

INSTALLATION, USER AND SERVICE MANUAL

Alubox ^S_H

FLOOR STANDING GAS FIRED CONDENSING BOILER

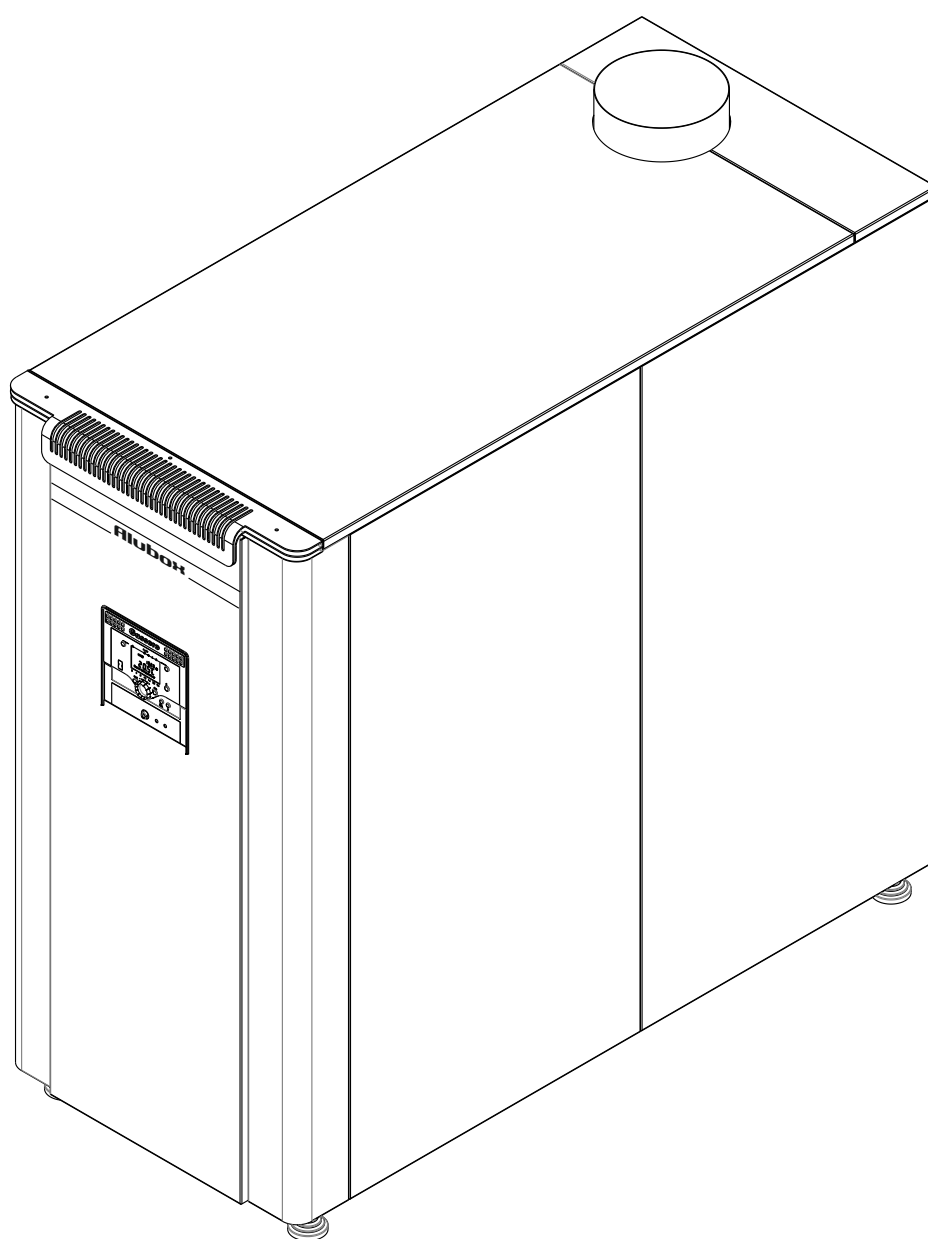


Table of Contents

1	Meaning of the symbols and safety instructions	3	4.2	Installation examples	14
1.1	Meaning of symbols	3	4.2.1	Single boiler installations	14
1.2	General warnings	4	4.2.2	Cascade installation	15
1.3	Safety instructions	5	4.3	Adjustment of the gas rate	16
1.4	Regulations and standards	4	4.3.1	Description of the adjustment points	16
<hr/>					
2	General	6	4.3.2	Combustion values adjustment table	16
2.1	Designated use	6	4.3.3	Maximum output adjustment	16
2.2	Description of the appliance	6	4.3.4	Minimum output adjustment	17
2.3	Boiler room & ventilation	6	4.4	Gas conversion instructions	18
2.4	Packaging label	7	4.5	Flue installation instructions	18
2.5	Warning label	7	4.5.1	Flue appliance types	18
2.6	Data label	7	4.5.2	Flue installation types	18
<hr/>					
3	Technical features	8	4.5.3	Flue kit accessories	21
3.1	Alubox dimensions	8	4.6	Electrical installation Alubox S Models	19
3.2	Alubox main components	9	4.6.1	Wiring diagram	19
3.3	Technical data	10	4.6.2	External probe installation	20
<hr/>					
4	Instructions for the installer	11	4.6.3	Outdoor temperature control	21
4.1	Installation	11	5	Operation of Alubox S Models	22
4.1.1	Packing	11	5.1	General	23
4.1.2	Transport	11	5.2	Programming	24
4.1.3	Mounting	11	5.3	Error codes	25
4.1.4	Clearances	12	5.4	Maintenance codes	26
4.1.5	Water quality and treatment	12		Electrical installation Alubox H Models	27
4.1.6	Water side connections	13		Wiring diagram	27
4.1.7	Expansion vessel	13		Cascade connections for ALUBOX H Models	28
4.1.8	Safety valve	13		Outdoor temperature control	29
4.1.9	Condensate drain	13		Operation of Alubox H Models	30
4.1.10	Frost protection	13		Error codes	31
4.1.11	Dirt separation	13	<hr/>		
4.1.12	Automatic air vent	13	6	Maintenance	34
4.1.13	Pump	13		Commissioning checklist	39
				Service interval record	41

IMPORTANT

When carrying out commissioning of the boiler, you are highly recommended to perform the following checks:

- Make sure that there are no liquids or inflammable materials in the immediate vicinity of the boiler.
- Make sure that the electrical connections have been made correctly and the earth wire is connected to a well done earthing system.
- Open the gas tap and check the soundness of the connections, including the burner.
- Make sure that the boiler is set for operation for the type of gas supplied.
- Check that the flue pipe for the outlet of the products of the combustion is unobstructed and has been properly installed.
- Make sure that any shutoff valves are open.
- Make sure that the system is charged with water and is thoroughly vented.
- Check that the circulation pump is not locked.
- Purge the system, bleeding off the air present in the gas pipe by operating the pressure relief valve on the gas valve inlet.
- The installer must provide the user with instruction in operation of the boiler and safety devices and hand over the instruction booklet to the user.
- The images shown in this manual are a simplified representation of the product. In this representation there may be slight, unimportant differences with the supplied product.

1 MEANING OF THE SYMBOLS AND SAFETY INSTRUCTIONS

1.1 MEANING OF THE SYMBOLS

WARNINGS



Warnings in this document are framed and identified with a warning icon which is shown on the left figure.



Electrical hazards are identified by a lightning icon surrounded by a warning triangle.



Actions that absolutely must not be carry out identified by the figure on left

Keywords indicate the seriousness of the hazard in terms of the consequences of not following the safety instructions.

- NOTE indicates that material damage may occur.
- CAUTION indicates that injuries may occur.
- WARNING indicates that serious injury may occur.
- DANGER indicates potentially risk to life.

IMPORTANT INFORMATION



Important information in cases where there is no risk of injury material losses is identified by the symbol shown on the left. It is bordered by horizontal lines above and below the text.

THIS APPLIANCE MUST BE INSTALLED BY A GAS SAFE REGISTERED, AUTHORIZED PERSON. FAILURE TO INSTALL CORRECTLY COULD LEAD TO PROSECUTION.

IF YOU HAVE ANY QUESTION CONTACT THE GASSERO TECHNICAL SERVICE. (technical.service@gassero.com, +90 216 394 09 85)

PLEASE LEAVE THESE INSTRUCTIONS WITH THE COMPLETED INSTALLATION CHECKLIST, AND USER USER MANUAL WITH THE OWNER OR AT THE GAS METER AFTER INSTALLATION OR SERVICING.

THE INSTALLATION AND COMMISSIONING CHECKLIST CAN BE FOUND IN BACK PAGES THE MANUAL.

PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION.

THESE INSTRUCTIONS ARE APPLICABLE TO THE GASSERO BOILER MODELS WRITTEN ON THE FRONT COVER OF MANUAL ONLY AND MUST NOT BE USED WITH ANY OTHER BOILER MODELS.

1.2 GENERAL WARNINGS



After having removed the packaging, check that the material supplied is intact and complete; if this is not the case, contact with GASSERO or dealers.



The Alubox Series boilers must be installed by authorized person as detailed under any current standards and law applicable and with the instructions provided by Gassero in the manual given with the appliance.



The boiler must be used for the purposes it has been expressly manufactured. Gassero declines all contractual and extra-contractual liability for damage caused to persons, animals or things, due to errors in installation, control, servicing or improper use.



In case of the water leakage, disconnect the boiler from the mains power supply, close the water supply and promptly notify Gassero or other authorized qualified personnel.



Periodically check that the condensate drain is free of blockages.



Periodically check that the operating pressure of the water circuit when cold is **1.5 bar** and less than the maximum limit specified for the appliance. If this is not the case, contact with Gassero or other authorized qualified personnel.



If the boiler is not used for an extended period, the following operations must be completed:
 - move the main system switch to "off"
 - close the fuel cock and the water cocks on the central heating system
 - empty the central heating system if there is the risk of frost.



This manual is an integral part of the boiler and as a consequence must be kept with care. If the manual is damaged or lost, contact with Gassero to supply a new copy.



Maintenance and servicing must be done once a year.

1.3 SAFETY INSTRUCTIONS



The boiler must not be used by children or invalid persons without supervision.



Electrical devices or appliances, such as switches, household appliances, etc. must not be used if there is the smell of gas or unburned fuel. In this case :

- ventilate the room by opening doors and windows;
- close the fuel stopcock;
- promptly contact Gassero, your gas supplier or other professionally qualified personnel.



Do not touch the boiler when bare feet or with wet parts of the body.



No service or cleaning operations may be performed without first having disconnected the boiler from the mains power supply, moving the main system switch to "off".



The safety or control devices must not be adjusted without the authorisation and written instructions from the manufacturer of the boiler.



Do not pull, remove or twist the electrical cables coming out of the boiler, even if the appliance is disconnected from the mains power supply.



The ventilation openings in the room where the appliance is installed must not be plugged or reduced in size and must comply with any current standards and law applicable.



Do not switch off the boiler if the outside temperature may decrease below ZERO (risk of freezing).



Do not leave flammable substances in the room where the boiler is installed.



The packaging material must not be dispersed in the environment or left within the reach of children as it is a potential source of hazard. It must be disposed of according to the legislation in force.

Alterations to parts connected to the appliance

Do not carry out any alterations for following parts:

- the boiler
- to the gas, air, water supply pipes and electrical
- to the flue pipe, safety valve and its drain pipe
- to the constructive components which influence the appliance's safe operation



When tightening or loosening the screw connections, use only adequate tool. The improper use and/or the use of inadequate equipment can cause damages (for example water or gas leakages).

If you smell gas :

If you smell gas follow these safety indications:

- Do not turn on or turn off electrical switches
- Do not smoke
- Do not use the telephone
- Close the mains gas tap
- Open all windows and doors where the gas leakage
- Contact the gas society or a company specialized in installing and servicing heating systems



Indications for appliances operating with propane gas ensure yourself that before installing the appliance the gas tank has been purged.

For a correct purging of the tank contact the liquid gas supplier or a legally authorized person .

If the tank has not been correctly purged problems could occur during ignition. If this occurs contact the liquid gas tank's supplier.

1.4 REGULATIONS AND STANDARDS

Current Gas Safety (Installation & Use) Regulations:

All gas appliances must be installed by a competent person in accordance with the above regulations;

The appliance must be installed in accordance with, and comply to, the current: Gas Safety Regulations, IEE Regulations, Building Regulations, Building Standards and any other local requirements.

Directives:

- 2009/142/EEC gas appliance directive
- 92/42/EEC boiler efficiency directive

Installation of rated input greater than 70 kW

EN 15417 Gas-fired central heating boilers.

Specific requirements for condensing boilers with a nominal heat input greater than 70 kW but not exceeding 1000 kW.

EN 15420 Gas-fired central heating boilers. Type C boilers of nominal heat input exceeding 70 kW, but not exceeding 1000 kW.

EN 656 Type B boilers of nominal heat input exceeding 70kW but not exceeding 300 kW.

2 GENERAL

These installation and maintenance instructions apply to the following floor standing condensing gas boilers:

- Alubox S
- Alubox H

The Alubox series is suitable for use as a single boiler or as part of a cascade system.

CE LABEL



The appliance complies with the basic requirements of the relevant European directives.

Conformity has been substantiated by the proper documents which, together with the declaration of conformity, are filed with the manufacturer.

2.1 DESIGNED TO USE

The boiler may only be used to heat up water for heating systems as standard and/or domestic hot water (DHW) systems with the connection of DHW tank.

The boiler can be installed either as a single system or as part of a multiple system (cascade system). A cascade system enables several boilers of this type to be connected together, where maximum of 16 boilers can be in S models and 12 boiler in H model connected together.

Special cascade units (accessories) have been developed to enable this boiler to be installed in a cascade system. Every cascade unit includes an installation frame, connection pipes for the boiler, main gas pipe and vertical low loss header.

2.2 DESCRIPTION OF THE APPLIANCE

The **Alubox** is a floor standing condensing boiler, for CH and DHW(with DHW tank) purposes, with pre-mix burner, made up of aluminium heat exchanger.

The **Alubox** boilers can be combined in a cascade configuration with other heat generators to create modular heating plants made up of boilers connected to the same water circuit and with electronic controllers communicating via bus.

The individual heating units in cascading configuration can be activated, as well as by simple rotation, in such a way that when a certain percentage of output is reached by the first unit, the other units start automatically, all with the same load factor.

The main features of the **Alubox** Boilers are:

- fiber coated premix burner
- output from 210 to 290 kW
- heat output up to 4.640 kW, by connecting up to 16 boilers in a cascading configuration (in S models).
- quick connection of the water and gas headers (optional)
- microprocessor control with self-diagnosis, shown on LED and the display
- frost protection function activated according to the outside temperature and/or the temperature of the boiler
- fitted for room thermostat in the high and low temperature zones
- outside probe to enable the climate control function
- priority settable on the DHW, high or low temperature circuit
- solar system & swimming pool control functions
- chimney sweep function
- low investment costs for cascade operations (slave models can be controlled by Master models, without using any display modules in slave units)

2.3 BOILER ROOM & VENTILATION



CAUTION:

Damage to the installation due to frost.

Install the heating system in a room which is free from frost.



WARNING:

Fire hazard due to flammable materials or liquids.

Do not store any flammable materials or liquids in the direct vicinity of the boiler.



CAUTION:


Boiler damage due to contaminated combustion air or contaminated air in the boiler room.


Never use the boiler in an environment which contains lots of dust or aggressive chemicals. Such as spray shops, hairdresser's shops, locations where trichlorethylene or hydrogen halides (e.g. contained in aerosols, certain adhesives, solvents or detergents, paints) and other aggressive chemicals are used or stored.


The Alubox condensing boilers must be installed in rooms used exclusively for this purpose, provided with adequately sized ventilation openings, in compliance with any current standards and low applicable. If the combustion air is taken from the room where the boiler is installed, Alubox boilers operates as a type B 23.


When installing and operating the boilers it is necessary to keep a safe 200 mm distance from combustibile materials with combustibility degrees B,C1,C2 .

For easily flammable materials with combustibility degree C3 which burn quickly and by themselves also after the ignition source removal the safe distance is doubled it means 400 mm.

 Provide enough clearance to access the safety and control devices and to carry out the servicing operations.

 Check that the index of protection of the boiler is suitable for the characteristics of the room where the appliance is installed.

 If the boilers operate on gas fuel with a higher specific weight than air, the electrical parts must be located at least 500 mm from the floor.

 The boilers cannot be installed outside as they are not designed for outdoor operation.


2.4 PACKAGING LABEL


Product Model : **Alubox**

Heat Output :


Gas Type : 2H G20-20 mbar-N.Gas

Product Code :


 MASTER

 SLAVE

Serial Number :



Countries of Destination



2.5 WARNING LABEL






WARNINGS !

- .Read the technical instructions before installing the boiler.
- .Installation and comissioning must be done by authorized qualified technicians.
- .Read the user instructions before operating the boiler.
- .The boiler may only be installed in a room which complies with the appropriate ventilation requirements and which is seperated from living rooms.



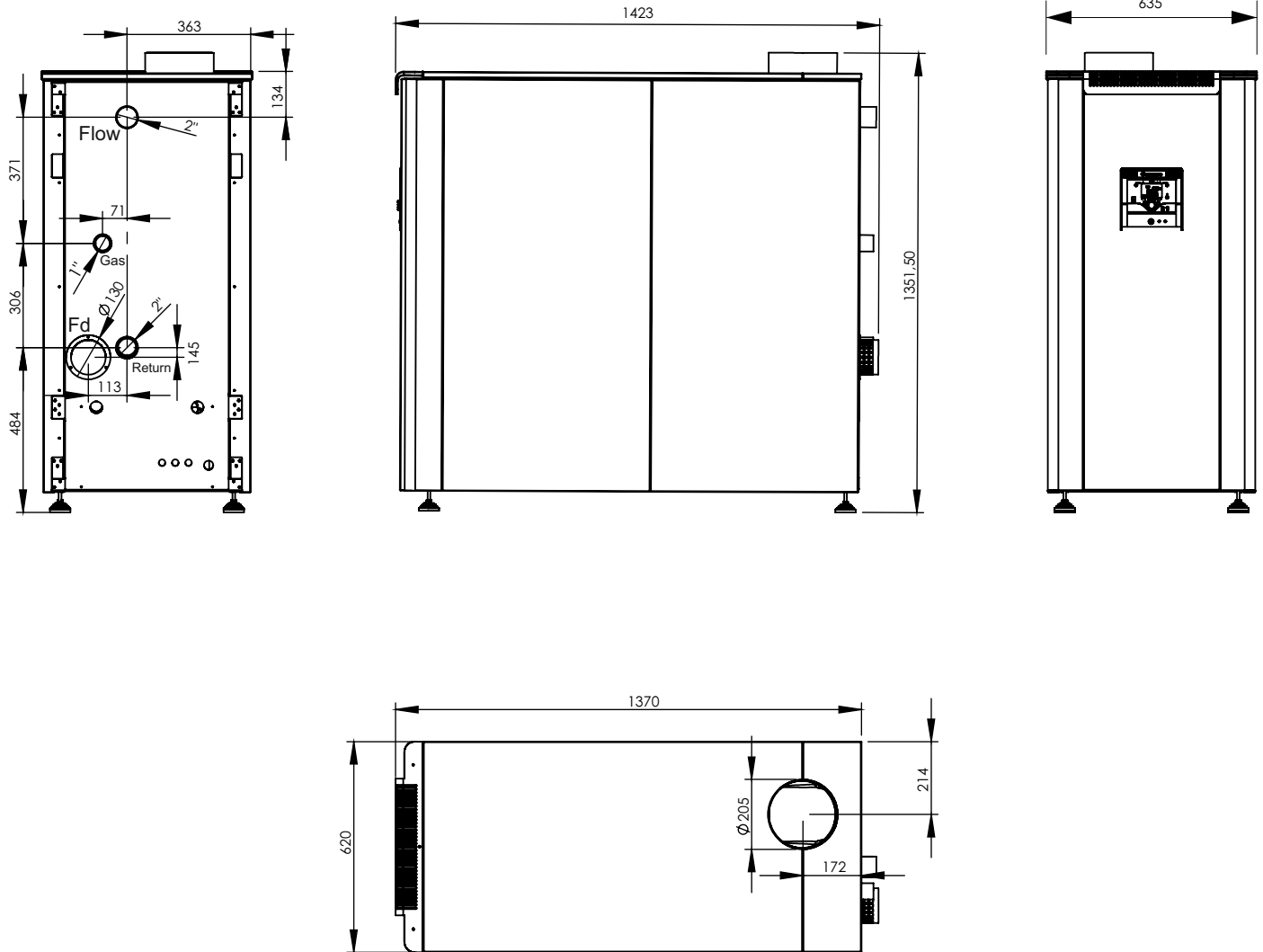



2.6 DATA LABEL

Alubox		 0051-13					
<i>Floor Standing Gas Condensing Boilers</i>							
Model : Alubox Efficiency Level : ☆☆☆☆ Standards : EN 15417 / EN 15420 Production Year : NO _x Class : 5 Power Supply : 230V / 50 Hz Power Consumption : W IP Class : X4D Max. Working Pressure(PMS) : 6bar Max. Working Temperature : 90 °C Flue (appliance) Type : B23	Nominal Heat Input Qn Qn Max. (kW): Qn Min. (kW) : Nominal Useful Output at (80/60 °C) Pn Max. (kW) : Pn Min. (kW) : Nominal Useful Output at (50/30 °C) Pn Max. (kW) : Pn Min. (kW) :						
Serial Number : 	Product Code : 						
<p> ATTENTION : The boiler is adjusted in the Factory to Gas Pressure of G20 - 20 mbar .</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Countries of Destination</td> <td style="width: 33%;">Gas Pressure</td> <td style="width: 33%;">Gas Category</td> </tr> <tr> <td style="height: 40px;"></td> <td></td> <td></td> </tr> </table>	Countries of Destination	Gas Pressure	Gas Category			
Countries of Destination	Gas Pressure	Gas Category					
 Istanbul Endustri ve Ticaret Serbest Bolgesi (FREE ZONE) , 4. Sok. Parsel 110 34957 , Tuzla, Istanbul, TURKEY www.gassero.com							

3 TECHNICAL FEATURES

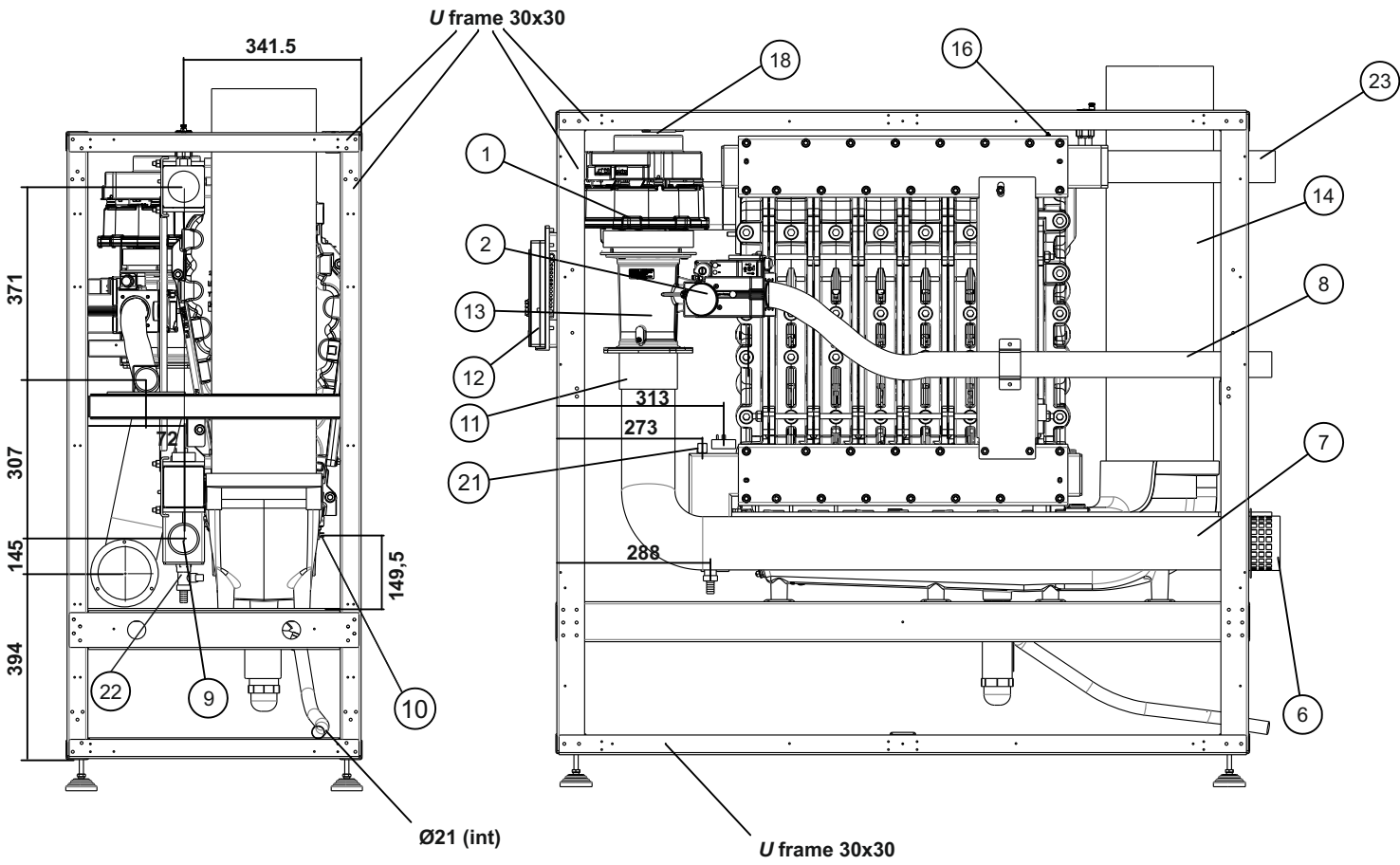
3.1 Alubox DIMENSIONS



CONNECTIONS :

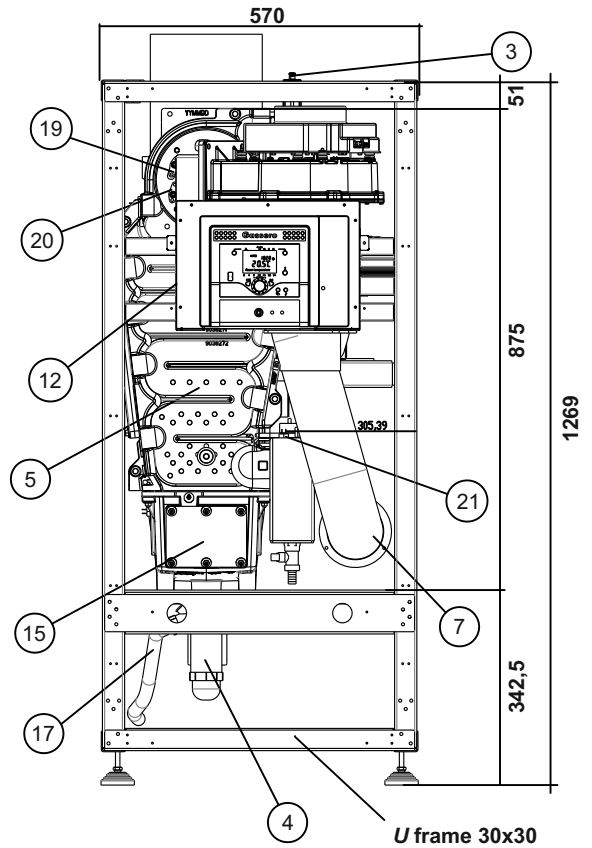
Flow: System flow : 2"
 Return : System return : 2"
 Gas: Gas supply : 1"
 Fd : Flue outlet : 200 mm

3.2 Alubox MAIN COMPONENTS



KEY

- 1- Fan
- 2- Gas Valve
- 3- Automatic air vent
- 4- Syphon
- 5- Heat Exchanger
- 6- Air inlet terminal
- 7- Fresh air intake pipe
- 8- Gas inlet pipe
- 9- Return water pipe (collector)
- 10- Flue gas temperature sensor
- 11- Venturi adapter
- 12- Control panel
- 13- Venturi
- 14- Flue
- 15- Condensate collector
- 16- Flow NTC sensor
- 17- Syphon pipe
- 18- Ignition transformer
- 19- Ignition electrode
- 20- Ionization electrode
- 21- Pressure sensor
- 22- KFE drain cock
- 23- Flow water pipe (collector)



3.3 TECHNICAL DATA

<i>General</i>		<i>Alubox 200</i>		<i>Alubox 280</i>	
		<i>min.</i>	<i>max.</i>	<i>min.</i>	<i>max.</i>
Installation types		B23		B23	
Gas categories		I2H G20 20 mbar		I2H G20 20 mbar	
Fuel type		Natural Gas		Natural Gas	
Nominal heat input Qn	kW	35,3	200,0	48,0	280,0
Nominal heat output Pn at (80 - 60 °C)	kW	34,5	195,2	46,7	274,1
Nominal heat output Pn at (50 - 30 °C)	kW	36,4	208,0	51,6	290,6
Working pressure	bar	0,8	6	0,8	6
Max. working temperature	°C	90		90	
Limit thermostat shut down temperature	°C	95		95	
<i>Efficiency&Combustion</i>					
Efficiency at Q _{min} (80 - 60 °C)	%	97,7		97,3	
Efficiency at Q _{max} (80 - 60 °C)	%	97,6		97,9	
Efficiency at Q _{min} (50 - 30 °C)	%	103,2		107,5	
Efficiency at Q _{max} (50 - 30 °C)	%	104,0		103,8	
Partial load return 30 °C	%	107,4		107,3	
Efficiency level		☆☆☆☆		☆☆☆☆	
Flue gas temperature (50 - 30 °C)	°C	29	52	29	47
Flue gas temperature (80 - 60 °C)	°C	53	63	54	64
Gas nozzle (G20)	mm	---		---	
CO ₂ emissions (G20)	%	8,8	9,3	8,8	9,8
NO _x emissions (G20)	mg/kWh	35		65	
NO _x class		5		5	
Combustion products output mass (G20)	g/sec	90,1		119,6	
Gas flow rate (G20)	m ³ /h	3,74	21,16	5,08	29,63
Fan speed (G20)	rpm	1100	5100	1250	5700
System flow	"	2"		2"	
System return	"	2"		2"	
Gas inlet	"	1"		1"	
Maximum pressure of duct	Pa	160		160	
Condensate discharge	∅	25		25	
Flue outlet	∅	200		200	
Air intake	∅	100		100	
<i>Electrical</i>					
Power supply	V/Hz	230 - 50		230 - 50	
Electric insulation class	IP	X4D		X4D	

4 INSTRUCTIONS FOR THE INSTALLER

4.1 INSTALLATION

4.1.1 PACKING

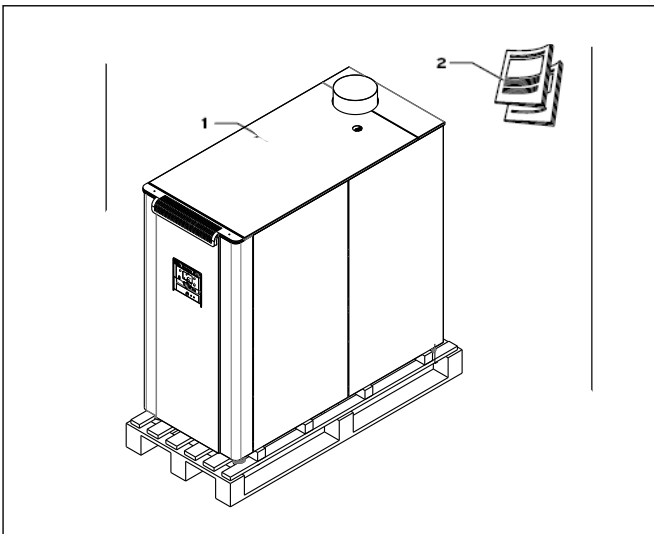
The **Alubox** boilers are supplied fully assembled in a strong pallet.

After having unpacked the boiler check that it is intact and undamaged.



Keep the packaging material (cardboard box, plastic bags, polyester protection etc.) **out of the reach of children as they can be dangerous.**

GASSERO refuses all liability for injury to persons, animals or damage to property deriving from not having respected the above mentioned recommendations.



In the packaging, in addition to the boiler, you can also find the following contents:

- Installation and service manual
- Warranty card

4.1.2 TRANSPORT



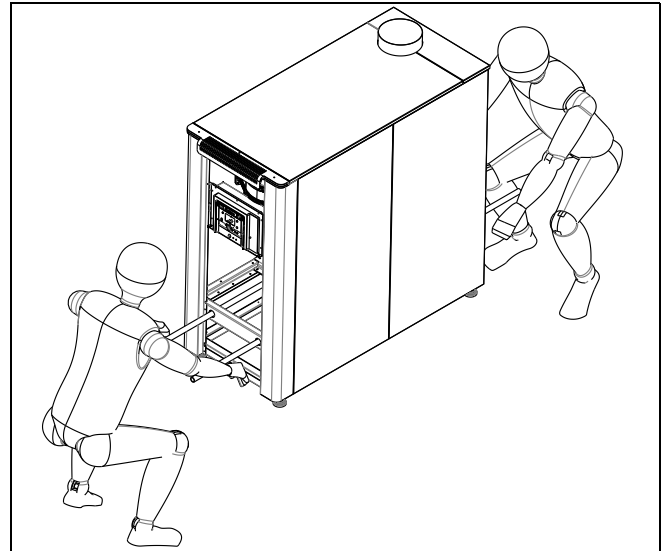
CAUTION: Damage to the installation due to impacts.

The boiler contains parts which can be damaged by impacts.

During further transport all parts must be protected against impacts.

Obey the transport symbols and instructions on the packaging.

To lift and carry the boiler, please use the transpallet or forklifts.



CAUTION: Damage to the unit due to it being lifted and carried incorrectly.

Carefully transport the boiler to the installation place.

4.1.3 MOUNTING

4.1.4 CLEARENCES

The gas and water connections are located on the rear of the boiler whilst the air intake and flue outlet is located on the top of the boiler. The boiler is supplied as standard with pipe-work tails to allow connections facing downwards. For installation, servicing and inspection min. 600mm and 200mm near of the boiler is required. If this free space is obtained by opening a door or removing a panel, the boiler may be installed for instance in a closed cupboard. For ease of installation we recommend clearances of 200mm at the side so that the unit is easy to open, with a free space of 250 mm under the appliance and 1200 mm above the appliance, as the minimum requirement. The boiler must be installed, according to international standarts and regulations away from flammable surfaces, materials, gas or electrical lines.



CAUTION:

Boiler damage due to corrosion.



NOTE:

Damage to the installation due to insufficient or improper cleaning and maintenance.

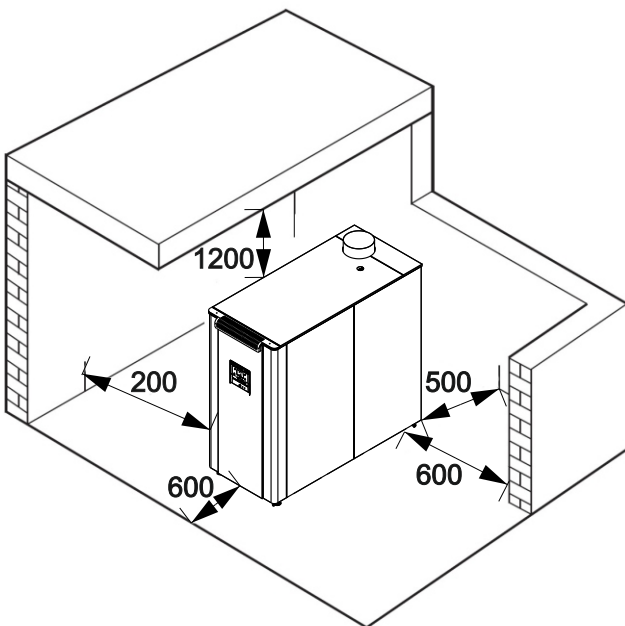
Inspect and clean the heating system as required once a year.



Carry out maintenance as required.

Immediately remedy faults. This will avoid further damage to the system!

DO NOT treat the water with antifreeze.



4.1.5 WATER QUALITY AND TREATMENT

In the case of heating water that has been conditioned by the addition of strongly alkaline substances, aluminium and its alloys are at risk from corrosion.

The pH value of the heating water must not permanently rise above 8.5 or fall below 6.5.

Mixing additives with the heating water can result in material damage. However no incompatibility with Gassero appliances has been detected with proper use of the following products over a long period.

- When using additives, follow the manufacturer's instructions without exception.

Gassero accepts no liability for the compatibility of any additive or its effectiveness in the rest of the heating system.

Suitable chemicals and their use should be discussed with a specialist water treatment company prior to carrying out any work (environmental aspects, health aspects). The specification of the system and manufacturers recommendations must be taken into account, along with the age and condition of the system. New systems should be flushed thoroughly to regulations to remove all traces of flux, debris, grease and metal swarf generated during installation. Care to be taken with old systems to ensure any black metallic iron oxide sludge and other corrosive residues are removed, again by power flushing, ensuring that the system is drained completely from all low points. It is important to check the inhibitor concentration after installation, system modifications, filling the system and every service in accordance with these instructions. For the correct dosage and the suitability of inhibitors for use with our boilers and for further information on water treatment or system cleaning we advise direct contact with Gassero service.

The manufacturer declines any liability for damage caused to the boiler by failure to install or inadequate installation of this filter. Before switch on the boiler, water must be circulate at least 2 hours for elimination the impurities from the system trough the micro impurity seperator. In the end of the operation, safety drain valve must be opened for removing the impurities. It is also possible to use plate heat exchangers according the system characteristics. In any case, micro impurity separators must be used in the system in the boiler. Before installation, carefully wash all the pipes of the system to remove any residuals or impurities that could affect proper operation of the unit. Filter must also be installed on the system return piping to prevent impurities or sludge from the system clogging and damaging the boiler.

The plumbing system must be cleaned using with suitable - registered products before starting the installation of the boiler. Neutral, non-acidic and non-alkali cleaners (SENTINEL and FERNOX) must be used for preventing the metal, plastic and rubber parts in the installation system. Please obey the instructions of the manufacturer, when using these type of cleaners.

Note: Rust particles and impurities in the heating system can caused problems. (overheating, un-efficient and noisy work) Problems and damages due to wrong installations and wrong plumbing systems is out of warranty.

4.1.6 WATER SIDE CONNECTION INSTRUCTIONS

The heating capacity of the unit must be previously established by calculating the building's heat requirement according to current regulations. The system must be provided with all the components for correct and regular operation. In particular, provide for all the protection and safety devices prescribed by current regulations for the complete system.



We strongly recommend to install two ball valves under the boiler, so the boiler can be isolated from the heating system when needed.

4.1.7 EXPANSION VESSEL

Alubox is not supplied with an expansion vessel; therefore its connection must be carried out by the qualified installer. The capacity of the expansion vessel must be chosen and installed to match the capacity of the central heating system and the static pressure. We suggest you install the expansion vessel in the return line of the central heating system. It can be combined with the drain valve for servicing.

4.1.8 SAFETY VALVE

Safety valve must be connected to collection pipe to prevent water spurting onto the floor in case of overpressure in the heating circuit. Otherwise, if the discharge valve cuts in and floods the room, the boiler manufacturer cannot be held liable.

4.1.9 CONDANSATE DISCHARGE

The condensate drain is under boiler and siphon pipe has placed back side and has a 25mm hose discharge. Connect this flexible hose to the sewer system. Use only plastic parts with the condensate drain. Metal lines are not allowed. Blockage of this drain may cause damage to the boiler. The drain connection is correct when the condensate can be seen flowing away, e.g. using a funnel. Any damage that may occur is not covered by the warranty of the boiler. There should be an open connection between the condensate hose from the boiler, to the sewage system. An under pressure in the sewage system should never be able to suck on the boiler condensate drain hose. The condensate drain must be connected in accordance with current regulations.



Do not use the water system pipes to earth electrical appliances.

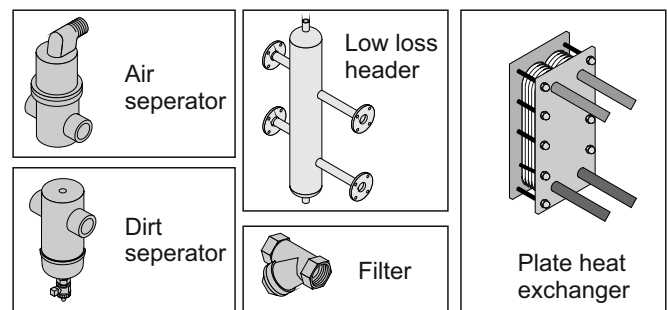
4.1.10 FROST PROTECTION

Alubox series boiler has built-in frost protection, automatically activating the central heating pump when the boiler return water temperature drops below 5°C. The pump and/or burner will shut down as soon as the return temperature has reached demanded point. The above-mentioned temperatures relates to the temperature measured with the RETURN sensor of the boiler. This Frost Protection provision is for the boiler only and not for the all system.

4.1.11 DIRT SEPERATION

Always install a strainer (water filter) and /or a dirt separator in the return of the boiler is such a way that the boiler water is free of any debris/particles. When using a water filter one should check weekly after installation to determine the strainer cleaning interval.

We advise to mount valves before and after the strainer including an air bleed valve so the strainer can be isolated from the heating circuit for servicing. Clean water is important, blocked heat exchangers do not fall under warranty. The filter should be installed when replacing boilers in existing systems. The manufacturer declines any liability for damage caused to the boiler by failure to install or inadequate installation of this filter. Before switch on the boiler, water must be circulate at least 2 hours for elimination the impurities from the system trough the micro impurity seperator. In the end of the operation, safety drain valve must be opened for removing the impurities. It is also possible to use plate heat exchangers according the system characteristics. In any case, micro impurity seperators must be used in the system in the boiler. Before installation, carefully wash all the pipes of the system to remove any residuals or impurities that could affect proper operation of the unit. Filter must also be installed on the system return piping to prevent impurities or sludge from the system clogging and damaging the boiler.



4.1.12 AUTOMATIC AIR VENT

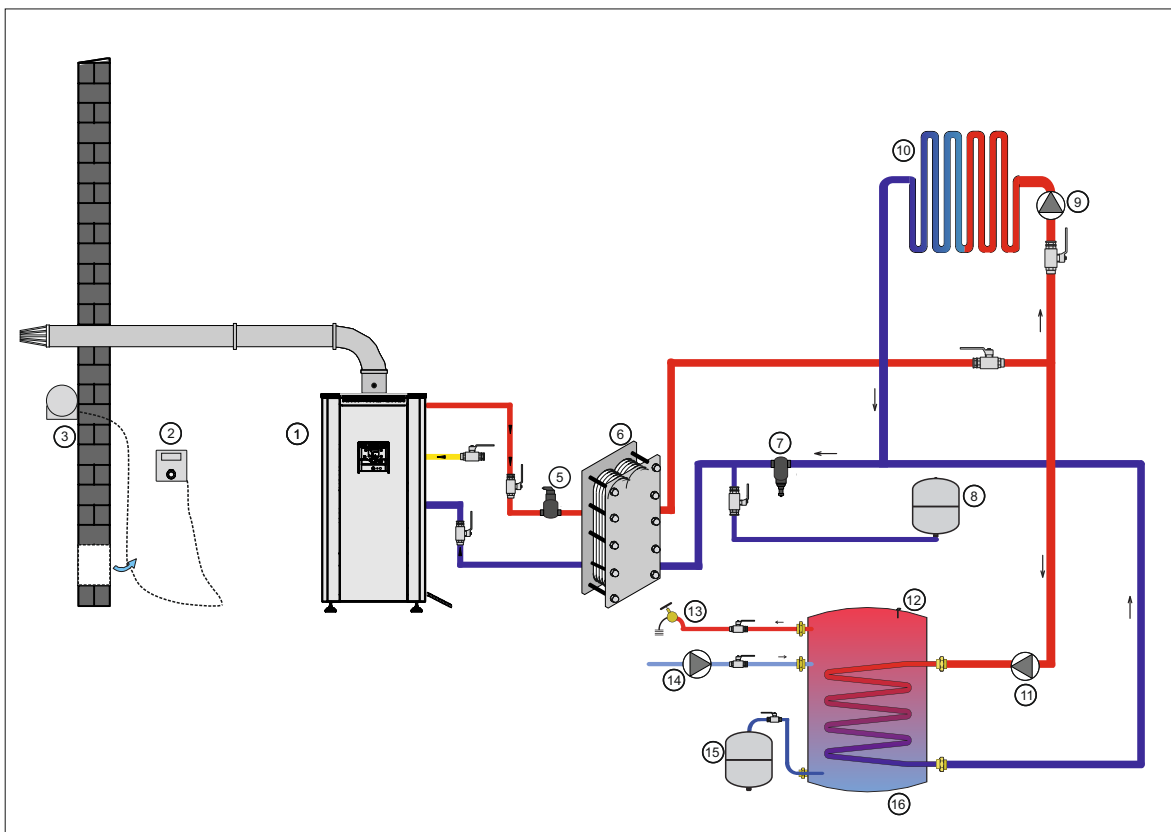
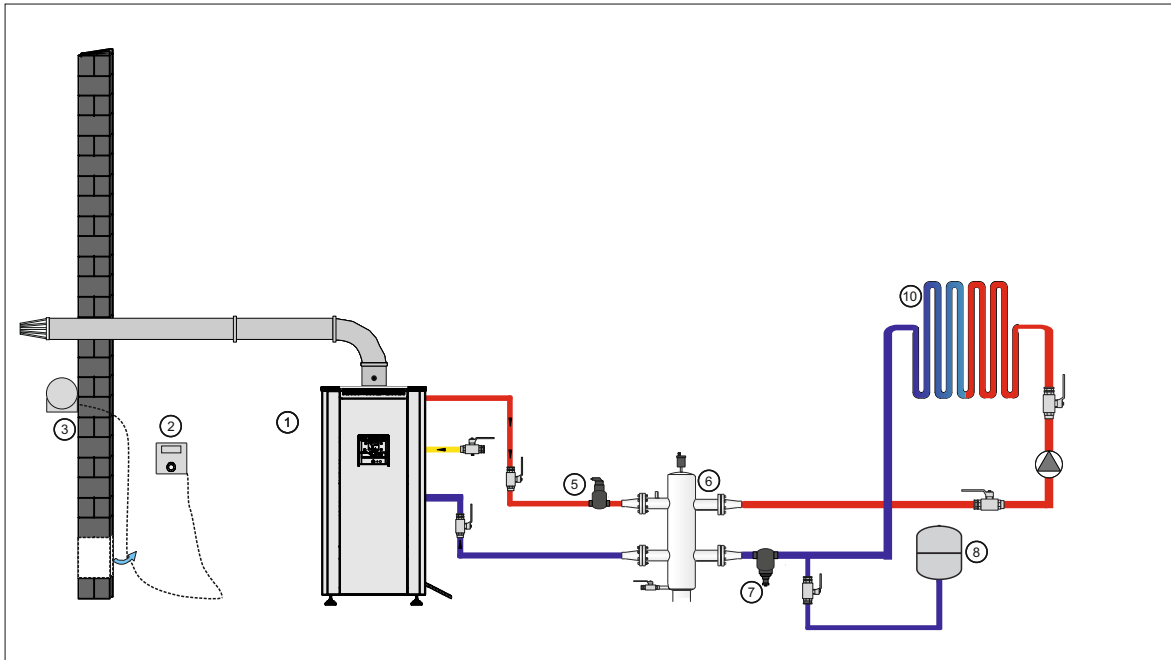
There is an automatic air vent mounted in the boiler to remove air from the water circuit. This automatic air vent is only for eliminate the air in the heat exchanger of the boiler. One or more external automatic air vent(s) and/or air separators should always be installed in the heating system to eliminate air trapped in the heating circuit.

4.1.13 PUMP

The Alubox boilers are not supplied with a circulation pump. A circulation pump must be used in the return line of the installation system. Please get in contact with the Gassero for circulation pump type.

4.2 BOILER INSTALLATION SYSTEM EXAMPLES

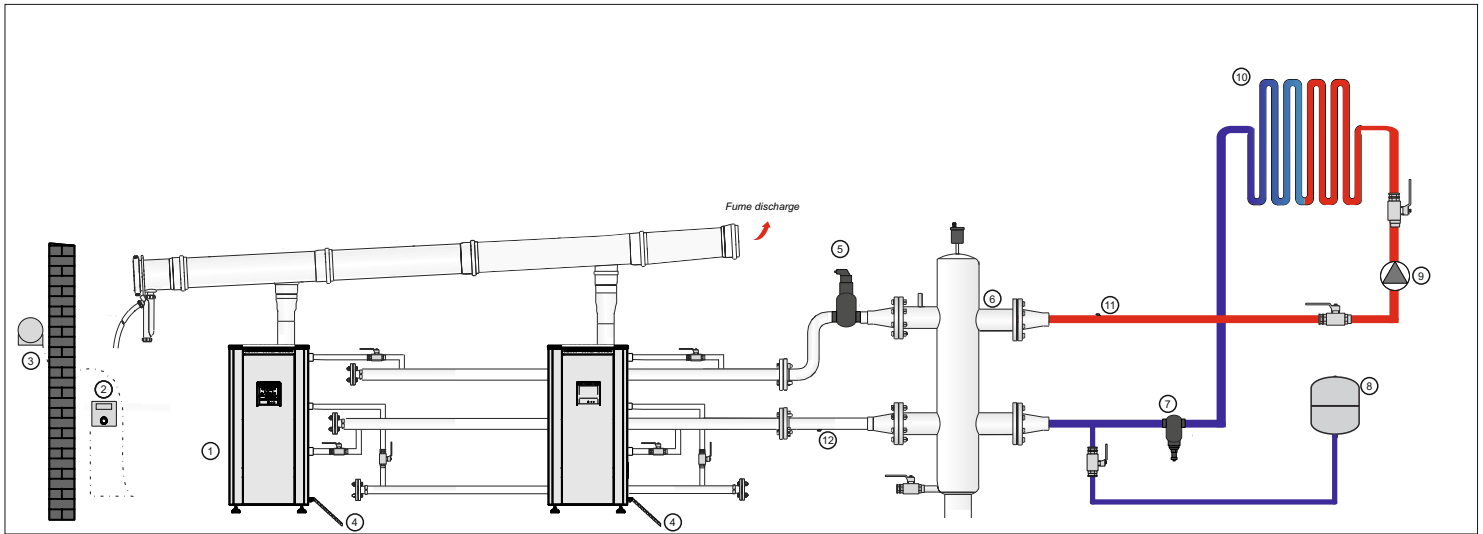
4.2.1 SINGLE BOILER INSTALLATIONS



- 1 - Alubox condensing boiler
- 2 - Room thermostat (QAA55)
- 3 - Outside probe (QAC34)
- 4 - Condansate discharge
- 5 - Air seperator
- 6 - Plate heat exchanger / Low loss header
- 7 - Dirt seperator
- 8 - Expansion vessel
- 9 - Radiator pump

- 10 - Heating system(radiator/underfloor)
- 11 - DHW tank pump
- 12 - DHW tank sensor (QAZ36)
- 13 - Hot water
- 14 - DHW re-circulation pump
- 15 - DHW tank expansion vessel
- 16 - DHW tank

4.2.2 CASCADE INSTALLATIONS



- 1 - Alubox condensing boiler
- 2 - Room thermostat (QAA55)
- 3 - Outside probe (QAC34)
- 4 - Condansate discharge
- 5 - Air seperator
- 6 - Plate heat exchanger / Low loss header
- 7 - Dirt seperator
- 8 - Expansion vessel
- 9 - Radiator pump

- 10 - Heating system(radiator/underfloor)
- 11 - Cascade supply sensor (QAD36)
- 12 - Cascade return sensor (QAD36)

4.3 ADJUSTMENT OF THE GAS RATE

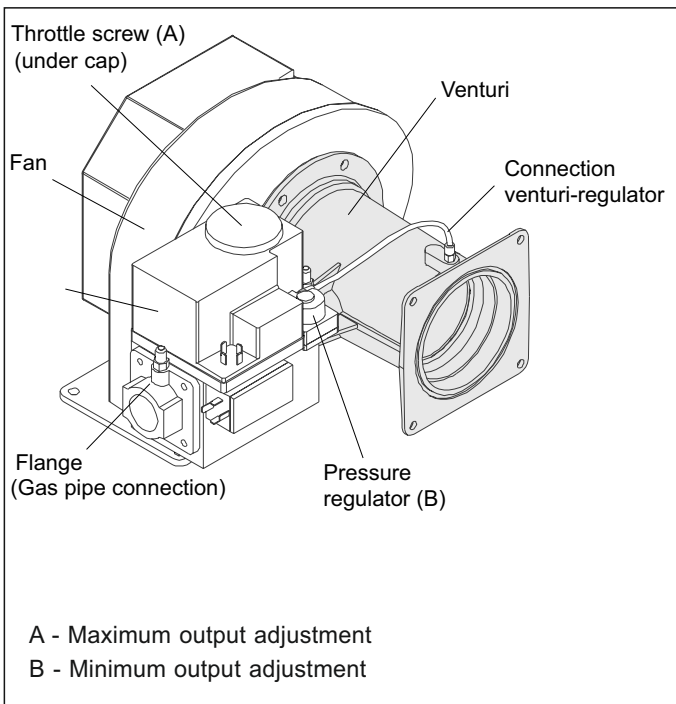


All the instructions written below are for the exclusive use of qualified service technicians or installers. All the boilers are supplied already calibrated and tested. Adjustments are only be made with special tools.



Adjustments must be done by Gassero authorized services.

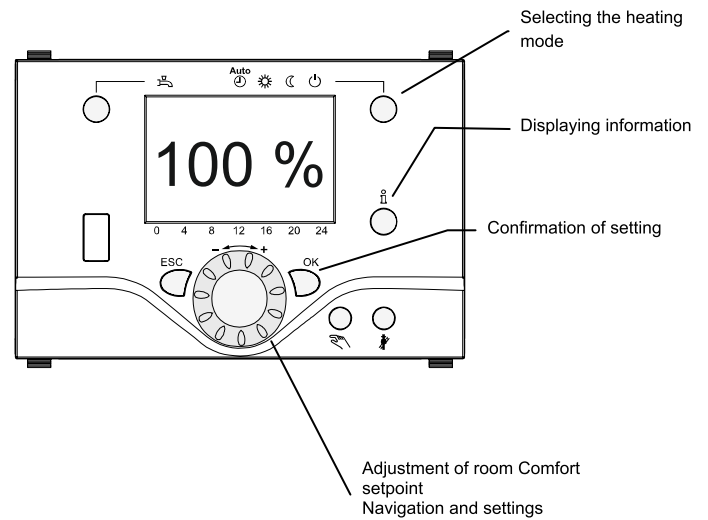
4.3.1 Description of the adjustment points



2- If the flue gas value in maximum load needs to be adjusted,

- Remove the black cover cap to reach the screw of the main throttle on gas valve (1).
- Be sure that the boiler is running in in full load (Qmax)
- Specify the required flue gas value if necessary (see Table) by turning the screw of the main throttle.

3 - For operating in the max. output, press at least 3 seconds to heating mode when the boiler in * mode. Controller function stop will appear on the screen. Than press information button, it will indicate the modulation rate (%) on the screen. Adjust the rate to 100% for max. output setting with using of navigation button. Then press OK . Thus, boiler will operate in maximum power.



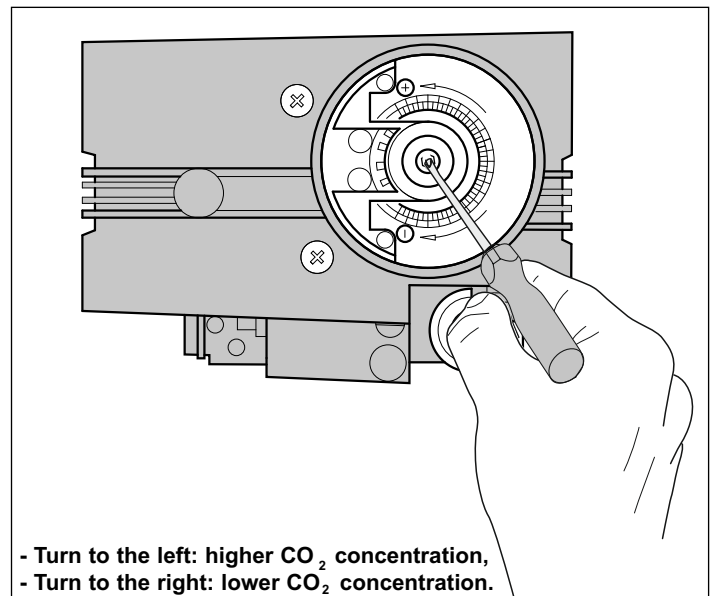
WARNING:

Damage to the boiler by incorrect adjustment of the gas/air-ratio.

To ensure correct operation the values have to be adjusted with extreme care respecting the values indicated in the table.

4.3.2 Combustion values adjustment table

Boiler Type	Alubox 200		Alubox 280	
	min.	max.	min.	max.
Q				
CO ₂ %	8,8	9,3	8,8	9,8
Gas Flow Rate(m ³ /h)	3,73	21,1	5,08	29,63
Fan Speed (rpm)	1100	5100	1250	5700



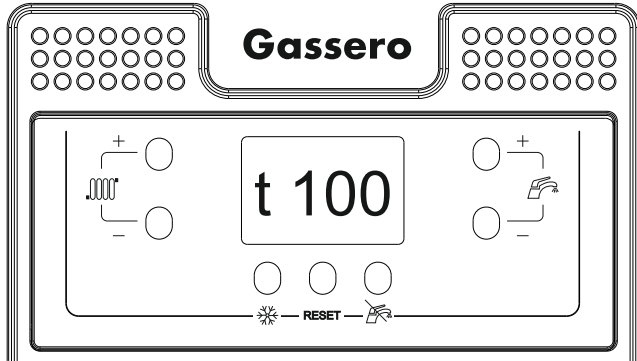
- Turn to the left: higher CO₂ concentration,
- Turn to the right: lower CO₂ concentration.

4.3.3 Maximum output adjustment for ALUBOX S models

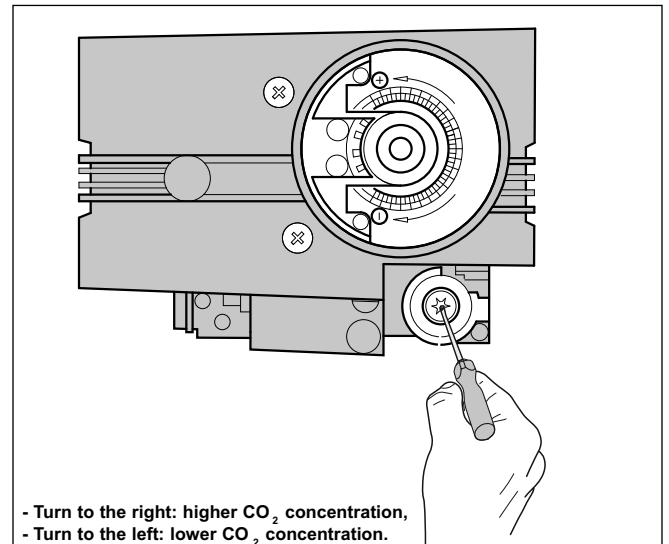
1 - Connect the gas analyser probe to the sampling test point on the flue .

Maximum output adjustment for ALUBOX H Models

- For operating in the max. output, press at least 3 seconds to button . «t 0 » will be appear in the screen. Boiler will indicate the modulation rate (%) on the screen as 0 . Adjust the rate to 100 % for max. output setting with using of mode « + » button . Thus, boiler will operate in maximum power.



- After performing the adjustments, check the CO₂ concentration in minimum load.
- If the flue gas value in minimum load needs to be adjusted.
- Remove the cover cap of the zero point screw (B) on the gas valve
- Be sure that the boiler is running in minimum mode (Qmin).
- Specify the required flue gas value if necessary by turning the screw of the zero point (B)

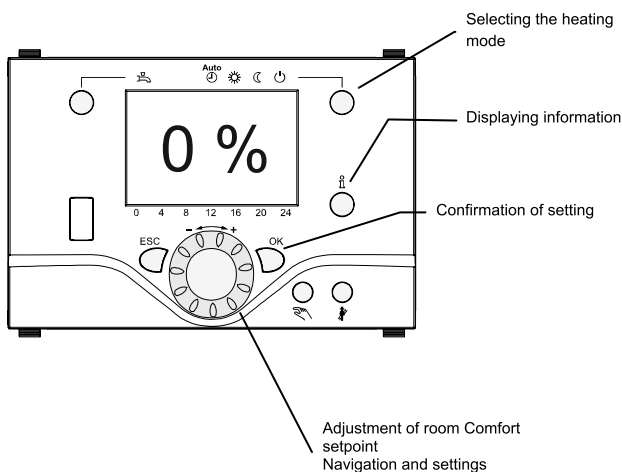


The adjustment is very sensitive. Only perform the adjustment in increments of 1/16 turn. Wait approximately 1 minute after each adjustment until the value stabilises.

- Fit the cover caps on the gas valve.
- The cover caps shall be sealed after the adjustment.
- Put the casing back to the boiler

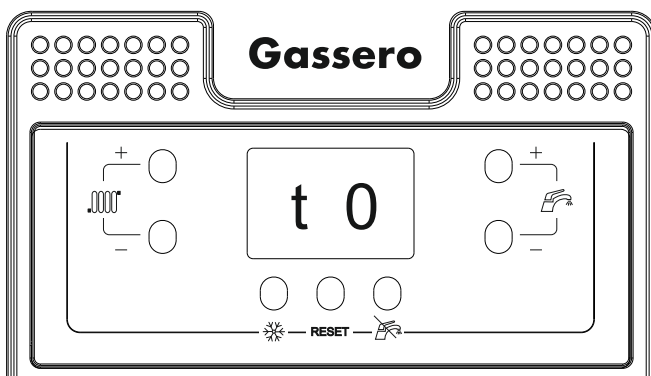
4.3.4 Minimum output adjustment for ALUBOX S Models

1 - For operating in the min. output, press at least 3 seconds to heating mode when the boiler in mode. Controller function stop will appear on the screen. Than press information button, it will indicate the modulation rate (%) on the screen. Adjust the rate to 0% for min. output setting with using of navigation button. Then press OK . Thus, boiler will operate in minimum power.



Minimum output adjustment for ALUBOX H models

1 - For operating in the min. output, press at least 3 seconds to button . «t 0 » will be appear in the screen. Boiler will indicate the modulation rate (%) on the screen as 0 . Thus, boiler will operate in minimum power.



4.4 GAS CONVERSION INSTRUCTIONS



The unit can operate only natural gas. (2H G20 20 mbar)



Do not use any type of gas except G20 Natural Gas. It might be dangerous.

4.5 FLUE INSTALLATION INSTRUCTIONS

The flue and the fitting to the flue must be made in compliance with the standards and the legislation in force, as well as with local regulations. The pipes used must be rigid and resistant to temperature, condensate and mechanical stress, and airtight.



Non-insulated flues are potential sources of danger.

Installation Type B23

Air intake dia.(mm)	100
Flue duct dia.(mm)	200
Δp at Max. Qn (Pa)	160

IMPORTANT INFORMATION



It is very important to ensure, that products of combustion discharging from the terminal cannot re-enter the building or any other adjacent building. Through ventilators, windows, doors, other sources of natural air infiltration, or forced ventilation / air-conditioning. If this could occur the appliance **MUST** be turned off, and signed as unsafe until corrective action can be taken.

4.5.1 FLUE APPLIANCE TYPES



The Alubox Series can only be installed in B23 flue type.

B_{23} = Smoke evacuation duct connected to outside from room where the boiler is installed. The combustion air is intaken directly from the room where the boiler is installed.



Only use original GASSERO flue gas discharging systems.

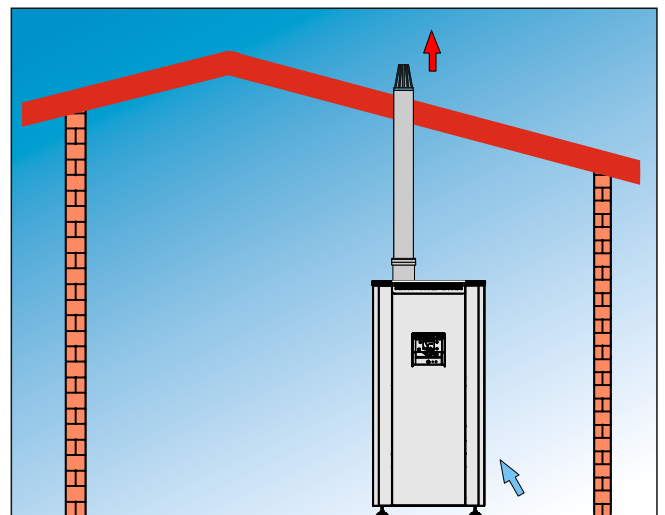
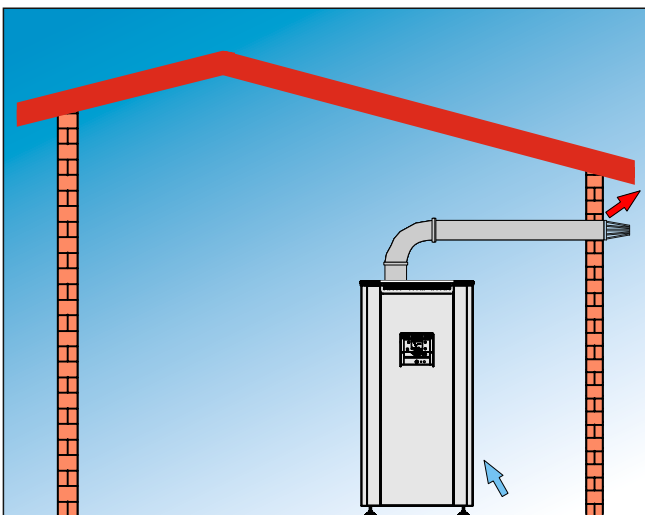


Flue installations must be done by authorized person.



Flue installations must be done according to local ventilation requirements.

4.5.2 FLUE INSTALLATION TYPES



4.6 ELECTRICAL INSTALLATION of ALUBOX S models

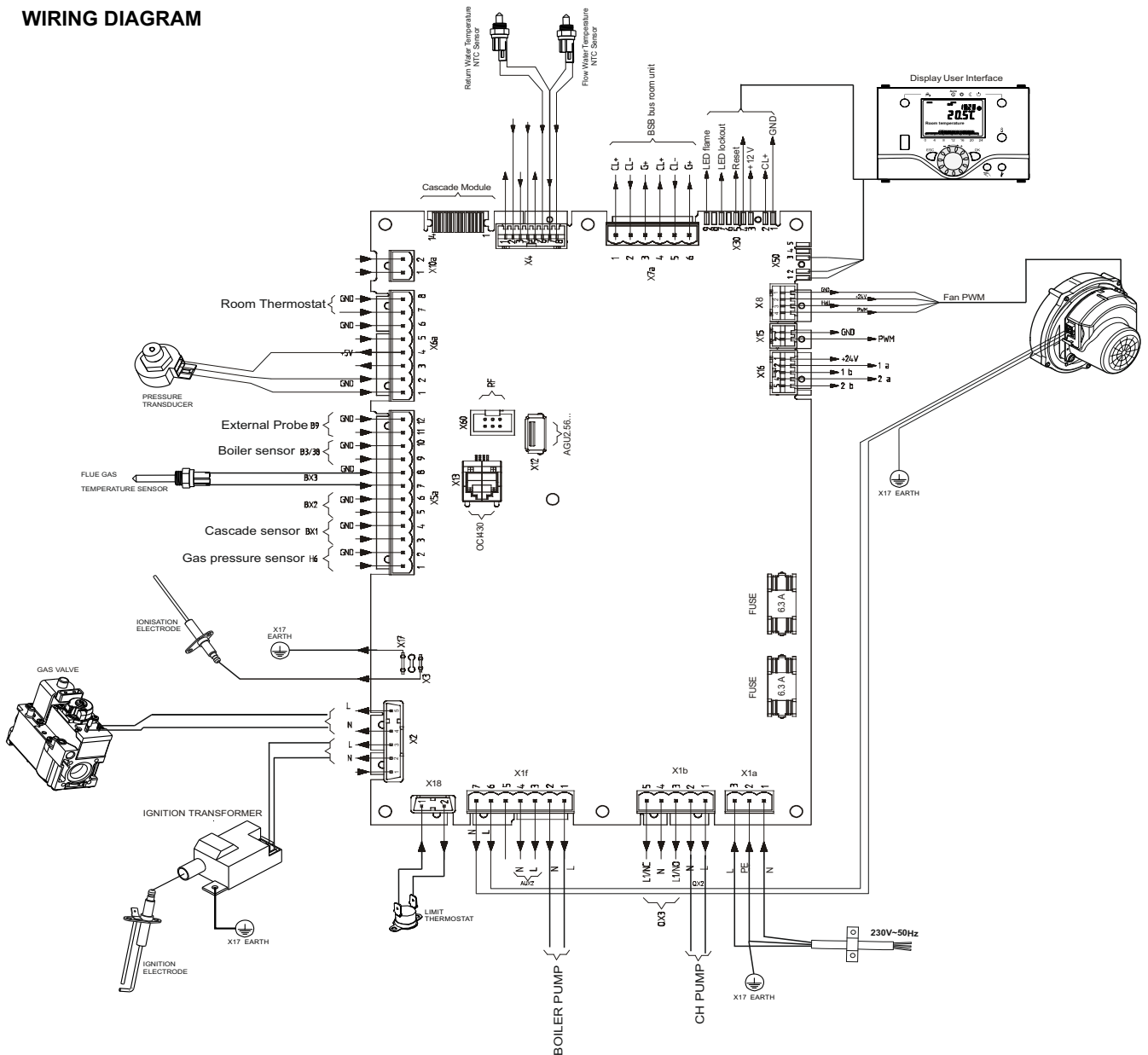
All the wiring is connected to connectors that is fitted in a socket. The connectors can be taken from the sockets on the PCB without loosening the wiring. The connections are placed in the back of the display, and can be reach by removing the front panel of the boiler and the connector protection cover. For operation the boiler needs a power supply of 230VAC 50Hz with earth. Power supply must be removed when you are working on the boiler. Electrical wiring should be done according to national, local or other special standards. Electrical works must be done by a qualified service engineer that is skilled in electrical installation according to the standards.

- 1 - Respect the connection L (Line) - N (Neutral) and earth (ground) connections.
- 2 - Use wires with a cross-section greater than or equal to 1.5 mm², complete with pointed end terminals;
- 3 - Refer to the wiring diagrams in this manual for any operations on the electrical system;
- 4 - Connect the appliance to an effective earth system.
- 5 - Power supply and room thermostat cables must not run near hot surfaces (outlet pipes).



The manufacturer is not liable for any damage due to the failure to earth the appliance and to observe the information provided on the wiring diagrams.

4.6.1 WIRING DIAGRAM



4.6.2 EXTERNAL PROBE INSTALLATION

The correct positioning of the outside probe is fundamental for the correct operation of the climate control function. The probe must be installed outside of the building being heated, at a height of around 1/2 of the wall facing NORTH or NORTH-WEST and away from flues, doors, windows and areas exposed to direct sunlight.



The connection cable between the probe and control panel must not have junctions; if required, these must be sealed and adequately protected.

Fastening the outside probe to the wall

- Unscrew the cover on the probe protection box, turning it anticlockwise to access the terminal block and the fastening holes
- Trace the fastening points using the protection box as the template
- Remove the box and drill the holes for the expansion plugs
- Fasten the box to the wall using the two plugs supplied
- Connect the two wires on the cable to the terminal block, without needing to identify the polarity
- Tighten the nut on the cable gland and close the cover on the protection box.



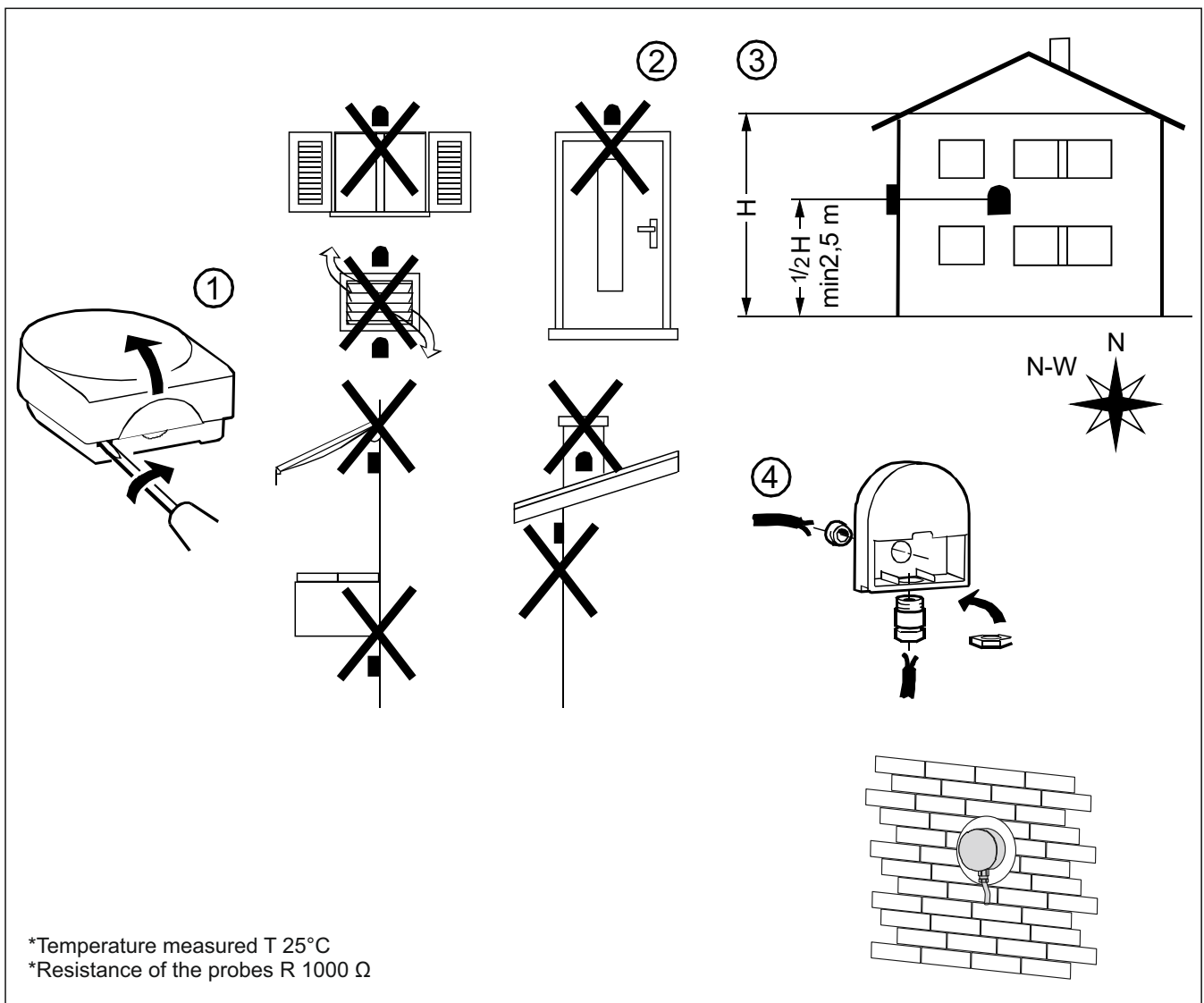
The probe should be placed on a smooth section of the wall; in the event of exposed brick walls or uneven walls, a smooth contact area should be used.



The maximum length of the connection between the outside probe and the control panel is 50 m.



Any conduits used for the connection cable must be separate from the power cables (230V).



4.6.3 OUTDOOR TEMPERATURE CONTROL (OTC)

The heating curve generates the flow temperature setpoint, which is used to maintain a certain flow temperature level depending on the prevailing weather conditions. The heating curve can be adjusted in different ways, thus matching the heat output and the room temperature to individual needs. When the heating curve slope is raised, the flow temperature increases as the outside temperature drops. Or, in other words, if the room temperature is not correct at low outside temperatures but correct at higher outside temperatures, the heating curve slope must be readjusted.

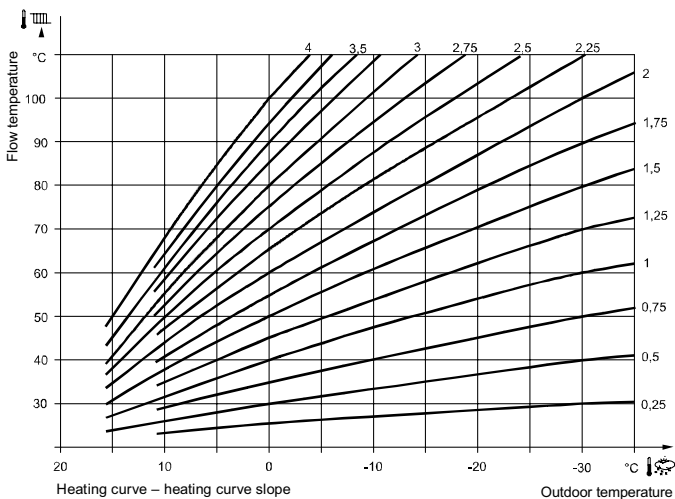
Increasing the slope: Raises the flow temperature, especially when the outside temperature is low.

Decreasing the slope: Lowers the flow temperature, especially when the outside temperature is low.

IMPORTANT INFORMATION



The set heating curve is based on a room temperature setpoint of 20 °C. If this setpoint is changed, the heating curve adapts automatically to the new value.



Parallel displacement of the heating curve is used to change the flow temperature evenly across the entire outside temperature range or, in other words, if the room temperature is always too high or too low, a readjustment must be made with parallel displacement. Adaption of the heating curve is used by the controller to automatically adapt the heating curve to the prevailing weather conditions. In that case, a readjustment of heating curve slope and parallel displacement is not required. It can only be switched on or off.

IMPORTANT INFORMATION



To provide this function, following must be observed:

- A room sensor must be connected
- The Room influence setting must be selected between 1 and 99
- No thermostatic radiator valves should be used in the reference room, where the room sensor is located (if installed, such valves must be fully opened and locked in that position)

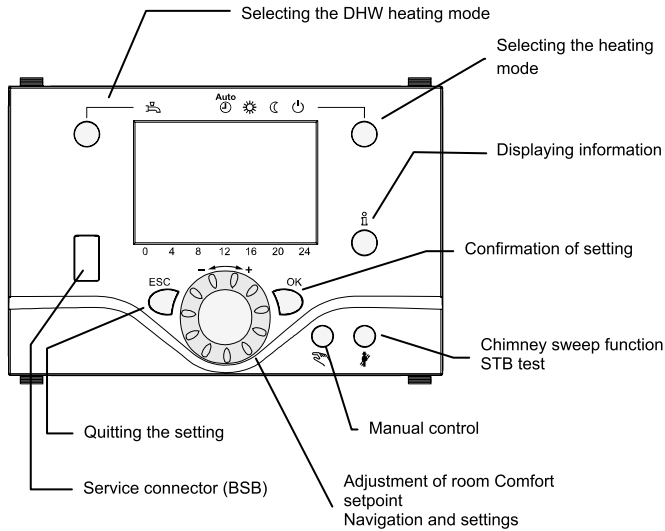
The function is activated with parameter, provided a room sensor is used and the compensation variant is weather compensation with room influence. If the required flow temperature is exceeded or is not reached for more than 2 hours, no adaption is made for that day. With pump heating circuits, the boiler temperature is used in place of the flow temperature. Heating curve adaption readjusts the heating curve's slope and the parallel displacement (heat gains). In Comfort mode (nominal operating level), the function integrates the room temperature control deviation and readjusts at midnight the parameters for calculating the heating curve, depending on the attenuated outside temperature and the learning sensitivity. During boost heating, the deviation of room temperature control is not taken into consideration. When readjusting the heating curve or the heat gains, the sensitivity is automatically set to the maximum. A certain minimum sensitivity is always maintained. If the attenuated outside temperature is below 4 °C, the heating curve slope is readjusted through the learning process. If the attenuated outside temperature lies between 4 °C and 12 °C, heating curve slope and parallel displacement are readjusted through learning. If the attenuated outside temperature exceeds 12 °C, the learning process is stopped. These basic values apply to a Comfort setpoint of 20 °C, heat gains of 0 K and a heating curve displacement of 0 K.

5 OPERATION of ALUBOX S Models

5.1 GENERAL

The Alubox boilers are fitted with SIEMENS control unit as standart. This controller can be used to control of heating system, with 3 different zones and building automatization.

The boiler controller consists of the following components:

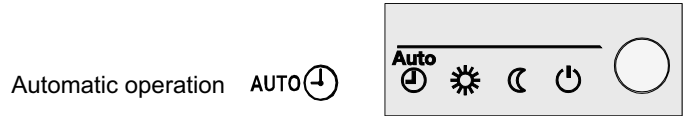


Display choices

- Heating to the Comfort setpoint
- Heating to the Reduced setpoint
- Heating to the frost protection setpoint
- Process running – please wait
- Change battery
- Burner in operation (only oil / gas burner)
- INFO** Info level activated
- PROG** Programming activated
- ECO** ECO function active
- Heating system temporarily off
- Holiday function active
- Reference to heating circuit
- Maintenance / special mode
- Error messages

Selection of space heating mode

Press the button to switch between the different operating. The choice made is indicated by a bar which appears below the symbols.



Automatic operation controls the room temperature according to the time program.

- Characteristics of automatic operation:
- Heating mode according to the time program
 - Temperature setpoints according to heating program
 - “Comfort setpoint“ or
 - “Reduced setpoint“
 - Protective functions active
 - Automatic summer / winter changeover (ECO functions)

Continuous operation or

Continuous operation maintains the room temperature at the selected operating level.

- Heating to the Comfort setpoint
- Heating to the Reduced setpoint

- Characteristics of continuous operation:
- Heating mode with no time program
 - Protective functions active
 - Summer/winter heating limit and automatic
 - 24-hour heating limit (ECO functions)
 - During continuous operation with comfort setpoint: not active
 - During continuous operation with reduced setpoint: Active

Protective mode

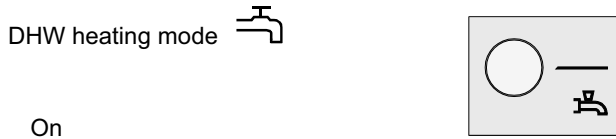
When using Protection, the heating system is off. But it remains protected against frost (frost protection temperature), provided there is no power failure.

Characteristics of Protection:

- Heating off
- Temperature according to frost protection
- Protective functions active
- Automatic summer / winter changeover (ECO functions) and automatic 24-hour heating limit active

Selecting DHW heating

The button is used to switch DHW heating mode on and off. The choice made is indicated by a bar which appears below the symbols.



On

The DHW is heated according to the selected switching program.

Off

No DHW heating, but the protective function is active.


DHW push

To do this, keep the DHW operating mode button on the operator or room unit depressed for at least 3 seconds.

The DHW push can also be started when:

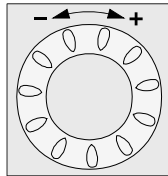
- The operating mode is "Off"
- Operating mode changeover acts via H1 or centrally
- All heating circuits have assumed the holiday mode


Adjusting the room temperature setpoint

Turn the setting knob to increase or decrease the **Comfort** setpoint .

For the **Reduced setpoint** 

- Press the OK button
- Select operating page "Heating circuit" and
- Adjust the "Reduced" setpoint





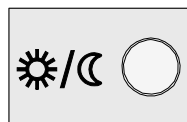
 Each time you make a readjustment, wait at least 2 hours, allowing the room temperature to adapt.


Presence button

If the rooms are not used for a certain period of time, you can press the occupancy button to reduce the room temperature, thus saving heating energy.

When the rooms are occupied again, press again the occupancy button to resume heating operation.

-  Heating to the Comfort setpoint
-  Heating to the Reduced setpoint



 The occupancy button is only active in automatic operation

The current selection is active until the next switching action according to the heating program occurs.

Displaying information

The Info button is used to display information.



Available information

Certain information lines are hidden, depending on the type of unit, unit configuration and operating state.

Possible displays:

Depending on the type of unit, configuration and operating state, some of the info lines listed below may not appear.

Displays:


- Possible error messages from the error code are listed in the manual.
- Possible maintenance alarms from the maintenance code are listed in the manual.
- Possible special mode messages

Other displays:

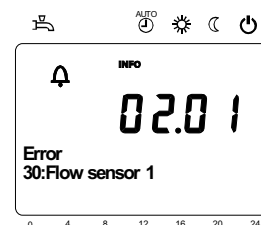
- Room temperature
- Room temperature minimum
- Room temperature maximum
- Boiler temp
- Outside temperature
- Outside temp min
- Outside temp max
- DHW temp 1
- State heating circuit 1
- State heating circuit 2
- State heating circuit P
- State DHW
- State boiler
- State solar
- State solid fuel boiler
- State buffer storage tank
- Date and time of day
- Telephone customer service


Exceptional cases

In exceptional cases, display shows one of the following symbols.


 Error messages

If this symbol appears, a plant fault occurred. In that case, press the Info button to obtain more information.



 Maintenance or special mode

If this symbol appears, a maintenance alarm is delivered or the plant has changed to special mode. In that case, press the Info button to obtain more information.

 A list of possible displays is given in the manual.

Reset function

The reset function for meters and the resettable parameters appears on the bottom line of the display, provided a reset is permitted on the current operating line (enduser/commissioning / heating engineer).


After activation of the OK button, display shows a flashing “Yes“



After confirmation with the OK button, the relevant parameter or parameters will be reset.

Manual Control

When manual control is active, the relays are no longer energized and deenergized according to the control state, but are set to a predefined manual operating state depending on their function. The burner relay energized in manual control can be deenergized by the electronic temperature controller (TR).

After manual control has been activated, a change to the basic display must be made. There, the maintenance / special mode symbol  appears. Press the Info button to switch to info display “Manual mode“, where the setpoint can be adjusted.

Chimney sweep function

The chimney sweep function is activated by a short press (maximum 3 seconds) on the chimney sweep button. It produces the operating state required for making flue gas measurements.

SLT test

The SLT test (SLT = safety limit thermostat) is activated by a long press (longer than 3 seconds) on the chimney sweep button. The button must be kept depressed during the entire test. If released, the test will be aborted. The SLT test is shown on the display.



The test must be made by qualified technicians since the boiler temperature will be raised above the maximum limitations.

5.2 PROGRAMMING

Setting principle

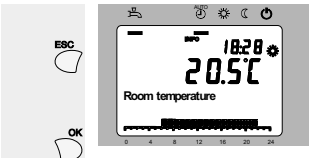
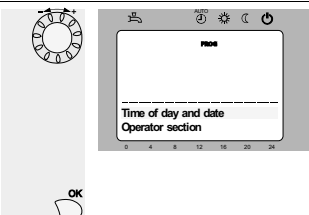
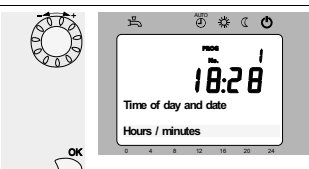
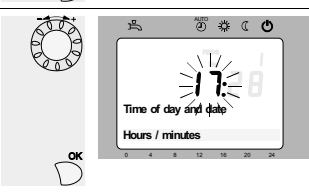
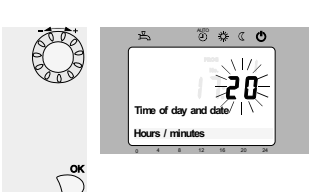
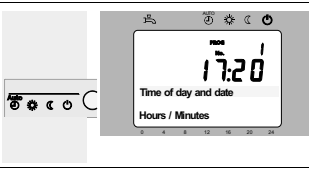

Settings that cannot be made directly with the help of operating elements are made through programming. For this purpose, the individual settings are structured in the form of operating pages and operating lines, thus forming practical groups of settings. The following example which shows the setting of the time of day and date shall explain this.

Example “Setting the time of day“

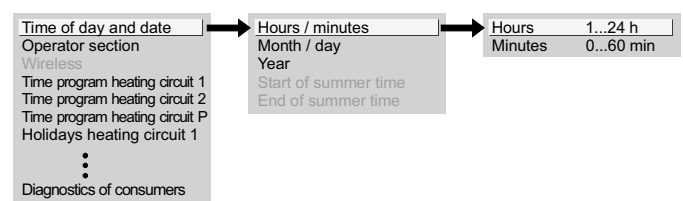
When pressing the ESC button, you go back one step; adjusted values will not be adopted

If any setting is made for 8 minutes, the unit will automatically return to the basic display

Operating lines may be hidden, depending on the type of unit, the configuration and user level

operation	Display example	Description
1		You will see the basic display. If the basic display is not shown, press the ESC button to return to it. Press the OK button.
2		The bottom section of the display shows a number of operating pages. Turn the setting knob until operating page “Time of day and date“ appears. To confirm, press the OK button.
3		In the bottom section of the display, the first operating line of operating page “Time of day and date“ appears. Turn the setting knob until operating line “Hours / minutes“ appears. To confirm, press the OK button.
4		The display shows the hours flashing. Turn the setting knob until the hours of the time of day are correct. To confirm, press the OK button.
5		The display shows the minutes flashing. Turn the setting knob until the minutes of the time of day are correct. To confirm, press the OK button.
6		The settings are saved, the display stops flashing. You can continue to make other settings, or you press the operating mode button to return to the basic display.
7		Now, you have returned to the basic display.

Example of menu structure



USER LEVELS

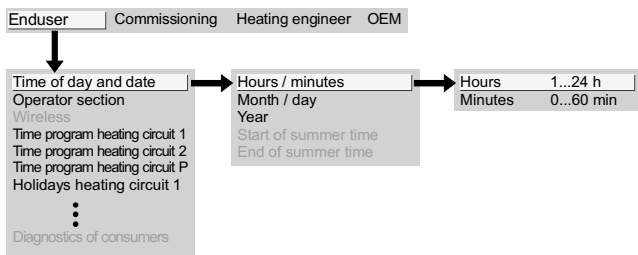
Certain user levels only allow certain user groups to make settings. To reach the required user level, proceed as follows:

operation	Display example	Description
1		You see the basic display. If the basic display is not shown, press the ESC button to return to it. Press the OK button.
2		You are on user level "Enduser". Press the Info button for 3 seconds.
3		You are given a choice of user levels. Turn the setting knob until the required user level is reached. Press the OK button.
4		You are now on the required user level.

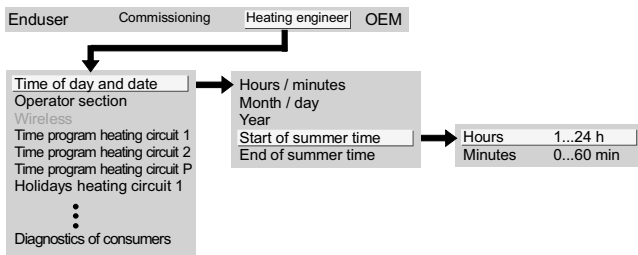
To reach the OEM level, enter the relevant code.

Setting structure for "Enduser"

The example given here shows that certain user levels do not allow certain settings to be made. The example shows them highlighted. On the unit, they are hidden.



Setting structure for "Heating engineer"



5.3 ERROR CODES for ALUBOX S models

The boiler control unit supports a 16-bit error code. Older types of operator units might display 8-bit error codes. If different from the 16-bit error code, the corresponding 8-bit errorcode is indicated in parentheses.

Error Code	LPB code	Description of error code
10		Outside temperature, sensor error
20		Boiler temperature 1, sensor error
25		Boiler temperature, solid fuel, sensor error
26		Common flow temperature, sensor error
28		Flue gas temperature, sensor error
30		Flow temperature 1, sensor error
38		Flow temperature, primary controller, sensor error
40		Return temperature 1, sensor error
46		Cascade return temperature, sensor error
47		Common return temperature, sensor error
50		DHW temperature 1 sensor error
52		DHW temperature 2 sensor error
54		Flow temperature DHW, sensor error
57		DHW, circulation sensor error
60		Room temperature 1, sensor error
65		Room temperature 2, sensor error
68		Room temperature 3, sensor error
70		Storage tank temperature 1 (top), sensor error
71		Storage tank temperature 2 (bottom), sensor error
72		Storage tank temperature 3 (center), sensor error
73		Collector temperature 1, sensor error
78		Water pressure, sensor error
82		LPB address collision
83		BSB wire cross-sectional/no communication
84		BSB wire address collision
85		BSB RF communication error
91		Data overrun in EEPROM
98		Extension module 1, error
99		Extension module 2, error
100		2 clock time masters
102		Clock time master without backup
103		Communication error
105		Maintenance message
109		Supervision boiler temperature
110		STB (SLT) lockout
111		Temperature limiter safety shutdown
117		Water pressure too high
118		Water pressure too low
119		Water pressure switch has cut out
121		Flow temperature heating circuit 1 not reached
122		Flow temperature heating circuit 2 not reached
125		Maximum boiler temperature exceeded
126		DHW charging temperature not reached
127		DHW legionella temperature not reached
128		Loss of flame during operation
129		Wrong air supply
130		Flue gas temperature limit exceeded
132		Gas pressure switch safety shutdown
133		Safety time for establishment of flame exceeded
146		Configuration error sensor/controlling elements
151		LMS14... error, internally
152		Parameterization error
153		Unit manually locked
160		Fan speed threshold not reached
162		Air pressure switch does not close
164		Flow/pressure switch, heating circuit error
166		Air pressure switch error, does not open
169		Sitherm Pro system error
170		Error water pressure sensor, primary side
171		Alarm contact 1 active
172		Alarm contact 2 active

173		Alarm contact 3 active
174		Alarm contact 4 active
176		Water pressure 2 too high
177		Water pressure 2 too low
178		Temperature limiter heating circuit 1
179		Temperature limiter heating circuit 2
183		Unit in parameterization mode
195		Maximum duration of the refill per charging exceeded
196		Maximum duration of the refill per week exceeded
209		Fault heating circuit
214		Monitoring of motor
215		Fault fan air diverting valve
216		Fault boiler
217		Sensor error
218		Pressure supervision
241		Flow sensor for yield measurement, error
242		Return sensor for yield measurement, error
243		Swimming pool sensor, error
260	217	Flow temperature 3, sensor error
270	215	Temperature difference, heat exchanger too large
317	214	Mains frequency outside permissible range
320	217	DHW charging temperature, sensor error
321	217	DHW outlet temperature, sensor error
322	218	Water pressure 3 too high
323	218	Water pressure 3 too low
324	146	Input BX, same sensors
325	146	Input BX/extension module, same sensors
326	146	Input BX/mixing group, same sensors
327	146	Extension module, same function
328	146	Mixing group, same function
329	146	Extension module/mixing group, same function
330	146	Sensor input BX1 without function
331	146	Sensor input BX2 without function
332	146	Sensor input BX3 without function
333	146	Sensor input BX4 without function
335	146	Sensor input BX21 without function
336	146	Sensor input BX22 without function
339	146	Collector pump Q5 missing
340	146	Collector pump Q16 missing
341	146	Sensor B6 missing
342	146	Solar charging sensor B31 missing
343	146	Solar integration missing
344	146	Solar controlling element buffer K8 missing
345	146	Solar controlling element swimming pool K18 missing
346	146	Solid fuel boiler pump Q10 missing
347	146	Solid fuel boiler comparative sensor missing
348	146	Solid fuel boiler address error
349	146	Buffer storage tank return valve Y15 missing
350	146	Buffer storage tank address error
351	146	Primary controller/system pump, address error
352	146	Pressureless header, address error
353	146	Sensor B10 missing
371	209	Flow temperature heating circuit 3
372	209	Temperature limiter heating circuit 3
373	103	Extension module 3
374	169	Sitherm Pro calculation
375	169	BV stepper motor
376	169	Drift test limit value
377	169	Drift test prevented
378	151	Internal repetition
382	129	Repetition speed
384	151	Extraneous light
385	151	Mains undervoltage
386	129	Fan speed tolerance
387	129	Air pressure tolerance
388	146	DHW sensor no function
426	151	Feedback flue gas damper
427	152	Configuration flue gas damper
429	218	Dynamic water pressure too high
430	218	Dynamic water pressure too low
431	217	Sensor primary heat exchanger
432	151	Function earth not connected
433	216	Temperature primary heat exchanger too high

Maintenance code

Maintenance code	Description of maintenance	Priority
1	Number of burner hours run exceeded	6
2	Number of burner starts exceeded	6
3	Maintenance interval exceeded	6
5	Water pressure heating circuit too low (dropped below lower pressure limit 1)	9
10	Change batteries of outside sensor	6
18	Water pressure 2 heating circuit too low (dropped below lower pressure limit 2)	9
10	Change batteries of outside sensor	6
22	Water pressure 3 heating circuit too low (dropped below lower pressure limit 3)	9
25	Automatic filling of water activated	3

ELECTRICAL INSTALLATION for ALUBOX H models

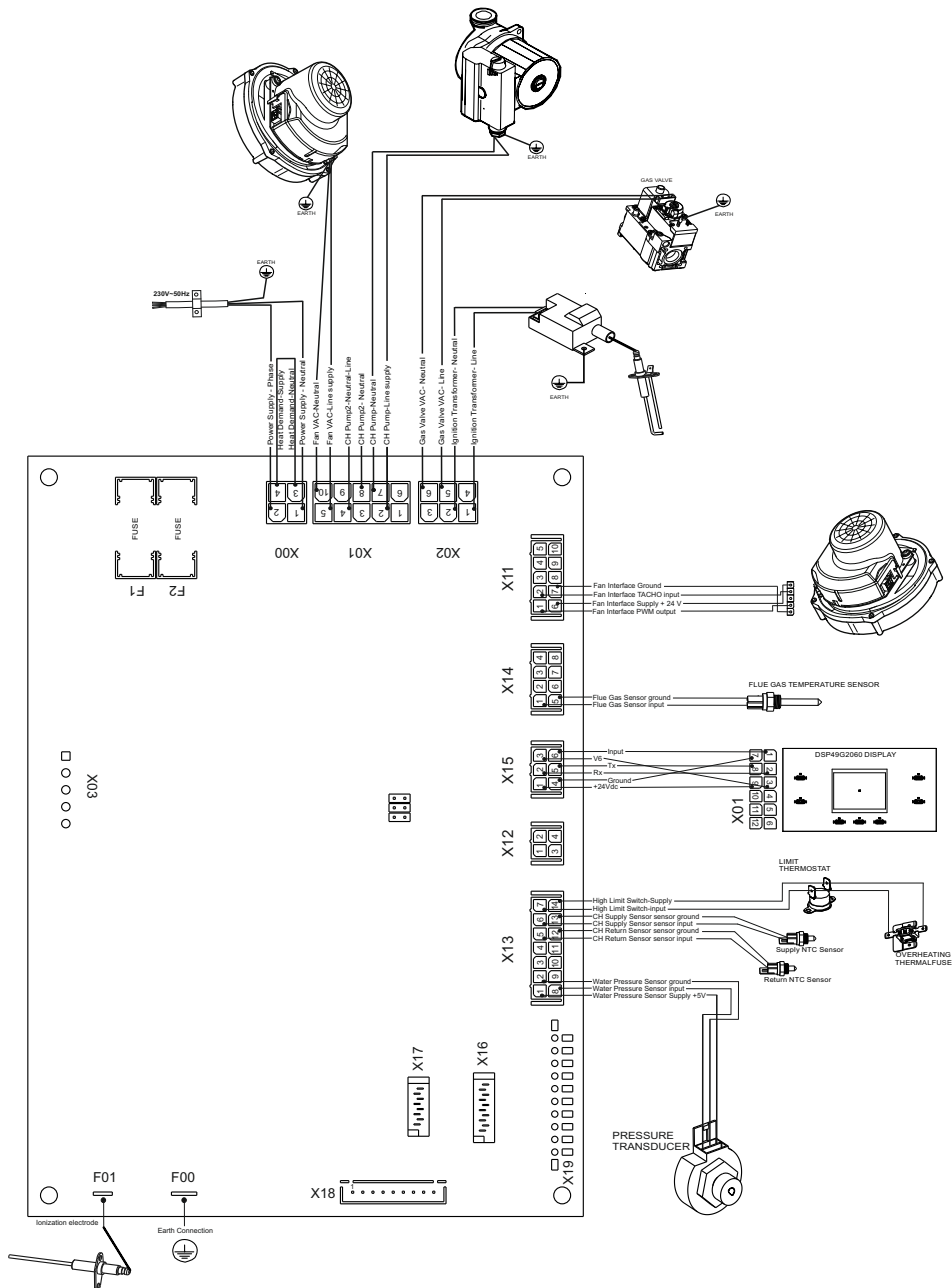
All the wiring is connected to connectors that is fitted in a socket. The connectors can be taken from the sockets on the PCB without loosening the wiring. The connections are placed in the back of the display, and can be reach by removing the front panel of the boiler and the connector protection cover. For operation the boiler needs a power supply of 230VAC 50Hz with earth. Power supply must be removed when you are working on the boiler. Electrical wiring should be done according to national, local or other special standards. Electrical works must be done by a qualified service engineer that is skilled in electrical installation according to the standards.

- 1 - Respect the connection L (Line) - N (Neutral) and earth (ground) connections.
- 2 - Use wires with a cross-section greater than or equal to 1.5 mm², complete with pointed end terminals;
- 3 - Refer to the wiring diagrams in this manual for any operations on the electrical system;
- 4 - Connect the appliance to an effective earth system.
- 5 - Power supply and room thermostat cables must not run near hot surfaces (outlet pipes).



The manufacturer is not liable for any damage due to the failure to earth the appliance and to observe the information provided on the wiring diagrams.

4.6.1 WIRING DIAGRAM



Connector name	Pin	Type of Connection	Description
HIGH VOLTAGE CONNECTIONS			
X00	1	Molex Minifit (family 5566)	Main Power Line Neutral
X00	2	Molex Minifit	Main Power Line Phase
X00	3	Molex Minifit	Heat Demand - Neutral
X00	4	Molex Minifit	Heat Demand - Line supply
X01	1	Molex Minifit (family 5566)	Solar Pump - Line supply
X01	2	Molex Minifit	CH Pump - Line supply
X01	3	Molex Minifit	3 way DHW , 3 way supply
X01	4	Molex Minifit	3 way CH or PUMP2 - Line supply
X01	5	Molex Minifit	Fan VAC - Line supply
X01	6	Molex Minifit	Solar Pump - Neutral
X01	7	Molex Minifit	CH Pump - Neutral
X01	8	Molex Minifit	3 way DHW , 3 way CH or PUMP2 - Neutral
X01	9	Molex Minifit	Neutral
X01	10	Molex Minifit	Fan VAC - Neutral
X02	1	Molex Minifit (family 5566)	External Sparking Transformer - Line supply
X02	2	Molex Minifit	External Sparking Transformer - Neutral
X02	3	Molex Minifit	Gas Valve VDC Rectified - Line Supply
X02	4	Molex Minifit	Gas Valve VDC Rectified - Neutral
X02	5	Molex Minifit	Gas Valve VAC - Line Supply
X02	6	Molex Minifit	Gas Valve VAC - Neutral
SAFETY EXTRA LOW VOLTAGE (SELV) CONNECTIONS			
X11	1	Molex Microfit (family 43045)	AC Fan Interface - PWM output
X11	2	Molex Microfit	AC Fan Interface - TACHO input
X11	3	Molex Microfit	Air Pressure Switch - input
X11	4	Molex Microfit	Modulating Pump - PWM output
X11	5	Molex Microfit	Modulating Pump - Supply +24 Vdc
X11	6	Molex Microfit	AC Fan Interface - Supply +24 Vdc
X11	7	Molex Microfit	AC Fan Interface - ground
X11	8	Molex Microfit	Air Pressure Switch - ground
X11	9	Molex Microfit	Modulating Pump - ground
X11	10	Molex Microfit	Modulating Pump - V6 Vdc
X12	1	Molex Microfit (family 43045)	3-way Stepper driver - COIL1 +
X12	2	Molex Microfit	3-way Stepper driver - COIL1 -
X12	3	Molex Microfit	3-way Stepper driver - COIL2 +
X12	4	Molex Microfit	3-way Stepper driver - COIL2 -
X13	1	Molex Microfit (family 43045)	Water Pressure sensor- Supply +5V
X13	2	Molex Microfit	Water Pressure sensor/switch - ground
X13	3	Molex Microfit	Flow sensor/switch - input
X13	4	Molex Microfit	DHW NTC sensor - input
X13	5	Molex Microfit	CH RETURN NTC sensor - input
X13	6	Molex Microfit	CH1 SUPPLY NTC sensor - input
X13	7	Molex Microfit	High Limit Switch or CH2 SUPPLY sensor - input
X13	8	Molex Microfit	Water Pressure sensor/switch - input
X13	9	Molex Microfit	Flow sensor - Supply V6
X13	10	Molex Microfit	Flow sensor/switch - ground
X13	11	Molex Microfit	DHW NTC sensor - ground
X13	12	Molex Microfit	CH RETURN NTC sensor - ground
X13	13	Molex Microfit	CH1 SUPPLY NTC sensor - ground
X13	14	Molex Microfit	High Limit Switch - Supply
X14	1	Molex Microfit (family 43045)	TTB Flue sensor - input
X14	2	Molex Microfit	Outside temperature Sensor (OTC) - input
X14	3	Molex Microfit	OPENTHERM RoomUnit - signal
X14	4	Molex Microfit	Solar Temperature Sensor - input
X14	5	Molex Microfit	TTB Flue sensor - ground
X14	6	Molex Microfit	Outside temperature Sensor (OTC) - ground
X14	7	Molex Microfit	OPENTHERM RoomUnit - ground
X14	8	Molex Microfit	Solar Temperature Sensor - ground
X15	1	Molex Microfit (family 43045)	Microcom connection - +24 Vdc
X15	2	Molex Microfit	Microcom connection - Rx
X15	3	Molex Microfit	Microcom connection - V6
X15	4	Molex Microfit	Microcom connection - ground
X15	5	Molex Microfit	Microcom connection - Tx
X15	6	Molex Microfit	Microcom connection - input
X16	1	Flat cable	Simple User Interface - CLOCK
FLAME INPUT CONNECTION			
F01		4,8 x 0,8 mm Faston Tab	Flame rod input
EARTH CONNECTION			
F00		6,3 x 0,8 mm faston Tab	Earth Connection

CASCADE CONNECTIONS for ALUBOX H models

- In case of cascade applications as one display generating two maXsys;(from 6 boilers to 12 boilers)
 There must be a communication cable between X01 connector of maXsys 0(master) and maXsys 1(slave) of X15 connectors. If there are multiple modules(example;8, 10 ,12 boilers cascade system) the displays of every module must be connected to each other by a communication cable on X03 and X06 connectors.
 In order to adress maXsys controller as maXsys 1(slave) ; Outside Temperature Sensor output must be closed.

DSP49G2060 DISPLAY	
Connector	PIN
X01	1
X01	2
X01	3
X01	4
X01	5
X01	8
X01	9
X01	11

S4966V2052 MAXSYS BOARD		
Connector	PIN	Maxsys
X15	4	0
X15	2	0
X15	3	0
X15	4	1
X15	2	1
X15	5	0
X15	1	0
X15	5	1

In the case of cascade applications as every display generating one maXsys;(up to 6 boilers cascade system)
 There must be a communication cable between X06 connector of maXsys 0(master) and X03 connector of maXsys 1(slave) . Every maXsys must be connected to its own display. Outside sensor must be closed with bridge from the displays.

DSP49G2060 DISPLAY	
Connector	PIN
X06	2
X06	3
X06	4

DSP49G2060 DISPLAY	
Connector	PIN
X03	5
X03	4
X03	2



Cascade sensor must be connected to X04 (pin 7 - 8) on DSP.



OTC sensor must be closed X14 (pin 2 - 6) in Maxsys 1.



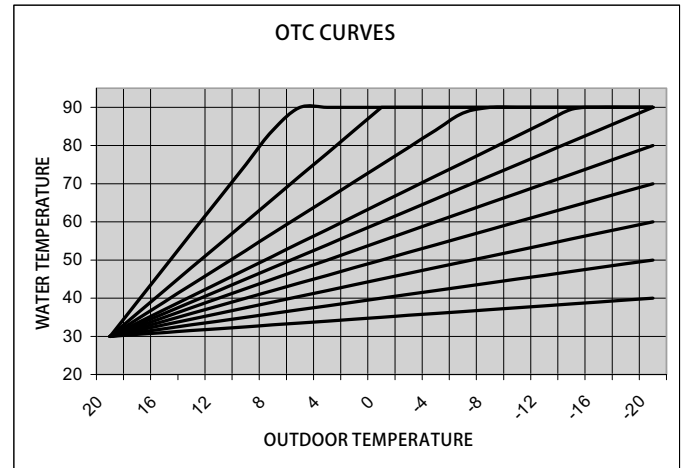
DHW sensor must be open X13 (4) in Maxsys 1.

OUTDOOR TEMPERATURE CONTROL (OTC) for ALUBOX H

The heating curve generates the flow temperature setpoint, which is used to maintain a certain flow temperature level depending on the prevailing weather conditions. The heating curve can be adjusted in different ways, thus matching the heat output and the room temperature to individual needs. When the heating curve slope is raised, the flow temperature increases as the outside temperature drops. Or, in other words, if the room temperature is not correct at low outside temperatures but correct at higher outside temperatures, the heating curve slope must be readjusted.

Increasing the slope: Raises the flow temperature, especially when the outside temperature is low.

Decreasing the slope: Lowers the flow temperature, especially when the outside temperature is low.



The maXsys Controller will convert the Analog/Digital conversion result to the corresponding temperature. This is done through a special lookup table between the limits of -30 to + 70 degrees Celsius. This is the standard used 8-bit lookup table.

The controller calculates and uses a Control Temperature Setpoint for Central Heating when an Outside Temperature Sensor is connected and OTC curve number is NOT 0. The value of Control Setpoint is limited to the maximum of the CH Setpoint range.

For calculating this Control Temperature Setpoint, the following calculation is done:

$$\text{Control Temp. Setpoint} = \text{OTC Offset} + C1 * (20 - \text{Outside Temperature}) / 4$$

Where:

C1 = derived from the OTC Curve number:

If OTC Curve number = 1..7 then C1 = OTC Curve number

If OTC Curve number = 8, then C1 = 9

If OTC Curve number = 9, then C1 = 12

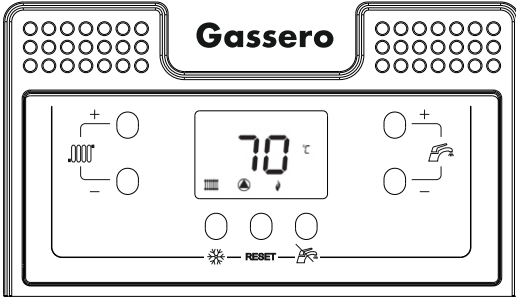
If OTC Curve number = 10, then C1 = 18

For Outside Temperatures above 20 degrees Celsius, Control Temp. Setpoint = OTC Offset .

OPERATION of ALUBOX H Models

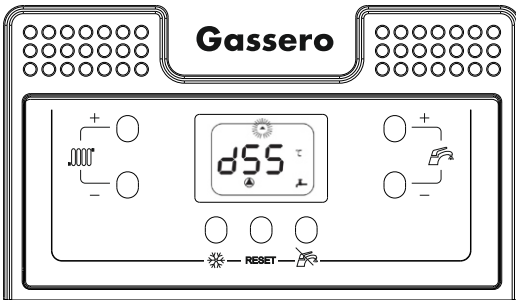
Heating

A heating demand (generated by the Room Thermostat or Remote Timer Control) is indicated by activation of the pump and radiator . The display shows the actual heating delivery temperature and during DHW standby time.




DHW circuit (with optional hot water tank installed)

A hot water tank heating demand is indicated by activation of the circulating pump and the tap . The display shows the actual hot water tank sensor temperature and during heating standby time.

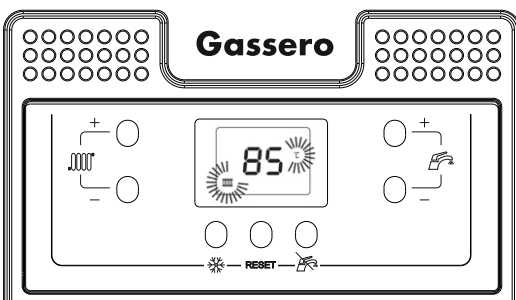


Summer / Winter Mode

Press the button  for 1 second. The display activates the Summer symbol . The heating function is deactivated, whereas the possible production of domestic hot water(DHW) (with optional external hot water tank) remains activated. The frost protection remains activated. To deactivate Summer mode, press the button again for 1 second.

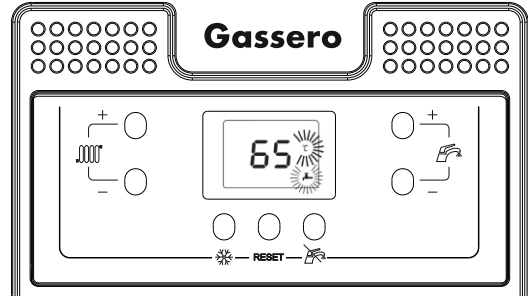
Heating temperature adjustment

Push the heating buttons to adjust the temperature from a min. of 20 °C to a max. of 90 °C.




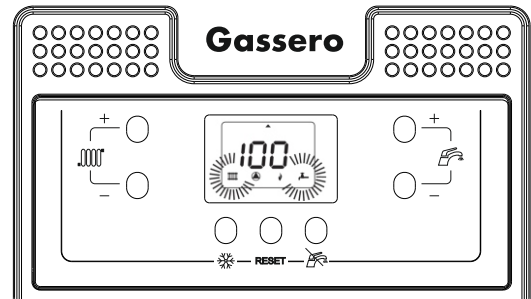
DHW temperature adjustment (DHW tank installed)

Operate the DHW buttons to adjust the temperature from a min. of 10 °C to a max. of 65 °C.

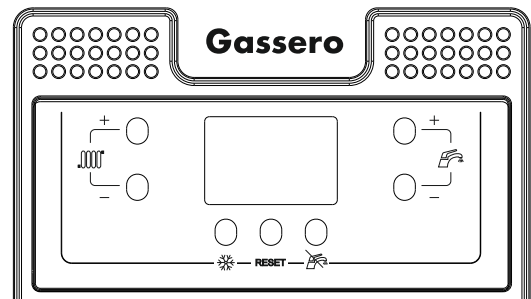


Test mode

Press the  button for 3 seconds to activate the TEST mode. The boiler lights at the maximum heating power set as described in the following section. The heating symbol and DHW symbol flash on the display; the heating power will be displayed alongside. In any case, TEST mode is disabled automatically after 15 minutes.



To adjust the heating power, switch the boiler to TEST mode. Press the heating buttons (+ / -) to increase or decrease the power (min. = 00 - max. =100). Press the reset button within 5 seconds; max. power will remain that just set. Exit TEST mode .



The boiler must be adjusted at the time of installation by qualified personnel. Possible adjustments can in any case be made by the user to improve comfort.

ERROR CODES for ALUBOX H models

Protection and error conditions

Several checks are included to protect the boiler and its environment. The water pressure switch/sensor is monitored permanently for primary water condition check, temperatures are monitored permanently if they are in range, safety times are constantly compared etc.

Any violation of (programmable) limits (and/or internal thermostat functions) will lead to an error/fault or warning condition. This can condition can be read out via external cvbc communication, or can be shown on a display. Severe error (igniter lockout) will cause a lockout condition which can only be cleared by the reset key on the room unit (or locally at the boiler front panel). Non severe errors/faults (i.e. sensor out of range) will reset as soon as the cause of the problem disappears. In case of lockout and blocking conditions, fan will not operate. Also in case of low water pressure, pump will be disabled. Refer to above chapters for a detailed description of protection modes.

Complete list of errors is given as following:

01	Flame lockout after several ignition trials
02	False flame signal
03	High Limit error
04	APS not closing error
05	Not tacho signal received when fan is controlled.
06	APS not opening error
07	TTB (Exhaust protection) activated
08	Flame circuit error
09	Valve driver circuit error
11	Supply/Return High Limit Error
13	Remote Reset Error
21	ADC error
25	CRC error
30	CH sensor error short
31	CH sensor error open
32	DHW sensor error short
33	DHW sensor error open
34	Low mains voltage
37	Water pressure low error
41	Water pressure signal timeout
43	CH return sensor error short
44	CH return sensor error open
45	TTB sensor error short
46	TTB sensor error open
47	Water Pressure Sensor not connected or broken
74	Solar sensor SHORT
75	Solar sensor OPEN
76	Gas Pressure Error
77	Siphon input

Error codes can be divided in 2 groups:

1. Lock-out condition codes
2. Blocking condition codes

Lock out condition codes

Lock out condition codes requires a manual reset action. The meaning of the error numbers is as following:

FAULT 1 = Lock out signal after no flame and all ignition trials are expired. This error condition is stopping the boiler and to get to the normal operation again, manual/remote reset is required. By using the local reset key, number of resets is not limited. However all remote resets (communication or OpenTherm) are limited to 5 resets per hour.

FAULT 2 = False flame signal. A flame signal is seen without the gasvalve being open.

FAULT 3 = High limit signal coming from the high limit temperature check on CH sensors supply and Ch sensor return. If one of the two temperatures is higher than 105°C, an error is generated. A High Limit error can be generated even after a condition of CH sensor supply or return sensor short condition is generated.

FAULT 4 = APS Error – If the APS is configured and the APS does not close or does not open within the configured time limits (see 'APS switching time'), Error 4 is generated.

FAULT 5 = Tacho Error. The control requires a certain fan speed, but does not detect a (correct) tacho signal.

FAULT 6 = APS Error – If the APS is configured and it drops during burner on and the number of maximum retrials has been reached, Error 6 is generated.

FAULT 9 = Valve circuit error - during normal operation of the ignition controller, valve circuit is regularly checked. This check has predictable behavior and several steps. If check fails, error 9 will be set. When the error is resolved, error will disappear.

FAULT 11 = In order to support the safety related high limit function based on the supply/return sensors the sensors drift test must be executed and passed at least every 24 hours. During standby the difference dT between supply and return sensor is measured continuously. This dT must be less or equal to 5 °C confirmed for at least 5 seconds in order to pass the drift test. If this test will not pass during standby within 24 hours then the following test has to be done: Check dT continuously after a HD has been generated but before opening of the gas valve until the dt is reduced to a value less or equal to 5°C confirmed for at least 5 seconds. If after 24Hours the test does not pass, a non volatile lock-out is generated. This error will be triggered also when the test of cracked supply/return sensor and stucked supply/return sensor should fail.

FAULT 13 = All remote resets (communication) are limited to 5 resets per 15min. If the limit is exceeded, error will be generated and to reset it, power off/on is necessary.

FAULT 30 = CH sensor out of normal operating range (short circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again (a lockout reset is necessary).

FAULT 31 = CH sensor out of normal operating range (open circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again (a lockout reset is necessary).

FAULT 43 = CH return sensor out of normal operating range (short circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again (a lockout reset is necessary).

FAULT 44 = CH return sensor out of normal operating range (open circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again (a lockout reset is necessary).

Blocking codes

The boiler controller recognizes also the fault situations that can block the heat demands but do not lead to lockout condition. When the error condition becomes resolved, error will disappear but will also be written into the history data. The meaning of these codes is as follow:

FAULT 7 = TTB protection. When the temperature measured on the TTB exhaust sensor becomes too high, this error will be activated. The TTB 'trip point' is the value which defines when the TTB sensor is too high, and changes depending on burner load. Refer to Figure 4 - TTB protection for a description of TTB error mechanism. An error condition due to TTB protection will be set.

FAULT 8 = Flame circuit error - during normal operation of the ignition controller, flame circuit is regularly checked. This check has predictable behavior and several steps. If check fails, error 8 will be set. When the error is resolved, error will disappear.

FAULT 21 = A/D error

FAULT 25 = Software CRC Matching error.

FAULT 32 = DHW sensor out of normal operating range (short circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again. If ever DHW sensor is faulty, the boiler can enter CH mode anyway, and the sensor error will be displayed.

FAULT 33 = DHW sensor out of normal operating range (open circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again. If ever DHW sensor is faulty, the boiler can enter CH mode anyway, and the sensor error will be displayed.

FAULT 34 = Low Mains voltage will trigger this error (157V \pm 10V). When Mains voltage brought back, error is resolved.

FAULT 37 = In case of sensor or water pressure switch - low water pressure, error is triggered. After being brought back to nominal value, error is resolved (see paragraph 6.16 for more details).

FAULT 41 = Water pressure signal timeout. The water pressure value is not refreshed often enough. Possibly caused by communication problems.

FAULT 45 = TTB sensor out of normal operating range (short circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again.

FAULT 46 = TTB sensor out of normal operating range (open circuit) - resolving type. If NTC sensor goes outside the range, warning will be generated. In case sensor is back to the normal operating range, warning is gone. Warning will switch off the system. Heat demands will be disabled. Resolving situation can be achieved only if the sensor is within operating range again.

FAULT 47 = Water Pressure Sensor not connected or broken condition will generate an error.

FAULT 74 = Solar sensor out of normal operating range (short circuit) - resolving type.

FAULT 75 = Solar sensor out of normal operating range (open circuit) - resolving type.

FAULT 76 = Gas Pressure Error – If the Gas Pressure Switch is configured and the Gas pressure Switch opens at any time for more than 5s, Error 76 is generated and will switch off the system. Resolving situation can be achieved only if the Gas Pressure Switch closes again.

FAULT 77 = Siphon input error

CASCADE ERROR CODES

E 99	Communication error between DSP and maXsys
E 98	Communication error between two DSPs
E 97	Cascade structure mismatch
E 90	DSP - maXsys mismatch
E 94	DSP firmware problem
E 95	Cascade CH supply sensor error
E 96	Outside temperature sensor error

6 MAINTENANCE

6.1 GENERAL



WARNING: Damage to the installation due to insufficient or improper cleaning and maintenance.

Inspect and clean the heating system once a year.

Carry out maintenance as required. Immediately remedy faults. This will avoid further damage to the system!

Generally, the normal service period is one year. Each year the boiler should be cleaned and checked according to the maintenance procedure and instructions. If there is any doubt whether the boiler will operate with the correct water or combustion air quality, it is advisable that a first check is done after half a year to determine future service period.

6.2 MAINTENANCE PROCEDURE

Inspection, maintenance and the replacement of parts should be done by Gassero technical service. Besides doing maintenance we advise to create a log chart belonging to each boiler on which at least the following should be written:

- Serial number of the boiler
- Maintenance date
- Responsible personnel of maintenance.
- Parts and/or settings changed during maintenance.
- Special remarks
- Important points in the future.

During maintenance the following points should be checked and/or parts must be inspected and maintained.

Before doing any work on the boiler:

- Switch off the power to the boiler by service switch or pull out plug from wall socket
- Close the gas valve

Customer comments

Comments and notes from the customer should be taken seriously and an effort should be made to find the cause of any problems.

Service history

Faults and working history can be read from boiler interface or with a computer in combination with the software and interface cable of the PCB.

Water leakage

The pressure of the installation must be higher than 0,8 bar, and maximum 6 bar. Find possible leaks in the system and have these fixed.

Flue gas leakage

The flue gas discharge and air intake piping need to be checked for gas leakage. Also check if the piping is properly mounted and not damaged. Inspect the top of the boiler housing for traces of water leakage or traces of water from the air vent, or leaking condensate from the flue gas piping.

Gas lines/-connections

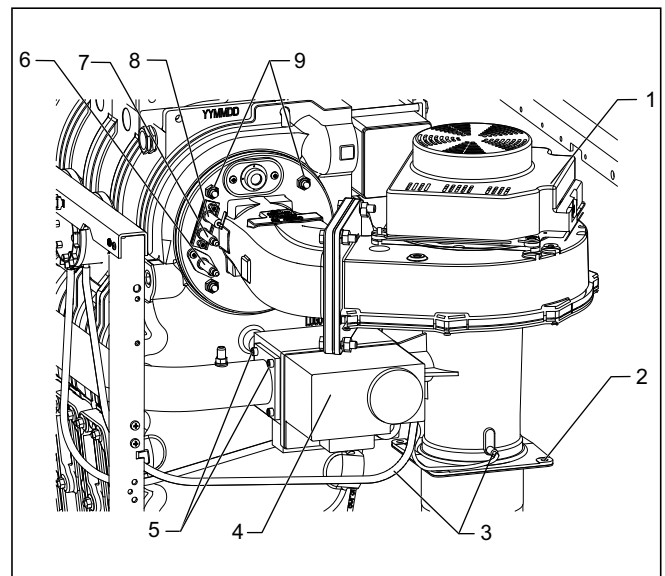
The gas lines need to be checked for gas leakage. Also check if the piping is properly mounted and not damaged.

Gas/air ratio

Always check the gas/air ratio by checking the combustion figure CO₂ on maximum and minimum input. If necessary adjust these figures.

Burner

The burner can be cleaned using a soft (non metallic) brush. The dust can be removed with a vacuum cleaner or pressurized air. Check if the burner surface shows any signs of damage. If the burner surface is damaged (example: cracks in the surface) the burner must be replaced.



Removing the burner

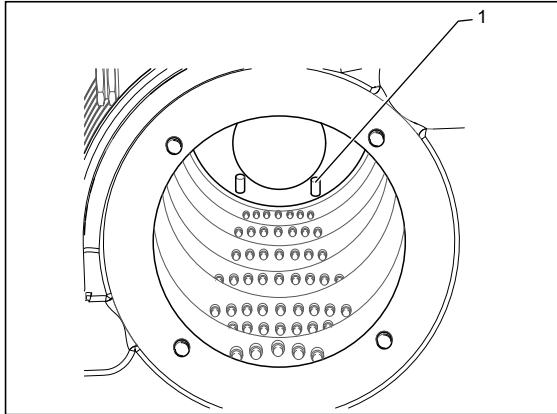
- Remove the casing.
- Unfasten the connections on the gas fitting (4) and on the blower
- Unfasten the earthing conductor (8).
- Disconnect the plugs on the ignition electrode (7) and the ionisation/monitoring electrode (6).
- Disconnect the control hoses (3) on the gas valve and on the Venturi.
- Unfasten the four screws between the Venturi and the supply air silencer (2)
- Unfasten the four M8 nuts (9) on the heat exchanger.
- Withdraw the entire unit, consisting of manifold flange, fan, Venturi and gas fitting, to the front and lay it carefully to one side.
- Remove the gasket between the heat exchanger and the manifold flange.
- Carefully withdraw the burner to the front.

Caution!

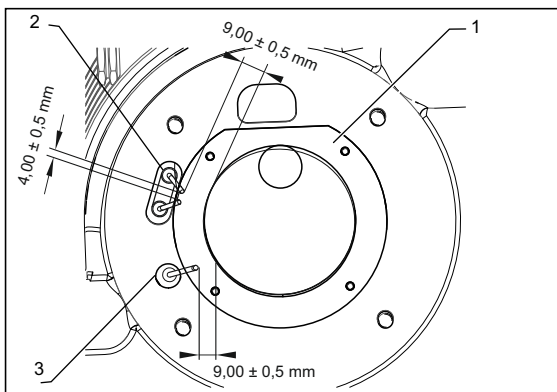
Risk of damage to the burner surface!

Take care that the burner surface does not get damaged during cleaning!

- Take the burner outside the installation area and blow it from the outside inwards with compressed air. If no compressed air is available.
If the burner is heavily contaminated it must be replaced.
- Re-assemble all the components in reverse order.

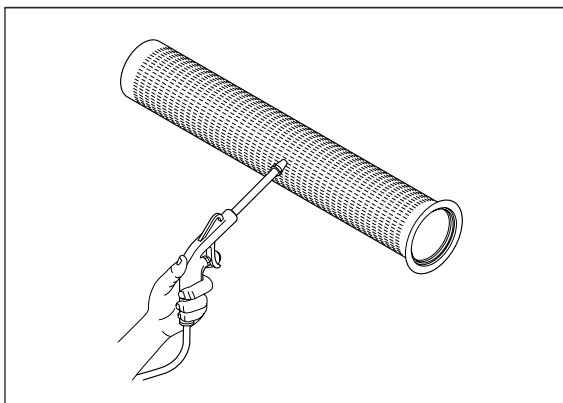


Burner guide slots



Front plate

- 1 - Burner
- 2 - Ignition electrodes
- 3 - Ionisation electrodes



Changing the ignition and ionisation electrodes

Caution!

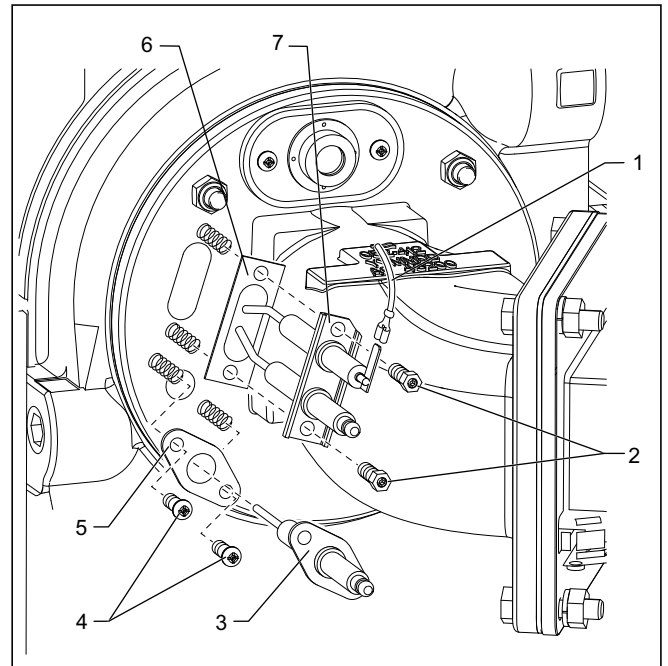
Danger of malfunctions caused by deposits!

Deposits on the electrodes can cause impairments to the function of the unit.

The ignition and ionisation/monitoring electrodes should therefore be replaced annually.

***Notice :** be carefull during inspection not to damage sealings.

All damaged and/or by ageing or other causes influenced sealings should be replaced.



Removing the ignition and ionisation electrodes

Check the electrode, especially the distance between the two pins ($4 \pm 0,5$ mm). Replace electrode if necessary.

- Carefully pull off the connecting cable (1) from the ignition electrode (7).
- Loosen the two fixing nuts (2) on the ignition electrode and remove the entire electrode.
- Replace the gasket (3) and fit the new ignition electrode.
- Carefully pull off the connecting cable from the ionisation/monitoring electrode (3).
- Loosen the two fixing nuts (4) on the ionisation electrode and remove the entire electrode.
- Replace the gasket (5) and fit the new ionisation/monitoring electrode.

When defects are found that cannot be fixed by the service engineer, he has to inform the end user about the defects, and should advise the end user to have them fixed.

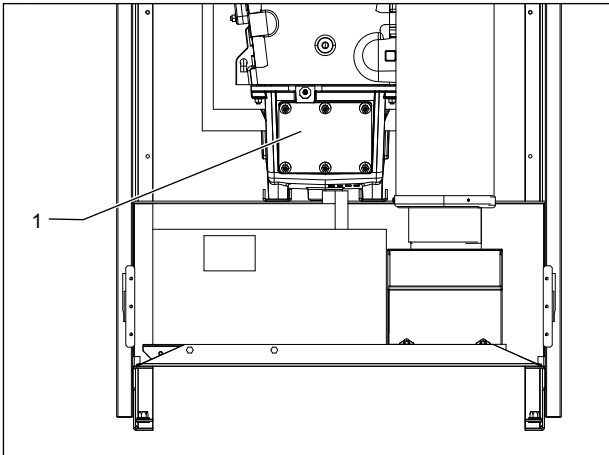


This should also be mentioned on the service report of the boiler. During maintenance gas, air, flue gas and condensate connections are loosened and remounted. Make sure all the components are mounted gas-/water tight before recommissioning the boiler.



Cleaning the condensate collector

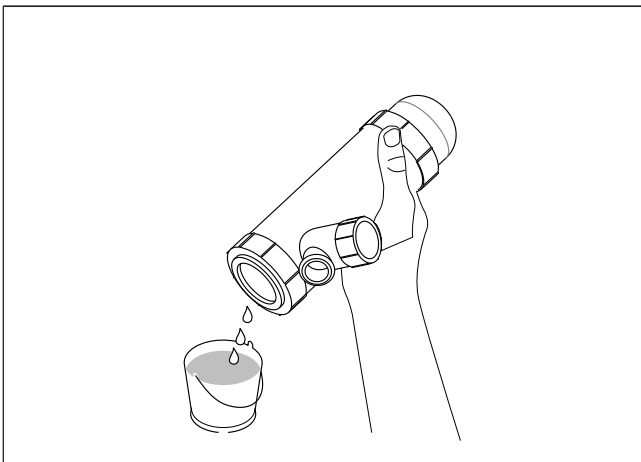
Clean the condensate collector by removing the inspection cover (next to the flue gas discharge) and then rinsing the collector with water.



condensate collector inspection cover

Cleaning the syphon

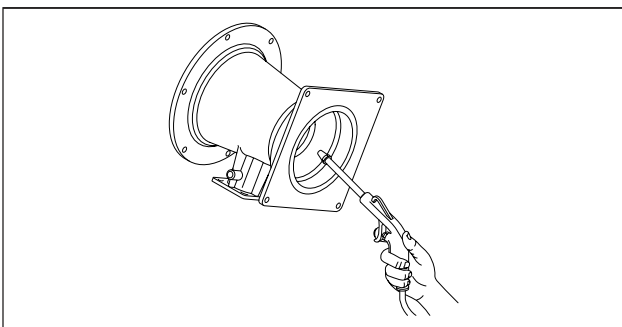
Remove the complete syphon (located underneath condensate collector beneath the flue connection) Remove syphon, clean and refill with clean water and re-fit.



siphon being emptied

Cleaning the venturi

Use compressed air or a synthetic brush to clean venturi – Make sure that the silicon hose between gas valve and venturi is clear and in good condition.



venturi cleaned with compressed air

Cleaning the fan

Use compressed air or a synthetic brush to clean fan, **be careful not to disturb the balance clips on the vanes**

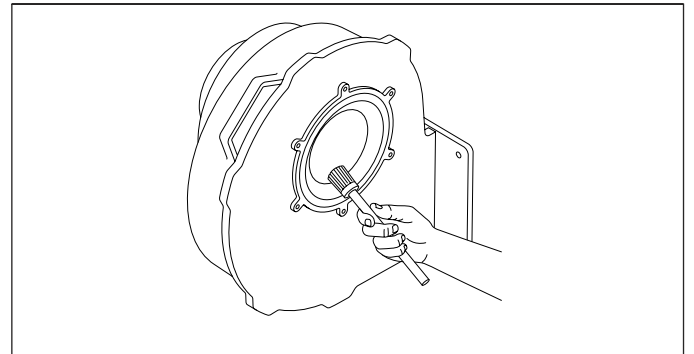
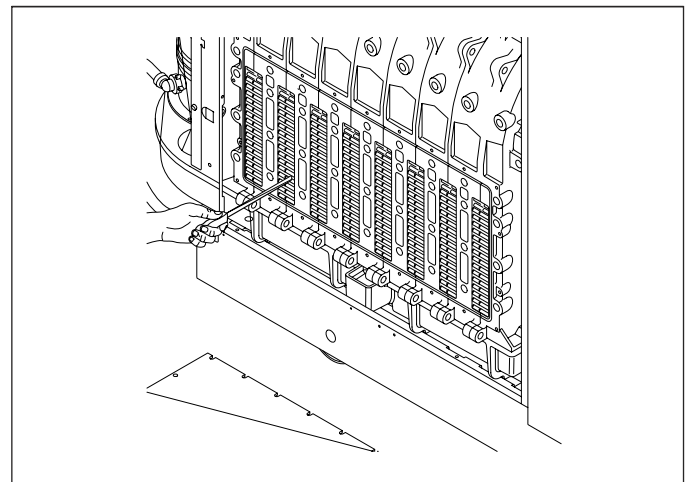


fig. 31 fan being cleaned with soft brush

Cleaning the heat exchanger

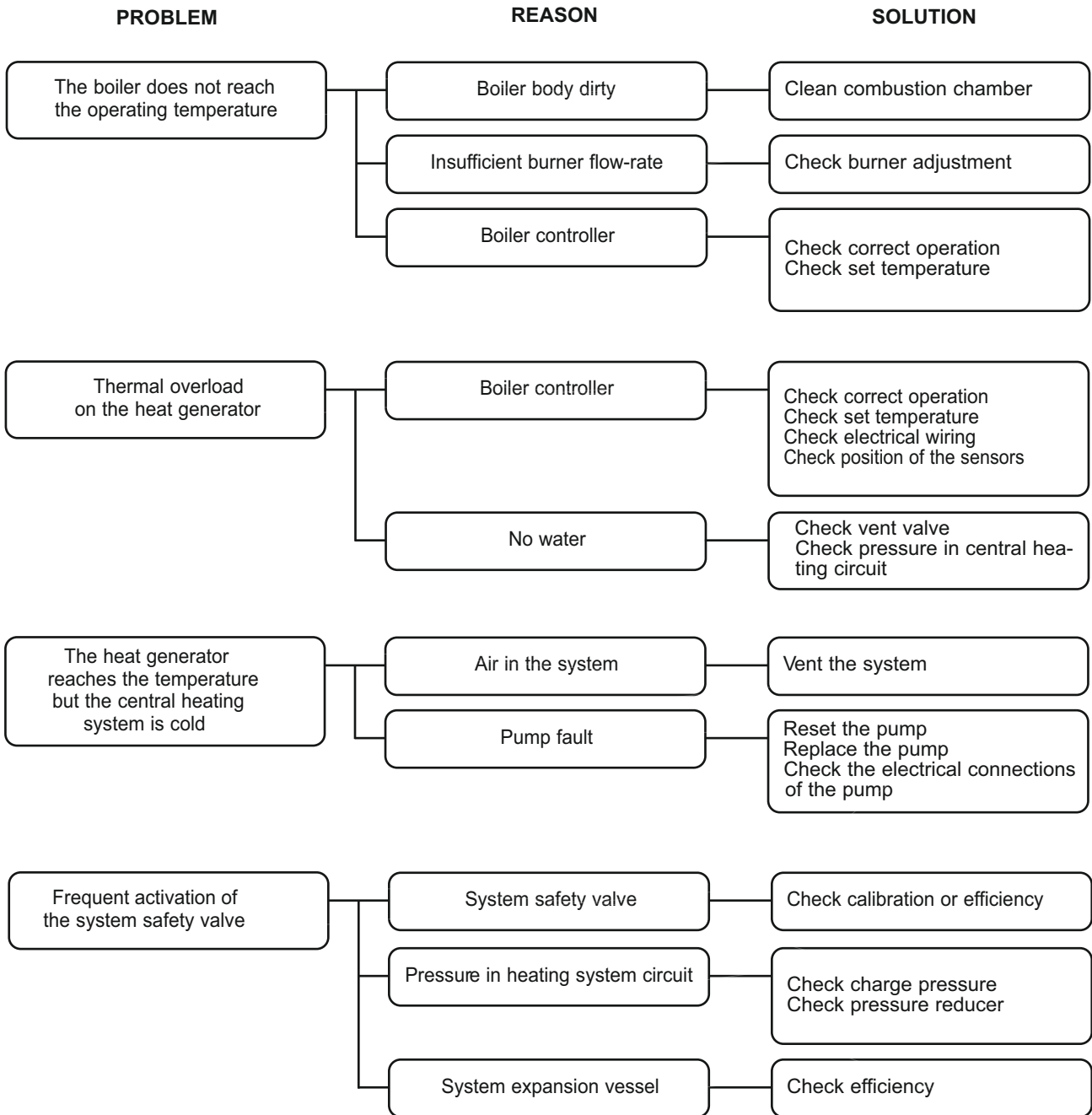
Release the retaining nuts from heat exchanger cover plate, remove plate, be careful not to damage the gasket, store safely.

Heat exchanger can be washed with clean water, if badly contaminated, clean with a small stiff bristle “bottle type” brush or use the special cleaning tool (supplied optional). Care should be taken when using water in the confined space of the boiler casing to avoid contaminating the electrical controls. Compressed air can also be used but care should be taken to ensure disturbed dust etc does not contaminate the rest of boiler and controls. Replace the heat exchanger front plate after the cleaning and tighten the retaining nuts.



heat exchanger opened up for cleaning

PROBLEM	REASON	SOLUTION
Smell of gas	Gas supply circuit	Check the tightness of the joints and that the pressure test points are closed
Smell of unburned gas	Flue gas circuit	Check: - The tightness of the joints - The absence of obstructions - The quality of combustion
Irregular combustion	Burner gas pressure	Check adjustment
	Diaphragm installed	Check diameter
	Condition of the burner and exchanger	Check they are clean
	Exchanger openings blocked	Check the openings are clean
	Fan fault	Check operation
Delays in ignition with pulsating operation of the burner	Burner gas pressure	Check adjustment
	Ignition electrode	Check positioning and condition
The boiler becomes dirty in a short time	Combustion	Check flame colour Check combustion adjustments
The burner does not start when receiving the signal from the boiler controller	Gas valve	Check that 230 V AC is present at the terminals on the gas valve; check wiring and connections
The boiler does not start	No power supply (the display is blank)	Check: - electrical connections - fuse
The pump does not start	Pump fault	Reset the pump Replace the pump Check the electrical connections of the pump



GAS BOILER COMMISSIONING CHECKLIST

BOILER SERIAL No: _____ **BOILER MODEL:** _____

CONTROLS To comply with the Building Regulations, each section must have a tick in one or other of the boxes

TIME & TEMPERATURE CONTROL TO HEATING	ROOM T/STAT & PROGRAMMER/TIMER <input type="checkbox"/>	PROGRAMMABLE ROOMSTAT <input type="checkbox"/>
TIME & TEMPERATURE CONTROL TO HOT WATER	CYLINDER T/STAT & PROGRAMMER/TIMER <input type="checkbox"/>	COMBI BOILER <input type="checkbox"/>
HEATING ZONE VALVES	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>
HOT WATER ZONE VALVES	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>
THERMOSTATIC RADIATOR VALVES	FITTED <input type="checkbox"/>	
AUTOMATIC BYPASS TO SYSTEM	FITTED <input type="checkbox"/>	NOT REQUIRED <input type="checkbox"/>

FOR ALL BOILERS CONFIRM THE FOLLOWING

THE SYSTEM HAS BEEN FLUSHED IN ACCORDANCE WITH THE BOILER MANUFACTURER'S INSTRUCTIONS?

THE SYSTEM CLEANER USED _____

THE INHIBITOR USED _____

FOR THE CENTRAL HEATING MODE, MEASURE & RECORD

GAS RATE _____ m³/hr _____ ft³/hr

BURNER OPERATING PRESSURE (IF APPLICABLE) N/A _____ mbar

CENTRAL HEATING FLOW TEMPERATURE _____ °C

CENTRAL HEATING RETURN TEMPERATURE _____ °C

FOR COMBINATION BOILERS ONLY

HAS A WATER SCALE REDUCER BEEN FITTED? YES NO

WHAT TYPE OF SCALE REDUCER HAS BEEN FITTED? _____

FOR THE DOMESTIC HOT WATER MODE, MEASURE & RECORD

GAS RATE _____ m³/hr _____ ft³/hr

MAXIMUM BURNER OPERATING PRESSURE (IF APPLICABLE) N/A _____ mbar

COLD WATER INLET TEMPERATURE _____ °C

HOT WATER OUTLET TEMPERATURE _____ °C

WATER FLOW RATE _____ lts/min

FOR CONDENSING BOILERS ONLY CONFIRM THE FOLLOWING

THE CONDENSATE DRAIN HAS BEEN INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS? YES

FOR ALL INSTALLATIONS CONFIRM THE FOLLOWING

THE HEATING AND HOT WATER SYSTEM COMPLIES WITH CURRENT BUILDING REGULATIONS

THE APPLIANCE AND ASSOCIATED EQUIPMENT HAS BEEN INSTALLED AND COMMISSIONED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS

IF REQUIRED BY THE MANUFACTURER, HAVE YOU RECORDED A CO/CO₂ RATIO READING? N/A YES _____ CO/CO₂ RATIO

THE OPERATION OF THE APPLIANCE AND SYSTEM CONTROLS HAVE BEEN DEMONSTRATED TO THE CUSTOMER

THE MANUFACTURER'S LITERATURE HAS BEEN LEFT WITH THE CUSTOMER

COMMISSIONING ENG'S NAME PRINT _____ DATE _____

SIGN _____

SERVICE INTERVAL RECORD

It is recommended that your heating system is serviced regularly and that you complete the appropriate Service Interval Record Below.

Service Provider. Before completing the appropriate Service Interval Record below, please ensure you have carried out the service as described in the boiler manufacturer's instructions. Always use the manufacturer's specified spare part when replacing all controls

SERVICE 1 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 2 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 3 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 4 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 5 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 6 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 7 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 8 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 9 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE

SERVICE 10 DATE

ENGINEER NAME

COMPANY NAME

TEL No.

CORGI ID CARD SERIAL No.

COMMENTS

SIGNATURE



firstcontact@gassero.com

Gassero Isı Teknolojileri Sanayi Limited
Istanbul Endüstri ve Ticaret Serbest Bölgesi (FREE ZONE)
4. Sok. Parsel 110, 34957 Tuzla, Istanbul, Turkey

T: +90 216 394 09 85

www.gassero.com

