function: 0 Inactive 6 DHW loop circulating pump 2 Alarm feedback 7 Hot air curtain function active signal 3 Burner on 8 Downstream circulating pumpfor hydr. Decoupling bottle. 5 2nd heating circuit pump 12 Analogue input signal active		2	
H 620	Clip-in 2nd programmable output function: 0 Inactive 6 DHW loop circulating pump 2 Alarm feedback 7 Hot air curtain function active signal 3 Burner on 8 Downstream circulating pump for hydr. Decoupling bottle. 5 2nd heating circuit pump 12 Analogue input signal active		3	
H 622	Maximum temperature for maximum value of analogue input signal, in specified setting mode	5 … 130 °C	100	
H 623	Minimum value of analogue input signal in % of range for burner starting in minimum power in specified power mode	5 … 95 %	20	
	Maintenance alerts			
P 629	Temporary maintenance alert acknowledgement: 1 Alert acknowledgement		0	
H 630.b0	Maintenance activation / deactivation: 0 Alert deactivated 1 Alert active		0	
H 630.b6	General maintenance alert acknowledgement: 1 Acknowledges the maintenance alert		0	
H 630.b7	Not used		0	
H 634	Burner operating hours since last maintenance		0	
H 635	No. burner starts since last maintenance		0	
H 636	Boiler operating months since last maintenance		0	
	Faults / Meters history			
H 700	*Recorded fault 1 repetition counter*			
H 701	*Burner phase during recorded fault 1 **			
H 702	*Extended code for recorded fault 1*			
H 703	*Recorded fault 2 repetition counter*			
H 704	*Burner phase during recorded fault 2 **			
H 705	*Extended code for recorded fault 2*			
H 706	*Recorded fault 3 repetition counter*			
H 707	*Burner phase during recorded fault 3 **			
H 708	*Extended code for recorded fault 3*			
H 709	*Recorded fault 4 repetition counter*			
H 710	*Burner phase during recorded fault 4 **			
H 711	*Extended code for recorded fault 4*			
H 712	*Recorded fault 5 repetition counter*			
H 713	*Burner phase during recorded fault 5 **			
H 714	*Extended code for recorded fault 5*			
H 715	*Current fault repetition counter*			
H 716	*Burner phase during current fault*			
H 717	*Extended code for current fault*			
H 718	*Burner operating time*	*0 … 131070 h*	*0*	
H 719	*Heating mode operating time*	*0 … 131070 h*	*0*	
H 720	*DHW mode operating time*	*0 … 131070 h*	*0*	
H 721	*Zone control mode operating time*	*0 … 131070 h*	*0*	
H 722	*Starts counter*	*0 … 327675*	*0*	
H 728	*Albatros code for previous fault*			
H 729	*Albatros code for 2nd previous fault*			
H 730	*Albatros code for 3rd previous fault*			
H 731	*Albatros code for 4th previous fault*			
H 732	*Albatros code for 5th previous fault*			
H 733	*Albatros code for current fault*			

In italics: read only parameters

** : Burner phase code correspondance*

0, 1, 2	*Return to standby position*	*11*	*Pre-ignition (ignition electrode heating)*
3	*Standby*	*12, 13, 14, 15*	*Safety time*
4	*Starting blocked*	*16*	*Post-ignition (maintain ignition rate)*
5, 6	*Fan speed increasing*	*17*	*Burner modulation*
7	*Preventilation*	*18, 19, 20, 21*	*Post-ventilation*
8, 9, 10	*Wait position*	*22*	*Shut down*

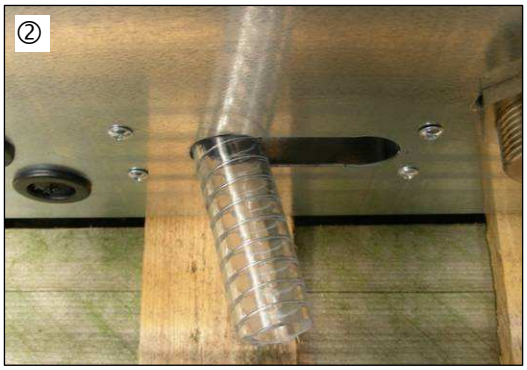
10. Installation of condensate siphon & safety valve

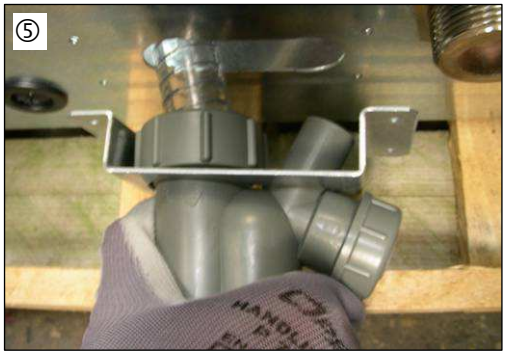
10.1. Installation of siphon on STRATTON STW 45 / STW 60

The components of the combustion condensate siphon are located in the plastic bag placed inside the boiler.

10.2. Installation of siphon on STRATTON STW 85 / STW 100

The components of the combustion condensate siphon are located in the plastic bag placed inside the boiler.





10.3. Installation of safety valve on STRATTON

Securely hold the valve when tightening the nut to prevent any deformation of the tube.

Warranty Registration Card for STRATTON Boilers

Hamworthy
Heating *at work.*

Product Details

Hamworthy Heating Ltd Contract Number:

Appliance Serial Number:

End User Details (Person Responsible For Site Services)

* Contact Name:
* Telephone Number:
* Email:
* Address:

Installer Details

* Installer Name:
Telephone Number:
Address:

Installation Details

* Date Installed:
* Date Commissioned:
* Commissioned By: Hamworthy / Other
If Commission By Other Please provide Details:

Water Treatment

Water treatment in accordance with

* Hamworthy recommendations ☐
* Copy of water treatment certificate available ☐

Please complete all mandatory fields marked *
For any warranty registration queries please email: service@hamworthy-heating.com

500002580 A

Please complete the information on the Registration card, cut out and return to Hamworthy Heating Ltd.

Business Reply Plus
Licence Number
RSRR-JHEB-YAKC

Hamworthy Heating Ltd
Fleets Corner
Poole
BH17 OHH

Notes

Hamworthy Heating Accredited Agents

North West England (Sales & Service)
Gillies Modular Services
210-218 New Chester Road, Birkenhead, Merseyside L41 9BG
tel: **0151 666 1030** fax: **0151 647 8101**

Southern Ireland (Sales & Service)
HEVAC Limited
Naas Road, Dublin 12, Ireland
tel: **00 353 141 91919** fax: **00 353 145 84806**

Northern Ireland (Sales & Service)
HVAC Supplies Limited
Unit 12 forty 8 north, 48 Duncrue Street, Belfast BT3 9BJ
tel: **02890 747737** fax: **02890 741233**

Scotland (Sales & Service)
McDowall Modular Services
14-46 Lomond Street, Glasgow, Scotland G22 6JD
tel: **0141 336 8795** fax: **0141 336 8954**

North East England (Service)
Allison Heating Products
12 Sunnyside Lane, Cleadon Village, Sunderland SR6 7XB
tel: **0191 536 8833** fax: **0191 536 9933**

For all other areas, please contact Hamworthy Heating Customer Service Centre in Poole.

Customer Service Centre
Hamworthy Heating Limited,
Fleets Corner, Poole,
Dorset BH17 0HH

Telephone: **0845 450 2866**
Fax: **01202 662522**
Email: **aftersales@hamworthy-heating.com**
Website: **www.hamworthy-heating.com**