

KONf



200 - 400



INSTALLATION AND MAINTENANCE INSTRUCTIONS





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

Provisions for proper disposal of the product

After decommissioning, this appliance must not be disposed of as mixed urban waste.

Separate waste collection is mandatory for this type of waste, in order to allow the recovery and reuse of the materials making up the appliance.

Please contact operators authorised for the disposal of this type of appliances

Incorrect management of waste and of its disposal has potential negative effects on the environment and human health

The  symbol on the appliance, represents the prohibition to dispose of the product as mixed urban waste.



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.

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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

When reading this manual, pay special attention to the parts marked by the symbols shown:



DANGER!
Serious danger
to safety and health



ATTENTION!
Possible dangerous
situation for the product
and the environment



NOTE!
Tips for the user



NOTE!
For further details refer to the
Technical Information:
at the address indicated
on page 2.



DANGER!
Danger of burns!



OBLIGATION!
Wear protective
gloves

1.3 - APPROPRIATE USE OF APPLIANCE



The boiler has been constructed according to the current level of engineering and acknowledged technical safety rules.

Nonetheless, improper use could result in hazards for the safety and life of the user or other persons, i.e. damage to the appliance or other property.

The appliance is designed to work in heating systems, with hot water circulation, for the production of domestic hot water.

Any other use shall be considered as misuse.

UNICAL will not be held liable for any damage resulting from improper use.

Use according to the intended purposes also includes strict compliance with the instructions in this manual.

1.4 - INFORMATION FOR THE SYSTEM MANAGER



The user must be instructed on use and operation of the 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 reference.**
- 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 on how to control the system's water pressure as well as operations to restore it.
- Inform the user on 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 manual accompanies it so that the new owner and/or installer can refer to it.

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 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.

②	
Model	③
S.N°	⑤ /
PIN	⑥
Types	⑦
NOx	⑧
A Central Heating	Pn ⑨ kW Pcond ⑩ kW Qn ⑪ kW Adjusted Qn ⑫ kW PMS ⑬ bar T max ⑭ °C
B DHW	Qnw ⑮ kW D ⑯ l/min PMW ⑰ bar T max ⑳ °C
G	s ⑲ % wh ⑳ %
E Factory setting <input checked="" type="checkbox"/> MET GPL	D Countries of destination
⑳ mbar <input type="checkbox"/> ㉑ mbar <input type="checkbox"/> ㉒ mbar <input type="checkbox"/> ㉓ mbar <input type="checkbox"/> ㉔ mbar <input type="checkbox"/> ㉕ mbar <input type="checkbox"/> ㉖ mbar <input type="checkbox"/> ㉗ mbar <input type="checkbox"/>	㉘ ㉙ ㉚
C Electrical Power supply	
⑳ V HZ ㉑ W	
IP class: ㉒	
	㉓
Made in Italy	①

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 = Electrical 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



Feed water treatment prevents problems and maintains the functionality and efficiency of the generator over time.



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



The ideal water pH in heating systems must be within:

VALUE	MIN	MAX
PH	6.5	8
Hardness [°fr]	9	15



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.



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)

NOTE!

Further details in the section
“Technical Information” on the boiler
page of the www.unicalag.it website

1.8 - BOILER ANTIFREEZE PROTECTION

It is activated 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 11 (SM) a temperature level between 2 and 5°C is detected, the appliance will behave as described in the table below, 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.

P O S	ANTIFREEZE FUNCTION				
	Power supplies		30 - SMG (*)	Status antifreeze function	Actions
	Electric	Gas			
1	ON	ON	< 7 °C	ON	- Burner and Pump ON until T > 15°C
	ON	ON	< 2 ÷ 5 °C	ON	FAULT SIGNAL CODE 16 (with Electrical power supply ON) (see par. 4.6 - ERROR CODES). Ignition inhibited.
2	ON	OFF		OFF	(with Electrical power supply ON)
	OFF	ON		OFF	(see par. 4.6 - ERROR CODES).
	OFF	OFF		OFF	Ignition inhibited.

(*) Sensor 30 par. 2.2



For outdoor installations, in partially protected places, you must use the additional heater kit (optional) for antifreeze siphon cap.

Declared TA room temperature, using the resistance kit = -15°C.

2

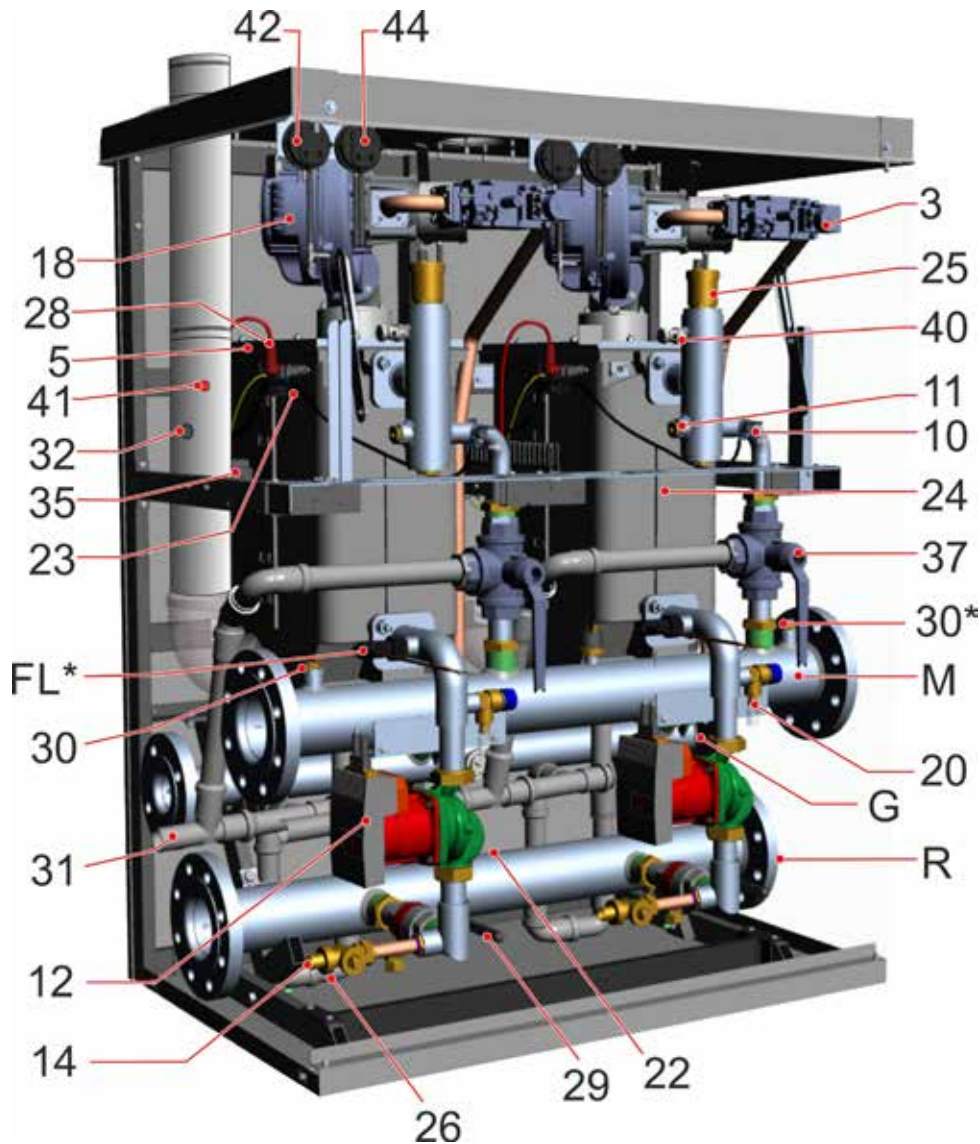
TECHNICAL FEATURES AND DIMENSIONS

2.1 - TECHNICAL FEATURES

NOTE! Further details in the section "Technical Information" on the boiler page of the www.unicalag.it website

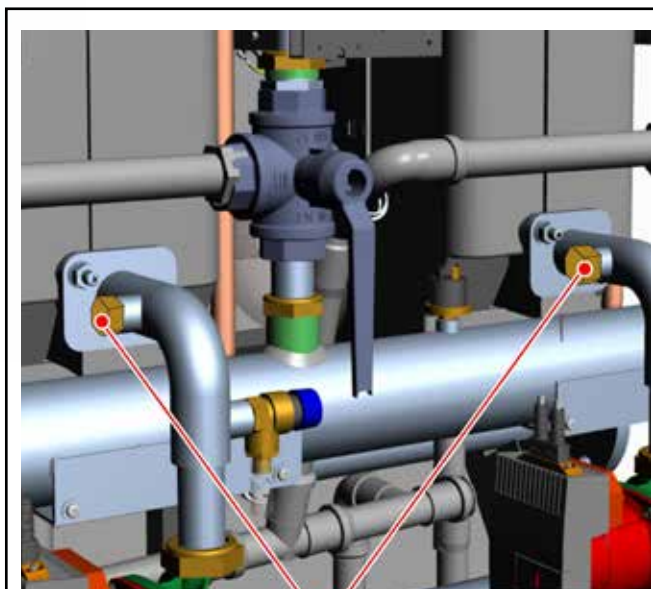
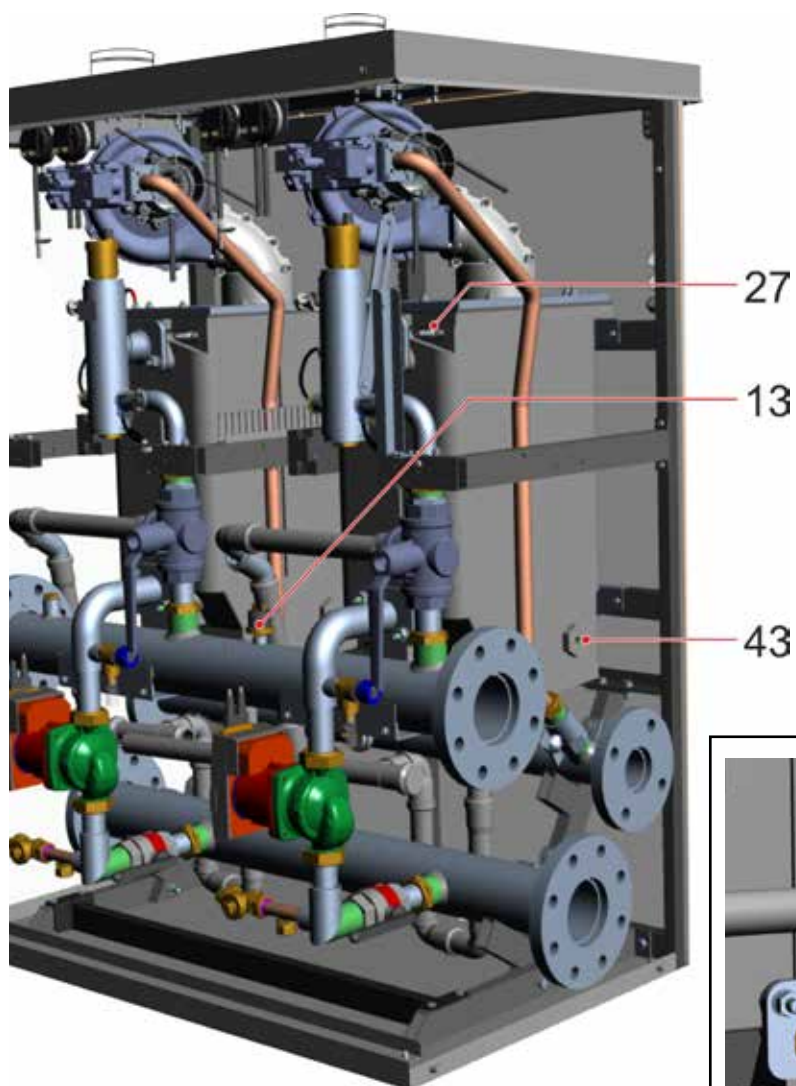
2.2 - INTERNAL VIEW WITH THE INDICATION OF THE MAIN COMPONENTS

KONF 200



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



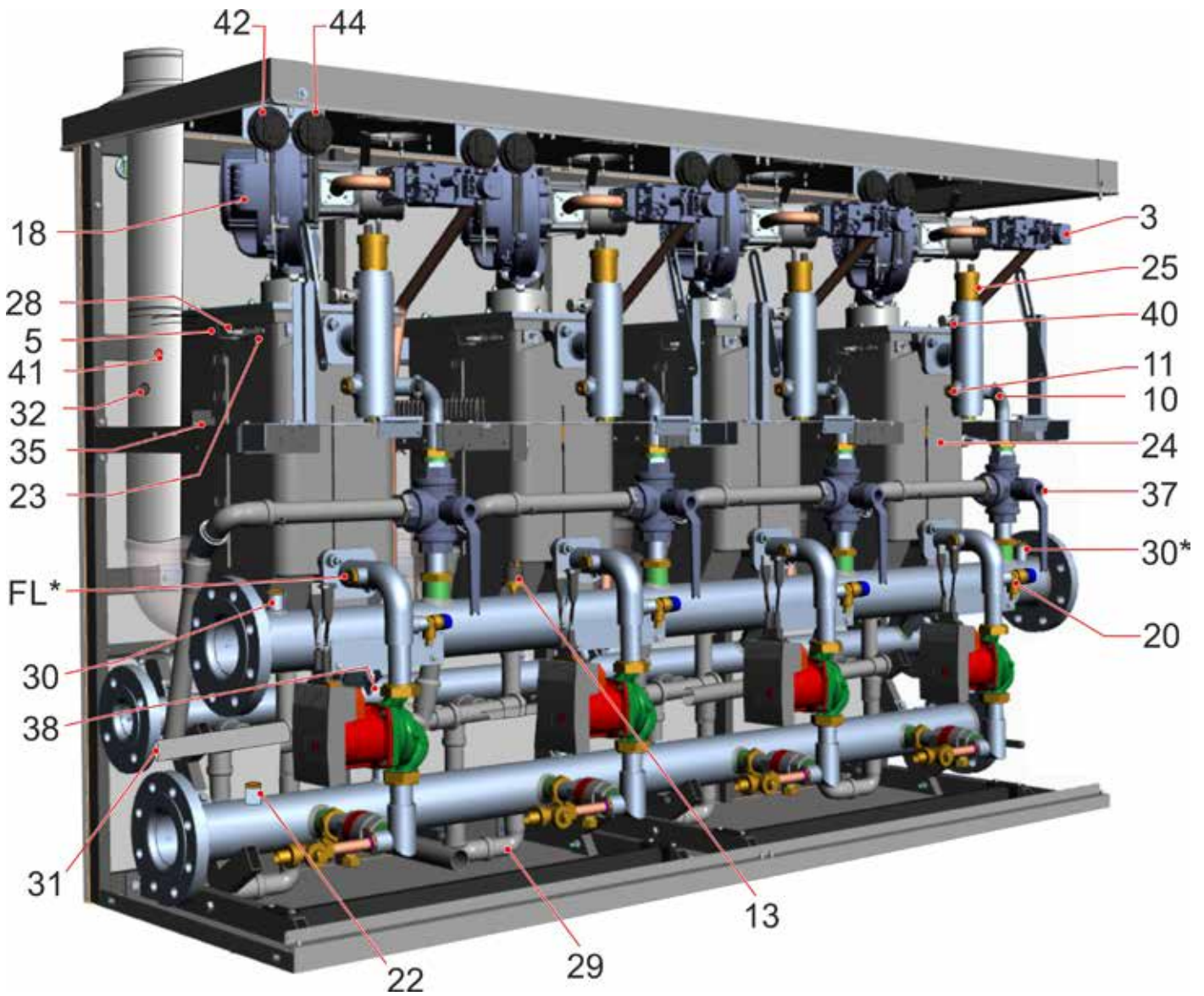
FL*



NOTE:
Insert the flows switch approved, cod. 00368501, as shown in figure.

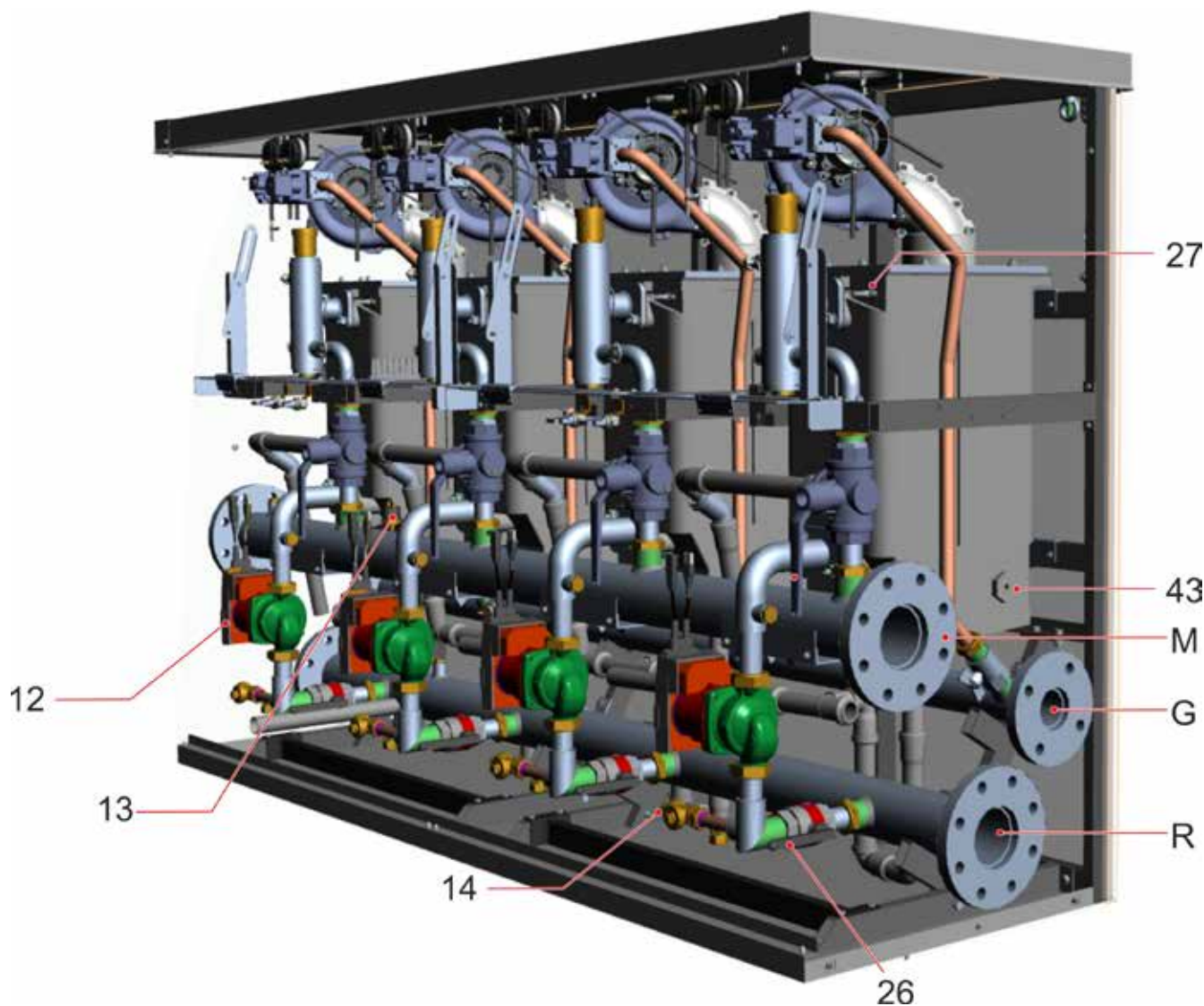
37			Flow shut-off (3 Way) valve		
38			Gas pressure switch		
40			Manual Vent valve		
41			Smoke Thermostat		
42		PFmax	Flue pressure switch max		
43		SL	Condensate sensor level		
44		PFmin	Flue pressure switch min		
FL*			Flow pressure switch (*)		
				DN	mm
G			Gas inle	50	60,3
M			Heating system 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				

KONf 400

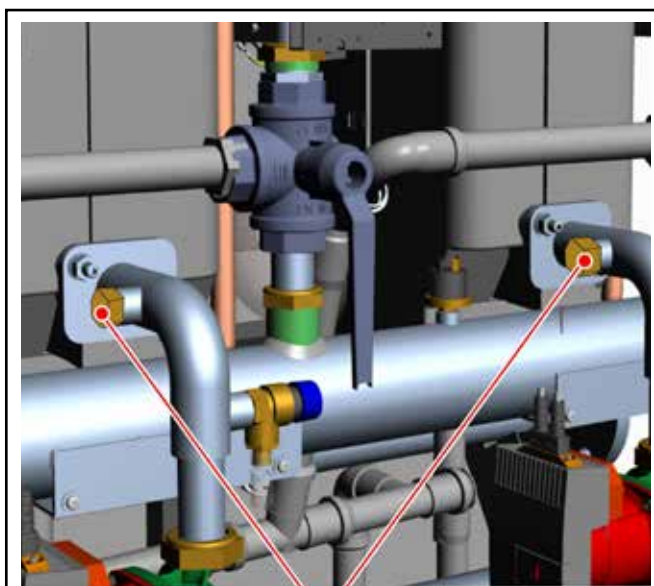


KEY			
N°	C.E.	S.E.	Description
3		VG	Gas valve
5			Burner
10	HL	TL	Safety thermostat
11	Hb	SR	Heating temperature sensor
12	Ht	P	Modulating Pump
13	Lp	DK	Water deficiency pressure switch
14			Boiler drain valve
18	FL FH	VM	Modulating Fan
20			Safety valve
22	rb	SRR	Return temperature sensor

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
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35			Ignition transformer



37			Flow shut-off (3 Way) valve		
38			Gas pressure switch		
40			Manual Vent valve		
41			Smoke Thermostat		
42		PFmax	Flue pressure switch max		
43		SL	Condensate sensor level		
44		PFmin	Flue pressure switch min		
FL*			Flow pressure switch (*)		
				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				



FL*

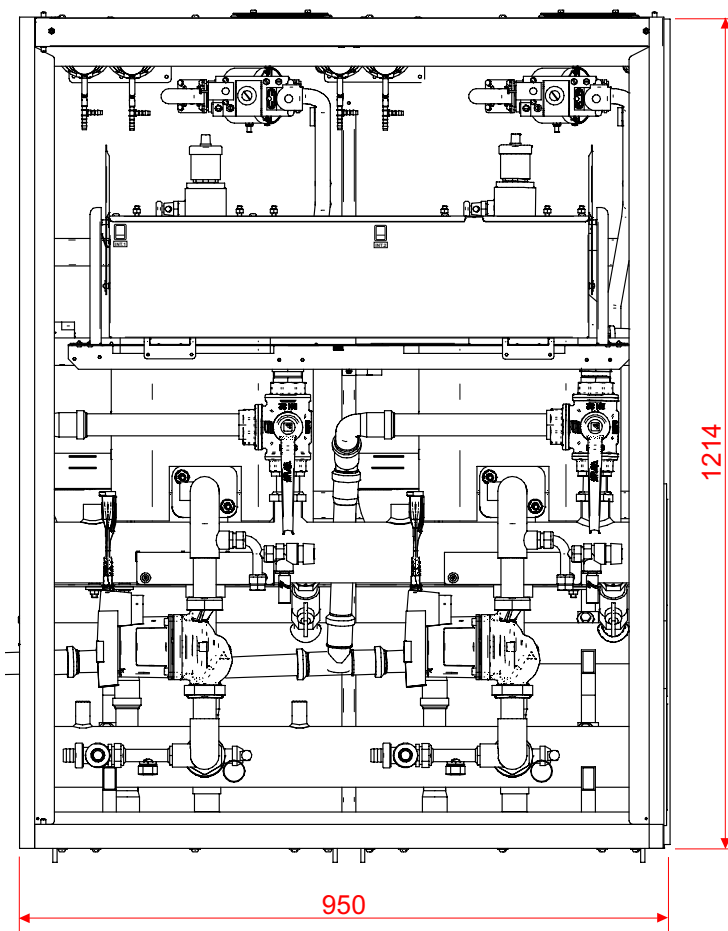
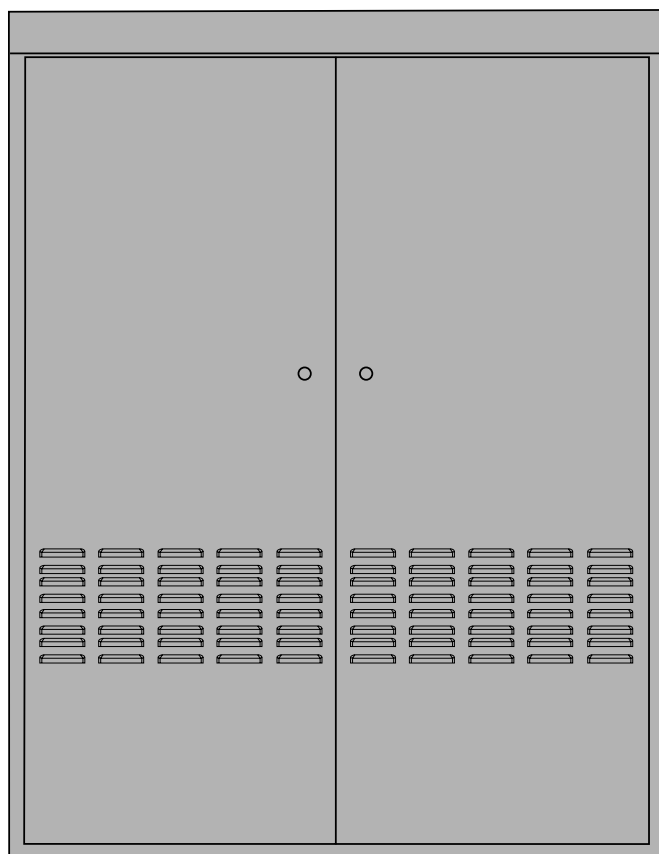


NOTE:
Insert the flows switch approved, cod. 00368501, as shown in figure.

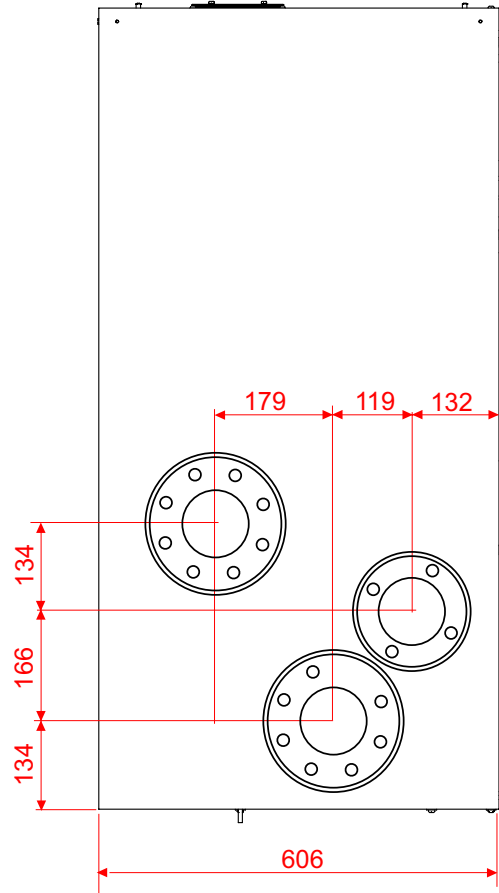
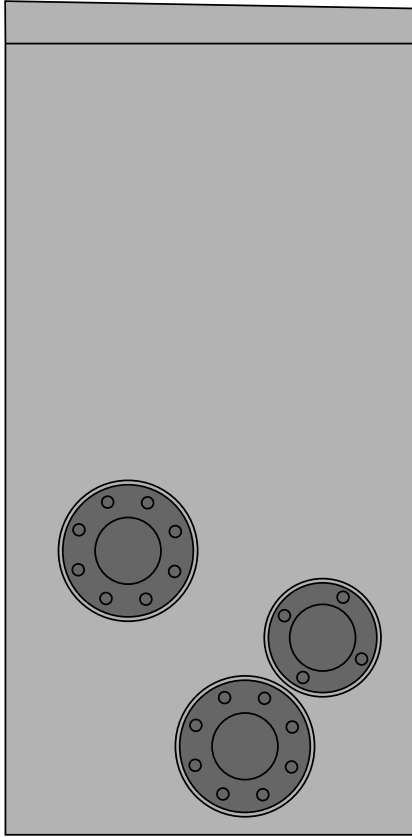
2.3 - DIMENSIONS

KONf 200

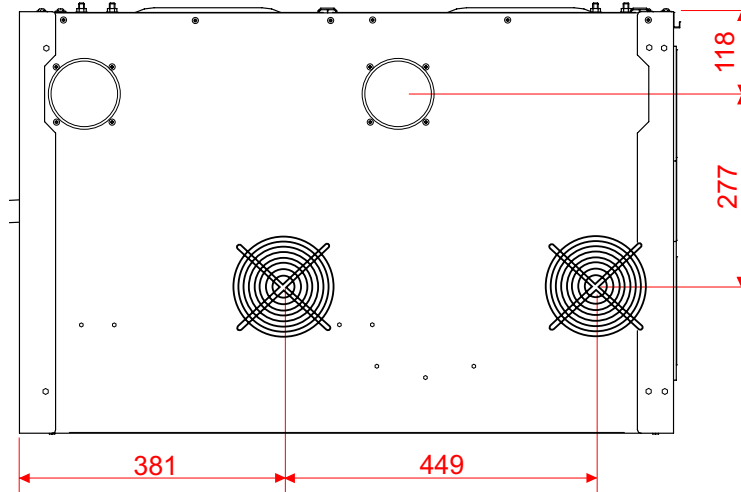
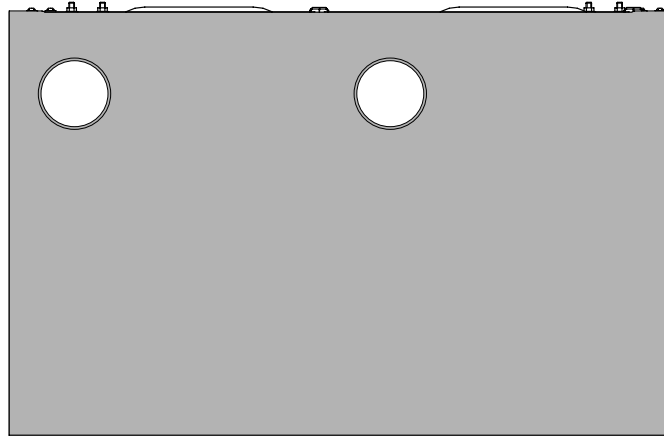
FRONT VIEW



SIDE VIEW DX

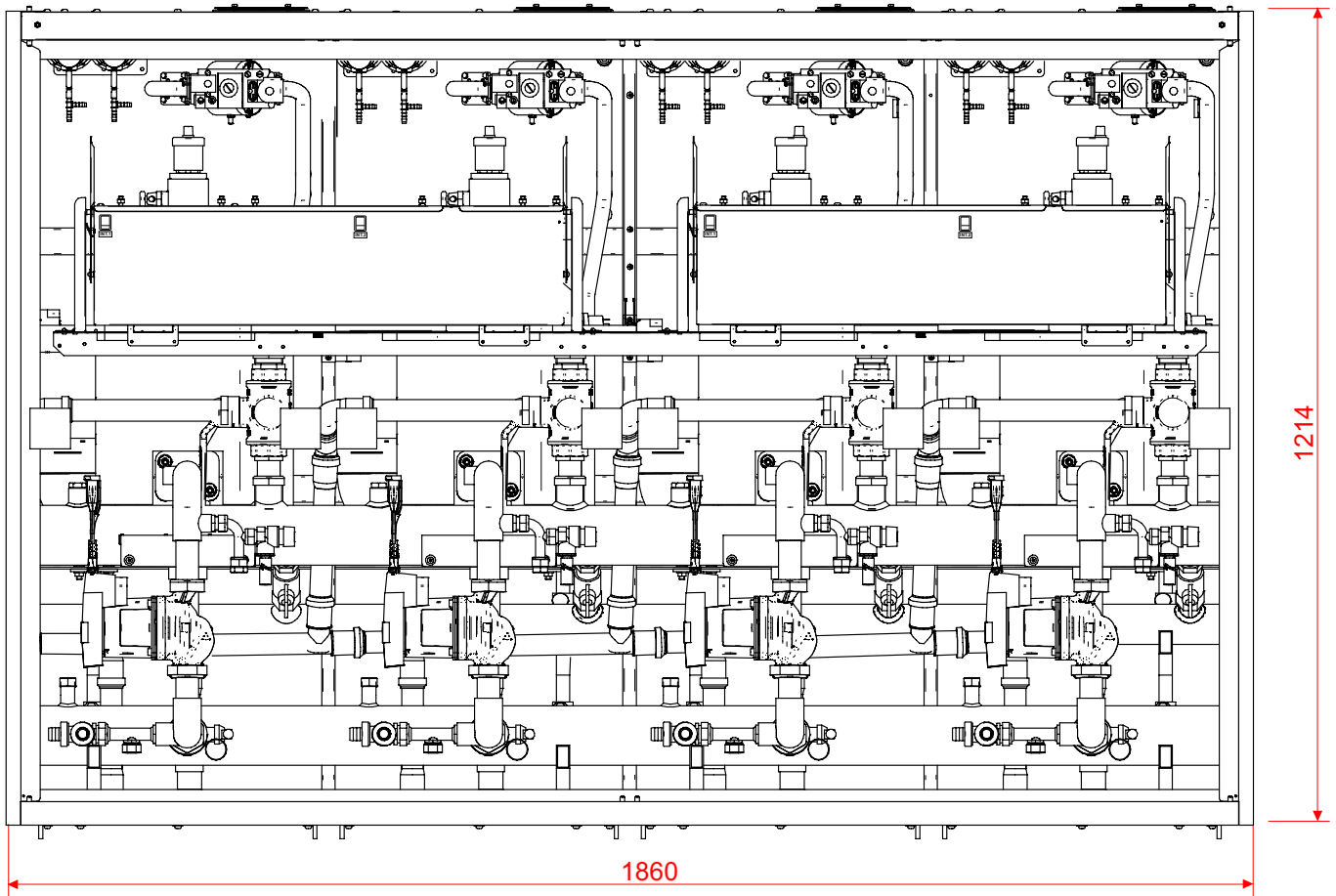
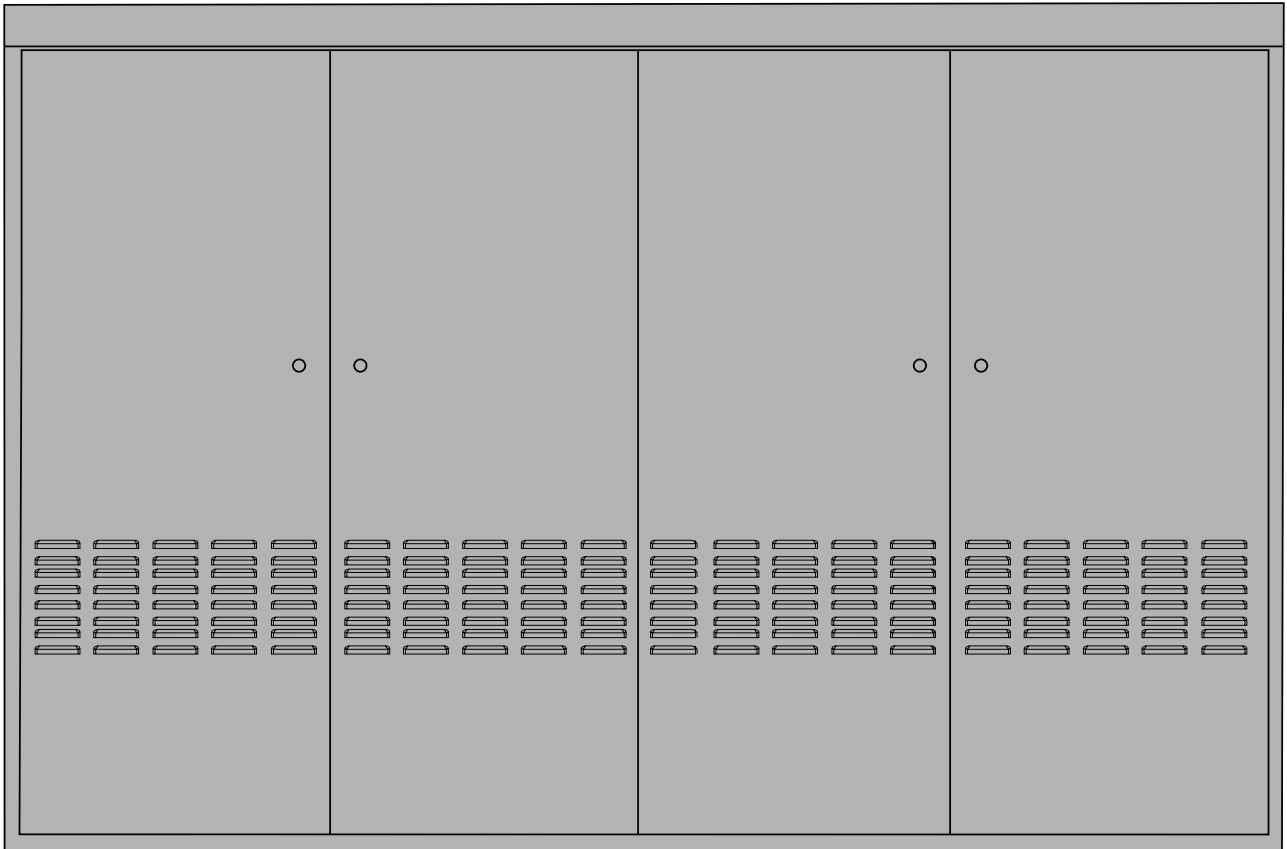


TOP VIEW

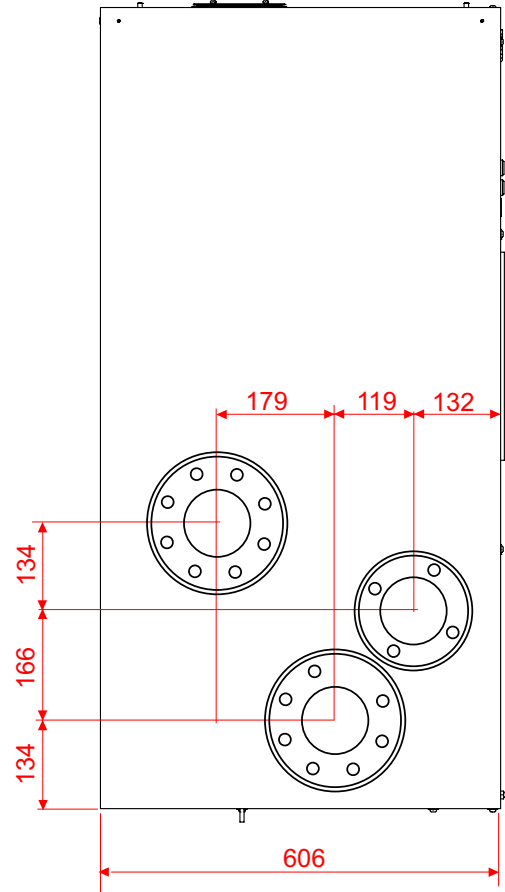
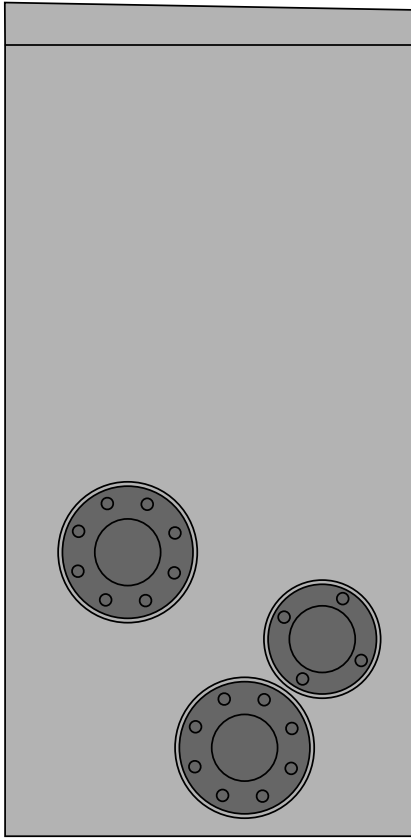


KONf 400

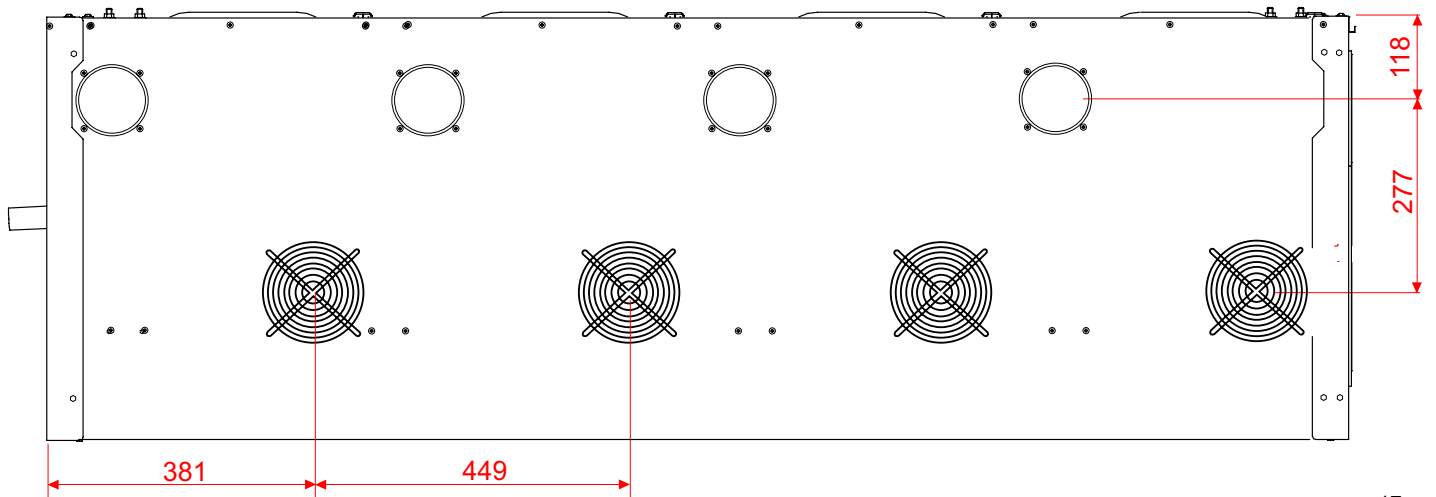
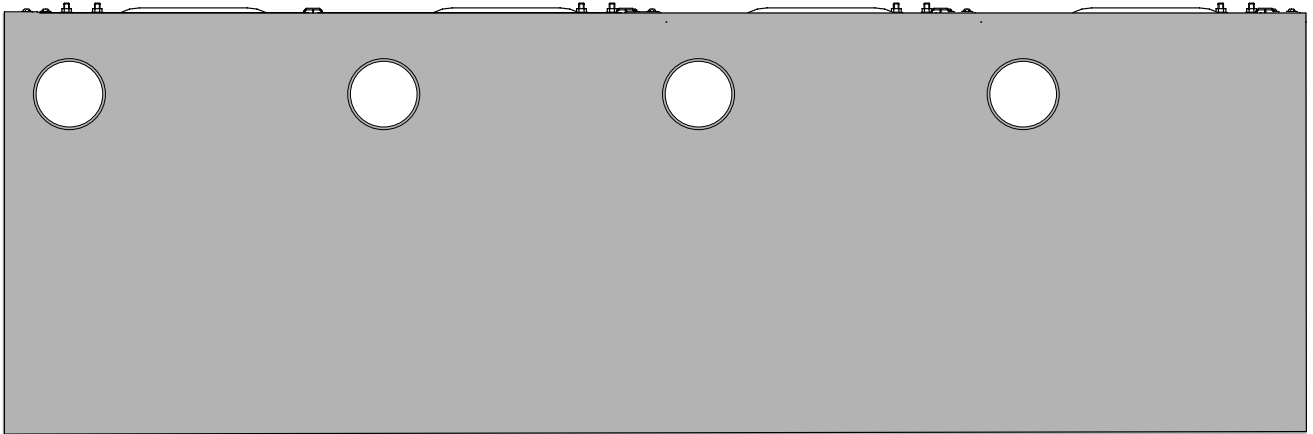
FRONT VIEW



SIDE VIEW DX



TOP VIEW

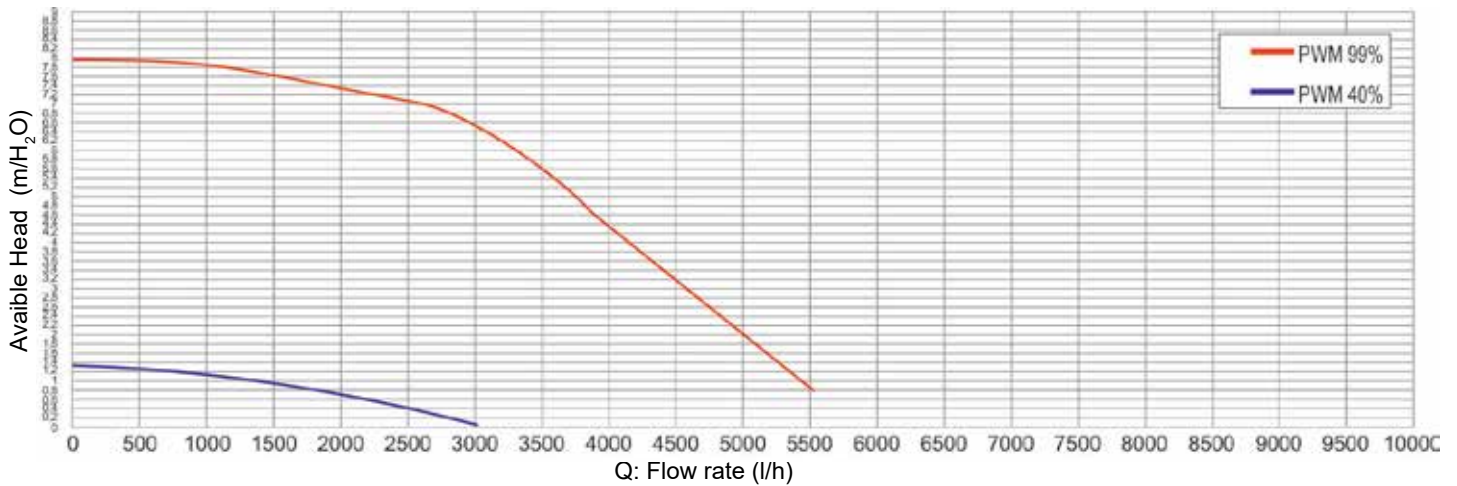


ENGLISH

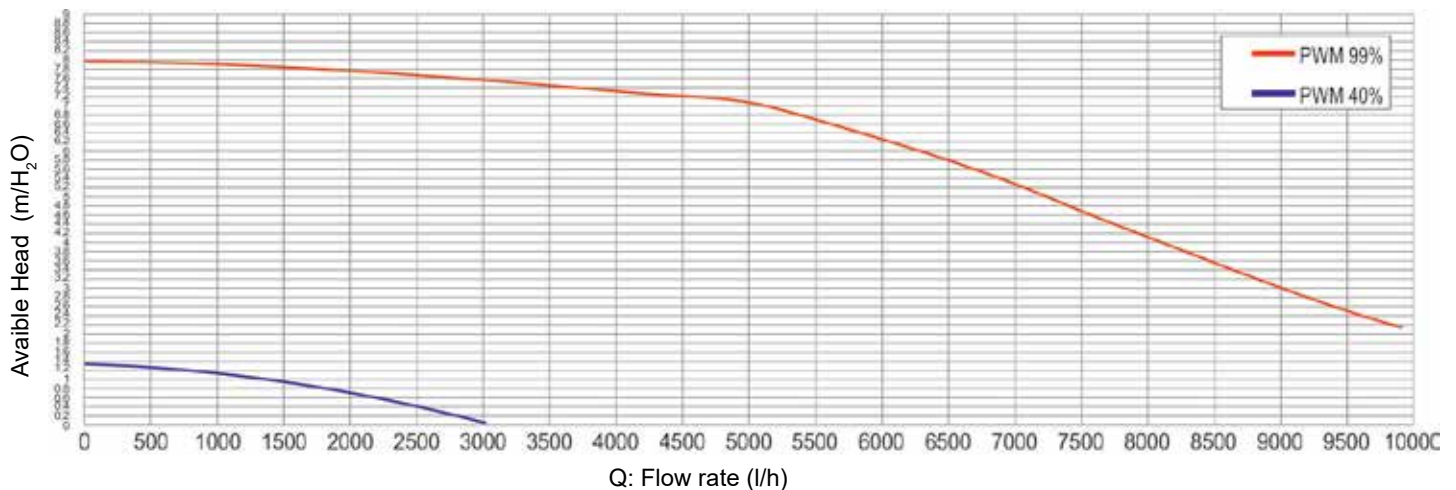
Technical Features

2.4 - DIAGRAM OF FLOW RATE/PRESSURE AVAILABLE FOR INSTALLATION

n. 1 Pump at Qnom n. 1 Pump at Qmin



n. 2 Pump at Qnom n. 1 Pump at Qmin



The table provides an indication the flow the pump in function of the Δt of the primary circuit.

		KONf 200	KONf 400
Power supply in kW	kW	199	398
Max flow rate demanded l/h (Δt 15 K)	l/h	11400	22818
Nominal flow rate request (Δt 20 K)	l/h	8860	17110
Power supply in condensation (50/30)	kW	210	420
Max flow rate demanded l/h (Δt 15 K)	l/h	12040	24080
Nominal flow rate request (Δt 20 K)	l/h	9030	18060



Δt rate between Flow and Return it must NOT 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 200	KONf 400
Appliance category		II _{2H3P}	II _{2H3P}
Modulation Ratio		1 : 10,0	1 : 20,0
Nominal Heat Input on P.C.I. Qn	kW	199	398
Minimum Heat Input on P.C.I. Qmin	kW	20	20
Nominal Output (Tr 60 / Tm 80 °C) Pn	kW	195	391
Minimum Output (Tr 60 / Tm 80 °C) Pn min	kW	19,1	19,21
Nominal Output (Tr 30 / Tm 50 °C) Pcond	kW	206	413
Minimum Output (Tr 30 / Tm 50 °C) Pcond min	kW	21,2	21,2
Efficiency at max. output (Tr 60 / Tm 80 °C)	%	97,9	98,8
Efficiency at min. output (Tr 60 / Tm 80 °C)	%	95,6	95,6
Efficiency at max. output (Tr 30 / Tm 50 °C)	%	104	104
Efficiency at min. output (Tr 30 / Tm 50 °C)	%	106	106
Rendimento al 30% del carico (Tr 30 °C)	%	108,9	108
Combustion efficiency with nominal load	%	98,02	98,26
Combustion efficiency with minimum load	%	98,2	98,2
Heat loss at casing with burner in operation (Qmin)	%	2,6	2,56
Heat loss at casing with burner in operation (Qn)	%	0,14	0,05
Flue gas temperature tf-ta (min)(*)	°C	34,0	34,5
Flue gas temperature tf-ta (max)(*)	°C	40	35,6
Maximum allowable temperature	°C	100	100
Maximum operating temperature	°C	85	85
Flue gas mass flow rate (min)	kg/h	34,31	34,31
Flue gas mass flow rate (max)	kg/h	319,57	639,14
Excess λ air	%	23	23
Flue losses with burner in operation (min)	%	1,8	1,8
Flue losses with burner in operation (max)	%	2,0	1,74
Minimum heating circuit pressure	bar (kPa)	0,5 (50)	0,5 (50)
Maximum heating circuit pressure	bar (kPa)	6 (600)	6 (600)
Water content	l	22	44
Gas Consumption Natural (20 mbar) gas G 20 a Qn	m³/h	21,04	42,1
Gas Consumption Natural gas (20 mbar) G 20 a Qmin	m³/h	2,11	2,11
Gas Consumption G25 (supply pressure 25 mbar) Qn	m³/h	24,5	49
Gas Consumption G25 (supply pressure 25 mbar) Qmin	m³/h	2,46	2,46
Gas Consumption G31 (supply pressure 37/50 mbar) Qn	kg/h	15,5	31,0
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	12,8	26,0
Emissions			
CO at Minimum Heat Input with 0% of O2	mg/kWh	153	156
NOx at Nominal Heat Input with 0% of O2	mg/kWh	68	70
NOx Class		6	6
Electrical Data			
Voltage/Frequency electric power supply	V/Hz	230/50	230/50
Fuse on main supply	A (R)	6.3 A T - 250V	6.3 A T - 250V
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 - P _{stb} - see ErP table			
Consumption in stand-by - P _{sb} - see ErP table			

2.5.1 - TECHNICAL DATA ACCORDING ErP DIRECTIVE

			KONf 200	KONf 400
Element	Symbol	Unit		
Effective nominal output	P _{nominale}	kW	195	388
Seasonal energy efficiency to heat the room	η _s	%	93	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	195	391
Rated heat output efficiency with high temperature capacity (Tr 60 °C / Tm 80 °C)	η ₄	%	88,2	88,5
Useful power at 30% of the rated heat output with low temperature capacity (Tr 30 °C)	P ₁	kW	65,0	129,0
Performance at 30% of the rated heat output with low temperature capacity (Tr 30 °C)	η ₁	%	98,1	97,3
Boiler with output range adjustment: YES / NO			NO	NO
Auxiliary electricity consumption				
With a full load	el _{max}	kW	0,580	1,160
With a partial load	el _{min}	kW	0,156	0,156
Standby mode	P _{SB}	kW	0,025	0,032
Other elements				
Heat loss in stand-by	P _{stb}	kW	0,962	0,9238
Emissions of nitrogen oxides PCS	NO _x	Mg/kWh	41	41
Annual electricity consumption	Q _{HE}	GJ	606	1220
For CH & DHW production boilers				
Declarerd load profile			-	-
Energy efficiency in DHW production mode	η _{wh}	%	-	-
Daily electricity consumption	Q _{elec}	kWh	-	-
Daily fuel consumption	Q _{fuel}	kWh		
Inside sound power level	L _{wa}	dB (A)		
Annual electricity consumption	AEC	kWh	-	-
Annual fuel consumption	AFC	GJ		
Seasonal efficiency class in DHW production mode			-	-

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!**

Only mount the appliance on a closed wall, made of non-flammable material, flat, vertical so that the minimum distances required for installation and maintenance can be observed.



The boiler must be connected to a central heating system compatible with its efficiency and output.



The boiler can be installed outdoors in a partially protected place or at least in a place where the boiler is not exposed to the direct action of the weather.

3.2 - INSTALLATION STANDARDS

It 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 according 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.

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



OBLIGATION!
wear protective gloves

- Only transport the boiler using appropriate transport equipment
- Follow the transport instructions on the packaging.

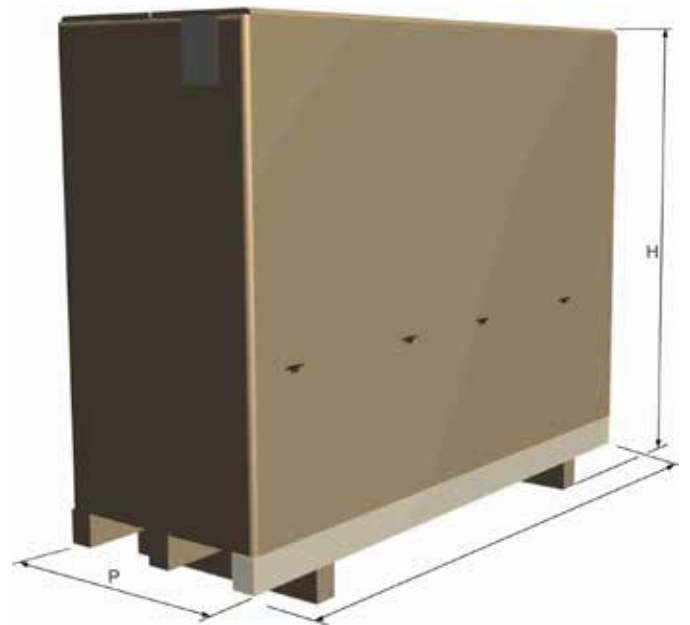
As well as the appliance, the packaging contains:

ENVELOPE DOCUMENTATION

- Instruction for regulator HSCP
- Instruction manual for the installer and servicing personnel
- Key
- Rosoni silicone per coperchio
- Hydraulic test report
- Certificate of conformity
- Boiler (water tank) sensor
- Outside sensor

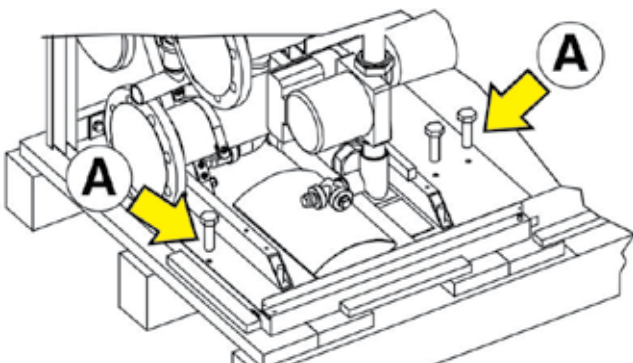
(positioned inside the boiler above the pallet)

- envelope with adjustable feet,
- Boiler drain tap
- Box containing magnetic HSCP regulator
- Flange Kit
- kit screws + gaskets
- 3 Eyebolts for lifting the boiler for (KONf 400)
- Smoke outlet pipe Ø 100



KONf 200				
P depth (mm)	L width (mm)	H height (mm)	Net Weight (kg)	Gross Weight (kg)
675	995	1400	316	374

KONf 400				
P depth (mm)	L width (mm)	H height (mm)	Net Weight (kg)	Gross Weight (kg)
675	1890	1500	632	688



Remove the "A" to remove the boiler from pallet.
6 screws for KONf 200
8 screws for KONf 400.

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 base-ment, 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

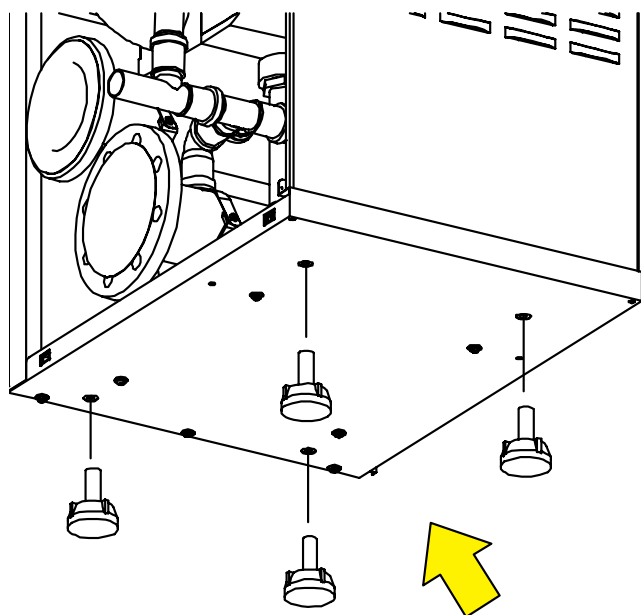
When choosing the installation place, the following items have to be considered:

- 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.

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.

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

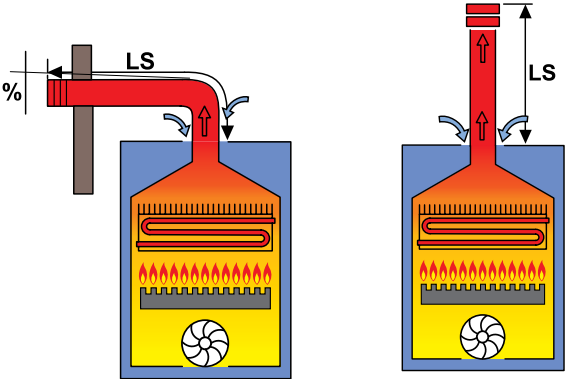
C63x	C63
Boiler intended for connection to a combustion air intake and combustion products evacuation system, approved and sold separately	

 **ATTENTION:**
The flue must comply with standards in force.

 **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.


B23P

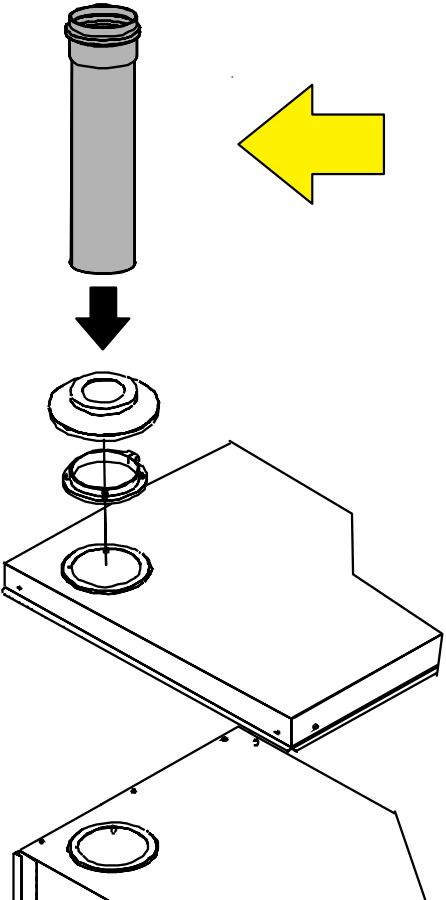



TOTAL LENGTH (LS exhaust)	
SINGLE Ø100	
FROM [m]	TO [m]
1	42

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

 **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.

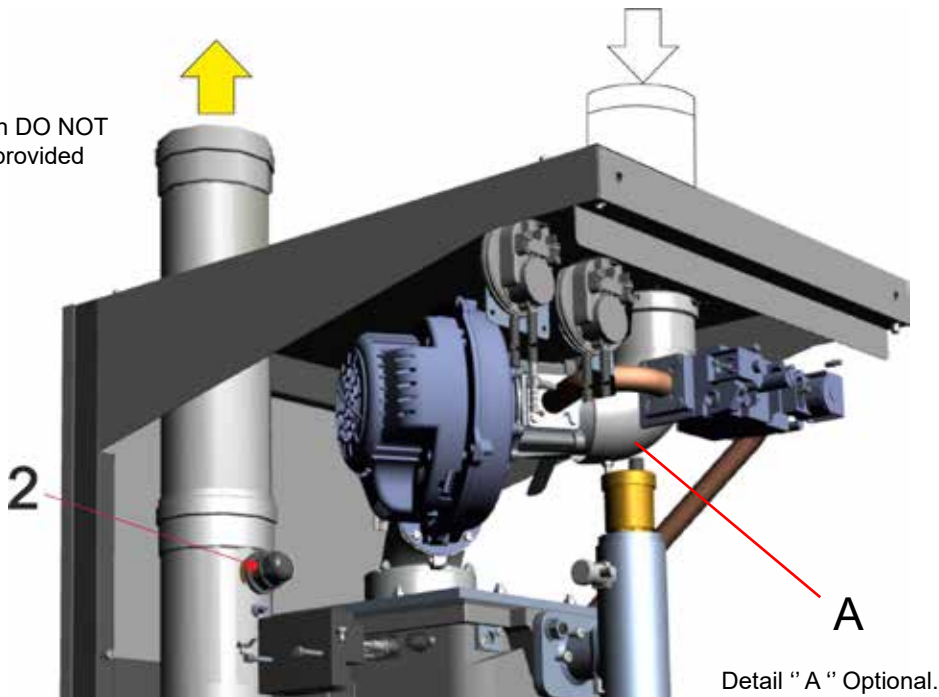


 **ATTENTION:**
For the type of connection **B23P** the room follows the same installation rules for boilers with natural draught.

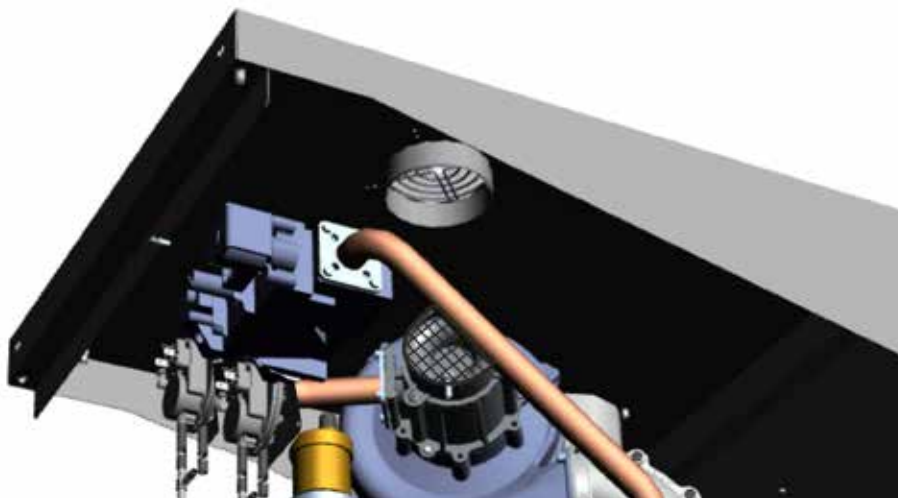
Installation Type C63: Start for air inlet Ø80 and smoke outlet Ø100 (Only for indoor installation)



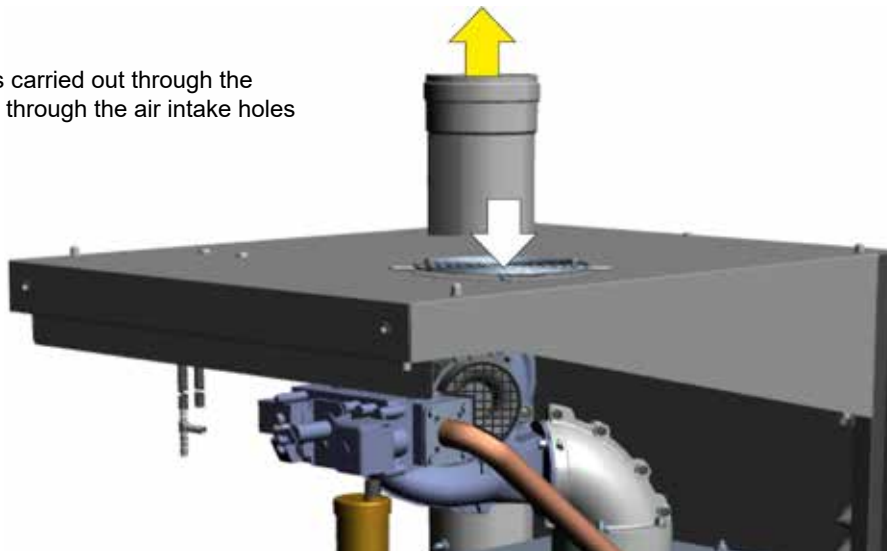
For this configuration DO NOT use the case cover provided with the boiler.



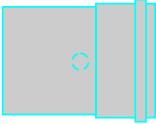

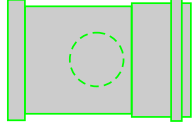

Installation Type B23p: Air inlet from upper grid and smoke outlet Ø100



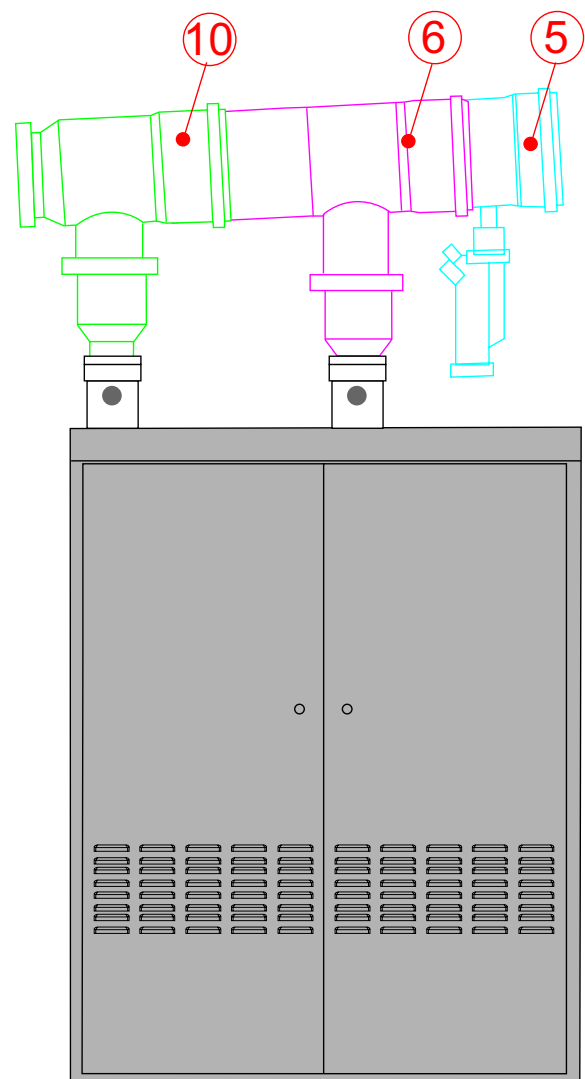
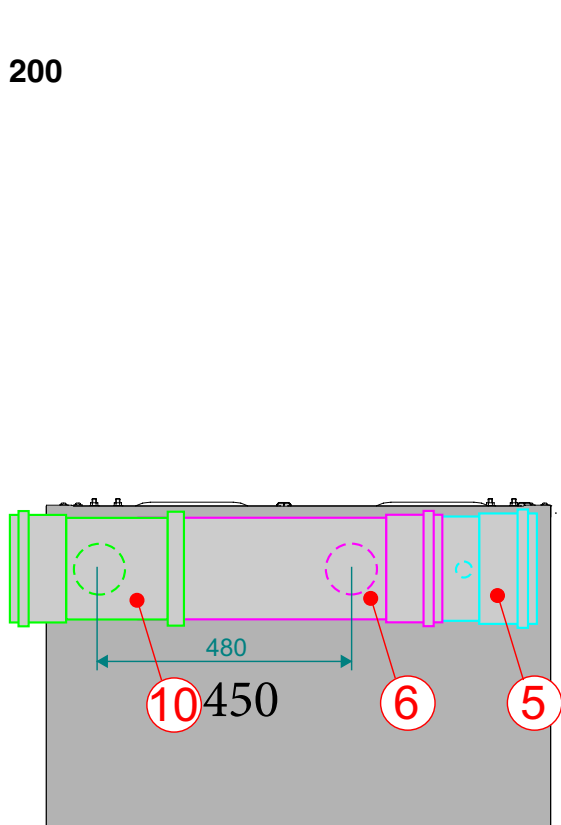
Combustion air inlet is carried out through the indicated (grid) hole a through the air intake holes of the case

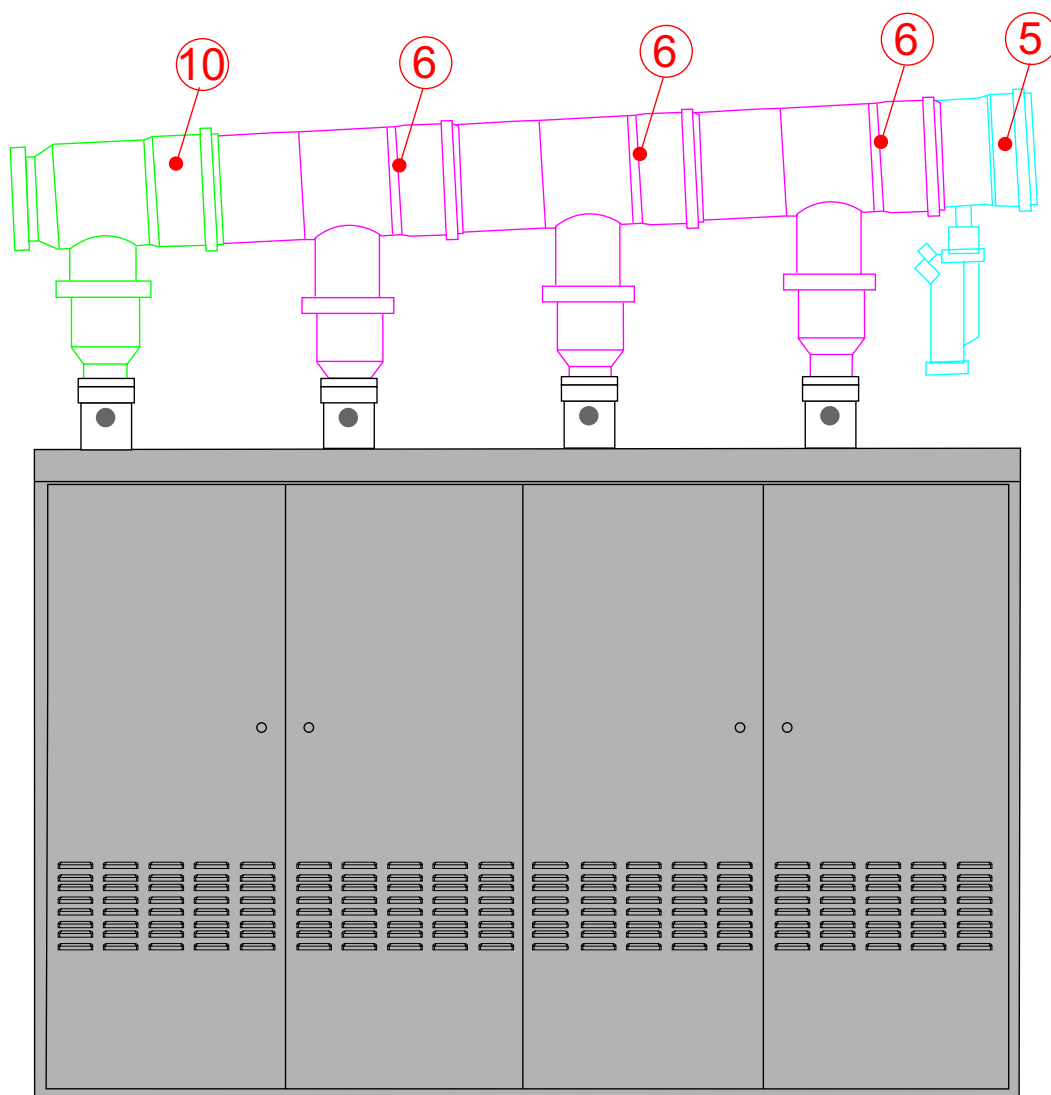
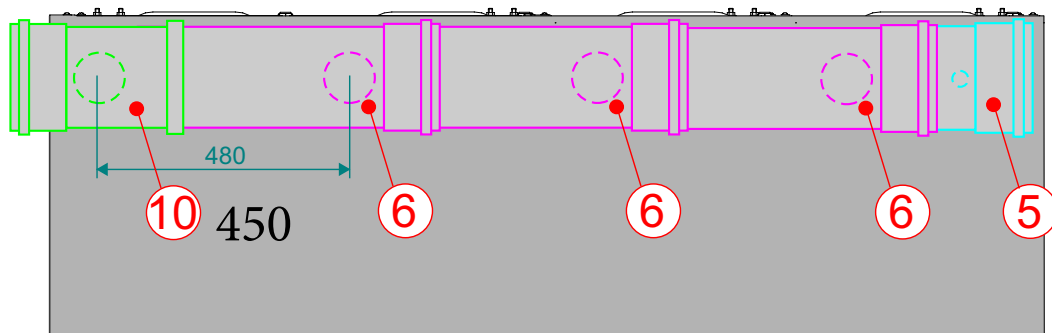


Smoke accessories Ø 200

 <p>⑤</p>	Siphon	00363843
 <p>⑥</p>	Smoke outlet expansion Kit	00366433
 <p>⑩</p>	Single exhaust manifold	00366437
 <p>⑭</p>	Smoke extension kit	00366435

KON 200





Installation instructions

3.7 - CONNECTION

G	GAS	DN 50 - G 2"
----------	------------	--------------

M	FLOW	DN 80 - G 3"
R	RETURN	DN 80 - G 3"




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

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.



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



Note:

In case of hydraulic outlets on the RIGHT side, change the **SMG (30)**. general flow sensor cockpit .
 The correct position of the pit is indicated on the hydraulic diagram (30 *) see chap. 2.2.

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.

Use this pipes to fill the siphon.



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.

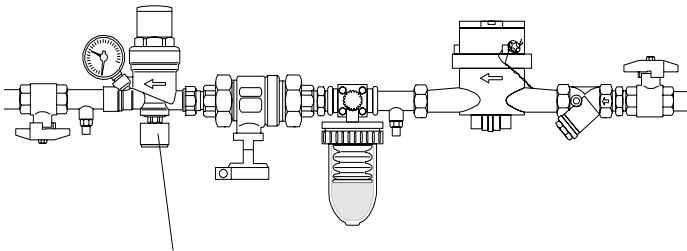


Pressure in the mains supply must be between 0.5 and 6 bar (In case of higher pressure a pressure reducer it must be installed)



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

EXAMPLE OF THE SYSTEM'S LOADING UNIT



UNIT OF LOADING

To fill the system, you must provide a filling valve on the system's return.

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.

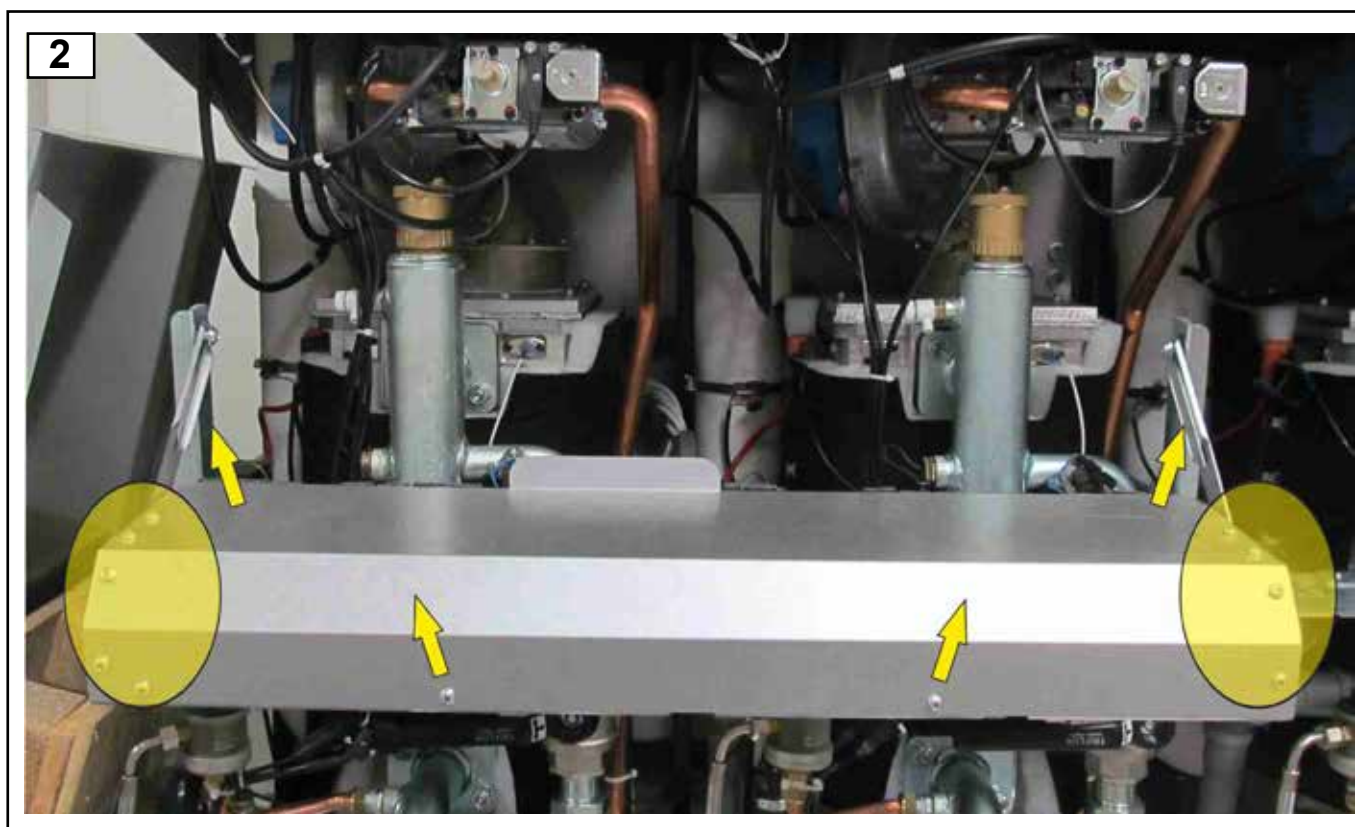
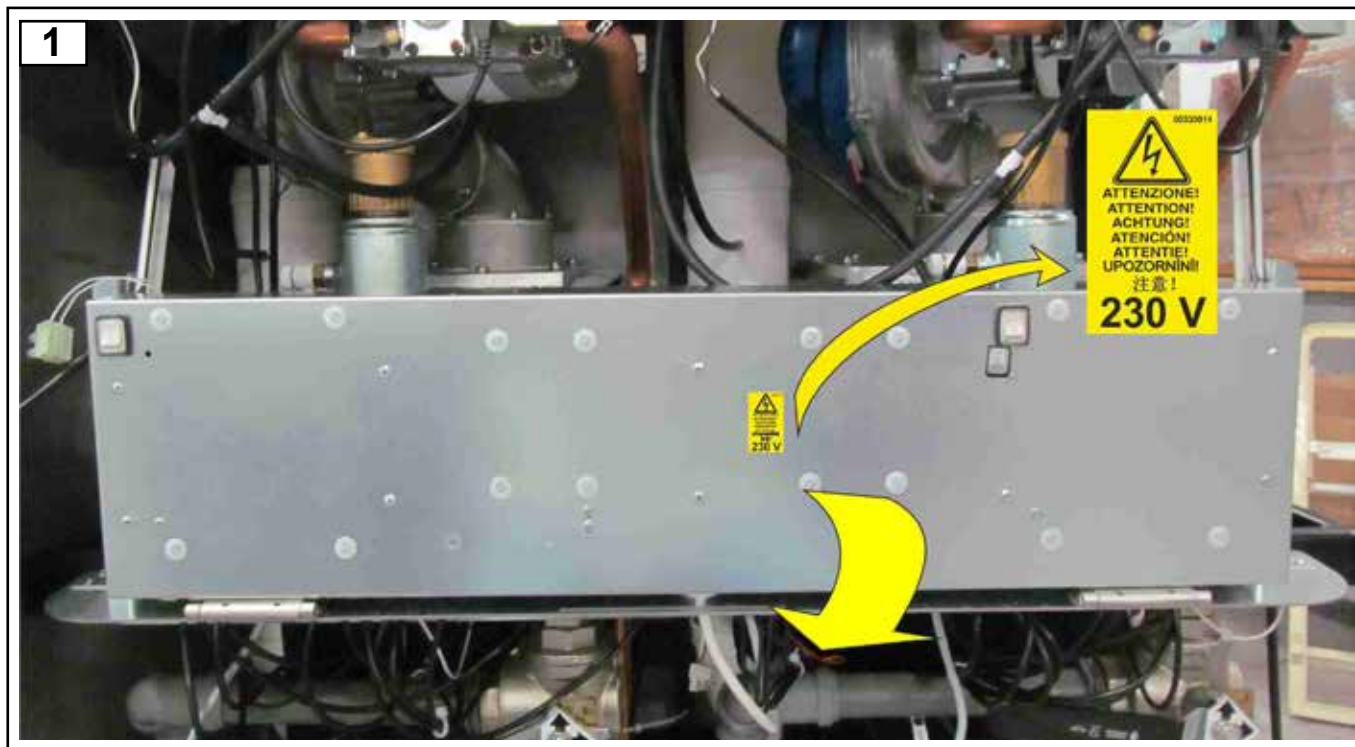
The system must be equipped with its own drain valve, with a size suitable to the capacity of the system.

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



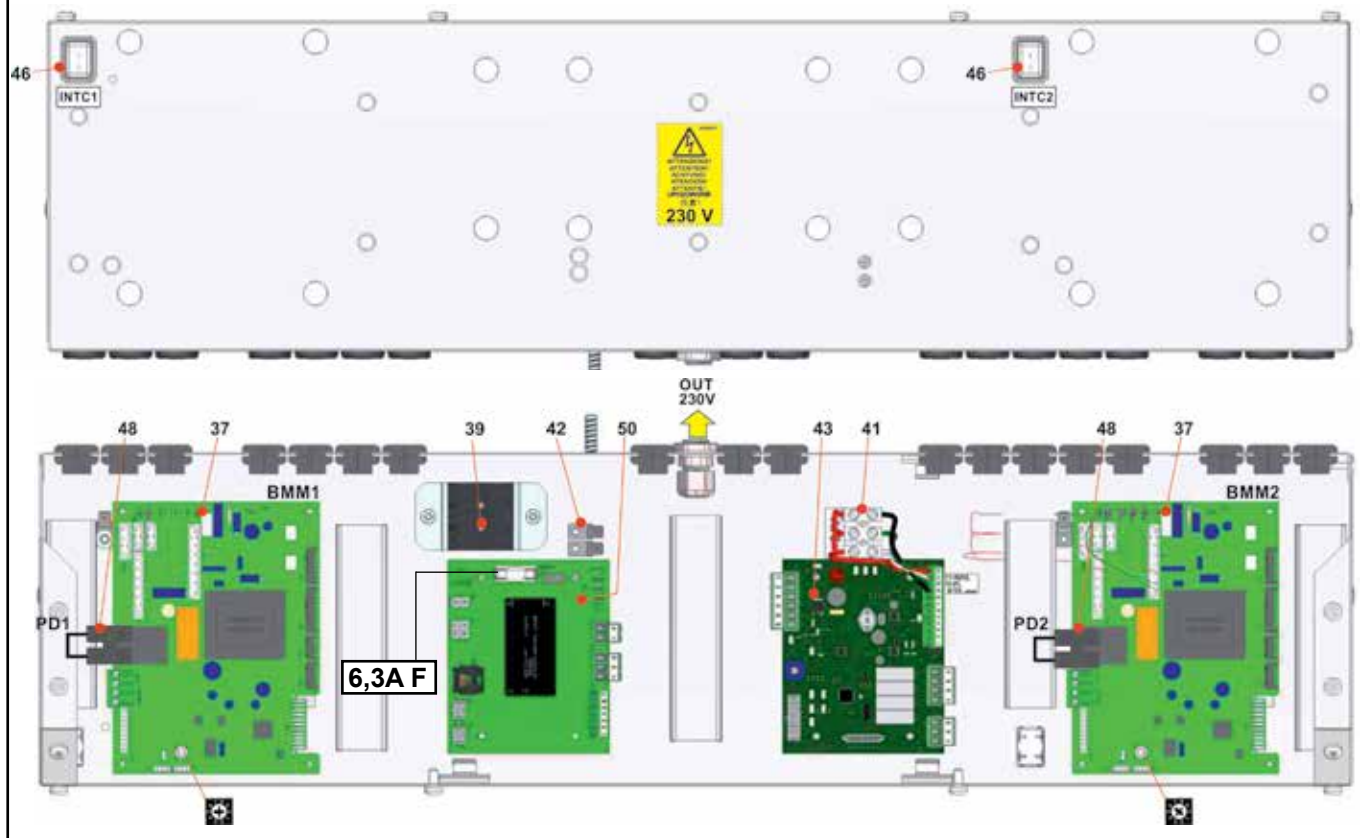
NOTE!
For more information
See Technical Info
from site indicated at pag. 2

3.9 - ELECTRICAL CONNECTIONS



Installation instructions

KONf 200 - KONf 400



KONf 400



KEY		
N°		Description
37	BMM	Burner management board
39		230 V Power Supply Terminals
41		Supplementary terminal +24V BCM

42		eBus connessione
43	BCM	Boiler controller
46	INTC	Switch Inhibit Body 1 - 2 - 3 - 4
48	PD1 - PD2	Connection FL flow switch 1-2-3-4
50		Power supply PCB



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.



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

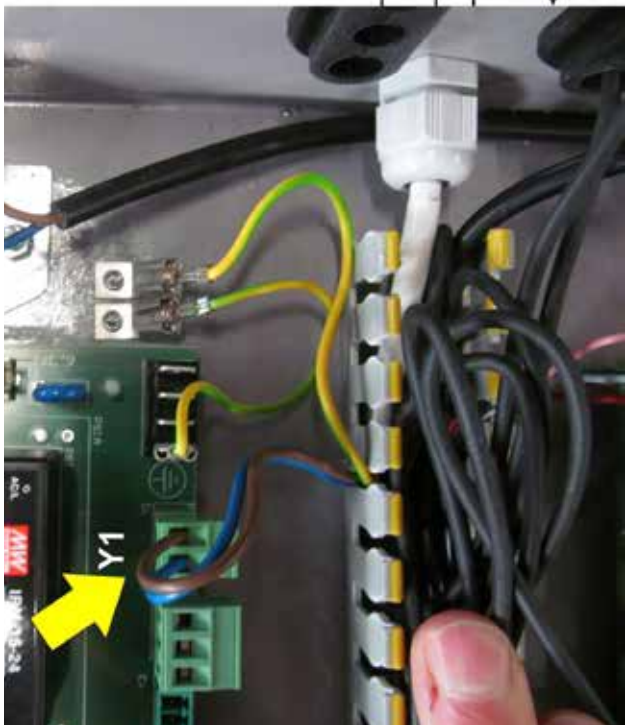
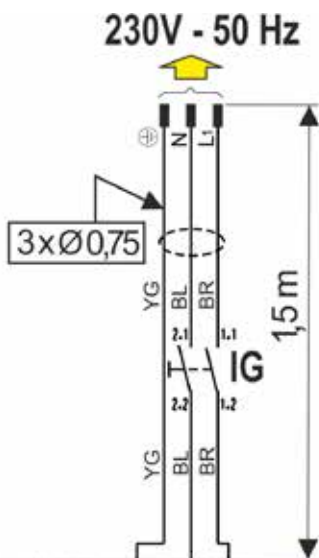


Remember that a bipolar switch must be installed on the boiler power line with over 3 mm between contacts, easy to access, making maintenance quick and safe.

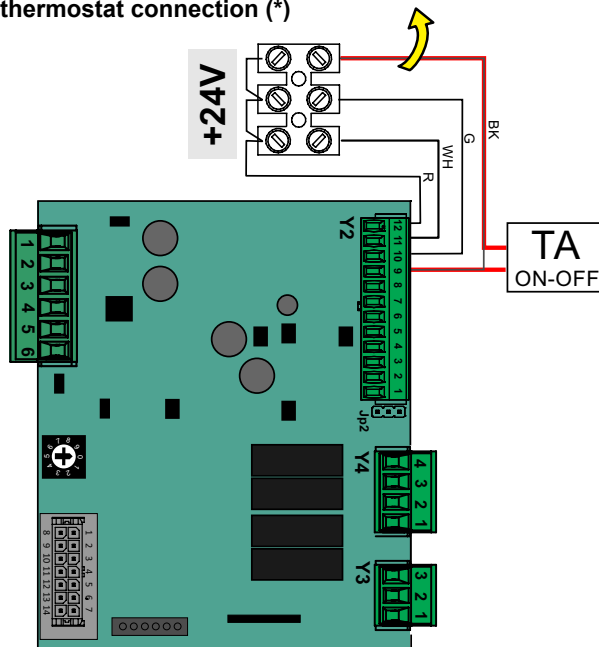


ATTENTION!
 Comply with the PHASE and NEUTRAL polarity since flame detection is Phase Sensitive.

Electric power supply connection



ON/OFF room thermostat connection (*)



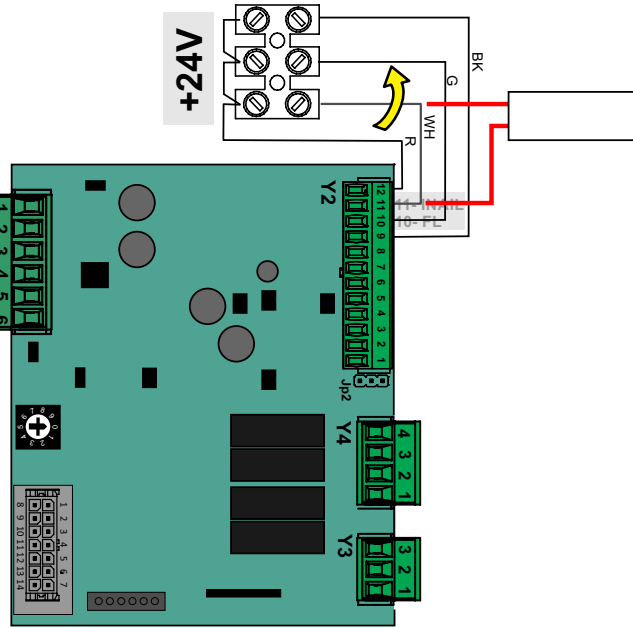
- (Y2 - 9 and terminal board M2) after removing the jumper.

(*) Optional



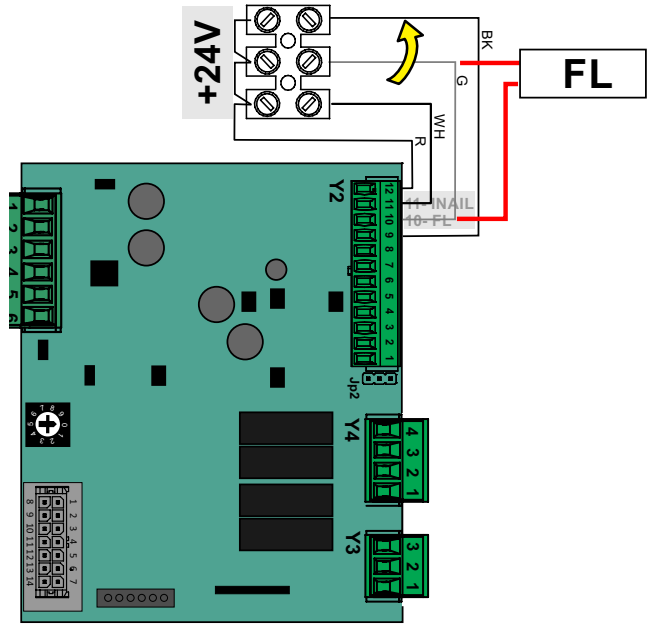
ATTENTION:
 The 230 V cables must run far apart from 24V cables.

Safety connections



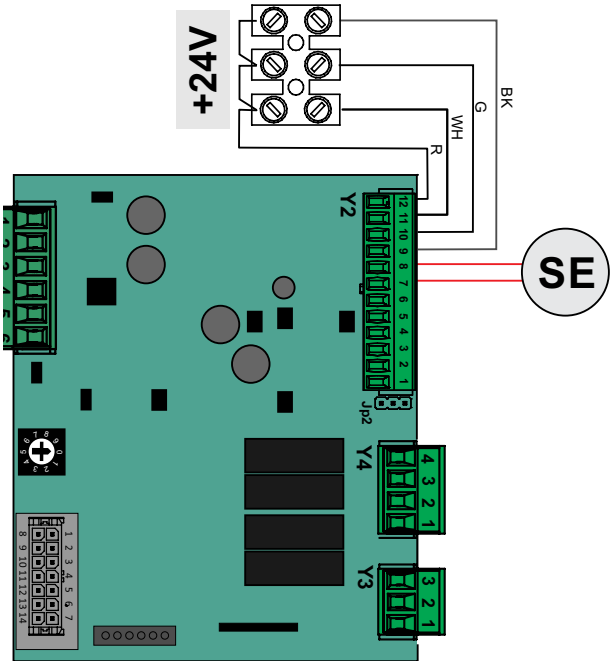
- Remove the jumper and connect the cables as indicated between (Y2 11 and terminal board M2).

FL connection Flow switch (*) **NOT USED**
for connections refer to instructions contained in the FLOW switch kit



- Remove the jumper and connect the cables as indicated between (Y2 10 and terminal board M2).

External probe connection (*)



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



NOTE:

The boiler is set up for direct flow and storage tank management.

If **Stemp. ACC** is connected automatically, DHW is activated, which will have priority management with regard to direct flow through the pumps shown below.

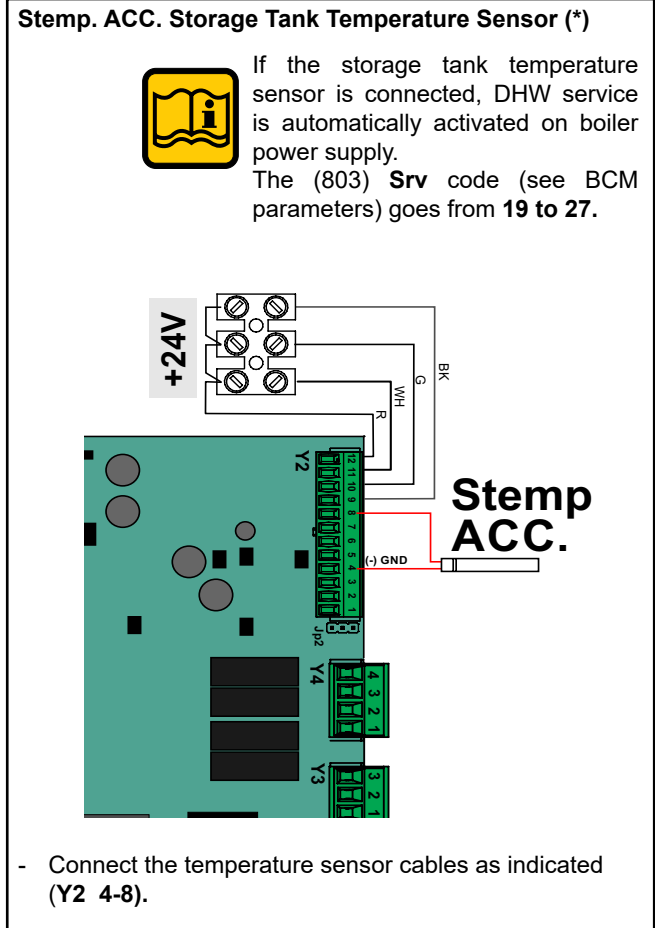
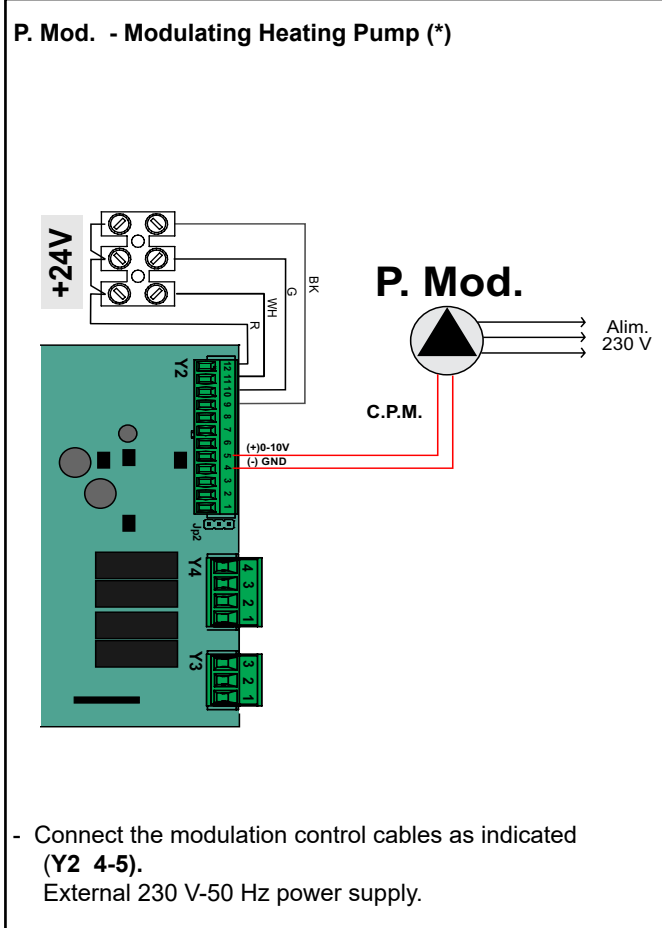
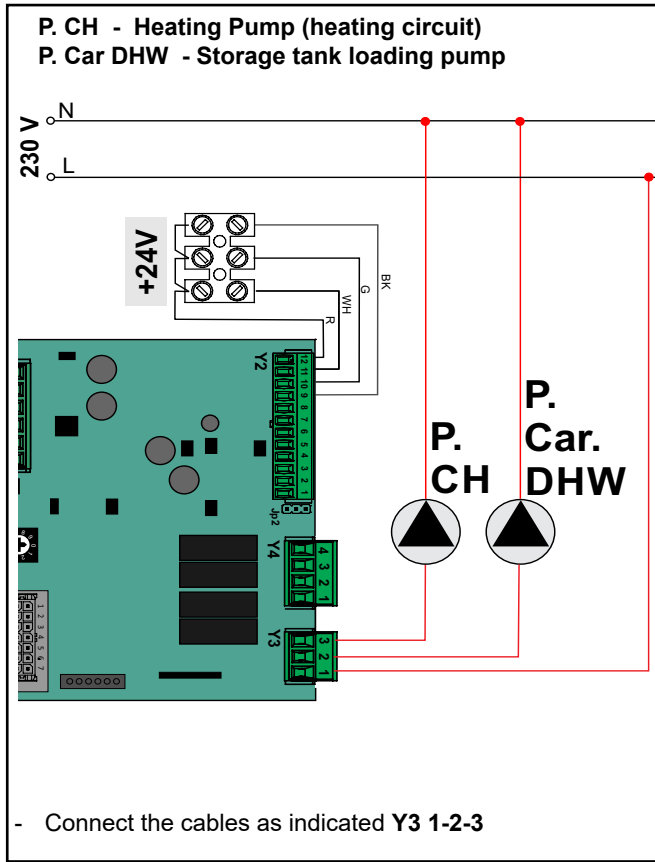
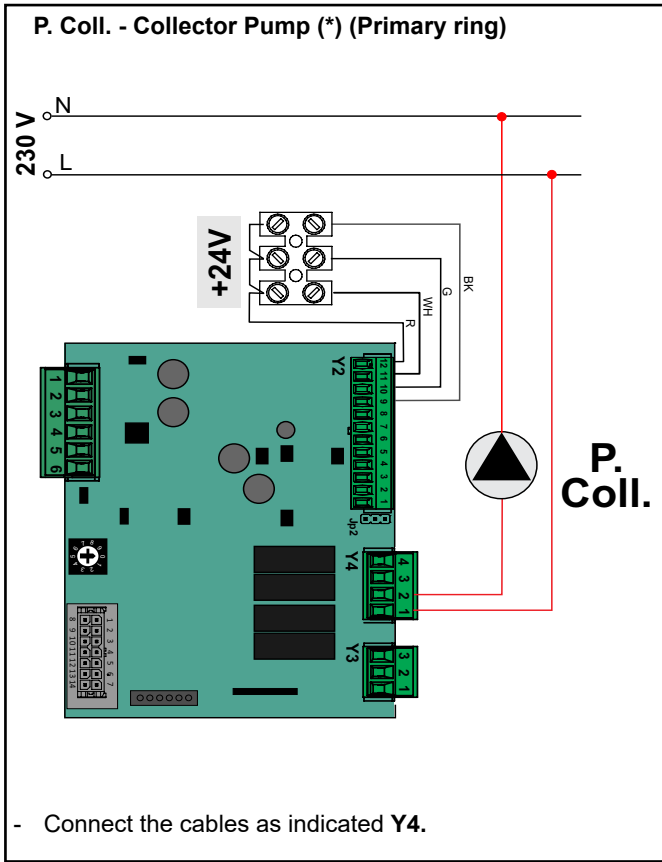
Should additional services be requested (storage

tanks, mixed areas, solar, etc), you must purchase **SHC** multi-function modules to connect to the local bus for total management through **HSCP** (and **UFLY**) heating controller.



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

(*) Optional



Installation instructions

3.10 - COMMISSIONING

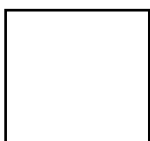


Commissioning must be done by professionally qualified personnel. Unical AG S.p.A. will not be held liable for damage to persons, animals or objects due to failure to comply with the above

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?	<input type="checkbox"/>
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?	<input type="checkbox"/>
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?	<input type="checkbox"/>
is the power supply of the boiler 230V - 50Hz?	<input type="checkbox"/>
has the system been filled with water (approximately 0.8/1 bar pressure on the pressure gauge with the pump stopped)?	<input type="checkbox"/>
Has the condensation drain trap been filled with water as indicated in chapter 3.7?	<input type="checkbox"/>
are any system shut-off gate valves open?	<input type="checkbox"/>
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;	<input type="checkbox"/>
is the gas supply valve open?	<input type="checkbox"/>
has the system been checked for gas leaks?	<input type="checkbox"/>
is the outside main switch ON?	<input type="checkbox"/>
is the system safety valve efficient and is it connected to the drains? is the condensation drain trap connected to the drains?	<input type="checkbox"/>
has the system been checked for water leaks?	<input type="checkbox"/>
are the ventilation conditions and minimum distances to perform any maintenance ensured?	<input type="checkbox"/>
have the GAS, HEATING and DOMESTIC HOT WATER pipes been cleaned thoroughly with products suitable for each circuit?	<input type="checkbox"/>
has a surveillance and protection system against gas leaks been installed? (Optional)	<input type="checkbox"/>
are the system pipes NOT used as the electrical system earthing?	<input type="checkbox"/>
has the system been sized properly bearing in mind the radiator pressure drops? thermostatic valves, radiator stop valves	<input type="checkbox"/>
has the operator been trained and has the documentation been supplied?	<input type="checkbox"/>
Please tick the operations performed	



Switching boiler on and off

NOTE!

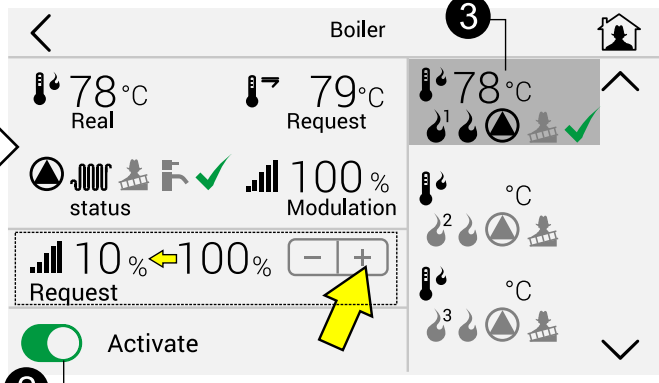
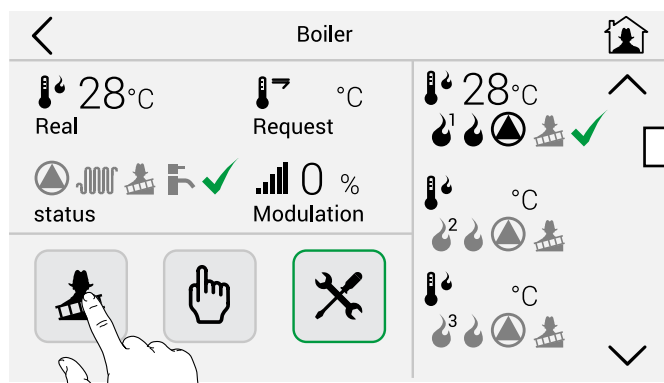
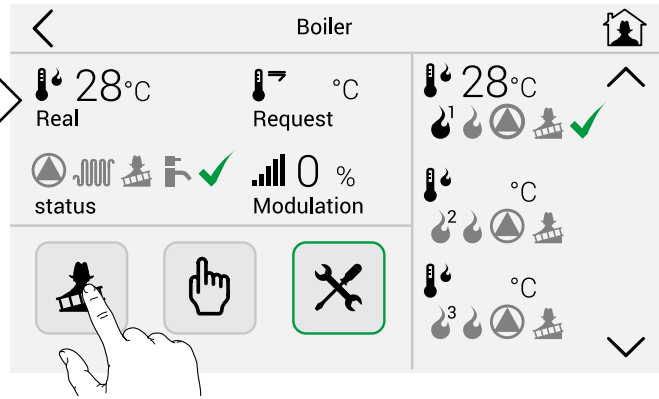
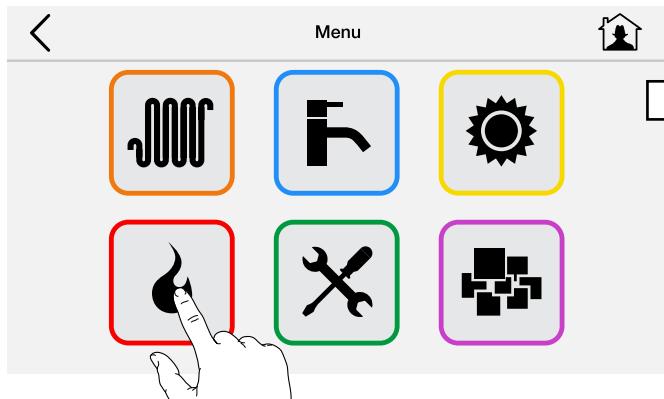
For more information
See Technical Info
from site indicated at pag. 2



3.11 - ACTIVATION OF THE CALIBRATION FUNCTION (Burner Menù)

WARNING!
 Function reserved exclusively to authorized service centers.

3.11.1 Sweeper function

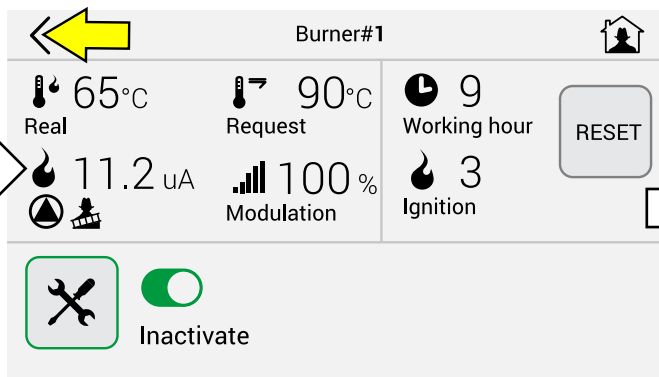
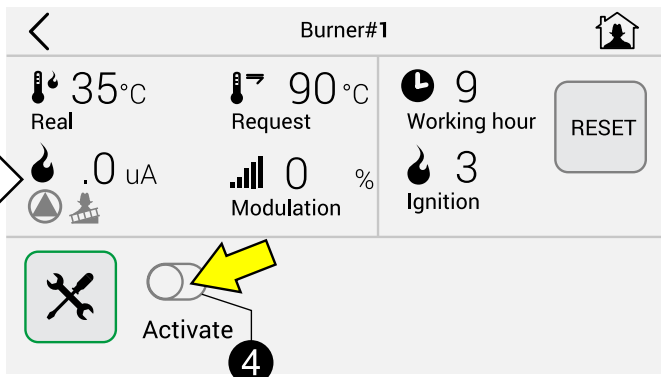


1 - Insert psw and select sweeper again

- | |
|---|
| Vary % mod. request from 10 % to 100 % |
| 2 - Activation |
| 3 - Chose burner among those available, eg: usually 1 / modulex (from 1 to 8). |

Note: once selected the burner, (3) the display page changes: Burner # 1 # 8

Installation instructions



4 - Activation

Note: the selected burner is running at maximum power (modulation 100%)
 Pressing button < go back one page, burner menu'.



Boiler

71°C Real 90°C Request 73°C

status Modulation 100%

Request 100%

Activate

1 2 3

5 - Burner operating to maximum power (modulation 100%).

Boiler

71°C Real 90°C Request 79°C

status Modulation 0%

Request 10%

Activate

1 2 3

6 - Vary % of modulation request to the minimum 10% and select the burner

Burner#1

79°C Real 90°C Request 9 Working hour

0.9 uA Modulation 0% 3 Ignition RESET

Inactivate

7 - Boiler operating with modulation min. (modulation 0%).

Burner#1

55°C Real 79°C Request 9 Working hour

0.1 uA Modulation 0% 3 Ignition RESET

Activate

8 - Disable SWEEPER function. Exit by pressing Home icon.

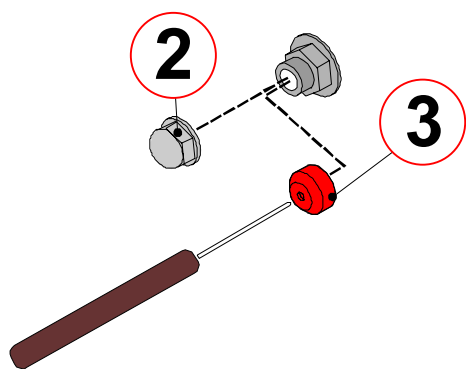
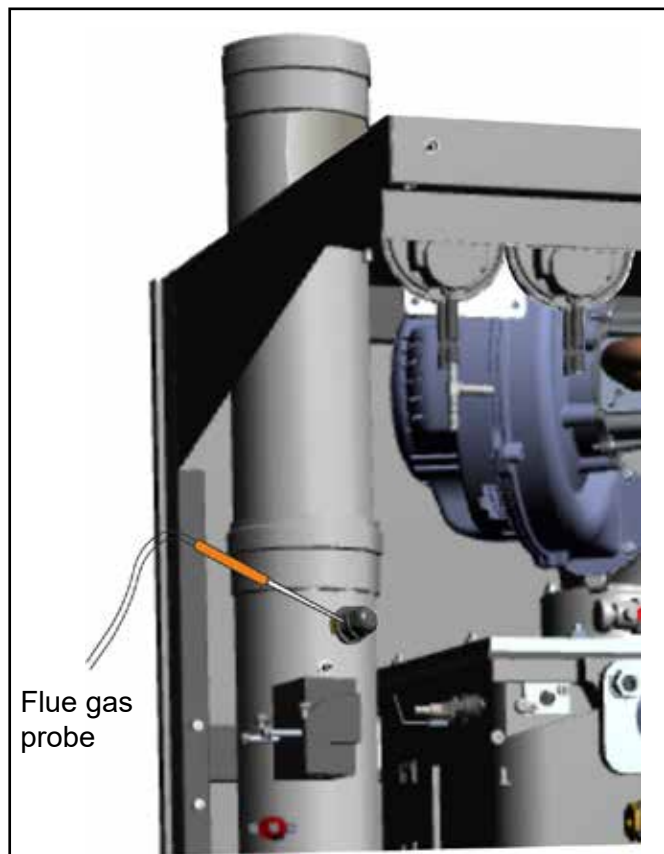
8

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 CO_2 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**.

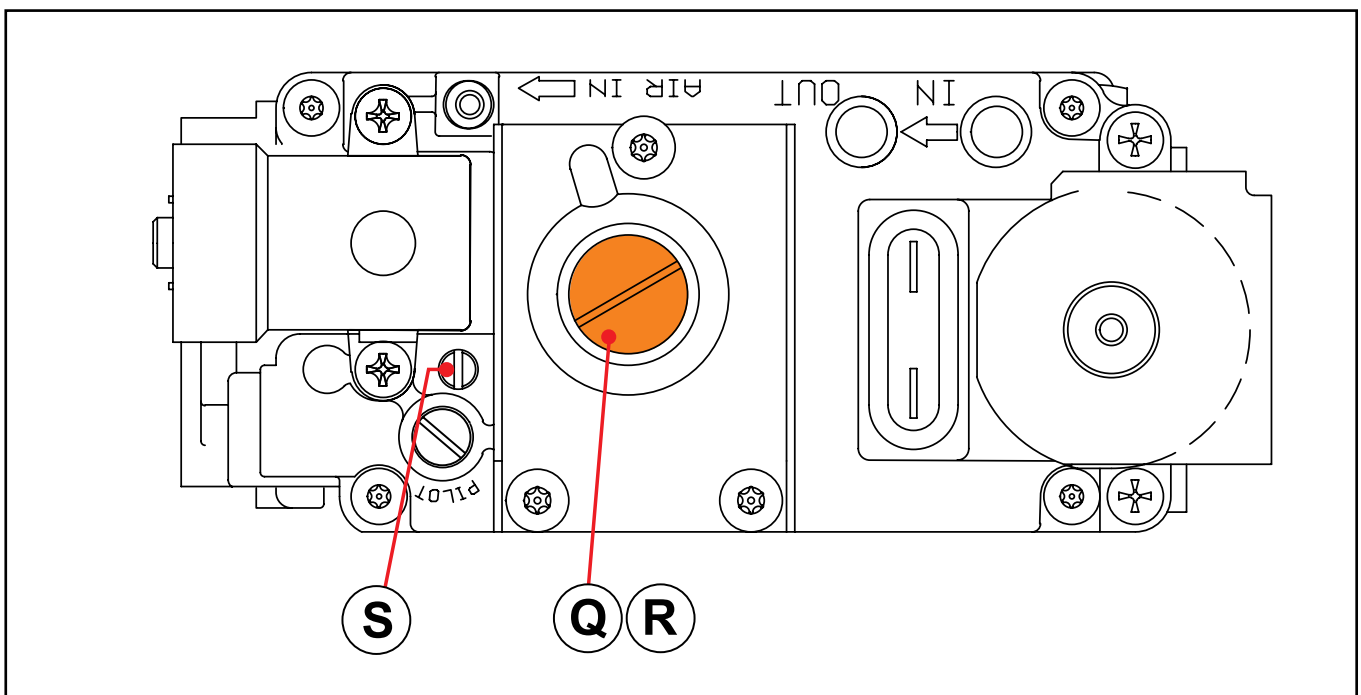
- Remove the cap 2 and insert the CO₂ analysis probe in the flue gas sample point of the intake/exhaust terminal, see chap. 3.11.2.

1) Maximum output adjustment

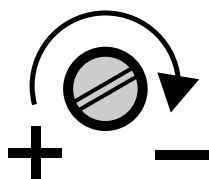
- Operate the boiler in "calibration" mode at MAXIMUM OUTPUT (see 3.11.1)
- Once the burner is on check that the CO₂ "MAXIMUM" value corresponds to that indicated in the table "NOZZLES - PRESSURE".
- if it does not correspond, correct it by turning the screw "S" CLOCKWISE to decrease it, ANTICLOCKWISE to increase it.

2) Minimum output adjustment

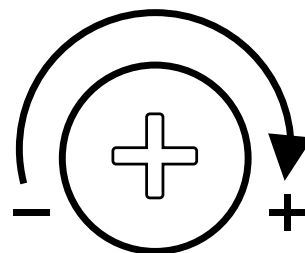
- Operate the boiler in "calibration" mode at MINIMUM OUTPUT (see 3.11.1)
- Once the burner is on check that the CO₂ "MINIMUM" value corresponds to that indicated in the table "NOZZLES - PRESSURE".
- Correct it if needed by turning (with a screwdriver) the screw "R"; CLOCKWISE to increase it, ANTICLOCKWISE to decrease it



(S)
ADJUSTMENT SCREW
MAXIMUM OUTPUT



(R)
ADJUSTMENT SCREW
MINIMUM OUTPUT



3) Conclusion of the basic calibrations

- once the CO₂ 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 CO₂ 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 200 / 400								
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
Nat. Gas(G20)	20	-	14	24	85	8,6	9,3	35
Nat. Gas(G25)	25	-	-	22	84	8,6	9,1	35
Propane (G31)	37	-	14	23	78	9,6	10,6	35

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



NOTE!
Further details in the section “Technical Information” on the boiler page of the www.unicalag.it website

Edit the parameters

FH and FL max and min Fan speed.

(*) for values, see TABLE NOZZLES-PRESSURE-CAPACITY)

M E T A N O	G P L	Code	Symbol	Description	Value
		526	FU	Fan: Maximum speed	(*)
		346	FL	Fan: Minimum speed	(*)

- Follow the instructions regarding Burner Adjustment (Chap. 3.12 /METHANE/LPG gas valve shutter).
- 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

Data - Fecha
Date - Datum 08, 09, 05

Firma - Signature
Unterschrift [Signature]

- Regolata per G 20

- Réglée pour G 25

- Adjusted for G 30

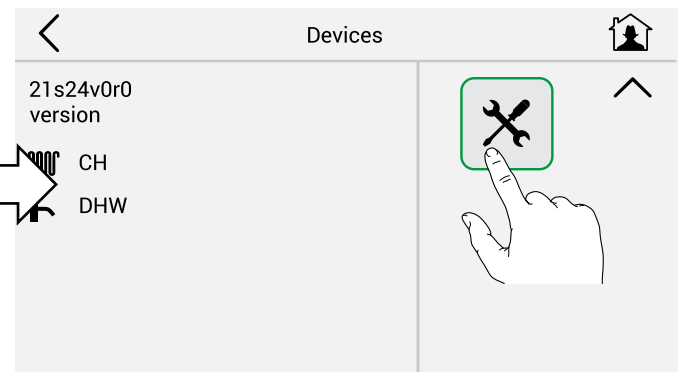
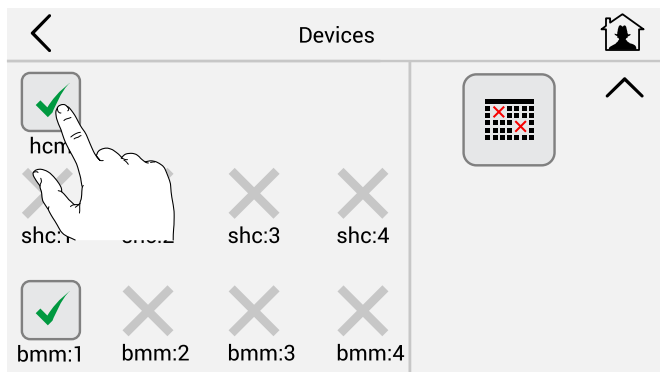
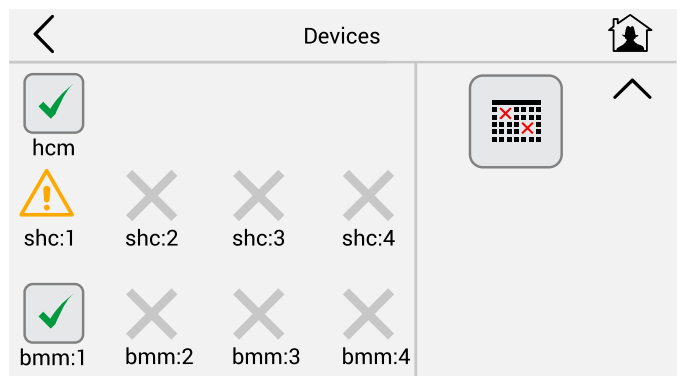
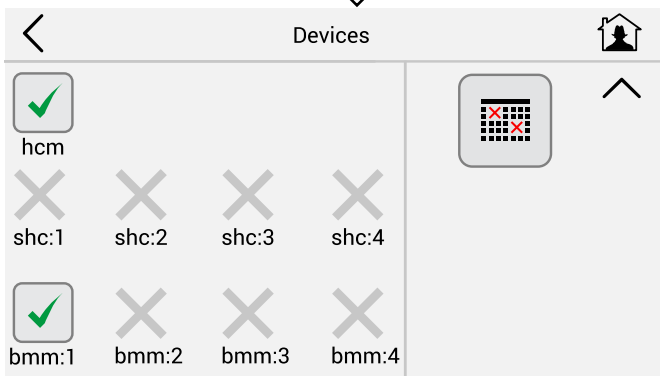
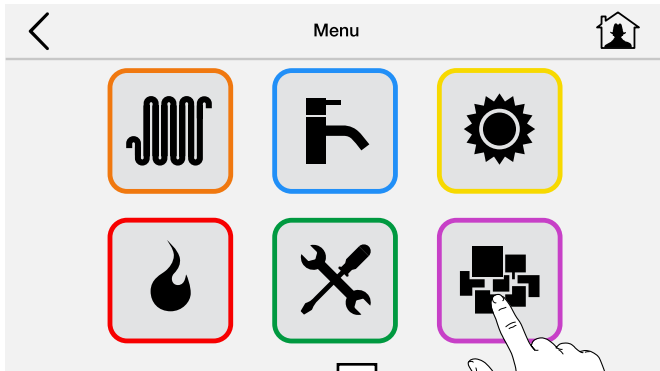
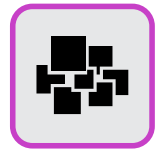
- Reglada para G 31

- Eingestellt für G 31

ETI 4530C

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3.14 - PROGRAMMING OF THE OPERATING PARAMETERS

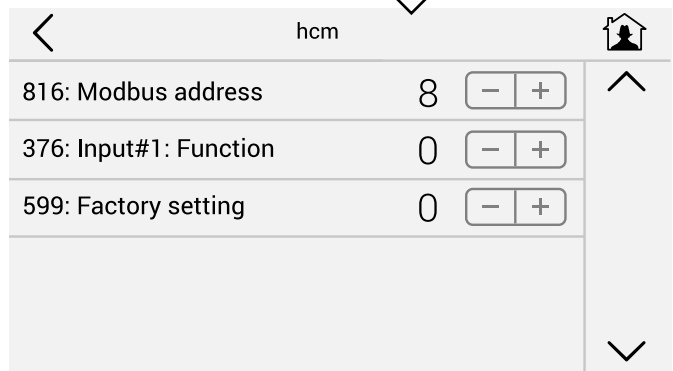


At every boiler lighting, UFLY BOX scans devices, if new devices are recognized, such as:

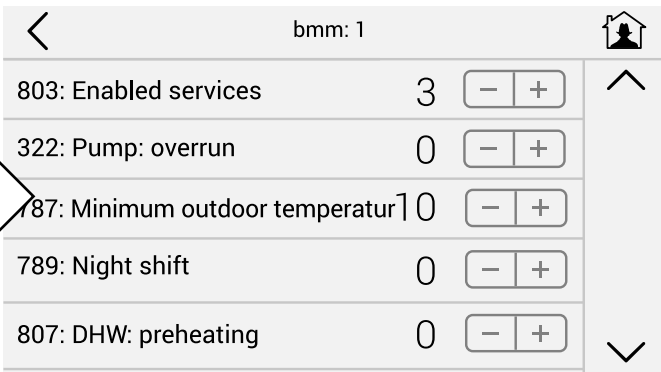
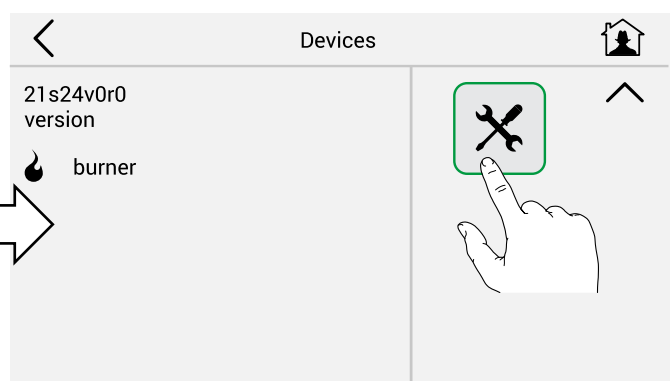
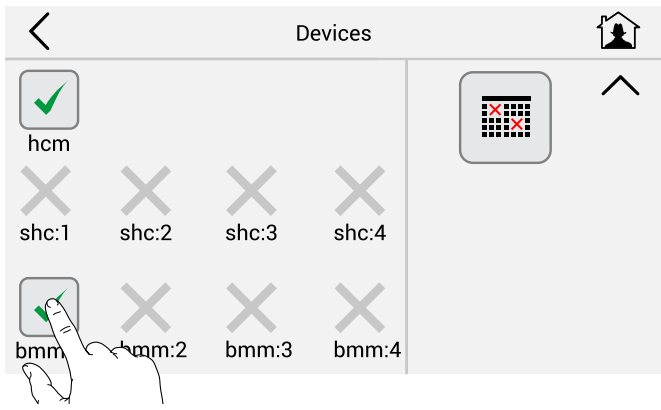
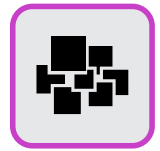
hcm / bcm	Heating / Burner Control Manager System manager / Cascade
shc	Slave Heating Controller Multifunction module
bmm	Burner Modul Manager

They are displayed on the next screen, and is prompted to save the new configuration.

	Icon scanning devices
	Icon save new configuration



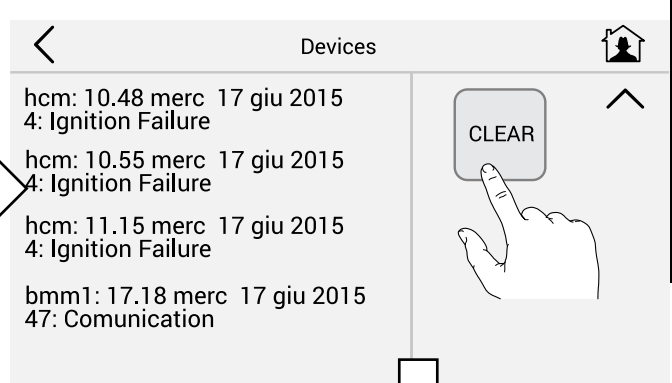
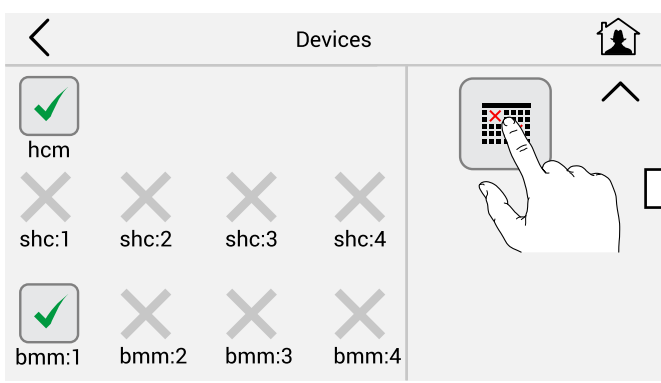
	Detected Device
	Not installed device
	Device previously detected, but not detected at the moment .



BMM / HCM Parameter

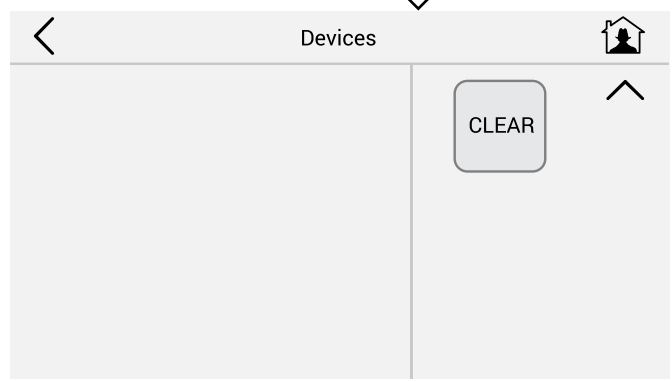
List of parameter in par. 4.2 instruction manual of the boiler

To change the parameters is required password.



Historical Error

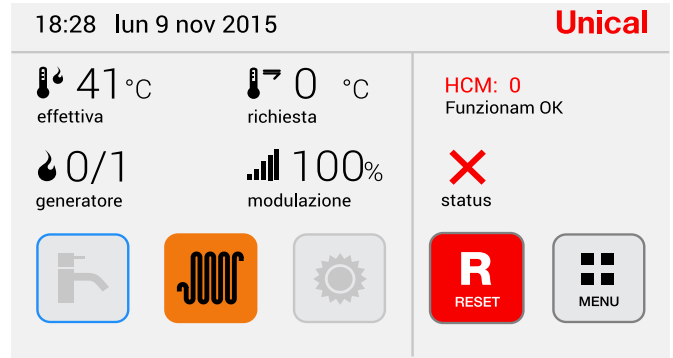
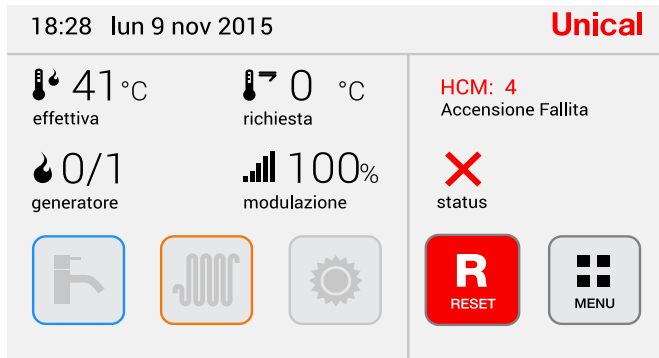
Delete history with Button Clear (password).



BMM parameters						
COD	SiMB	DESCRIPTION PARAMETER	U.M.	RANGE		DEFAULT SETTING
				MIN	MAX	
803	Srv	Enabled Services		0	3	
31	HL	CH#1: Minimum Set-point	°C	20	45	
39	HH	CH#1: Maximum Set-point	°C	50	90	
322	Po	Pump: Post-circulation	min	0	10	
341	PL	Pump: Minimum Control	%	0	100	
313	Pr	Pump: Maximum Control	%	20	100	
368	VA1	Programmable Relay # 1		0	1	
773	dr	Enable request sensor		0	1	
650	dL	ACS: Minimum Setpoint	°C	25	45	
385	dH	ACS: Setpoint Max.	°C	50	65	
310	DpT	DHW Pump: Postcirc.	sec	0	600	
360	dt	Storage Tank Adjustment		0	15	
320	tH	Hysteresis of water tank	°C	0	30	
309	St	Application Code	%	0	4	
619	IG	Relative fan speed at burner pre-purge and ignition	%	0	100	
314	Sb	Relative fan speed at burner standby	%	0	100	
319	FH	Maximum relative fan speed	%	0	100	
346	FL	Minimum relative fan speed	%	0	100	
2590		Burner maximum capacity	kW	1	1000	
483	rP	Water Δ -temperature protection:	°C	0	50	
622	FS	Water minimum flow-rate protection		0	1	
34	HY	Burner OFF hysteresis	°C	5	20	
336	HS	Temperature control: slope limit.	°C/MIN	1	30	
353	HP	Temperature control: proportional gain		0	50	
354	HI	Temperature control: integrative gain		0	50	
478	Hd	Temperature control: derivative gain		0	50	
486	FP	Fan speed control: proportional gain		0	50	
487	FI	Fan speed control: integrative gain		0	50	
337	Fr	Fan speed slope (rpm/min)	rpm/min	0	30000	
526	FU	Maximum absolute fan speed	Hz	50	120	
488	Fb	Fan PWM modulation at maximum fan speed		1	20	
527	PU	Fan tachometer: pulse/revolution		2	3	
777	AFC	Burner air-flow check		0	1	
793	COC	Chimney obstruction check		0	1	
783	0	unknown parameter		0	1	
896	TU	Temperature unit:		0	1	
768	LG	Low gas pressure protection		0	1	
771	PS	LowWaterFlow		0	2	
1056	Fc	Installation loading factor		1	10	

PARAMETRI HCM (BCM)						
COD	SIMB.	DESCRIPTION PARAMETER	U.M.	RANGE		DEFAULT SETTING
				MIN	MAX	
803	Srv	Enabled services		0	3	
483	rP	CH: Temp. Differenziale Max	°C	0,0	50,0	
34	HY	Burner OFF hysteresis	°C	5,0	20,0	
31	HL	CH: Setpoint min	°C	20,0	40,0	
39	HH	CH: Setpoint max	°C	45,0	85,0	
786	ES	Outdoor Temperature sensor		0	2	
322	Po	Pump: Postcirculation	min	1	10	
341	PL	Pump: Minimum command	Volt	0,0	10,0	
313	Pr	Pump: Maximum Command	Volt	0,0	10,0	
346	FL	Minimum Modulation	%	0,0	100,0	
800	mB	Burners: Min. Inserted		1	8	
336	HS	Temperature Gradient	°C/min	1	30	
353	HP	CH PID: Proportional	°C	0	50	
354	HI	CH PID: Integrative		0	50	
478	Hd	CH PID: Derivatives		0	50	
816	MI	Modbus address		1	127	
817	MT	Modbus timeout	sec	0	240	
896	TU	Temperature unit:		0	1	
309	St	Application Code		0	1	

3.15 - ERROR CODES



Fault that causes the boiler to stop:

- The error code is displayed, the boiler has stopped running. After solving the failure, press Reset to restart the boiler.

Fault that does NOT cause the boiler to stop:

- The error code is displayed, the boiler has a heating request, Reset icon (informing that a failure has been detected, even if the fault was temporary). Therefore, you must always carry out reset to cancel the word "Error" displayed.

(Num) = see key Par. 2.2

SYMBOL	DESCRIPTION OF FAULT DETECTED ON BMM	SOLUTION
01	SAFETY THERMOSTAT Intervention of the safety thermostat (10)	Press the unblock button on the panel and/or check that the thermostat or its connections are not interrupted, make sure the switches INTC are closed (position 1)
04	BLOCK No gas or failed burner ignition	Check the gas supply or that the ignition/detection electrode is working properly (4).
05	LOSS OF FLAME DURING OPERATION.	Verificare elettrodo rilevazione
06	HIGH TEMPERATURE Boiler temperature too high	Check pump operation and if needed clean the exchanger (24)
08	WATER DEFICIENCY Insufficient water pressure and consequent intervention of the minimum water pressure - pressure switch (13).	
10	INTERNAL FAULT	
11	Flame detection before ignition (flame parasite)	Check detection electrode connection, probable contacts oxidation
12	HEATING SENSOR (11) Heating sensor fault	Check the efficiency of the sensor (see table Res/Temp) (Par.4) or its connections.
14	RETUR HEATING SENSOR Auxiliary (SRR) sensor interrupted	Check the wiring, if needed replace the auxiliary sensor (22)
15	WATER CIRCULATION INSUFFICIENT Primary circuit water circulation insufficient ($\Delta t > 40^\circ \text{C}$)	Check pump operation and speed - remove any heating system obstructions.
16	EXCHANGER FREEZING (24) Exchanger freezing is detected If the heating sensor detects a temperature below 2°C , burner ignition is inhibited until the sensor detects a temperature above 5°C .	Disconnect the from the power supply, close the gas valve, defrost the exchanger carefully.
22	LACK OF AIR IN IGNITION Stop	Verify that the fan has a prevalence of at least 60 Pa.

23	UNATTENDED AIR FLOW	Min pressure switch blocked (closed)
24	SPEED OUT OF CONTROL Alteration of the fan speed; the speed is not reached.	Check fan operation (18) and the connections
26	SPEED OUT OF CONTROL Alteration of the fan speed; the speed is above that requested	Check fan operation (18) and the connections
27	LACK OF AIR Stop	Verify that the fan has a prevalence of at least 60 Pa.
30	FACTORY PARAMETERS Alteration of the factory parameters or possible electromagnetic interferences.	Press the unblock key; if the anomaly persists, replace the board
32	Line voltage at 80% of the nominal value. Wait until the line voltage is > 85% of the nominal value. .	Correction: if the line voltage is < 190Vac: the line voltage is really below the minimum limit, otherwise there is a monitor line error: replace BMM
CODE	DESCRIPTION detected on HCM (BCM)	SOLUTIONS
2	GAS PRESSURE MINIMUM PRESSURE SWITCH TRIGGERED stop effect	The ignition procedure is inhibited until gas pressure reaches the correct values.
17	EXCHANGER FREEZING (24) stop effect	Try to Reset since the system automatically activates an antifreeze function, therefore, it could only be a warning.
18	FLOW-RETURN ΔT MAXIMUM PRESSURE stop effect	Check circulation, check installation (only with a return probe present).
19	FLOW OVERTEMPERATURE. It is activated when the flow temperature is > 95. Resetting is automatically carried out when the temperature is < 80. Effect: Stop burner, Pump On	Circulation control
28	CLOGGED OUTLETS Stop	Check the Chimneys / Check the trap.
29	WATER IN THE COMBUSTION CHAMBER Stop	Check the combustion chamber / check the siphon.
37	PARAMETERS MEMORY DEFECTIVE Flame Block	Contact Customer Care
38	DAMAGED DEFAULT PARAMETERS due to electromagnetic interferences. stop	Contact Customer Care
40	FL INTERVENTION insufficient water circulation Stop	Check water circulation
56	NO REMOTE CONTROL DETECTED Flame Block	Check electrical connections e-BUS1
57	BMM BOARD NOT DETECTED stop	check electrical connections BMM and e-BUS
58	FLOW SENSOR Stop	Connect a new sensor if the code disappears, replace the sensor otherwise check the electrical connections
93	ISPESL SAFETY INTERVENTION Stop	check the safety parts, manually reset after blocking each individual safety device.

The error codes are displayed in the info row of the remote console and remain there even if the fault is temporary. Therefore, you must always reset to cancel **"Alarm" displayed**.

4

INSPECTION AND MAINTENANCE



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.



OBLIGATION!
wear gloves protective



Danger of burns!
during maintenance operations.

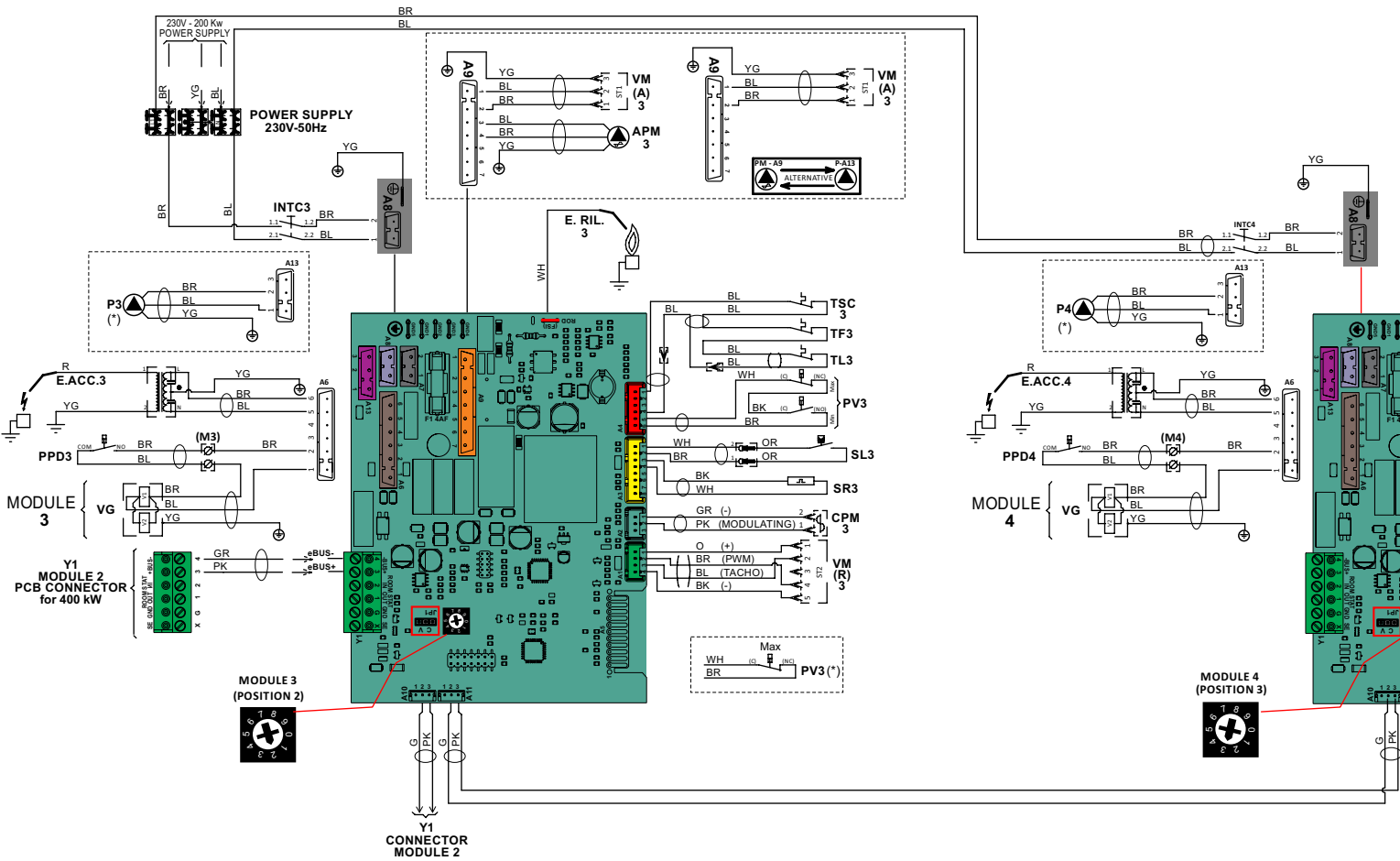
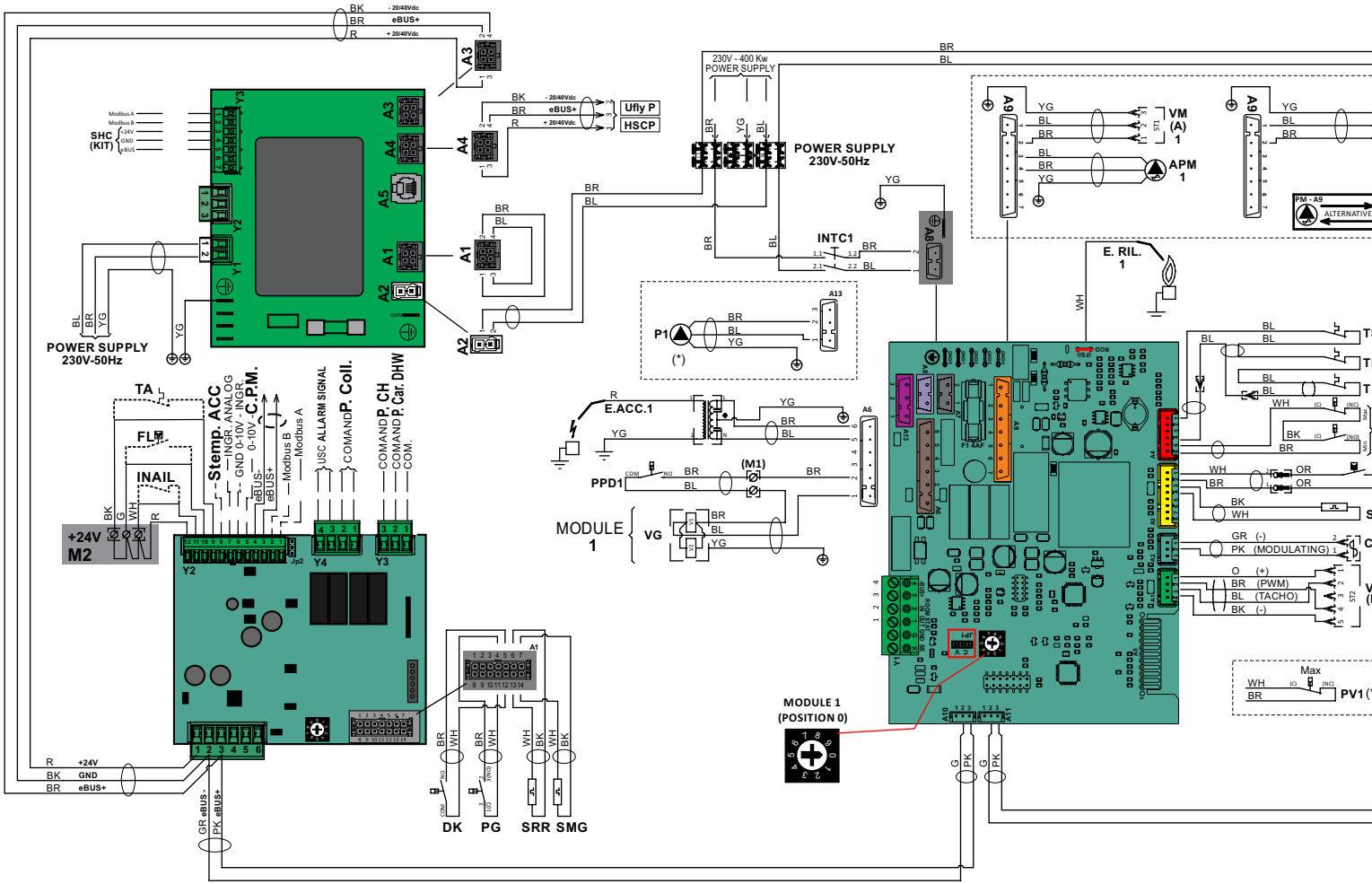
TABLE OF RESISTANCE VALUES, ACCORDING TO THE TEMPERATURE, TO THE HEATING PROBE 11 (SR) AND ANY HEATING RETURN PROBE 22 (SRR) see par. 4.5.

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

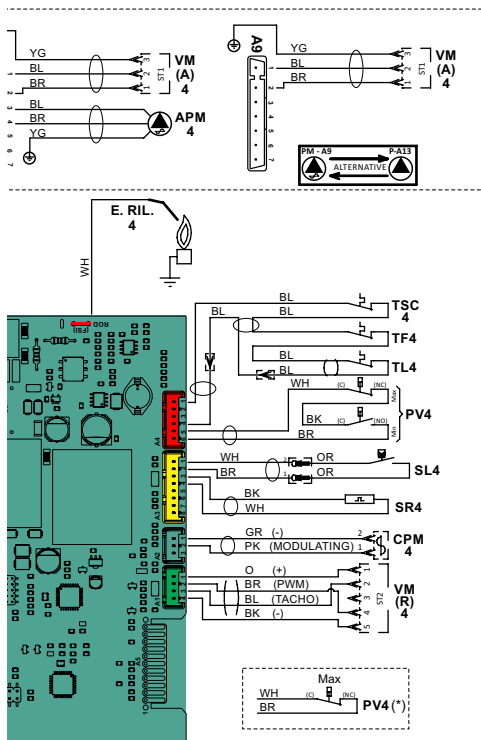
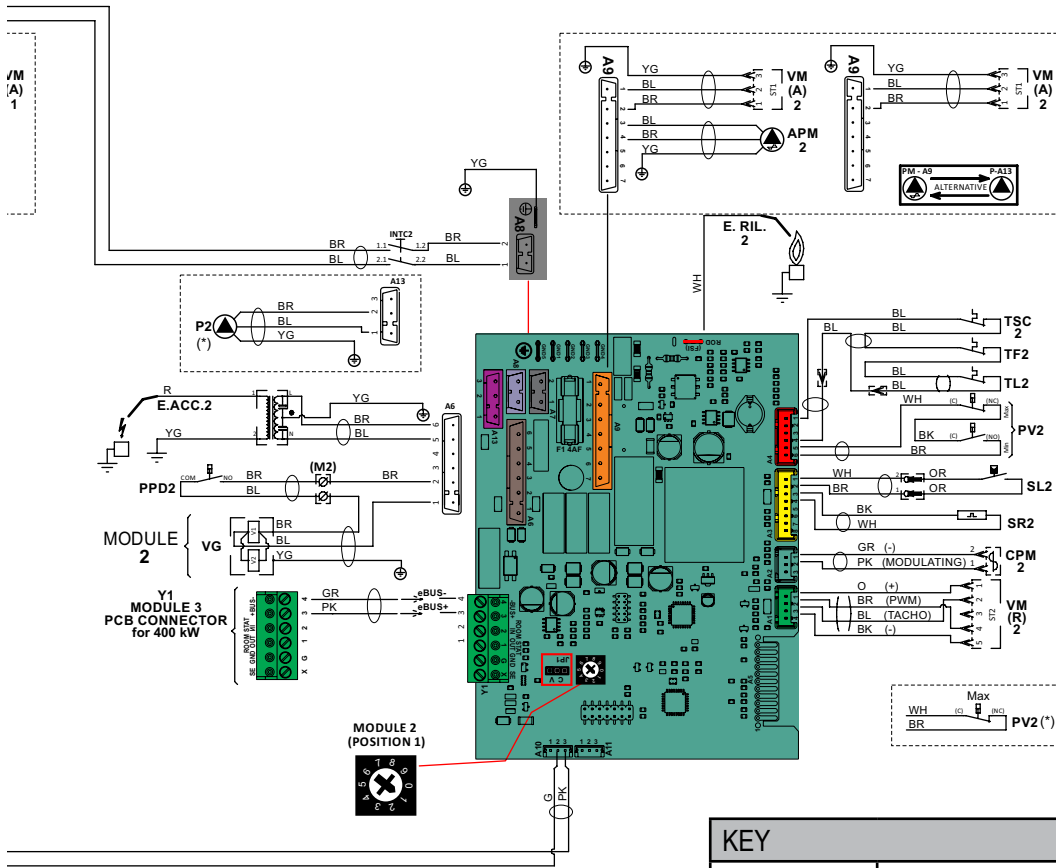
Relation between the temperature (°C) and the nom. resistance (Ohm) of the heating probe SR
Example: At 25°C, the nominal resistance is 10067 Ohm At 90°C, the nominal resistance is 920 Ohm

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 not detected	Detach the electrode ionisation wire and check the securing time. Check connection cable (oxidation socket) or condizoni / detection electrode placement.
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		

4.5 - PRACTICAL CONNECTION 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.....A9	Services connectors
ALIM. E8	Supply PCB for HSCP (*)
APM	Supply for Modulating Pump 1-2-3-4
DK	Safety low water pressure switch
E. ACC.	Ignition electrode 1-2-3-4
E. RIL.	Detection electrode 1-2-3-4
INTC	Switch inhibition body 1-2-3-4
HSCP	Heating controller
M1	Boiler Power Supply Terminal Board
MVD	Motore valvola deviatrice
P	Pump 1-2-3-4 (only for russia)
SR	Heating sensor 1-2-3-4
M2	Terminal board for safe device
PF	Smoke Thermostat
PF min	Minimum flue pressure pressure switch (*)
PG	Gas minimum pressure switch
PF max	Gas minimum pressure switch
PV	Fan flow switch 1-2-3-4
SL	Condensate level sensor 1-2-3-4
SMG	Sensor flow general
SR	Heating sensor module 1-2-3-4
SRR	Return sensor heating
T. ACC 1-2	Ignition Transformation 1-2
TL	Limit thermostat 1-2-3-4

TF	Smoke Thermostat 1-2-3-4
TSC	Safe Thermostat aluminium body 1-2-3-4
VG	Gas valve 1-2-3-4
VM (A)	Modulating Fan Power Supply 1-2-3-4
VM (R)	Modulating Fan Det./Adjustment
SE	External probe connection terminals
U-FLY	Heating Controller Touch (*)

BCM services	
FL	Flow switch
INAIL	Connection
TA	Room thermostat
S.temp ACC	Storage Tank Temperature Sensor
INGR. ANALOG	Analogical input
GND 0-10V ING	Analogical input 0-10 V
0-10V C.P.M.	Modulating Pump Control
ALLARM SIGNAL	Alarm Output
Comm P. COLL	Boiler collector pump control
Comm P. CH	Heating pump control
P. car DHW	Storage tank loading pump control
COM.	Common
(*)	Optional or only for some countries

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Unical AG S.p.A. 46033 casteldario - mantova - italia - tel. +39 0376 57001 - fax +39 0376 660556
info@unical-ag.com - export@unical-ag.com - www.unical.eu

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