EN

SUPERBOX

FLOOR STANDING CONDENSING BOILERS

INSTALLATION AND USER MANUAL

SUPERBOX 150
SUPERBOX 500
SUPERBOX 1000 V
SUPERBOX 1000 H

CE

Gassero
technology for your comfort

CONTENTS

IMPORTANT

PLEASE READ INSTRUCTIONS BELOW CAREFULLY BEFORE THE INSTALLATION AND USAGE

1. **THIS MANUAL IS AN INSEPARABLE PART OF THE BOILER AND HAS TO BE STORED TOGETHER WITH THE BOILER. IF THIS MANUAL DAMAGED OR LOST CONTACT GASSERO FOR A NEW COPY.**
2. **THE INFORMATION AND INSTRUCTIONS THAT ARE SPECIFIED IN THIS USER'S MANUAL APPLY ONLY FOR THE BOILER MODELS SPECIFIED IN PAGE 3.**
3. **THE INSTALLATION OF THIS BOILER MUST BE MADE IN ACCORDANCE WITH THE CE DIRECTIVES AND THE LOCAL GAS ORGANIZATIONS' INSTRUCTIONS BY AUTHORIZED SERVICES.**
4. **SPECIFIED GAS MUST BE SUPPLIED BY AUTHORIZED GAS ORGANIZATIONS BEFORE THE COMMISSIONING OF THE BOILER.**
5. **COMMISSIONING OF THE BOILER MUST BE MADE BY GASSERO'S AUTHORIZED SERVICES. OTHERWISE BOILER WARRANTY WILL BE CANCELLED.**
6. **THE MANUFACTURER IS NOT THE RESPONSIBLE OF THE DAMAGE DUE TO WRONG OR IMPROPER INSTALLATION OF THE BOILER.**
7. **SOME PARTS OF THE PURCHASED BOILER COULD BE DIFFERENT THAN SHOWN BOILER PARTS IN THIS MANUAL.**
8. **MANUFACTURER (GASSERO) RESERVES THE RIGHT TO CHANGE THIS USER'S GUIDE WITHOUT NOTICE.**
9. **LIFE TIME OF THE BOILER IS 10 YEARS IF ALL OF THE INSTRUCTIONS FOLLOWED ACCORDING TO THIS USER MANUAL.**
10. **BOILER MAINTENANCE MUST BE MADE AT LEAST ONCE IN A YEAR.**

1. MEANINGS OF THE SYMBOLS AND SAFETY

1.1 MEANINGS OF THE SYMBOLS

The symbols which are used in this document and their meanings are as follows:

DANGER : Actions that are certainly not to be done. Material damage and severe personal damage may occur.

ELECTRICAL HAZARD: Danger of death or serious injury due to electric shock.

WARNING: Danger of material damage or damage to the environment.

Refers to the **Information / Recommendations** to be considered by the user

1.2 GENERAL WARNINGS

Your boiler must be used in accordance with the instructions and purposes specified in the user manual. The manufacturer cannot be held liable for damage to the people, animals and property due to improper installation, subsequent repairs and modifications.

Boiler may not be used by persons with inadequate physical, mental and perceptual capacity and without experience and knowledge.

1.3 SAFETY INSTRUCTIONS

IF GAS SMELLS:

- Do not open or close the power switches, do not touch the plugs or sockets.
- Do not smoke
- Do not use your phone
- Close the gas valve immediately
- Ventilate the space by opening the doors and windows.
- Notify everyone in the building.
- Call the emergency service of the gas distribution company you are connected to. Do not allow anyone to enter the boiler room until the emergency service arrives.
- If there is a sealing due to gas leakage, do not disassemble the seal, contact the gas distribution company to disassemble the seal after necessary repair.
- The smell of the waste gas formed after burning with natural gas may resemble each other. Never use the boiler in the event of a leak in the waste gas system.

IF WATER LEAKAGE OCCURS IN THE BOILER:

- Switch off the electrical and water connections of the boiler and notify the authorized service.
- Condensation water formed after combustion is corrosive and corrosive. In case of leakage or leakage of this water, inform the authorized service.

IF ELECTRICAL LEAK OCCURS IN THE BOILER:

- Never touch the boiler.
- Lower the main switch on the board and notify the authorized service.
- Do not touch the pipes or the chimneys. (there may be a ground fault)
- Do not cut, pull, or bend the cables even if the switch is lowered and the power cut off.

DON'T TOUCH THE BOILER WHEN YOUR HANDS ARE WET OR STEPPING ON A WET AREA.

1.4 STANDARTS AND REGULATIONS

This boiler is manufactured in accordance with the following directives and standards:

EN 15502-1+A1	
EN 15502-2-1+A1	
(EU) 2016/426	Gas Appliances Regulation (GAR)
2014/30/EU	Electromagnetic Compatibility (EMC)
2014/35/EU	Low Voltage Directive (LVD) 92/42/EEC
	Boiler Efficiency

These installation and maintenance instructions are prepared for the Floor Standing condensing boilers specified below:

SUPERBOX 150
SUPERBOX 500
SUPERBOX 1000 V
SUPERBOX 1000 H

CE LABEL:
This boiler complies with the essential requirements of the relevant European directives. The CE marking certifies that the products meet the essential requirements of the applicable regulations in accordance with the type of label. Manufacturer can be consulted for the declaration of conformity.

WARRANTY PERIOD AND LIFE TIME:
Warranty is 2 years from the date of invoice, unless other terms are agreed separately.
Service life of the boiler is 10 years (this period can be change according to the installation, water quality and other environmental conditions).

CONSUMER RIGHTS:
Consumers can apply for complaints and appeals to consumer courts and consumer arbitration committees.
In case of defective goods;
a) Withdraw from the contract by stating that it is ready to return the product;
b) If all costs incurred do not incur excessive costs,
to request free repair of the product,
c) Requesting the replacement of the product with a non-defective product,
One of the rights can be used.

2 GENERAL

2.1 PURPOSE OF DESIGN

Gassero **SUPERBOX** Floor Standing Condensing Boilers with Premix Burners are designed for heating purposes only. For hot water use, the boiler must also be connected to the DHW tank. Boiler can be used with in a cascade system or stand alone. Maximum 16 boilers can work together in cascade systems. Multi-purpose heating values can be achieved with cascade systems.

Examples of stand alone and cascade systems are shown in the SAMPLE INSTALLATION DIAGRAMS section.

For cascade systems, special cascade accessories such as mounting frame, horizontal flue elements, connection pipes between the boilers, main gas pipe and hydraulic mixer (balance vessel) have been developed. Such accessories make the cascade system easier to install with less effort. For more detailed information on cascade systems, please contact your dealer or manufacturer.

This boiler is not suitable for industrial purposes. The manufacturer cannot be held responsible for the problems caused by the usege except of the design purpose.

2.2 INTRODUCTION OF THE PRODUCT

SUPERBOX is a condensing boiler which is modulated with a stainless steel heat exchanger and pre-mix burner for central heating and (optional) hot water production.

BASIC FEATURES OF SUPERBOX BOILERS:
- % 107 boiler efficiency through premix burner (See the technical table)
- **1/7** turndown ratio and NOx 6 emission class for **SUPERBOX 150**
- **1/18** turndown ratio and NOx 6 emission class for **SUPERBOX 500**
- **1/36** turndown ratio and NOx 6 emission class for **SUPERBOX 1000 V/H**

- Through intelligent electronic control panel, it has 13 safety systems and 3 separate zone control options
- Room thermostat and outside temperature sensor provide comfortable economic heating
- Besides the ease of operation via smart digital panel, it provides fault and error detection
- Web server provides remote control of the boiler
- Solar systems and pool temperature can be operated on the same control panel

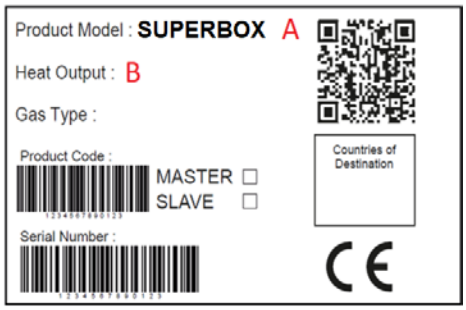
SUPERBOX MODEL BOILERS ARE DESIGNED TO WORK ONLY WITH NATURAL GAS.
They cannot be used with LPG.

2.3 BOILER ROOM AND VENTILATION

- This boiler provides IPX4D electrical protection class. Check that the place where the boiler is located complies with this protection class.
- Boilers must be placed 200 mm away from flammable materials with flammability class B, C1, C2.
- Boilers must be placed 400 mm away from the easily flammable materials of the C3 class which can be ignited by themselves or by ignition sources..
- Never switch off the power supply of the boiler when the air temperature falls below 0°C against the risk of freezing. Read the FROST PROTECTION section.
- **SUPERBOX** condensing boilers must be installed in spaces that have the necessary ventilation openings according to current standards and applicable regulations
- Do not modify the ventilation openings, ventilation ducts, ventilation vents and do not block them after the commissioning.
- Never use the boiler in places where excessive amounts of dust are stored, where barber shops, corrosive, explosive chemicals are stored or used.
- If the boiler receives the combustion air from the environment, there should not be any low pressure due to other systems / boilers in the boiler room.
- The boiler must be installed in accordance with the electrical voltages, gas and water pressures specified in the technical table.
- Grounding of the electrical line is mandatory.
- Never switch off the mains when the boiler is in operation. Such behavior may cause abnormal heat build-up and damage the heat exchanger and other units of the system.

2.4 WARNING LABEL

2.5 PACKAGING LABEL



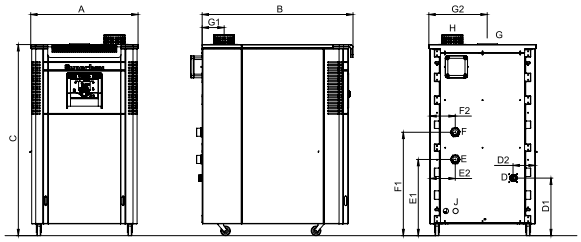
2.6 INFORMATION LABEL

A	B	C	D	E	F	G	H	I
150	150	460	21	143	19,5	138	22,7	150
500	527,4	900	27,21	498,5	26,25	481,67	29,11	527,35
1000 V / H	1052	1440	27,2	996,9	26,3	962,1	29,1	1051,9

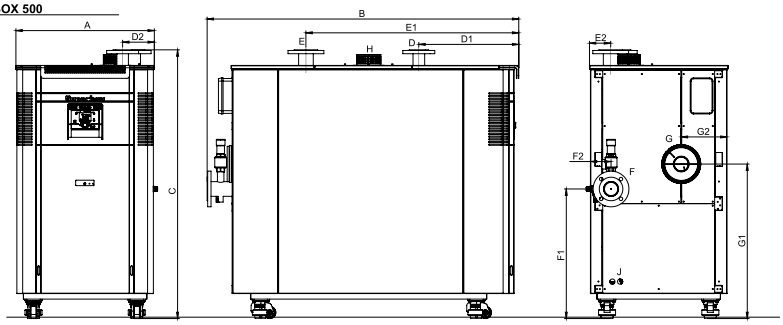
3 TECHNICAL SPECIFICATIONS

3.1 DIMENSIONS

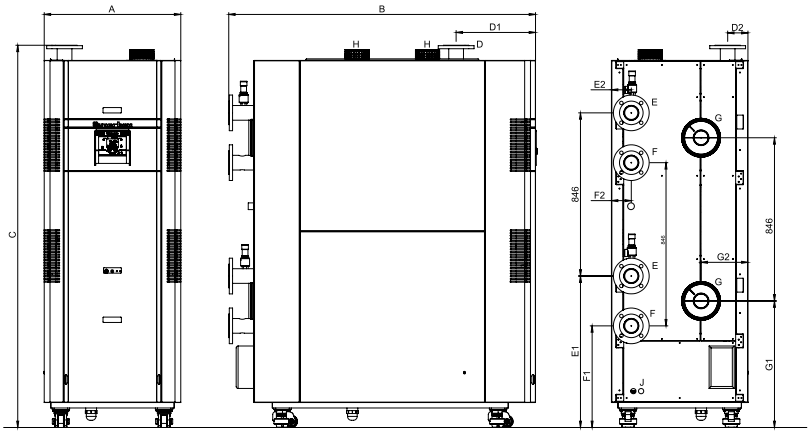
SUPERBOX 150



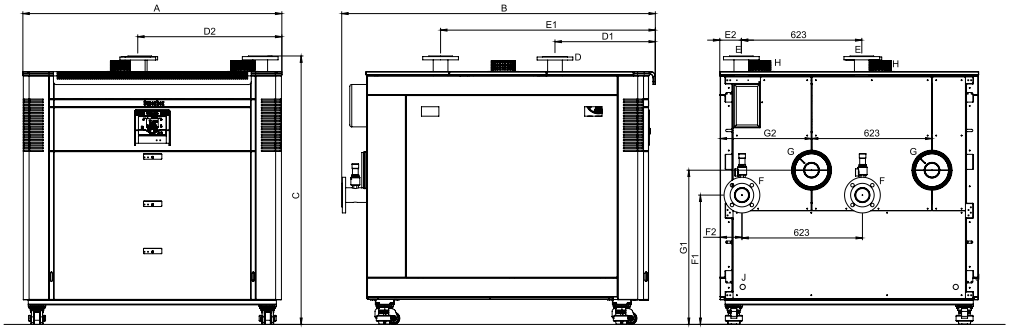
SUPERBOX 500



SUPERBOX 1000V



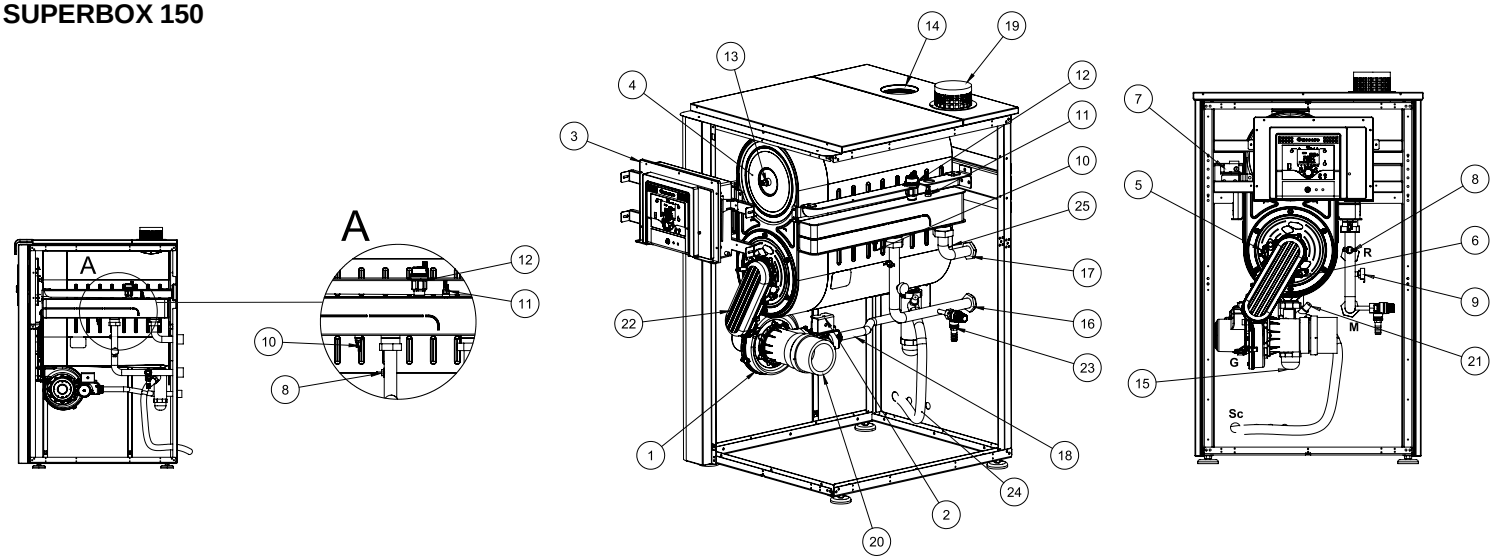
SUPERBOX 1000H



	SUPERBOX 150	SUPERBOX 500	SUPERBOX 1000 V	SUPERBOX 1000 H
A (Width)	555mm	715mm	706mm	1340mm
B (Length)	780mm	1610mm	1585mm	1620mm
C (Height)	990mm	1394mm	1980mm	1390mm
D (Gas inlet)	1"	DN50(PN16)	DN65(PN16)	DN65(PN16)
D1	298mm	515mm	410mm	518mm
D2	115mm	165mm	105mm	745mm
E (Water outlet Conn.)	1 1/4"	DN65(PN16)	DN65(PN16)	DN65(PN16)
E1	395mm	1100mm	786mm	1110mm
E2	130mm	110mm	103mm	112mm
F (Water inlet conn.)	1 1/4"	DN65(PN16)	DN65(PN16)	DN65(PN16)
F1	536mm	672mm	527mm	672mm
F2	131mm	107mm	103mm	113mm
G (Flue diameter)	Ø100mm	Ø180mm	Ø180mm	Ø180mm
G1	113mm	801mm	656mm	801mm
G2	302mm	236mm	242mm	472mm
H (Air intake)	Ø110mm	Ø100mm	Ø100mm	Ø100mm
J (Condensate drain)	Ø25mm	Ø25mm	Ø25mm	Ø25mm

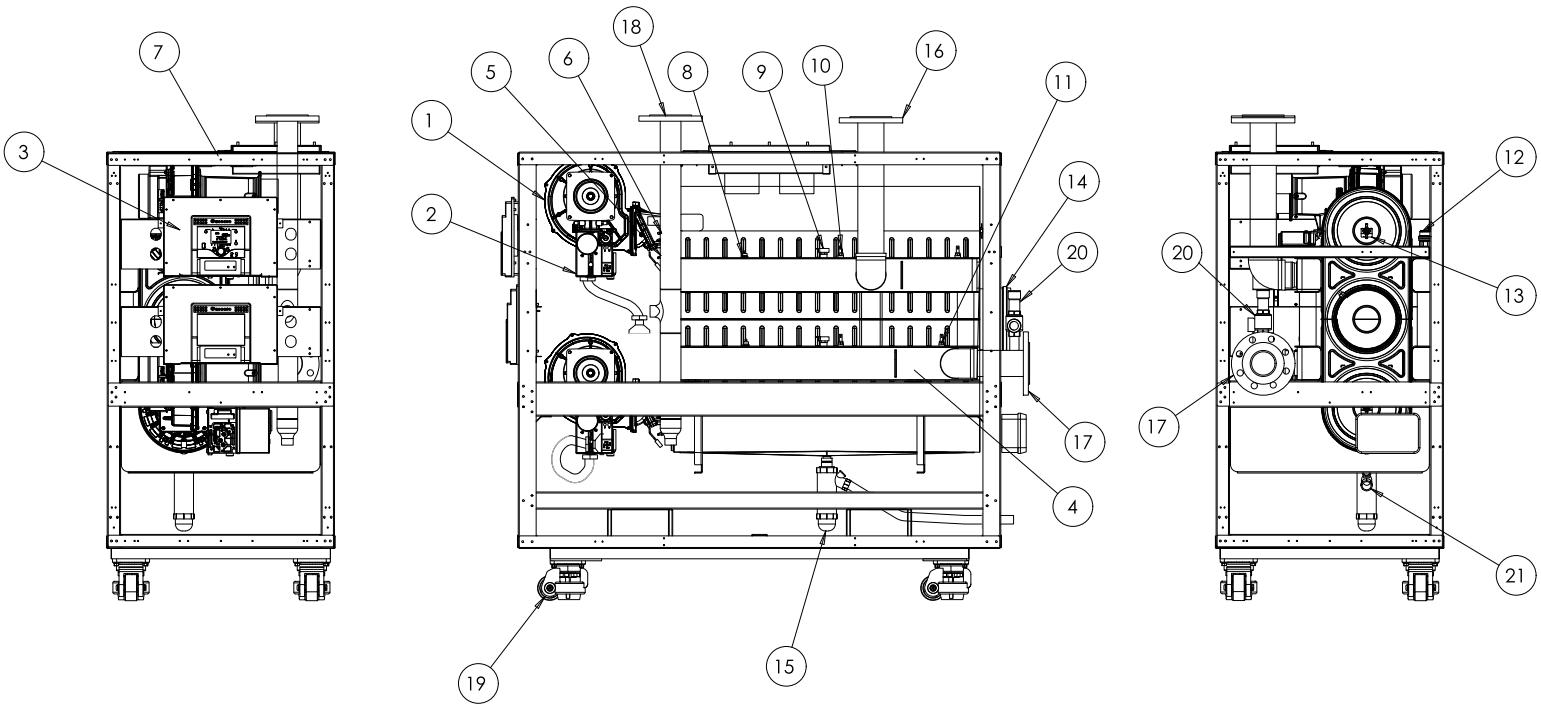
3.2 MAIN COMPONENTS

SUPERBOX 150



1- Fan
2- Gas Valve
3- Control panel
4- Heat Exchanger
5- Ionization electrode
6- Ignition electrode
7- Ignition transformer
8- Limit thermostat
9- Pressure sensor
10- Flow NTC sensor
11- Return NTC sensor
12- Automatic air vent
13- Thermalfuse
14- Flue gas outlet
15- Syphon
16- Water outlet connection
17- Water inlet connection
18- Gas inlet
19- Air intake
20- Venturi
21- Syphon sensor
22- Air gas mix pipe
23- Pressure safety valve
24- Drain hose
25- Over heat sensor

SUPERBOX 500



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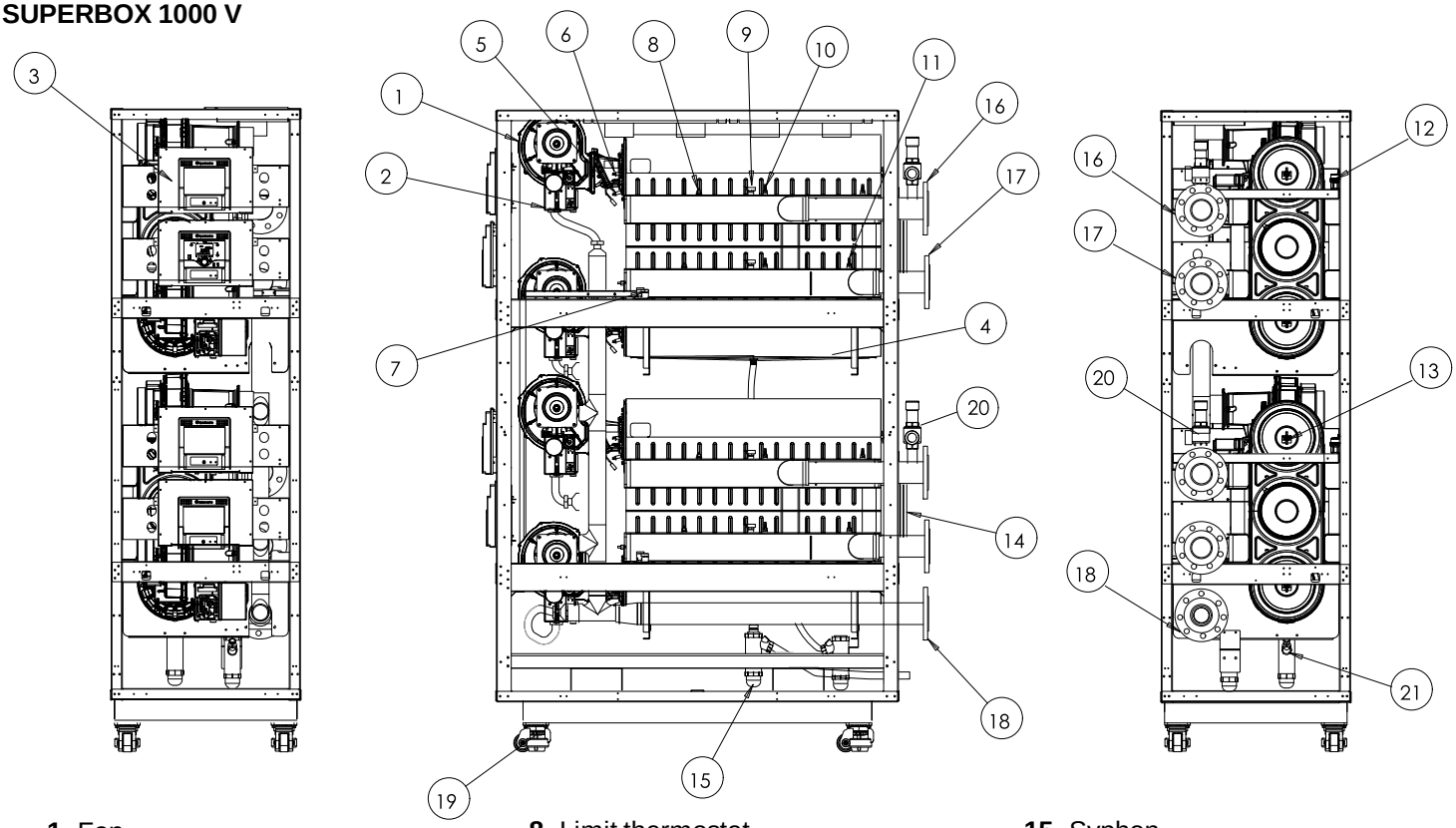
11- Return NTC sensor
12- Automatic air vent
13- Thermalfuse
14- Flue gas outlet
15- Syphon
16- Water outlet connection
17- Water inlet connection
18- Gas inlet
19- Wheel
20- Pressure safety valve
21- Syphon sensor

SUPERBOX 1000 V



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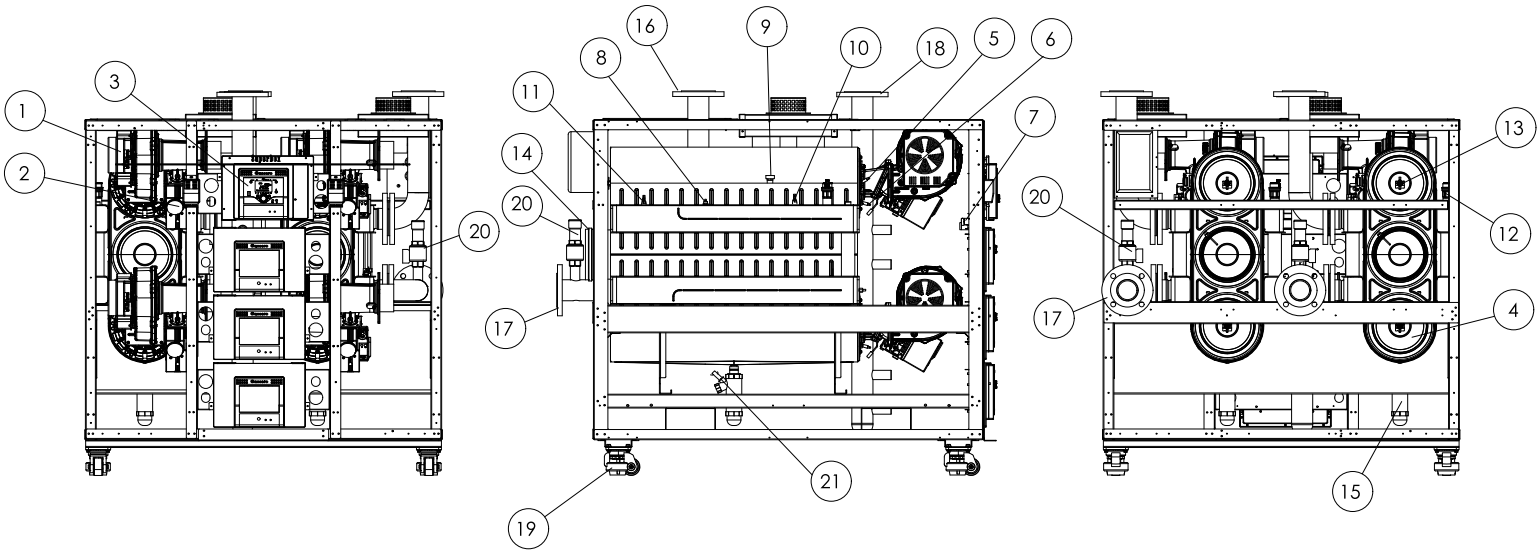
16- Water outlet connection
17- Water inlet connection
18- Gas inlet
19- Wheel
20- Pressure safety valve
21- Syphon sensor

SUPERBOX 1000 H



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6- Ignition electrode
7- Ignition transformer
8- Limit thermostat
9- Pressure sensor
10- Flow NTC sensor
11- Return NTC sensor
12- Automatic air vent
13- Thermalfuse
14- Flue gas outlet
15- Syphon
16- Water outlet connection
17- Water inlet connection
18- Gas inlet
19- Wheel
20- Pressure safety valve
21- Syphon sensor

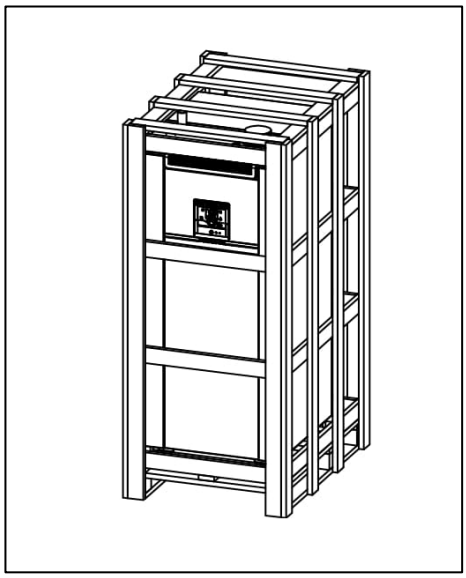
3.3 TECHNICAL TABLE

		SUPERBOX 150	SUPERBOX 500	SUPERBOX 1000 V SUPERBOX 1000 H
Thermal Specifications				
Nominal heat input Qn	kW	21,00/143,00	27,21/498,50	27,21/996,85
Nominal Heat Output Pn (80/60°C)	kW	19,50/138,00	26,25/481,67	26,25/962,14
Nominal Heat Output Pnc (50/30°C)	kW	22,70/150,00	29,11/527,35	29,09/1051,86
Heating efficiency ηu,n (80/60°C)	%	96,49/97,68	96,53/96,62	96,50/96,52
Heating efficiency ηu,n (50/30°C)	%	106,49/105,30	106,53/105,51	106,60/105,28
Partial load efficiency ηu (36/30°C)	%	108,34	106,96	106,91
Turndown ratio		15-100	6-100	3-100
Hydraulic Specifications				
Working water pressure	bar	0,80/6,00	0,80/6,00	0,80/6,00
Water flow rate	m^3/h	0,86/6,31	1,13/21,44	1,13/42,76
Pump delivery head	mWC	8,60	7,20	7,20
Max. operating temp.	˚C	90	90	90
Limit thermostat shut off temp.	˚C	105	105	105
Heat exchanger water volume	lt	11,4	69,8	139,6
Hydraulic loss	kPa	46,00	32,00	32,00
Gas and combustion Specifications				
Gas type		G20	G20	G20
Gas supply pressure (G20/G31)	mbar	20	20	20
Flue Type		B23/C13/C33/C43 C53/C63/C83	B23	B23
Flue gas pressure	Pa	310,00	100,00	100,00
Combustion products mass flow rate	g/sn	9,70/67,30	12,60/226,70	12,60/449,10
CO2 emission	%	9,35/9,78	9,00/9,20	9,00/9,20
CO emission	ppm	0,00/208,00	3,00/105,00	5,00/122,00
O2	%	4,33/3,45	4,95/4,65	4,90/4,55
Flue gas temp. (80/60˚C) (min/max)	˚C	62,90/77,70	59,80/80,30	59,70/80,50
Flue gas temp. (50/30˚C) (min/max)	˚C	38,10/65,80	30,60/43,20	30,60/43,90
NOx class		6	6	6
NOx value	mg/kWh	37,00	45,00	53,00
Gas comsumption	m^3/h	2,13/14,66	2,83/51,82	2,83/103,59
Connection Specifications				
Boiler water inlet/outlet diameter	DN	32/32	65/65	65/65
Air inlet/ flue outlet diameter	mm	110/100	100/180	100/180
Gas supply diameter	DN	25	50	65
Electrical Specifications				
Power supply	V/Hz	230/50	230/50	400/50
Electrical consumption (Max)	W	461,00	900,00	1440,00
General Specifications				
Energy efficiency class		A	A	A
Sound power level (Lwa)	dB(A)	61,70	68,30	72,10
Sound pressure level (from 1m distance)	dB(A)	53,72	60,32	64,12
Boiler dimensions (Width/Length/Height)	mm	555x780x990	715x1610x1394	1340x1620x1390
Boiler weight (Net)	kg	110	522	640
Packaging Specifications				
Packing dimensions (Width/Length/Height)	mm	705x980x1240	906x1700x1520	906x1700x2250
Boiler weight (Gross)	kg	145	620	755

4 INSTALLATION INTRODUCTIONS

4.1 INSTALLATION

4.1.1 PACKAGING



SUPERBOX boilers are shipped on pallets as they are completely assembled, tested and protected against damage by wooden frame and nylon.

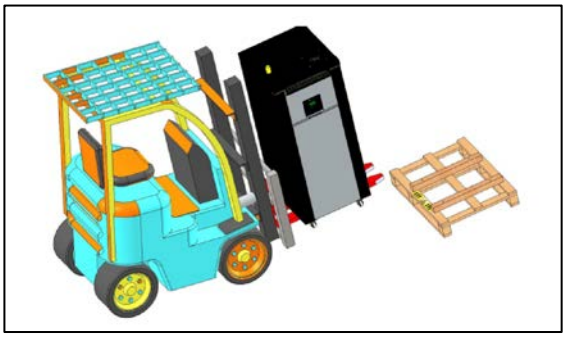
PACKAGE INCLUDED :

- User manual / Warranty certificate
- Outdoor sensor
- Immersion type temperature sensor
- DHW sensor (optional)
- Air inlet filter (optional)

At any stage should not put anything else on the boiler, stacking should not be done.

When the boiler is unpacked, check the contents of the package, contact the dealer if there is any damage or missing components.

4.1.2 CARRYING



- The boiler can be moved with a fork-lift or pallet truck as shown. In such transports, the boiler must be properly fixed and secured.
- The boiler must not be shaken or laid on its side during transport.
- The boiler can also be moved on its own wheels after being lowered.
- The wheels must always be secured and fixed when the transport is finished.

During the transportation, safety rules must be followed, and care must be taken against injuries and crushing.
The manufacturer cannot be held liable for damage to people, animals or property due to transportation faults.

4.1.3 MOUNTING

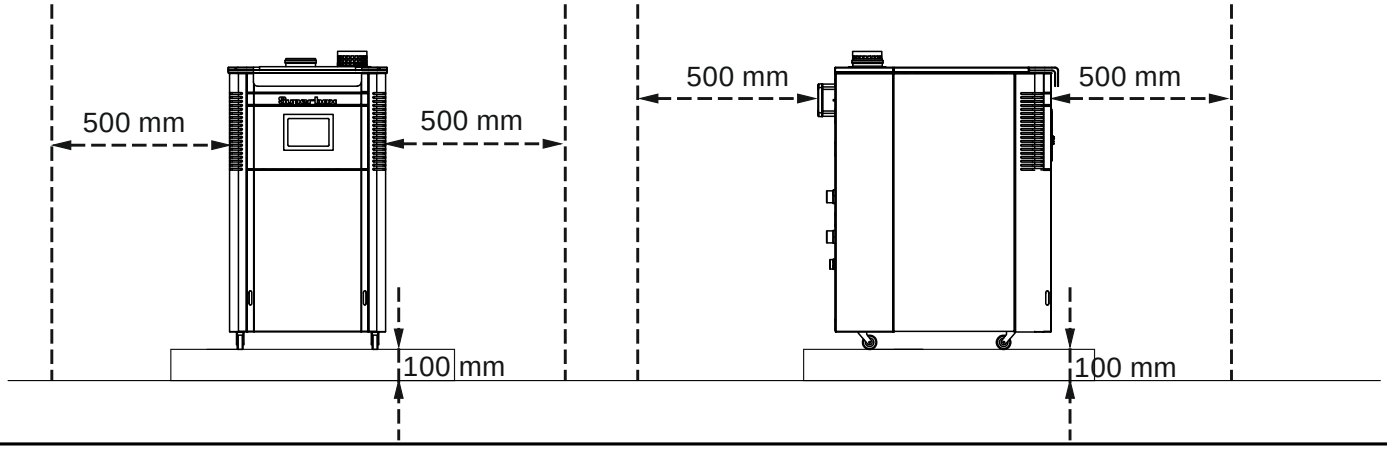
MINIMUM DISTANCES:

Gaps required for the installation, service and maintenance are indicated left side.

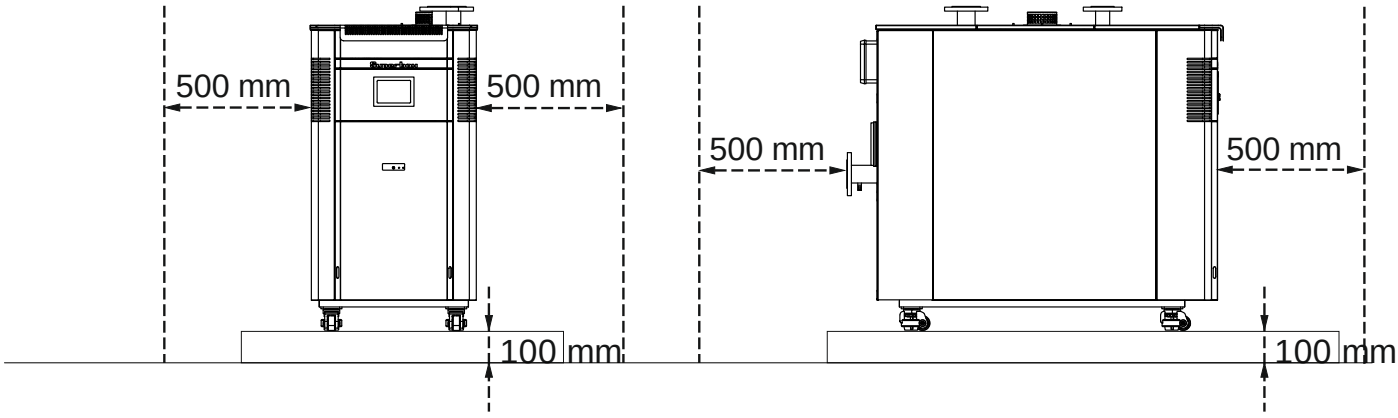
- The installation and chimney pipes must be connected in such a way that they do not interfere with the service and maintenance operations.
- If the chimney connections are at the top of the boiler, the detachability of the boilers' top covers should be checked.
- The gas regulator must be installed at least 1 meter away from the boiler.

In order to protect the boiler from water, it is recommended to place the boiler on a base with 10cm high and suitable width for the boiler.

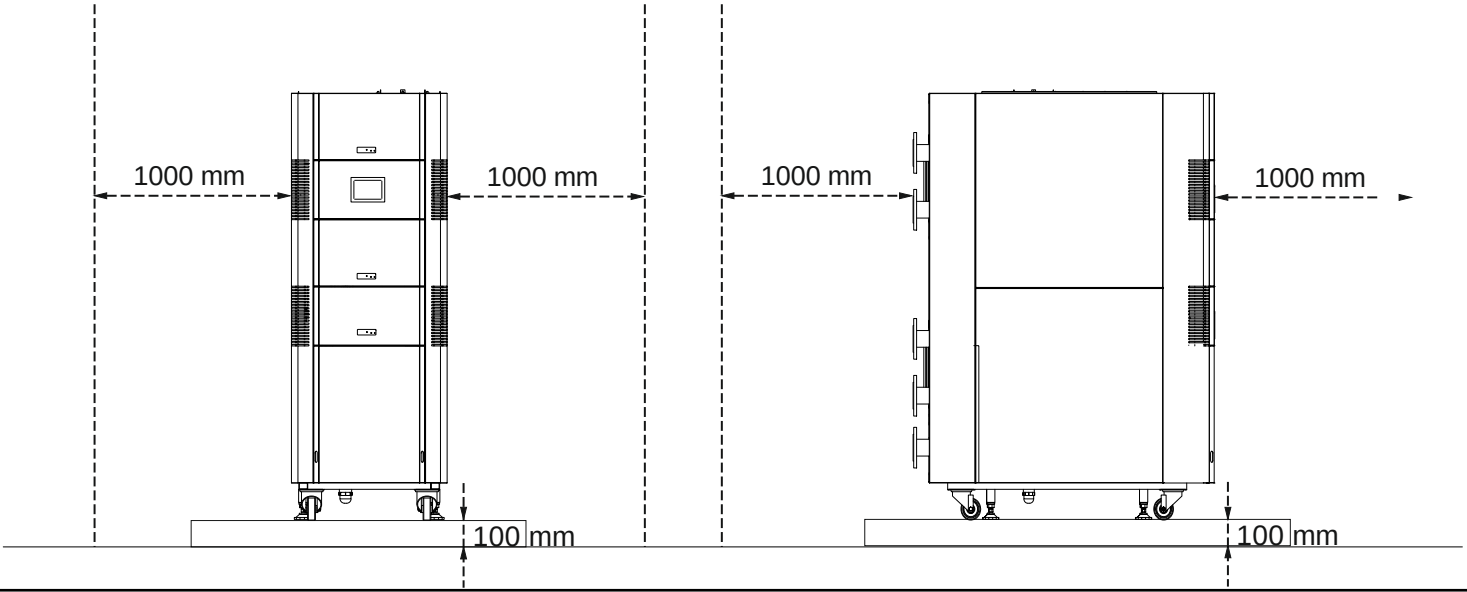
SUPERBOX 150



SUPERBOX 500 - 1000 H



SUPERBOX 1000 V



4.1.4 WATER QUALITY AND TREATMENTS

Paying attention to the following issues related to water quality will greatly reduce the problems that may arise during the life time of the boiler and ensure the continuity of the working efficiency:

- Piping and installation components must be cleaned before installation.
- In old installations, iron oxide, sludge, sediment and similar deposits should be cleaned.
- The water in the system should be analyzed in terms of hardness, pH, iron content and conductivity.

Gassero Water Specification

	Total Hardness °d	pH	Iron (Not Diluted)	Conductivity
STAINLESS EXCHANGER	1,00	7,5-9,5	<10ppm	≤2000µS/cm
ALUMINUM EXCHANGER	1,00	6,5-8,5	<10ppm	≤2000µS/cm

If all or a part of the heating installation is to be operated by UNDERFLOOR HEATING SYSTEM, PLATE HEAT EXCHANGER should be used and the system should be separated from each other as primary and secondary.

Faults that may arise if the water conditions are not in accordance with the values specified in the table, boiler will be considered out of warranty.

DYNAMIC AND CHEMICAL WASHING / FLUSHING:
In the newly established systems, to aviod the possible substances in the installation (metal shavings, some oils, residues of construction wastes etc.) flushing treatment is a mandatory.
Likewise, it is a mandatory to apply the flushing treatment without water given to the boiler in conversion of older systems.
The methods of washing / flushing are described in detail in the manual GASSERO DYNAMIC AND CHEMICAL WASHING / FLUSHING.
Neutral-based, non-acidic, non-alkaline registered products can be used to clean the installation or keep the water conditions at desired levels. You can get information from GASSERO for cleaner, preservative or inhibitor type (stopper, preventive) products or you can contact with SENTINEL or FERNOX companies.

4.2 HYDRAULIC CONNECTIONS

According to the current legislation; total heating capacity of the boiler or cascade system must be calculated to meet the building's heat demand. All necessary components must be installed and supplied correctly in the installation in a manner to perform their duty. Protective and safety devices must be used in the heating system as described in the current legislation.

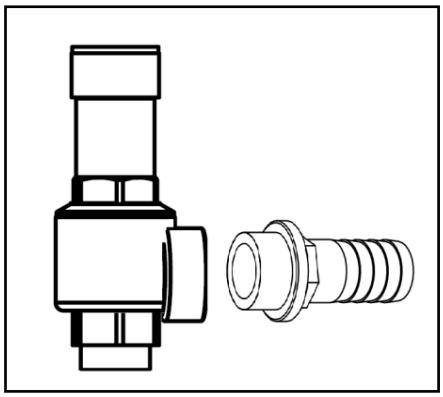
In order to separate the boiler from the installation, two ball valves should be placed on the supply and the return lines.

4.2.1 EXPANSION TANK

SUPERBOX **b**oilers do not have an expansion tank. So the capacity of the expansion tank should be selected according to the capacity of the heating system and the static pressure.

It is recommended to place the expansion tank on the turn of the central heating system.

4.2.2 SAFETY VALVE

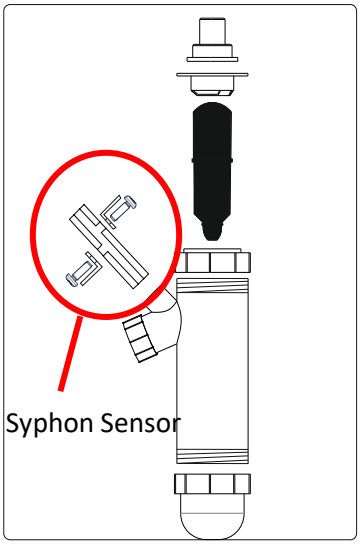


SUPERBOX boilers are equipped with a safety valve. The hose of this safety valve must be connected to a drain. Manufacturer cannot be held liable for damages caused by water flow into the boiler or on the ground when excessive pressure is generated in the heating installation.

Safety valve must not be used as a means of draining water from the system.

Draining water of the safety valve can be very hot. Beware of scalding.

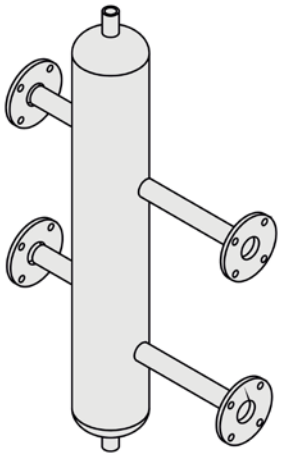
4.2.3 CONDENSATION WATER DRAIN



Condensation water which is generated during to the combustion, transfers to the water drain connection by the syphon and drain hose.
Condensation water is acidic and corrosive (approx. 2 ph). So all of the connections which are made for condensation water must be made with PP type pipes. Condensation water must be transferred to the drain with the shortest way possible. For health and environmental reasons it mustn't transfer such places near people, animals and plants.

- Condensation water must not be connected to rain drain systems.
- The condensate drain line must have a slope of at least 3%.
- A neutralization tank should be used for condensate water occurring in systems with a total power of 200 kW and above.
- It is mandatory to comply with the relevant local regulations for the discharge of condensate water.

4.2.4 HYDRAULIC SEPARATOR



These are used to compensate the pressure differences in systems where multiple pumps and / or heating circuits are used, to eliminate excessive pressure differences between boiler's inlet and outlet water temperatures and to prevent thermal stresses in the boiler.

- Dimensions, input and output distances should be selected correctly.
- Via a sensor to be placed on it, the general temperature of the system is determined by the hydraulic separator.
- There must be an automatic air relief valve on the hydraulic separator.

In case the water in the system is dirty, chalky or corrosive, plate heat exchanger should be used instead of balance container.

4.2.5 PLATE HEAT EXCHANGER

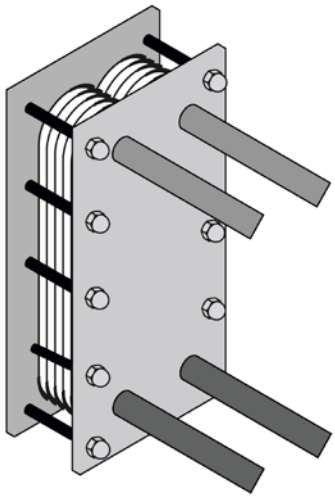


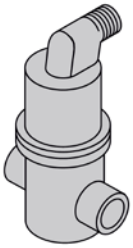
Plate heat exchangers are hydraulic equipments that separates the boiler and the installation (primary and secondary zones). Unlike the hydraulic separator circulating water in the plate heat exchanger never interfere with the water goes through the boiler and the water goes through the installation. Only heat transfer occurs here.
Preferred for many purposes;

- If the water in the system is very dirty, chalky or corrosive,
- If the working pressure of the system exceeds the working pressure of the boiler,
- If a part or all of the system is required to operate with lower temperature values. (eg. underfloor heating systems)

The plate heat exchanger must be used in the following cases and the system must be separated into primary and secondary.
-Heating systems which are consist of partly of fully floor heating,
-Used, older systems,
-Systems that are dirty, corrosive, bacterial and calcareous water.

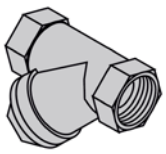
Periodic inspection and maintenance of the plate heat exchanger is highly important for the efficiency of the system.

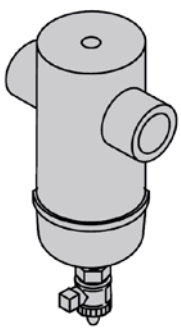
4.2.6 AUTOMATIC AIR RELIEF VALVE



SUPERBOX boilers have an automatic relief valve for the evacuation of the air accumulated in the heat exchanger. However, for the evacuation of the air that may occur in the installation, it is necessary to place one or more automatic air relief valves in the appropriate places of the installation. Local regulations must be followed in this regard.

4.2.7 DEPOSIT AND DIRT SEPARATOR



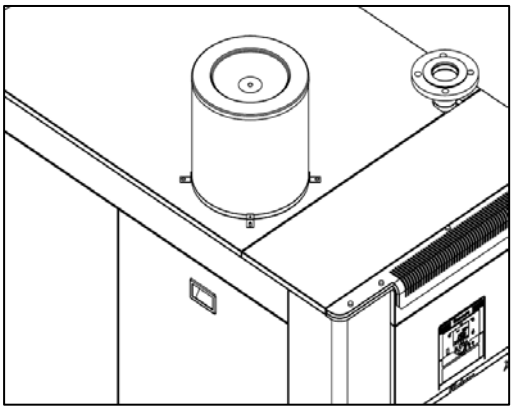


To remove the dirt and particles form the water, a strainer or deposit and dirt separator must be placed on the return line of the boiler.
When the dirt, particles and similar deposits in the system water are not cleaned;

- The efficiency of the system decreases,
- Installation equipments (pumps, valves, plate heat exchanger, etc.) may be damaged due to overheating
- A boiler damage may occur due to heat exchanger clogging. Manufacturer cannot be held liable for damages that may occur in such cases.

Strainers or deposit and dirt sepertors on the system should be checked frequently and cleaned if necessary.

4.2.8 AIR INLET FILTER (OPTIONAL)



If **SUPERBOX** boilers will be used in to a dirty air environment, they must be supported with the air inlet filters. This optional filter must be checked regularly.

When the air inlet filter becomes dirty;

- Emission values would be deteriorated and efficient combustion wouldn't be achieved.
- The accumulation of soot occurs in the heat exchanger.
- Loud ignition and combustion occurs.
- Overheating, leakage and deformation would be observed in the flue system.

Manufacturer cannot be held liable for damages caused by dirty combustion air.
Don't block the air filter partially or totally.

4.2.9 PUMP

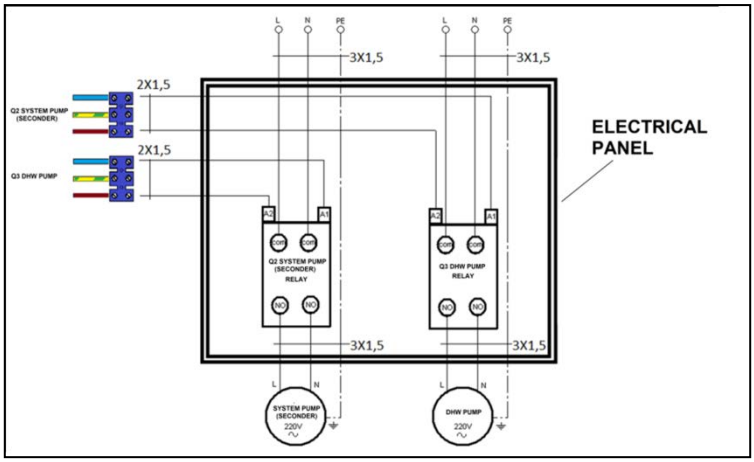
	WATER FLOW (m³/h)		
	min	max	mwc
SUPERBOX 150	1,01	6,67	8,6
SUPERBOX 500	1,231	21,438	7,2
ULTRABOX 1000 V / H	1,23	42,761	7,2

Pumps aren't included in **SUPERBOX** model boilers. The primary pumps, which are determined according to the hydraulic pressure losses of the boiler, are offered by Gassero as an option. If a different primary pump is to be used, pump must be selected in accordance with the values given in the table on the left.

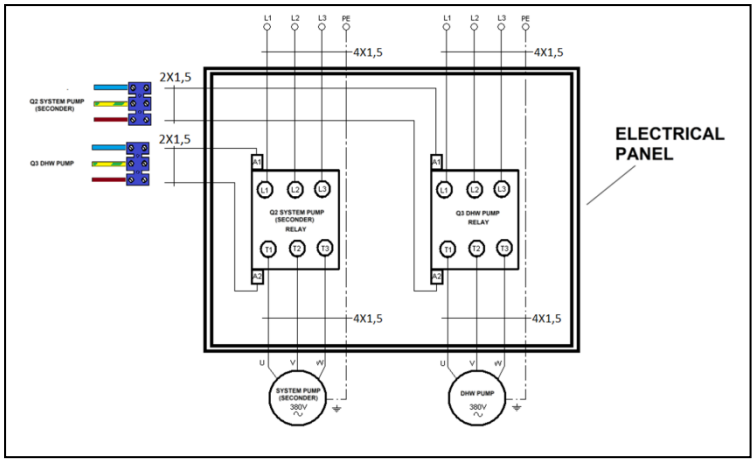
The use of an unsuitable primary pump can result an uneconomic, uncomfortable operation and damage to your boiler and your installation. The manufacturer is not liable for damages that may arise from such situations.

- ❑ The primary pump must be mounted on the return line (See INSTALLATION EXAMPLES).
- ❑ Installation of primary and secondary pumps to the installation and wiring of the power supply cables are in responsibility of the installation / mechanical / electrical teams.
- ❑ The power supplies of all primary and secondary pumps are provided via the boilers' electrical panel. The switch-on signal to the contactors in the electrical panel is sent by the signal cable from the terminals Q1-Q2-Q3 located on the back of the boilers. (See ELECTRICAL CONNECTION EXAMPLES)

230 V PUMP CONNECTION EXAMPLE



400 V PUMP CONNECTION EXAMPLE



4.3 FLUE CONNECTIONS

Flue and chimney connections must be carried out in accordance with applicable regulations and relevant standards. Materials which are used for the flue and chimney must be resistant to the temperature, corrosive effect of condensation water and mechanical stresses and must be gas-tight.

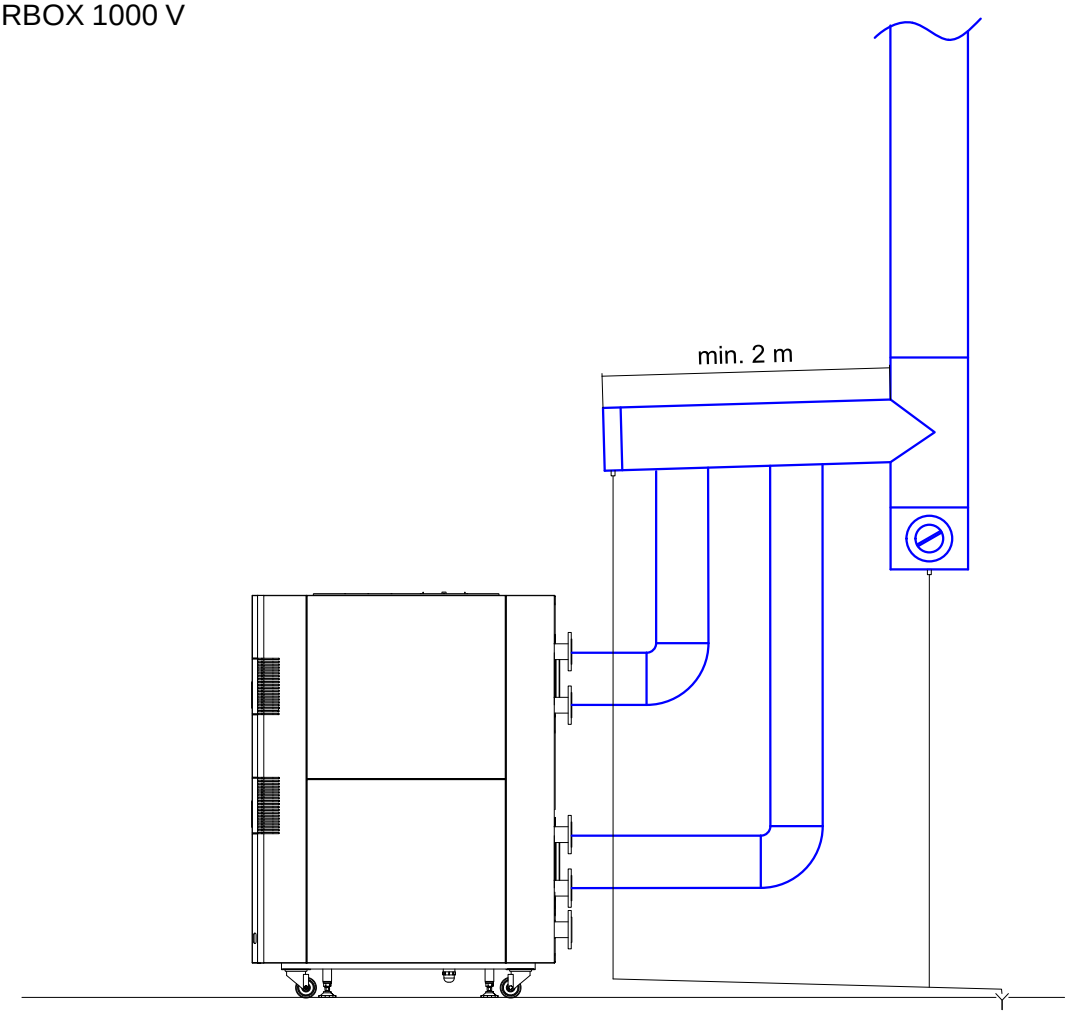
Never use the new boiler with the flues which are used for solid/liquid fuel boilers or shunt chimneys.

Chimney system and the condensation drainage systems connected to it should be checked once a year and cleaned if necessary.

SUPERBOX 1000 boilers have 2 flue outlets.

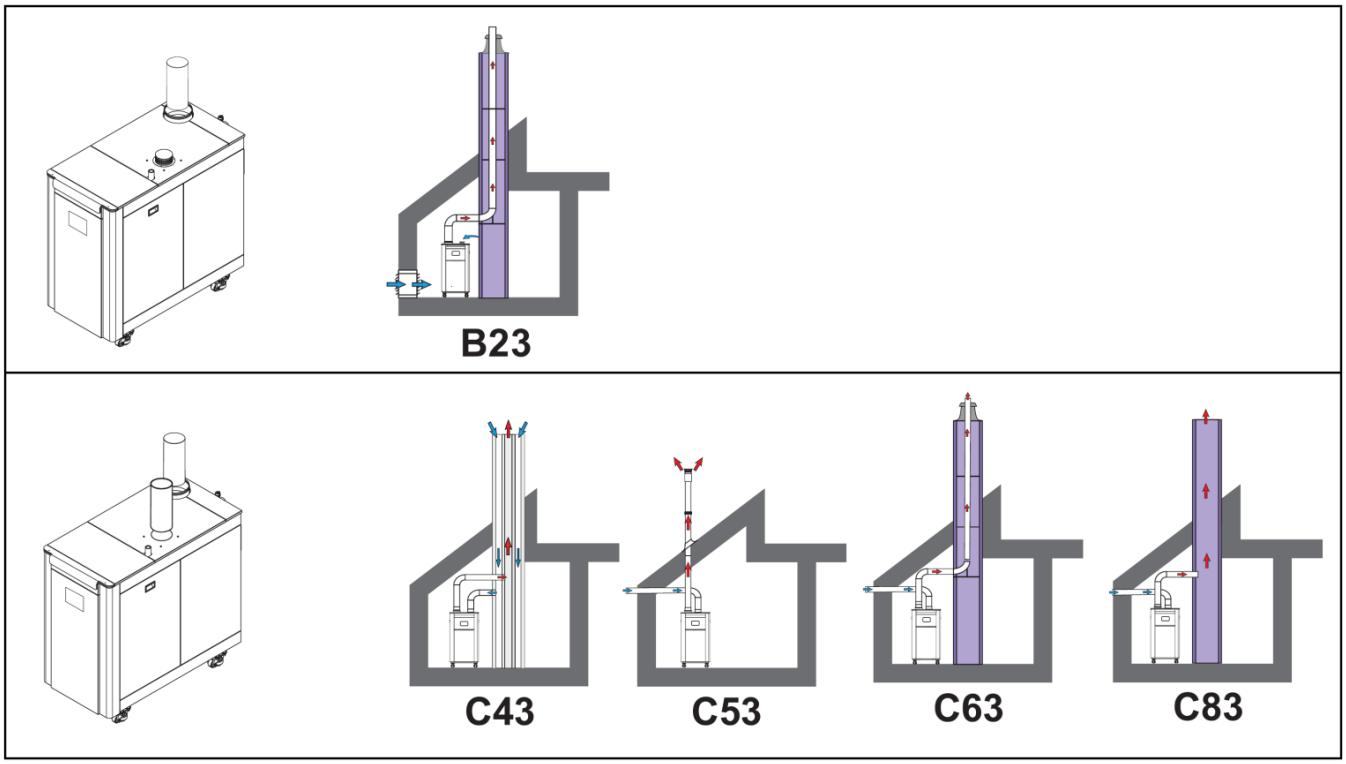
- Vertically aligned flue outlets can be mount as 2 seperate flue outlet, extented upwards or connected to a horizontal flue collector as shown in the figure below.
- Flue collector length should be at least 2 meters and should have %3 slope.
- Drainage lines should be made for the condensate liquid in flue collector and vertical flues.
- Drainage lines can be drained to the waste water installation.
- Flues have to be made of steel material that can withstand the corrosive effects of the condensate liquid and electrically grounded.
- Drain orifices have to be made for condensation drainage of the condensate liquid in the flues.
- It is recommended to put a cleaning cap on the bottom of vertical flues.
- Boilers have internal backflow shutters (on the air inlet side). It isn't necessary to use external flue backflow shutters.

SUPERBOX 1000 V



4.3.1 FLUE TYPES

B23 = It is a flue system that takes the combustion air from the environment and throws flue gas to the outside.
C43 = It is a flue system that takes the combustion air from the outside and throws flue gas to the outside with seperate flue pipes.
C53 = It is a flue system that takes the combustion air from the outside and throws flue gas to the outside with the vertical and horizontal concentric flue pipe system.
C63 = It is a flue system that flue pipes are not supplied by the manufacturer. It has to be applied according to one of the applicable flue systems which are mentioned in technical table in flue types section with CE certified flue pipes.
C83 = It is a flue system which takes the combustion air from the outside with horizontal flue pipes and throws flue gas to the self contained (negative pressure) chimney.

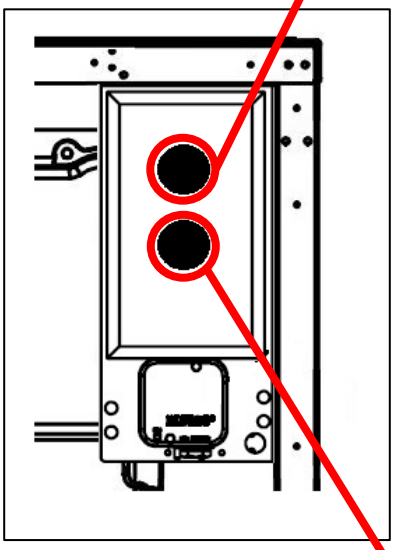


4.4 ELECTRICAL CONNECTIONS

- For the operation of the boiler, a grounded electrical supply 230 VAC 50Hz is required (tolerance must be between -15% ve +10%).
- Electric supply of the boiler must be cut off via a fuse during the maintenance.
- Electrical operations must be made by authorized technical personal in accordance with regulations and standards.
- Cables should not be passed close to hot surfaces (such as hot water pipes).
- L (phase), N(neutral) and grounding connections must be made properly.
- All cables must be fitted with a ferrule.

The manufacturer cannot be held liable for damages caused by negligence or incorrect operation in the earthing of the boiler.

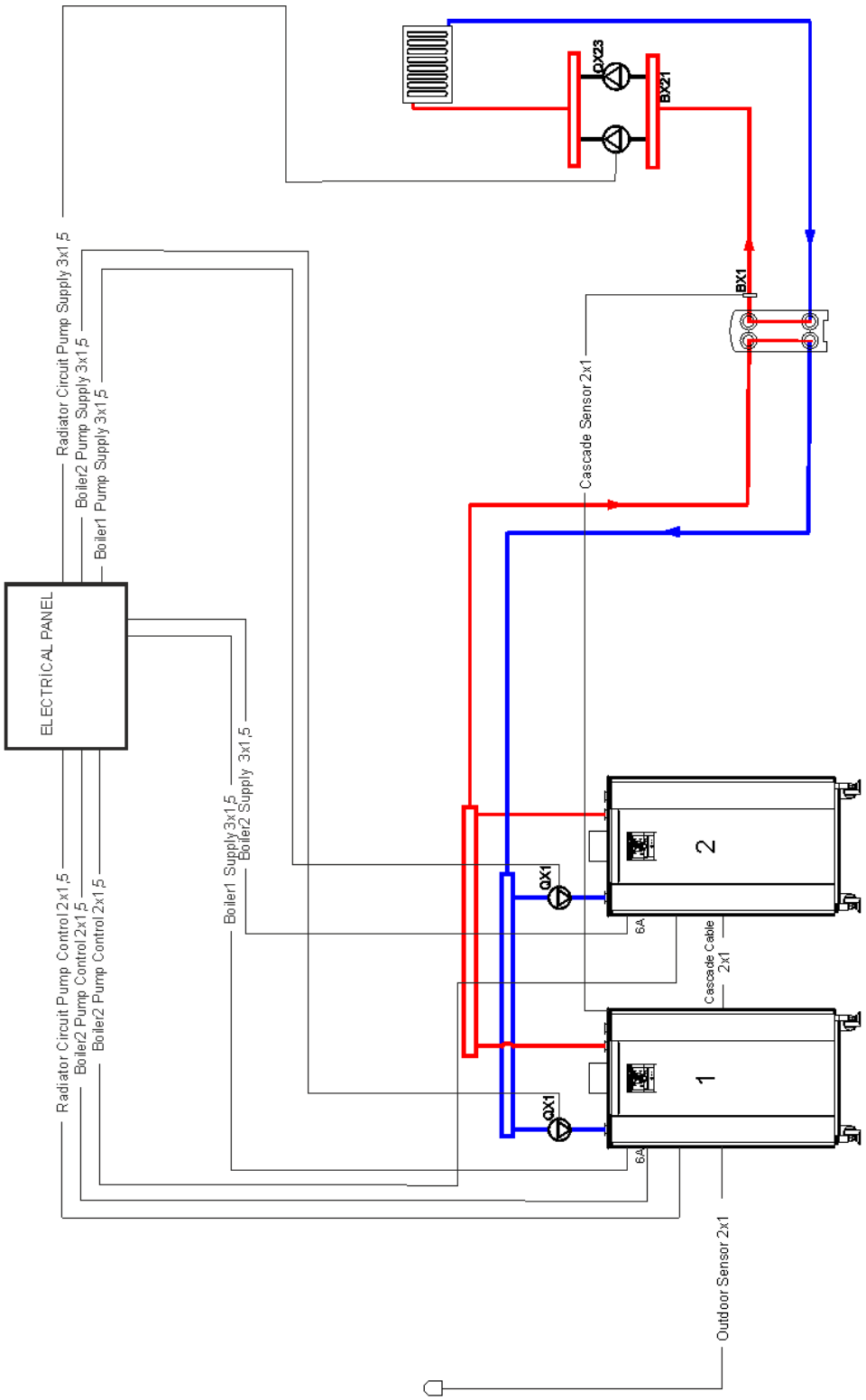
4.4.1 WIRING DIAGRAM



BOILER SIDE CONNECTIONS	CABLE SECTION	CONNECTION	EXPLANATION
BROWN YELLOW/GREEN BLUE	3 X 1,5	SUPPLY CABLE	BROWN= PHASE , BLUE = NEUTRAL , YELLOW = GROUND has to be connected to a 6A fuse.
BROWN YELLOW/GREEN BLUE	3 X 1,5	Q1 BOILER PUMP	Using for PRIMARY CIRCULATION PUMP. 2 X 1,5 cable has to be connected to PRIMARY CIRCULATION PUMP contactor's phase terminal on the electrical panel. Electrical panel connections will be made by the installation services. Boiler connections from the electrical panel will be made by authorized Gassero service.
BROWN YELLOW/GREEN BLUE	3 X 1,5	Q2 SYSTEM PUMP CABLE	Using for system pump control via master boiler. 2 X 1,5 cable has to be connected to SYSTEM PUMP contactor's phase terminal on the electrical panel. Electrical panel connections will be made by the installation services. Boiler connections from the electrical panel will be made by authorized Gassero service.
BROWN YELLOW/GREEN BLUE	3 X 1,5	Q3 DHW PUMP CABLE	Using for DHW pump control via Master boiler. 2 X 1,5 cable has to be connected to DHW PUMP contactor's phase terminal on the electrical panel. Electrical panel connections will be made by the installation services. Boiler connections from the electrical panel will be made by authorized Gassero service.

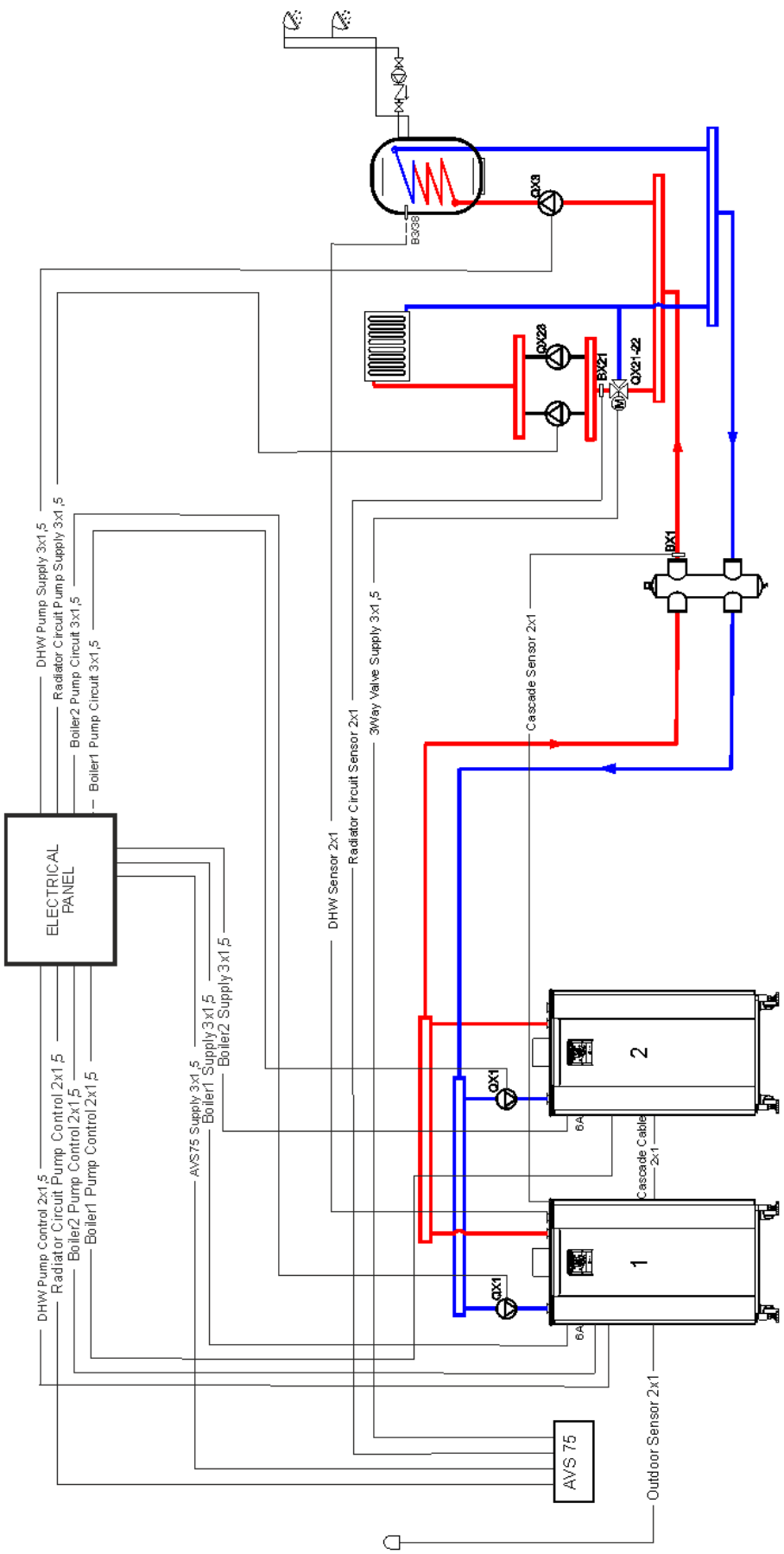
BOILER SIDE CONNECTIONS	CABLE SECTION	PICTURE	CONNETION	EXPLANATION
RED RED/BLACK	2x1,5		Outside Sensor:	Boiler or cascade system operates according to the outside air temperature. Maximum 50 m length connection is possible. It operates in the range of -50 ° C to 70 ° C (with + 1 / -1 tolerance)
BLACK BLACK/WHITE	2x1,5		Cascade Module:	It provides communication between boilers in cascade systems. 16 boilers can be communicate with each other.
YELLOW YELLOW/BLACK	2x1,5		Room Thermostat:	Room comfort setting and operation mode can be adjusted. Maximum 50 m length connection is possible.
BROWN BROWN/BLACK	2x1,5		Immersion Type Cascade Temperature Sensor	Connects to the supply collector, the hydraulic seperator or the plate heat exchanger. Measures the flow temperature. It operates from 0 ° C to 95 ° C. (with + 0.5 / - 0.5 ° C tolerance).
BLUE BLUE/BLACK	2x1,5		Immersion Type DHW Temperature Sensor	Measures the DHW tank temperature. It can operate from 0 ° C to 95 ° C. (with + 0.5 / -0.5 ° C tolerance.)
PURPLE GREY	2x1,5		0 - 10 V INPUT	Used for to connect Remote Control Systems.
YELLOW GREEN	2x1,5		PUMP PWM CONTROL 0 - 10 V	It connects to frequency controlled (modulating) primary pumps 0-10 terminal. It controls the modulation of the pump.

ELECTRIC SCHEME
Installation of 2 FLOOR STANDING CONDENSING BOILERS in cascade with 1 Radiator Circuit.



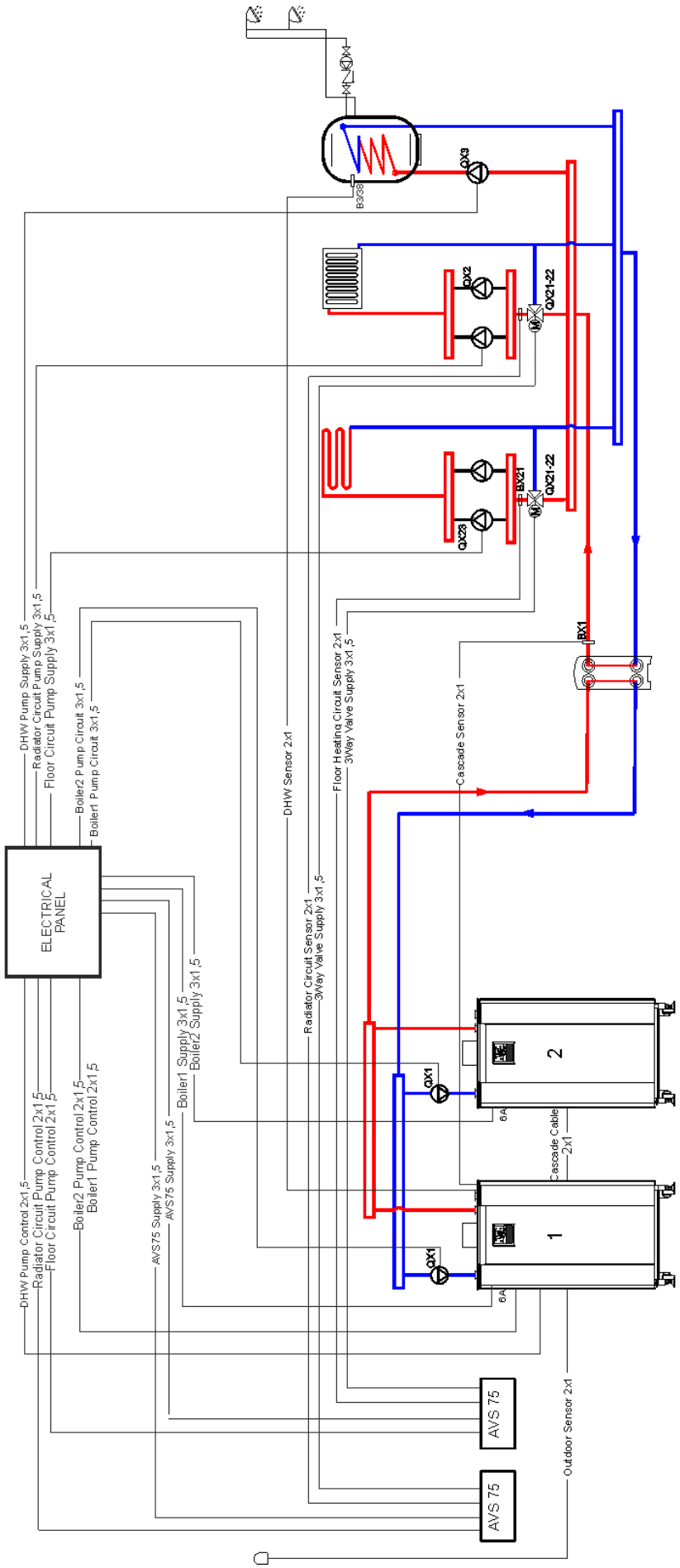
- W-automat fuse maximum 6A, power supply cable should be 3x1,5
- The outside air temperature sensor must be mounted on the northher facade of the building in such a way that it is not affected by direct sun and rain
- Installation side (Secondary) pumps must be supplied via contactor phase input (A1) must be controlled via master boiler.

ELECTRIC SCHEME
Installation of 2 FLOOR STANDING CONDENSING BOILERS in cascade with 1 Radiator Circuit + 1 DHW Circuit.

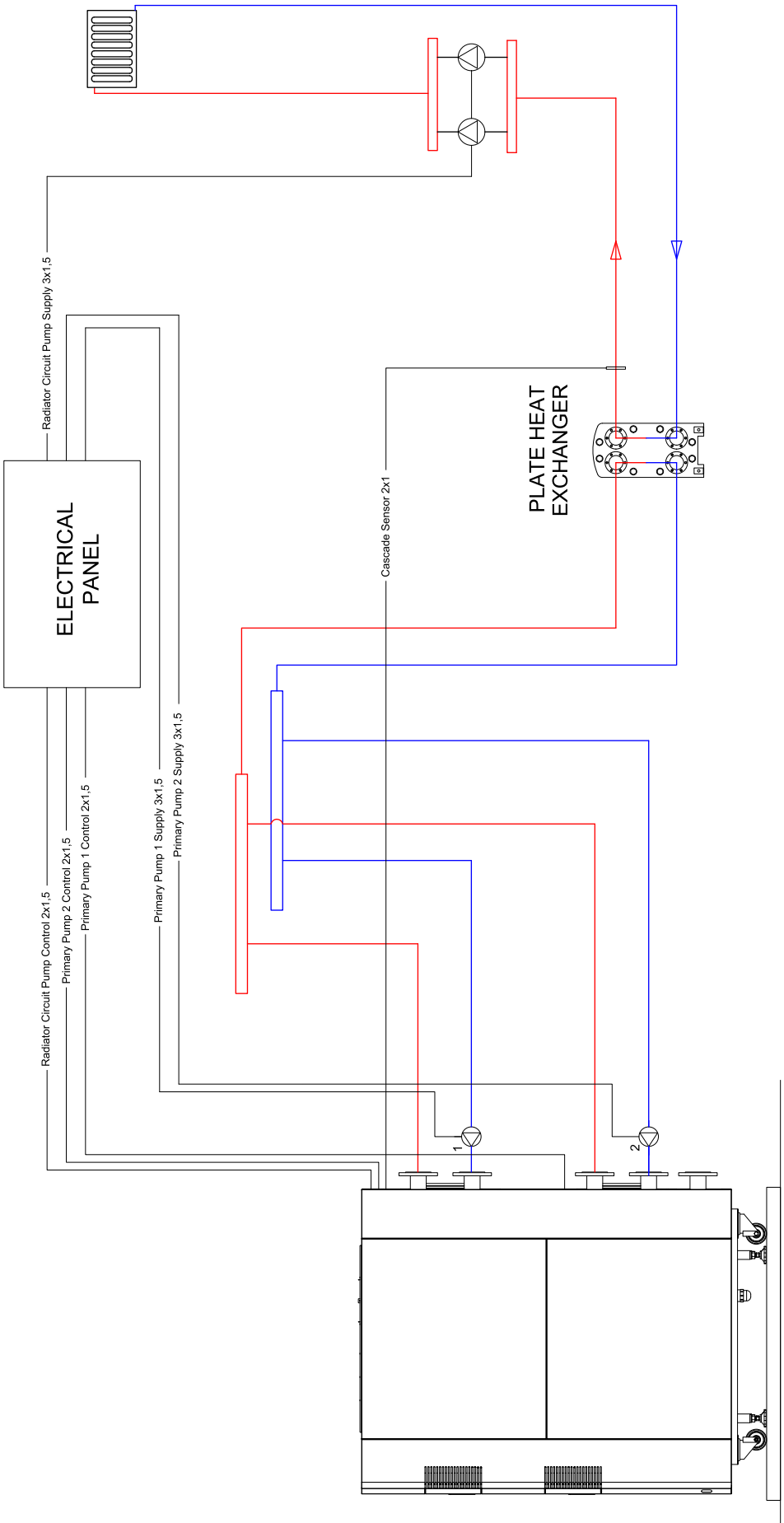


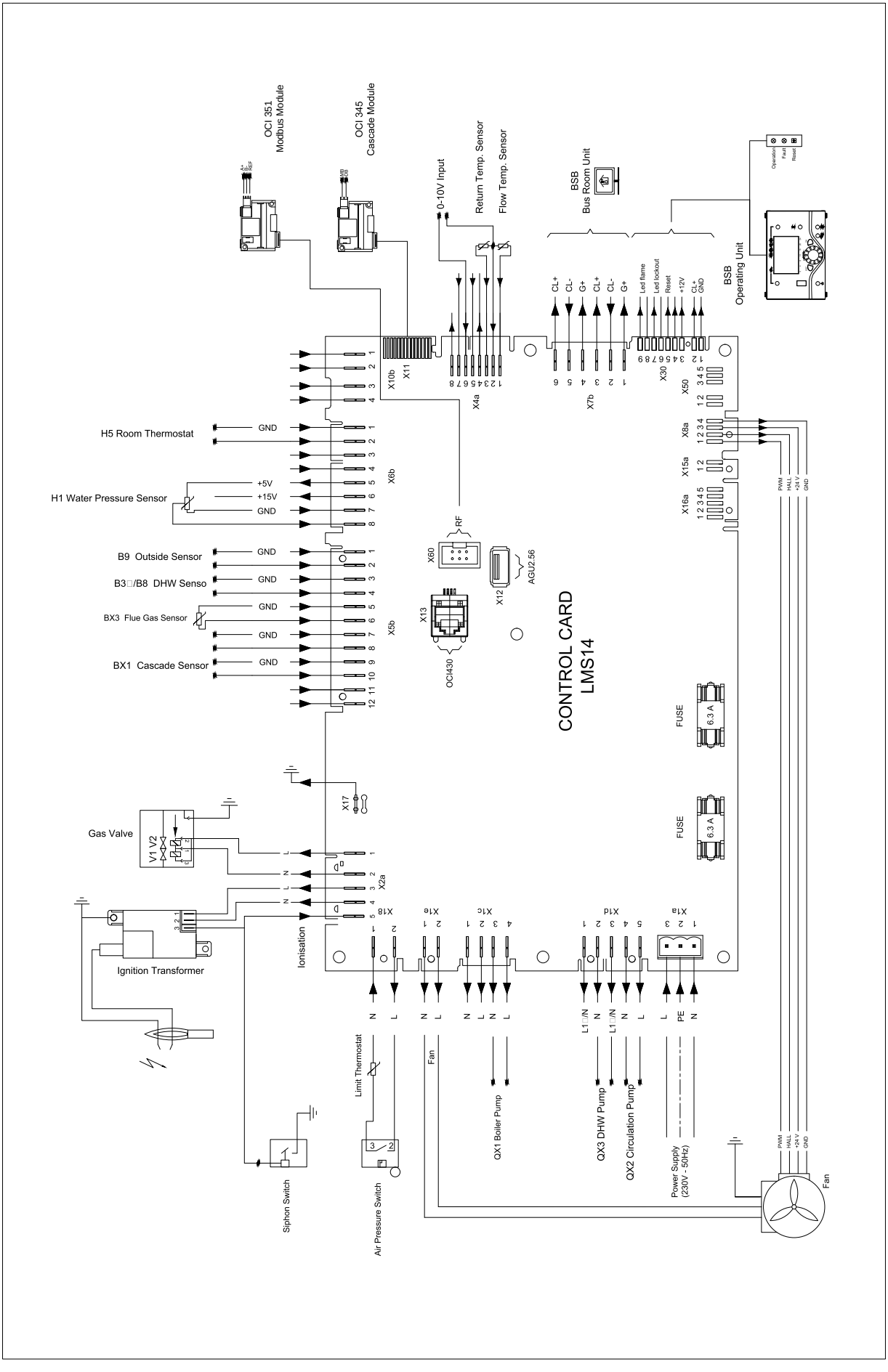
- W-automat fuse maximum 6A, power supply cable should be 3x1,5
- The outside air temperature sensor must be mounted on the northher facade of the building in such a way that it is not affected by direct sun and rain
- İnstallation side (Secondary) pumps must be supplied via contactor phase input (A1) must be controlled via master boiler.
- AVS75 modules should be used for heating zones with mixing valves.
- The pump to be used for the heating zones with mixing valves must be controlled via the tree valve and the sensor AVS75.
- The AVS75 module is installed in the master boiler by an authorized service center.

ELECTRIC SCHEME
Installation of 2 FLOOR STANDING CONDENSING BOILERS in cascade with 1 Floor Heating + 1Radiator Circuit + 1 DHW Circuit.

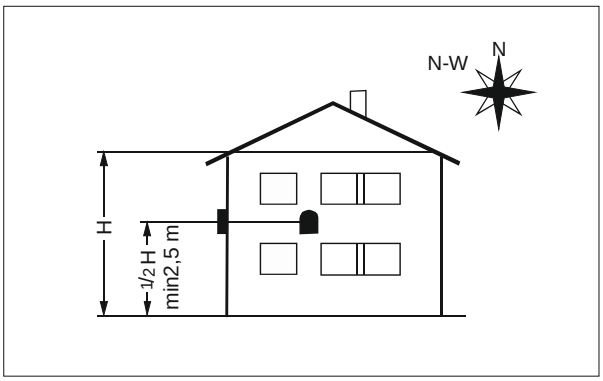


- W-automat fuse maximum 6A, power supply cable should be 3x1,5
- The outside air temperature sensor must be mounted on the northher facade of the building in such a way that it is not affected by direct sun and rain
- Installation side (Secondary) pumps must be supplied via contactor phase input (A1) must be controlled via master boiler.
- AVS75 modules should be used for heating zones with mixing valves.
- The pump to be used for the heating zones with mixing valves must be controlled via the tree valve and the sensor AVS75.
- The AVS75 module is installed in the master boiler by an authorized service center.


Radiator Circuit Pump Supply 3x1,5
ELECTRICAL PANEL
PLATE HEAT EXCHANGER
Cascade Sensor 2x1
Primary Pump 2 Supply 3x1,5
Primary Pump 1 Supply 3x1,5
Primary Pump 1 Control 2x1,5
Primary Pump 2 Control 2x1,5
Radiator Circuit Pump Control 2x1,5
1
2


CONTROL CARD
LMS14
OCI 351
Modbus Module
OCI 345
Cascade Module
0-10V Input
Return Temp. Sensor
Flow Temp. Sensor
BSB
Bus Room Unit
BSB
Operating Unit
H5 Room Thermostat
H1 Water Pressure Sensor
B9 Outside Sensor
B3□/B8 DHW Senso
BX3 Flue Gas Sensor
BX1 Cascade Sensor
Gas Valve
Ignition Transformer
Ionisation
Siphon Switch
Limit Thermostat
Air Pressure Switch
Fan
QX1 Boiler Pump
QX3 DHW Pump
QX2 Circulation Pump
Power Supply
(230V ~50Hz)
FUSE
6.3 A
OCI430
AGU2.56
RF

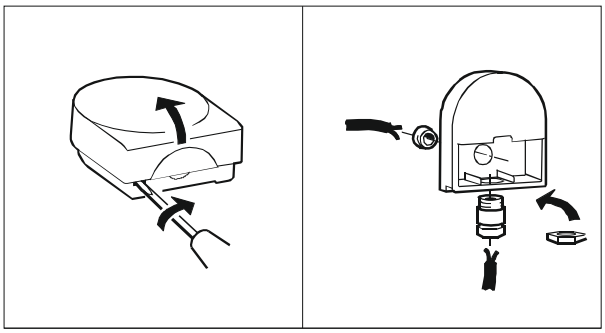
4.4.2 OUTSIDE TEMPERATURE SENSOR



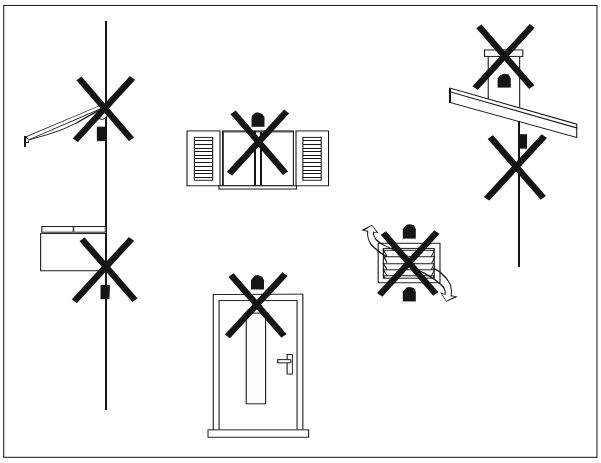
When an outside temperature sensor installed, boiler will adjust supply temperature according to the outside temperature in order to provide energy saving without compromise the comfort.

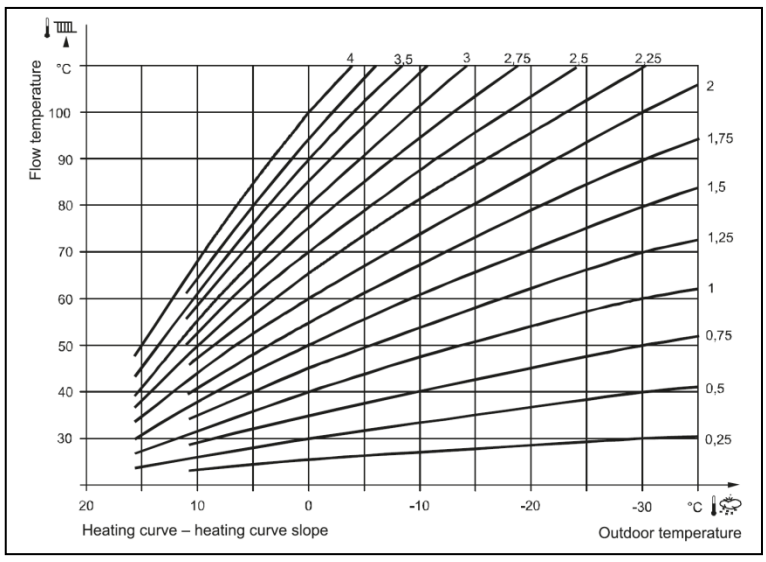
Outside Temperature Sensor must be Installed;

- north or north-west direction of outside of the building,
- at a height of minimum 2,5m from the ground,
- not exposed to direct sunlight,
- straight side of the wall,
- in a place away from doors, windows, chimneys and vents.

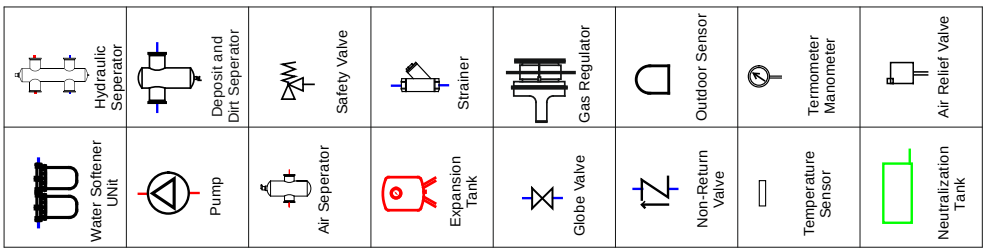


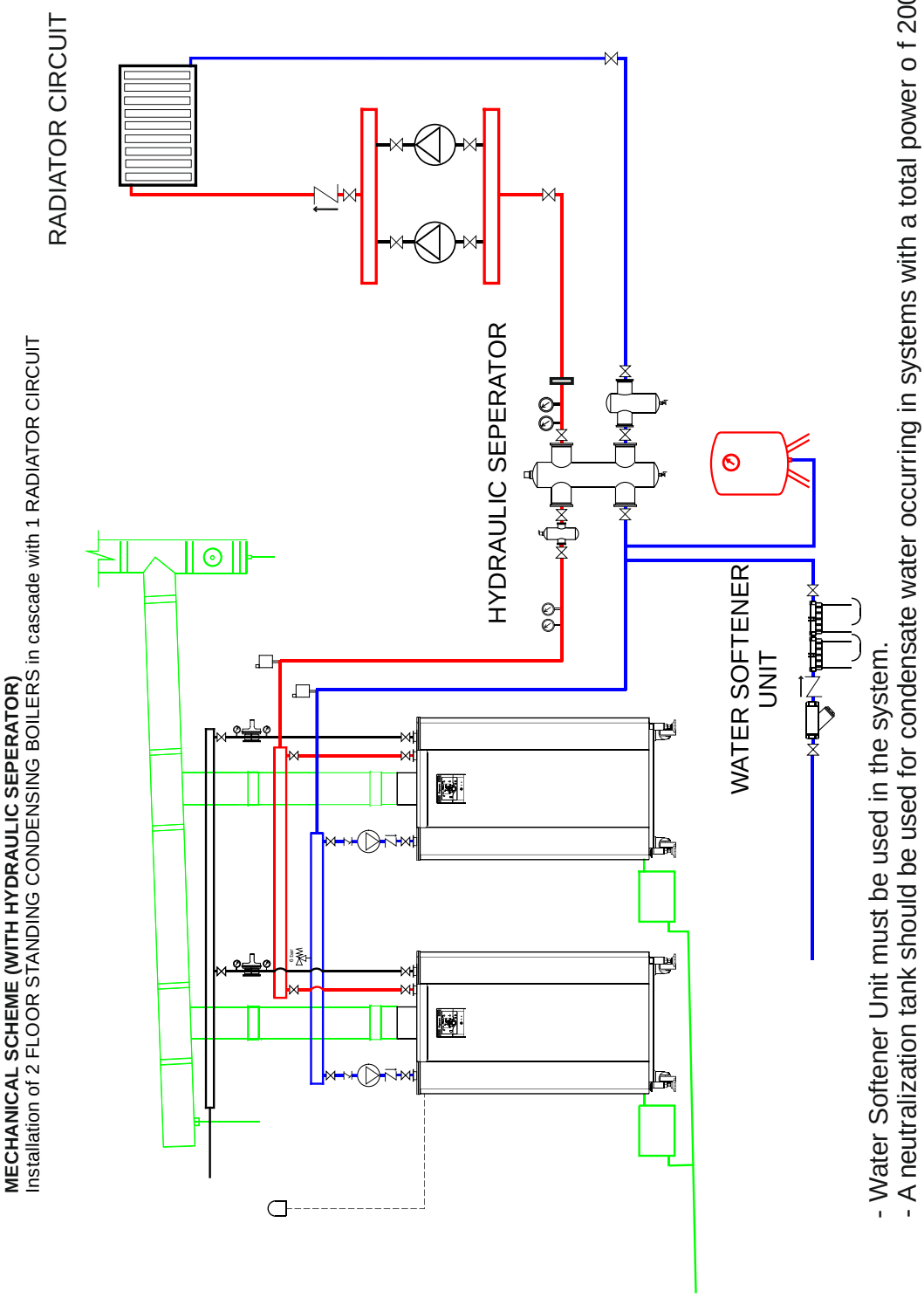
- Open the sensor housing cover by turning it counterclockwise to access the sensor connection terminal and the wall fixing holes.
- Mark the fixing points on the wall and drill the wall using the storage box as a template.
- Secure the box to the wall using the two anchors provided.
- Connect the two-wire cable from the boiler to the terminal box (nonpolar).
- Tighten the nut in the housing box to ensure water-tightness of the cable connection.
- Maximum length between the control panel and the outside temperature sensor is 50 meters.
- Sensor cable has to be used as a single cable as possible. Aware of multiple additions as far as possible.





5 INSTALLATION EXAMPLES

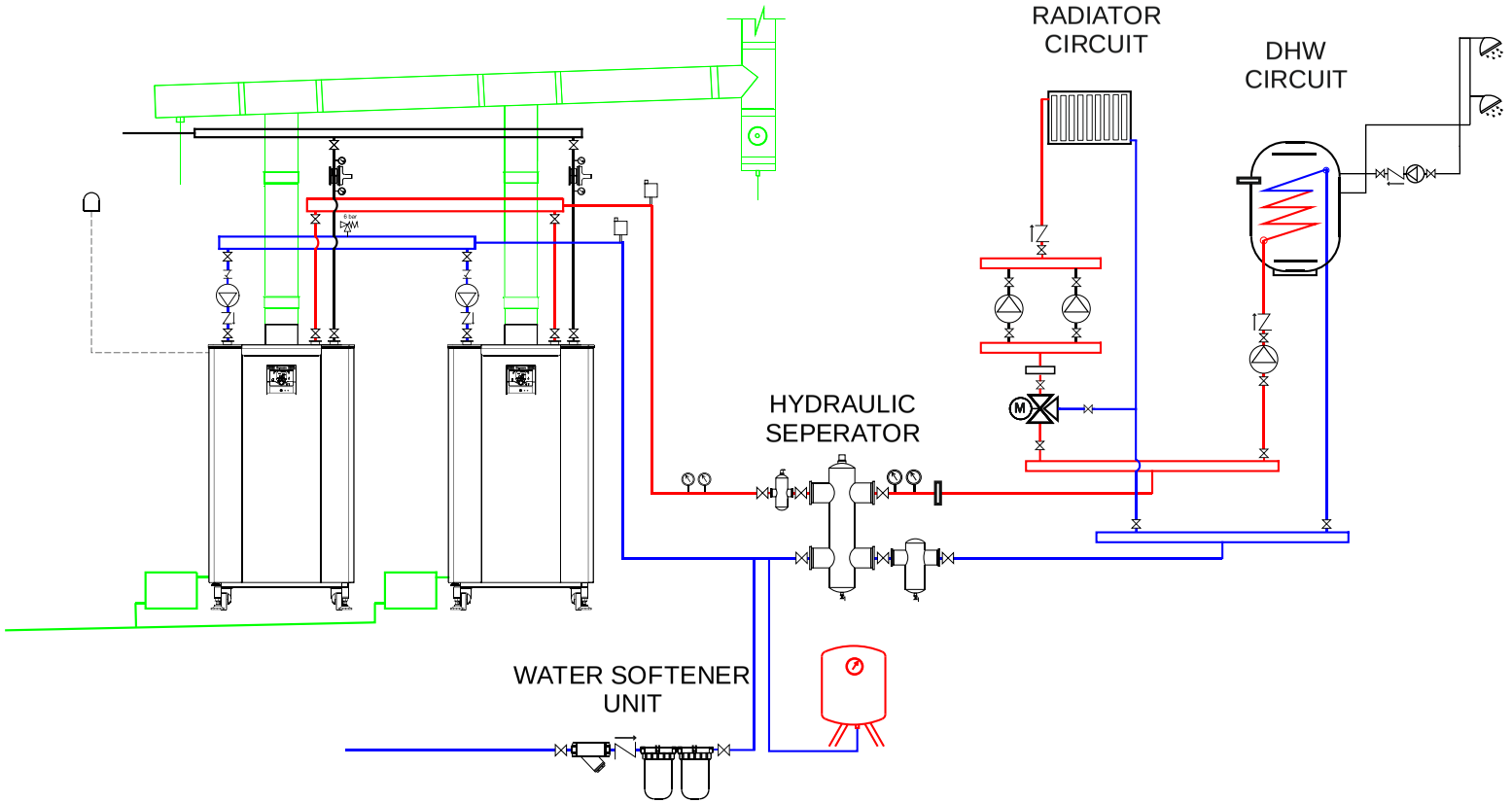




MECHANICAL SCHEME (WITH HYDRAULIC SEPERATOR)
Installation of 2 FLOOR STANDING CONDENSING BOILERS in cascade with 1 RADIATOR CIRCUIT

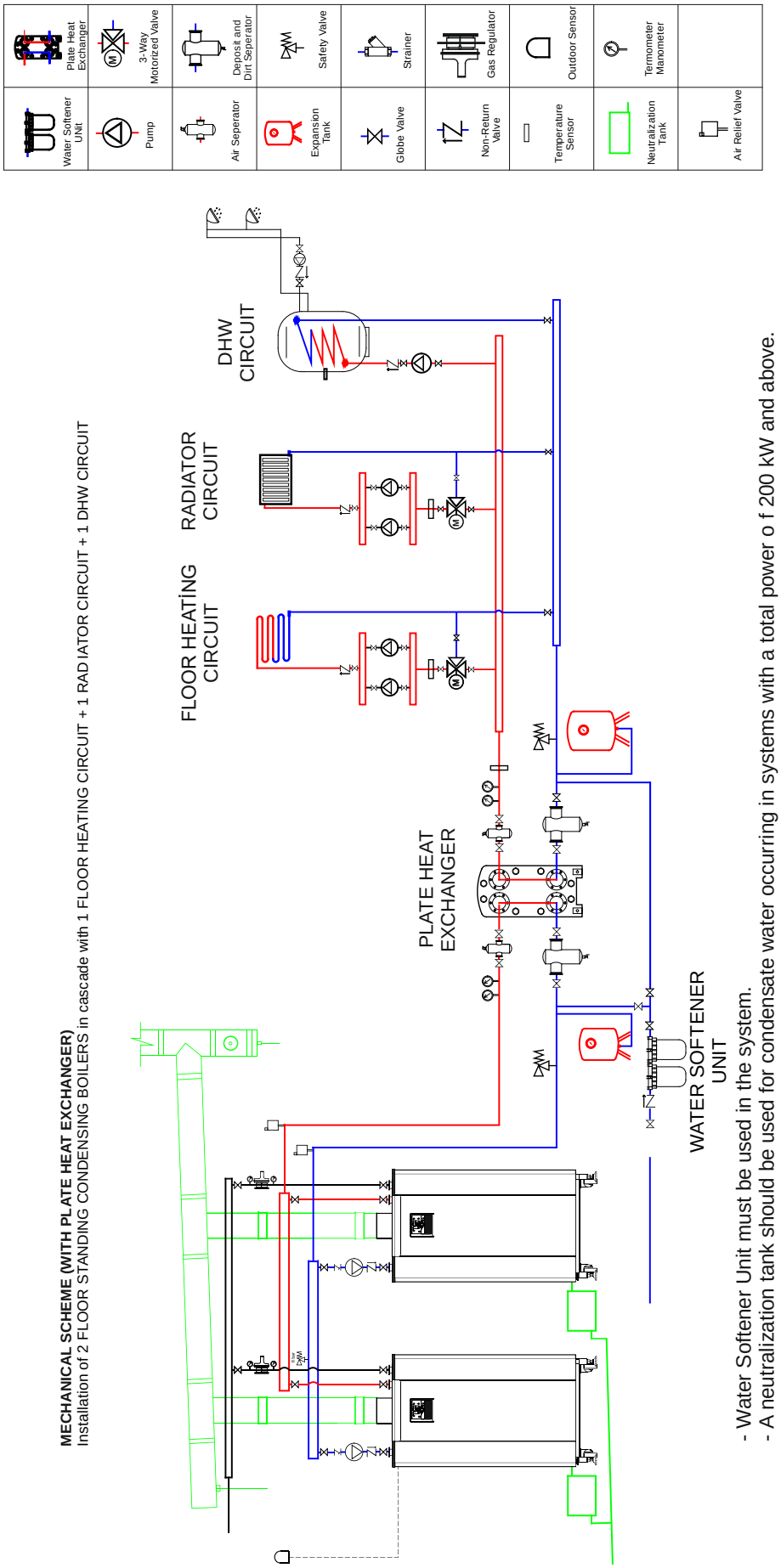
- Water Softener Unit must be used in the system.
- A neutralization tank should be used for condensate water occurring in systems with a total power o f 200 kW and above.

MECHANICAL SCHEME (WITH HYDRAULIC SEPERATOR)
Installation of 2 FLOOR STANDING CONDENSING BOILERS in cascade with 1 RADIATOR CIRCUIT + 1 DHW CIRC UIT



Water Softener UNit	Hydraulic Seperator
Pump	3-Way Motorized Valve
Air Seperator	Deposit and Dirt Seperator
Expansion Tank	Safety Valve
Globe Valve	Strainer
Non-Return Valve	Gas Regulator
Temperature Sensor	Outdoor Sensor
Neutralization Tank	Termometer Manometer
Air Relief Valve	

- Water Softener Unit must be used in the system.
- A neutralization tank should be used for condensate water occurring in systems with a total power o f 200 kW and above.



MECHANICAL SCHEME (WITH PLATE HEAT EXCHANGER)
Installation of 2 FLOOR STANDING CONDENSING BOILERS in cascade with 1 FLOOR HEATING CIRCUIT + 1 RADIATOR CIRCUIT + 1 DHW CIRCUIT

- Water Softener Unit must be used in the system.
- A neutralization tank should be used for condensate water occurring in systems with a total power o f 200 kW and above.
- Plate Heat Exchanger must be used in FLOOR HEATING SYSTEMS.

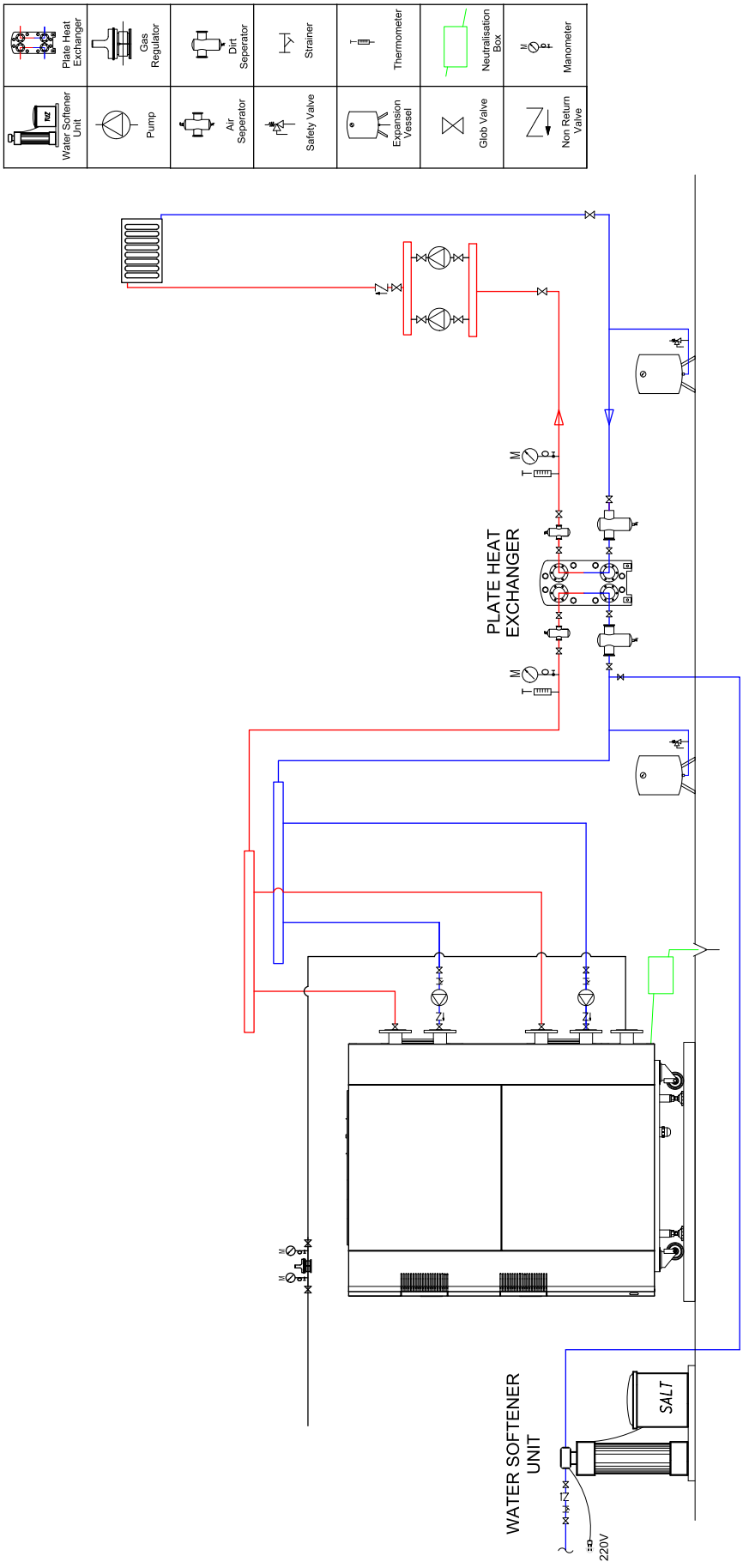


Plate Heat Exchanger
Gas Regulator
Dirt Seperator
Strainer
Thermometer
Neutralisation Box
Manometer
Water Softener Unit
Pump
Air Seperator
Safety Valve
Expansion Vessel
Glob Valve
Non Return Valve
PLATE HEAT EXCHANGER
WATER SOFTENER UNIT
SALT
220V

6 OPERATION

6.1 GENERAL

SUPERBOX boilers;

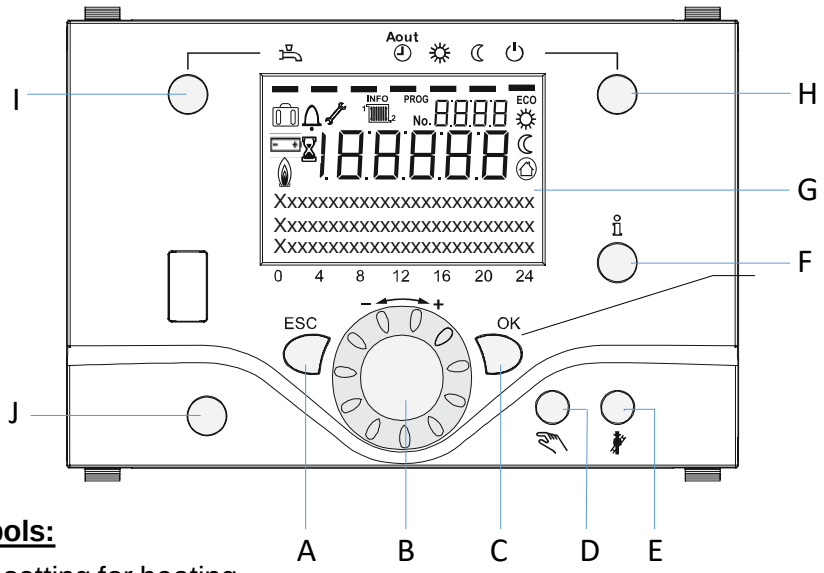
- Controls 3 heating zones. It could be increase with placing additional zone modules.
- Calculates exact temperatures for each zone via sensors and outside temperature sensor.
- Saves and display the fault and error history.
- Integrated with cascade control system to work with multiple boilers according to heat demand equally.
- Integrated with frost and legionella protection systems.
- Can be control via internet or BMS systems with addtional modules.

All comissioning, installation, maintenance etc. must be performed by authorized personnel.

Improper interventions may cause loss of life and property, increased fuel consumption, and deterioration in safe and comfortable operation.

Manufacturer cannot be held liable for any problems caused by incorrect adjustments and interventions.

6.2 DISPLAY AND BUTTONS



Display symbols:

- Comfort setting for heating
- Reduced heating setting for heating
- Frost protection setting for heating
- In progress – Please wait
- Change the battery
- Burner on
- INFO Info menü activated
- PROG Programming menu activated
- ECO ECO funtion activated
- Holiday function activated
- Heating referance
- Maintenance mode
- Error

DISPLAY (G)
Backlight display automatically turn off without operation. Push any button to turn it on again.
Screen displays information / settings below:
- Operation modes
- Temperatures
- Parameters
- Faults / errors

HEATING MODE BUTTON (H)
Used for to choose and select 4 different heating modes.

DHW MODE BUTTON (I)
Used for to turn on or off the DHW mode.

NAVIGATION AND ADJUSTMENT KNOB (B)
Changes comfort temperature setting. Additionally it also used for;
increase / decrease temperatures,
choose and select sub menus,
Change the settings.

OK BUTTON (C)
Used for to apply selected value or setting. In the parameters section this button is used for the further menu options.

CANCEL BUTTON – ESC (A)
Used for to cancel the settings and return to upper menu section.

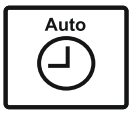
MANUAL CONTROL BUTTON (D)
Used for to run to boiler manually. During the manual operation all pumps will be ran, but mixing valves wouldn't be operated. Burner temperature will be held at adjusted temperature while the commissioning. Pushing to this button more than 3sec will be opareted the air relief function. During this function burner will held into standby mode, pumps will be energised periodically, mixing valves ran into middle position. This function will be turned off automatically after the cycle.

FLUE FUNCTION (E)
Used for flue gas emission measuring. During this function boiler will be operated according to maximum adjusted temperature until it reach the exact value. Then this function will be turned off automatically.

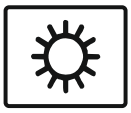
INFO BUTTON (F)
Used for the display boiler information such as temperatures, operating modes, error codes etc.

RESET BUTTON (J)
Used for to reset any fault and error which caused to stop the boiler.

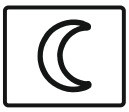
HEATING MODE SELECTION :
Press the appropriate button to select between different heating modes:



Auto : Boiler will be operated according to adjusted time program.

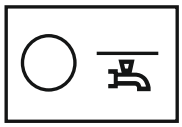


Comfort Temperature : Boiler will be operated according to adjusted comfort temperature permanently.



Reduced Temperature : Boiler will be operated according to adjusted reduced temperature permanently.

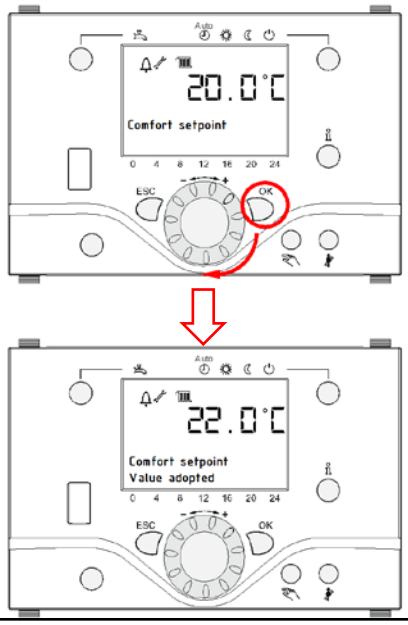
Standby : Heating will be turned off, but frost protection still activated unless the power supply is disconnected.



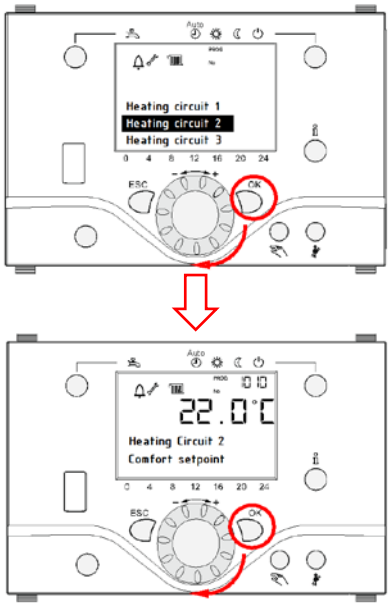
DHW MODE SEELECTION :

When the corresponding button is used, the boiler is switched on to operate synchronously with the units that produce hot water (DHW tank, plate heat exchanger, etc.). This function can be switched off or on.
Pressing the button once will be activate the boiler to heat the DHW tank. Pressing it again disables DHW tank heating. Pressing the button for 3 seconds activates the Quick Water Heating Mode for faster hot water production.

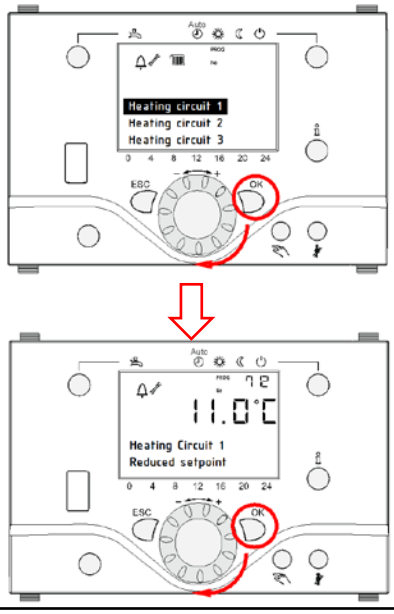
6.3 OPERATING MODE SELECTION



ADJUSTING THE ROOM TEMPERATURE:
The temperature (comfort value) of the room which is heated by the heating circuit-1 is set by the Navigation Button. The boiler will be activated and keep the room temperature constant to the set temperature.
To adjust;
Turn the Navigation Knob in any direction
Set the desired room temperature and press OK. (Factory setting is 20°C)



ADJUSTING OTHER HEATING CIRCUITS:
If there is more than one heating circuit in the system, the comfort temperature can be set separately for each circuit.
To adjust;
Press OK
Turn the Navigation Knob to select Heating circuit-2 and press OK
Adjust the desired room temperature and press OK
Press ESC button to return upper menu and adjust other heating circuits

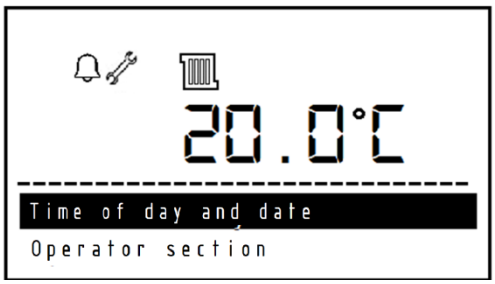


REDUCED TEMPERATURE:
A temperature limit for the room temperature. When the room temperature falls below the set temperature, the boiler will be activated and keep the room temperature constant. (Factory setting is 10 °C)
To adjust;
Press OK
Turn the Navigation Knob and select Heating circuit-1 by pressing OK
Turn the navigation Knob and select Heating circuit-1 Reduced setting temperature by pressing OK
Adjust the desired Reduced setting temperature and press OK.
Press ESC button to return upper menu and adjust other heating circuits

FROST PROTECTION :
It will be activated when the temperature of the water in the boiler falls below 4°C and activates the primary circulation pump. In order for the frost protection mode to be active, boiler's electrical switch must be switched on and the system water must be full.

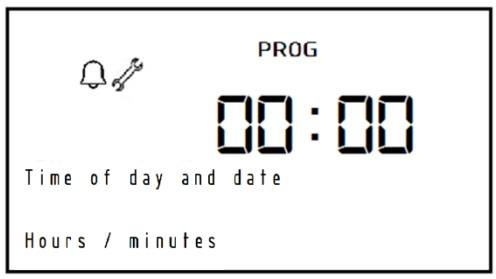
Frost Protection function is valid only for boiler, can not protect the installation.

6.4 PROGRAMMING

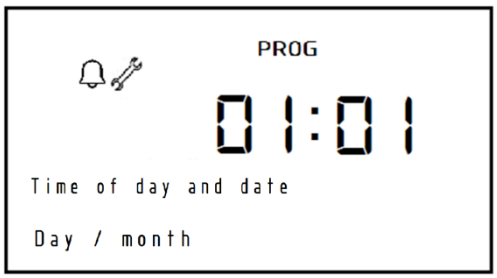


If there is no other control panel (cascade control unit, etc.) in the system, all personalized settings, parameters, fault resets will be made via the control panel.

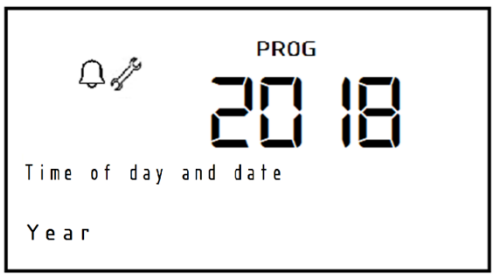
E.g. ;
Date and time adjustment:



Push OK button. Select «**Time of day and date**» then push **OK** button again.



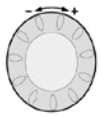
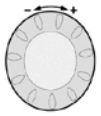
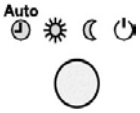
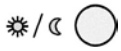
Push **OK** button for adjusment. Push **OK** button to adjust hour and minute settings.



Turn the adjusment knob one click and set mounth and day with pushing **OK** button.

Push **OK** button to adjust the year as a final step. Push ESC button to return the home secreen.

6.5 MAIN FUNCTIONS

Button	Action	Procedure	Display / Function
	Set room temperature	**Zone 1 and zone 2** Actuate rotary knob left/right Turn rotary knob Confirm with OK button or wait 5 sec. or press	 Comfort setpoint with blinking temperature Blinking temperature in 0,5 °C steps from 10 to 30 °C **Comfort setpoint saved** **Comfort setpoint cancelled** - after 3 sec. Main menu appears
	Set room temperature for zone 1 or zone 2	**Zone 2 independent from zone 1** Actuate rotary knob left/right Confirm with OK button Actuate rotary knob left/right Confirm with OK button or wait 5 sec. or press ESC	**Choose heating zone** Heating zone is chosen Blinking temperature in 0,5 °C steps from 10 to 30 °C **Comfort setpoint saved** **Comfort setpoint cancelled** - after 3 sec. Main menu appears
	Switch on /off DHW operation	Press button	**DHW mode on / off** (see indication below DHW symbol) - On: DHW mode by time programm - Off: no DHW operation - Safety functions activated
	Change heating operation mode	Factory setting Press button 1x Press button 1x again Press button 1x again	**Automatic mode on, with:** - Heating by time programm - Temperature setpoint by heating programm - Safety functions activated - Summer/Winter automatic switching activated - ECO-functions activated (see indication below operation symbol) **Continuous COMFORT heating on, with:** - Heating without time programm by comfort setpoint - Safety functions activated **Continuous REDUCED heating on, with:** - Heating without time programm by reduced setpoint - Safety functions activated - Summer/Winter automatic switching activated - ECO-functions activated **Safety mode on, with:** - Heating off - Temperature by frost protection - Safety functions activated
	Controller Stop Mode	Press button > 3 sec. Press button > 3 sec. again	**304: Controller Stopp mode** **insert setpoint** after 3 sec. Main menu appears
	Info display	Press button 1x Press button 1x again Press button 1x again ..... Press button 1x	**INFO Segment displayed** - Status Boiler - room temperature - room temperature minimum - Status DHW - room temperature maximum - Status zone 1 - outside temperature - Status zone 2 - outside temperature minimum Time / Date - DHW temperature 1 - Error indication - Boiler temperature - Maintenance indication - Flow temperature (Info display depends on configuration) Back to main menu; INFO Segment disappears
	Operation by manual setpoint Change factory setting boiler temperature	Press button 1x Press button Press button Turn rotary knob -/+ Press button Press button Press button	**Manual mode on** (spanner symbol appears) - Haeting by fixed setpoint (factory setting = 60 °C) **301: Manual mode** **insert setpoint?** blinking temperature set value **Status boiler** Manual mode off (spanner symbol disappears)
	Deaeration	Press button > 3 sec. Press button > 3 sec. again	312: Deaeration on Deaeration off
	Activate chimney sweeper mode	Press button (< 3 sec.) Press button again (< 3 sec.)	Chimney sweeper mode on Chimney sweeper mode off
	Temporary reduction of reduced temperature on QAA75	Press button Press button again	Heating by reduced setpoint Heating by comfort setpoint
RESET	Reset button	Press button (< 3 sec.) Press button again > 3 sec.	Boiler manually blocked, no release Boiler released, Alarm symbol disappears

6.6 BMS – BOILER 0-10V MANAGEMENT

1) H3 output could use for 0-10V management. After cable connection, 5960 parameter should set 'Consumer Request CC1 10V' from configuration menu.

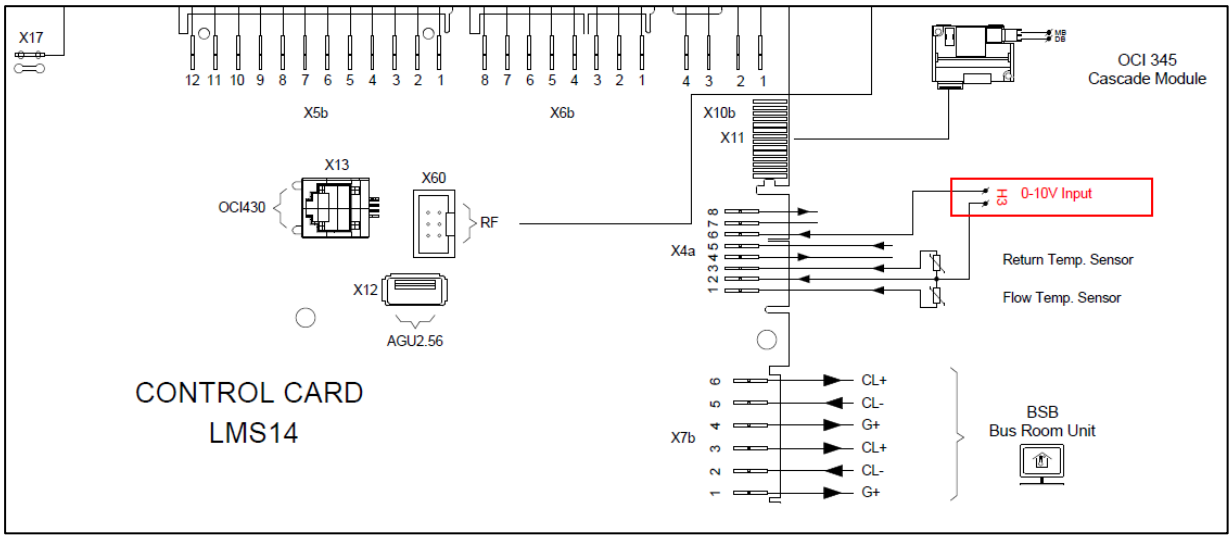
2) 5963-64-65-66 parameter should set for heat and value assignment.

3) Heating Circuit 5710 and 5715 parameter should set 'OFF' from configuration menu.

4) DHW (Domestic Hot Water) Circuit sensor should be cancelled from boiler.

5960	Function input H3 None ¦ Optg mode change HCs+DHW ¦ Optg mode changeover DHW ¦ Optg mode changeover HCs ¦ Optg mode changeover HC1 ¦ Optg mode changeover HC2 ¦ Optg mode changeover HC3 ¦ Heat generation lock ¦ Error/alarm message ¦ Consumer request CC1 ¦ Consumer request CC2 ¦ Release swi pool source heat ¦ Excess heat discharge ¦ Release swi pool solar ¦ Operating level DHW ¦ Operating level HC1 ¦ Operating level HC2 ¦ Operating level HC3 ¦ Room thermostat HC1 ¦ Room thermostat HC2 ¦ Room thermostat HC3 ¦ DHW flow switch ¦ DHW thermostat ¦ Pulse count ¦ Checkb sign flue gas damper ¦ Start prevention ¦ Boiler flow switch ¦ Boiler pressure switch ¦ Consumer request CC1 10V ¦ Consumer request CC2 10V ¦ Pressure measurement 10V ¦ Output request 10V
5961	Contact type H3 NC ¦ NO
5963	Voltage value 1 H3
5964	Function value 1 H3
5965	Voltage value 2 H3
5966	Function value 2 H3

Configuration	
5710	Heating circuit 1 Off ¦ On
5711	Cooling circuit 1 Off ¦ 4-pipe system cooling
5715	Heating circuit 2 Off ¦ On



7 PARAMETERS

Parameters of **SUPERBOX** boilers are divided into 4 groups according to their level:

- END USER PARAMETERS
- COMMISSIONING
- ENGINEER
- OEM

Due to incorrect adjustments energy saving operation may not be observed and the whole system or some parts of the units may be damaged.

Manufacturer cannot be held liable for malfunctions and damages resulting from incorrect settings made by unauthorized persons.

7.1 END USER PARAMETERS

MENU	LINE NO	OPERATING LINE	UNIT	MIN.	MAX.	FACTORY SETTINGS
Time of day and date	1	Hours / Minutes	hh:mm	00:00	23:59	--.--
	2	Day / Month	tt:MM	1.01.	31.12.	--.--
	3	Year	jjjj	2004	2099	--.--
Operator section	20	Language	-	English, Deutsch, Francais, Italiano, Dansk, Nederlands, Español, Česky, Slovenský, Türkçe		English
	29	Birimler	-	°C, bar,°F, PSI		°C, bar
Time program	500	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
HC 1	501	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	502	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	503	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	504	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	505	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	506	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	516	Default values	-	Yes, No		No
Time program	520	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
HC 2	521	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
(When activated)	522	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	523	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	524	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	525	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	526	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	536	Default values	-	Yes, No		No
Time program 4/DHW	560	Preselection	-	Mo-Su, Mo-Fr, Sa-Su, Mo,Tu,We,Th,Fr,Sa,Su		Mo-Su
	561	Mo-Su: 1. Phase On	hh:mm	00:00	24:00	06:00
	562	Mo-Su: 1. Phase Off	hh:mm	00:00	24:00	22:00
	563	Mo-Su: 2. Phase On	hh:mm	00:00	24:00	--:--
	564	Mo-Su: 2. Phase Off	hh:mm	00:00	24:00	--:--
	565	Mo-Su: 3. Phase On	hh:mm	00:00	24:00	--:--
	566	Mo-Su: 3. Phase Off	hh:mm	00:00	24:00	--:--
	576	Default values	-	Yes, No		No
Holidays	641	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
HC1	642	Period Start Day / Month	tt.MM	01.01	31.12	--:--
	643	Periode End Day / Month	tt.MM	01.01	31.12	--:--
	648	Operating level	-	Frost protection, Reduced		Frost protection
Holidays	651	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
HC2	652	Period Start Day / Month	tt.MM	01.01	31.12	--:--
(When activated)	653	Periode End Day / Month	tt.MM	01.01	31.12	--:--
	658	Operating level	-	Frost protection, Reduced		Frost protection
Holidays	661	Preselection	-	Period 1, 2, 3, 4, 5, 6, 7, 8		Period 1
HC3	662	Period Start Day / Month	tt.MM	01.01	31.12	--:--
(When activated)	663	Periode End Day / Month	tt.MM	01.01	31.12	--:--
	668	Operating level	-	Frost protection, Reduced		Frost protection
HC1	710	Comfort setpoint	°C	Value from Line no. 712	35	20
	712	Reduced setpoint	°C	4	Value from Line no. 710	16
	714	Frost protection setpoint	°C	4	Value from Line no. 712	10
	720	Heating curve slope	-	0,1	4	1,5
	730	Summer/winter heating limit	°C	---/8	30	20
HC2	1010	Comfort setpoint	°C	Value from Line no. 1012	35	20
(When activated)	1012	Reduced setpoint	°C	4	Value from Line no. 1010	16
	1014	Frost protection setpoint	°C	4	Value from Line no. 1012	4
	1020	Heating curve slope	-	0,1	4	1,5
	1030	Summer/winter heating limit	°C	---/8	30	20
DHW	1600	DHW operating mode	-	On, Off, Eco		On
	1610	Nominal setpoint	°C	Value from Line no. 1612	Value from Line no. 1614	55
	1612	Reduced setpoint	°C	8	Value from Line no. 1610	40
Swimming pool	2055	Pool setpoint solar heating	°C	8	80	26
	2056	Pool sepoint boiler heating	°C	8	80	22
Boiler	2214	Setpoint manual control	°C	10	90	80
Fault	6705	SW Diagnose Code	-	-	-	Indication only
	6706	Burner ctrl phase lockout pos	-	-	-	Indication only

8 ERROR / FAULT CODES

SUPERBOX boilers are equipped with a fault diagnosis system. When a malfunction code is displayed on both the Master and Slave boilers, the red light on the bottom of the control panel flashes with the no flame sign.
Malfunction codes are given below.

Error Code	Error Description
10	Outside temperature sensor error
20	Boiler temperature 1 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	Return temperature cascade sensor error
47	Common return temperature sensor error
50	DHW temperature 1 sensor error
52	DHW temperature 2 sensor error
54	DHW primary controller sensor error
57	DHW circulation temperature sensor error
60	Room temperature 1 sensor error
65	Room temperature 2 sensor error
70	Buffer storage tank temperature 1 sensor error
71	Buffer storage tank temperature 2 sensor error
72	Buffer storage tank temperature 3 sensor error
73	Collector temperature 1 sensor error
78	Water pressure sensor error
82	LPB address collision
83	BSB wire short-circuit
84	BSB address collision
85	BSB RF communication error
91	EEPROM error lockout information
98	Extension module 1 error (collective error)
99	Extension module 2 error (collective error)
100	2 clocktime masters (LPB)
102	Clocktime master without reserve (LPB)
103	Communication error
105	Maintenance message
109	Boiler temperature supervision
110	STB lockout
111	TW cutout
117	Water pressure too high
118	Water pressure too low
119	Water pressure switch has cut out
121	Flow temperature 1 (HC1) supervision
122	Flow temperature 2 (HC2) supervision
125	Pump supervision error
126	DHW charging supervision
127	Legionella temperature not reached
128	Loss of flame during operation
129	Fan error or LP error

Error Code	Error Description
130	Flue gas temperature limit exceeded
132	GP or LP error
133	No flame during safety time
146	Configuration error collective message
151	Internal error
152	Parameterization error
153	Unit manually locked
160	Fan error
162	LP error, does not close
164	Error heating circuit flow switch
166	LP error, does not open
169	Sitherm Pro system error
170	Error water pressure sensor, primary side
171	Alarm contact H1 or H4 active
172	Alarm contact H2 (EM1, EM2 or EM3) or H5 active
173	Alarm contact H6 active
174	Alarm contact H3 or H7 active
176	Water pressure 2 too high
177	Water pressure 2 too low
178	Limit thermostat heating circuit 1
179	Limit thermostat heating circuit 2
183	Unit in parameterization mode
195	Maximum duration of the refill per charging
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	Fault sensor
218	Pressure supervision
241	Flow sensor solar sensor error
242	Return sensor solar sensor error
243	Swimming pool temperature sensor error
260	217 Flow temperature 3, sensor error
270	Limit function
317	Mains frequency outside permissible range
320	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	BX same sensors
325	BX / extension module same sensors
326	BX / mixing group same sensors
327	Extension module same function

Error Code	Error Description
328	146 Mixing group, same function
329	146 Extension module/mixing group, same
330	Sensor BX1 no function
331	Sensor BX2 no function
332	Sensor BX3 no function
333	Sensor BX4 no function
335	Sensor BX21 no function (EM1, EM2 or EM3)
336	Sensor BX22 no function (EM1, EM2 or EM3)
339	Collector pump Q5 not available
340	Collector pump Q16 not available
341	Solar Collector sensor B6 not available
342	DHW sensor B31 not available
343	Solar integration not available
344	Solar controlling element buffer K8 not available
345	Solar ctrl element swimming pool K18 not
346	Solid fuel boiler pump Q10 not available
347	Solid fuel boiler comparison sensor not available
348	Solid fuel boiler address error
349	Buffer return valve Y15 not available
350	Puffer address sensor
351	Primary controller / system pump address error
352	Pressureless header address error
353	Common flow sensor B10 not available
371	Flow temperature 3 (heating circuit 3) supervision
372	Limit thermostat heating circuit 3
373	Extension module 3 error (collective error)
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 under-voltage
386	Fan speed has lost valid range
387	129 Air pressure tolerance
388	DHW error no function
426	Feedback flue gas damper
427	Configuration flue gas damper
429	218 Dynamic water pressure too high
430	218 Dynamic water pressure too low
431	Sensor primary heat exchanger
432	Functional earth not connected
433	Temperature primary heat exchanger to high

9 CASCADE

SUPERBOX boilers can be used as a single boiler or as cascade for up to 16 boilers.
Particularly during the season passes, the heat requirement of the system may be very low. Cascade systems run only 1 boiler to meet this low heat requirement and provide efficient operation. In the same way, cascade systems, can activate all of the boilers when heat demand increased, saves energy by operating in a wide range of modulation.
Boilers in the cascade system share the heat load evenly. Master Boiler's EQUAL AGING function ensures that each boiler works evenly, ensuring high efficiency and long life time.
In cascade systems, one of the boilers is used as MASTER (LEADER), others are used as SLAVES (FOLLOWERS). While all settings of the cascade system are done via the MASTER boiler, SLAVE boilers work under the control of the MASTER boiler.

10 COMBUSTION ADJUSTMENTS

These combution settings mentioned below must be issued by authorized GASSERO services.

SUPERBOX boilers are offer to sale after all required combusiton, efficiency and safety controls. Emission settings mustn't be changed which are made by GASSERO. However, if there is a deviation in the values which are given below, emission settings should be changed by GASSERO authorized service.

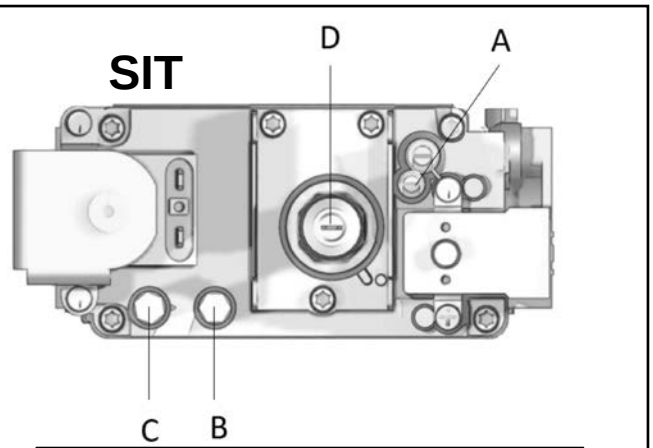
Flue gas analyzer must be used during to the combustion adjustments.

G20		***SUPERBOX 150***		***SUPERBOX 500***		***SUPERBOX 1000 V / H***	
		min.	***maks.***	***min.***	***maks.***	***min.***	***maks.***
CO2 emission	**%**	9,4	9,8	9	9,2	9,3	9,4
Gaz Consumption	**m³/h**	2,3	15,6	2,8	51,8	2,8	103,6
Flue gas mass flow	**g/sec.**	9,7	67,3	12,6	226,7	12,6	449,1

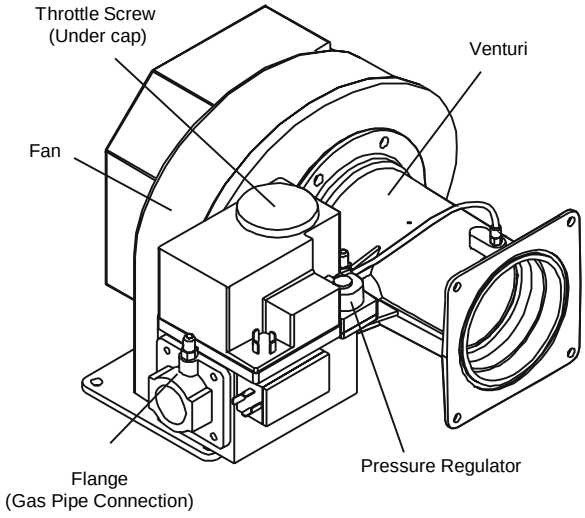
SUPERBOX MODEL BOILERS ARE DESIGNED TO WORK ONLY WITH NATURAL GAS.
They cannot be used with LPG.

10.1 EMISSION SETPOINTS

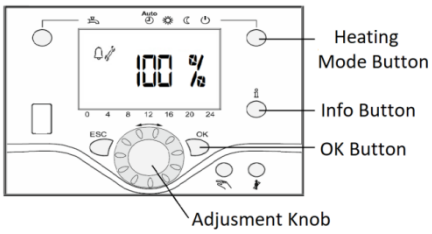
Two different types of gas valves are used in SUPERBOX boilers. Setpoints are given below.

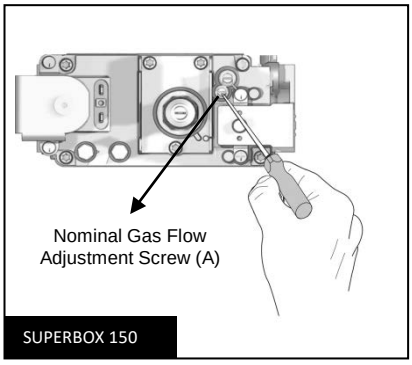


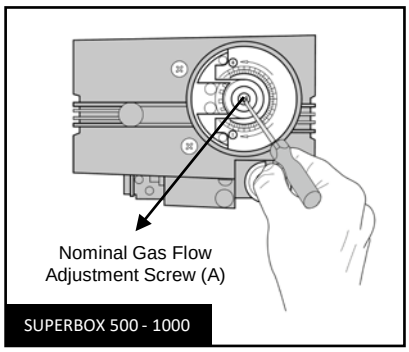
A – Nominal gas flow adjustment screw
B – Burner gas inlet measurement point
C – Main gas inlet measurement point
D – Minimum gas flow adjustment screw



10.2 NOMINAL LOAD EMISSION SETTINGS







Connect the Flue Gas Analyzer probe to the sampling point on the flue adapter.

Make sure that the Flue Gas Analyzer which will be used to adjust the combustion settings is calibrated and functioning correctly.

To run the boiler at nominal load;

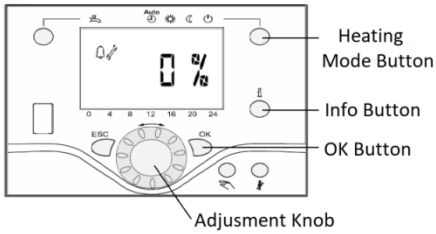
- Press and hold Heating Mode button for 3 sec.
- «Controller Stop Function On» will be mentioned on the screen
- Modulation rate will be displayed in % by pressing the Info button.
- Press OK button and change the modulation rate to %100 by turning the Adjusment Knob.
- Press OK button to apply.

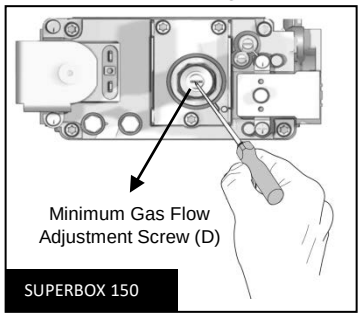
Turn the Nominal Gas Flow Adjustment Screw (A) (**+**) direction to increase the CO2 value. If you turn it (**-**) direction, the gas flow rate will decrease and therefore the CO2 value will decrease.

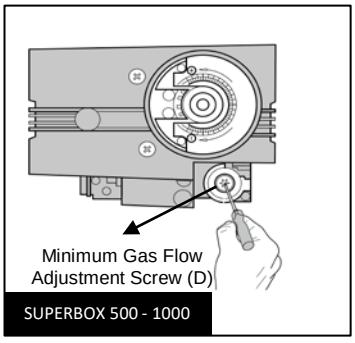
Before operating the boiler at nominal load, ensure that the valves in the system are open, the condensate drain line is open, the flue connections are gas-tight and the pumps are running.

Due to the danger of burning and scalding, be careful of the boiler and plumbing pipes which will become very hot.

10.3 MINIMUM LOAD EMISSION SETTINGS







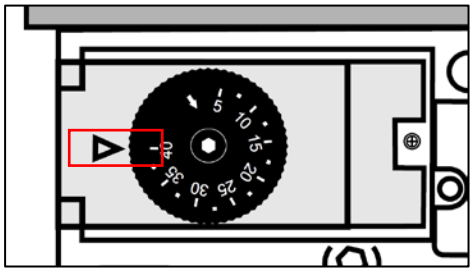
Minimum load emission setting is done by measuring the CO2 value in the flue gas. The following steps should be followed for this instant measurement on a boiler operating at minimum capacity.

To run the boiler at minimum load;

- Press and hold Heating Mode button for 3 sec.
- «Controller Stop Function On» will be mentioned on the screen
- Modulation rate will be displayed in % by pressing the Info button.
- Press OK button and change the modulation rate to %0 by turning the Adjusment Knob.
- Press OK button to apply.

Turn the Minimum Gas Flow Adjustment Screw (D) (**+**) direction to increase the CO2 value. If you turn it (**-**) direction, the gas flow rate will decrease and therefore the CO2 value will decrease.

10.4 GAS PRESSURE SWİTCH



SUPERBOX boilers are equipped with Gas Pressure Switch as a measure against high gas pressure. This value is adjusted to **40 mbar.** In cases where the mains pressure is higher than the set value, the gas pass is stopped and 132 (Safety Shutdown of Gas Processor) error code will be displayed on the control panel. This error code can only be reset by performing a reset operation.

Do not remove or change the gas pressure switch.

11 MAINTENANCE

Maintenance must be performed at least once a year for the following reasons:
- Less fuel will be consumed by achieving high efficiency.
- Operational safety will be ensured.
- The loss of comfort will be prevented by avoiding possible faults/errors.
- When the emissions of waste gases released into the environment are controlled, the environment will be protected.

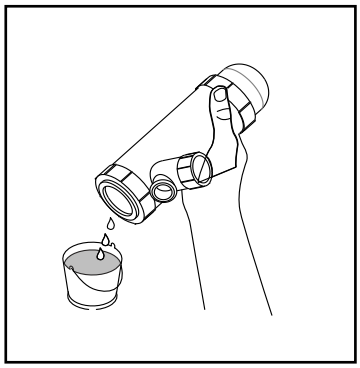
Maintenance must be made by authorized GASSERO services.
Malfunctions resulting from unauthorized interventions will be considered out of warranty.

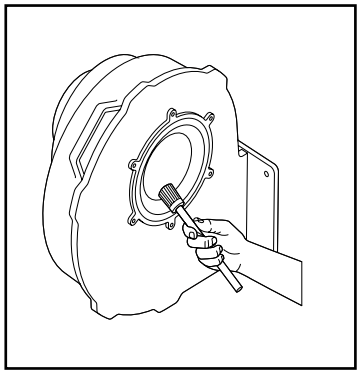
It is the responsibility of the operator / user to keep the place where the boiler is clean and tidy;
If you clean the surface of the boiler;
- Cut the boiler electrical supply via fuse,
- Do not use abrasive or chemical products to clean painted and plastic parts.
- Avoid water or liquid contact to the control panel and cables.

11.1 MAINTENANCE PROCESS

Life time of the boiler, installation and environment must be take into account, information / error / fault histories should be evaluated.
Issues such as fault history, operating times can be displayed via the display or PCB interface. Faults that may occur in the boiler can be determined by the service history.
This information should be added to the information provided by the consumer and the service history of the boiler should be established.
Authorized Gassero service responsible should inform the consumer about the defects in the installation or location and advise on the solution of these defects.

- Water inside the boiler will be drained. Do not use safety valve for drainage purposes except the drain valve. Results should be analyzed in terms of water quality by taking samples from the water inside the boiler (read the WATER QUALITY AND OPERATIONS section). Boiler filter will be cleaned. This filter is located at the bottom of the boiler. Cleaning of large filters in secondary system is the responsibility of installation / mechanical services.





- Water temperature and safety sensors on the supply and return line of the boiler will be removed, cleaned and replaced if necessary. Control of the sensors can be done by checking the temperature / resistance tables to detect that sensors are working properly.
- Burner and Heat Exchanger will be cleaned: Burner and heat exchanger surfaces / pores can be cleaned with a non-metal brush or compressed air. The burner gasket, or heat exchanger cap gasket (fuse) will be checked and has to be replaced if deformed.
- Siphon will be cleaned and the drain line will be checked. Once the condensate siphon has been cleaned, it must be filled with water again. If there is a congestion in the drainage line, the slope has to be checked.
- Ignition and ionization electrodes of the boiler will be removed and cleaned if necessary, replaced. Distances between the electrodes and the burner are very important in terms of ignition and flame detection.
- Distances which are shown below must be observed when adjusting the electrode distances.
- Electrodes with cracks in the ceramic parts must be replaced.
- Electrode gasket must be replaced if the electrode is cleaned or replaced.
- Gas pressure of the expansion tank will be checked and if there is an issue responsible will be warned about the completion of the gas (expansion tank is the responsibility of the installation / mechanical service).
- When filling the boiler with water, check that the water treatment units are running and active. A sample should be taken from the water filled in the boiler and the results of the analysis will be written to the service document.
- Water, gas, air, chimney and electrical connections will be checked.
- Gas leakage control will be made. For gas leakage control, a gas detector or leakage detection sprays may be used.
- Chimney connections will be checked for leakage of gas or condensation water.
- If there is an air inlet filter in the boiler, it will be checked and replaced if necessary.
- Electrical connections, sockets, grounding terminals will be checked.
- Automatic air relief valves, thermometers, manometers or similar control devices in the system will be checked, if any issues detected installation / mechanical service will be warned.
- After the boiler has been switched on, the burner must be checked with the analyzer and the emission settings will be re-made if necessary.
- Time / holiday settings which are made according to the requests of the consumer will be checked.
- Emission values (CO2 and O2) will be written to the service document by operating the boiler at nominal, minimum and partial load.
- Boiler submission: After all maintenance operations are carried out, the boiler will be submitted in a working position or stand-by position according to the request of the consumer. Display reminder for the next maintenance period will be programmed.
- Creating a maintenance file: A file should be created to remember the maintenance, date, replacement parts, recommendations and warnings about the boiler and store with the service documents.

12 ENERGY SAVING RECOMMENDATIONS

- INSULATION: Building insulation is one of the most important steps of energy saving. Insulated building allows you to get more energy using less fuel.
- ADJUSTING RIGHT TEMPERATURE VALUES: Selecting COMFORT and REDUCED TEMPERATURE values will save energy. Excessively selected COMFORT temperature will increase the energy consumption. To save more energy use REDUCED TEMPERATURE function more often.
- CORRECT PROGRAMMING: Selecting the correct operation ranges for automatic mode will save energy.
- INSTALLATION INSULATION: Insulation of pipes, collectors, boilers, storage tanks and chimneys in the boiler room saves energy. Installation pipes which will pass through unused spaces must also be insulated.
- WATER QUALITY: Water treatment will keep the water conditions under constant control and saves energy.
- REGULAR MAINTENANCE: Maintenance of the boiler once a year and reviewing the system periodically is also important for energy saving.

13 DISPOSAL

- When **SUPERBOX** boilers have to be disposed of, the procedures determined by the local authorities must be followed. Such wastes must be treated in accordance with the applicable regulations.
- Similarly, local regulations will be followed for the packaging wastes.

Leaving the non-functional units, spare parts and packaging materials in the environment and leaving them accessible to children can be dangerous. Such wastes must be treated in accordance with the applicable regulations.

Ignoring this warning may harm, people, animals and may cause property damage. Manufacturer is not liable for damages that may arise in such cases.

14 PRODUCT FICHE

Product fiche / ERP Information Form		
Supplier name		Gassero technology for your comfort
Model Name		**SUPERBOX 150**
Seasonal Space heating efficiency class		A
Rated heat output	P_{rated}	138,0 kW
At rated heat output and high-temperature regime, useful heat capacity (*)	P_4	133,1kW
At 30 % of rated heat output and low-temperature regime, useful heat capacity (**)	P_1	26,6kW
At rated heat output and high-temperature regime, useful efficiency (*)	η_4	88,0 %
At 30 % of rated heat output and low-temperature regime, useful efficiency (**)	η_1	97,7 %
Electricity Consumption		
at full load	el_{max}	0,461 kW
at part load	el_{min}	0,207 kW
in stand by mode	P_{sb}	0,007 kW
Standby heat loss	P_{stby}	0,142 kW
Ignition burner power consumption	P_{ign}	NA
Emissions of Nitrogen Oxide	NO_x	37 mg / kWh
Seasonal Space heating energy efficiency	η_s	91,3 %
Annual energy consumption	Q_{HE}	420 GJ
Sound power level indoors	L_{WA}	NA
Condensing boiler		Evet
Low temperature boiler		Hayır
B1 Boiler		Hayır
Combination heater		Hayır
Cogeneration space heater		Hayır
Temperature controls		
Supplier name		Siemens + TURKEY
Model name		LMS 14.047B109
Temperature control class [1]		VI
Contribution of temperature control to seasonal efficiency		4 %
Manufacturer	Gassero Isı Teknolojileri Sanayi Limited Şirketi	
Manufacturing address	İstanbul Endüstri ve Ticaret Serbest Bölgesi 4. Sokak Parsel No: 110/2 Tuzla/İstanbul/ TÜRKİYE	

Warning and information

Before any assembly, disassembly, installation or maintenance the user and installation manual has to be read attentively and to be followed.

1) Definition of class VI thermostat

— Class VI - Weather compensator and room sensor, for use with modulating heaters: A heater flow temperature control that varies the flow temperature of water leaving the heater dependent upon prevailing outside temperature and selected weather compensation curve. A room temperature sensor monitors room temperature and adjusts the compensation curve parallel displacement to improve room comfort. Control is achieved by modulating the output of the heater.

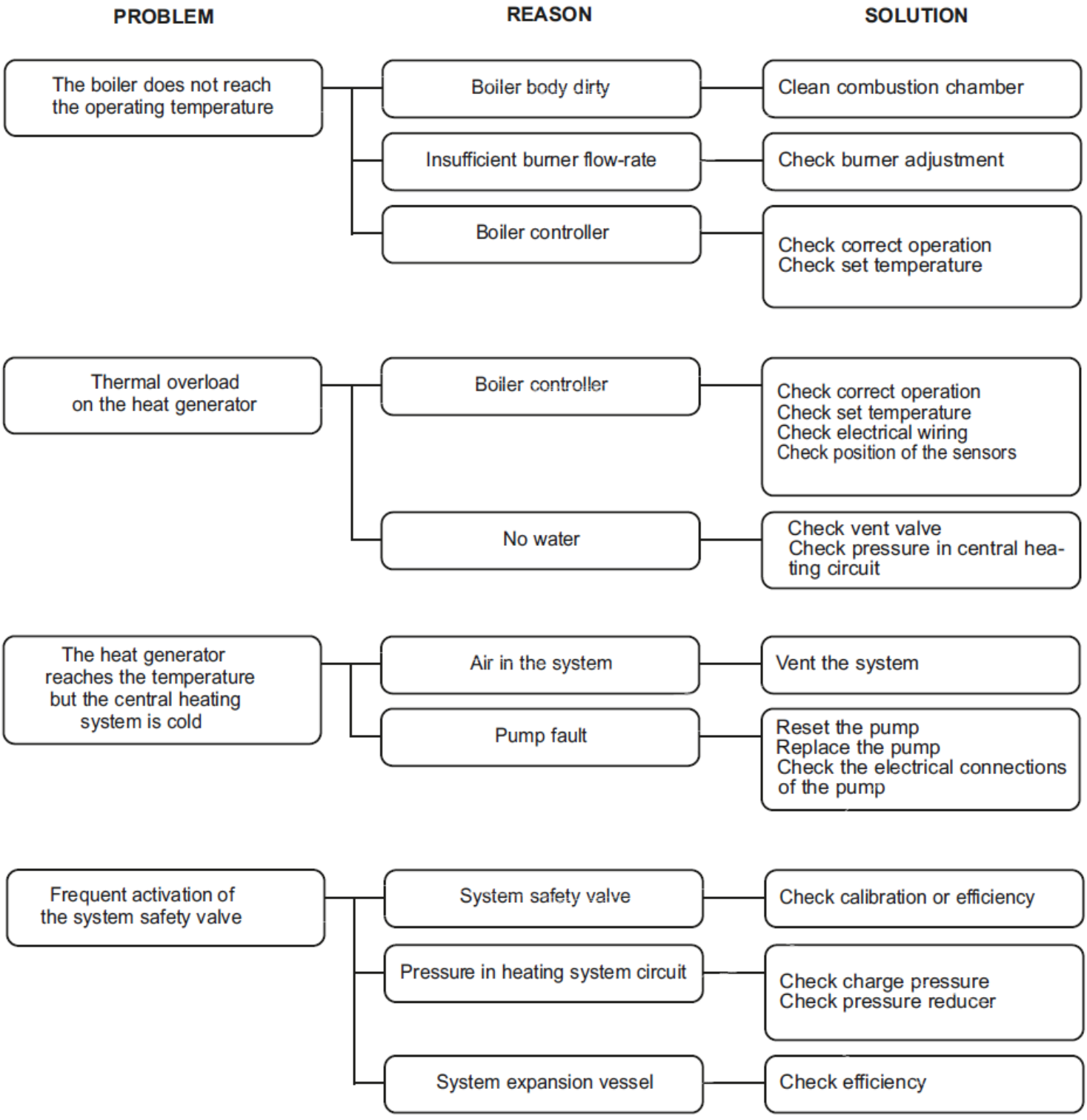
(*) High-temperature regime means 60 °C return temperature at heater inlet and 80 °C feed temperature at heater outlet.
(**) Low temperature means for condensing boilers 30 °C, for low-temperature boilers 37 °C and for other heaters 50 °C return temperature (at heater inlet).

In order to CE directives EU type inspection (Module B) has been made by Szutest in Brno laboratory. Production process inspection has been made by Kiwa certification organisation in order to module D production process based on quality assurance. Conformity marking: **"CE 0063"**

This document has been prepared in order to EU 811/2013 regulation.

15 TROUBLE SHOOTING

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 recieiving 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 con - nections
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


PROBLEM
REASON
SOLUTION
The boiler does not reach the operating temperature
Boiler body dirty
Clean combustion chamber
Insufficient burner flow-rate
Check burner adjustment
Boiler controller
Check correct operation
Check set temperature
Thermal overload on the heat generator
Boiler controller
Check correct operation
Check set temperature
Check electrical wiring
Check position of the sensors
No water
Check vent valve
Check pressure in central heating circuit
The heat generator reaches the temperature but the central heating system is cold
Air in the system
Vent the system
Pump fault
Reset the pump
Replace the pump
Check the electrical connections of the pump
Frequent activation of the system safety valve
System safety valve
Check calibration or efficiency
Pressure in heating system circuit
Check charge pressure
Check pressure reducer
System expansion vessel
Check efficiency

16 BOILER ROOM APPLICATION RECOMMENDATIONS

Gassero is strictly advising to use water softening unit before commissioning process for long term usage. Otherwise, system could harm because of undesirable substances.
It is strictly advising to use plate heat exchanger, if there is floor heating system on line.
The devices that are commissioned outside of the required conditions, could be out of warranty.

Water Condition Range

Total Hardness °d	pH (Aluminium)	pH (Stainless)	Iron (Not Diluted)	Condunctivity	Flushing
1	6,5-8,5	7,5-9,5	<10ppm	≤2000µS/cm	It is mandatory to comply with BSRIA 7593 (See: Gassero Flushing Process)

WATER CONDITIONS	Nitrite protection should not be used in boilers with aluminum heat exchangers
	As GASSERO, we recommend flushing in the system to prolong the life of system and boilers. No acid-based products should be used during flushing.
	The water used in the installation must be city-water. **Never use well-water**
	The boiler must be serviced annually. All this maintenance should be made by authorized service, water values and the water softening unit (resin, salt etc.) values should be measured and maintained by service.
	Depending on the water conditions specified in the table, the problems that may occur in the boiler heat exchanger could make out of warranty.
	Assembly and installation should made according to Gassero sample schemes.
HYDRAULIC	Boiler (primary) pump must be selected to in accordence with the required pressure and flow rate.
	The boiler (primary) pump must be in the direction of the installation return line to the boiler.
	The system operating pressure should match with the working pressure of boiler. Sales Engineers could give consultancy.
	All heat exchanger manufacturers; recommends to use of plate exchanger instead of the hydraulic separator for seperate the primary circuit and the secondary circuit.
	Domestic waste system could be used for condensate water. In system with a total power of 200 KW and above, a neutralization tank must be used.
	Boiler output and input diameters must be strictly followed, other equipment should be selected according to the this diameters. In order to install other equipment, the diameter of the boiler out should not be reduced.
	It is mandatory to use a suitable diameter filter and check valve to the boiler return line pipe at each boiler turn.
	Please contact our service department about detail of collector connection in installation of floor type boiler.
	Additional zone control modules and sensors must be requested if there are equipment such as three-way valves and boilers that must be checked on the heating collector. Please contact our Sales Engineer for more information.
	Must use air separator and dirt separator with hydraulic separator.
	In case the plate heat exchanger is used instead of the hydraulic separator as the system separator, expansion tank must be placed in the primary circuit.
	If an automatic filling valve is used in the system, a water meter must be used for following how much water is added to the system.
	In cascade systems, the sensor housing must be placed on the hydraulic separator or on the secondary flow line. If the system is separated by a plate heat exchanger, place the sensor housing on the secondary circuit flow line.
ELECTRIC AND FLUE	6A fuses must be used for the power supply of the boilers. The electrical system must be grounded.
	Chimney connections must be made in accordance with the chimney types and regulations.
	The flue gas analysis measuring probe (probe hole) must be opened by the flue company for each boiler.
	Boiler chimneys should be extended by a minimum 1 meter from the boiler flue outlet direction and then connected to the chimney collector without elbows or with elbows.
	If the chimney connections passes over the boiler, the connections should be checked properly and water tightening should be provided. Water in the chimney due to leaks may cause the system out of warranty. Adequate ventilation should be provided for the boiler room.
GAS AND OTHER	The operating pressure of the boilers in the natural gas installation is 21 Mbar. Therefore, it is necessary to use a regulator in the gas line. There should be a minimum distance of 1-2 meters between the regulator and the boiler gas flange. There should be discharge line after regulator for discharge of the excess air.
	In order to control the gas pressures, the manometer must be fitted before and after the regulator.
	Gassero boilers are manufactured for heating and domestic water. Not suitable for industrial purposes. **GASSERO shall not be held responsible for any problems arising out of the design purpose.**

Gassero

technology for your comfort

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