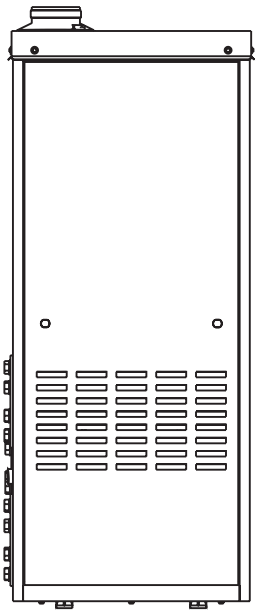
Unical®



KONf

100 - 115

INSTALLATION AND SERVICING MANUAL

ENGLISH

http://www.unicalag.it/prodotti/professionale-300/light-commercial-alluminio/2075/konf

Provisions for proper disposal of the product

At the end of its life cycle the product must not be disposed of as urban waste. It can be taken to a special recycling centre managed by the local authorities, or to a dealer who offers this service.
Separate disposal of a domestic appliance avoids possible negative consequences for the environment and human health deriving from inappropriate waste handling and allows the recovery of the materials of which it is made, in order to obtain significant energy and resource savings.

Attention: this manual contains instructions for the exclusive use of the professionally qualified installer and/or maintenance technician in compliance with current legislation.
The user is NOT qualified to intervene on the boiler.
The manufacturer will not be held liable in case of damage to persons, animals or objects resulting from failure to comply with the instructions contained in the manuals supplied with the boiler.

1 GENERAL INFORMATION

1.1 - GENERAL WARNINGS

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

Read the warnings contained in this instruction booklet carefully as they provide important guidelines regarding installation, use and maintenance safety.

Keep the booklet with care for further consultation.

Installation and maintenance must be performed in compliance with the standards in force according to the instructions of the manufacturer, up to standard and by personnel qualified and certified in compliance with law.
Systems for the production of domestic hot water MUST be constructed entirely with compliant materials.

By professionally qualified personnel we mean: personnel with specific technical skill in the field of heating system components for civil use, domestic hot water production and maintenance. Personnel must have the qualifications provided for by current legislation.

Incorrect installation or improper maintenance can cause damage to persons, animals or objects for which the manufacturer is not responsible.

Before performing any cleaning or maintenance, disconnect the appliance from the energy mains by acting on the switch of the system and/or through the specific cut-off devices.
Do not obstruct the terminals of the intake/exhaust ducts.

In case of failure and/or malfunctioning of the appliance, switch it off and do not try to repair it or intervene on it directly. Contact only personnel qualified in compliance with law.

Any repairs must be performed solely by personnel authorised by Unical AG S.p.A., using original spare parts only. Failure to comply with the above can compromise the safety of the appliance and void the warranty.

To guarantee appliance efficiency and its correct operation, yearly maintenance must be performed by qualified personnel.

Should you decide not to use the appliance, parts entailing potential sources of hazard must be made safe.
Before commissioning an appliance that has not been used, wash the domestic hot water production system, making the water flow until it has been fully replaced.

Should the appliance be sold or transferred to a new owner or if you move and leave the appliance, always make sure that the instruction booklet accompanies it in order to be consulted by the new owner and/or installer.

Only original accessories must be used for all appliances with optionals or kits (including electric).

This appliance is intended solely for the use for which it was expressly designed.
Any other use is to be considered improper and therefore dangerous (*).

1.2 - SYMBOLS USED IN THE MANUAL

Pay special attention when reading this manual to the parts marked by the symbols:

DANGER!
Serious danger to safety and health

ATTENTION!
Possible dangerous situation for the product and the environment

NOTE!
Tips for the user

NOTE!
For more information See Technical Info: from site indicated at pag. 2

1.3 - APPROPRIATE USE OF APPLIANCE

The boiler has been built according to the current level of engineering and acknowledged technical safety rules.
Nonetheless, if improperly used, dangers could arise for the safety and life of the user and other persons or damage to the equipment or other objects.
The appliance is designed to work in heating systems, with hot water circulation, for the production of domestic hot water.
Any other use is considered improper.
For any damage resulting from improper use UNICAL AG. S.p.A. assumes no responsibility.
Use according to the intended purposes also includes strict compliance with the instructions in this manual.

1.4 - INFORMATION PROVIDED TO THE USER

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

- Deliver these instructions to the user, as well as other documents concerning the appliance inserted in the envelope inside the packaging. **The user must keep this documentation safe for future consultation.**
- Inform the user about the importance of the air vents and the flue gas exhaust system, highlighting their essential features and the absolute prohibition of modifying them.
- Inform the user concerning controlling the system's water pressure as well as operations to restore it.
- Inform the user concerning correct temperature control, control units/thermostats and radiators for saving energy.
- Please note that, in compliance with the standards in force, the inspection and maintenance of the appliance must be carried out in compliance with the regulations and frequency indicated by the manufacturer.
- Should the appliance be sold or transferred to a new owner or if you move and leave the appliance, always make sure that the instruction booklet accompanies it in order to be consulted by the new owner and/or installer.

The manufacturer will not be held liable in the event of damage to persons, animals or objects resulting from failure to comply with the instructions contained in this manual.

1.5 - SAFETY WARNINGS

ATTENTION!

The boiler must not be used by people with with reduced physical, sensory and mental abilities, without experience and knowledge. These people must be previously trained and supervised during the manoeuvre operations. Children must be supervised so that they do not have access to the boiler.

ATTENTION!

The appliance must be installed, adjusted and maintained by professionally qualified personnel, in compliance with the standards and provisions in force. Incorrect installation can cause damage to persons, animals and objects for which the manufacturer cannot be held responsible.

DANGER!

NEVER attempt performing maintenance or repairs on the boiler on your own initiative.

Any work must be done by professionally qualified personnel. We recommend stipulating a maintenance contract.

Insufficient or irregular maintenance can jeopardise the operating safety of the appliance and cause damage to persons, animals and objects for which the manufacturer cannot be held responsible.

Changes to the parts connected to the boiler (once the boiler installation is complete)

Do not modify the following parts:

- the boiler
- the gas, air, water and electricity supply lines
- the flue gas pipe, the safety valve and the exhaust pipe
- the construction parts which affect the operating safety of the appliance.

Attention!

To tighten or loosen the screwed fittings, use only appropriate fixed spanners.

Incompliant use and/or inappropriate tools can cause damage (e.g. water or gas leakage).

ATTENTION!

Indications for propane gas-fired appliances

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

For state-of-the-art tank venting, contact the LPG supplier or person qualified in compliance with the law requirement.

If the tank has not been professionally deaerated, ignition problems could arise.

In that case, contact the supplier of the LPG tank.

Smell of gas

Should a smell of gas be perceived, follow these safety guidelines:

- do not turn electric switches on or off
- do not smoke
- do not use the telephone
- close the gas shut-off valve
- air out the area where the gas leakage has occurred
- inform the gas supplier or a company specialised in installation and maintenance of heating systems.

Explosive and easily flammable substances

Do not use or store explosive or easily flammable materials (e.g. petrol, paints, paper) in the room where the boiler is installed.

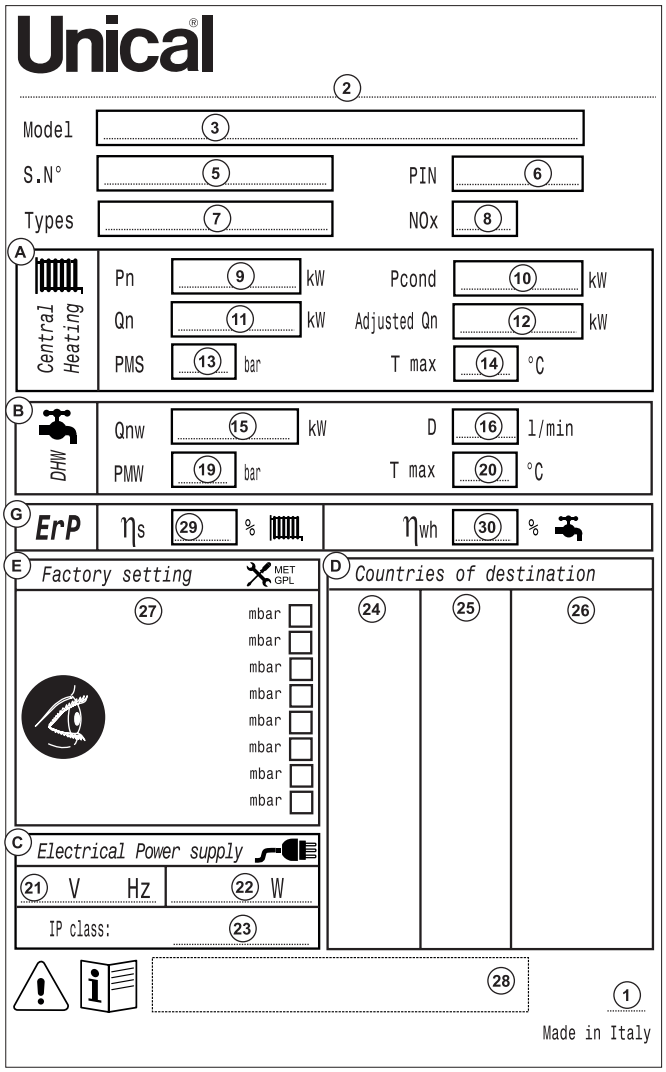
1.6 - TECHNICAL DATA PLATE

The CE marking
certifies the compliance of the equipment with the essential safety requirements defined in the directives and applicable European regulations and that its functioning satisfy applicable technical standards.

The CE marking is affixed to each piece of equipment with an appropriate label.

The CE declaration of conformity issued in accordance with international standards by the manufacturer, is placed in documentation envelope supplied with the product.

The technical data plate is placed inside the boiler, the COPY of the data plate is placed inside the front door.



KEY:
1 = CE monitoring body
2 = Type of boiler
3 = Boiler model
4 = Number of stars (directive 92/42 EEC)
5 = (S.N°) Serial Number
6 = P.I.N. Product Identification Number
7 = Types of approved flue gas exhaust configurations
8 = (NOx) NOx Class

A = Heating circuit characteristics
9 = (Pn) Effective nominal output
10 = (Pcond) Effective output in condensation
11 = (Qn) Maximum heat output
12 = (Adjusted Qn) Adjusted for rated heat output
13 = (PMS) Max. heating operating pressure
14 = (T max) Max. heating temperature

B = Domestic hot water circuit characteristics
15 = (Qnw) Rated heat output in domestic hot water function (if different to Qn)
16 = (D) Specific D.H.W. flow rate according to EN 625 - EN 13203-1
17 = (R factor) No. of taps according to the declared amount of water (EN 13203-1)
18 = (F factor) No. of stars according to the declared quality of the water (EN 13203-1)
19 = (PMW) Max. domestic hot water operating pressure
20 = (T max) Max. domestic hot water temperature

C = Eletrical characteristics
21 = Electrical power supply
22 = Consumption
23 = Protection rating

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 space heating energy efficiency
30 = Energy efficiency in DHW production mode

1.7 - WATER TREATMENT

The treatment of the supply water allows to prevent inconveniences and maintain the functionality and efficiency of the generator over time.

The ideal water pH in heating systems must be within:

VALUE	MIN	MAX
PH	6,5	8
Hardness [°fr]	9	15

To minimise corrosion, it is crucial to use a corrosion inhibitor; in order for it to work properly, the metal surfaces must be clean. (see system protection ACCESSORIES sect. in domestic price list)

ATTENTION!
ANY DAMAGE TO THE BOILER CAUSED BY THE FORMATION OF FOULING OR BY CORROSIVE WATER WILL NOT BE COVERED BY THE WARRANTY.

ATTENTION (*) see general warnings 1.1
The heating only models are NOT suitable for the production of water for human consumption according to Ministerial Decree D.M. 174/2004.

NOTE!
Further details in the section "Technical Information" on the boiler indicated at page 2.

1.8 - BOILER ANTIFREEZE PROTECTION

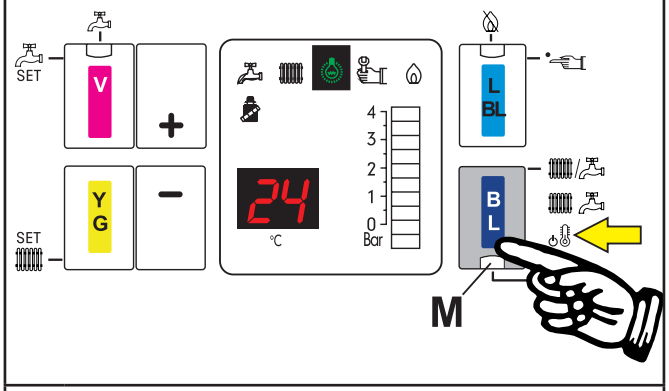
Enabled by default

This protection can intervene only if the electricity and gas supplies are connected.
If one of the two is not available and upon reset **30 (SR)** a temperature between 2 ÷ 5°C is detected, the appliance will behave as described in tab. **pos 2.**

The heating system can be protected effectively from frost by using antifreeze products with inhibitor for heating systems (specific for multidmetal)

Do not use car engine antifreeze products as they could damage the water gaskets.

ANTIFREEZE



Push **"BLUE"** button, led **M** is OFF.

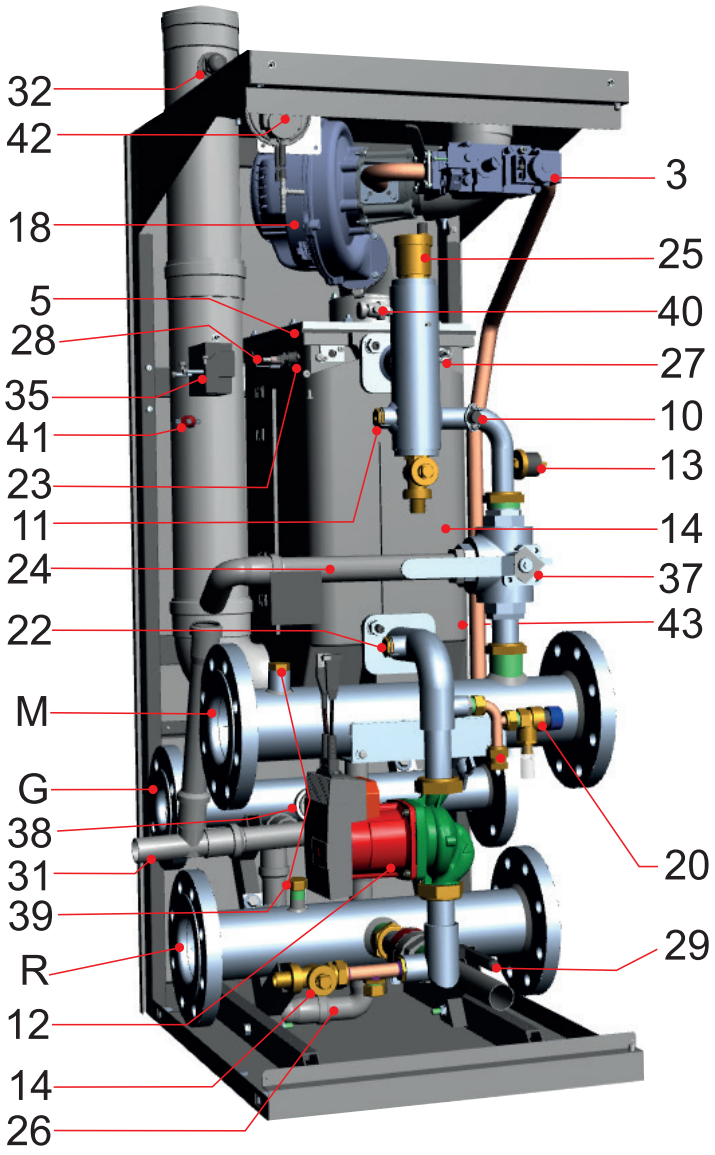
POS	ANTIFREEZE FUNCTION				
	Power supplies		**11 - SR** (*)	Status function antifreeze	Actions
	Electric	Gas			
1	ON	ON	< 7 °C	ON	- Burner and Pump ON until T > 15°C
	ON	ON	< 2 ÷ 5 °C	ON	FAULT CODE Fr 16 (see par. 4.6 ERROR CODES). Ignition disabled.
2	ON	OFF		OFF	- Ignition disabled.
	OFF	ON		OFF	- Ignition disabled.
	OFF	OFF		OFF	- Ignition disabled.
(*) Sensor 11 par. 2.2					

2 TECHNICAL FEATURES AND DIMENSIONS

2.1 - TECHNICAL FEATURES

NOTE! Further details in the section "Technical Information" on the boiler indicated at page 2.

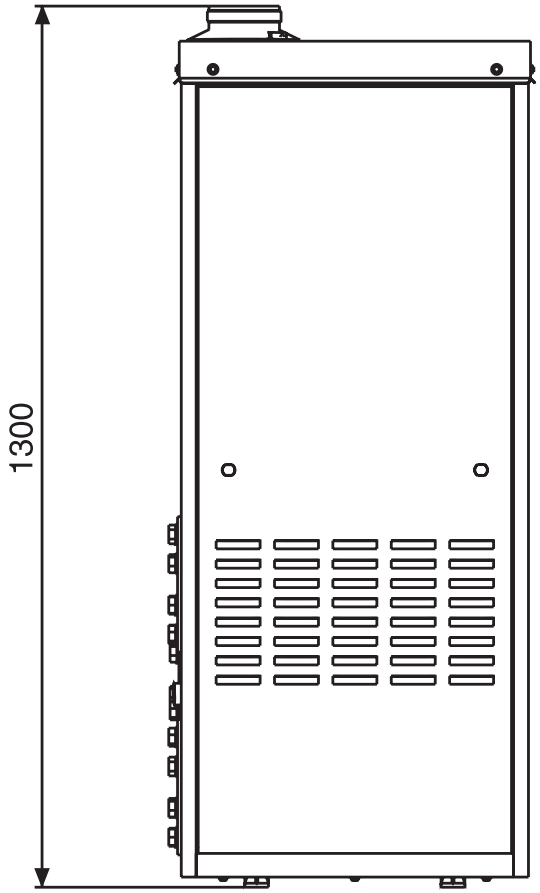
2.2 - VIEW WITH THE INDICATION OF THE MAIN COMPONENTS KONf 100 - 115



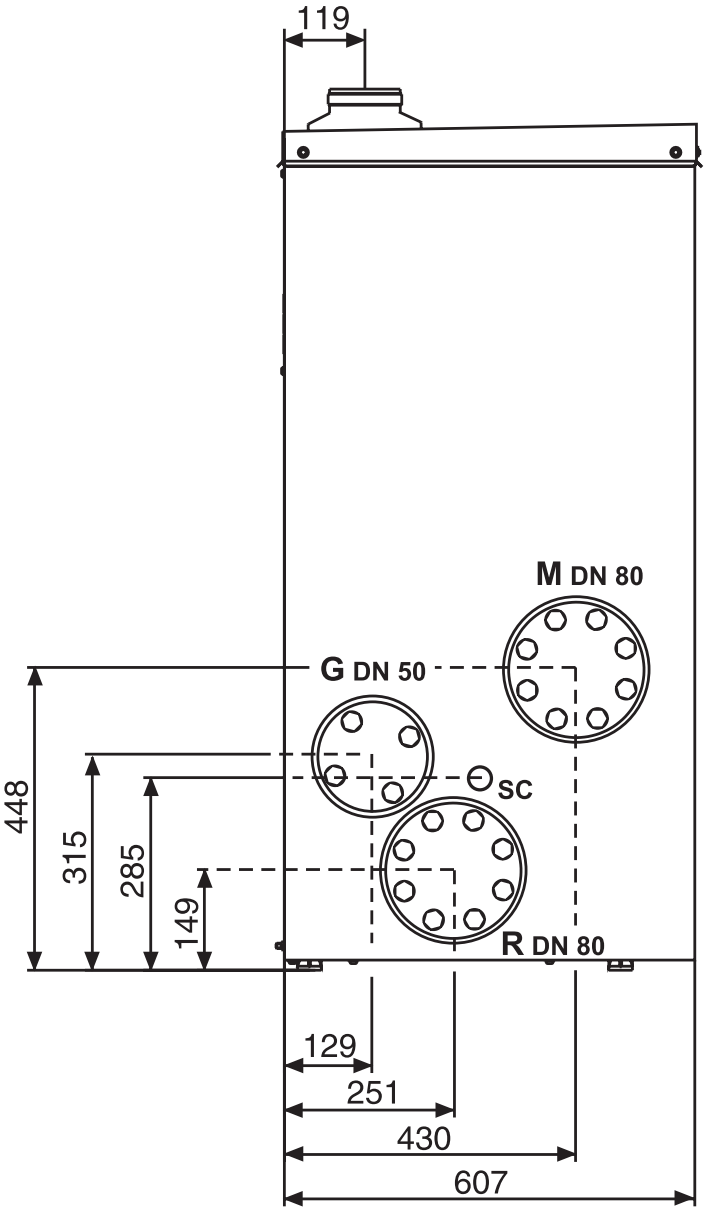
KEY					
N°	C.E.	S.E.	Description		
3		VG	Gas valve		
5			Burner		
10	HL	TL	Safety thermostat		
11	Hb	SR	Heating temperature sensor		
12	Ht	P	Modulating Pump		
13	Lp	DK	Water deficiency pressure switch		
14			Boiler drain valve		
18	FL FH	VM	Modulating Fan		
20			Safety valve		
22	rb	SRR	Return temperature sensor		
23		TSC	Flue gas collector safety thermostat		
24			Aluminium Heat Exchanger/Capacitor		
25			Vent valve		
26			Condensation drain trap		
27		E. RIL.	Detection electrode		
28		E. ACC.	Ignition electrode		
29			Return shut-off (3 Way) valve		
30		SMG	Sensor Flow General		
31			Condensation drain trap		
32			Outlet flue inspection		
35			Ignition transformer		
37			Flow shut-off (3 Way) valve		
38			Gas pressure switch		
39			Differential Pressure switch insertion attacks		
40			Manual Vent valve		
41			Smoke Thermostat		
42			Smoke pressure switch		
43		SL	Condensate level sensor		
KONf				DN	mm
G			Gas inle	50	60,3
M			Heating system flow	80	88,9
R			Heating system return	80	88,9
Scond			Condensation drain		32
S			Smoke outlet		Ø 100
	C.E.		= ERROR CODES see par. 4.6		
		S.E.	WIRING DIAGRAM KEY see par. 4.5		
(N.U)	Component not used				

2.3 - DIMENSIONS

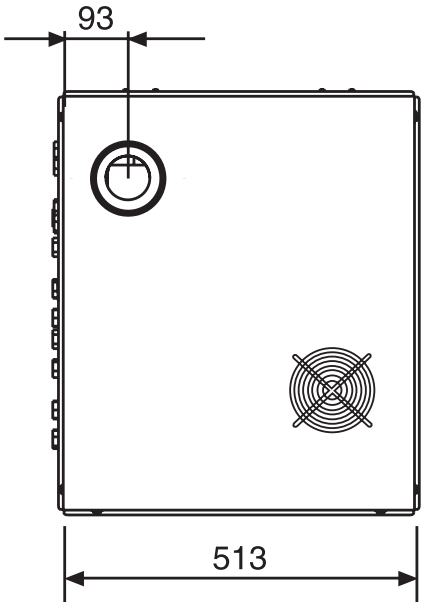
Front view



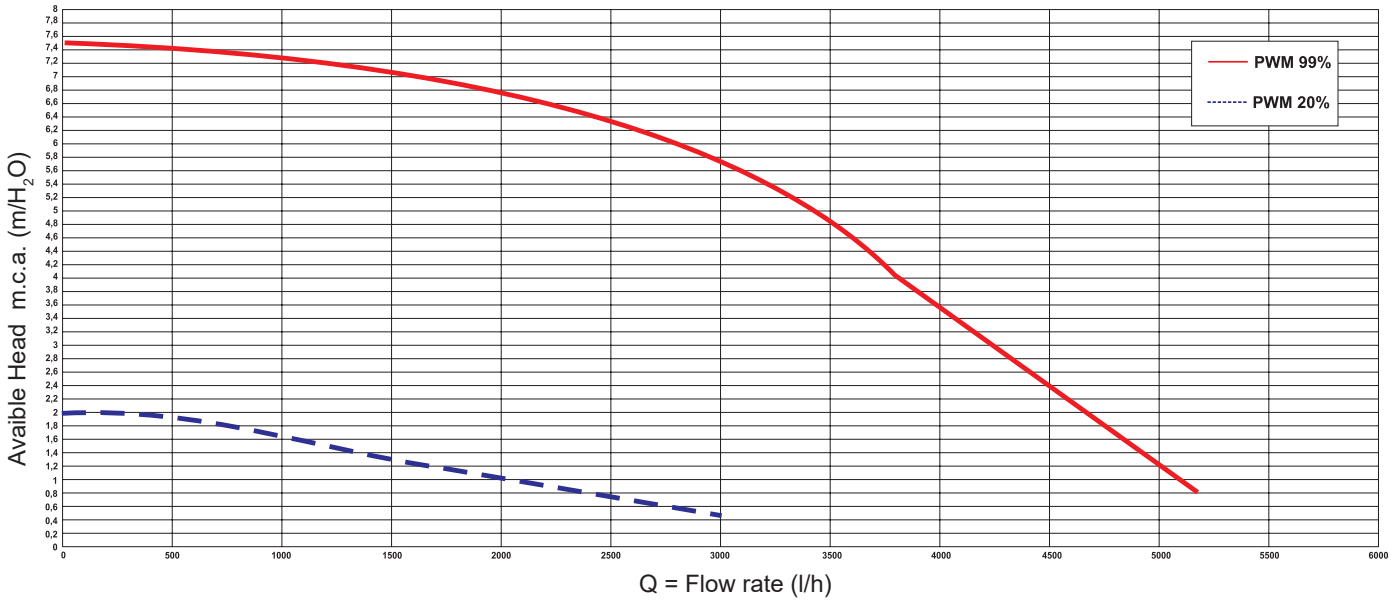
Left Side view



View from above



2.4 - DIAGRAM OF FLOW RATE/PRESSURE AVAILABLE FOR INSTALLATION



The table provides an indication the flow the pump in function of the Δt of the primary circuit.			
		KONf 100	KONf 115
Power supply in kW	kW	99,5	115
Max flow rate demanded l/h (Δt 15 K)	l/h	5700	6600
Nominal flow rate request (Δt 20 K)	l/h	4280	4950
Power supply in condensation (50/30)	kW	105	120,3
Max flow rate demanded l/h (Δt 15 K)	l/h	6020	6897
Nominal flow rate request (Δt 20 K)	l/h	4520	5173

The Δt between supply and return boiler must never be less than 15 ° K.

NOTE:
The use of a mixing header fitted between the boiler circuit and the system circuit is always advisable. It becomes INDISPENSABLE if the system requires flow rates superior to the maximum permitted boiler flow rates, which is to say lower than 15K.

2.5 - OPERATING DATA ACCORDING TO UNI 10348 and GENERAL FEATURES

For the adjustment data: NOZZLES - PRESSURE - DIAGRAMS - FLOW RATES - CONSUMPTION refer to the paragraph ADAPTATION TO OTHER TYPES OF GAS.

		KONf 100	KONf 115
Appliance category		II_{2H3P}	II_{2H3P}
Modulation Ratio		1 : 5,0	1 : 5,75
Nominal Heat Input on P.C.I. Qn	kW	99,5	115
Minimum Heat Input on P.C.I. Qmin	kW	20	20
Nominal Output (Tr 60 / Tm 80 °C) Pn	kW	98,8	111,5
Minimum Output (Tr 60 / Tm 80 °C) Pn min	kW	19,2	19,2
Nominal Output (Tr 30 / Tm 50 °C) Pcond	kW	105	120,3
Minimum Output (Tr 30 / Tm 50 °C) Pcond min	kW	21,75	21,75
Efficiency at max. output (Tr 60 / Tm 80°C)	%	98,81	97,1
Efficiency at min. output (Tr 60 / Tm 80°C)	%	95,90	95,90
Efficiency at max. output (Tr 30 / Tm 50°C))	%	105,03	104,6
Efficiency at min. output (Tr 30 / Tm 50°C)	%	108,77	108,77
Rendimento al 30% del carico (Tr 30°C)	%	109,3	107,27
Combustion efficiency with nominal load	%	98,05	97,7
Combustion efficiency with minimum load	%	98,28	98,28
Heat loss at casing with burner in operation (Qmin)	%	2,30	2,69
Heat loss at casing with burner in operation (Qn)	%	0,1	0,7
Flue gas temperature tf-ta (min)(*)	°C	35,0	36,0
Flue gas temperature tf-ta (max)(*)	°C	39,4	46,6
Maximum allowable temperature	°C	100	100
Maximum operating temperature	°C	85	85
Flue gas mass flow rate (min)	kg/h	37,71	34,31
Flue gas mass flow rate (max)	kg/h	163,59	184,6
Excess λ air	%	25,53	23
Flue losses with burner in operation (min)	%	1,72	1,87
Flue losses with burner in operation (max)	%	1,95	2,29
Minimum heating circuit pressure	bar	0,5	0,5
Maximum heating circuit pressure	bar	6	6
Water content	l	9	9
Gas Consumption Natural (20 mbar) gas G 20 a Qn	m^3/h	10,57	12,08
Gas Consumption Natural gas (20 mbar) G 20 a Qmin	m^3/h	2,11	2,11
Gas Consumption G25 (supply pressure 25 mbar) Qn	m^3/h	12,3	14,0
Gas Consumption G25 (supply pressure 25 mbar) Qmin	m^3/h	2,46	2,46
Gas Consumption G31 (supply pressure 37/50 mbar) Qn	kg/h	7,76	8,92
Gas Consumption G31 (supply pressure 37/50 mbar) Qmin	kg/h	1,55	1,55
Max. available pressure at the chimney base	Pa	150	150
Max Condensation production	kg/h	8,46	8,46
Emissioni			
CO at Minimum Heat Input with 0% of O2	mg/kWh	140	147
NOx at Nominal Heat Input with 0% of O2	mg/kWh	47	47
NOx Class		5	5
Electrical Data			
Voltage/Frequency electric power supply	V/Hz	230/50	230/50
Fuse on main supply	A (R)	4	4
Insulation degree	IP	X5D	X5D
Room Temperature = 20°C			
(*) Temperatures detected with the unit in operation (Tr 60 / Tm 80°C)			
CO_2 (min/max) See table INJECTORS PRESSURES			
Seasonal space heating energy 2009/125 CEE (<=400Kw) η_s - see ErP table			
Stand-by heat loss ΔT 30°C - Pstb - see ErP table			
Consumption in stand-by - Psb - see ErP table			

2.5.1 - TECHNICAL DATA ACCORDING ErP DIRECTIVE

			KONf 100	KONf 115
Element	**Symbol**	**Unit**		
Effective nominal output	Pnominale	kW	99	112
Seasonal energy efficiency to heat the room	η_s	%	94	92
Season efficiency class to discharge			**A**	**A**
For boilers to heat the room and mixed boilers: useful heat output				
Useful heat output with high temperature capacity (Tr 60 °C / Tm 80 °C)	P_4	kW	98,8	111,5
Rated heat output efficiency with high temperature capacity (Tr 60 °C / Tm 80 °C)	η_4	%	89,0	87,4
Useful power at 30% of the rated heat output with low temperature capacity (Tr 30 °C)	P_1	kW	32,2	36,9
Performance at 30% of the rated heat output with low temperature capacity (Tr 30 °C)	η_1	%	98,5	96,5
Boiler with output range adjustment: YES / NO			NO	NO
Auxiliary electricity consumption				
With a full load	elmax	kW	0,289	0,314
With a partial load	elmin	kW	0,156	0,160
Standby mode	P_{SB}	kW	0,018	0,028
Other elements				
Heat dispersion on standby	P_{stb}	kW	0,641	0,642
Nitrogen oxides emissions	NOx	Mg/kWh	43	46
For mixed heating appliances				
Declared load profile			-	-
Water heating energy efficiency	η_{wh}	%	-	-
Daily consumption of electricity	Qelec	kWh	-	-
Daily consumption of fuel	Qfuel	kWh	-	-
Internal sound power level	Lwa	dB (A)	-	-
Seasonal DHW efficiency class			**-**	**-**

3 INSTALLATION INSTRUCTIONS

3.1 - GENERAL WARNINGS

ATTENTION!

This boiler is intended solely for the use for which it was expressly designed. Any other use is to be considered improper and therefore dangerous.
This boiler heats water at a temperature lower than the atmospheric pressure boiling temperature.

Before connecting the boiler, have professionally qualified personnel:

a) Thoroughly wash all the piping of the system to remove any residues or impurities which could jeopardise proper operation of the boiler, even from a hygienic point of view.

b) Check that boiler is set up to operate with the available type of fuel. This can be seen written on the package and on the technical feature plate;

c) Check that the chimney/flue has an appropriate draught, without any bottlenecks, and that no exhausts from other appliances are inserted, unless the flue has been implemented to accommodate several utilities according to specific standards and regulations in force. Only after this check can the fitting between the boiler and chimney/flue be mounted;

ATTENTION!
If there is dust and/or if there are aggressive/corrosive vapours present in the installation room, the appliance must be protected suitably and must be able to operate independently from the air in the room.

ATTENTION!
Mount the appliance respecting the minimum distances required for installation and maintenance.

The boiler must be connected to a central heating system and/or domestic hot water supply network compatible with its efficiency and output.

3.2 - INSTALLATION STANDARDS

t must be installed by a professionally qualified technician, **who shall take the responsibility of observing all local and/or national laws published in the official journal, as well as the applicable technical standards.**

3.3 - PREVENTIVE VERIFICATION AND VERIFICATION AND ADJUSTMENT OPERATIONS

Before installing this appliance on old systems, check that:
- The chimney is suitable for appliances with condensation, combustion products temperature, and built in compliance with the standards in force in this regard.
  Is as straight as possible, airtight and insulated, and has no obstructions or constructions.
- The chimney is equipped with a fitting to drain condensate.
- The boiler room is equipped with a duct to drain condensate produced from the boiler.
- The electrical system has been set up by a qualified technician in compliance with the rules in force.
- The rate, head and direction of the flow of the circulation pumps are appropriate.
- The fuel adduction line and the tank, if any, are made ac cording to relevant standards in force.
- The expansion vessels can fully absorb dilation of the fluid in the system.
- The system has been cleaned from sludge and scaling.

If it is possible to program replacements, you must provide for intervention with protective washing equipped with basic dispersant.
Washing must be carried out four weeks prior to replacement, with the system operating at 35°C - 40°C

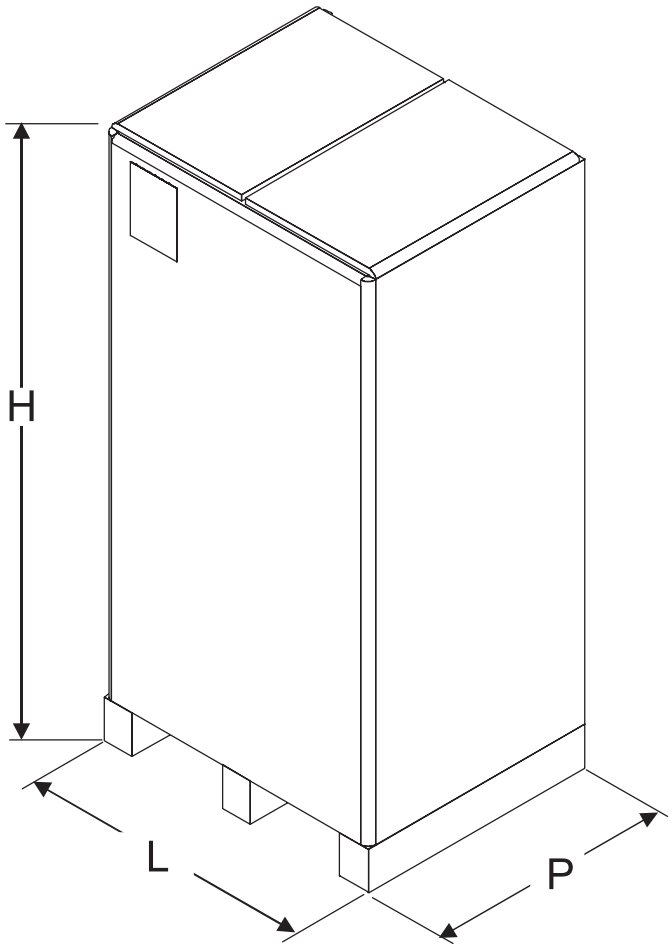
Attention! If the new boiler was replaced in an old system without having provided for the aforementioned washing cycle, do not start the system since any product residues in the circuit can, after replacement, fill the generator with residues. It is recommended to contact a specialised company for water treatment.

3.4 - PACKAGING

The Boiler boiler is supplied partially assembled in a strong cardboard box. After removing the two holders, remove the cardboard from above and ensure the integrity of the contents.

The packaging elements (cardboard box, straps, plastic bags, etc.) **must be kept out of the reach of children as they are potential sources of danger**.

Unical AG S.p.A. will not be held liable for damage to persons, animals or objects due to failure to comply with the instruction above



KONf 100 - KONf 115				
P depth (mm)	L width (mm)	H height (mm)	Net Weight (kg)	Gross Weight (kg)
675	**550**	**1430**	**157,8**	**171,6**

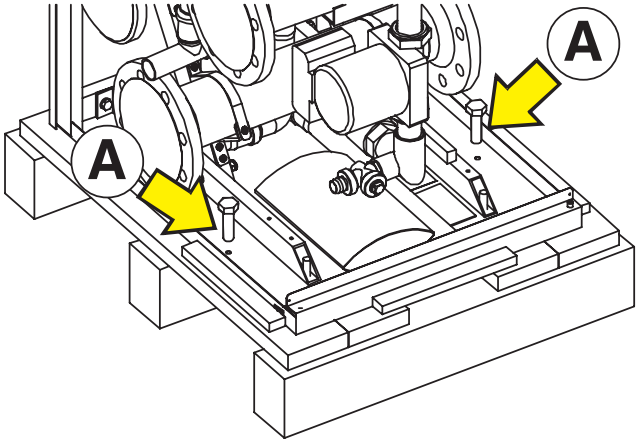
I**n the packaging**, in addition to the boiler, you can also find the following contents:

ENVELOPE DOCUMENTATION
Instruction manual for the person in charge of the appliance
- Instruction manual for the installer and servicing personnel
- Warranty
- Nr. 2 spare parts request coupons
- Conformity certificatee
- Air inlet filter

Envelope with adjustable feet, lock and key
(placed on the pallet, inside the boiler).

- Smoke outlet pipe Ø 100

For MASTER model also 3 package with:
- Flange Kit
- Cover Kit
- Side Case Kit.



Remove the **''A"** to remove the boiler from pallet.

3.5 - LOCATION OF BOILER INSIDE A BOILER ROOM

The boiler must be installed in accordance with the directions indicated in the most recent Standards and legislations regarding boiler rooms, installation of heating and hot water systems, boiler ventilation, chimney's capable of discharging the products of combustion of condensing boilers and any other applicable requirement.

The boiler will be placed on a flat and sufficiently strong basement, with dimensions not smaller than the ones of the boiler. After installation the boiler will result perfectly horizontal and very stable (in order to reduce vibrations and noise).

Installation

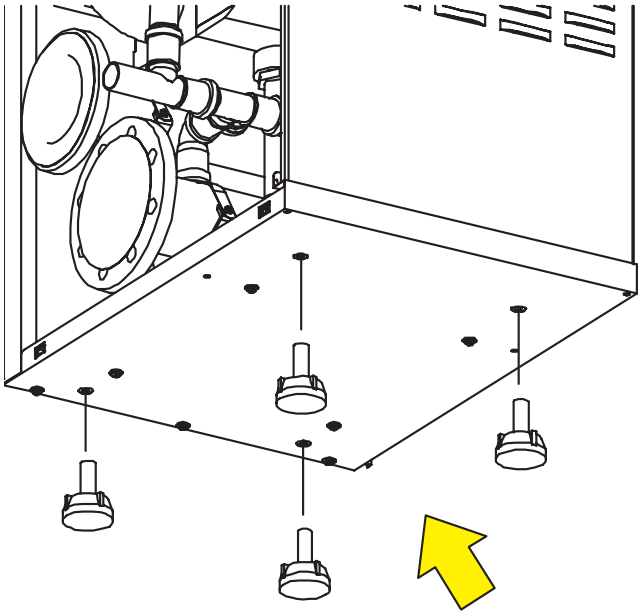
When choosing the installation place, the following items have to be considered:

- To grant an easy access to the boiler components in order to facilitate the ordinary and extraordinary service operations.
- The floor should not be of flammable material.

If the floor is flammable an insulation material

- If the floor is flammable an insulation material, with the capacity to withstand to the fire for at least 120 min should be placed between the boiler and the floor and will protrude de boiler basement of 0.5 m all around.

Mounting of the adjustable feet



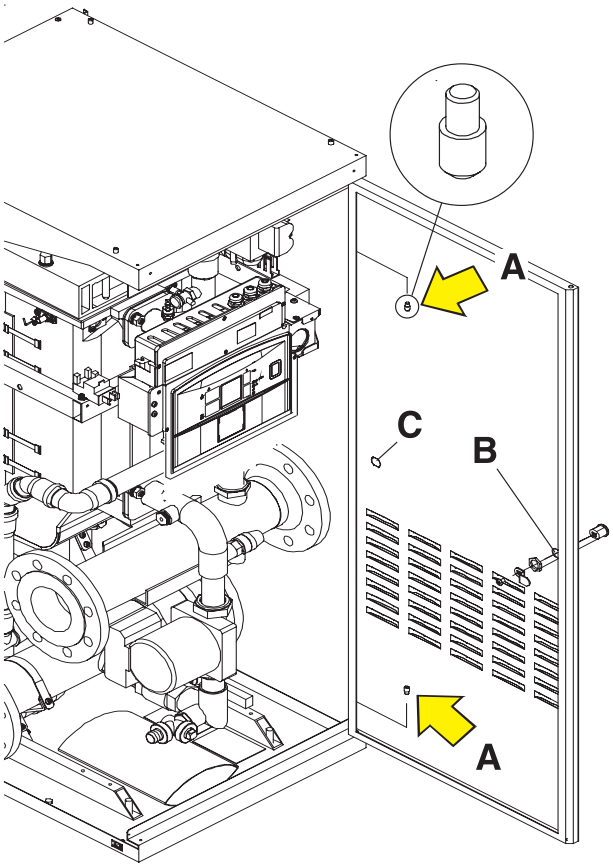
Before positioning the boiler, screw down the adjustable feet supplied with the boiler.

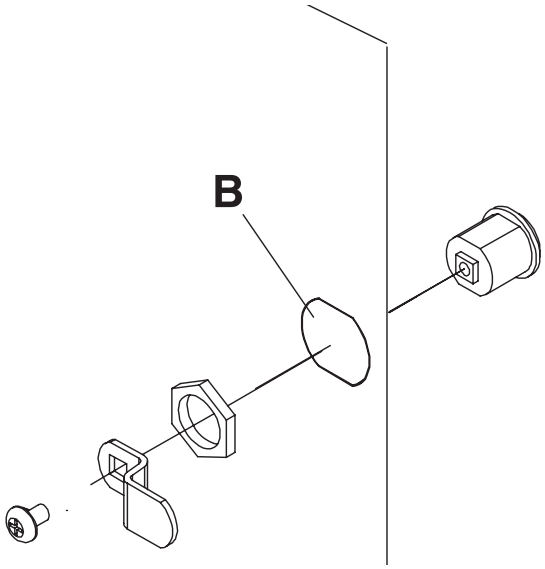
Rispettare le minime distanze di ingombro per poter eseguire le operazioni di normale manutenzione e pulizia.

Mounting of the locker

The casing front panel is hinged on the R.H. side. The hinges ''A'' are factory fitted on the R.H. side of the frame. For the introduction of the cocker remove the precut disk **''B''** with a screwdriver and fit the cocker as shown in the figure.

In case the casing front panel needs to be hinged on the L.H. side, deplace the hinges **''A''** from R.H. to L.H. side; then remove the precut disk **''C''** from the front panel and fit the locker as shown in the figure.





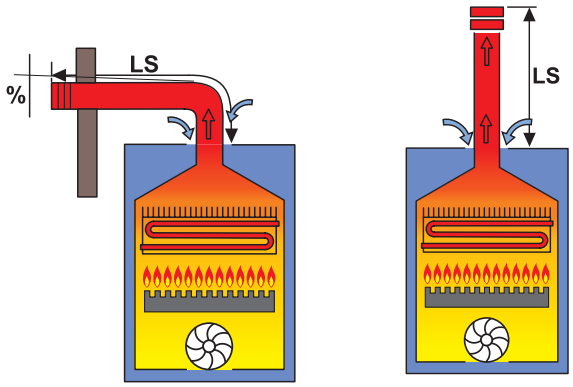
3.6 - FLUE GAS EXHAUST PIPE CONNECTION (Forced draw boiler)

To connect the flue gas exhaust pipe, local and national standards must be observed
In the event the boiler is replaced, ALWAYS replace the flue gas pipe as well.

C63x	C63
Boiler intended for connection to a combustion air intake and combustion products evacuation system, approved and sold separately	

ATTENTION:
The flue must comply with standards in force.

B23P



TOTAL LENGTH (LS exhaust)	
SINGLE Ø100	
FROM [m]	TO [m]
1	**42**

Connection to a combustion products evacuation pipe outside the room; the combustion air is taken directly from the room where the appliance is installed.

ATTENTION:
For the type of connection **B23P** the room follows the same installation rules for boilers with natural draught.

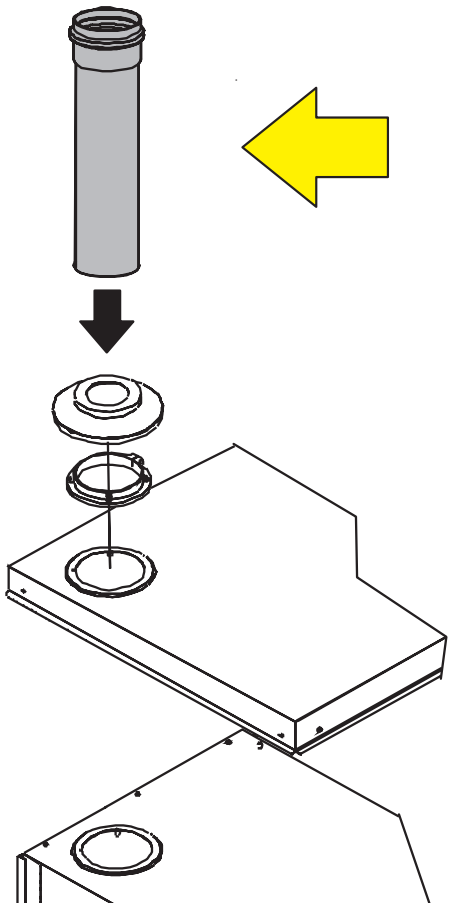
The boiler is type approved for the exhaust configurations listed below:

CAUTION
LT total length is a reference value for the dimensioning of the ducts of **A** (intake) and **S** (Exhaust). Subtracting the values of **LT** reported, at values of bends* / terminals* / extensions* you get the value:
if > 0 = OK - POSSIBLE configuration
if < 0 = NO - WRONG configuration

(*) Values in the **MT018** available on the website.

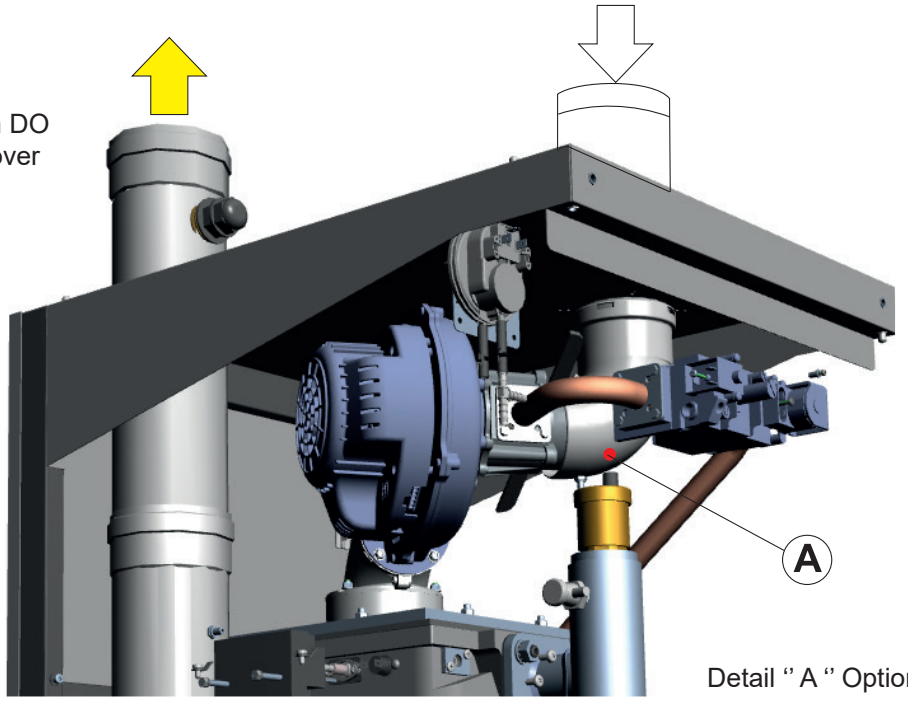
Please note:
These values relate to exhausts/ made by means of rigid pipes and smooth original UNICAL.

Preliminary operations:
Fit the Ø 100 mm smoke outlet hose provided in the package as shown.



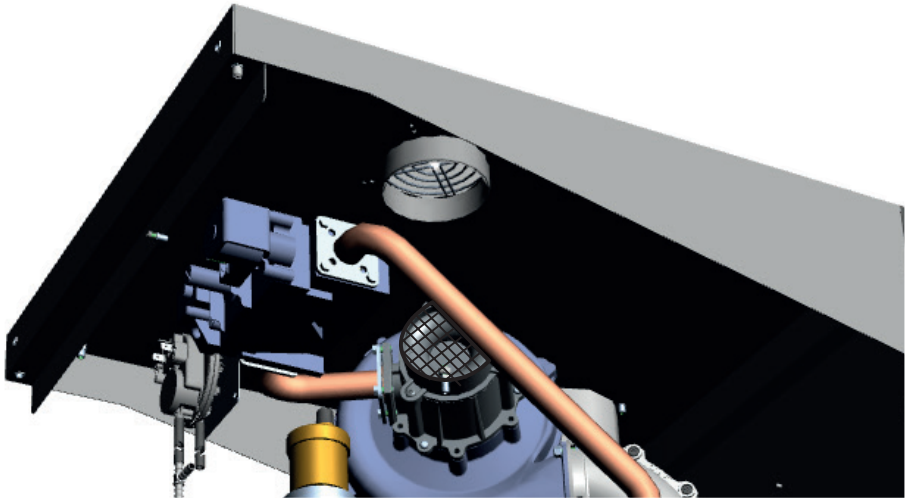
Installation Type C63: Start for air inlet Ø80 and smoke outlet Ø100 (Only for indoor installation)

For this configuration DO NOT use the case cover provided with the boiler.

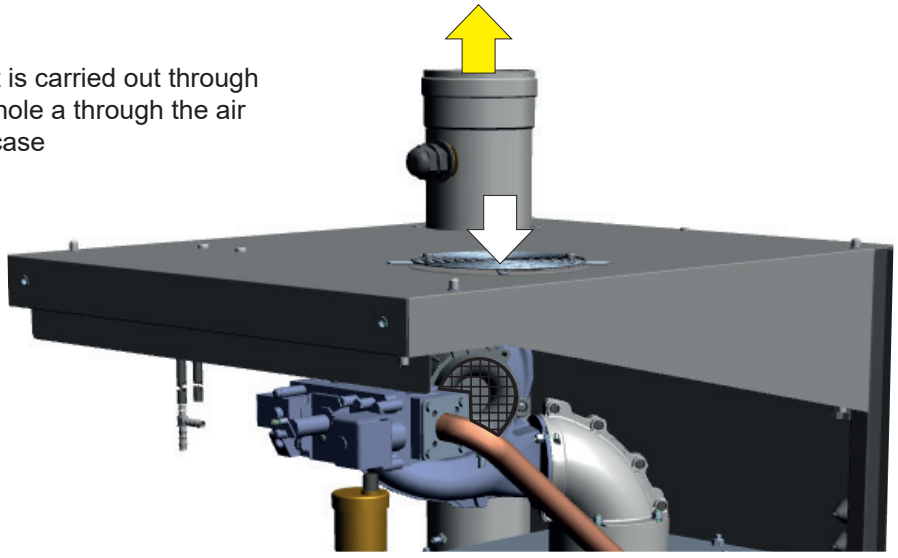


Detail '' A '' Optional.

Installation Type B23p: Air inlet from upper grid and smoke outlet Ø100



Combustion air inlet is carried out through the indicated (grid) hole a through the air intake holes of the case



3.7 - CONNECTION

G	**GAS**	DN 50 - G 2''

Danger!
The gas connection must be carried out only by a qualified installer who must respect and apply that foreseen by relevant laws in force in the local prescriptions of the supply company. Incorrect installation can cause damage to persons, animals and objects for which the manufacturer cannot be held responsible.

If you smell gas:

a) Do not operate electric switches, the telephone or any other object that may cause sparks;
b) Immediately open doors and windows to create air current to purify the room;
c) Shut the gas cocks

Installation of generators as cascade:
For installation instructions, electrical connections, safety devices, refer to MT instruction, available on the website.

M	**FLOW**	DN 80 - G 3''
R	**RETURN**	DN 80 - G 3''

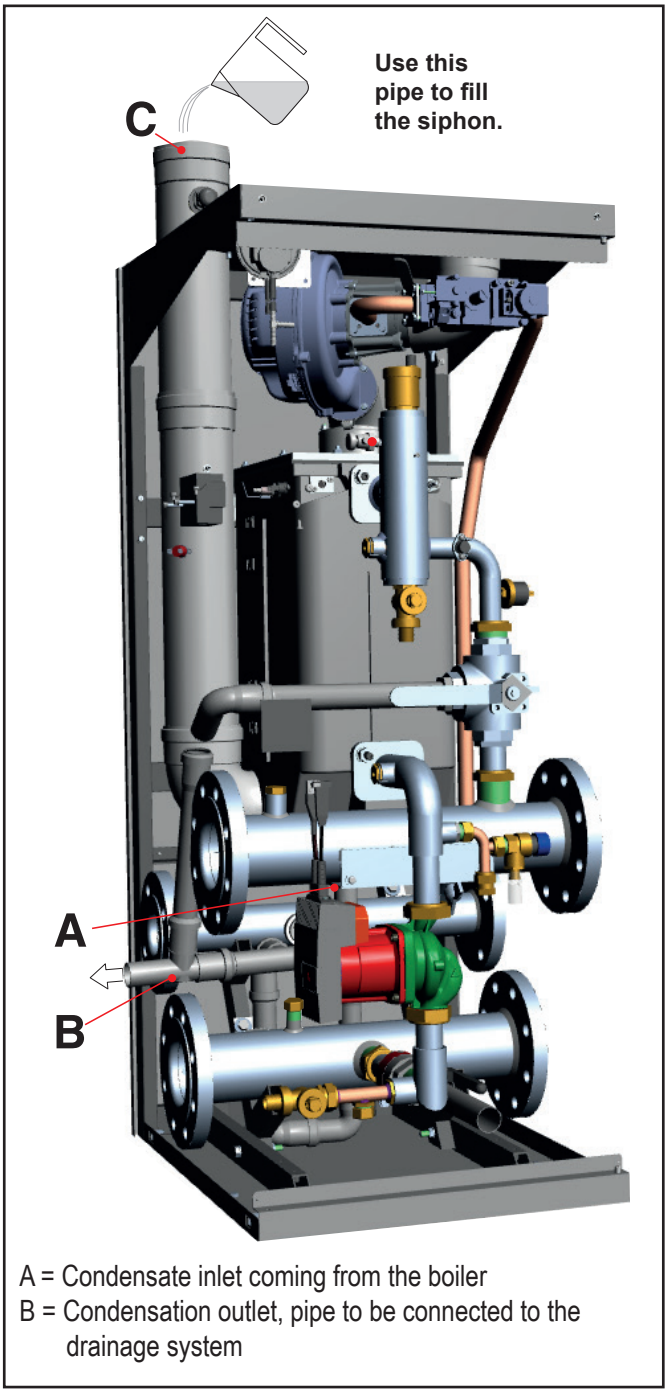
S.cond	CONDENSATION DRAIN
Svs 	SAFETY VALVE DRAIN Provide a drain pipe with funnel and a trap that lead to a suitable drain, in correspondence of Svs. This drainage must be controlled on sight. If this precaution is not taken, triggering of the safety valve can cause damage to persons, animals and objects, for which the manufacturer cannot be held responsible.

Condensation drain

The boiler, during the combustion process, produces condensation that, through pipe "**A**", flows into the trap.
The condensation that forms inside the boiler flows into a suitable drain via pipe **"B"**.

Danger!
Before commissioning the appliance:
- check that the trap is assembled properly (H = 180 mm)
- fill the trap and check that the condensation is drained properly

If the appliance is used with an empty condensation drain trap, there is an intoxication hazard due to the release of exhaust gasses.



A = Condensate inlet coming from the boiler
B = Condensation outlet, pipe to be connected to the drainage system

The connection between the appliance and the domestic waste system must be made in compliance with the specific reference standards.

3.8 - FILLING THE SYSTEM

Attention!
Do not mix the heating water with incorrect concentrations of antifreeze or anti-corrosion substances! This could damage the gaskets and cause noise during operation.
Unical will not be held liable for damage to persons, animals or objects due to failure to comply with the above instruction.

Pressure in the mains supply must be between 0.5 and 6 bar (In case of higher pressure a pressure reducer it must be installed)

To fill the system is necessary to provide a loading tap on the heating circuit, or use the optional accessories.

The boiler is equipped with its own drain valve, the position of which is indicated in the figure to par 2.2 (14). This tap can never be used for emptying the system, since all the dirt present in the circuit could be accumulate in the boiler, compromising the proper functioning.
The system must be equipped with its own drain valve, with a size suitable to the capacity of the system.

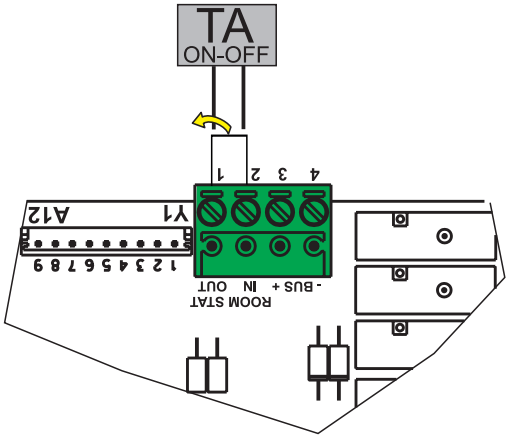
The system must therefore have its own drain cock, properly sized.

NOTE!
For more information
See Technical Info
from site indicated at pag. 2

3.9 - ELECTRICAL CONNECTIONS

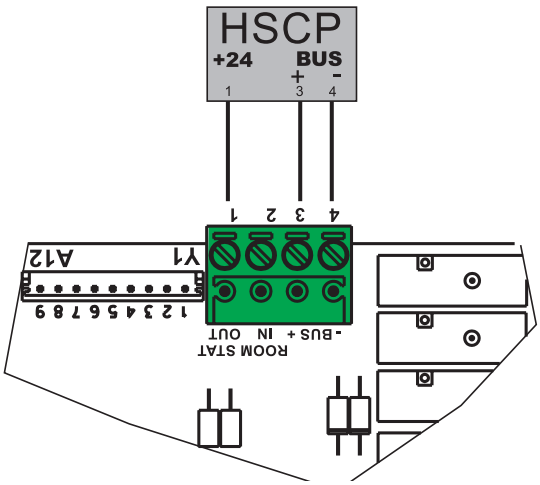
Danger!
Only a qualified technician may perform the electrical installation.
Before performing connections or any type of operation on electrical parts, always disconnect electrical power and make sure that it cannot be reconnected accidentally.

ON/OFF room thermostat connection (*)



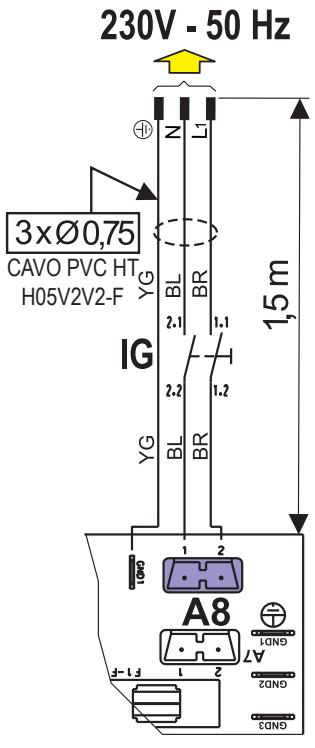
- Remove the jumper and connect the wires between terminals as indicated ROOM STAT 1-2

Thermoregulation HSCP eBUS / E8 (*)



- Remove the jumper and connect the wires between terminals as indicated - BUS + after removing the jumper. Respecting the polarization of the connection on the terminal blocks of both devices.

Electric power supply connection



See par. 4.5 positioning on the board
(*) Optional

The boiler is equipped with a power cable, boiler installation requires electric al connection to the mains power supply. This connection must be made up to standard, as required the regulations in force.

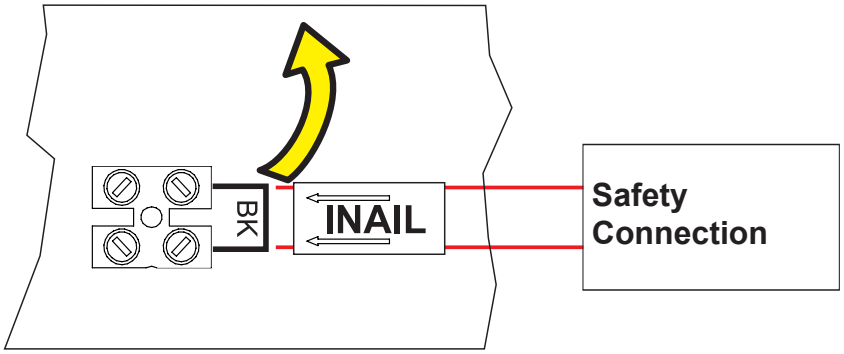
The power cable must be replaced by technical personnel authorised, using original spare parts only. Failure to comply with the above can jeopardise the safety of the appliance.

The power cable must be replaced by technical personnel authorised, using original spare parts only. Failure to comply with the above can jeopardise the safety of the appliance.

NOTE!
For more information
See Technical Info
from site indicated at pag. 2

Danger!
Electrical installation must only be carried out by a qualified technician.
Always disconnect the power supply before making any connections or any operation on the electrical parts and make sure that it can not be accidentally re-inserted.

Safety connection (*)



- Remove the jumper and connect the wires between terminals as indicated

3.10 - COMMISSIONING

Commissioning must be done by professionally qualified personnel. Unical AG S.p.A. will not be held liable for damage to persons, animals or objects due to failure to comply with the above instruction.

Before commissioning the boiler, check that:

does the installation meet the specific standards and regulations in force, both relating to the gas part as well as the electrical part?	☐
do the combustion air intake and flue gas exhaust take place properly according to what is defined by the specific rules and regulations in force?	☐
is the fuel supply system sized according to the capacity required by the boiler? Is it equipped with all safety and control devices required by the standards in force?	☐
is the power supply of the boiler 230V - 50Hz?	☐
has the system been filled with water (approximately 0.8/1 bar pressure on the pressure gauge with the pump stopped)?	☐
Has the condensation drain trap been filled with water as indicated in chapter 3.7?	☐
are any system shut-off gate valves open?	☐
does the gas to be used correspond to the boiler calibration gas?: otherwise, perform the boiler conversion in order to use the gas available (see section: 4.3"); this operation must be carried out by technical staff qualified in compliance with the standards in force;	☐
is the gas supply valve open?	☐
has the system been checked for gas leaks?	☐
is the outside main switch ON?	☐
is the system safety valve efficient and is it connected to the drains? is the condensation drain trap connected to the drains?	☐
has the system been checked for water leaks?	☐
are the ventilation conditions and minimum distances to perform any maintenance ensured?	☐
have the GAS, HEATING and DOMESTIC HOT WATER pipes been cleaned thoroughly with products suitable for each circuit?	☐
has a surveillance and protection system against gas leaks been installed? (Optional)	☐
are the system pipes NOT used as the electrical system earthing?	☐
has the system been sized properly bearing in mind the radiator pressure drops? thermostatic valves, radiator stop valves	☐
has the operator been trained and has the documentation been supplied?	☐
Please tick the operations performed	

☐

Switching boiler on and off

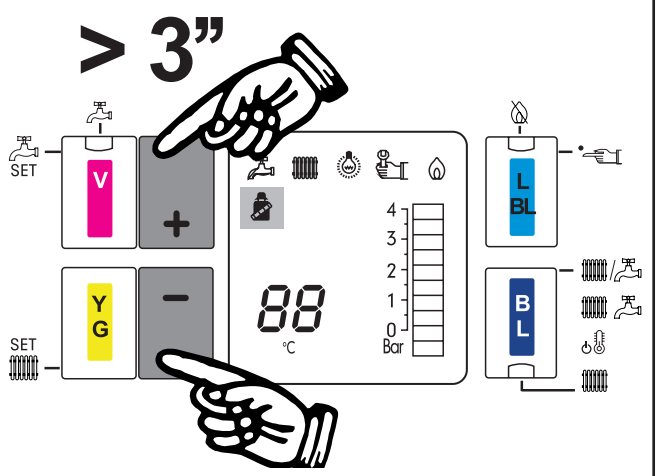
NOTE!
For more information
See Technical Info
from site indicated at pag. 2

3.11 - MEASUREMENT OF COMBUSTION EFFICIENCY DURING INSTALLATION

3.11.1- ACTIVATION OF THE CALIBRATION FUNCTION

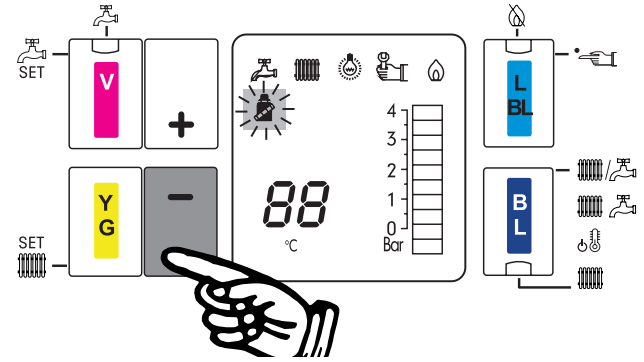
ATTENTION!
Function reserved for Authorised Assistance Centres only.

1 ACTIVATION / MAXIMUM OUTPUT



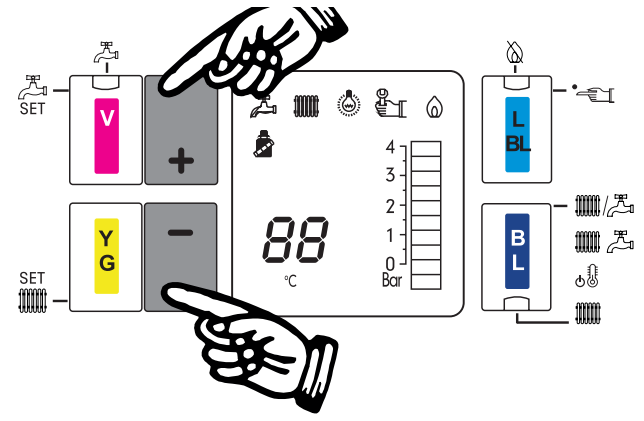
Press the key + (**PLUS**) and - **(MINUS)** for at least 3 seconds: boiler at max power, symbol light .

3 MINIMUM OUTPUT



Press key - **(MINUS)**
boiler at mimum power, symbol flashing.

4 DISABLING



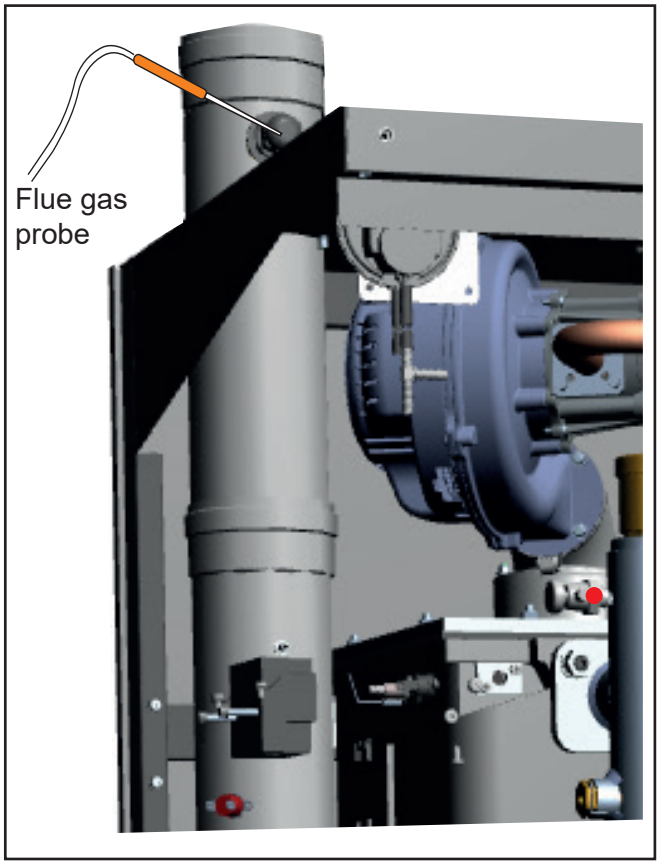
After calibration, press the + (PLUS) and - (MINUS) at the same time, the symbol off.

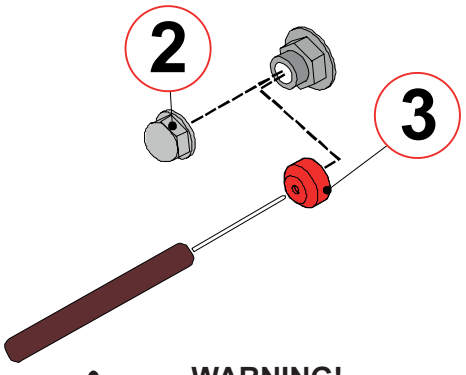
3.11.2 - POSITIONING THE PROBES

To determine the combustion efficiency
one must make the following measurements:

- measurement of the combustion air temperature
- measurement of the flue gas temperature and content of CO_2 taken in the relevant hole **2**.

Take the measurements with the generator in steady state conditions (see par. 3.11.1).





WARNING!
Remove the cap 2,
Insert the probe analysis of CO2 in the cap hole 3

3.12 - ADJUSTING THE BURNER

All boilers leave the factory already calibrated and tested, however in the event the gas valve recalibration are required:

The following instructions are intended exclusively for **authorised service personnel**.

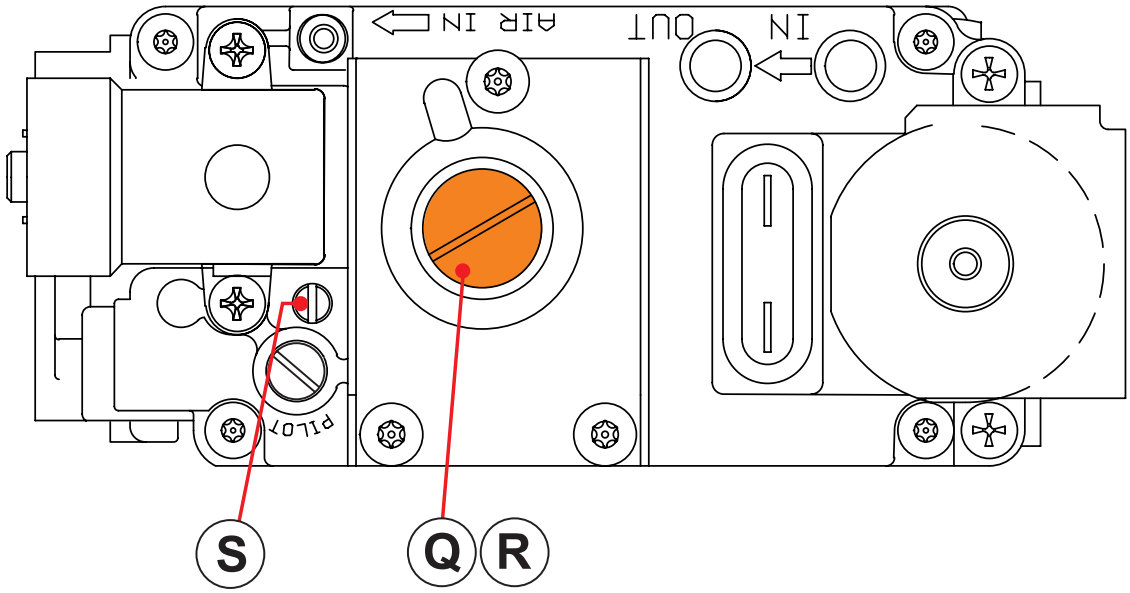
- Remove the cap 2 and insert the CO2 analysis probe in the flue gas sample point of the intake/exhaust terminal, see chap. 3.11.2.

1) Maximum output adjustment

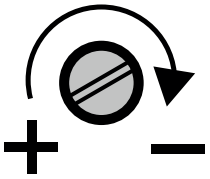
- Operate the boiler in “calibration” mode at MAXIMUM OUTPUT (see 3.11.1)
- Once the burner is on check that the CO_2 “MAXIMUM” value corresponds to that indicated in the table “NOZZLES - PRESSURE”.
- if it does not correspond, correct it by turning the screw **“S”** CLOCKWISE to decrease it, ANTICLOCKWISE to increase it.

2) Minimum output adjustment

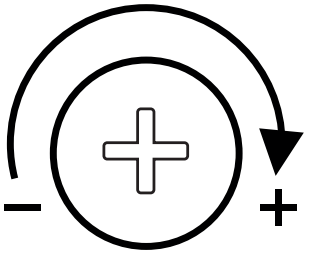
- Operate the boiler in “calibration” mode at MINIMUM OUTPUT (see 3.11.1)
- Once the burner is on check that the CO_2 “MINIMUM” value corresponds to that indicated in the table “NOZZLES - PRESSURE”.
- Correct it if needed by turning (with a screwdriver) the screw **“R”;** CLOCKWISE to increase it, ANTICLOCKWISE to decrease it



(S)
ADJUSTMENT SCREW
MAXIMUM OUTPUT



(R)
ADJUSTMENT SCREW
MINIMUM OUTPUT



3) Conclusion of the basic calibrations

- once the CO_2 values at minimum and maximum output have been checked and any adjustments have been made (sections 1-2):
- disable the timed “calibration” function by switching off the main switch.
- close the flue gas inspection sample points of the intake and exhaust terminal
- **check that there are no gas leaks.**

For proper operation, the CO_2 values must be calibrated with particular attention, observing the values indicated in the table.

If the CO2 percentage is too low, check if the air and smoke ducts are not obstructed.

If they are not obstructed, check if the burner and/or the exchanger (aluminium sections) are well cleaned.

NOZZLES - PRESSURE - FLOW RATES TABLE

Check the levels of CO2 often, especially with low flow rates. They refer to the boiler with a closed combustion chamber.

KONf 100								
Type of Gas	Supply Press.	Ø Nozzles	Collector diaphragm	Fan speed		CO_2 levels		Start-up power.
	[mbar]	(mm)	[Ø/mm]	min	max	[%]		[%]
				FL [%FU]	**FH** [% FU]	min	max	**IG**
Gas nat. (G20)	20	-	14	25	85	8,6	9,3	28
Gas nat. (G25)	25	-	-	22	84	8,6	9,1	28
Propano (G31)	37	-	14	23	78	9,6	10,6	28

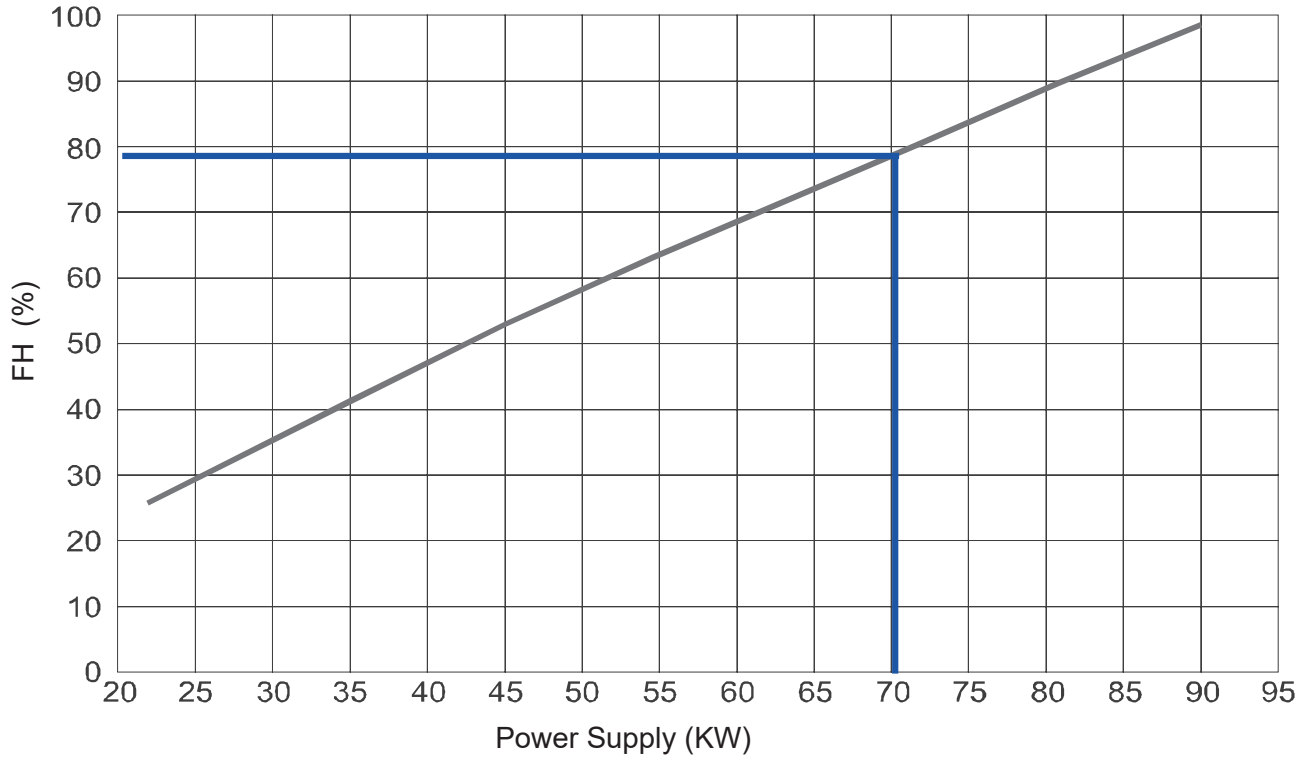
KONf 115								
Type of Gas	Supply Press.	Ø Nozzles	Collector diaphragm	Fan speed		CO_2 levels		Start-up power.
	[mbar]	(mm)	[Ø/mm]	min	max	[%]		[%]
				FL [%FU]	**FH** [% FU]	min	max	**IG**
Gas nat. (G20)	20	-	14	25	97	8,6	9,3	28
Gas nat. (G25)	25	-	-	22	92	8,6	9,1	28
Propano (G31)	37	-	14	23	92	9,6	10,6	28

3.12.1 - ADAPTATION OF THE POWER TO THE HEATING SYSTEM

ATTENTION!
Function reserved for Authorised Assistance Centres only.
The user is NOT authorised to activate the function described below.

It is possible to adjust the maximum thermal capacity in heating mode, by decreasing the burner pressure value.

Act on parameter **FH** (par. 4.2 SE parameters list) to achieve the value corresponding to the desired output.



Es:
to decrease the output of the boiler to 70 kW, edit parameter HP (about 79).

4 ISPEZIONI E MANUTENZIONE

Inspections and maintenance performed professionally and according to a regular schedule, as well as the use of original spare parts, are of the utmost importance for fault-free operation of the boiler and to guarantee its long life.
Yearly maintenance of the appliance is mandatory in compliance with Laws in force.

Failure to perform Inspections and Maintenance can entail material and personal damage.

4.1 - INSPECTION AND MAINTENANCE INSTRUCTIONS

To assure long-term functioning of your appliance and to avoid altering its approved status, only original Unical spare parts must be used.

If a component needs to be replaced:
- Disconnect the appliance from the electrical mains and make sure that it cannot be reconnected accidentally.
- Close the gas shut-off valve upstream the boiler.
- If needed, and depending on the intervention to be carried out, close any shut-off valves on the flow and return line of the heating system, as well as the cold water inlet valve.

Once all maintenance operations are complete resume boiler operation.
- Open the heating flow and return pipes, as well as the cold water inlet valve (if closed previously).
- Vent and, if necessary, restore the heating pressure until reaching a pressure of 0.8/1.0 bar.
- Open the gas shut-off valve.
- Switch the boiler on
- Make sure the appliance is gas tight and watertight.

TABLE OF RESISTANCE VALUES, ACCORDING TO THE TEMPERATURE, TO THE HEATING PROBE 11 (SR) AND TO THE DOMESTIC HOT WATER PROBE 1 (SS) AND ANY HEATING RETURN PROBE 22 (SRR) see par. 4.5.

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 the nom. resistance (Ohm) of the heating probe SR and of the domestic hot water probe SS
Example: At 25°C, the nominal resistance is 10067 Ohm At 90°C,the nominal resistance is 920 Ohm

ROUTINE YEARLY VERIFICATION OPERATIONS		
COMPONENT:	**VERIFY:**	**CONTROL/INTERVENTION METHOD:**
VG (Gas valve) **(3)**	Does the valve modulate properly?	The verification is performed on the "Calibration" requiring 100%, in 50%, the minimum percentage of modulation. Make sure that the flame modulate.
SR (heating sensor)**(11)** SS (domestic hot water sensor) **(1)**	Do the sensors maintain the original characteristics?	12571 ohm at 20° C / 1762 ohm at 70° C. Measurement to be taken with the wires disconnected (see table Res/Temp).
E ACC (ignition electrode) **(28)** E. RIV. (detection electrode) **(27)**	Does the discharge of sparks before putting the boiler in safe conditions last less than 3 sec.? Flame present but no detected.	Detach the electrode ionisation wire and check the securing time. Check for cable connection (faston oxidation) or condition / detection electrode positioning.
TL (anti-overheating limit thermostat) **(10)**	Does the TL put the boiler in safety conditions when overheating?	Heat the TL until it intervenes at 102°C and check that it intervenes at 102°.
DK (safety pressure switch against water deficiency) **(13)**	Does the pressure switch block the boiler if the water pressure is below 0.4 bar?	Without request: close the shut-off valves of the heating circuit, open the drain valve to make the water pressure decrease. Before pressurising again, check the pressure of the expansion vessel.
Condensation drain trap **(27)**	Has the trap got deposits on the bottom?	Clean the trap with water.
Heat exchanger body **(9)**	1) Measure the Thermal Capacity using a meter and compare the value with that contained in table 3.12. The data measured indicates if the exchanger needs cleaning. 2) Check that the space between the rungs of the exchanger are not clogged	It is recommended to use the products purposely created by Unical (see system protection ACCESSORIES sect. in the domestic price list), being careful to wash the area with most rungs first (lowest part visible from above) and then the upper part if necessary.
Burner **(5)**	Check the state of cleanliness of the burner mesh	Remove any deposits using compressed air, blowing from the mesh side.
(Num) = see key Par. 2.2		

4.3 - ADAPTATION TO THE USE OF OTHER GAS

The boilers are produced for the type of gas specifically requested upon ordering.

DANGER!
The conversion for the operation of the boiler with a type of gas other than that specifically required in the order, must be performed by professionally qualified personnel, in compliance with the standards and regulations in force.
The manufacturer cannot be held liable for any damage resulting from a conversion operation that is incorrect or not performed in compliance with the laws in force and/or with the instructions given.

ATTENTION!
After performing the conversion for the operation of the boiler with a type of gas (e.g. propane gas) other than that specifically requested when ordering, the appliance will only work with this new type of gas.

ATTENTION!
Indications for propane gas-fired appliances
Make sure that the gas tank has been deaerated before installing the appliance.
For state-of-the-art deaeration of the tank, contact the LPG supplier or a person qualified in compliance with law.
If the tank has not been professionally deaerated, ignition problems could arise.
In that case, contact the supplier of the LPG tank.

Gas Conversion

Per la conversione della caldaia da un gas all'altro occorre procedere come segue:

1. Remove the front casing

2. Set the maximum pressure adjusting screw **(S.)** at approximately half range and screw of a turn the minimum pressure adjusting screw **(R)**, as shown on par 3.12.

3. Try to ignite the boiler: if it fails proceed unscrewing of a turn the maximum pressure adjusting screw **(S)** and retry the ignition. Repeat more times the operation, till the igni tion of the boiler.

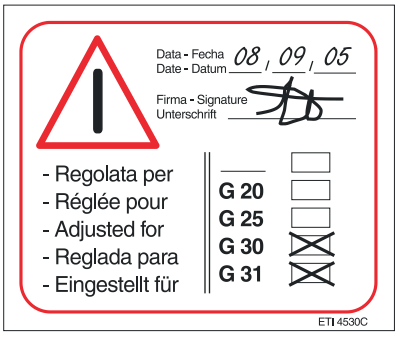
4. Adjust the CO2 value according to the type of gas as described in the paragraph "3.12 - Adjustment of the burner.

In order to change the gas one must change the Factory parameter FH /FU / FL.
(*) for values, see TABLE NOZZLES - PRESSURE-FLOW

		Simb.	Desciption	Value
METHANE	PROPANE	FH FU	Fan Speed: maximum	(*)
		FL	Fan Speed: minimum	
		IG	Start - up Power	(*)

- **when the conversion is complete, fill in the information required on the label supplied in the documentation envelope and apply it next to the technical data label of the boiler.**

EXAMPLE OF COMPILATION

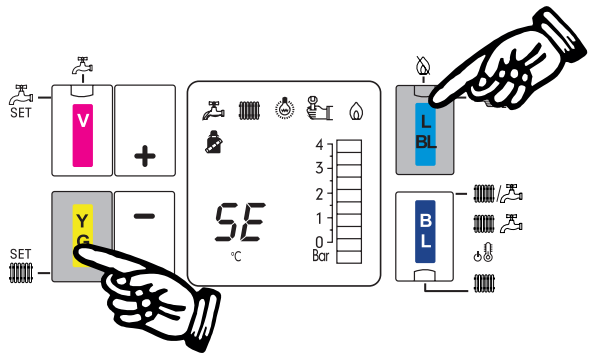


4.4 - PROGRAMMING OF THE OPERATION PARAMETERS

ATTENTION!
Function reserved for Authorised Assistance Centres only.

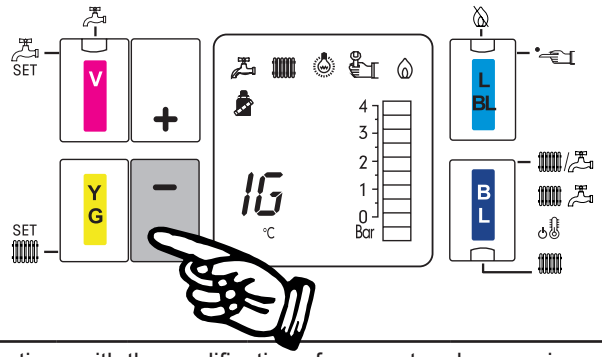
The user is NOT authorised to activate the function described below.

SE **SERVICE PARAMETER**



Press the buttons indicated simultaneously to enter in the service mode SE and change value.

BURNER MODULATION LEVEL IN IGNITION - (1)

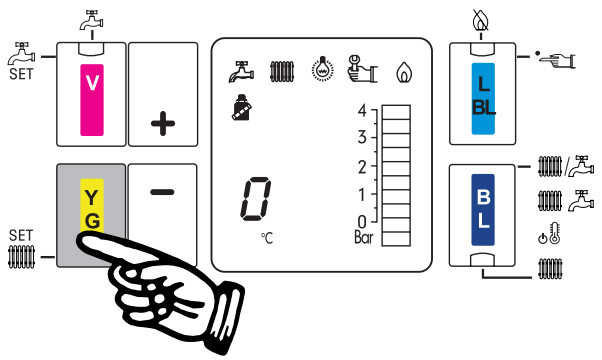


Continue with the modification of parameters by pressing the (MINUS)

Repeat the operations A-B-C to change value

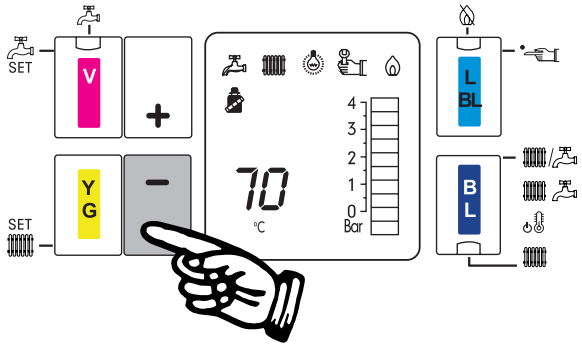
VALUE				
FROM	TO		DEFAULT	
			KONf 100	KONf 115
0	99	Methane	28	28
0	99	Propane	28	28

A Operation READING PARAMETER



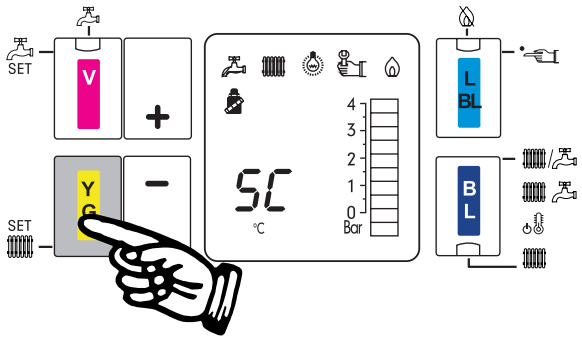
Press the button indicated to view default setting

B Operation CHANGE PARAMETER



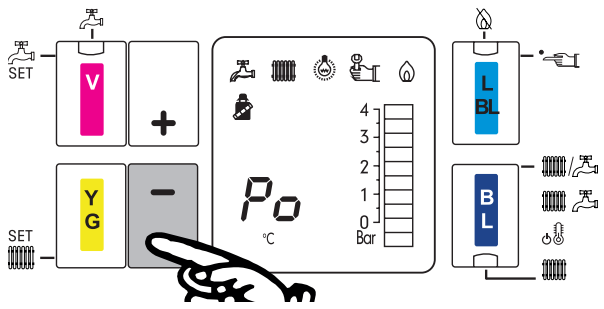
Press key **+ (PLUS)** / **- (MINUS)** to modify

C Operation SET / MODIFY PARAMETER



Push the button shown

PUMP OVERRUN - (2)



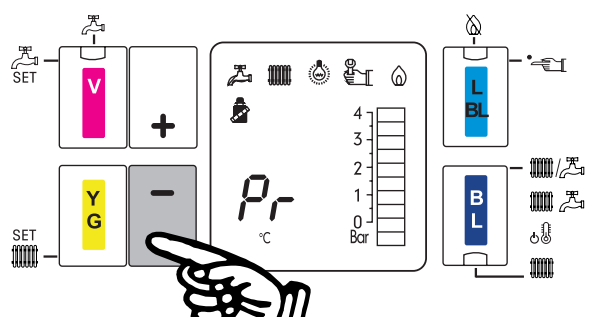
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
1 min	**10 min**	**5** min

CAPACITY TO FLOW-RATE RATIO - (5)



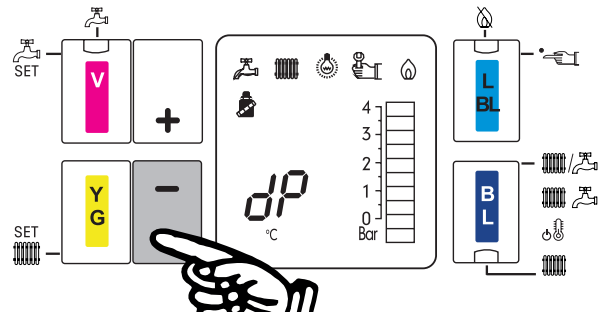
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
20	**100**	**99**

Pump overrun time after DHW operation - (3)



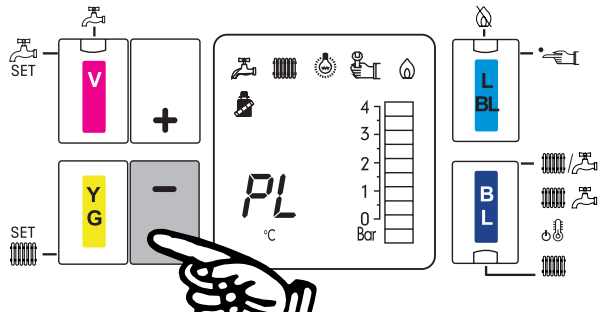
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
0 sec.	**60 sec.**	**30 sec**

MODULATING PUMP MINIMUM MODULAT. LEVEL - (6)



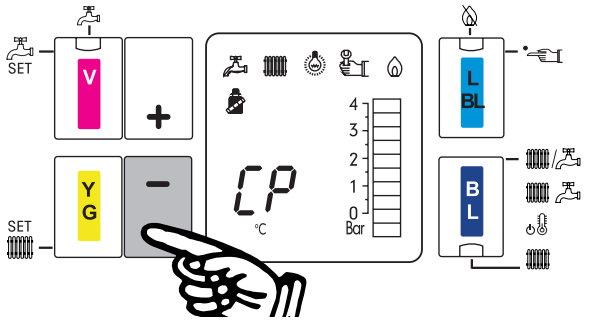
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	KON 100	KON 115
0 %	99 %	40	40

RELAY PUMP BOILER COLLECTOR - (4)



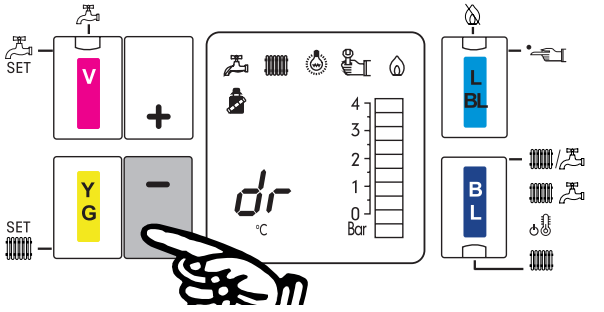
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
0	**1**	**0**

DHW: ENABLE THE TEMPERATURE SENSOR - (7)



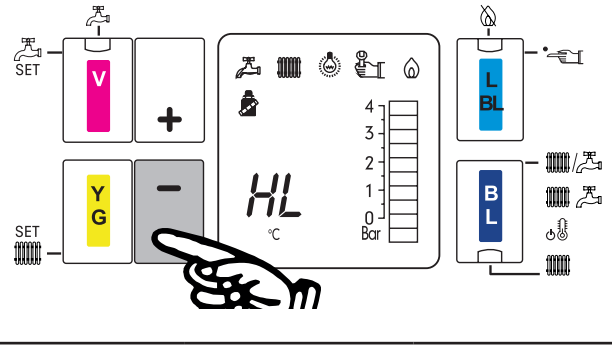
Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE

FROM	TO	DEFAULT
0	**1**	**0**

SETTING OF MINIMUM HEATING TEMP. - (8)

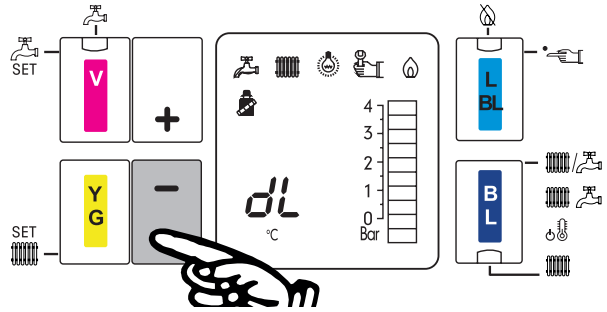


Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE		
FROM	**TO**	**DEFAULT**
20 °C	**60 °C**	**30 °C**

SETTING OF THE MINIMUM DHW TEMPERATURE (only if combined with an external storage tank) - (11)

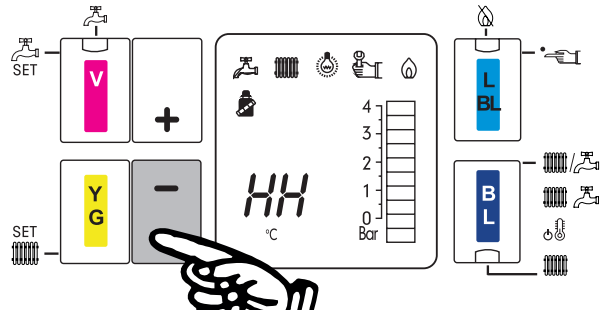


Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE		
FROM	**TO**	**DEFAULT**
35 °C	**45 °C**	**40 °C**

SETTING OF MAXIMUM HEATING TEMP. - (9)

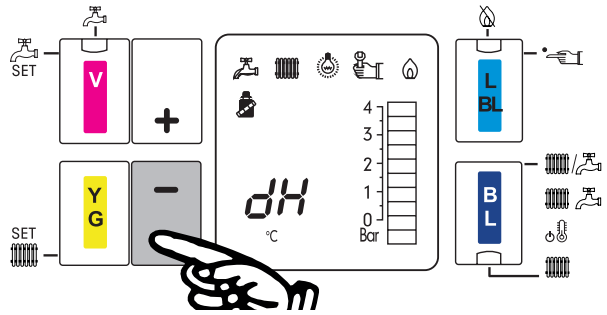


Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE		
FROM	**TO**	**DEFAULT**
65 °C	**85 °C**	**85 °C**

SETTING OF THE MAXIMUM DHW TEMPERATURE (only if combined with an external storage tank) - (12)



Continue with the modification of parameters by pressing the - **(MINUS)**

Repeat the operations A-B-C to change value

VALUE		
FROM	**TO**	**DEFAULT**
50 °C	**65 °C**	**60 °C**

ATTENTION!
Function reserved for Authorised Assistance Centres only.

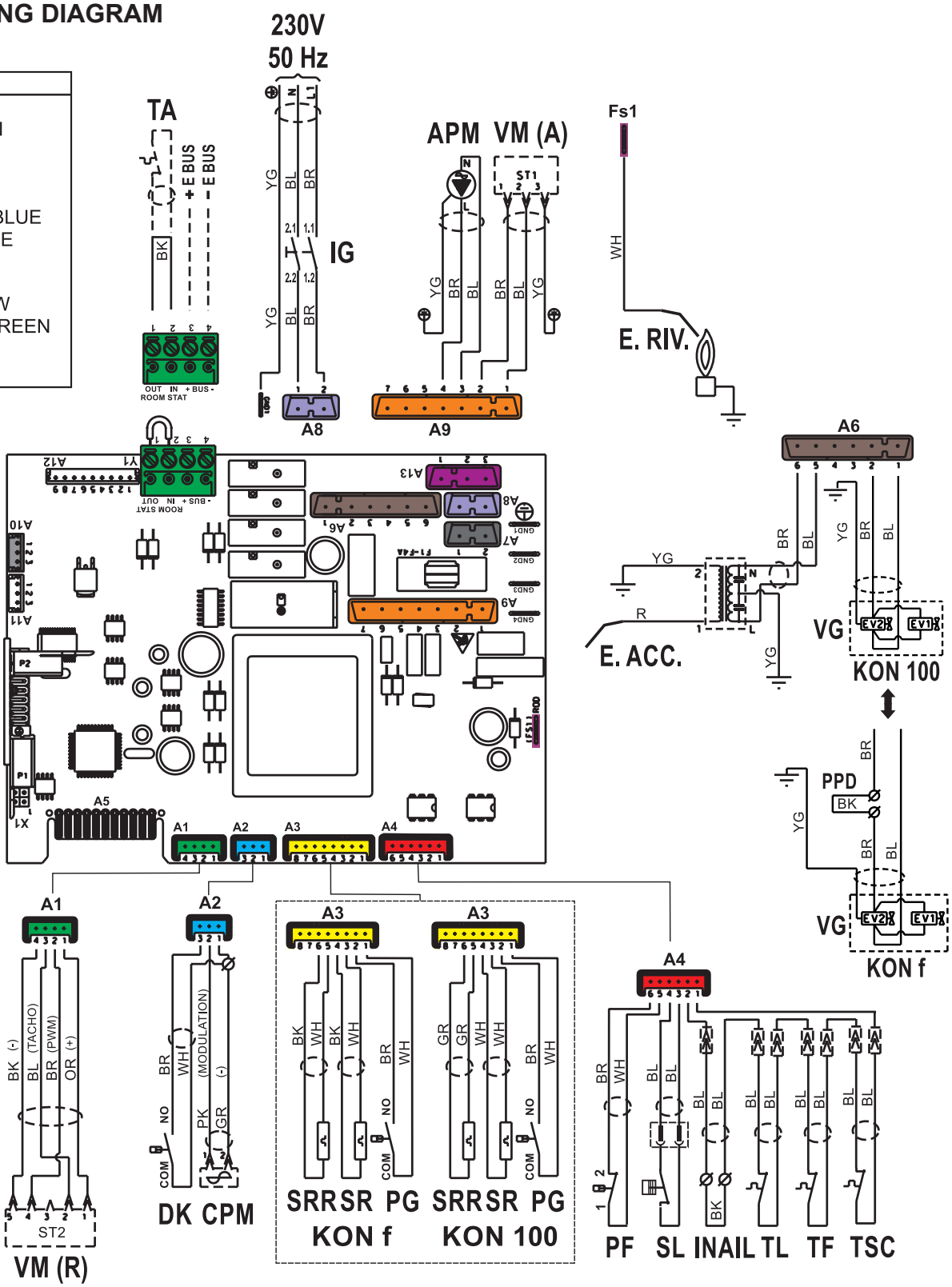
Note: TSp setting are released by After sale department under request by the installer / on site (reserved technical area)

To modify parameters is necessary password

FA Parameter	
Symb.	Descption
St	Enabled services: 2 = Cascade boiler 3 = Sigle boiler only heating 4 = Sigle boiler + water tank kit
rP	Water Δ-temperature protection: 0 = disabled 1÷50 = Massimo Δ-t
FS	Water minimum flow rate protection 0 = disabled 1 = flow switch
LG	Low gas pressure protection: disabled/enabled
PS	Low water pressure sensor: 0 = none 1 = connected to the switch 2 = connected to the transducer
bc	Burner max capacity (kW x 10)
FP	Fan speed control: proportional gain
FI	Fan speed control: integrative gain
Fr	Fan speed slope (rpm/minx1000)
Fb	Fan PWM modulation at maximum fan speed
Pu	Fan tacho: Pulse/Revolution
Sb	Fanmodulation level at burner standby
Fu	Massima velocità ventilatore METANO (GPL)
FH	Maximum relative fun speed (GPL)
FL	Minimum relative fun speed (GPL)
dt	Storage tank regulation gain
tH	Storage tank hysteresys: 0 automatic, 1÷30 °C
Hp	Temperature control: proportional gain
HI	Temperature control: integrative gain
Hd	Temperature control: derivative gain
HY	Burner off hysteresys (°C * 10)
Hs	Temperature control: slope limit.
AS	Burner air-flow check
Co	Chimney obstruction check (pressostat)
tu	°Celsius / °Fahrenheit

4.5 - WIRING DIAGRAM

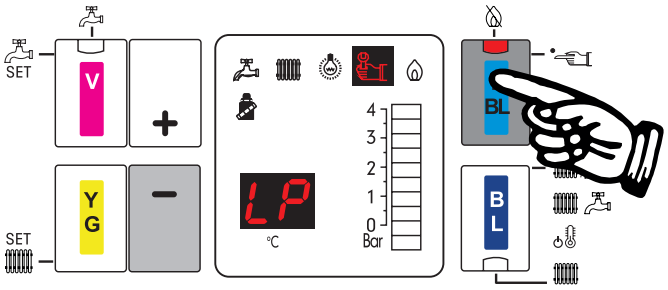
COLORS	
BL	BLUE
BR	BROWN
BK	BLACK
G	GREEN
GR	GREY
LBL	LIGHT BLUE
OR	ORANGE
PK	PINK
R	RED
Y	YELLOW
YG	YELL/GREEN
WH	WHITE
VI	VIOLET



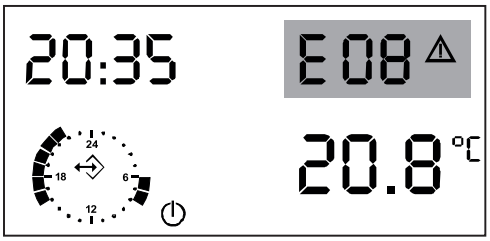
KEY	
A1.....A13	Services connectors
APM	Modulating pump supply
CMP	Modulating pump control
DK	Water deficiency safety pressure switch
e-BUS	Connection terminals HSCP / E8
E. ACC	Ignition Electrode
E. RIV	Detection Elecrode
INAIL	Safety connection
PF	Smoke Pressostat

PG	Gas Pressostat
SL	Level sensor condensat
SR	Flow heating sensor
SRR	Return heating sensor
TL	Limit thermostat
TSC	Excanger safety thermostat
TF	Smoke Thermostat
VG	Gas Valve
VM (A) VM (R)	Modulating Fun (A) Supply Modulating Fun (R) Regulation
TA	On/off TA connection terminals

4.6 - ERROR CODES



Control panel
When indicator fault light,
press the LIGHT BLUE key to view the error code on the display.



DIsplay Controller E8 (Optional)
For error codes relating to the heating system, refer to the section “Faults Finding” in Instructions for use supplied with the contoller E8.

			(Num) = vedi legenda Par. 2.2
CODE DISPLAY	**E8 CODE**	**DESCRIPTION**	**SOLUTION**
db	**E13**	DHW sensor failure (only if the boiler is combined with an external storage tank)	Check the sensor’s efficiency and/or its wiring
LL	**E32**	Mains voltage < 190 Vac	Check that the mains voltage is <190 Vac, if the mains voltage is correct replace the control board.
GP	**E02**	Gas pressure not sufficient	Check the gas pressure; if is correct check the efficiency of the pressure gas and / or wiring
CL	**E 29**	Water inside the combustion chamber Intervention Level Sensor (SL)	Verify condensing water draining pipe.
dt	**E15**	Difference between the heating temperature sensor (SR) and the heating return sensor (SRR) > 35°C.	Check the installation
rb	**E14**	HEATING RETURN SENSOR (22) Failure of the heating return sensor (SRR)	Check the efficiency of the sensor and/or wiring **(22)**
Ht	**E06**	HIGH TEMPERATURE Over high temperature detected by the heating sensor (SR) (>95°C)	Check the operation the pump and possibly clean the heat exchanger. (24)
LF	**E05**	Loss of flame signal during boiler operation	Press the reset key on the panel
- -	**E04**	No flame detected during the ignition phase.	Press the reset key on the control panel
FL	**E24**	FAN SPEED OUT OF CONTROL Alteration of the fan speed. Fan speed is not achieved.	Check the operation of the fan (18) and connections
FH	**E26**	SPEED OUT OF CONTROL Alteration of the fan speed Fan speed hightest than that required	Check the operation of the fan (18) and connections
AF	**E200**	Verify parameter St (if 0) fault will be detected	Rectify parameter St.

LP	**E08**	LACK OF WATER	Fill-up the water circuit
Fr	**E16**	FREEZING EXCHANGER (24) Is detected, the freezing of the heat exchanger. If the heating sensor detects a temperature below 2 ° C, the burner ignition is inhibited until the sensor detects a temperature higher than 5 ° C.	Remove power supply, close the gas valve, defrost the heat exchanger carefully.
HL	**E01**	INTERVENTION OF THE HIGH LIMIT thermostat (10)	Press the reset button on the panel and / or verify that the thermostat or its connections are not interrupted
CO	**E 28**	**CHIMNEY OBSTRUCTION** Failure of the heating sensor	Verify the chimney
Hb	**E12**	HEATING SENSOR (11) Damage to the sensor heating	Check the efficiency of the sensor (see table Res / Temp) (Pr.4) or its connections.
FP	**E30**	PARAMETERS OF FACTORY Alteration of the factory settings due to any electromagnetic interference.	Press the reset button if the fault does not clear, replace the board
Fd	**E11**	FLAME PARASITE Flame detected in ignition	Check the wiring electrode Acc / Ril. and remove any oxidation, press the reset button, if the fault does not clear, replace the electrode (4).
GL	**E20**	FLAME PARASITE Flame detected after shutdown	Check the wiring and leakage of the gas valve (3) eventually replace Gas Valve
IF	**E10**	INTERNAL FAULT	Replace the control board.
Sr		REQUEST FOR MAINTENANCE After 10,000 switching On or 2,000 hours of operation of the burner, boiler needs servicing	The blink code (Sr) does not preventthe normal operation of the boiler. Service the appliance and subsequently reset the counter by selecting “Cr” from the parameters menù and introducing the relevant resetting code.

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