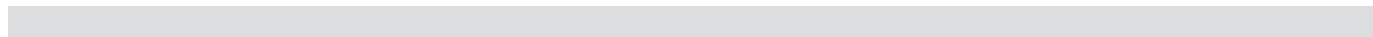




ARES Tec 440-900

Installation, Operation & Maintenance Manual



Warning this manual contains the exclusive instructions for use for professionally qualified installers and/or maintenance technicians, in compliance with laws in force.

The individual in charge of the system is NOT authorised to work on the boiler.

The manufacturer will not be held liable in the case of damage to people, animals or property due to the failure to observe the instructions contained in the manuals supplied with the boiler.

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Instructions on how to correctly dispose of the product.

At the end of its life, this appliance must not be disposed of as mixed municipal waste.

It is mandatory to separate this type of waste so that the materials making up the appliance can be recycled and reused. Contact authorised operators for disposal of this type of appliance. Incorrect management of waste and its disposal has potential negative effects on the environment and on human health. The symbol on the appliance represents the prohibition of disposing of the product as mixed municipal waste.

1 GENERAL INFORMATION

1.1 GENERAL WARNINGS

The instruction handbook is an integral and essential part of the product and must be kept safe by the user.

Read the warnings contained in the handbook carefully, as they provide important instructions regarding installation, user and maintenance safety.

Keep the handbook safe for future consultation.

The appliance must be installed and maintained in accordance with regulations in force, pursuant to the instructions of the manufacturer, the state of the art and by authorised and qualified personnel, in accordance with the law.

Domestic hot water production systems **MUST** be built entirely with compliant materials.

Professionally qualified personnel means staff with specific technical skills in the sector of heating system parts for civil use, hot water production for domestic use and maintenance. This personnel must have the authorisations required by legislation in force.

Incorrect installation or poor maintenance can cause injury to persons and animals and damage to objects, for which the manufacturer is not liable.

Before carrying out any cleaning or maintenance operations, cut the appliance off from the power mains by acting on the switch on the system and/or using the cut-off devices.

Do not obstruct the intake/exhaust pipe terminals.

In case of breakdown and/or poor operation of the appliance, switch it off, and do not attempt in any way to repair it or intervene directly. Only contact an authorised company that has been authorised in accordance with the law.

Any repairs to the products must be carried out by an authorised company only, using original spare parts only. Failure to observe the above can jeopardise the safety of the appliance and will void the warranty.

The guarantee the efficiency of the appliance and its correct operation it is essential for authorised company to carry out annual maintenance.

If the appliance is put out of use for downtime, any part that is susceptible to posing a potential source of danger must be made safe. Before re-commissioning an appliance that has been put out of use, proceed to washing the domestic hot water production system, making water flow through it for the amount of time required to change the water completely.

If the appliance is sold or transferred to another owner or if the owner moves, leaving the appliance behind, always ensure the handbook accompanies the appliance so that it may be consulted by the new owner and/or installer.

All appliances with optionals or kits (including electric) must only use original spare parts.

The appliance must only be employed for its expressly foreseen use. Any other use must be considered improper and therefore dangerous.



ATTENTION!

The heat unit must be installed so as to avoid, under the envisioned operating conditions, the liquid contained in it from freezing and avoid exposing the command and control parts to temperatures below **-15°C** and over **+40°C**.

The heat unit must be protected from climatic/environmental variations by:

- insulating the hydraulic and condensation exhaust pipes
- adopting specific anti-freeze products in the hydraulic system.

1.2 SYMBOLS USED IN THE MANUAL

When reading this manual, pay special attention to the parts marked with these symbols:



DANGER!
Serious danger to
safety and life



ATTENTION!
Possibly dangerous
situation for the product
and environment



NOTE!
Tips for the user



DANGER!
Scalding hazard!



OBLIGATION!
Wear protective
gloves

1.3 COMPLIANT USE OF THE APPLIANCE



The ARES Tec ErP appliance was built based on the current technical level and recognised technical safety rules. Nevertheless, following improper use the safety and life of the user or other people may be exposed to danger, i.e. damage to the appliance or other objects.

The appliance is designed for operation in hot water circulating heating systems.

Any other use is considered improper.

Stokvis Energy Systems will not be held liable for any damage resulting from improper use.

Any use in accordance with the envisioned purposes includes the strict observance of the instructions in this manual.

1.4 INFORMATION FOR THE SYSTEM MANAGER



The user must be instructed in the use and operation of his/her heating system, in particular:

- Deliver these instructions to the user, as well as the other documents relative to the appliance contained in the packaging in an envelope. **The user must keep this documentation safe so that it is available for future consultation.**
- Inform the user of the importance of aeration vents and the flue exhaust system, highlighting how essential they are and how it is strictly forbidden to change them.
- Inform the user on how to control the water pressure in the system as well as the operations required to restore it.
- Inform the user on how to correctly regulate the temperature, control units/thermostats and radiators in order to save energy.
- Remember that in compliance with the laws in force, the equipment must be inspected and maintained according to the requirements and on the basis set down by the manufacturer.
- If the appliance is sold or transferred to another owner or if the owner moves, leaving the appliance behind, always ensure the manual accompanies the appliance so that it may be consulted by the new owner and/or installer.

The manufacturer will not be held liable in the case of damage to people, animals or property due to the failure to observe the instructions contained in this manual.

General information

1.5 SAFETY WARNINGS



ATTENTION!

The appliance must not be used by children.

The appliance can be used only by adults who have read the instruction manual for the user / manager with care. Children must be supervised to ensure they do not play or tamper with the appliance.



ATTENTION!

Installation, adjustment and maintenance of the appliance must be carried out by professionally authorised company, in compliance with regulations and provisions in force, as incorrect installation can cause damage to people, animals and property, for which the manufacturer will not be held liable.



DANGER!

NEVER attempt to carry out maintenance or repairs on the boiler of your own initiative.

Any work must be carried out by professionally qualified staff; we advise you to stipulate a maintenance contract.

Poor or irregular maintenance can compromise the operational safety of the appliance and cause damage to people, animals and property for which the manufacturer will not be held liable.



Changes to parts connected to the appliance (after installation of the appliance)

Do not make changes to the following elements:

- to the boiler
- to the gas, air, water and power supply lines
- to the flue pipe, safety valve and exhaust pipe
- to the constructive elements that affect the operational safety of the appliance.



ATTENTION!

To tighten or loosen the screw-attached fittings, use suitable wrenches only.

Improper use and/or unsuitable tools can cause damage (for ex. water and gas leaks).



ATTENTION!

Instructions for appliances running on propane gas

Make sure that the gas tank has been deaerated prior to installing the appliance.

For a thorough deaeration of the tank contact the liquid gas supplier and in any case authorised company, in accordance with the law.

Ignition problems can arise if the tank is not thoroughly deaerated.

In this case contact the liquid gas tank supplier.



Smell of gas

In case of the smell of gas observe the following safety instructions:

- do not use electric switches
- do not smoke
- do not use the telephone
- shut off the gas cut-off valve
- aerate the room where the gas leak occurred
- notify the gas supply company or a company specialised in the installation and maintenance of heating systems.



Explosive and easily flammable substances

Do not use or deposit explosive or easily flammable materials (for ex. petrol, paints, paper) in the room where the appliance is installed.



ATTENTION!

Do not use the appliance as a base to support any object. Specifically, do not place receptacles containing liquids (Bottles, Glasses, Containers or Detergents) on top of the boiler. If the appliance is installed inside a box, do not insert or place other objects inside it

1.6 TECHNICAL DATA PLATE

CE Marking

certifies conformity of the appliance with the essential safety requirements set down by the directive and applicable European regulations, and operation in compliance with the technical standards of reference.

The CE marking is applied on each appliance with a label.

The CE declaration of conformity, released by the Manufacturer in compliance with the international regulations in force, can be found in the documents enclosed with the product.

The technical data plate is located under the casing, on the front cross member. There is a **DUPLICATE** of the plate near the temperature control unit.



		(2)			
Model	(3)				
S.N°	(5) /	PIN	(6)		
Types	(7)	NOx	(8)		
<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Central Heating</div> <div style="margin-left: 10px;"> <div style="border: 1px solid black; padding: 2px;">A</div> </div> </div>	Pn	(9) kW	Pcond	(10) kW	
	Qn	(11) kW	Adjusted Qn	(12) kW	
	PMS	(13) bar	T max	(14) °C	
<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">DHW</div> <div style="margin-left: 10px;"> <div style="border: 1px solid black; padding: 2px;">B</div> </div> </div>	Qnw	(15) kW	D	(16) l/min	
	PMW	(19) bar	T max	(20) °C	
		s	(29) %	wh	(30) %
<div style="display: flex;"> <div style="flex: 1;"> <div style="border: 1px solid black; padding: 2px;">E</div> <div style="border: 1px solid black; padding: 5px;"> Factory setting MET GPL <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; margin-right: 10px;"> </div> <div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> <div style="border: 1px solid black; width: 100%; height: 100%;"></div> </div> </div> </div> </div> <div style="display: flex;"> <div style="flex: 1;"> <div style="border: 1px solid black; padding: 2px;">C</div> <div style="border: 1px solid black; padding: 5px;"> Electrical Power supply <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px;">(21) V</div> <div style="border: 1px solid black; padding: 2px;">Hz</div> <div style="border: 1px solid black; padding: 2px;">(22) W</div> </div> <div style="border: 1px solid black; padding: 2px;">IP class: (23)</div> </div> </div> <div style="flex: 1;"> <div style="border: 1px solid black; padding: 2px;">D</div> <div style="border: 1px solid black; padding: 5px;"> Countries of destination <div style="display: flex;"> <div style="border: 1px solid black; width: 33%; height: 100%;"></div> <div style="border: 1px solid black; width: 33%; height: 100%;"></div> <div style="border: 1px solid black; width: 33%; height: 100%;"></div> </div> </div> </div> </div> </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="margin-right: 10px;"> </div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">(28)</div> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;">(1)</div> </div> <p style="text-align: right;">Made in Italy</p>					

KEY:

- 1 = CE supervisory body
- 2 = Type of boiler
- 3 = Boiler model
- 5 = (S.N°) Serial Number
- 6 = P.I.N. Product Identification Number
- 7 = Types of approved flue exhaust configurations
- 8 = (NOx) NOx class

- A = Characteristics of the heating circuit
- 9 = (Pn) Useful heat output
- 10 = (Pcond) Useful output in condensation
- 11 = (Qn) Maximum heat input
- 12 = (Adjusted Qn) Adjusted for useful heat input
- 13 = (PMS) Max. central heating operating pressure
- 14 = (T max) Max. central heating temperature

- A = Characteristics of the DHW circuit
- 15 = (Qnw) Nominal heat input in DHW mode (if different from Qn)
- 16 = (D) Specific flow rate for DHW according to EN625-EN13203-1
- 19 = (PMW) Max. DHW operating pressure
- 20 = (T max) Max. DHW temperature

- C = Electrical features
- 21 = Electric power supply
- 22 = Consumption
- 23 = Degree of protection

- D = Countries of destination
- 24 = Direct and indirect countries of destination
- 25 = Gas category
- 26 = Supply pressure

- E = Factory settings
- 27 = Adjusted for gas type X
- 28 = Space for national brands

- G = ErP
- 29 = Seasonal central heating energy efficiency
- 30 = Seasonal water heating energy efficiency.

General information

1.7 WATER TREATMENT



Treating the supply water allows you to prevent problems and maintain the functionality and efficiency of the generator over time.



The ideal pH value of the water in the central heating system must be:

VALUE	MIN	MAX
PH	6,5	8
HARDNESS (°fr)	9	15



To minimise corrosion, it is essential to use a corrosion inhibitor. In order for it to work efficiently, the metal surfaces must be clean.



ATTENTION!

Any damage caused to the boiler, due to the formation of build-up or corrosive water, will not be covered by the warranty.



ATTENTION!

The models only equipped with central heating are NOT suitable for hot water production for human consumption (M.D. 174/2004).

1.8 BOILER FROST PROTECTION

Activated by default

This protection only cuts in when the electric and gas supply are present. If the electric or gas supply are disconnected and 11 (SM) detects a temperature of between 2 and 5°C when the supply is restored, the appliance responds as indicated in the table below, in pos.2.



Antifreeze products with an inhibitor for central heating systems (specific for multimetal) can be used to ensure efficient protection of the central heating against freezing.



Do not use antifreeze products for car engines since these can damage the water gaskets.

POS	ANTIFREEZE FUNCTION				
	Supply		11 - SR (*)	Status of antifreeze function	Actions
	Electric	Gas			
1	ON	ON	< 7°C	ON	Burner and Pump ON until T > 15°C
2	ON	OFF	< 5 ÷ 5°C	OFF	INDICATION OF FAULT CODE 16 (see Par. 4.4 ERROR CODES). Ignition inhibited.
	OFF	ON		OFF	Ignition inhibited.
	OFF	OFF		OFF	Ignition inhibited.

(*) SR sensor, see Par. 2.2

2 TECHNICAL CHARACTERISTICS AND DIMENSIONS

2.1 TECHNICAL CHARACTERISTICS

- Heat generator, to heat Low Nox condensation gas
- Comprised of a heat module designed to operate on its own or in a set
- Can be set up directly outside (IP X5D)
- Low water content
- High response speed to load changes
- Single flue exhaust that can be positioned on 3 sides
- Unified flow and return hydraulic manifolds
- Comprised of 3 or more heating elements (between 3 and 7), aluminium/silicon/magnesium casting
- Including total irradiation premixing modulating burners
- None of the heating elements have hydraulic cut-off devices
- Single gas supply pipe
- Modulated power between 12 ÷ 50 kW/element.

TEMPERATURE CONTROL DEVICES:

- ROOM NTC sensor (every heating element)
- Room Limit Thermostat (every heating element)
- Flow NTC sensor (General)
- Return NTC sensor (General)
- Approved safety thermostat
- BCM global flow probe.

OTHER SAFETY DEVICES according to the R COLLECTION.

POP-UP control panel composed of:

- ON-OFF switch
- HSCP boiler thermoregulation/manager
- BCM (internal cascade management board)
- Protection fuses
- Any limit thermostats > 350kW
- Fan air pressure switch
- Condensation water level sensor
- Gas pressure switch
- Exhaust pressure switch (anti-obstruction).

- The entire heating unit is equipped with global temperature control NTC sensors on the flow and return manifolds.
- Integral insulation with non-allergenic synthetic wool.
- Total premix burner, modulating, with "metal foam" radiation combustion chamber. Premixing in the fan. Automatic separating backflow diaphragm from the combustion chamber.
- Sound emissions at maximum power below 52 dBA for models 100-350, 54 dBA for models 440-770 and 56 dBA for 900.
- Operation during heating: determining the instantaneous power through a control microprocessor, with preset comparison parameters between requested temperature (or calculated by the outdoor thermoregulation) and global flow temperature.
- Logic of operation:
 - Possibility of controlling the power of the single heating elements for calibration and/or assistance with reserved access code.
 - Domestic hot water production using a priority NTC probe, for control by a storage tank loading pump or diverter valve, is done with an SHC module that is supplied with the boiler.
- Possibility of controlling the power of the single heating elements.
- Heat request control: temperature setpoint and modulation level.
- Monitoring the state of operation and temperatures.
- Alarm notification.
- Parameter setting.
- Control relay to switch on a pump at a fixed speed.
- Analogue 0÷10V output to control a modulating pump.
- Emergency operation: this allows you to avoid the system from stopping due to an interruption in communication with the adjusting system or possible remote management of the control unit:
- Emergency temperature with maximum power 100%.
- Alarm management.
- Alarm reset input.
- Alarm notification Relay.
- Condensation collection tray with stainless steel exhaust trap.
- Easily removable integral panelling comprised of oven-painted steel panels suitable for outdoor installation.
- Condensation collection tray with stainless steel exhaust trap and flue chamber.
- Incorporated deaerator.

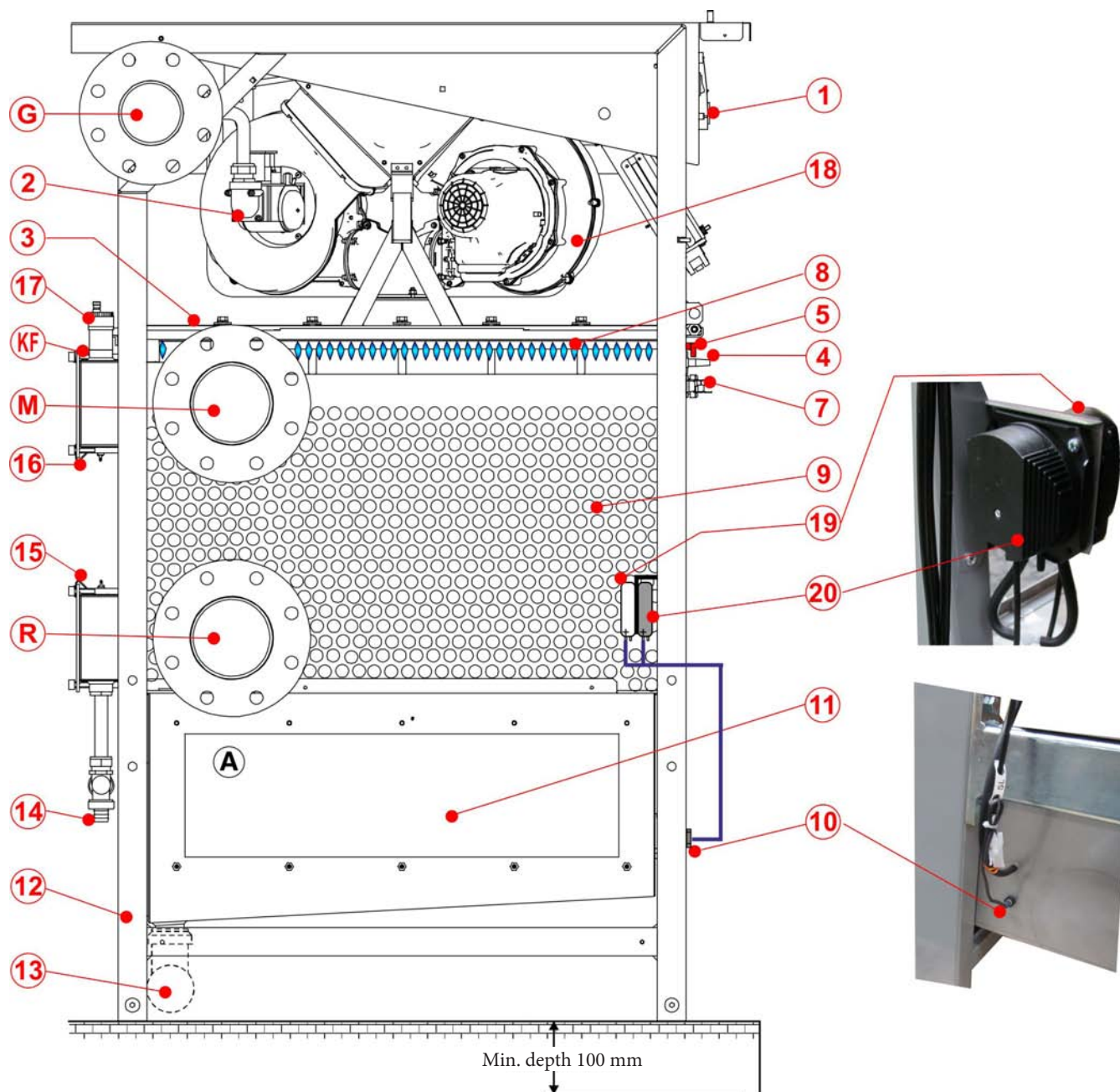
The request for heat can be generated by the HSCP thermoregulation/manager or alternatively by the BCM (Boiler controller).

The management logic envisions simultaneous operation of the maximum number of heat elements, so as to always obtain the maximum efficiency. Since it guarantees the maximum exchange area based on the delivered power. The elements are made to operate so as to equally divide the operating time.

The hot water that is produced is pushed by the pump located on the return of the primary ring to the flow of the hydraulic separator. From here a second pump (system - see suggested diagrams) will distribute to the various utilities. From the system, return the cooled water is taken in by the pump on the return, through the hydraulic separator, to start the cycle towards the generator again.

Technical characteristics and dimensions

2.2 VIEW OF MAIN PARTS



KEY			
N°	Error code	Wiring diagram	Description
1		HSCP	CONTROL PANEL
2		VG	GAS VALVE
3			BURNER COVER
4		E. ACC.	IGNITION
5		E. RIL.	IONISATION
7		TL	LIMIT THERMOSTAT
8			BURNER
9			SILICON ALUMINIUM EXCHANGER
10		SL	LEVEL SENSOR
11			CONDENSATION COLLECTION PAN / FLUE FITTING
12			FRAME

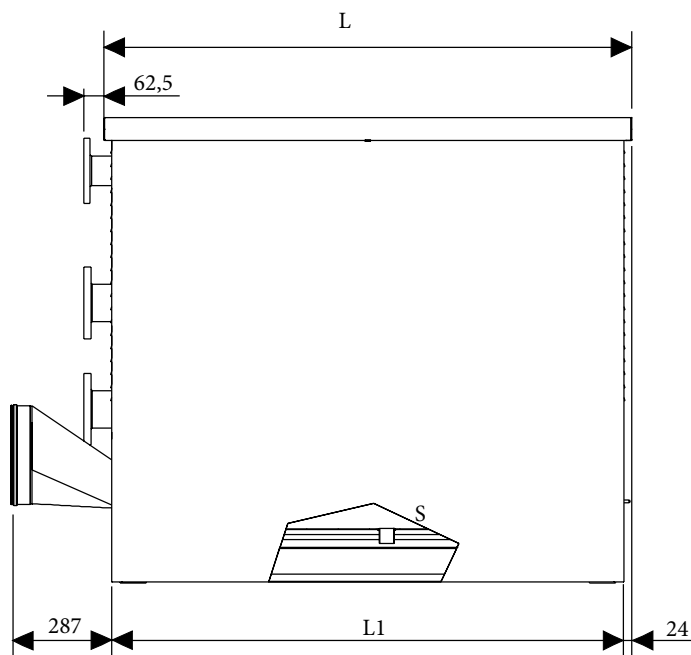
13			CONDENSATE DRAIN OUTLET
14			DRAINING VALVE
15		SRR	RETURN GLOBAL NTC
16		SMG	PROBE FLOW GLOBAL NTC
17			AUTOMATIC AIR BLEED VALVE
18			FAN
19		PF min	MINIMUM FLUE PRESSURE SWITCH
20		PF	FLUE PRESSURE SWITCH



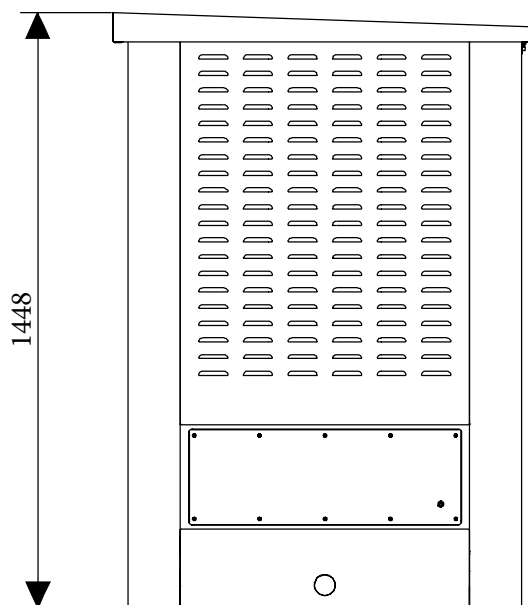
flue outlet LEFT, RIGHT, REAR side
flow LEFT side
return LEFT side
Gas inlet LEFT side
BCM: under the front casing

2.3 DIMENSIONS

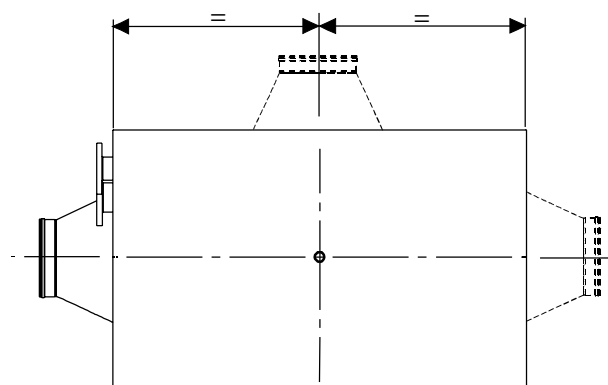
FRONT VIEW



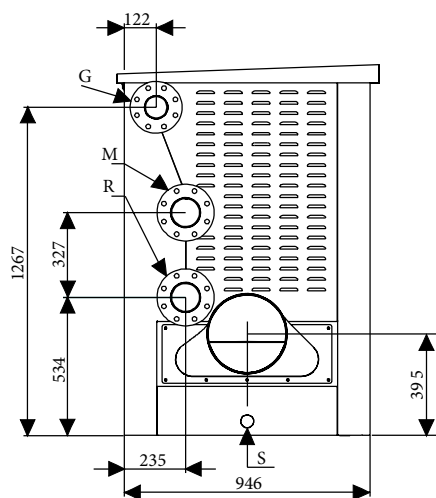
RIGHT SIDE VIEW



TOP VIEW



LEFT SIDE VIEW



Flue outlets:

Left side (supply condition)

Right side

Rear side

ARES Tec ErP		440	550	660	770	900
Dimensions	Unit					
Heating elements	n°	4	5	6	7	8
Height	mm	1448	1448	1448	1448	1448
Width "L"	mm	1087	1355	1355	1623	1623
Width "L1"	mm	1039	1307	1307	1575	1575
Depth	mm	946	946	946	946	946
Attachment sizes						
G Gas fitting	mm (inch)	80 (3)	80 (3)	80 (3)	80 (3)	80 (3)
F System flow	mm (inch)	100 (4)	100 (4)	100 (4)	100 (4)	100 (4)
R System return	mm (inch)	100 (4)	100 (4)	100 (4)	100 (4)	100 (4)
Flue fitting	mm	250	250	300	300	300
Condensate drain	mm	40	40	40	40	40

Technical characteristics and dimensions

2.4 OPERATING DATA / GENERAL CHARACTERISTICS

For the adjustment data: NOZZLES - PRESSURES - DIAPHRAGMS - FLOW RATES refer to the paragraph ADAPTATION FOR USE WITH OTHER GASES.

ARES Tec ErP		440	550	660	770	900
Boiler category		II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}	II _{2H3P}
Modulation ratio		1 : 19,6	1 : 24,5	1 : 29,4	1 : 34,3	1 : 39,2
Nominal heat input on L.V.C. Q _n	kW	432	540	648	756	864
Minimum heat input on L.C.V. Q _{min}	kW	22	22	22	22	22
Nominal effective power (Tr 60 / Tf 80 °C) P _n	kW	424,3	530,4	636,5	742,6	849,0
Minimum effective power (Tr 60 / Tf 80 °C) P _{n min}	kW	20,6	20,6	20,6	20,6	20,6
Nominal effective power (Tr 30 / Tf 50 °C) P _{cond}	kW	445,0	557,8	670,1	783,2	900,3
Minimum effective power (Tr 30 / Tf 50 °C) P _{cond min}	kW	23,9	23,9	23,9	23,9	23,9
Efficiency at nominal power (Tr 60 / Tf 80°C)	%	98,2	98,2	98,2	98,2	98,2
Efficiency at minimum power (Tr 60 / Tf 80°C)	%	93,5	93,5	93,5	93,5	93,5
Efficiency at nominal power (Tr 30 / Tm 50°C)	%	104,0	104,0	104,0	104,0	104,0
Efficiency at minimum power (Tr 30 / Tm 50°C)	%	109,0	109,0	109,0	109,0	109,0
Efficiency at 30% of the load (Tr 30°C)	%	107,3	107,5	108,3	107,8	107,6
Efficiency class according to directive 92/42 EEC	--	4	4	4	4	4
Combustion efficiency at nominal load	%	97,8	97,8	97,8	97,8	97,8
Combustion efficiency at a reduced load	%	98,5	98,5	98,5	98,5	98,5
Losses from operating burner casing (Q _{min})	%	5,04	5,04	5,04	5,04	5,04
Losses from operating burner casing (Q _n)	%	0,1	0,1	0,1	0,1	0,1
Flue temperature at net of Tf-Ta (min)(*)	°C	31,0	31,0	31,0	31,0	31,0
Flue temperature at net of Tf-Ta (max)(*)	°C	46,7	46,7	46,7	46,7	45,8
Maximum permitted temperature	°C	100	100	100	100	100
Maximum operating temperature:	°C	85	85	85	85	85
Mass flue flow rate (min)	kg/h	37	37	37	37	37
Mass flue flow rate (max)	kg/h	740	925	1111	1296	1515
Air excess	%	29,5	29,5	29,5	29,5	29,5
Chimney losses with burner in operation (min)	%	1,5	1,5	1,5	1,5	1,5
Flue losses with burner in operation (max)	%	2,58	2,53	2,51	2,58	2,58
Minimum pressure of heating circuit	bar	0,5	0,5	0,5	0,5	0,5
Maximum pressure of heating circuit	bar	6,0	6,0	6,0	6,0	6,0
Water content	l	67	80	94	108	122
Methane gas consumption G20 (supp.press. 20 mbar) at Q _n	m³/h	45,68	57,10	68,52	79,94	91,36
Methane gas consumption G20 (supp.press. 20 mbar) at Q _n	m³/h	2,33	2,33	2,33	2,33	2,33
Gas consumption G25 (supp.press. 20/25 mbar) at Q _n	m³/h	53,13	66,41	79,69	92,97	106,25
Gas consumption G25 (supp.press. 20/25 mbar) at Q _n	m³/h	2,71	2,71	2,71	2,71	2,71
Propane gas consumption (supp.press. 37/50 mbar) at Q _n	kg/h	33,53	41,92	50,30	58,68	67,01
Propane gas consumption (supp.press. 37/50 mbar) at Q _n	kg/h	1,71	1,71	1,71	1,71	1,71
Maximum pressure available at flue base	Pa	100	100	100	100	100
Max condensate production	kg/h	73,4	91,7	110	128,4	146,7
Emissions						
CO at maximum heat input with 0% O ₂	mg/kWh	58	58	56	61	58
NOx at maximum heat input with 0% O ₂	mg/kWh	40	40	38	36	37
NOx class		6	6	6	6	6
(**) Sound pressure level	dBA	54	54	54	54	56
Electrical data						
Frequency/Power supply voltage:	V/Hz	230/50	230/50	230/50	230/50	230/50
Supply fuse	A (R)	6,3/10	6,3/10	6,3/10	6,3/10	6,3/10
(**) Degree of protection	IP	X5D	X5D	X5D	X5D	X5D

(*) Room Temperature = 20°C

CO₂ (min/max) See "NOZZLES - PRESSURES" table

Seasonal Energy Efficiency according to 2009/125 EEC (<=400Kw) η_s - see Table ErP

Losses at shutdown at ΔT 30°C - P_{stb} - see Table ErP



Electrical consumption in standby - P_{sb} - see Table ErP

(**) See "NOZZLES - PRESSURES" table

(***) The IP X5D degree of protection is obtained with the lid lowered.



2.4.1 TECHNICAL DATA ACCORDING TO THE ERP DIRECTIVE

ARES TEC ErP			440	550	660	770	900
Element	Symbol	Unit					
Useful heat output	Nominal output	kW	424	530	636	743	849
Room central heating seasonal energy efficiency	ηs	%					
Central heating seasonal efficiency class			★	★	★	★	★
For boilers for central heating and combination boilers: useful heat output							
Useful heat output in high temperature mode (Tr 60 °C / Tm 80 °C)	P4	kW	-	-	-	-	-
Efficiency at nominal heat output in high temperature mode (Tr 60 °C / Tm 80 °C)	η4	%	-	-	-	-	-
Useful heat output at 30% nominal heat output in low temperature mode (Tr 30 °C)	P1	kW	-	-	-	-	-
Efficiency at 30% nominal heat output in low temperature mode (Tr 30 °C)	η1	%	-				
Boiler with power range adjustment: YES / NO							
Auxiliary electricity consumption							
At full load	elmax	kW	0,626	0,783	0,940	1,096	1,252
At partial load	elmin	kW	0,054				
In standby mode	PSB	kW	0,020				
Other items							
Heat loss in standby	Pstb	kW	0,2114	0,2114	0,2114	0,2114	0,2114
Annual electrical consumption	QHE	GJ	1303	1633	1959	2286	2612
For mixed central heating appliances							
Emissions of nitrogen oxides ref. PCI (PCS)	NOx	Mg/kWh	23	27	27	27	27
Water central heating energy efficiency	ηwh	%	-	-	-	-	-
Daily electrical power consumption	Qelec	kWh	-	-	-	-	-
Daily fuel consumption	Qfuel	kWh	-	-	-	-	-
Sound power level indoors	Lwa	dB (A)	-	-	-	-	-
Annual electrical consumption	AEC	kWh	-	-	-	-	-
Annual fuel consumption	AFC	GJ	-	-	-	-	-
DHW seasonal efficiency class			-	-	-	-	-

Technical characteristics and dimensions

2.4.2 DETERMINING THE PRIMARY CIRCUIT PUMP OR BOILER PUMP

The boiler pump must have head that can ensure circulator flow rates according to the circuit's Δt .

The pump is not an integral part of the boiler. It is advisable to choose a pump with a flow rate and head of approximately 2/3 of its typical curve.



The pumps must be determined by the installer or designer based on the data for the boiler and system.

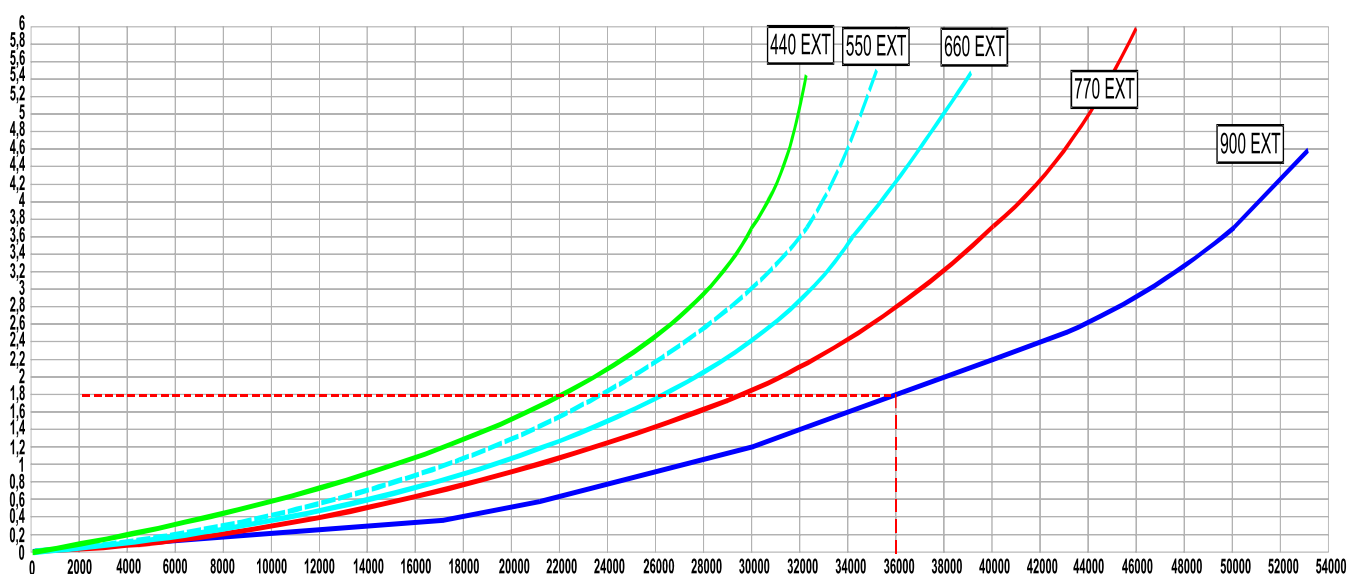
ARES TEC 440 ErP	
Maximum flow rate in l/h ($\Delta t = 15$ K)	24.326
Nominal requested flow rate in l/h ($\Delta t = 20$ K)	18.243

ARES TEC 550 ErP	
Maximum flow rate in l/h ($\Delta t = 15$ K)	30.404
Nominal requested flow rate in l/h ($\Delta t = 20$ K)	22.804

ARES TEC 660 ErP	
Maximum flow rate in l/h ($\Delta t = 15$ K)	36.487
Nominal requested flow rate in l/h ($\Delta t = 20$ K)	27.365

ARES TEC 770 ErP	
Maximum flow rate in l/h ($\Delta t = 15$ K)	42.570
Nominal requested flow rate in l/h ($\Delta t = 20$ K)	31.926

ARES TEC 900 ErP	
Maximum flow rate in l/h ($\Delta t = 15$ K)	48.647
Nominal requested flow rate in l/h ($\Delta t = 20$ K)	36.487



EXAMPLE:

For a ΔT 20K, of an ARES Tec ErP 900 the maximum required flow rate is 10514 l/h. From the head loss graph it is possible to deduce that the pump must ensure a head of at least 1.6 m/H₂O.



NOTE:

It is always advisable to set up a hydraulic compensator between the boiler circuit and the system circuit. It becomes ESSENTIAL if the system requires greater flow rates than the maximum allowed by the boiler, i.e. Δt below 15K.

FLUE SIZING ACCORDING TO DIN 4705

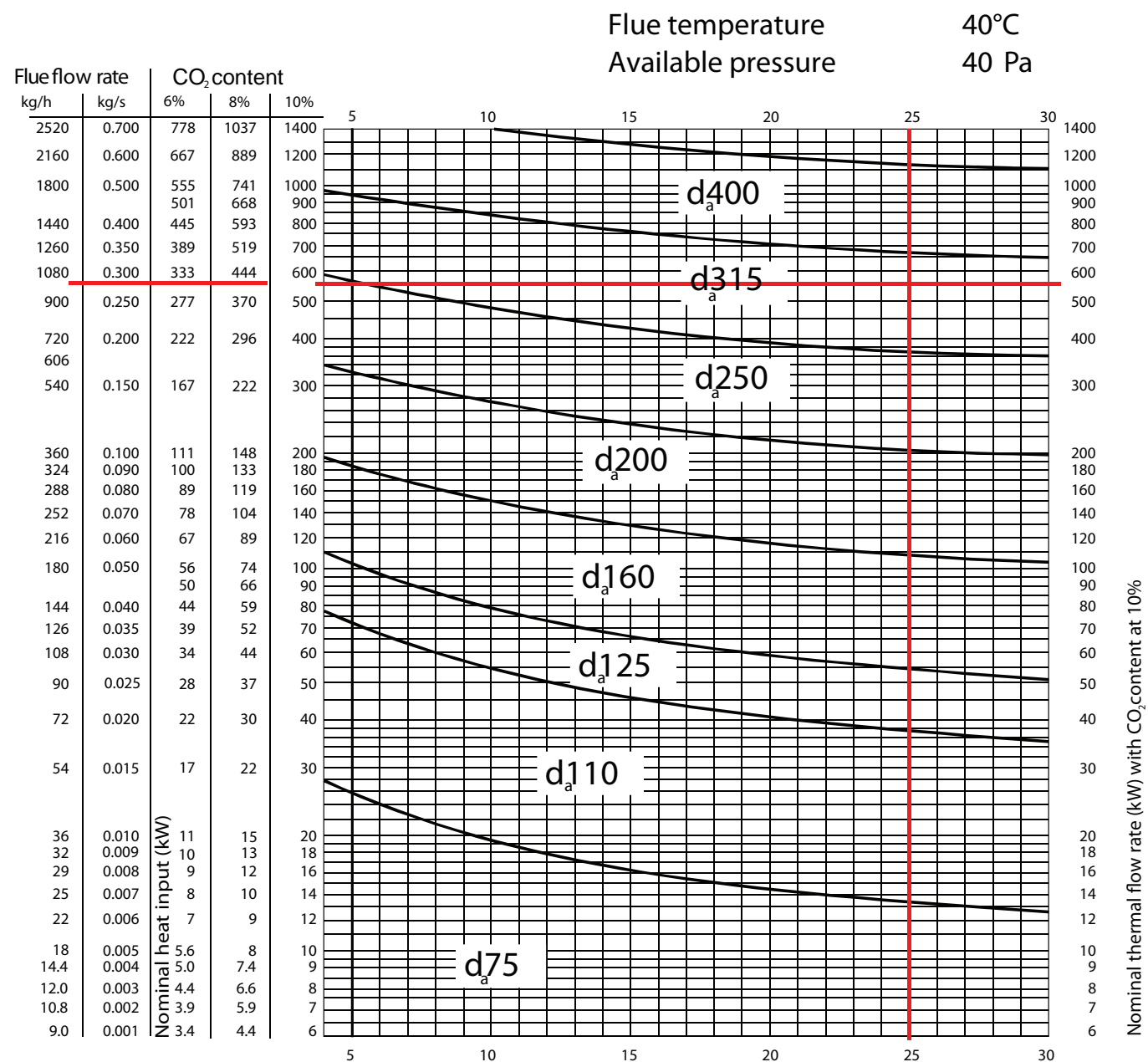


Table of max flue flow rate	
Model	Max flue flow rate (kg/h)
440	693
550	866
660	1040
770	1213
900	1386

Example:

ARES Tec 600

Maximum flue flow rate = 1040 Kg/h

Height of flue = 25 m

Diameter = 315 mm



NOTE:

The diagram above provides rough values only. The flue must be designed by a qualified professional in compliance with legislation and technical standard in force.

3 INSTRUCTIONS FOR INSTALLATION

3.1 GENERAL RECOMMENDATIONS



ATTENTION!

This boiler must only be employed for its explicitly intended use. Any other use must be considered improper and therefore dangerous.

This boiler is used to heat water to below boiling temperature in atmospheric pressure.



ATTENTION!

The appliances are designed to be installed inside buildings only in suitable technical compartments, and also outdoors in a completely open place.



Before connecting the boiler, have professionally authorised company:

- a) Accurately washing all of the pipes in the system to remove any residues or sediments could stop the boiler from running efficiently, even in terms of health and hygiene.
- b) Making sure the boiler is set up to operate with the available type of fuel. The type of fuel is stated on the packaging and technical characteristics plate.
- c) Make sure that the chimney/flue has an adequate draught, that it is not choked, and that there are no other exhausts for other appliances, unless the flue is designed for multiple utilities, in accordance with standard specifications and requirements in force. Only once this check has been carried out can the fitting between boiler and chimney/flue be set up.



ATTENTION!

In rooms with aggressive vapour or dust, the appliance must operate independently of the air in the room of installation!



ATTENTION!

The appliance must be installed by an authorised company possessing professional-technical qualifications in accordance with the law, who, under his/her own responsibility, enforces the observance of regulations according to the rules of good practice.



ATTENTION!

Assemble the appliance in observance of the minimum required distances for installation and maintenance.



The boiler must be connected to a heating system compatibly with its specifications and power.



ATTENTION!

NEVER CUT OFF SAFETY DEVICES FROM THE BOILER, such as the safety valve and expansion vessel.

3.2 REGULATIONS FOR INSTALLATION

Installation must be carried out by a professionally authorised company, who is in charge of enforcing observance of all local and/or national laws published in the Official Gazette, as well as all applicable technical regulations.

3.3 PREVENTATIVE CHECKS AND ADAPTATION OF THE SYSTEM

When the appliance is installed on existing systems, make sure that:

- The flue is suitable for condensation appliances, for the temperatures of the combustion products, calculated and built in accordance with regulations in force. That is it a straight as possible, water-tight and insulated and does not have any obstructions or constrictions.
- The flue is equipped with an attachment to evacuate the condensation. The boiler room is equipped with a pipe for the evacuation of the condensation produced by the boiler.
- The electrical system is built in accordance with specific regulations and by professionally authorised company.
- The flow rate, head and direction of flow of the circulation pumps is appropriate.
- The fuel feed line and any existing tanks are set up in accordance with regulations in force.
- The expansion vessels ensure complete absorption of the dilation of the fluid contained in the system.
- Slurry and build-up have been cleaned out of the system.

3.4 Protection devices when using a PHE (must be fitted) (not supplied by Stokvis)

- 1 **Safety thermostat:** this is designed to stop the boiler if the safety thermostat installed on the boiler fails to operate correctly. It must have an IMMOVABLE calibration of < 100°C.
 - 2 **Minimum pressure switch:** this is designed to stop the boiler if the minimum operating pressure drops (can be calibrated between 0.5 - 1.7 bar). It must be manually reset.
 - 3 **Safety pressure switch:** this is designed to stop the boiler if the maximum operating pressure is reached (can be calibrated between 1 - 5 bar).
- 3.3 **Pressure Relief Valve** correctly sized for the installation.

3.5 Control devices when using a PHE (must be fitted)

- 1 **(Pressure gauge -(not supplied by Stokvis) with (12) damper pipe and (11) pressure gauge valve:** it indicates the current pressure in the boiler, it must be graduated in 'bar', its full scale must match the maximum operating pressure and be equipped with a three-way valve with an attachment for the control pressure gauge.

contained in the boiler, it must be graduated in centigrade with a full scale of no more than 120°C.

- 2 **Spare sockets:** approved for the inclusion of control devices.
- 3 **1¼" stub pipes:** for the inclusion of safety valves.
- 4 **Flow switch:** Not supplied by Stokvis this is designed to stop the boiler in case of low flow inside the primary circuit.
- 5 **Approved expansion vessel:** this absorbs the increase in volume of water in the system following an increase in temperature. Not supplied by Stokvis.
- 6 **Y strainer.**
- 7 **Modulating pump (Not included in the kit).**
- 8 **Hydraulic separator (Not included in the kit).**
- 9 **Automatic air vent. Not supplied by Stokvis.**
- 10 **Drain cock. Not supplied by Stokvis.**

3.4 PACKAGING

The **ARES Tec ErP** boiler is supplied assembled in a sturdy cardboard box.



Once the two straps have been removed, slide the box off from the top and make sure the contents are intact.



Packaging materials (cardboard box, straps, plastic bags, etc.) **constitute a potential hazard and must be kept out of the reach of children.**

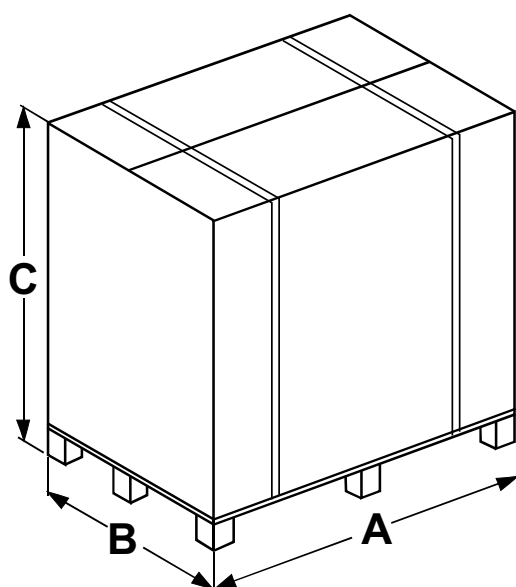
The manufacturer will not be held liable in case of damage caused to people, animals or property due to failure to observe the above.

OBLIGATION!

Wear protective gloves



- Only transport the boiler using appropriate transport means, for example a trolley with fixing strap.
- When the boiler is shipped, it must be secured to the transport equipment.
- Protect all parts against impacts, if they must be transported.
- Follow the transport instructions on the package.
- The boilers must always be lifted and carried with a trolley or suitable transport equipment.



Model	A (mm)	B (mm)	C (mm)	Gross Weight (kg)
440	1263	1120	1515	585
550	1531	1120	1515	643
660	1531	1120	1515	707
770	1799	1120	1515	806
900	1799	1120	1515	858

To take the boiler off of the pallet it is necessary to use a jib crane, to avoid damaging it.

- Remove the casings and harness it using slings "A" fig. 3 being careful to pass the slings through the load bearing crossbeams of the frame
- Tie the slings to the jib "B". Perform these operations with caution.

Composition of packaging:

on the left side of the boiler:

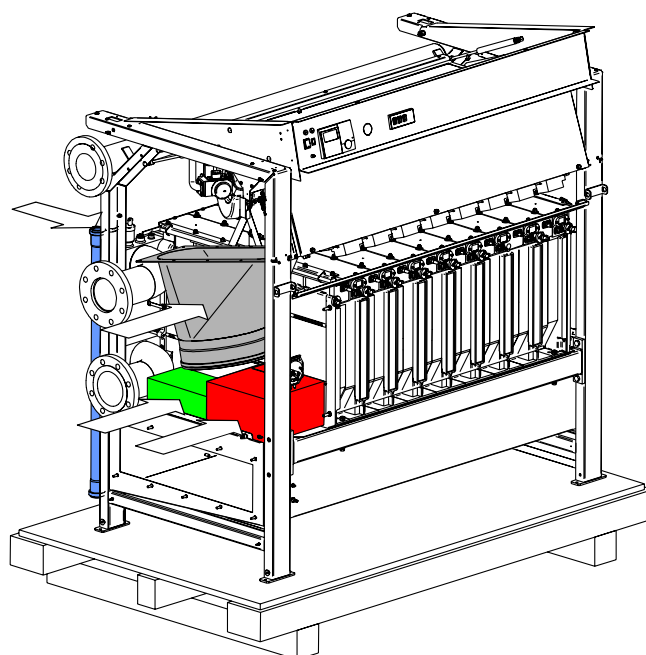
- The flue exhaust manifold.
- A cardboard box containing:
 - Gasket between pan and terminal
 - Collar gasket (Ø 250) Ø 300
 - Two bends + one T + plastic cap for condensate drain
 - Screws required to secure the flue terminal
- The probes: external, flow, storage tank.
- Flue inspection cap.
- Plate and fairlead for power output.
- A cardboard box containing:
 - Flanges

Inside the rear side of the casing:

- Condensate drain trap pipes (1 m).

Above the boiler cover:

- A plastic bag containing:
 - Installer and maintenance technician instructions handbook
 - HSCP control unit user handbook
 - BCM 2.0 user handbook
 - SHC book
 - Warranty certificate
 - Hydraulic test certificate
 - Pins to block the set of fans in raised position



3.5 OPERATION TO UNLOAD AND REMOVE THE PACKAGING



ATTENTION!

Handle using forklift or hoist and sling.

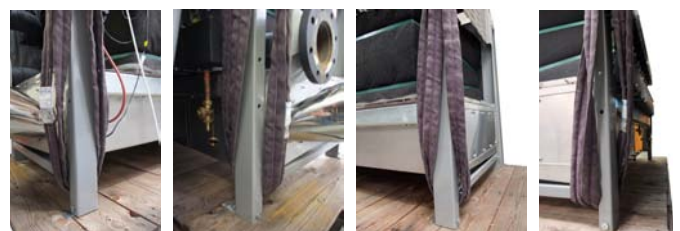
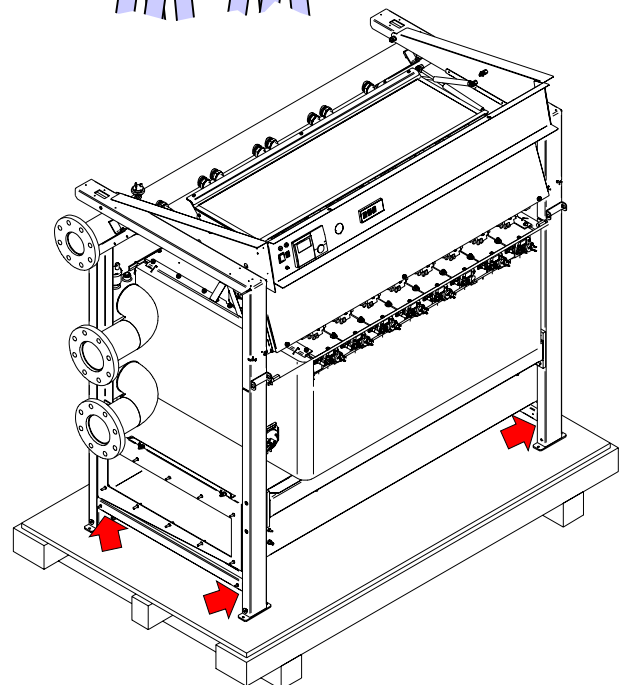
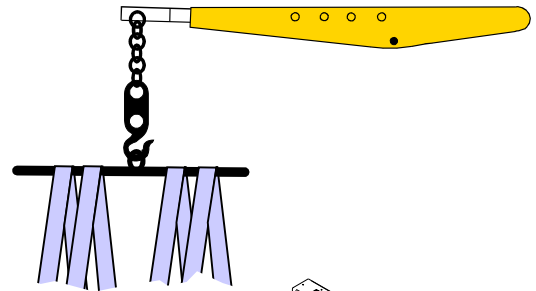
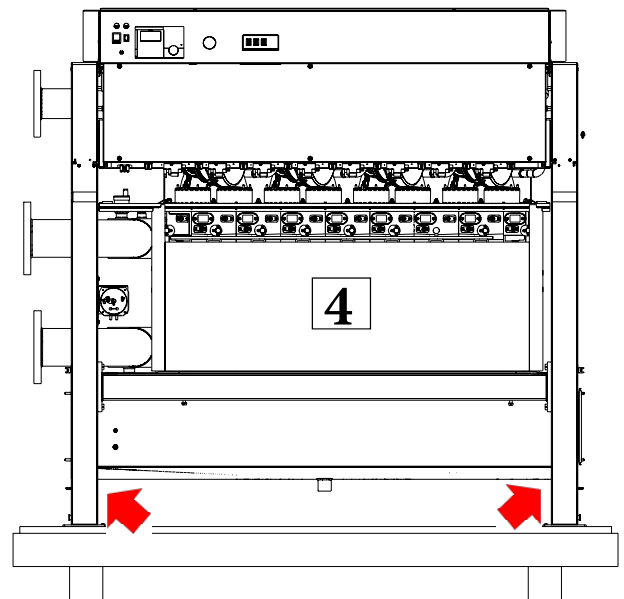
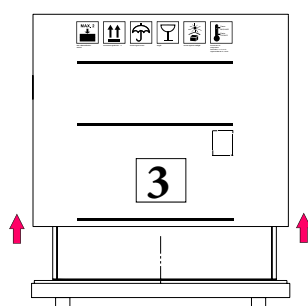
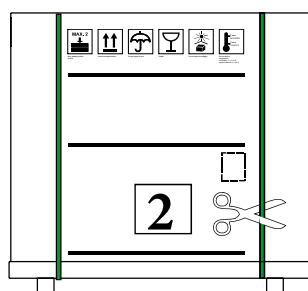
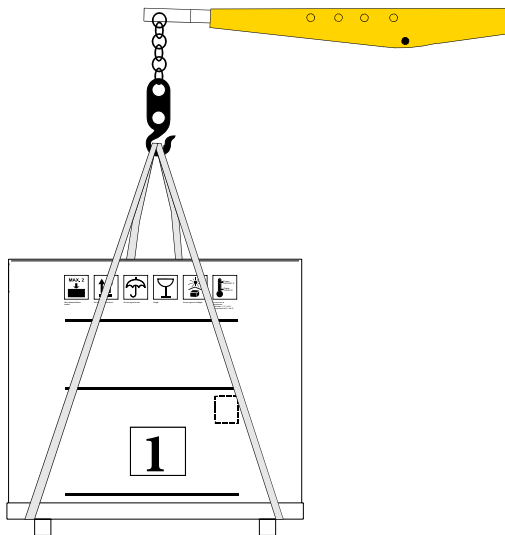


ATTENTION!

Sling slotting points for lifting. The slings must be assembled on the load bearing crossbeams of the frame.

To take the boiler off of the pallet it is necessary to use a jib crane, to avoid damaging it.

- Remove the casings and harness it using slings, being careful to pass the slings through the load bearing crossbeams of the frame.
- Tie the slings to the jib. Perform these operations with caution.



3.5 POSITIONING THE HEATING CONTROL UNIT

Special attention must be paid to local standards and regulations regarding heating control units, especially the minimum distances that must be observed.

Installation must comply with the requirements contained in the most recent standards and legislation regarding heating control units, heating system installation and hot water production, ventilation, flues suitable for condensation boiler combustion product exhaust, and any other applicable regulation.

The boiler can be placed on a flat platform that is sufficiently sturdy in size, in plan, no smaller than the boiler measurements and with a minimum height of at least 100 mm so that the trap for condensate drainage can be installed. Alternatively, a trap can be built from this platform, next to the boiler, at a depth of 100 mm so that the trap can be placed in it.

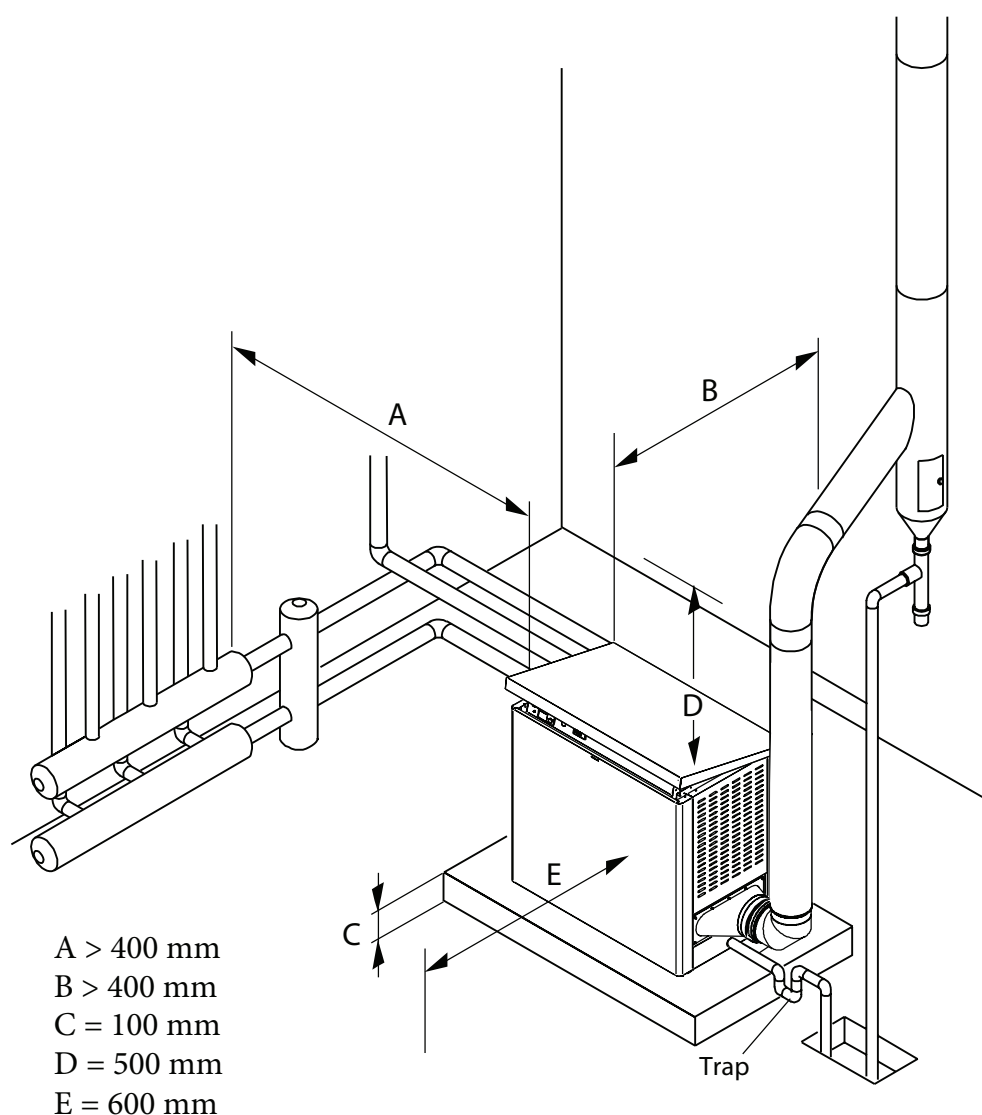
When installation is complete the boiler should be perfectly horizontal and firmly stable (to reduce vibrations and noise).



Observe the minimum clearance distances required to perform normal maintenance and cleaning operations.

Pipework should not be reduced down in size below the diameter of the boiler flow and return pipework connections.

In-line waste traps with internal non return valve must not be used a 100mm water trap must always be constructed.



A > 400 mm
B > 400 mm
C = 100 mm
D = 500 mm
E = 600 mm



Observe the minimum clearances required to perform normal maintenance and cleaning operations.

3.7 FLUE EXHAUST PIPE CONNECTION

The flue exhaust pipe must comply with local and national regulations.

B23P	<p>ATTENTION</p> <p>For this type of connection, the room follows the same installation regulations for boilers with natural draught</p>
<p>Connection to a combustion product evacuation pipe outside the room, the combustion air is taken directly from the room where the device is installed.</p>	

HEAD AVAILABLE AT THE BASE OF THE CHIMNEY	
S (Exhaust) A (Intake)	A (Intake)
Dp = 100 Pa -	-
The maximum permitted length of the pipes is determined by the head (Dp) available at the base of the chimney.	

	<p>ATTENTION:</p> <p>for the B23P type of connection, the room follows the same installation regulations for boilers with natural draught.</p>
--	--

The boiler is approved for the draining settings described below:

C63	<p>ATTENTION</p> <p>To configure the C63 you need to order the optional air intake kit which includes instructions on application.</p>
<p>Separate ducts for combustion air intake and evacuation of combustion products. (Commercial accessories)</p>	

HEAD AVAILABLE AT THE BASE OF THE CHIMNEY
S (Exhaust) A (Intake)
Dp = 100 Pa -
The maximum permitted length of the pipes is determined by the head (Dp) available at the base of the chimney



ATTENTION:
The flue must comply with the standards in force
BS6644:2011- IGE/UP/10

3.6.1 FLUE EXHAUST MANIFOLD CONNECTION

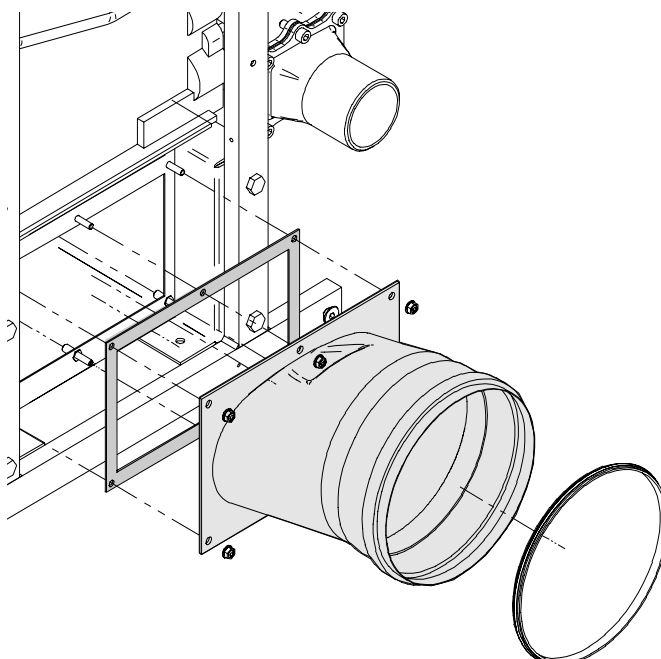
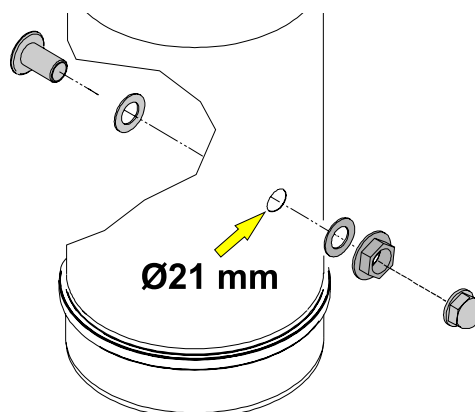


To secure the flue exhaust manifold use the nuts and washers contained in the bag.



The flue point must be positioned on the first straight section, within 1 meter of the boiler.

To set up the flue inspection point, cut a Ø 21 mm hole in the flue exhaust pipe, and install the inspection point following the sequence provided.



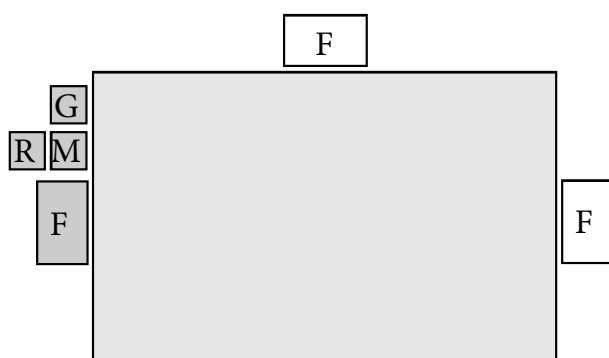
3.8 CONNECTING THE BOILER



The ARES Tec ErP boiler leaves the factory set up for the hydraulic (flow and return) and gas connections located on the left side of the boiler.

To fasten the flue exhaust manifold use the screws and gaskets contained in the accessory kit box and a 10 mm socket key.

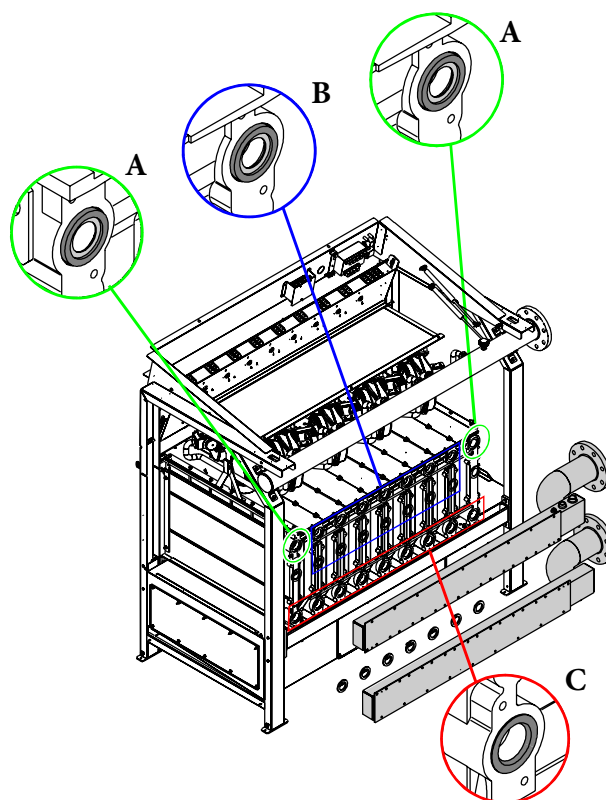
The flue exhaust manifold is set up on the LEFT SIDE. It is also possible to set up the outlet on the RIGHT and REAR SIDE.



Diaphragms and gaskets.

Diaphragm installed on the first and last element of the flow manifold Ø 18 (A), internal Ø 27 (B).

Gaskets installed on all of the other elements (C).



3.9 GAS CONNECTION

The gas supply pipe must be connected to the boiler using a 3" flanged fitting as indicated in Section 2.3.

The supply pipe must have a section equal to or larger than the one used in the boiler and must provide the correct gas pressure.

It is advisable to adhere to the standard specifications and requirements in force, installing a gas supply isolation valve, gas filter, anti-vibration joint, etc.

The gas supply pipe to the boiler must be tested for tightness and purged referring to IGE/UP/1 and 1A.



Before installation it is advisable to clean the inside of the gas supply pipe thoroughly, in order to remove any residues that could stop the boiler from operating smoothly.



If you notice the smell of gas:

- Close the gas valves.
- Do not operate electrical switches, the telephone or any other object that can generate sparks.
- Immediately open doors and windows to create an air current that purifies the room.
- Seek the assistance of professionally qualified personnel.



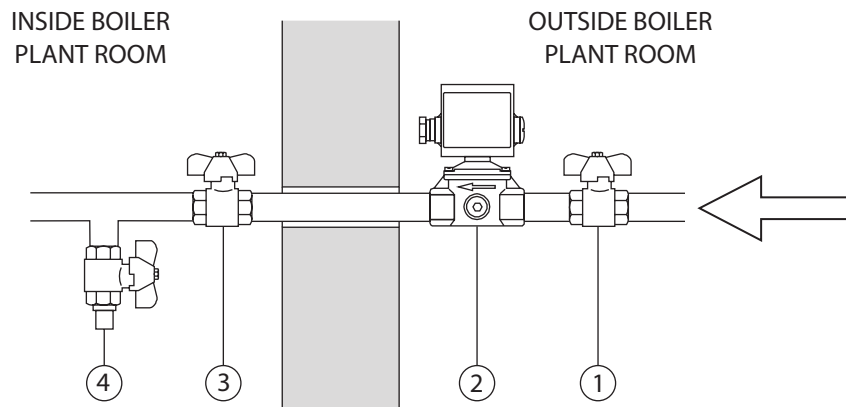
DANGER!

The gas connection must be installed and commissioned by an authorised Gas Safe registered engineer who must observe and adhere to the Gas Safety (Installation and use) regulations 1998 and the local requirements of the gas supply company, as incorrect installation can cause damage to people, animals and property, for which the manufacturer will not be held liable.



In order to detect any gas leaks it is advisable to install a surveillance and protection system composed of a gas leak detector combined with a cut-off safety shut-off on the gas supply pipe.

EXAMPLE of GAS Supply SySTEM



- 1 - Isolation valve
- 2 - Gas solenoid valve
- 3 - Appliance isolation valve
- 4 - Test and purge point

3.10 CONNECTIONS

G	GAS	G 3"
---	-----	------

M	FLOW	G 4"
R	RETURN	G 4"



Danger!

The gas connection must be set up by an authorised installation technician who must observe and apply the contents of the legislation in force and the local requirements of the gas supply company, as incorrect installation can cause damage to people, animals and property, for which the manufacturer will not be held liable.



Make sure the pipes in the system are not used as earthing connections for the electrical or telephone system. They are absolutely not suitable for this purpose. Serious damage to pipes, boiler and radiators could occur in a short amount of time.



ATTENTION!

IT IS ABSOLUTELY FORBIDDEN TO SET UP CUT-OFF DEVICES ON THE GENERATOR BEFORE THE SAFETY DEVICES.

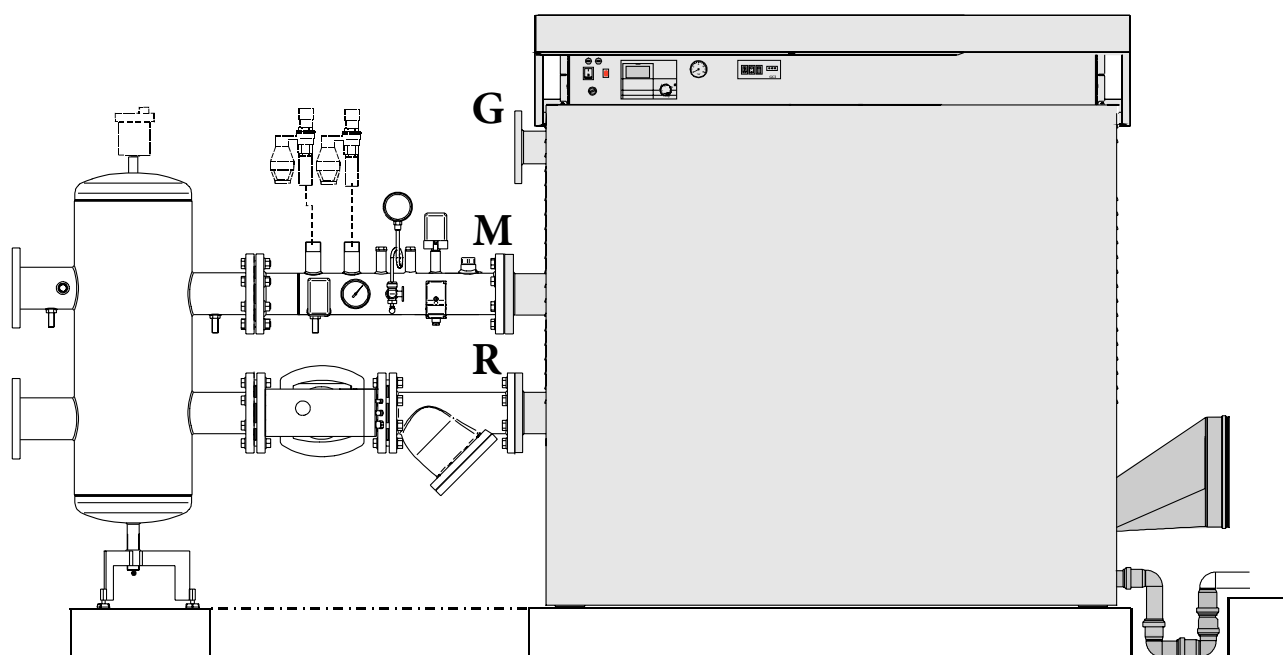


If you notice the smell of gas:

- Do not work the electrical switches, the telephone or any other object that can generate sparks;
- Immediately open doors and windows to create an air current that purifies the room;
- Close the gas valves;
- Seek the assistance of professionally qualified personnel.



In order to prevent any gas leaks it is advisable to install a surveillance and protection system composed of a gas leak detector combined with a cut-off electrovalve on the fuel supply line.



Condensate drain

During the combustion process, the boiler generates condensate that flows into the drain trap through pipe "A".

The condensate that forms inside the boiler must flow into a suitable drain from pipe "B".



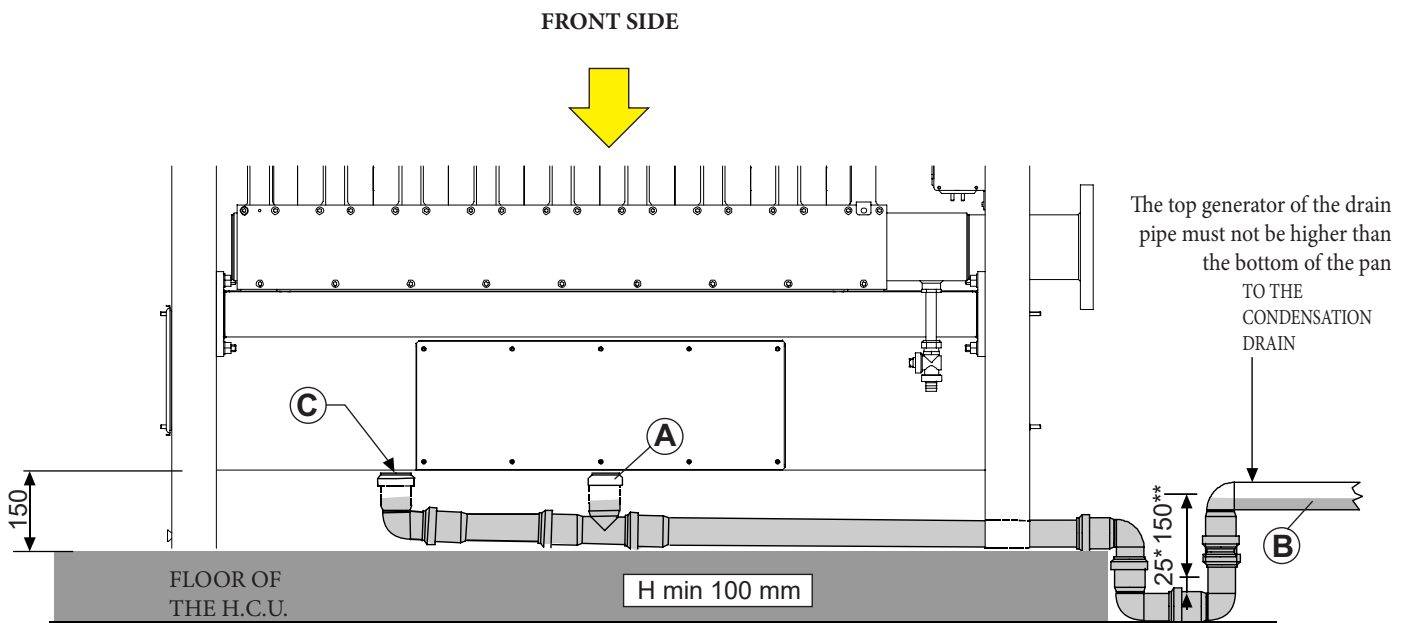
Danger!

Before commissioning the appliance:

- check correct assembly of the drain trap
- fill the drain trap from the filler cap "C" and check the correct draining of condensate.

If the appliance is used with an empty condensate drain trap the danger of poisoning subsists following a flue gas leak.

The condensate drain pipe outlet is set up towards the connection side of the flue box manifold, removing the pre-sectioned part on the cover panel.



* Minimum safety trap enforced by regulation

** Minimum head with boiler operating at maximum power.



Connection between the appliance and the domestic wastewater disposal system must be carried out in compliance with the specific regulations of reference.



If you do not want to or are able to create a platform, it is possible to install the boiler on the floor and set up the trap at a depth of 100 mm.

3.15 CONNECTING THE FLUE

Condensing boilers produce flue products at very low temperatures, generally below 84°C (approx). It is therefore necessary that the flue is impervious to the condensate produced and built with suitable corrosion-resistant materials.

The connecting joints must be sealed and equipped with suitable gaskets to stop condensation from leaking out and air from getting in.

In terms of flue section and height, it is necessary to refer to national and local regulations in force.

Refer to regulations in force for sizing.

In order to avoid the formation of ice during operation, the temperature of the inside wall at every point in the flue system, for its entire length, must not drop below 0°C.

The flue system must comply with local and national regulations.

The flue system must be built using materials that are resistant to the combustion products, typically 316 certified stainless steel or plastic materials, such as PVDF (polyvinylidene difluoride) or PPS (simple translucent polypropylene) or aluminium or other materials with the same features, in observance of regulation in force.



The supplier is excluded from any contractual and extra-contractual liability for damage caused by errors in installation and use due to failure to observe the instructions provided by the manufacturer.

Model	Modules	Flue spigot diameter
440	4	250
550	5	250
660	6	300
770	7	300
900	8	300

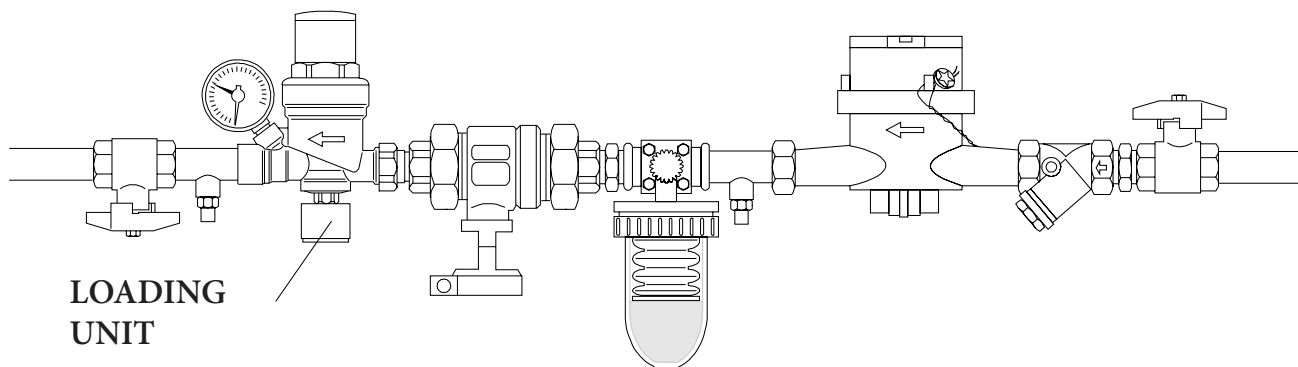
3.11 SYSTEM FILLING AND EMPTYING

Once all of the connections for the system have been set up, it is possible to fill the circuit.



To fill the system it is possible to set up a loading valve on the system's return pipe.

EXAMPLE OF SYSTEM LOADING UNIT



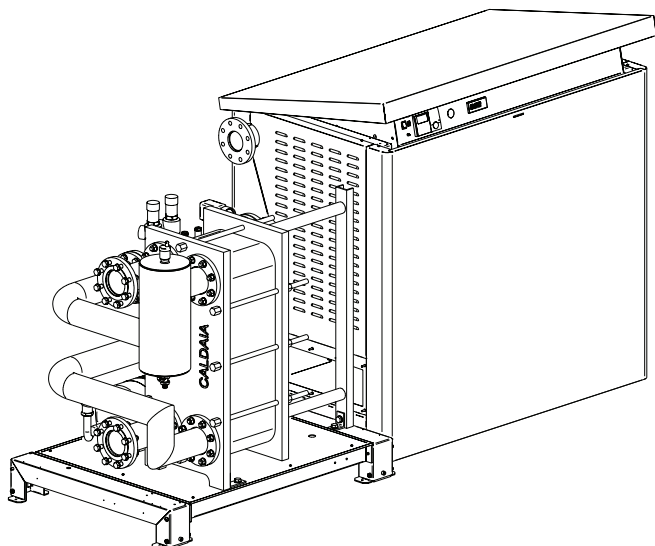
A load cock must be provided on the central heating circuit in order to fill the system, or use the optional accessories.



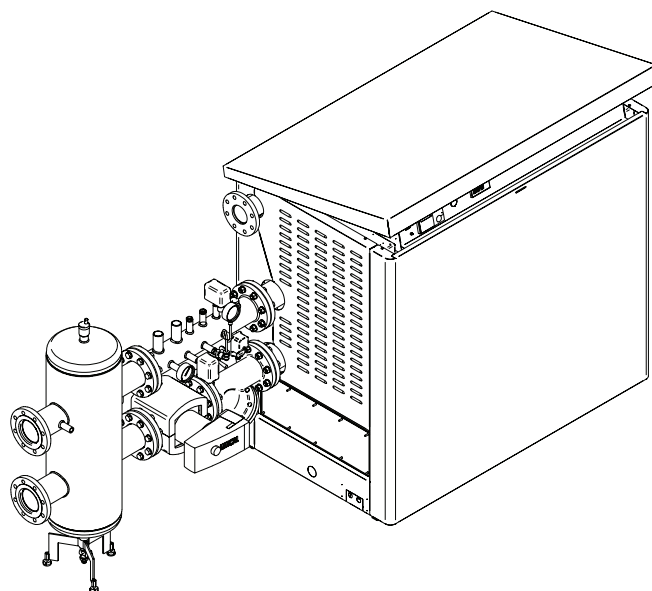
The boiler is equipped with its own draining valve, 14. This valve must **never** be used to empty the system, since all of the dirt contained in the system may accumulate in the boiler, jeopardising smooth operation. Therefore, before using the draining valve, make sure that the system's interception cock situated under the pump has been closed. **The system must be equipped with its own emptying valve, of a suitable size for the flow rate of the system.**

3.13 COMPLETE OPTIONAL EXTERNAL KITS

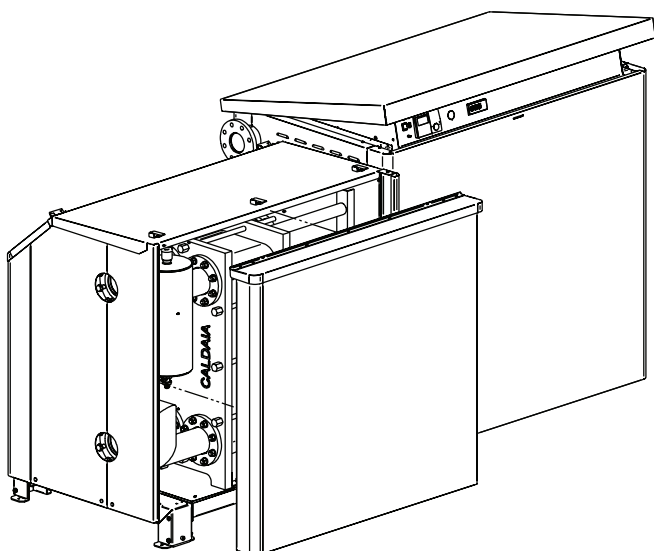
Safety kits including pump and plate exchanger.



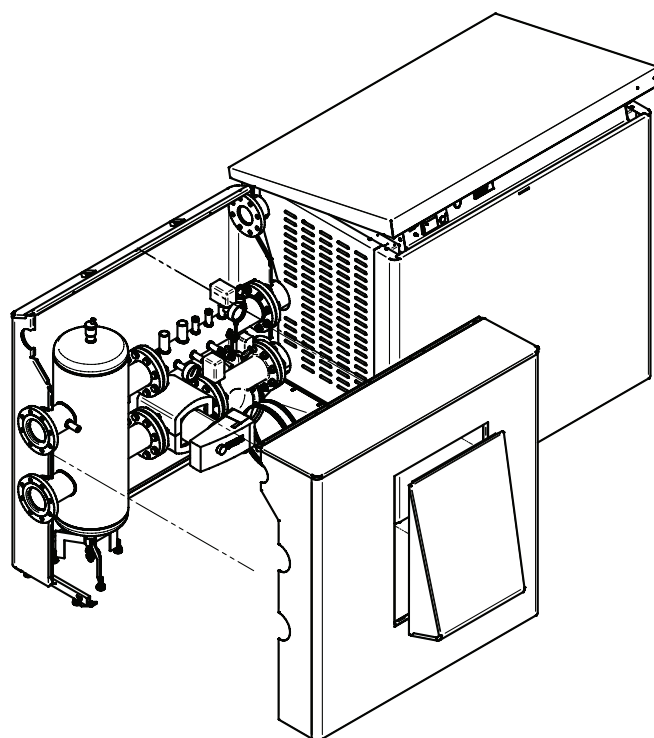
Safety kits including pump and hydraulic separator.



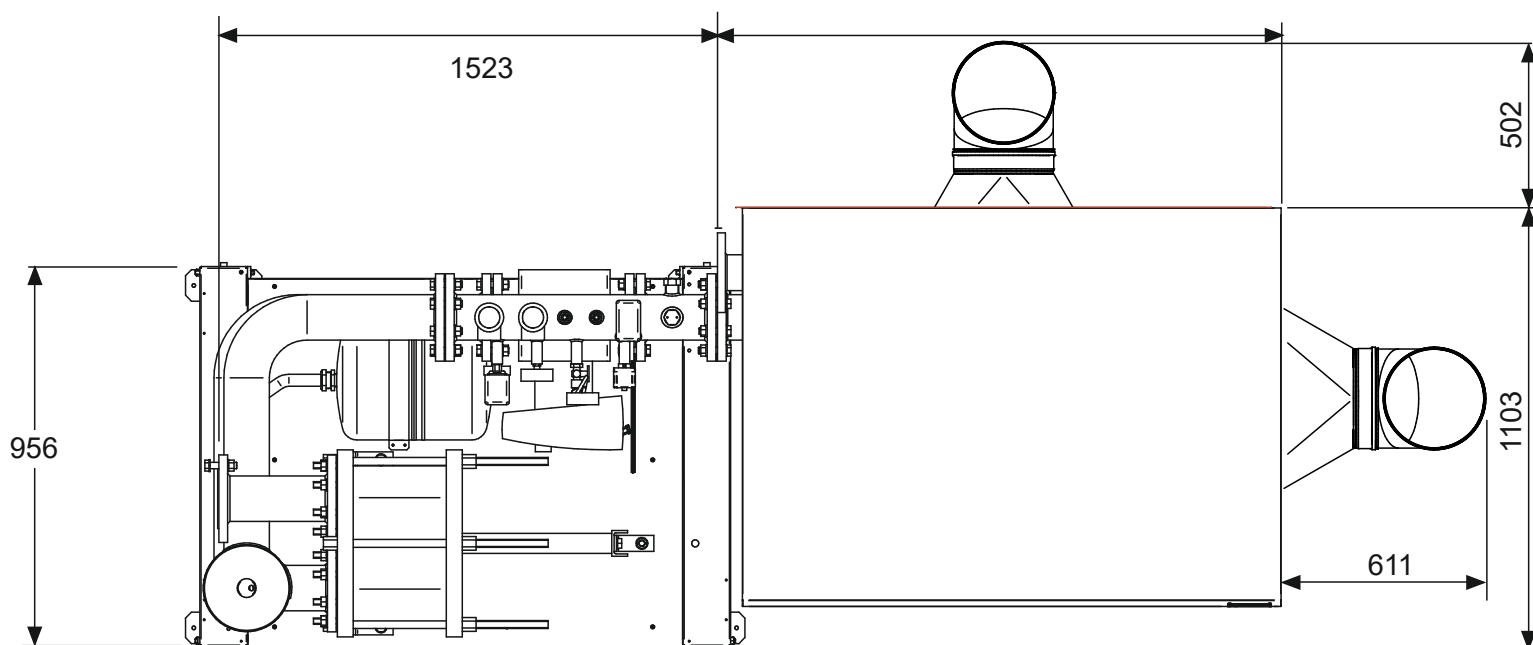
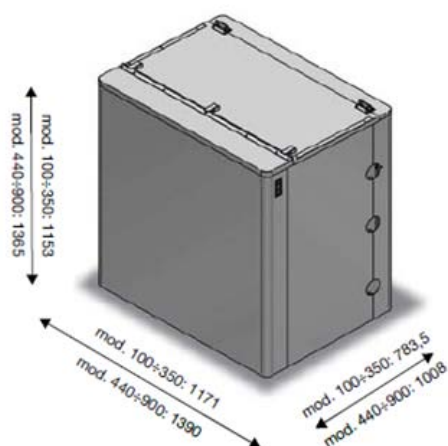
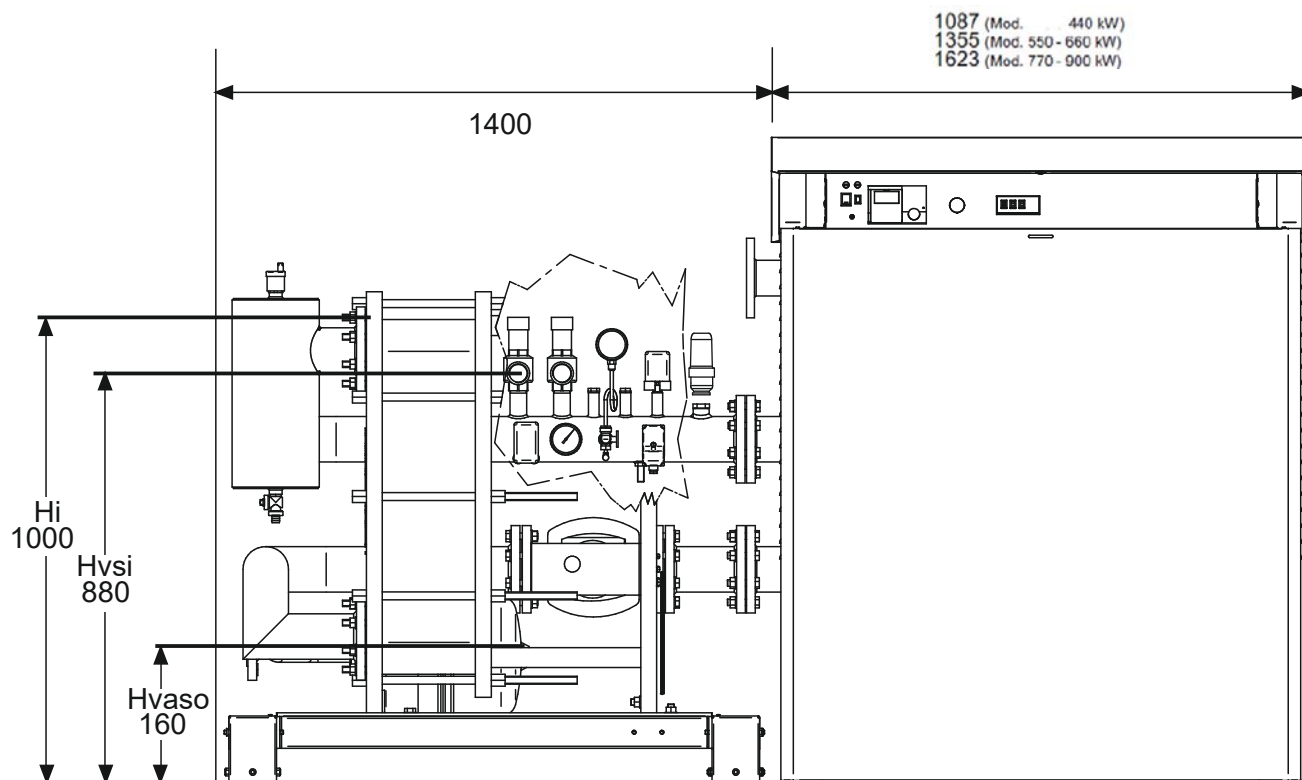
External covering kit for plate exchanger kit.



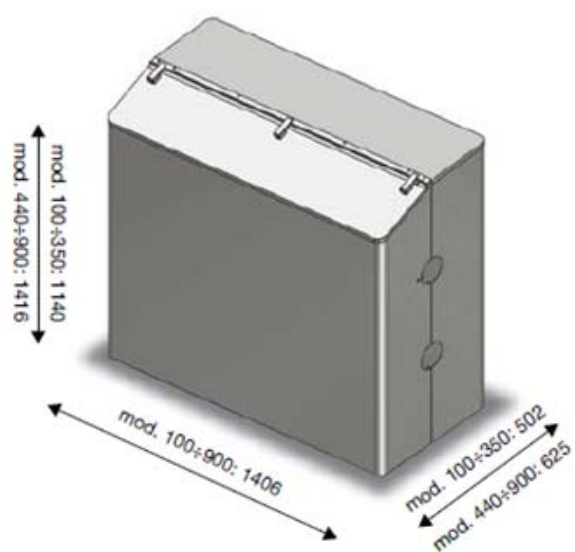
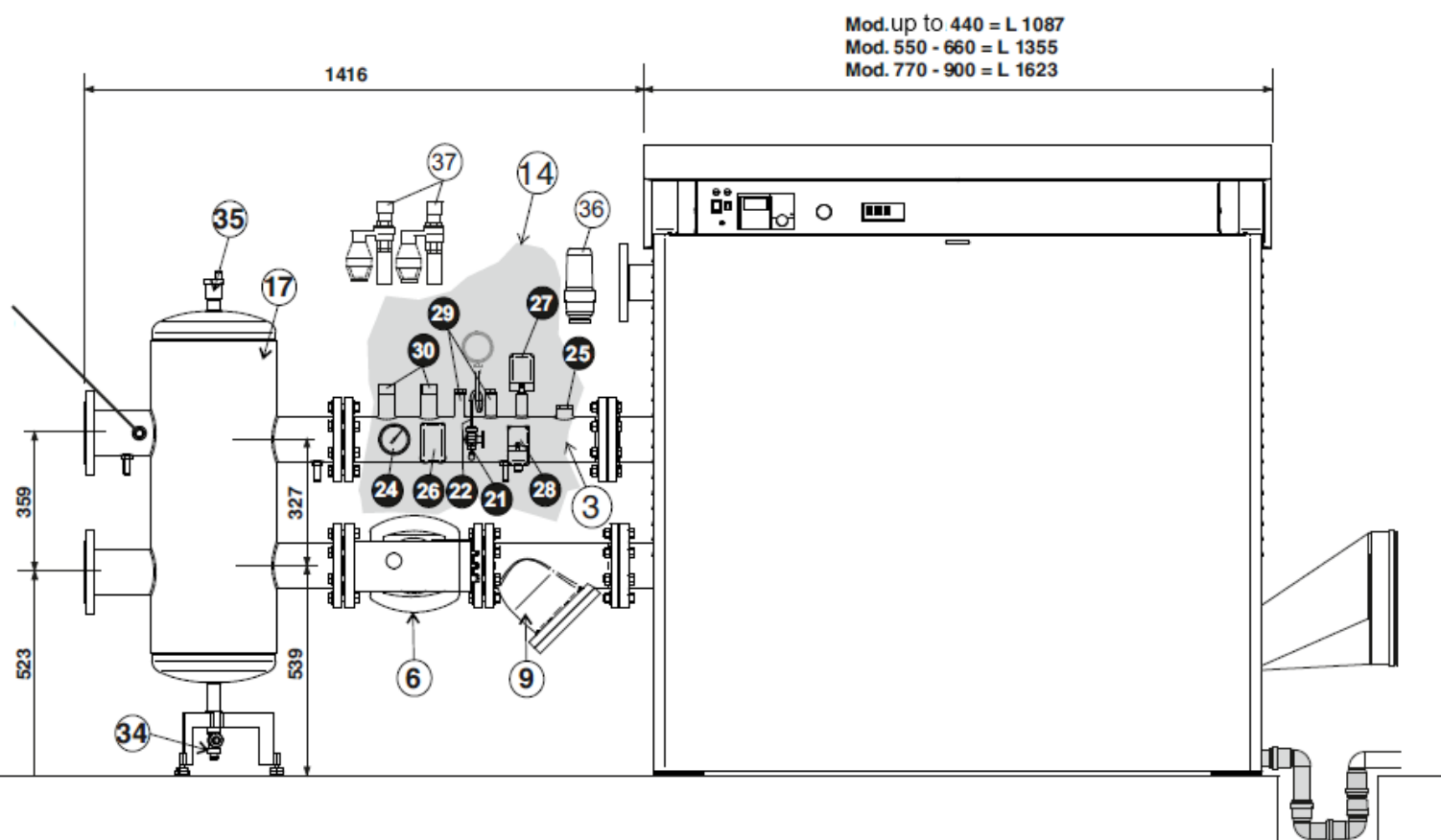
External covering kit for hydraulic separator.



3.13 COMPLETE OPTIONAL SAFETY KITS



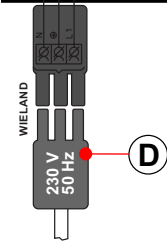
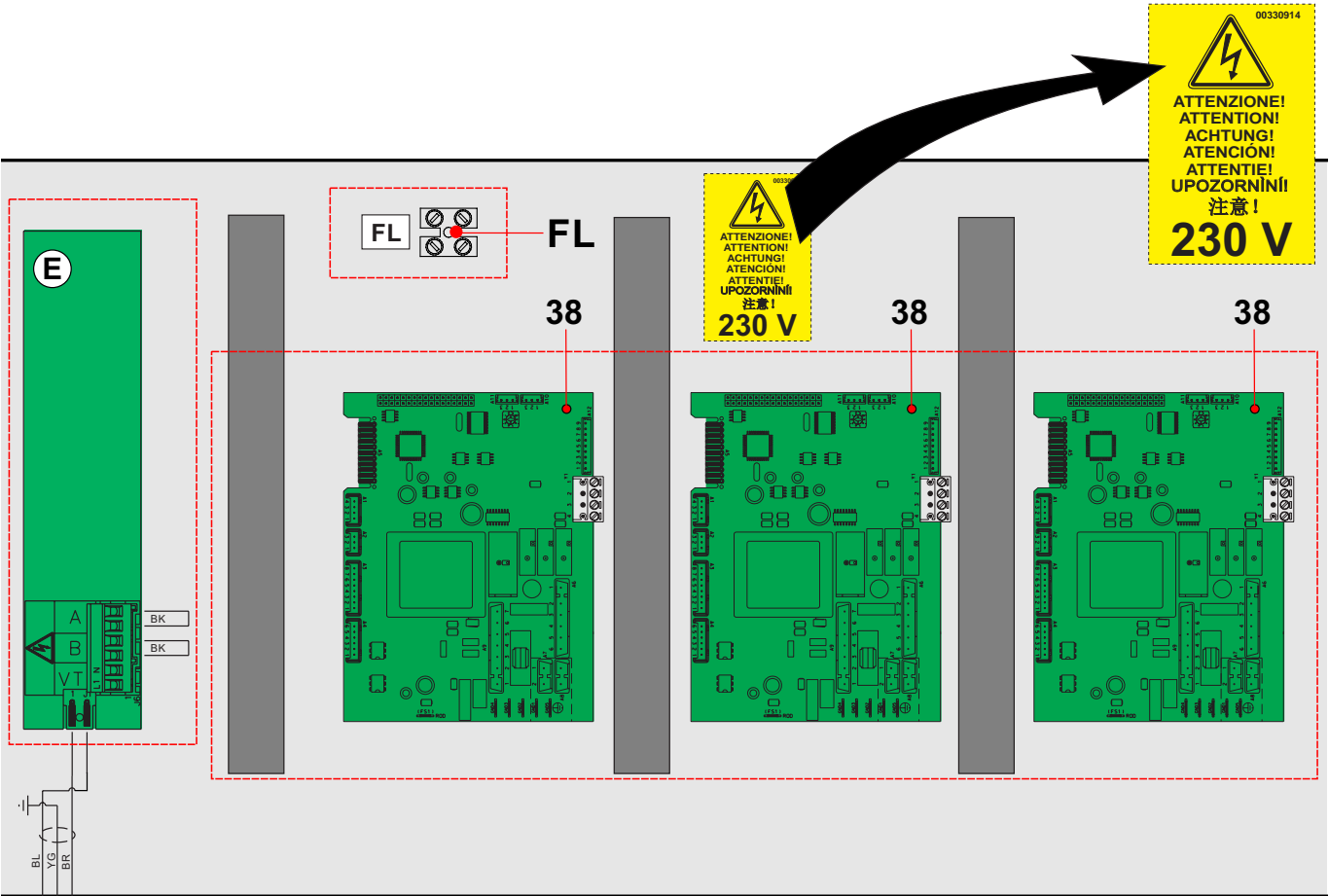
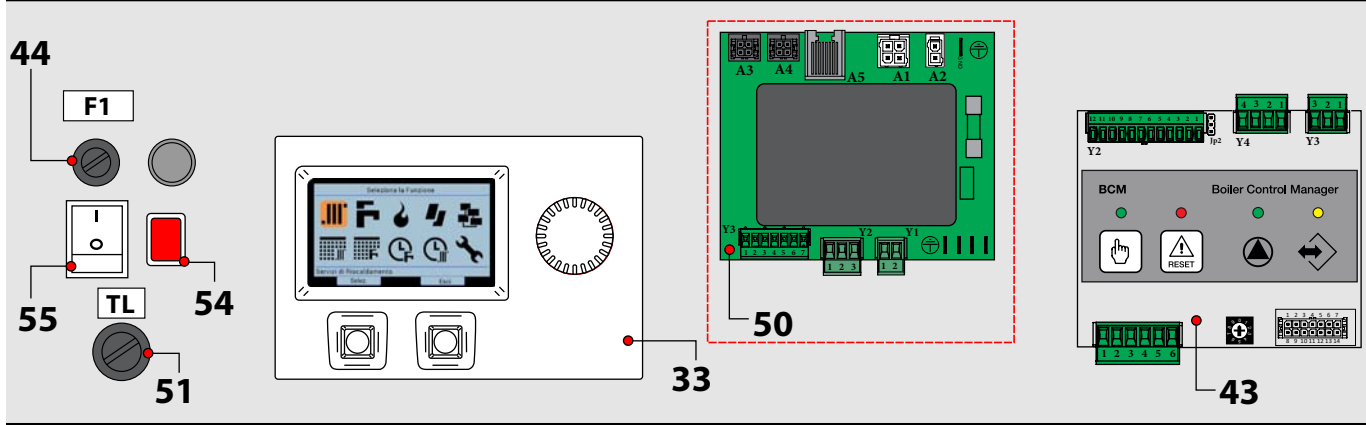
3.13 COMPLETE OPTIONAL SAFETY KITS



3.12 ELECTRICAL CONNECTIONS



Danger! Before setting up the connections or any operation on the electrical parts, always cut-off the electrical supply and make sure it cannot be accidentally re-connected.



KEY		
N°		Description
33		Heat adjuster HSCP
38	BMM	Burner management board
43	BCM	230 V power supply clamps
44	F1	Boiler pump
50		Fuse power supply 6.3 A

51	TLG	General manual reset limit thermostat (model 350)
54	LTGL	Limit thermostat lamp TLG (model 350)
55		Main boiler switch
E		Power supply distribution board
FL		Connection for flow switch
D		Wieland power plug 230V - 50Hz



Danger!
Electrical installation must only be carried out by an authorised company.

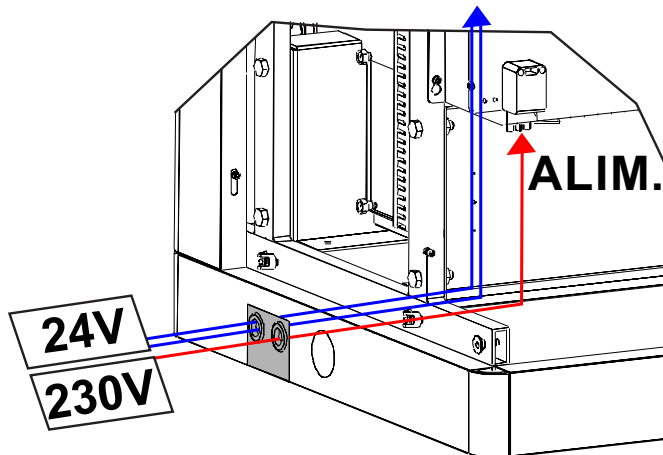


Electrical connection to the mains power supply.
This connection must be set up by state of the art, as envisioned by regulations in force.



Remember that it is necessary to install a bipolar switch on the electrical supply to the boiler with a max distance between the contacts of 3 mm, easy to access, so that maintenance operations can be carried out quickly and safely.

Electrical supply connection



The electrical supply to the boiler, 230 V - 50 Hz single-phase, must be carried out with a H05VV-F (PHASE - NEUTRAL - GROUND) three-pole cable with a section between 0.75 mm and 1.5 mm



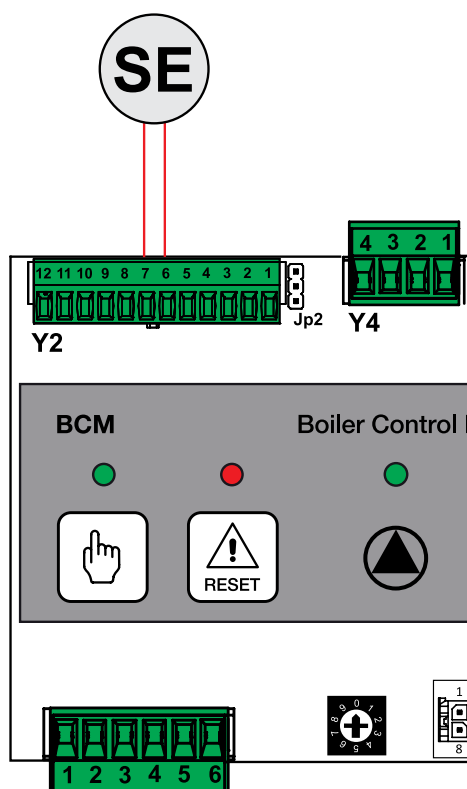
ATTENTION!
Respect the PHASE and NEUTRAL polarity since flame detection is Phase Sensitive.



ATTENTION:
Cables carrying a voltage of 230 V must travel separately from cables carrying a voltage of 24 V.

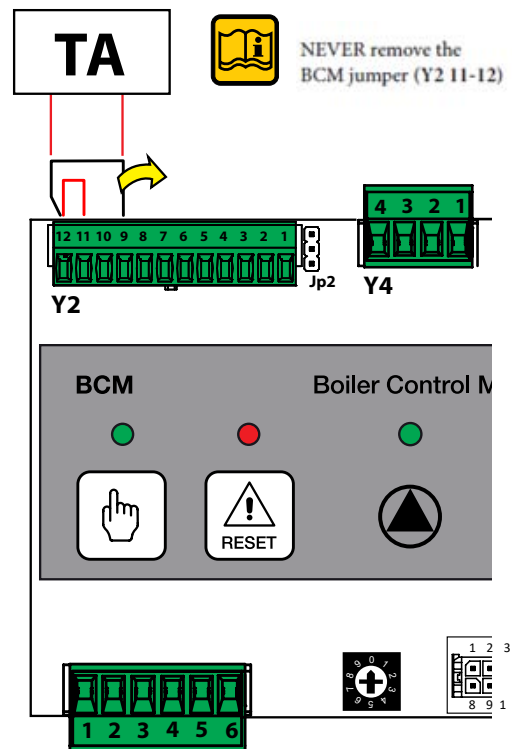
Connect with the plug "D" supplied with the boiler.
N.B. The 24 V output is for any signal / services connections.

External probe connection



Set up on the terminal board, BCM (Y2 6-7)

Connection TA - Clock (Optional) Volt free only



Set up on the terminal board, BCM (Y2 9-12)
Remove **only** the jumper BCM (Y2 9-12)

Instructions for the installer

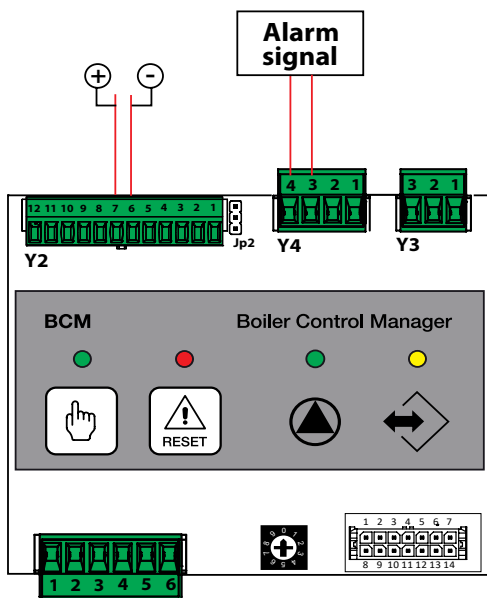


NOTE:

The boiler is provided with set-up to manage one direct flow and one storage tank.

If **Stemp. ACC** is connected automatically, the DHW service is enabled, which will be managed as a priority compared to direct flow through the pumps shown below.

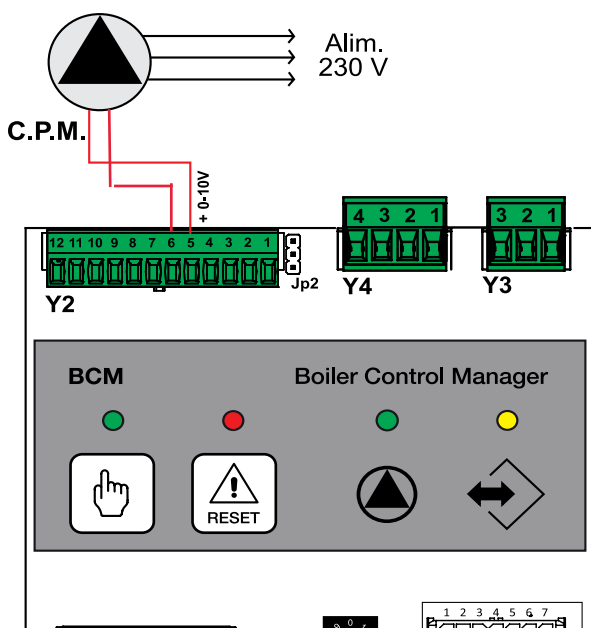
Alarm / signals contact (N.O. dry contact)
Ext signal contact 0 - 10 V



Connect the cables as indicated (Y4 3-4)
Connect the cables (Y4 7-8)

Connection Mod. P. Central Heating Modulating Pump
(Optional)

P. Mod.



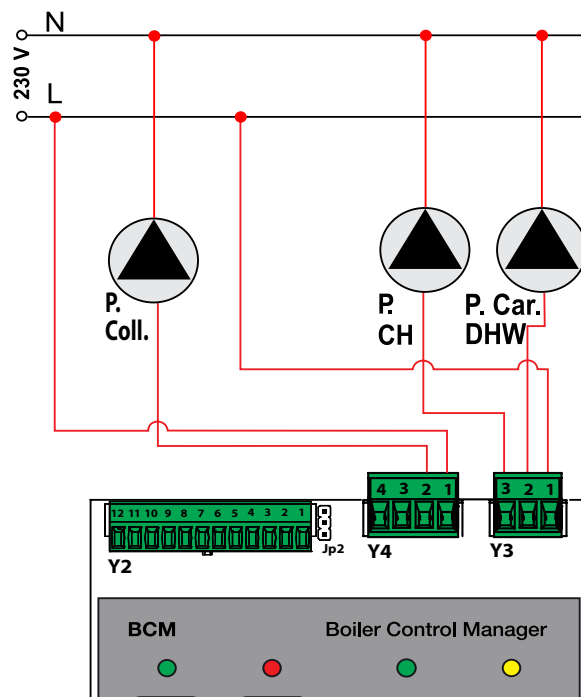
Connect the modulation control cables as indicated (Y2 4-5).
External power supply 230 V-50 Hz.

If other services (storage tanks, mixed zones, solar, etc.) are requested, it is necessary to purchase **SHC** multifunction modules to connect to the local bus for total temperature control management via HSCP (and UFLY).



The BCM relay contacts support pumps with max absorption of 4 A.

P. Coll - Pump Manifold (Primary ring) (Optional) (Run Signal)
P CH - Heating circuit pump (central heating circuit)
P. Car DHW - Storage tank load pump

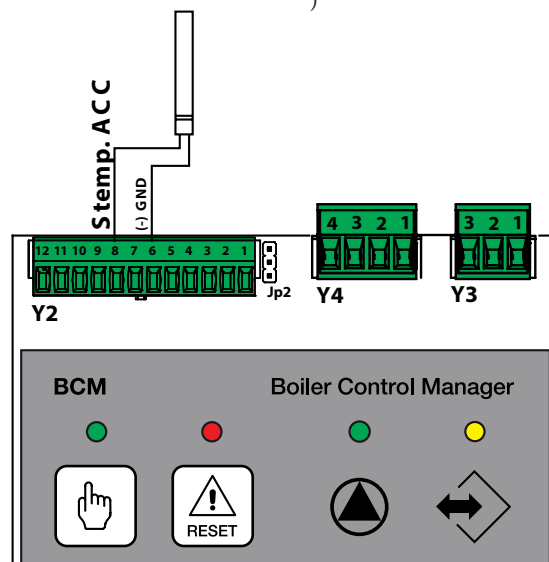


Connect the cables as indicated (Y4 1-2)
Connect the cables as indicated (Y3 1-2-3)

Stemp. ACC. Storage Tank Temperature Sensor



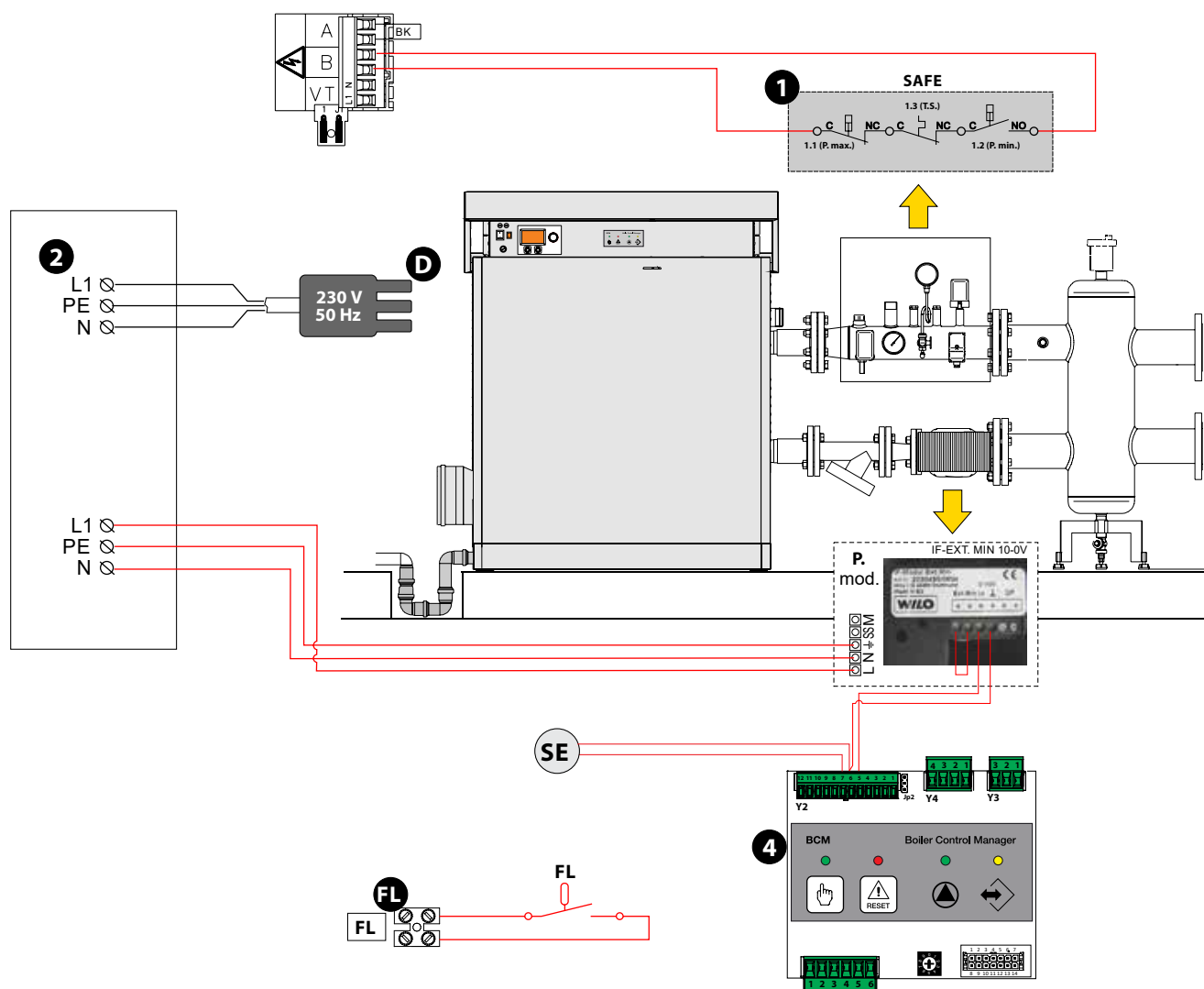
Se il sensore di temperatura acqua non viene collegato, il DHW è automaticamente disabilitato (il momento dell'alimentazione).



Connect the temperature sensor cables as indicated (Y2 6-8).

Example of connection diagram:

Power supply, INAIL, Modulation pump, external probe, Flow switch.



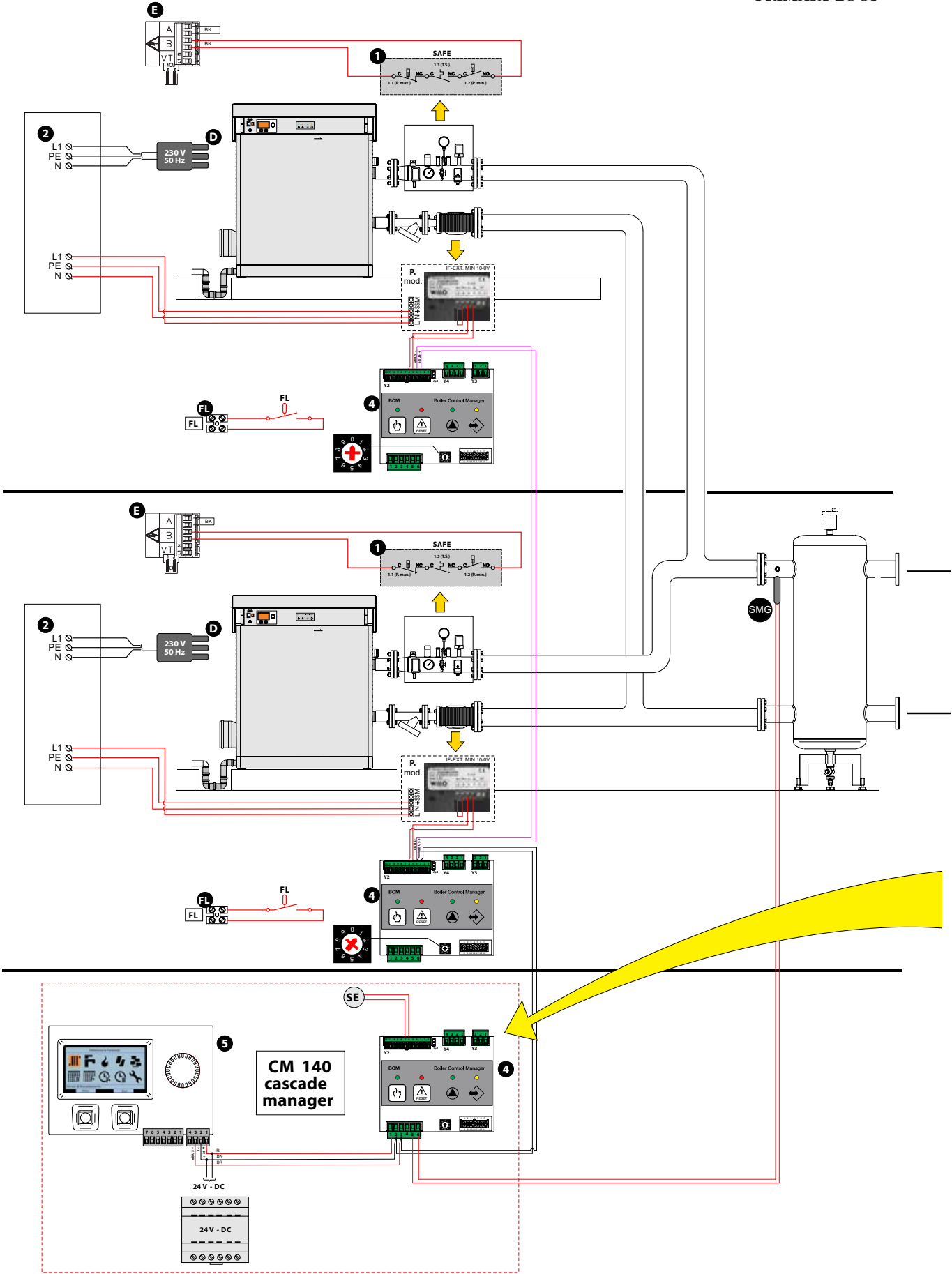
KEY		
N°		Description
1		SAFE - INAIL - SAFETY DEVICES
2		General electrical control panel (Not supplied)
4	BCM	Connection clamps BCM
E		Power supply distribution board
D		Wieland power plug
FL		Terminals for flow switch
SE		External probe
SMG		Global flow probe
P on_off		Manifold pump connections (on_off)
P mod		Modulating pump connections

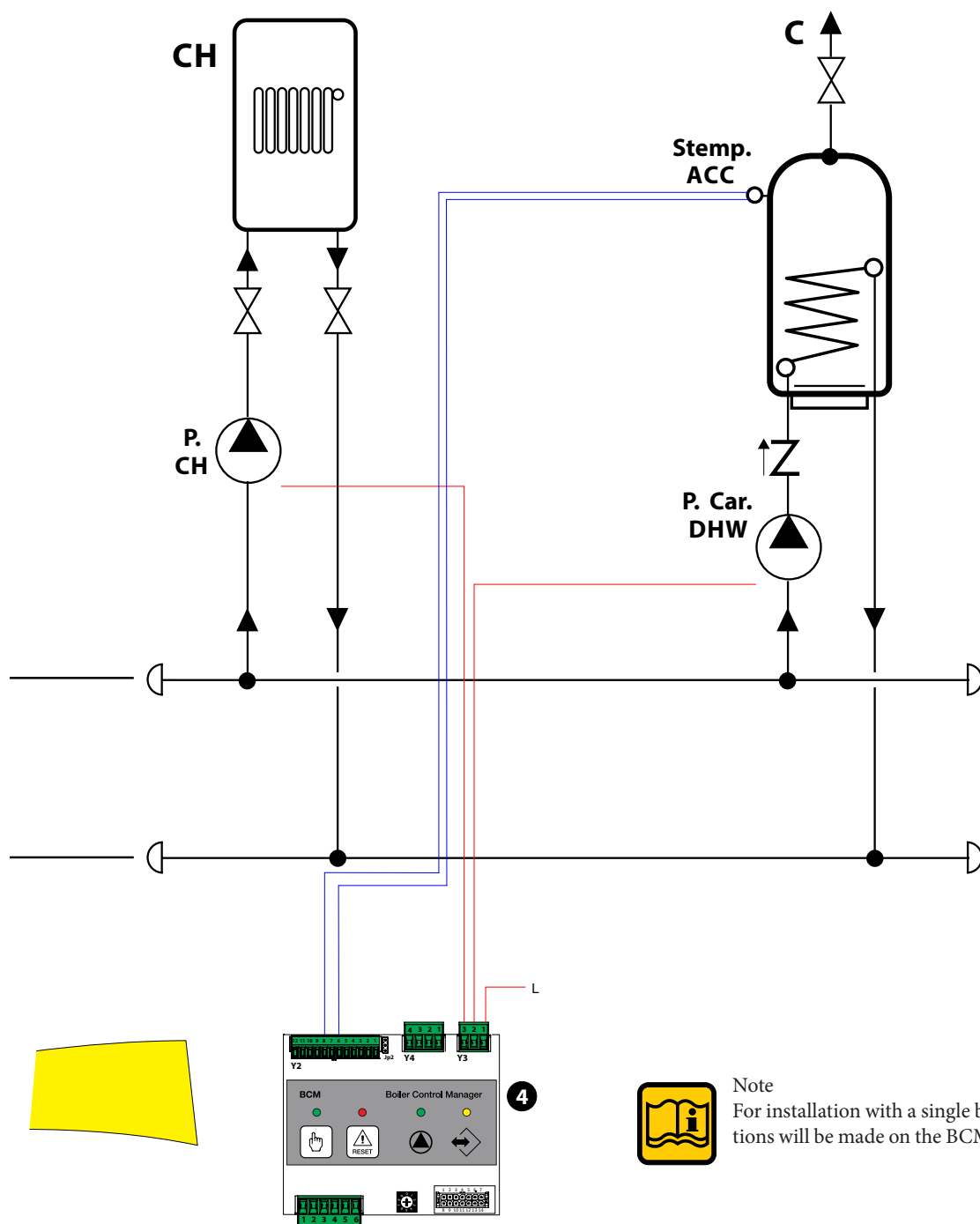


INDICATIVE CONNECTION LAYOUTS,
REFERRED TO BOILERS ARE TEC 150 - 350
(THE OUTLETS IN ARESTEC 440 - 900 ARE OPPOSITE).

2 ARES Tec connected in a set, managed by Cascade Manager.

PRIMARY LOOP





Note
For installation with a single boiler, the above connections will be made on the BCM board inside the boiler

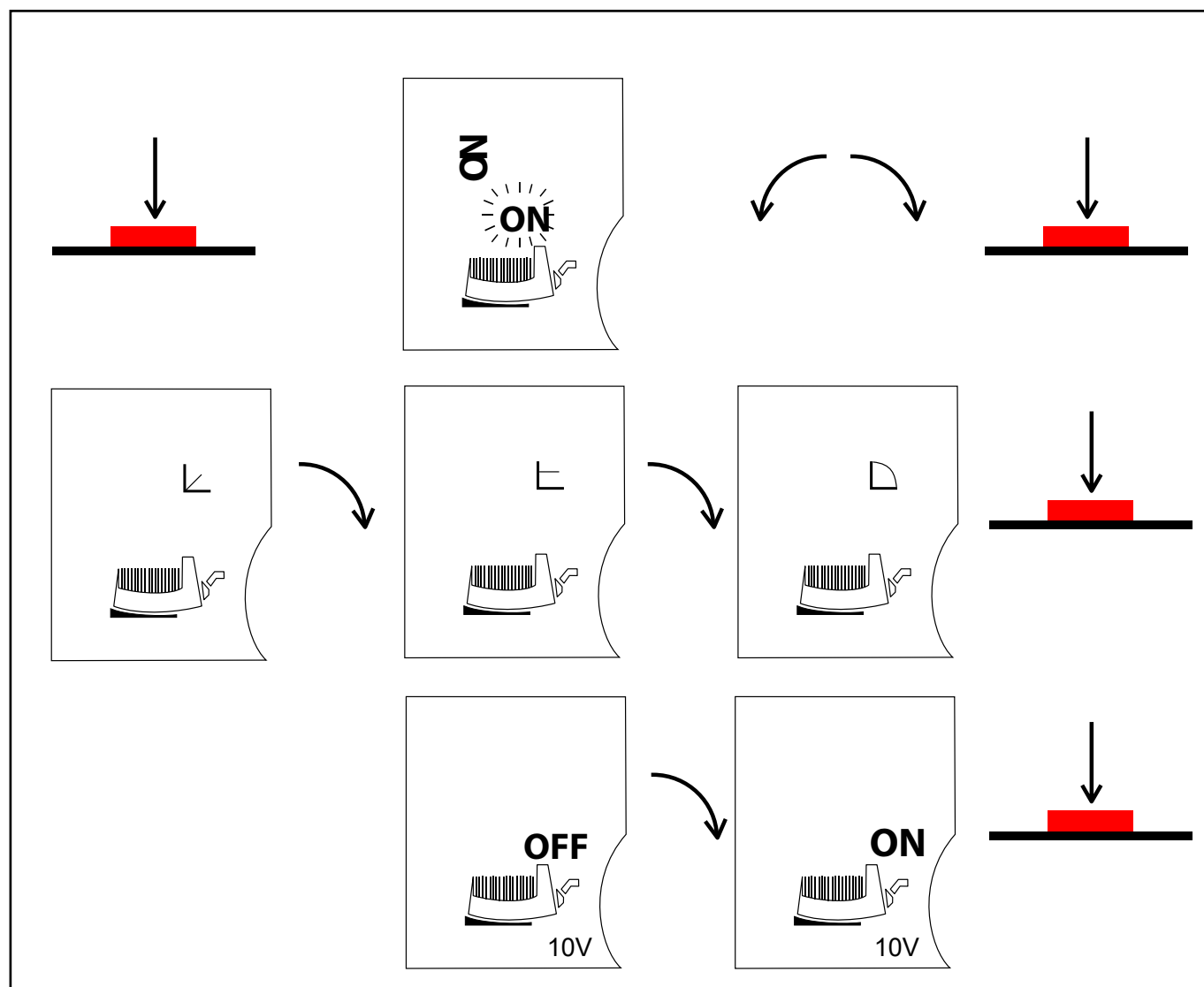


Note
For configuration of boiler cascade management parameters, see the specific installation manual



Note
Example diagram, consider the total nominal flow rate, any non-return valves (not supplied), moreover, the efficiency of the flow switches must be checked at each flow rate in modulation

Wilo Stratos modulating Pump setting (Enable ext 0 - 10 V input).



3.13 FIRST IGNITION

Preliminary checks.



First ignition must be carried out by professionally authorised company. Stokvis Energy Systems will not be held liable in case of damage caused to people, animals or property due to failure to observe the above.



Danger!
Prior to commissioning the appliance fill the trap through the filler hole and make sure the condensate is draining correctly.
If the appliance is used with an empty condensate drain trap the danger of poisoning subsists following a flue gas leak.

Prior to commissioning the boiler it is advisable to make sure that:

- installation fulfils the standard specifications and requirements in force for both the gas and electrical part;
- the supply of combustion air and the evacuation of flue exhaust are carried out correctly in accordance with standard specifications and requirements in force;
- the fuel supply system is sized for the boiler's flow rate and is equipped with all of the safety and control devices required by regulations in force;
- the power supply for the boiler is 230V - 50Hz;
- the system has been filled with water (pressure gauge 0.8/1 bar with the pump off);
- any cut-off dampers on the system are open;
- the required gas corresponds to the one used for boiler calibration: otherwise have the boiler converted for use with the available gas (see section: "ADAPTATION FOR USE WITH OTHER GASES"); this operation must be carried out by authorised company in accordance with regulations in force;
- the gas supply valve is open;
- there are no gas leaks;
- the external main switch is engaged;
- the system safety valve on the boiler responds to operation and is connected to the sewer drain;
- the condensate drain trap is filled with water;
- there are no water leaks;
- the conditions for aeration and minimum distances to carry out any maintenance operations are fulfilled.

Switching the boiler on and off

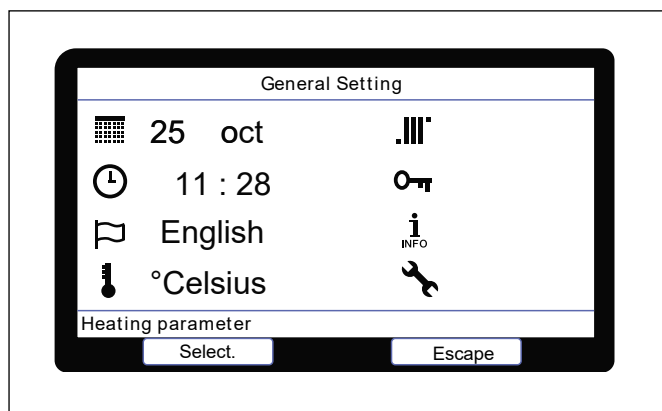
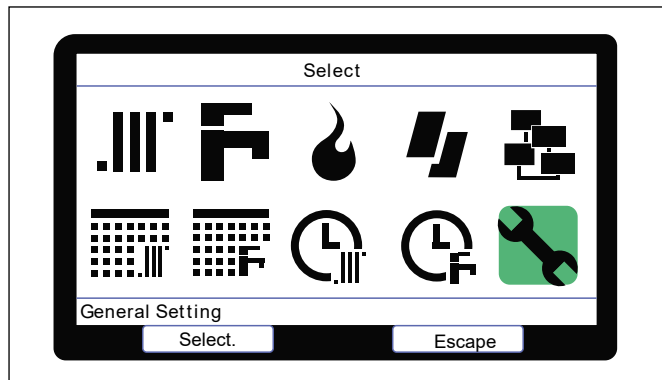
To turn the boiler on and off read the manual for the HSCP regulator.

Information for the system manager

The individual in charge of the system must be instructed in the use and operation of the heating system, in particular:

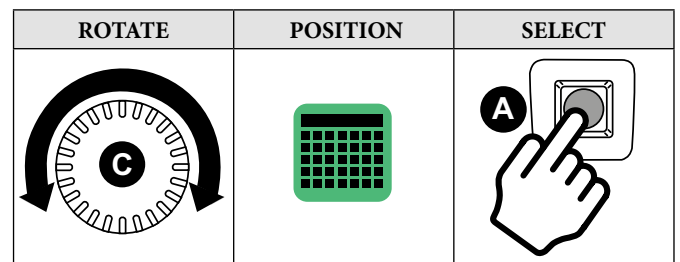
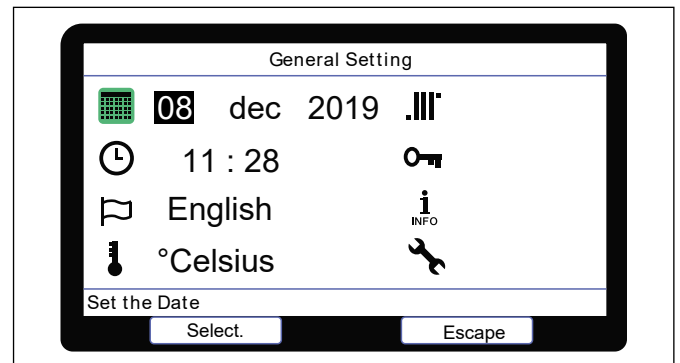
- Supply the system manager with the "THE SYSTEM MANAGER'S INSTRUCTIONS FOR USE", as well as all other documents attached the appliance contained in the envelope in the packaging. **The system manager must keep this documentation safe so that it is available for future consultation.**
- Inform the system manager of the importance of aeration vents and the flue exhaust system, highlighting how essential they are and how it is strictly forbidden to change them.
- Inform the system manager of the requirement to check the system's water pressure, as well as operations to restore it.
- Inform the system manager on how to correctly regulate the temperature, control units/thermostats and radiators in order to save energy.
- Remember that it is compulsory to carry out regular maintenance on the system and measure combustion output (as per national law).
- If the appliance is sold or transferred to another owner or if the owner moves, leaving the appliance behind, always ensure the manual accompanies the appliance so that it may be consulted by the new owner and/or installer.

1.2 GENERAL SETTINGS



SYMBOL	DESCRIPTION	PROCEDURE
	Adjusts the time	After having pressed button A, verify the changed date and time
	Sets the date	After having pressed button A, verify the changed date and time
	Sets the parameters (*1)	After having pressed button A, verify the changed Central heating parameters
	Set the language	After having pressed button A, refer to chapt. on changing the national setting
	Enters and manages the password	After having pressed button A, verify the changed texts
	Set the unit of temperature	After having pressed button A, refer to chapt. on changing scale temperature (Celsius or Fahrenheit) (*1)
	Software information	
	Display and device setting	

1.2.1 SETTING THE DATE



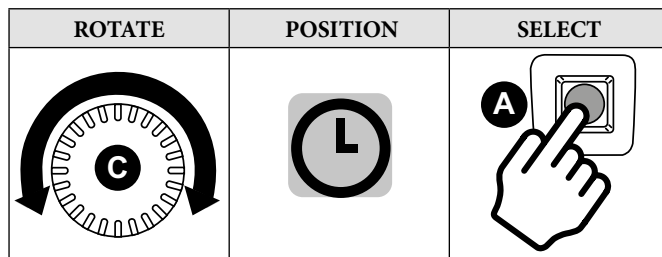
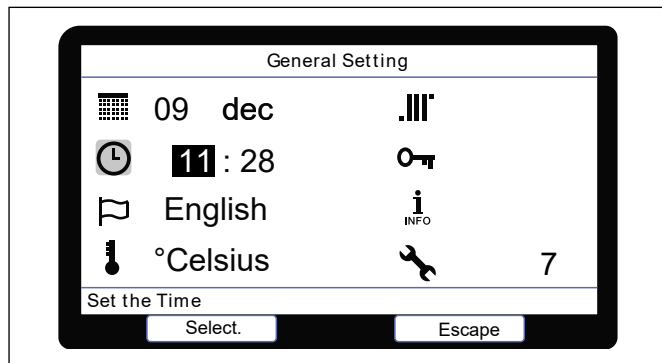
SELECT	CONFIRM	SET	CONFIRM
the current DAY with knob "C"	By pressing Key "A"	the current date with knob "C"	The change by pressing KEY "A"

SELECT	CONFIRM	SET	CONFIRM
the current MONTH with knob "C"	By pressing Key "A"	the current month with knob "C"	The change by pressing KEY "A"

SELECT	CONFIRM	SET	CONFIRM
the current YEAR with knob "C"	By pressing Key "A"	the current year with knob "C"	The change by pressing KEY "A"

SELECT	CONFIRM
with knob "C" DAY + MONTH + YEAR (all selected)	The new values by pressing Key "A"

1.2.2 SETTING THE TIME

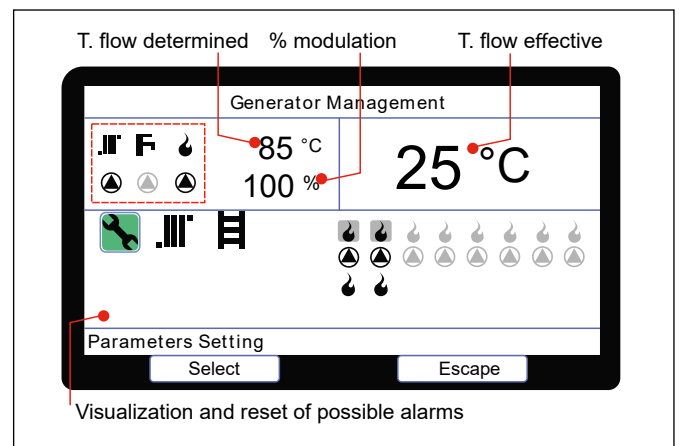
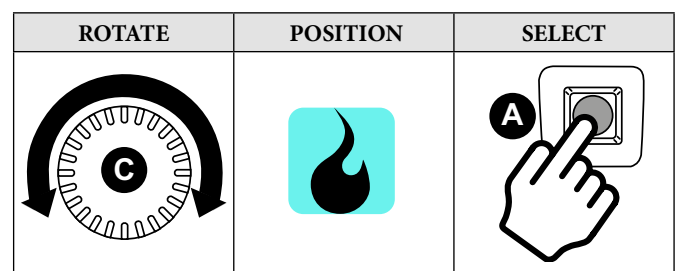
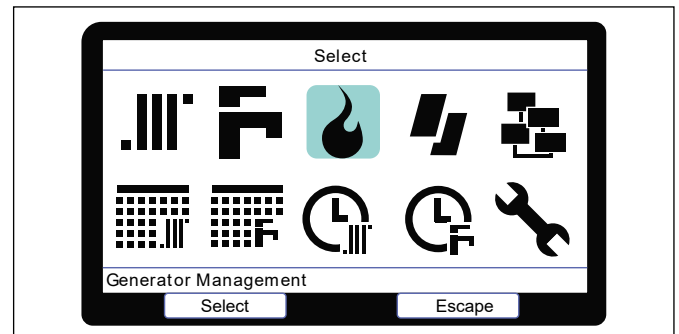


SELECT	CONFIRM	SET	CONFIRM
MINUTES with knob "C"	By pressing Key "A"	the MINUTES with knob "C"	The change by pressing KEY "A"

SELECT	CONFIRM	SET	CONFIRM
TIME of day with knob "C"	By pressing Key "A"	the current time with knob "C"	The change by pressing KEY "A"

SELECT	CONFIRM
with knob "C" TIME + MINUTES (all selected)	The new values by pressing Key "A"

1.7 GENERATOR CONTROL



The shaded area shows the status of the services (Heating / DHW) and any presence of boiler alarms:

	Inactive service
	Call service
	Presence of faults
	Fault reset

3.12 ON-SITE MEASUREMENT OF THE COMBUSTION EFFICIENCY

3.12.1 ENABLE THE CALIBRATION FUNCTION



ATTENTION!

Function reserved exclusively to Authorised Service Centres.



ATTENTION!

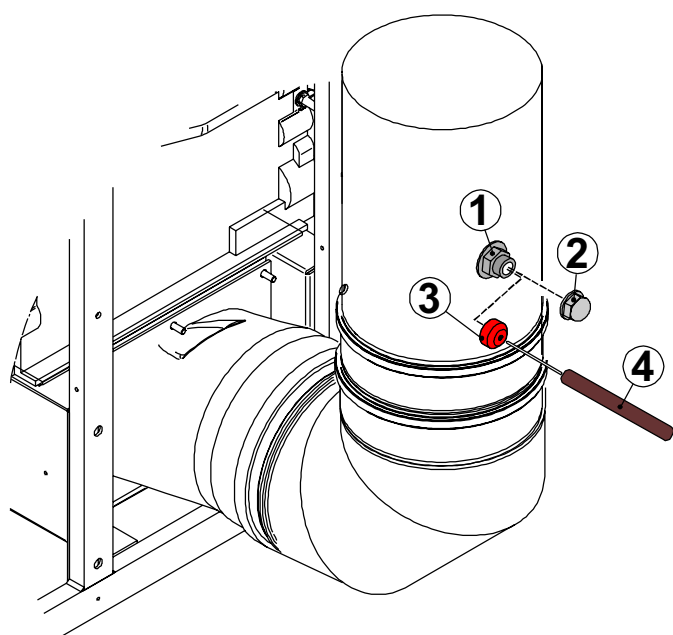
This function is explained in chapter 6 (Generator control) of the HSCP installation and maintenance manual.

3.12.2 POSITIONING THE PROBES

In order to determine the combustion efficiency, the following measurements must be taken:

- measure the combustion air temperature
- measure the flue gas temperature and content of CO₂ withdrawn from the hole 2.

Take the specific measurements with the generator at full speed (see Par. 3.12.1).



All boilers leave the factory calibrated and approved, nevertheless, if the calibration conditions need to be changed it is necessary to re-calibrate the gas valve.

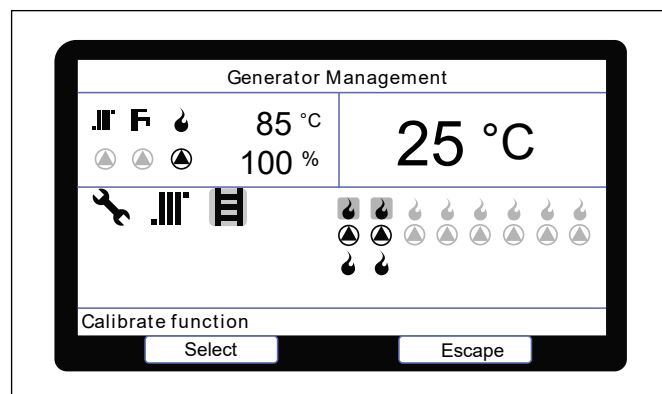
ATTENTION!

Remove cap 2, attach the red cap 3 to the flue point 1. Place the CO₂ analysis probe 4 in the hole on the cap. Once the measurement has been made, take the cap out and use the relative cap 2 to close the flue exhaust point back up.



Instructions for use

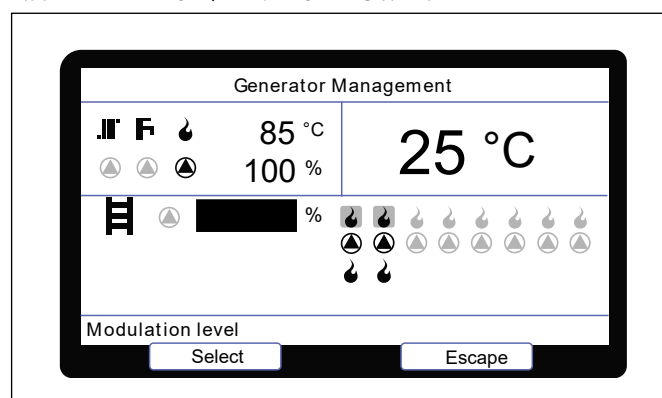
1.7.3 CALIBRATION FUNCTION SELECTION



Go to with knob "C" and confirm with key A (enter the access code 0000).

Go again to

1.7.4 MAXIMUM/MINIMUM POWER



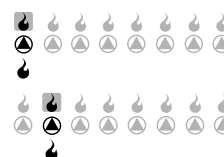
Use knob "C" to go to .
Confirm with key "A" to display .
Use knob "C" to go to %.
Confirm using key "A".

Use knob "C" to adjust the power that calibration is to be implemented at and confirm with key "A".

• MINIMUM POWER = 1 %

• MAXIMUM POWER = 100 %

Calibrate each heating element by selecting the burners:



1.7.5 DEACTIVATION

After calibrating, press key "B" to go back to the home page.

3.13 BURNER ADJUSTMENT



All boilers are factory calibrated and tested. If necessary, recalibrate the gas valves (MODULE1, MODULE 2, etc.)



All of the instructions below are provided for the exclusive use of **authorised assistance** personnel.

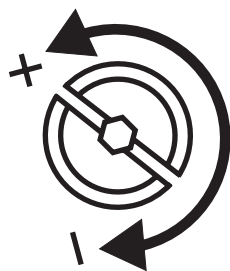
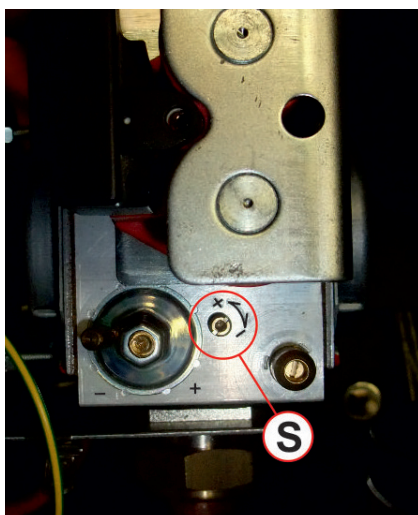
- Remove the cap and insert the CO₂ analysis probe into the flue gas output of the intake/exhaust terminal, see chap. 3.12.2.

1) Adjustment at maximum power:

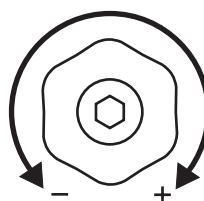
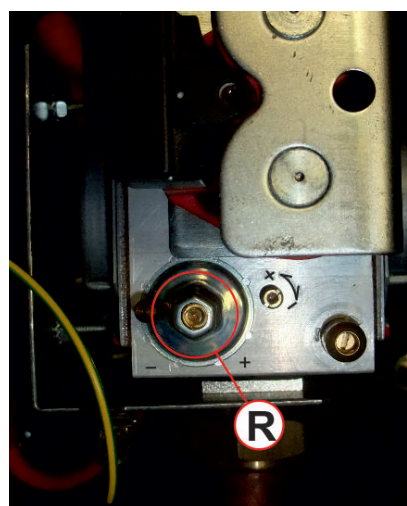
- Start the boiler in “calibration” mode at MAXIMUM POWER (see 3.12.1)
- Once the burner is on, check that the CO₂ value at “MAXIMUM” power corresponds with what is indicated in the “NOZZLES - PRESSURES” table.
- If necessary, correct the value by turning adjusting screw “S” CLOCKWISE to decrease it and ANTICLOCKWISE to increase it (see the NOZZLES-FLOW RATES-PRESSURES table).

2) Adjustment at minimum power:

- Start the boiler in “calibration” mode at MINIMUM POWER (see 3.12.1)
- Once the burner is on, check that the CO₂ value at “MINIMUM” power corresponds with what is indicated in the “NOZZLES - PRESSURES” table.
- If necessary, correct the value by turning (using a 2.5 mm Allen key) screw “R”; CLOCKWISE increases it and ANTICLOCKWISE decreases it (refer to the “NOZZLES - PRESSURES” table).



(S)
MAXIMUM POWER
ADJUSTING SCREW



(R)
MINIMUM POWER
ADJUSTING SCREW

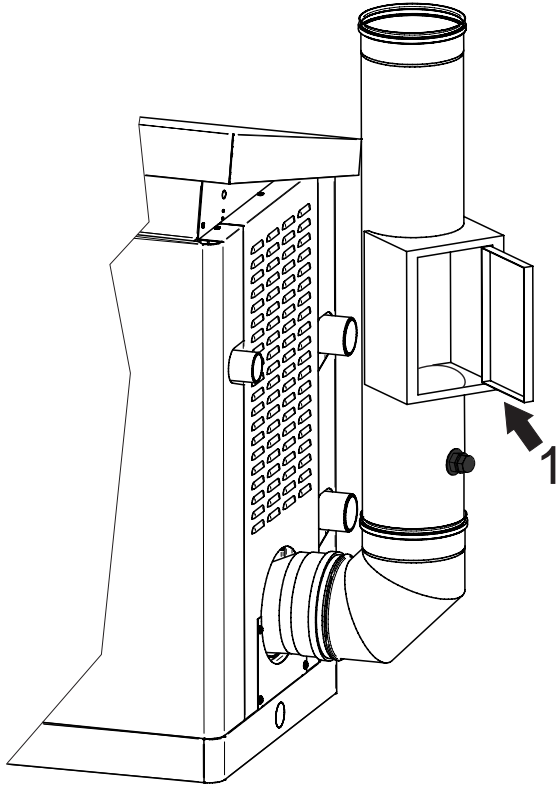
Instructions for the installer

NOZZLES - PRESSURES - FLOW RATES TABLE

ARES TEC ErP: 440-550-660-770-900								
Type of Gas	Supply pressure	Ø Nozzles	Diaphragm	Fan speed		CO ₂ levels +/- 0.2%		Power at ignition
	[mbar]	(mm)	[mm]	Min.	Max.	[%]		[%]
				FL Min.	FU Max.	Min.	Max.	IG
Nat. gas (G20)	20	9	-	28	108	8.8	8.8	80
Nat. gas (G25)	25	9	-	28	113	9.1	8.5	80
Propane (G31)	37	9	-	28	101	10.8	10.6	80

Follow this procedure to adjust the other modules as well.

If the measured flow rate is too low, make sure the supply and draining systems (the supply and draining pipes) are not obstructed.
If they are not obstructed, make sure the burner and/or exchanger are not dirty.



ATTENTION
Calibrate the VGs (Gas Valves) in the heating control unit referring to the procedures below.

Calibration of the VGs

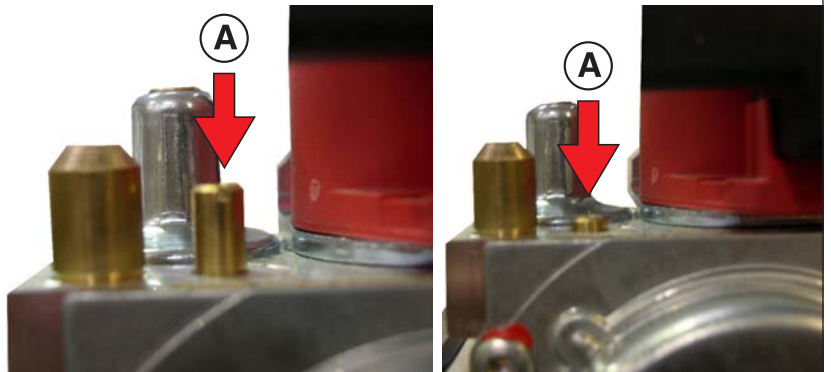
must be carried out with the flue pressure = 0 Pa;
for this reason:

- open the inspection door of flue pipe 1;
after calibration, close the inspection door.

INDICATIVE LAYOUT, REFERRED TO BOILERS
ARES TEC 150 - 350

When replacing the gas valve or having difficulty with ignition:

Screw general adjusting screw "A" on clockwise until it stops, then unscrew by 7 revolutions.
Check boiler ignition. If it does not start up unscrew screw "A" by one more revolution, then try to start it up again. If the boiler does not start up again, follow the operations described above until the boiler does start up again.
At this point adjust the burner as previously illustrated.



3) Completing basic calibration

- Check CO₂ values at the minimum and maximum flow rate.
- Touch up if necessary.
- Close the cap (2 - 3) for the flue inspection point back up (1)

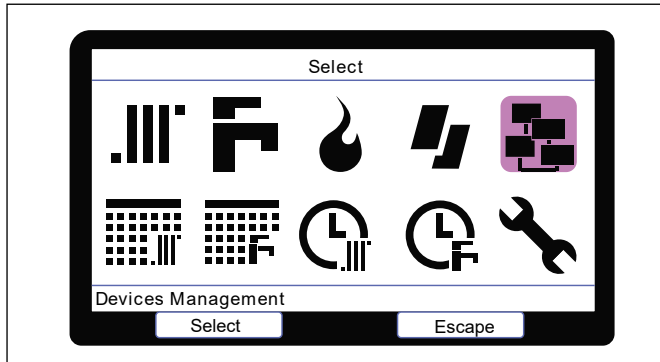


For smooth operation, calibrate the CO₂ values taking care to observe the values in the table.



NOTE: Do not force the adjusting screw limit switch limits.

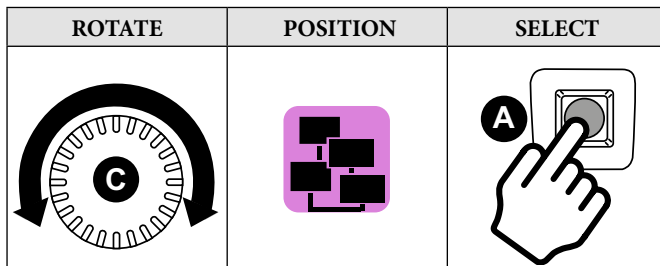
1.9 DEVICE MANAGEMENT



Attention

To be able to select (**Central Heating Parameters**) first select (**Device Management**)

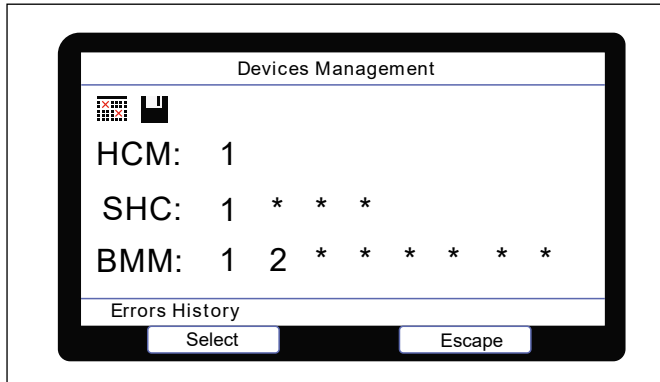
You will be unable to select unless this step is carried out first!



Wait for scanning device (1 minute); to save click:



1.9.1 DEVICE MANAGEMENT SELECTION + LOG



The display shows the devices in the system (- = not present/1-8 = progressive number of the detected device)

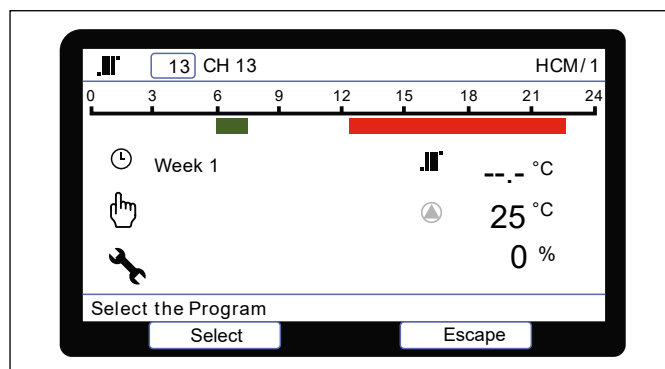
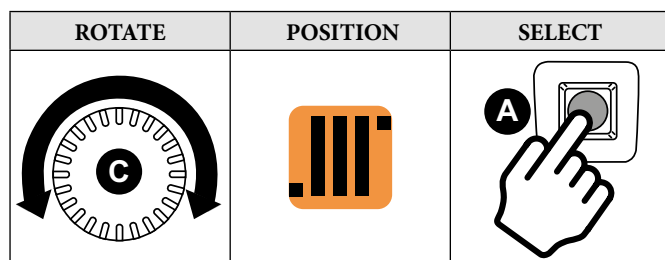
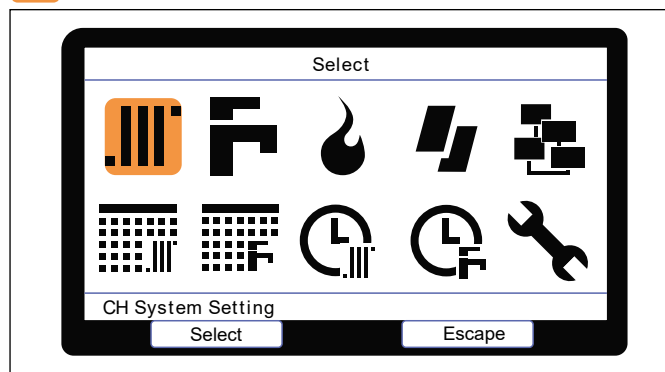
- **CM** (BCM cascade controller)
- **HC** (multifunction module)
- **BMM** (burner management board)


Select the module with knob "C" and confirm with key "A". The services provided by the device, parameters and software version are displayed.


- Select **HCM :1**
- Change parameter setting **803** (which is factory set to **16** disabled) change this value to **19**
- Then select **Escape**
- Then select the Icon
- This will now allow you to access the **Central Heating Parameters**

1.5 CENTRAL HEATING PARAMETERS


(Volt free Enable) (TA)



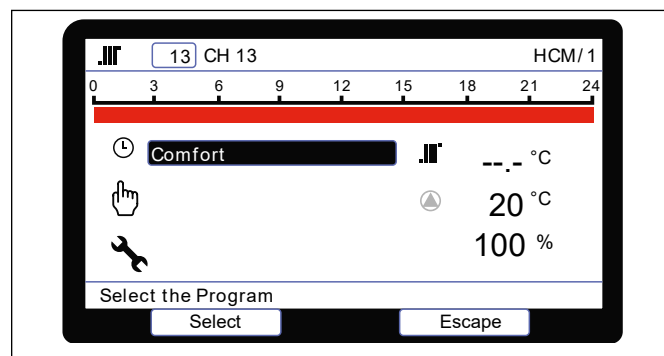
SELECT	CONFIRM	DISPLAY/MODIFY
with  knob "C"	By pressing Key "A"	the settings of the corresponding circuit can be displayed and changed with knob "C".

SELECT	CONFIRM	DISPLAY/MODIFY
with  knob "C"	By pressing Key "A"	one of the 3 previously set operating weeks can be combined with each circuit (see "Weekly programs").

The time bands of the current day are displayed in the upper scale.

SELECT	CONFIRM	DISPLAY/MODIFY
with  knob "C"	By pressing Key "A"	The COMFORT function is active

Continuous reduced temperature within the 24h.
see chapt. 1 GENERAL SETTINGS 1.2.3



Continuous reduced temperature (**Comfort**) needs to be selected if you are using a volt free enable (TA) to bring the boiler **on/off** or you want to run the boiler in continuous operation.

3.3 BCM PARAMETERS (HSC) - 0-10v set up GENERAL SETTINGS / USE SETTINGS WITH HSCP

The BCM receiver is factory preset for control via **0-10V** in temperature. (Control via EXTERNAL TEMPERATURE CONTROL 0-10 V).

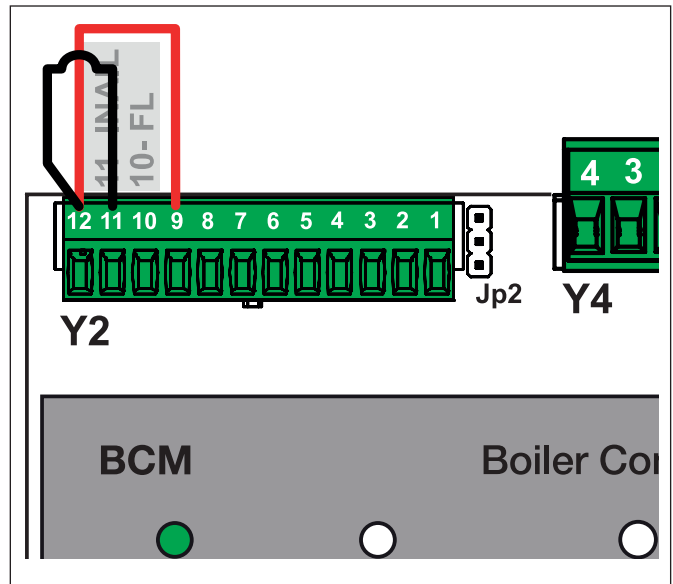
To enable the **0-10 V** request, the contact must be closed between **pin 12** and **pin 9** with a jumper or with a command coming from the external temperature control together with 0-10.

Also jumper **pin 12** and **11** (ISPESL alarm input) or use it to manage the system's safety devices, with the contact open, all the generators are switched off with alarm triggering.



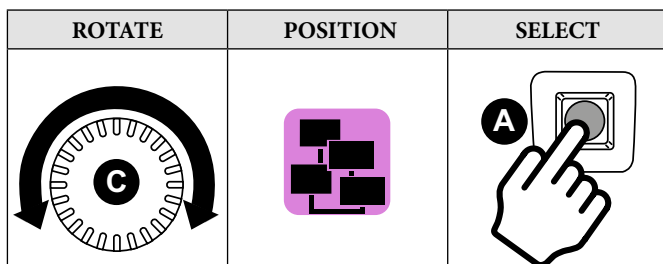
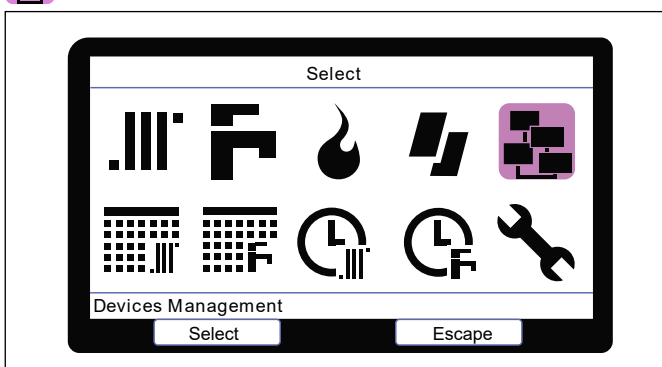
When using the BCM coupled with HSCP, the following parameters must be modified
Parameter 376 change to (0)
Parameter 799 changed to (2) 0r (3)
Parameter 31 & 39 Min and Max set point

Connecting a storage tank probe, **Stemp ACC**, in automatic mode, the parameter **803 Srv** assumes the value **27** and the system re-configuration is requested on HSCP (actually saving the new configuration).



Code	Symb.	Value	Description	Factory setting	BCM use setting with HSCP
376	DI1		Programmable Input #1		
		0	CH Service Enabling		0
		1	Heat generator enabling	1	
		2	Reset alarms		

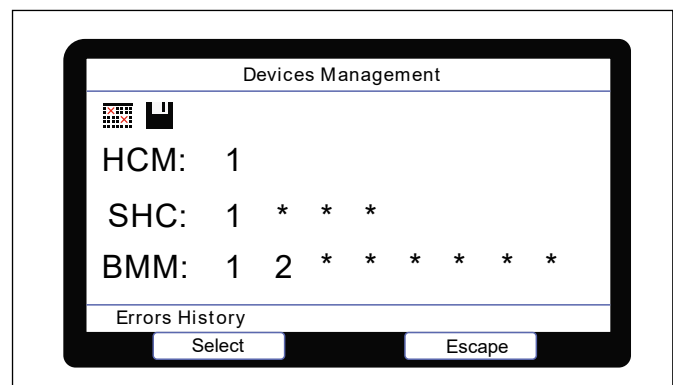
1.9 DEVICE MANAGEMENT



Wait for scanning device (1 minute); to save click:



1.9.1 DEVICE MANAGEMENT SELECTION + LOG

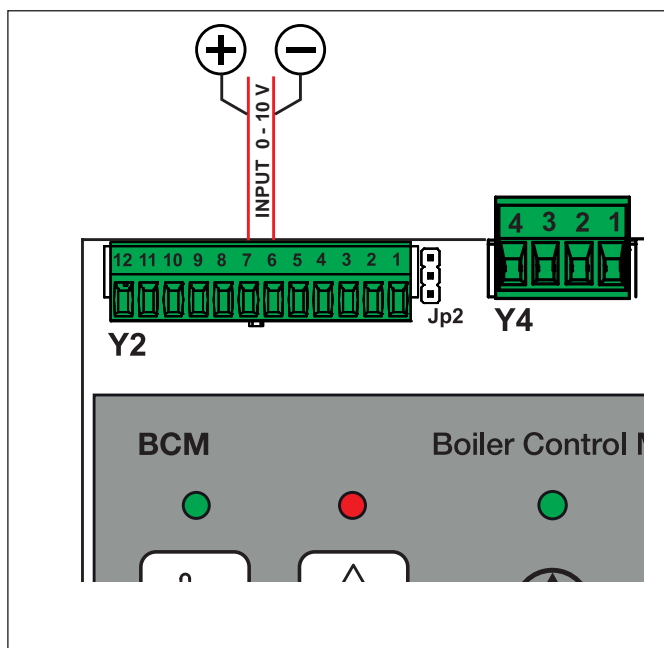


The display shows the devices in the system (- = not present/1-8 = progressive number of the detected device

- HCM (BCM cascade controller)
- SHC (multifunction module)
- BMM (burner management board)

Select the module with knob "C" and confirm with key "A". The services provided by the device, parameters and software version are displayed.

3.4 BCM (HCM) PARAMETERS – SETTING FOR 0-10 V USE.



1 Set parameter 39

CH#2: Burner Maximum Setpoint at 10V

2 Value at 0 V always corresponds to 0°C

3 Set parameter 31

CH#1: Burner Minimum Setpoint, below which the request value will be deleted and the burner will switch off

With this configuration, the system will set a temperature based on the received voltage of the 0 - 10 V inlet.

The setting will be between the value of parameter 31 (minimum) and 39 (maximum) when the temperature is lower than 2 °C when compared to the parameter 31 (minimum) the central heating request will be cancelled.

The central heating request restarts when the input voltage corresponds to the value of parameter 31 (minimum).

By changing parameter 39, you can adjust the gradient of the curve.

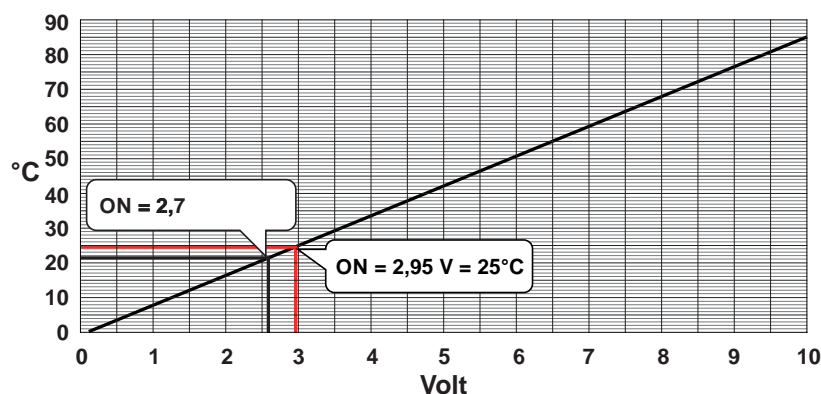
The value of the voltage with reference to the temperature is calculated as follows:

$$V = x \text{ } ^\circ\text{C} \cdot 10 / \text{par } 39 \text{ or } ^\circ\text{C} = V \cdot \text{par } 39 / 10$$

Standard setting condition example:

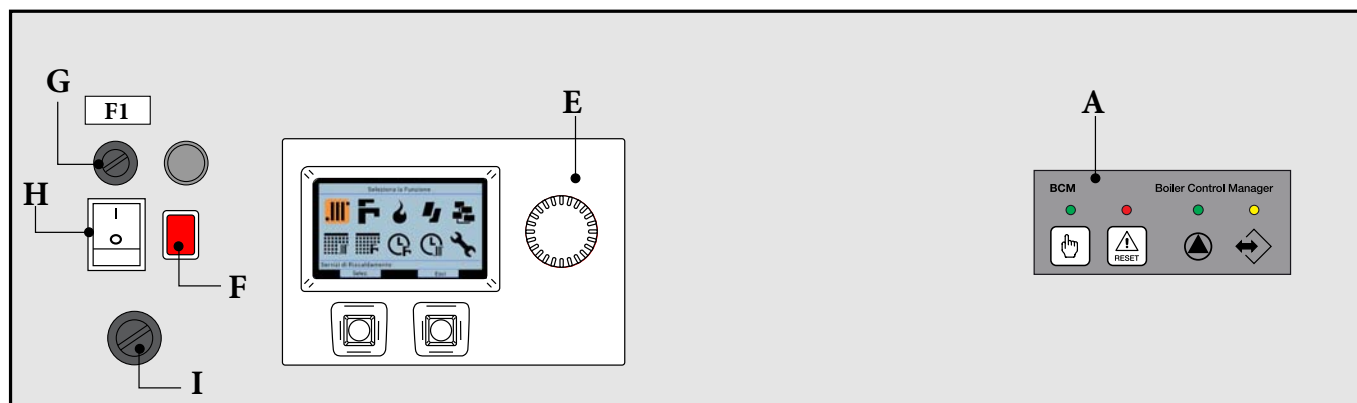
Parameter 39 = 85°C

Parameter 31 = 25°C



Cod.	Simb.	Valore	Descrizione	Impostazione Fabbrica	Impostazione utilizzo BCM con HSCP
799	AC		0/10 V analogue input function:		
		0	Manual adjustment target temperature		
		1	Outdoor temperature sensor		1
		2	0 / 10 V Temperature control target	2	
		3	0 / 10 V Modulation control	3	
31	HL	°C	CH#1: Burner Minimum Setpoint,		
		200 ÷ 400		350	=
39	HH	°C	CH#2: Burner Maximum Setpoint		
		450 ÷ 850		850	=

3.16 EMERGENCY AND SAFETY OPERATIONS



BCM

The BCM board prevents the system from shutting down if management of the HSCP system or main boiler system are out of service (see the BCM manual).



NOTE: the devices are positioned under the casing next to the control unit.

A YELLOW LED = flashing (communication between BMM and BCM) ok

GREEN LED = on (Pump On)

RED LED = on (Error Code detected)

E HSCP Control panel

F Only for ARES 350 Tec ErP Light indicating the General Limit Thermostat TLG is on

G Fuses:

1 = 6.3 A

H Main Switch

I Only for ARES 350 Tec ErP

When TLG General Limit Thermostat comes on it cuts off power to the boiler and light F comes on. To re-arm it, take off the cap and press



NOTE: the emergency function only switches the burners on in the boiler to 100% in flow. All system loads, including the manifold pump, must be controlled manually.

Condensate level sensor position



4 INSPECTIONS AND MAINTENANCE



OBLIGATION!
Wear protective gloves.



Inspections and maintenance carried out to state of the art and at regular intervals, as well as the exclusive use of original spare parts, are of primary importance for smooth operation and to guarantee long boiler life. Annual maintenance of the appliance is compulsory, in accordance with Legislation in force.



Scalding hazard!
Be careful during the maintenance operations.



Failure to carry out Inspections and Maintenance can cause material and personal damage.

4.1 INSTRUCTIONS FOR INSPECTION AND MAINTENANCE

Only original **Stokvis** spare parts must be used to ensure a long life for all of the functions of your appliance, and to avoid changing the conditions of the approved standard product. When a part needs to be replaced:

- Disconnect the appliance from the mains power supply and make sure it cannot be reconnected accidentally.
- Shut the gas cut-off valve upstream of the boiler.
- If necessary, and based on the work that needs to be carried out, close any cut-off valves on the heating flow and return, as well as the cold water inlet valve.

After completing all maintenance operations, restore the boiler's operation.

- Open the heating flow and return, as well as the cold water inlet valve (if it was previously closed).
- Relieve and, if necessary, restore the pressure in the heating system, until reaching pressure of 0.8/1.0 bar.
- Open the gas cut-off valve.
- Apply voltage to the boiler.
- Make sure the appliance is water-tight, on the gas side and the water side.

Table of resistance values based on the heating probe (SR) and the heating return probe (SRR) temperature

T°C	0	1	2	3	4	5	6	7	8	9
0	32755	31137	29607	28161	26795	25502	24278	23121	22025	20987
10	20003	19072	18189	17351	16557	15803	15088	14410	13765	13153
20	12571	12019	11493	10994	10519	10067	9636	9227	8837	8466
30	8112	7775	7454	7147	6855	6577	6311	6057	5815	5584
40	5363	5152	4951	4758	4574	4398	4230	4069	3915	3768
50	3627	3491	3362	3238	3119	3006	2897	2792	2692	2596
60	2504	2415	2330	2249	2171	2096	2023	1954	1888	1824
70	1762	1703	1646	1592	1539	1488	1440	1393	1348	1304
80	1263	1222	1183	1146	1110	1075	1042	1010	979	949
90	920	892	865	839	814	790	766	744	722	701

Relation between the temperature (°C) and nom. resistance (Ohm) of the heating probe SR and the heating return probe SRR.

Example: At 25°C, the nominal resistance is 10067 Ohm

Inspections and maintenance



We urge you to have authorised company fulfil requirements regarding periodic maintenance checks.

Since dust is extracted from the inside, the resistance on the flue side, through the boiler, will increase, leading to a decrease in the heat load (and, consequentially, in the power).

Prior to cleaning, check the heat load and the percentage of CO₂ (see Par. 3.13). If the measured load (with a correct CO₂ level) is within 5% of the value indicated, the boiler does not need to be cleaned.

The operation must therefore be limited to cleaning the trap.



ATTENTION!

A drop in the heat load can be caused by an obstruction in the exhaust channel or air intake pipe. First of all make sure that this is not the cause.

If there is a drop in the heat load greater than 5%, check how clean the burner condensate-collection pan is. Also clean the trap.

First phase – Disassembly.

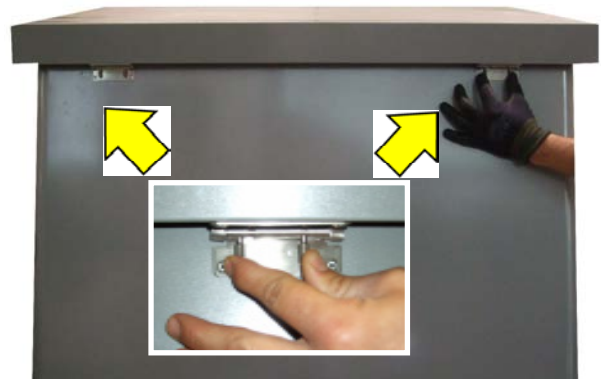
- Shut off the electrical and gas supplies **making sure the valve is firmly shut.**
- Take out: all of the casings.



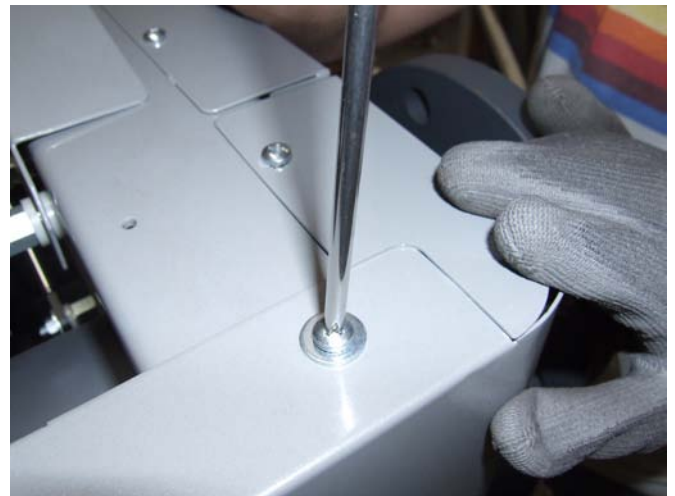
- Turn the required screw to lift the cover.



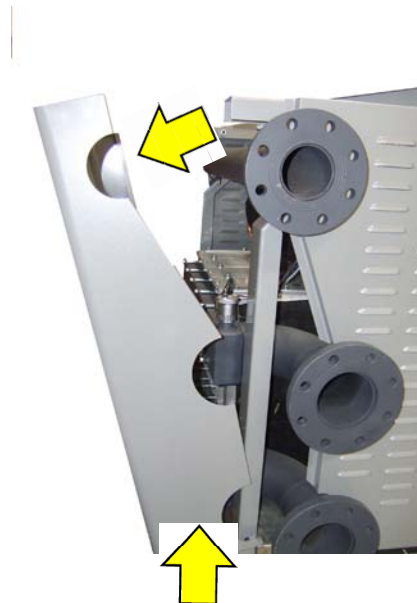
- Take out the two cover clamping screws.



- Act on the two rear closing hinges to take out the cover.



- Take out the rear, front and side casing clamping screws.

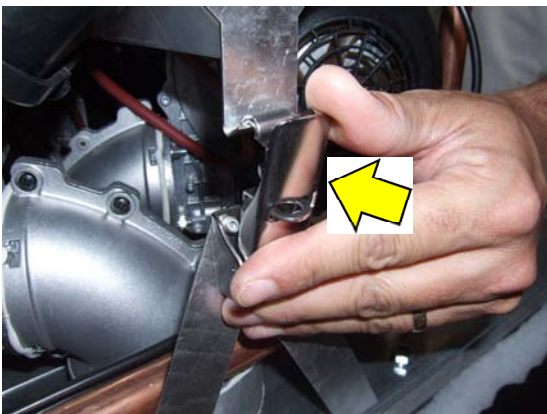
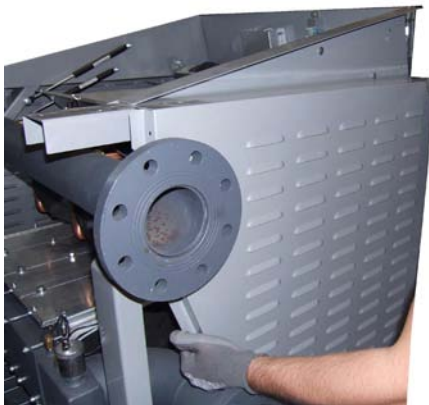
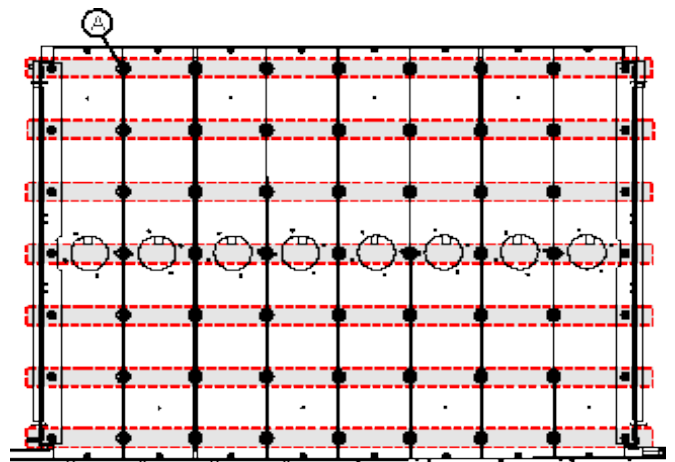


Inspections and maintenance

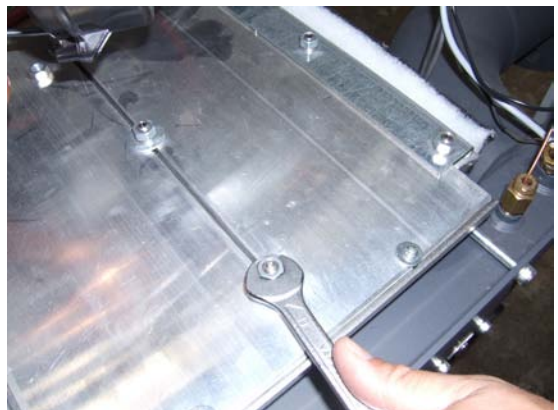


- Take out the red silicone pipes and then the fan chamber.

Element screws.

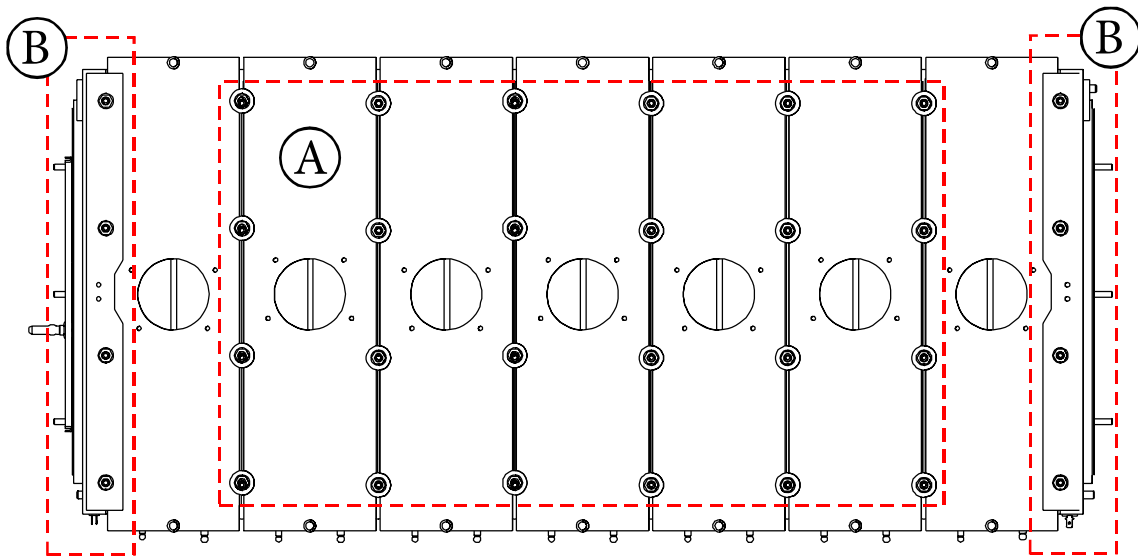


-- Unhook the fan chamber clamping spring (right/left side).

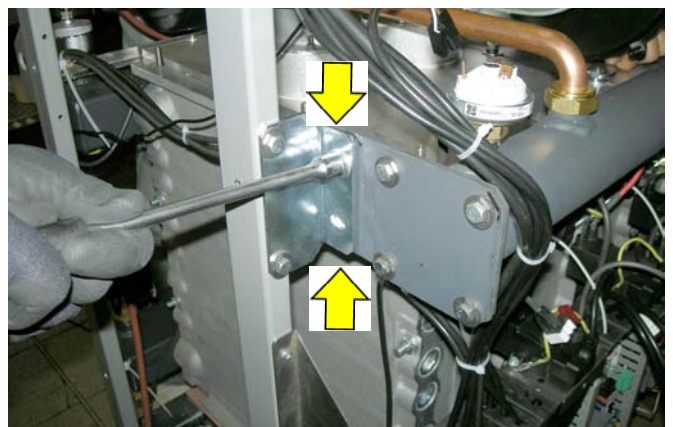


- Take out screws "A" from each element (with 13mm socket and flat key).

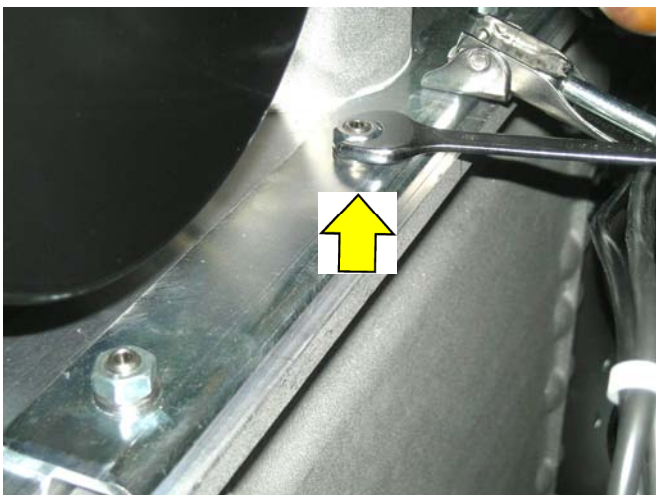
Element screws.



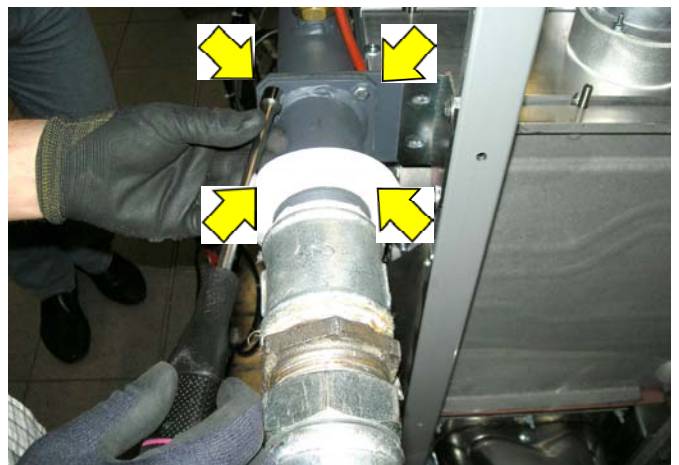
- Take out screws "A" from each element (with 13 mm socket key).



- Take out the gas pipe clamping screws (right and left side).

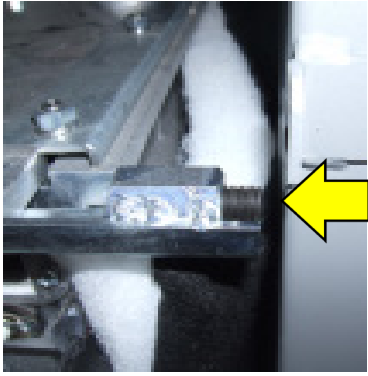


- Take out screws "B" (with 13 mm socket key / with 13 mm hex key) and take out the clamping plates.

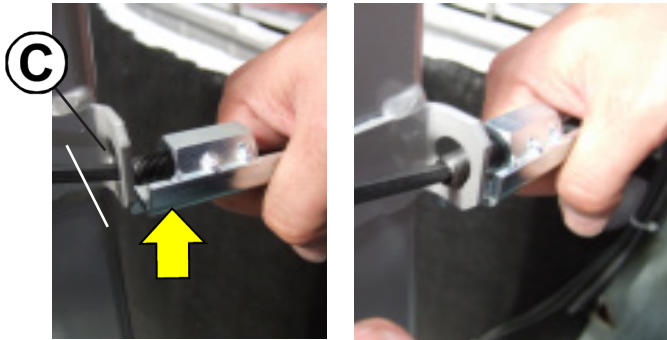


- Take out the four screws, followed by the gas flange, using a 10 mm socket key.

Inspections and maintenance



- Lift the burner block (front part).



- Lift the rear burner block slightly and take out 2 pins with a 5 mm hex key, until you reach holes "C" (left and right side).



- Take out the gas fittings from the gas manifold with a 36 mm flat key.



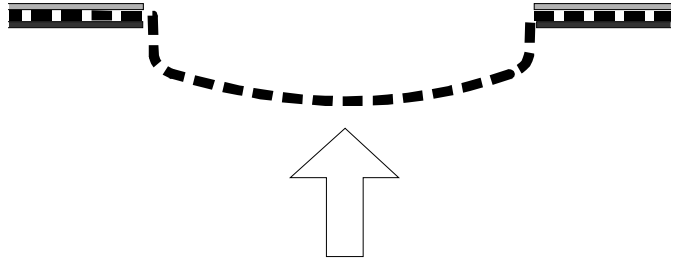
Inspections and maintenance

Second phase – Cleaning.

- Take out the gaskets and burners.
- Dry clean the burners using compressed air and operating from the "flame side".
- Visually check the state of the welding on the angulars and burner mesh.



The burner gaskets must be replaced every time cleaning operations are carried out.



Compressed air

- Wash the combustion chamber with water being careful not to get the electrical cables wet.
- During this operation is necessary to make sure that the condensate exhaust pipe is always unobstructed so that the wash water does not leak out from the inspection opening.
- Blow the combustion chamber with compressed air to remove any dirt that is still attached to the studs.
- When the elements have been washed make sure that the condensate drain trap is unobstructed: clean if necessary.
- Inspect the exhaust evacuation pipe and the flue.

Third phase - Reassembly.

- Once the body and/or burners have been cleaned, put the burners back in their places.
- Put the **new graphite gaskets in place**.



Proceed in the reverse order for reassembly, being careful to tighten the screws that clamp the mixer unit/fans to the body, at a torque of 13 Nm.



**ATTENTION
IT IS NECESSARY TO CHANGE THE SEALING GASKETS ON EACH BURNER AT EVERY MAINTENANCE OPERATION.**

- Before opening the gas supply valve make sure that the previously loosened gas fitting is firmly tightened. In order to do so open the valve and check the seal using soapy water.
- As a burner is being ignited, immediately check the seal between each single gas valve and relative premixing chamber.
- Perform a combustion analysis and check the parameters.
- Make sure that all of the previously opened gas pressure points are closed.

4.2 PROGRAMMING THE OPERATION PARAMETERS



ATTENTION!
Function reserved exclusively to Authorised Service Centres.



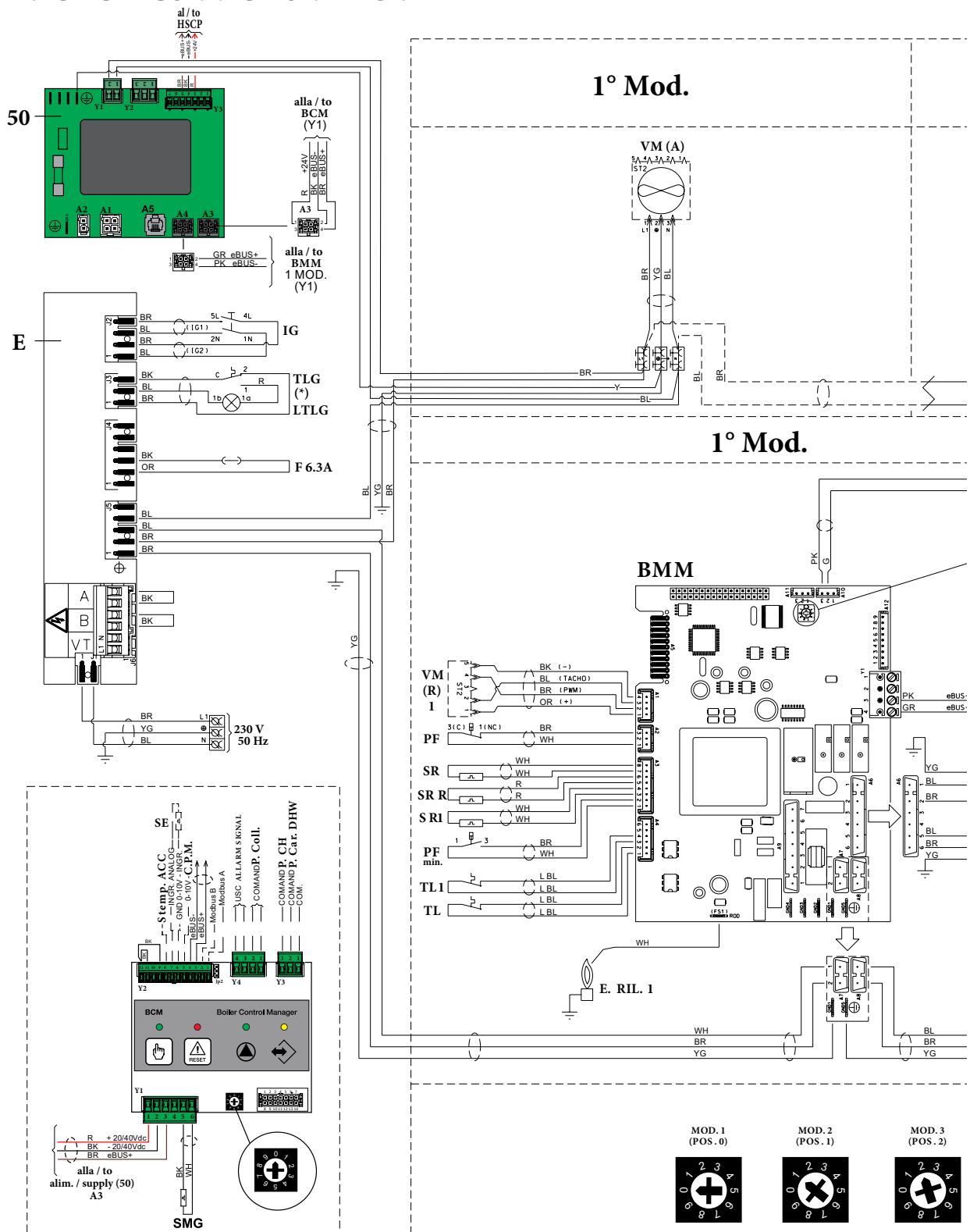
ATTENTION!
This function is explained in chapter 8 (Device management) of the HSCP installation and maintenance manual.

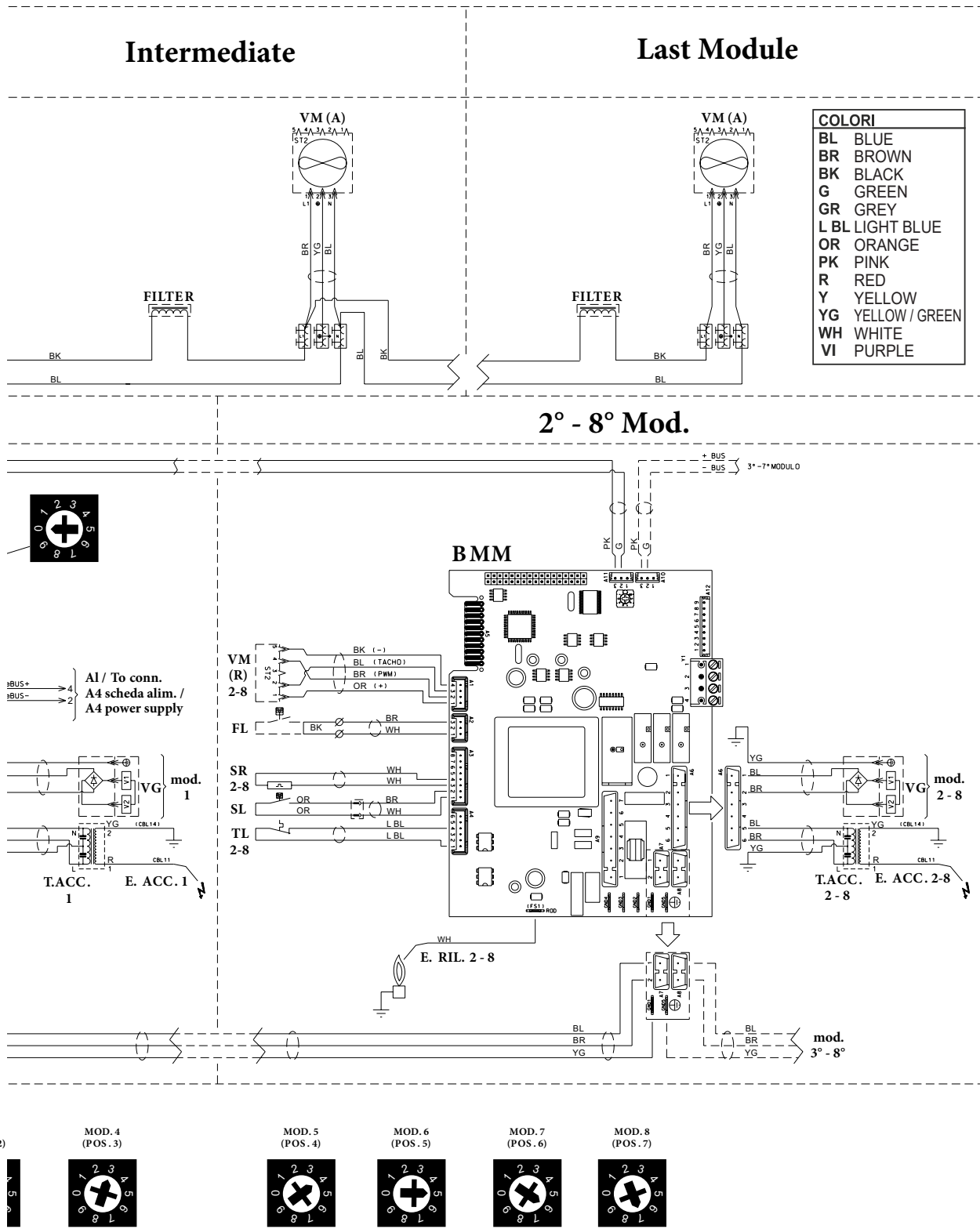
BMM parameters						
Code	Symb.	Description	Unit	Min	Max	Factory settings
31	HL	CH: Minimum Setpoint (°C *10)	°C	20	45	30
39	HH	CH-: Maximum Setpoint (°C *10)	°C	50	90	95
322	Po	Pump Post-circulation	min.	0	10	5
309	St	Application				0
619	IG	Ignition Modulation	%	0	100	80
314	Sb	Standby Modulation	%	0	100	26
319	FH	Maximum Modulation	%	0	100	98
346	FL	Minimum Modulation	%	0	100	22
488	Fb	Fan		1	20	50
527	PU	Fan: Pul./Rev		2	3	2
2590	bC	Burner Power	kW	1	1000	50
483	rP	Gen: Temp. Max Differential	°C	0	50	30
622	FS	Minimum Flow Sensor		0	1	1
34	HY	Burner Hysteresis	°C	5	20	5
336	Hs	Temperature Gradient	°C/min	1	30	10
353	Hp	CH temperatures: Reg. Proportional	%	0	50	25
354	HI	CH temperatures: Reg. Integrative	%	0	50	12
478	Hd	CH temperatures: Reg. Derivative	%	0	50	0
486	FP	Fan speed: Reg. Proportional	%	0	50	4
487	FI	Fan speed: Reg. Integrative	%	0	50	8
337	Fr	Modulation gradient	rpm	0	30000	5280
526	FM	Fan: Absolute max speed	revs/sec	50	120	100
777	AFC	Burner air flow control		0	1	0
793	COC	Chimney Obstruction Sens.: Enabled / Disabled		0	1	1
768	LG	Min. Gas Pressure Sens.		0	1	0

Inspections and maintenance

BCM parameters						
Code	Symb.	Description	Unit	Min	Max	Factory settings
803	Srv	Services Enabled		16	27	19
483	rP	Gen: Temp. Max Differential	°K	0,0	50,0	25
34	HY	Burner Hysteresis	°K	5,0	20,0	5,0
31	HL	CH#1: Minimum Setpoint	°C	20,0	40,0	35,0
39	HH	CH#1: Maximum Setpoint	°C	45,0	85,0	85,0
799	AC	Input 0/10V		0	3	1
376	DI1	Programmable Input #1		0	2	3
322	Po	Pump Post-circulation	min.	1	10	5
341	PL	Pump Minimum Control	V	0	10	3
313	Pr	Pump Maximum Control	V	0	10	10
792	CHP	CH: Max Modulation	%	0	100	100
611	POT	Gen: Err. Max. Parallel	°K	0	30	5
612	POL	Gen: Mod. Max. Parallel	%	0	100	0
650	dL	DHW: Minimum Setpoint	°C	25,0	45,0	35,0
385	dH	DHW: Maximum Setpoint		50,0	65,0	65,0
360	dt	Storage tank adjustment		0	15	0
656	drT	DHW: Temp. Request Differential	°K	-20	20	4
657	drH	DHW: Request Temp. Hysteresis	°K	1	20	8
310	DpT	DHW Pump: Postcirc.	sec.	5	600	60
660	dbT	DHW: Temp. Boiler Maximum	°C	50,0	85,0	75,0
48	ChSet	CH#1: Setpoint	°C	20,0	85,0	85,0
64	ChPO1	CH#1: Parallel Supply		0	1	0
346	FL	Minimum Modulation	%	0	100,0	25,0
600	mB	Burners: Min. Inserted		1	8	1
616	BSt	Gen: Insertion Time	sec.	30	900	120
613	BRt	Gen: Removal Time	sec.	30	900	120
336	HS	Temperature Gradient	°C/min	1	30	5
353	HP	CH PID: Proportional	°K	0	50	25
354	HI	CH PID: Integrative	°K	0	50	12
478	Hd	CH PID: Derivative	°K	0	50	0
816	MI	ModBus Address		1	127	1
817	MT	Timeout Modbus	sec.	0	240	30
896	TU	°Fahrenheit		0	1	0
309	St	Application Code		0	1	0
368	VA1	Programmable Relay #1		0	1	0
369	VA2	Programmable Relay #2		0	1	1
771	PS	Water Pressure Sensor		0	1	0
768	LG	Min. Gas Pressure Sens.		0	1	0
793	COC	Chimney Obstruction Sens.		0	2	0
622	FS	Minimum Flow Sensor		0	1	0

4.3 PRACTICAL CONNECTION DIAGRAM

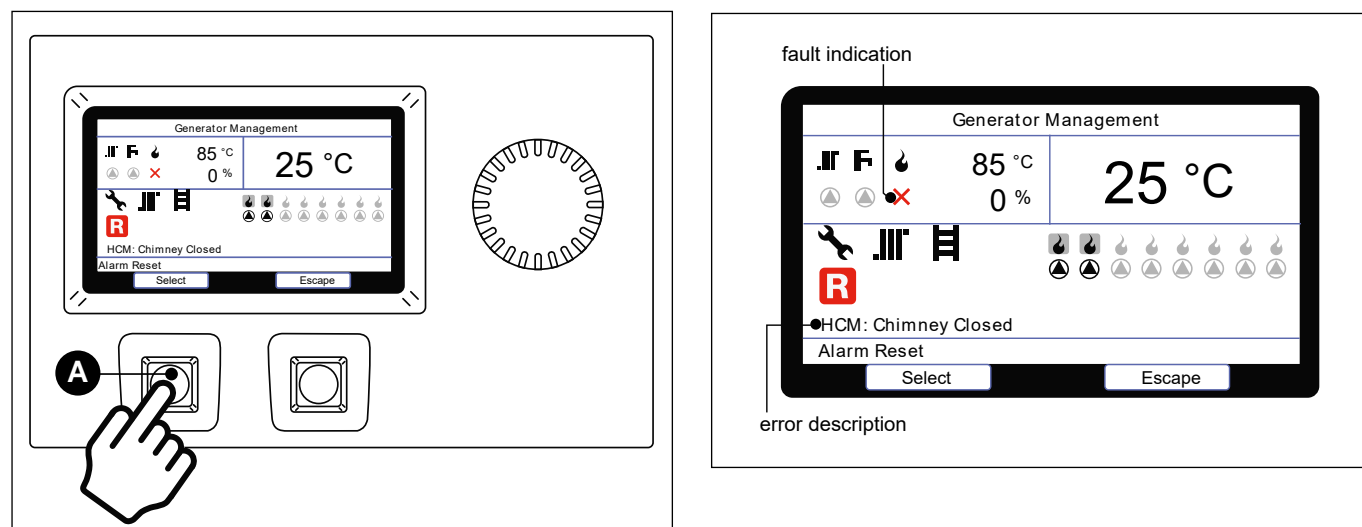




INGR. ANALOG.	Analogue input
GND 0-10V ING	0-10 V analogue input
0-10V C.P.M.	Modulating Pump Control
ALLARM SIGNAL	Alarm Outlet
Comm. P. COLL	Boiler manifold pump control
Comm. P. CH	Central heating pump control

P. car DHW	Storage tank load pump control
COM.	Common
IG	Main switch
TLG	General limit thermostat
LTLG	Limit thermostat lamp
F	Fuse

1.10 ERROR CODES



When the boiler detects a fault, the alarm symbol is displayed on the screen together with the relative error code and description. It is possible to reset the boiler by pressing key “A”.

Info	DESCRIPTION detected on HSCP
0	Regular operation
1	Overheat Thermostat
2	Low Gas Pressure
3	Overheat Thermostat
4	Ignition Failure
5	Flame Lost
6	Overheating
7	Aux Temp. Sensor
8	Low Water Pressure
9	Outdoor Temp. Sensor
10	Internal Failure
11	Unexpected Flame
12	CH flow sensor
13	DHW Temp. Sensor
14	CH return sensor
15	Differential Temp.
16	Frozen
17	Global Frozen
18	Global Differential Temp.
19	Global Overheating
20	Gas valve leaking
21	Flapper Stuck Open
22	Lack air x ignit
23	Unexpexted Air Flux

24	Low Fan Speed
25	Exhaust Overheating
26	High Fan Speed
27	Lack of air
28	Chimney Closed
29	Condens Level
30	Service Parameters
31	System Configuration
32	Low supply voltage
33	Mix#1: Frozen
34	Mix#2: Frozen
35	Mix#3: Frozen
36	Unknown Error
37	Parameters Memory
38	Factory Parameters
39	User Parameters
40	Low Water Flowrate
41	Mixed Air/Water
42	Pump Locked
43	Pump Not Wired
44	Waterpressure Sensor
45	Water Overpressure
46	Unknown Error
47	Communication
48	Unknown Error
49	HCM Missing
50	Room Temp. Sensor#1
51	Room Temp. Sensor#2
52	Room Temp. Sensor#3
53	Mixer Temp. Sensor#1
54	Mixer Temp. Sensor#2
55	Mixer Temp. Sensor#3
56	Heat Control Lack
57	Burners Lack (Safety Kit interruption)
58	Global Temp. Sensor
59	Unknown Error
60	Set Date and Time
61	Iono Regulation
62	Actuators
63	BC internal error
64	Calibration
65	Calibration

66	Missing Calibration
67	Iono Setpoint
68	Offset GPV
69	Adaptation not exec.
70	DHW Tank#1: Sensor
71	DHW Tank#2: Sensor
72	DHW Tank#3: Sensor
73	Water Flow Sensor
74	Temperature sensors swap
75	Temperature rise speed
76	Lack of fuel
77	Burner supercharged
78	Lockout by supercharging
79	Unknown Error
80	Sun Panel#1: Sensor
81	Sun Panel#2: Sensor
82	Sun Pan#1: Overheat
83	Sun Pan#2: Overheat
84	Sun Panel#1: Frost
85	Sun Panel#2: Frost
86	SunTank: Top Sensor
87	SunTank: Bottom Sensor
88	SunTank: Inlet Sensor
89	SunTank: Overheat
90	BC Communication
91	Exhaust Sensor
92	Low Battery
93	Safety lock
94	Gas valve wiring
95	Frequent loss of flame
96	Unreliable Reset
97	Test Configuration
98	Iono amplifier
99	CC: internal error
100	CC: unknown lockout
101	CC: ignition failure
102	Iono sensor s.c.
103	VGAS: open delay
104	Keypad locked
105	CC: communication
106	CC: Lambda sensor
107	Services configuration



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