

XC-K3



1000	1250	1500	1750
2000	2500	3000	



INSTALLATION AND MAINTENANCE INSTRUCTIONS





<https://www.unicalag.it/prodotti/professionale-300/commercial-condensazione-inox/341/xc-k-3>


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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1.2 - SYMBOLS USED IN THE MANUAL

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



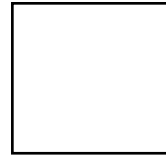
DANGER!
Serious danger
to safety
and health



ATTENTION!
Possible dangerous
situation for the product
and the environment



NOTE!
Tips
for the user



NOTE!
For further details
refer to the Technical Information:
<http://www.unicalag.it/catalogo-prodotti/professionale-300/334/commercial-condensazione-inox>



DANGER!
Danger of burns!



OBLIGATION!
wear gloves
protective

1.3 - APPROPRIATE USE OF APPLIANCE



The heat generator 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 must be 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 FOR THE SYSTEM MANAGER



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 manual 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 appliance must not be used by children.

The appliance may be used by adults and only after carefully reading the operating instructions manual for the user.

Children must be supervised so they do not play or tamper with the appliance.



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 appliance (once the appliance 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 appliance is installed.



ATTENTION!

Do not use the appliance to support any object.

Specifically, do not place any liquid containers (Bottles, Glasses, Containers or Detergents) on top of the boiler.

1.6 - TECHNICAL DATA PLATE

The technical data plate is adhesive and is included in the document case; it must be applied by the installer on the outside of the casing.








The serial number of the boiler is on the riveted plaque on the front plate of the body (front right bottom side).

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.

Model	<input type="text"/>		
S.N°	<input type="text"/>	YYYY-MM	<input type="text"/>
		GAS	OIL
Fuel type:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	1	2	3
Pn	<input type="text"/> kW	<input type="text"/> kW	
Pcond	<input type="text"/> kW	<input type="text"/> kW	
Qn	<input type="text"/> kW	<input type="text"/> kW	
Adjusted Qn	<input type="text"/> kW	<input type="text"/> kW	
	<input type="text"/>	<input type="text"/>	
PIN	<input type="text"/>	<input type="text"/>	
	Stock <input type="text"/> l	PMS <input type="text"/> bar	T max <input type="text"/> °C
	Stock <input type="text"/> l	PMW <input type="text"/> bar	T max <input type="text"/> °C
	<input type="text"/>		
	See Burner - Vedi Bruciatore - Voir Bruleur		
Note:			
			
			
Product Fabr. - Nr - >			
Body Serial Number - >	Made in ITALY		

Legenda

Symbol	EN	IT
Model	Boiler Model	Modello Caldaia
S.N° (*)	Serial Number: see on boiler body	Matricola: vedi il numero di fabbricazione sul corpo caldaia
Year	Year of manufacturing	Anno di costruzione
Fuel type:	Fuel 1 - Gas 2 - Oil 3 - Heavy Oil	Combustibile 1 - Gas 2 - Gasolio 3 - Nafta
Pn	Nominal OUTPUT	Potenza Utile nominale
Pcond	Condensing nom. output	Pot. Utile nom. in condensazione
Qn	Nominal heat INPUT	Portata Termica nominale
Adjusted Qn	Adj. for nom. heat input	Portata Termica Regolata a ...
CE	Surveillance notified body	Ente di sorveglianza CE
PIN	P.I.N. code	Numero Identificazione Prodotto
	BOILER heating circuit:	Circuito riscaldamento CALDAIA:
Stock	Water content	Contenuto acqua
PMS	Max. Working Pressure	Pressione Massima d'Esercizio
T.max	Max. Working Temperature	Temperatura Massima d'Esercizio
	D.H.W. TANK:	BOLLITORE A.C.S.
Stock	Water content	Contenuto acqua
PMW	Max. Working Pressure	Pressione Massima d'Esercizio
T.max	Max. Working Temperature	Temperatura Massima d'Esercizio
	Electrical power supply	Alimentazione Elettrica
	Destination Countries: (SEE BURNER)	Paesi di destinazione: (vedi bruciatore)
Note	(Condensing boiler)	(caldaia a condensazione)

1.7 - GENERAL WARNINGS

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

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 standards in force according to the instructions of the manufacturer and by qualified and certified personnel in compliance with law.

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 foreseen 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.

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 using original spare parts only. Failure to comply with the above can jeopardise the safety of the appliance.

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.

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).

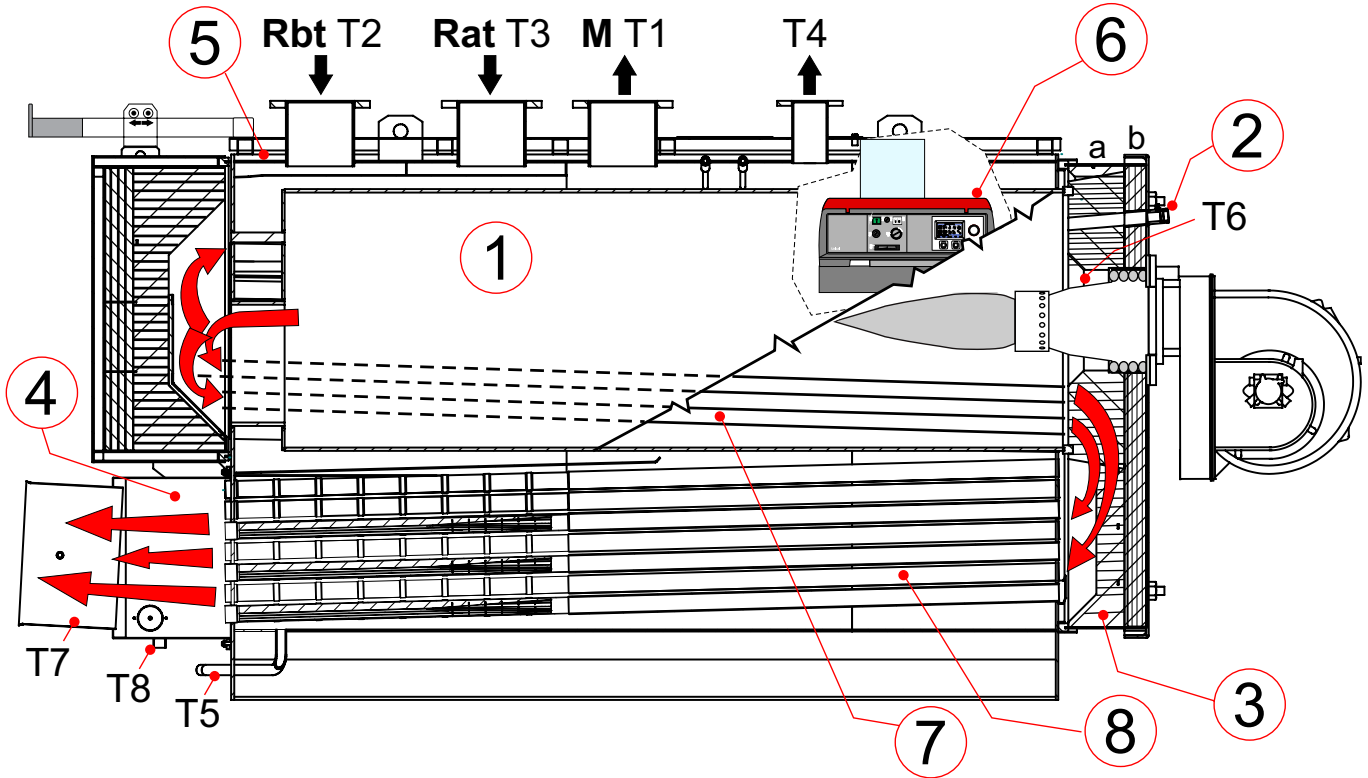
This appliance is intended solely for the use for which it was expressly designed. Any other use is to be considered improper and therefore dangerous.

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



Smoking section tubes



Note:
For operation with oil burner, when ordering specify it (for OIL burner). So as to foresee on the smoke tubes the treatment with Nanoprom coating.

2.2 - MAIN COMPONENTS

The XC-K3 boilers are equipped with a cylindrical furnace in which the combusted gases that reach the bottom take the smoke pipes of the second turn, having reached the front, the burnt gases are conveyed through the door into the pipes of the third turn to reach the chamber smoke back and then to the fireplace. During burner operation, within the boiler's power range, the combustion chamber is always under pressure. For the value of this pressure see the tables of cap. 2.4, in the column "Load losses smoke side".

The chimney must be calculated in such a way that at its base is not detected any positive pressure.

KEY		
N°	Description	
1	Furnace	
2	flame sight glass	
3	Door with flame sight glass	
4	Smoke chamber	
5	Body insulation	
6	Panel board	
7	Smoke tubes 2 Turn	
8	Smoke tubes 3 Turn	
M	T1	Flow
Rbt	T2	Low temperature return
Rat	T3	High temperature return
	T4	Expansion vessel
	T5	Boiler drain
	T6	Burner connection
	T7	Chimney connection
	T8	Condensation drain

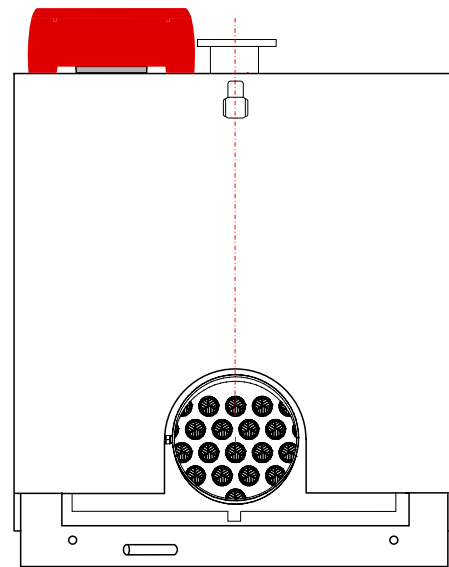
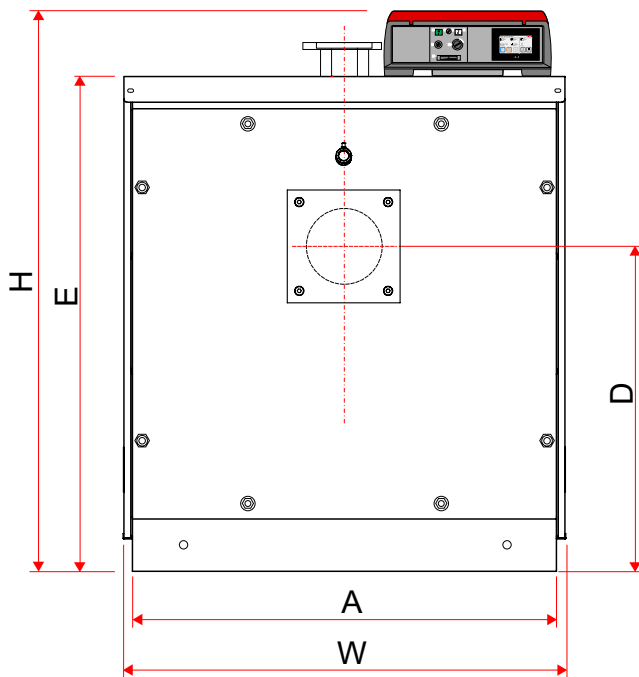
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2.3 - DIMENSIONS

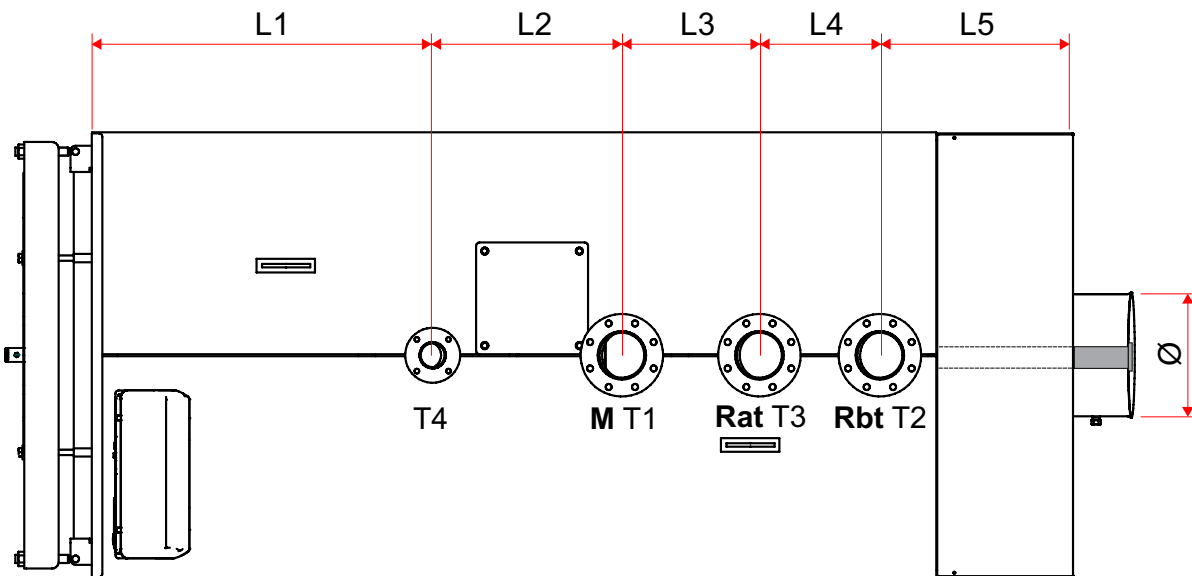
XC-K3 1000

FRONT VIEW

BACK VIEW

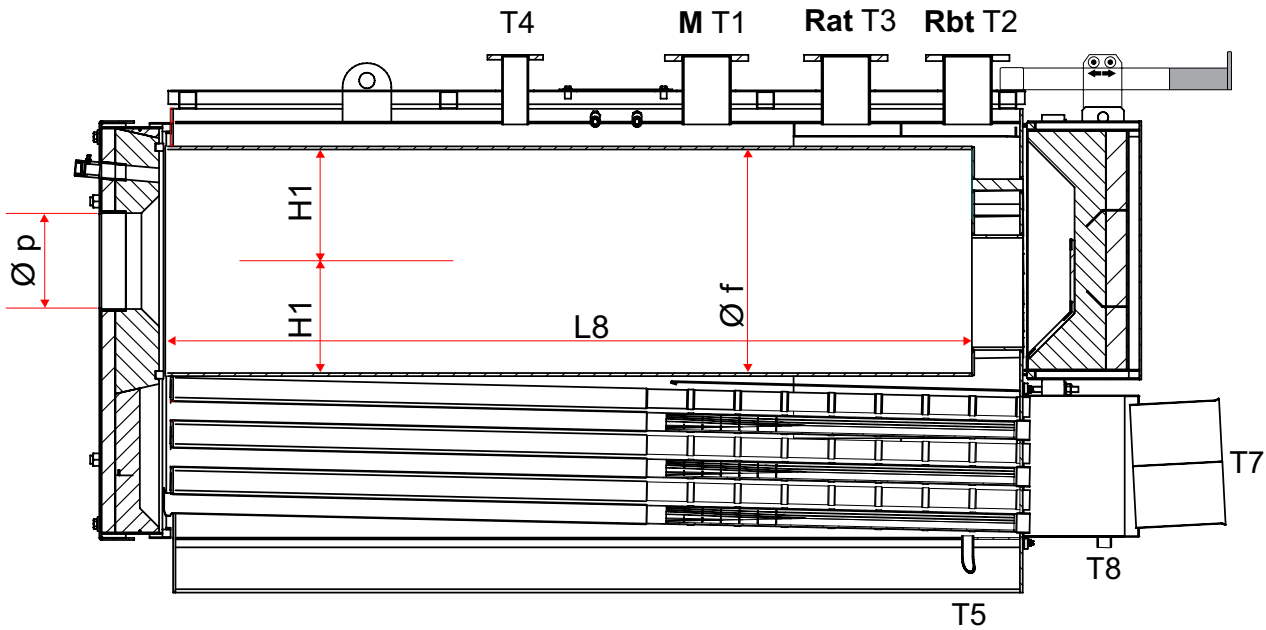


UPPER VIEW

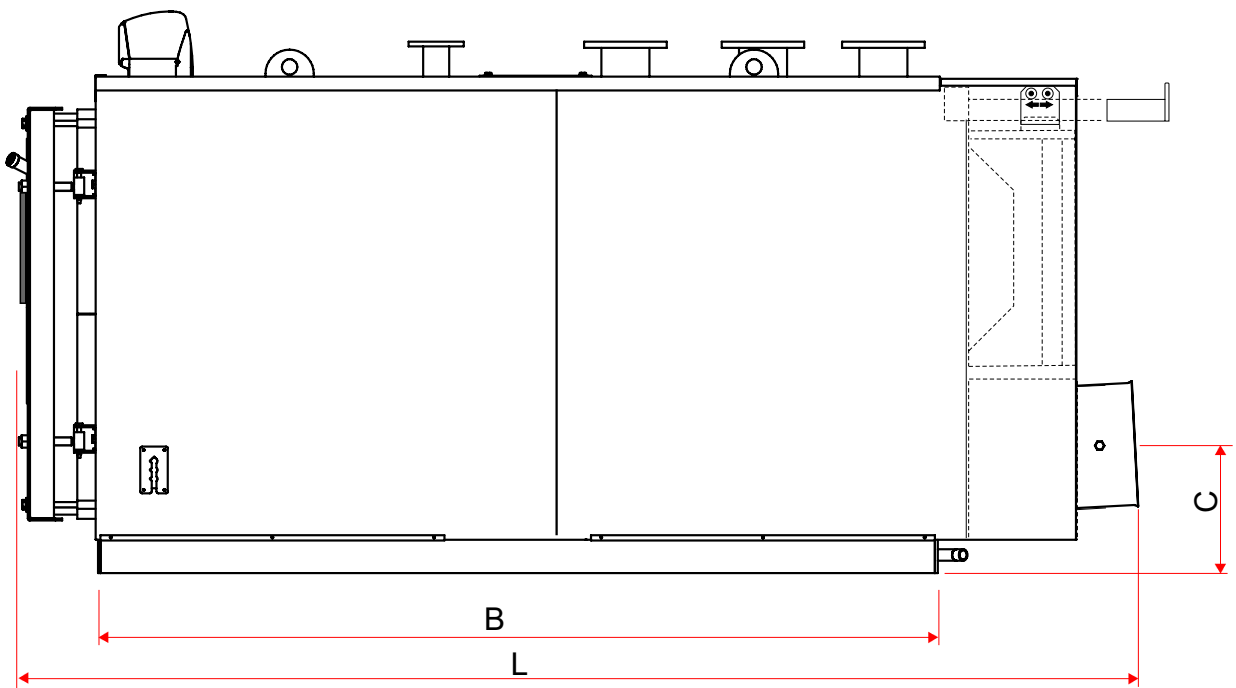


XC-K 3	DIMENSIONS [mm]																			
	Depth											Width		Height					Chimney con- nection	Furnace
	L	B	L1	L2	L3	L4	L5	L6	L7	L8	W	A	H	H1	C	D	E	Ø	Ø f	
1000	3221	2440	990	550	400	350	562	x	x	2310	1290	1240	1630	320	376	952	1447	350	640	

SIDE VIEW SECTION



SIDE VIEW WITH CASING



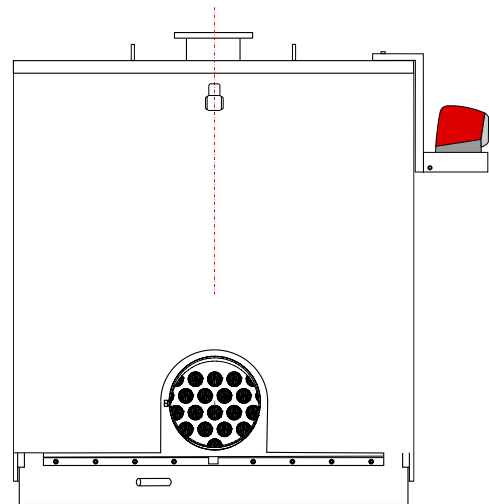
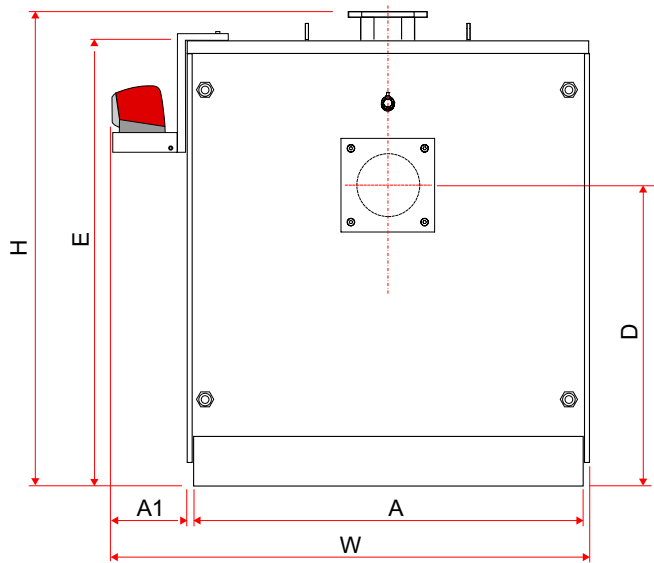
Technical features and dimensions

XC-K 3	CONNECTIONS									Weight
	T1 (M)	T2 (R)	T3 (R)	T4	T5 (Sc)	T6	T7 (S)	T8 (Scand)	G	kG
	PN6				inch	[mm]	[mm]	[mm]	inch	
1000	DN 125	DN 125	DN 125	DN 65	G 1"	270	350	40	-	

XC-K3 1250 - 3000

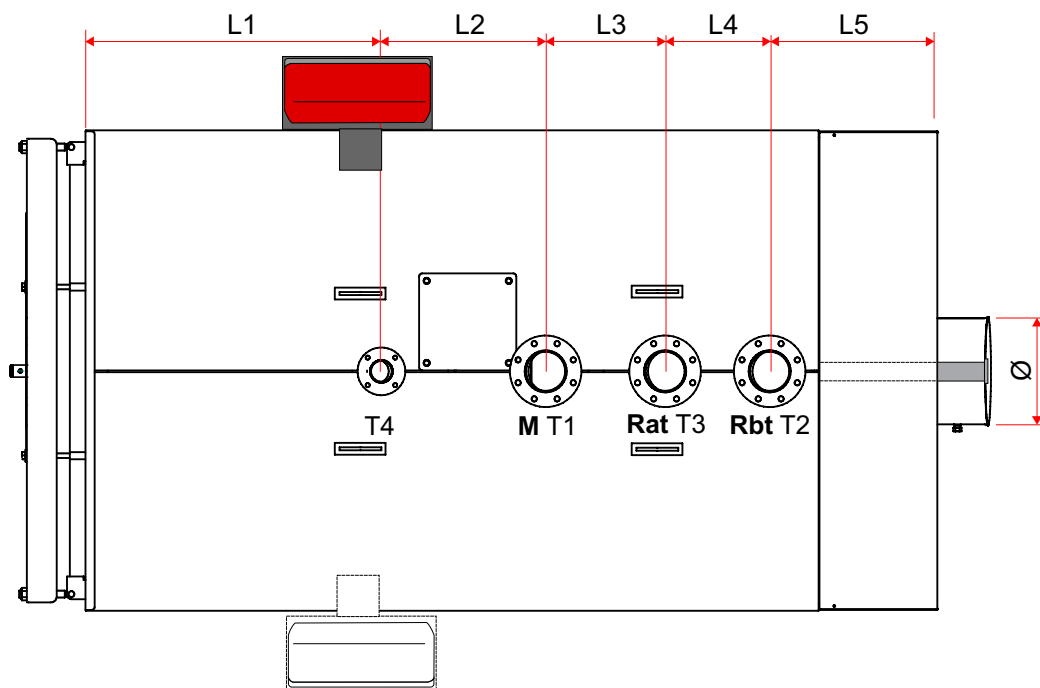
FRONT VIEW

BACK VIEW



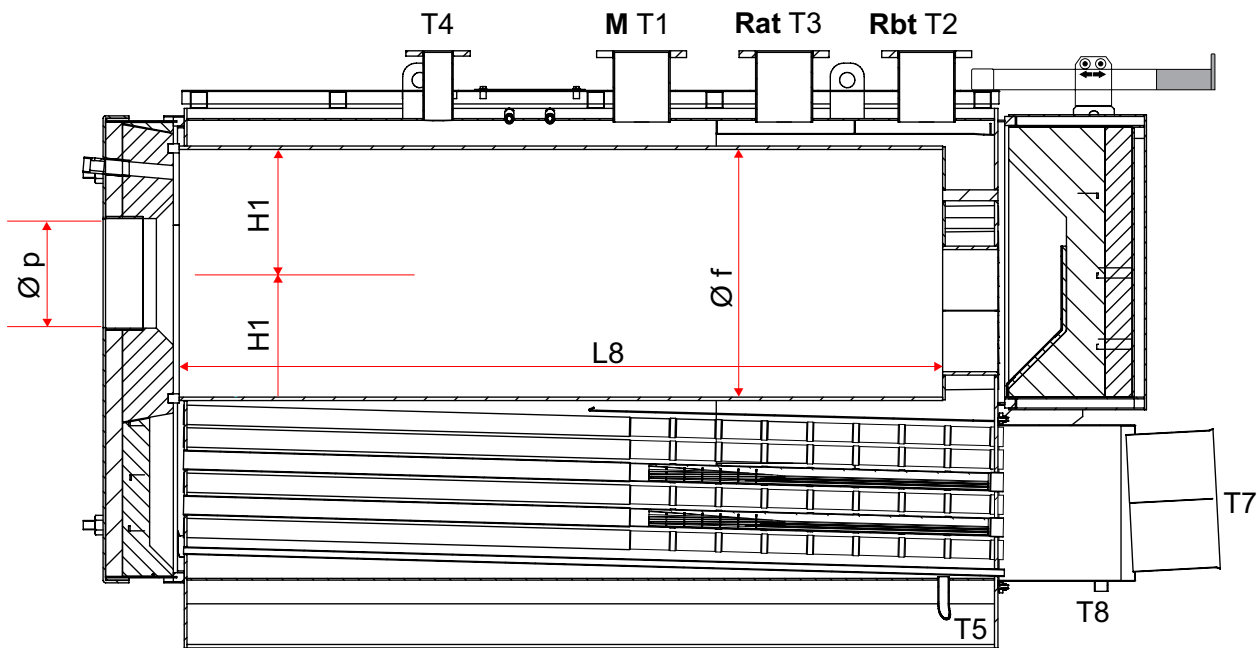
(*) In models: **XC-K 3 2500** and **3000**
the rear casing is not provided see chap. 3:11

UPPER VIEW

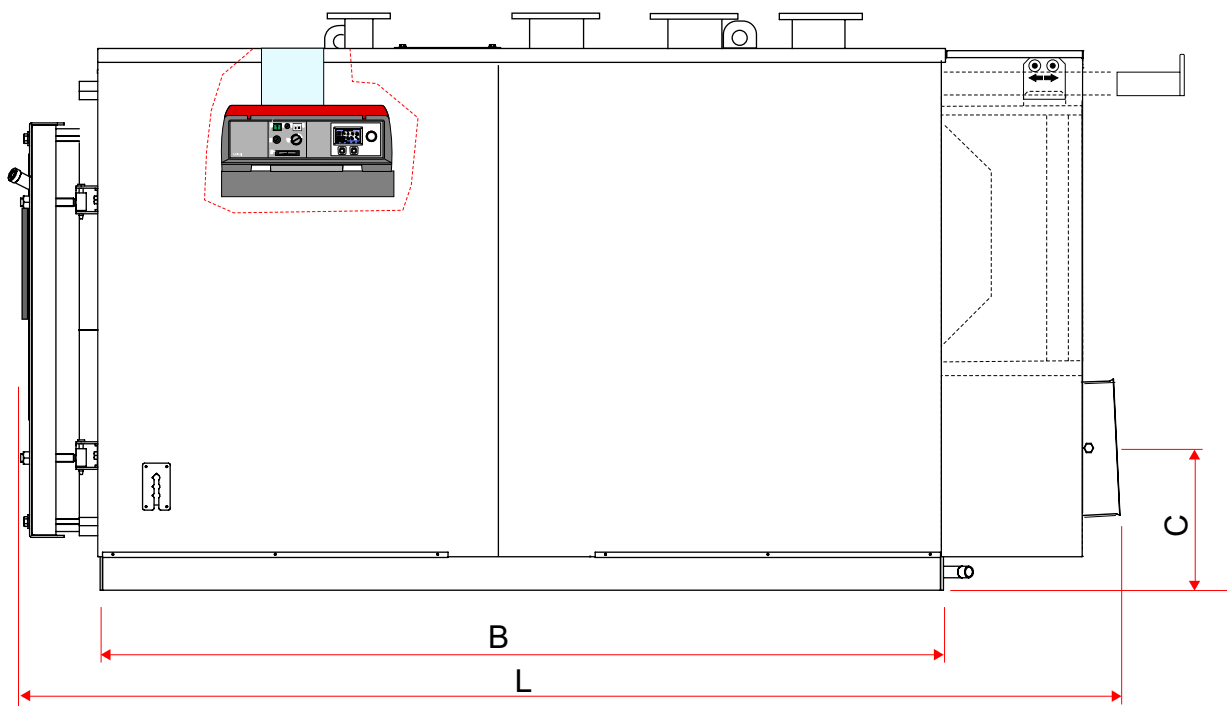


XC-K 3	DIMENSIONS [mm]																			
	Depth										Width			Height					Chimney con- nection	Furnace
	L	B	L1	L2	L3	L4	L5	L6	L7	L8	W	A	A1	H	H1	C	D	E	Ø	Ø f
1250	3293	2399	748	600	420	420	697	x	x	2250	1792	1495	297	1760	297	365	1104	1643	400	730
1500	3643	2749	1098	600	420	420	697	x	x	2250	1792	1495	297	1760	297	365	1104	1643	400	730
1750	3622	2650	804	600	420	550	817	x	x	2500	1932	1580	302	1922	405	471	1218	1809	450	810
2000	3970	2998	1151	600	420	550	817	x	x	2842	1932	1580	302	1922	405	471	1218	1809	450	810
2500	4332	3272	960	805	580	610	809	x	x	2845	2369	1980	329	2457	463	621	1619	2253	550	926
3000	4738	3678	1366	805	580	610	795	x	x	3250	2369	1980	329	2457	463	621	1619	2253	550	926

SIDE VIEW SECTION



SIDE VIEW WITH CASING



Technical features

XC-K 3	CONNECTIONS									Weight
	T1 (M)	T2 (R)	T3 (R)	T4	T5 (Sc)	T6 (Ø p)	T7 (S)	T8 (Scond)	G	kG
	PN6				inch	[mm]	[mm]	[mm]	inch	
1250	DN 150	DN 150	DN 150	DN 80	G 1"	320	400	40	x	
1500	DN 150	DN 150	DN 150	DN 80	G 1"	320	400	40	x	
1750	DN 200	DN 200	DN 200	DN 100	G 1"	320	450	40	x	
2000	DN 200	DN 200	DN 200	DN 100	G 1"	320	450	40	x	
	PN16				inch	[mm]	[mm]	[mm]	inch	
2500	DN 250	DN 250	DN 250	DN 125	G 1"	380	550	40	x	
3000	DN 250	DN 250	DN 250	DN 125	G 1"	380	550	40	x	

2.4 - OPERATING DATA

Model: XC-K 3		1000	1250	1500	1750	2000	2500	3000
Nominal heat output (80-60°C) (80-60°C)	[kW]	918	1136	1376	1606	1835	2294	2753
Nominal heat output (80-60°C) (50-30°C)	[kW]	1000	1238	1500	1750	2000	2500	3000
Nominal Heat input	[kW]	934	1156	1401	1635	1868	2335	2804
Combustion Efficiency full load 80°C-60°C	[%]	98,29	98,27	98,23	98,23	98,23	98,24	98,22
Heat efficiency full load 50°C - 30°C	[%]	107,0	107,0	107,0	107,0	107,0	107,0	107,0
Heat efficiency partial load 30% del 30%: (retourn 30°C)	[%]	109,0	109,0	109,0	109,0	109,0	109,0	109,0
Flue gas temperature 80°C-60°C (Tflue - Tamb.)	[°C]	33,0	33,0	33,0	33,0	33,0	33,0	33,0
Flue gas temperature 50°C-30°C (Tflue - Tamb.)	[°C]	20,0	20,0	20,0	20,0	20,0	20,0	20,0
CO ₂ content	[%]	10,3	10,3	10,3	10,3	10,3	10,3	10,3
Flue gas mass	[kg/h]	1346,2	1682,0	2018,4	2354,9	2691,3	3364,1	4036,9
Combustion Efficiency 80°C-60°C	[%]	98,5	98,5	98,5	98,5	98,5	98,5	98,5
Combustion Efficiency 50°C-30°C	[%]:	99,1	99,1	99,1	99,1	99,1	99,1	99,1
Heat loss at shell 80°C-60°C	[%]:	0,30	0,29	0,28	0,27	0,27	0,27	0,27
Heat loss at shell 50°C-30°C	[%]	0,24	0,23	0,22	0,22	0,22	0,22	0,22
Heat loss at chimney with burner ON 80°C-60°C	[%]	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Heat loss at chimney with burner ON 50°C-30°C	[%]	0,9	0,9	0,9	0,9	0,9	0,9	0,9
Heat loss at chimney with burner OFF	[%]:	0,05	0,05	0,05	0,05	0,05	0,05	0,05
Maximum condensation production	[l/h]	158,2	197,6	237,2	276,7	316,2	395,3	474,3
Maximum boiler back pressure (as standard)	[mm/H ₂ O]	67,4	----	----	----	----	----	----
Boiler back pressure (Smoke side pressure lost)	[mm/H ₂ O]	65,0	70,0	85,0	85,0	95,0	86,0	95,0
Head losses H ₂ O Δt 15	[kPa]	4,0	3,2	4,5	3,8	5,0	6,0	7,5
Water boiler content	[l]	1413	1500	2090	2375	2632	5160	5710
Max working pressure	[bar]	6	6	6	6	6	6	6
Max operating temperature	[C°]	100	100	100	100	100	100	100
Available chimney base pressure	[Pa]	0	0	0	0	0	0	0

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.



ATTENTION!

The appliances are designed to be installed inside suitable rooms or technical spaces only. The appliances cannot be installed or operate outdoors. Outdoor installation can cause malfunctioning and be dangerous. Choose specifically designed appliances for outdoor installation.



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.
- 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



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!

The appliance must be installed by a qualified technician with the technical-professional requirements according to law which, under his own responsibility, guarantees compliance with standards according to good practice rules.



ATTENTION!

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



The boiler must be connected to a central heating system.

3.2 - STANDARDS FOR INSTALLATION

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.

NOTE!

For further details relating to the standards, rules and regulations for safe installation of the thermal unit, refer to the section "Technical Information" on the boiler page of the www.unicalag.it website

3.3 - PACKAGING



XC-K 3 boilers are supplied complete with the door and smoke chamber assembled, while the casing and insulation are included in separate cardboard packs.

Before starting installation, make sure that the length and width of the boiler body received correspond respectively to the dimensions L and W of the boiler you have ordered

The casing of boilers complete with insulation mattresses, is contained in boxes.

Boxes

n.3	XC-K 3 1000
n.3	XC-K 3 1250 - 1500
n.3	XC-K 3 1750 - 2000
n.4	XC-K 3 2500 - 3000

The control panel is optional and if required it is packed with its own cardboard and placed inside the furnace,

as accessories positioned inside the furnace you will also find:

- 1 box containing hydraulic connection flanges, with relative gaskets and bolts (where included).
- ceramic fibre cord to insulate between burner blast tube and door.

Keep the packaging material (plastic bags, etc.) out of the reach of children as they are potential sources of danger.



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

Inside the furnace is contained:

Pouch with the following documentation:

- Manager operating instructions booklet
- Instruction booklet for the installer and maintenance engineer
- 2 Spare parts form
- Certificate of conformity
- Testing certificate

Accessories box containing:

- 5 bends + a T + a plastic condensate draining cap
- Condensate drain siphon pipe 1 m.

3.3.1 - HANDLING



The boiler must be handled by lifting by the upper hooks, or by translation with rollers placed under the sturdy base side.



OBLIGATION!
wear protective gloves

- Protect all parts against impacts if they are to be transported.

3.4 - POSITIONING IN BOILER ROOM

The boiler must be installed in compliance with standards and prescriptions in force.

The room must be well ventilated by openings with a total surface no less than 1/30 the surface of the boiler room, with a minimum of 0.5 m².

The ventilation openings must be permanent, communicate directly with the outside and be positioned high or low according to standards in force.

The location of the ventilation openings, the fuel supply circuits, electric energy supply and lighting must comply with current legal provisions in relation to the type of fuel used.

It is recommended to install the boiler as close to the chimney connection as possible.

To make it easier to clean the smoke circuit, in front of the boiler, there must be a free space no less than the length of the boiler body and, in any case, never less than 1300 mm. Check that with the door opened 90°, the distance between the door and the adjacent wall is at least the length of the burner.

The boiler can be placed directly on the floor as it is equipped with a base.

However it is useful to provide a flat, level cement plinth capable of bearing the weight of the boiler full of water.

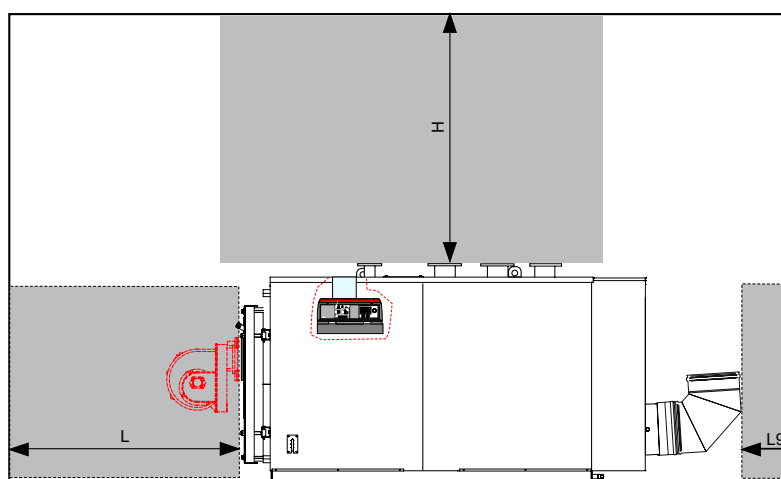
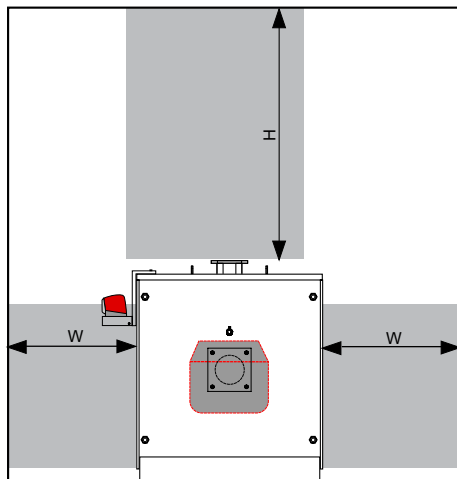
When positioned on the plinth, the dimensions must be at least **B x A** (see dimensions table).

When installation has been performed, the boiler must be perfectly horizontal and stable (to reduce vibrations and noise).



Comply with the minimum overall dimension distances in order to execute normal maintenance and cleaning operations.

XC-K 3	CLEARANCE mm			
	W	L	L9	H
1000	1300	3200	1000	1500
1250	1300	3200	1000	1500
1500	1300	3200	1000	1500
1750	1300	3600	1000	1500
2000	1300	3900	1000	1500
2500	1300	4300	1000	1500
3000	1300	4700	1000	1500



Technical features and dimensions

3.5 - BURNER

The burners operating with the XC-K3 boilers must have the EC certification comply with the local and / or national regulations in force published in the official journal.

3.5.1 - CHOOSING THE BURNER

The correct choice and adjustment of the burner are fundamental for optimal operation of the boiler and therefore must be done carefully and not underestimated.

The burner must be chosen verifying that its firing rate (fuel capacity - combustion chamber pressure) is compatible with the same features declared for the boiler.

Remember that pressure drops on the flue side of the boiler, namely combustion chamber backpressure, refer to zero pressure at the base of the chimney.

It is also appropriate to ensure correct calibration of the min. and max. of the burner.

The flame to be developed must be suitable for the characteristics of our combustion chamber.

In order to take advantage of the whole heat exchange surface of the blind bottom furnaces, use burners capable of providing a "long and narrow" flame in any operating condition, namely even at the minimum output when controlling two or more stages or modulating.

Model	Length Burner dimension		Door drilling	
	Ø b	L.b (min)	Ø p (mm)	L.p (mm)
XC-K 3 1000	250	300	270	171
XC-K 3 1250 - 1500	300	350	320	207
XC-K 3 1750 - 2000	300	390	320	278
XC-K 3 2500 - 3000	360	400	380	310

ATTENTION: the BURNER

it must be calibrated to a power value equal to or less than the thermal capacity (Burnt Power) indicated on the data plate of the generator.

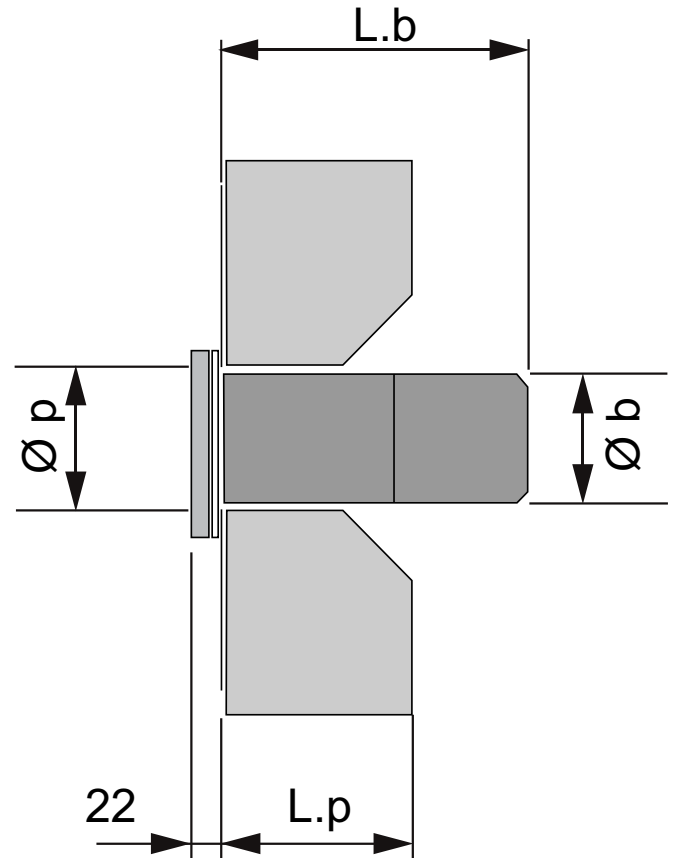
Flames which are too short cause overheating in the front of the furnace and combustion products, not sufficiently cooled, entering the smoke pipes at too high temperatures can seriously damage the generator.

The manufacturing companies of the burners can supply the dimensions of the flames which their appliances develop.



ATTENTION: THE BURNER it must be calibrated to a power value equal to or less than the thermal capacity (Burnt Power) indicated on the data plate of the generator.

if this indication is not followed, warranty will be excluded.



3.5.2 - INSTALLING THE BURNER



The burner must be mounted to the door of the boiler guaranteeing perfect sealing of the combustion products.

The burner is supplied with a **piece of ceramic fiber cord which must be placed on the blast tube of the burner to fully seal the space between the blast tube and the slot in the door.**

Make sure that no gaps remain between the blast tube and the slot on the refractory material inside the door.

Should a cone larger than the diameter of the blast tube be mounted, it must be removed before mounting the burner on the support plate and put back afterwards.

With the burner mounted, check that the electric cables are long enough to allow the door to open 90°.

For gas-fired burners, flexible hoses cannot be used for connections. Therefore it must be possible to disconnect the final section of the gas addition tube by means of a threaded or flanged joint.

**WARNING!**

The seat of the burner nozzle must be as precise as possible to avoid backfires or heat which would cause the burner connection plate to burn red.

If the enlargement of the hole is inaccurate or increased for assembly convenience, after assembling the burner, take care to fill completely and carefully, with the ceramic fiber supplied, the free space between the mouthpiece and the refractory of the front door.

If there is an adapter flange for the door / burner coupling, make sure that the flue gaskets are installed on both coupling surfaces.

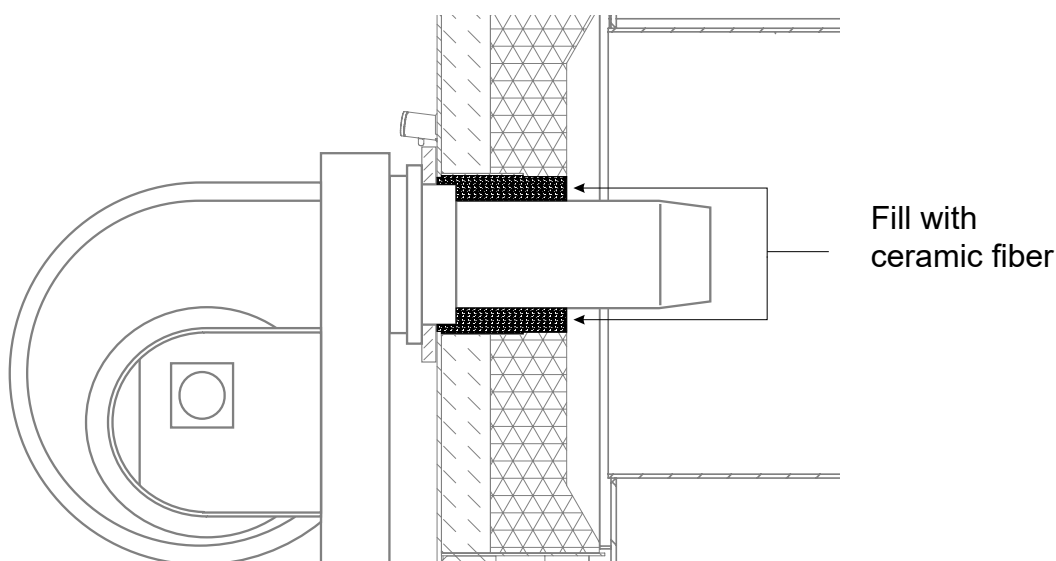
Graph the burner fixing screws to facilitate subsequent removals.

**IMPORTANT**

BEFORE STARTING THE BURNER, CAREFULLY CHECK THE CORRECT CONNECTION OF ALL SAFETY DEVICES



activate the function of **POST VENTILATION** of the burner



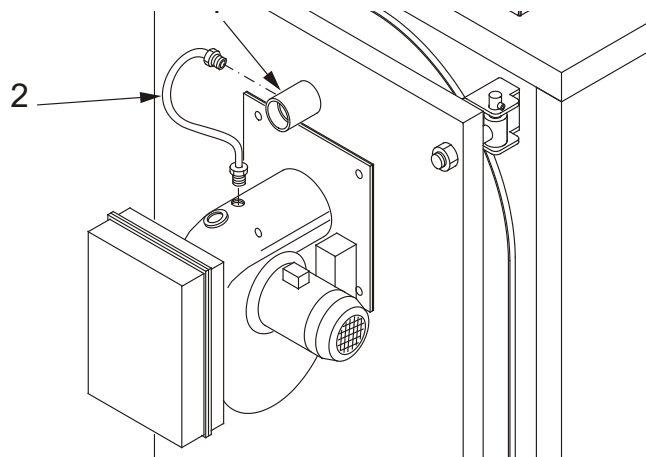
3.5.3 - CONNECTING FLAME SIGHT GLASS TO BURNER

The flame sight glass is provided with a 1/8" threaded connection (pos. 1) upon which a 9 mm pressure test nipple is mounted. It can be used with a silicon tube to measure the backpressure in the combustion chamber.

In place of this test nipple, which must be kept, an appropriate fitting will be mounted to connect the flame sight glass directly to the pressure chamber downstream the burner fan by means of a copper tube (pos.2).

The air blown by the fan will conveniently cool the sight glass and keep it from blackening.

If the cooling tube is not connected to the sight glass, it could break.

**ATTENTION:**

the flame sight glass can be very hot; therefore pay the utmost attention.

3.6 - FURNACE DOOR: ADJUSTMENT, OPENING AND CLOSING

3.6.1 - XC-K 3 BOILERS

For all these models, the door is hinged and fixed according to figure. In these cases, the door is mounted with four equal hinges: the two on the left side are normally used as rotation hinges (from right to left), while the two on the right side are used as closing hinges; the door is then secured with 4 nuts.

It will be exactly the opposite when the door is opened from the left to the right.

To invert rotation, just move the rear locknuts to the opposite side.

On the door are possible the following adjustments model by model

XC-K 3 1000 only adjustment B - C

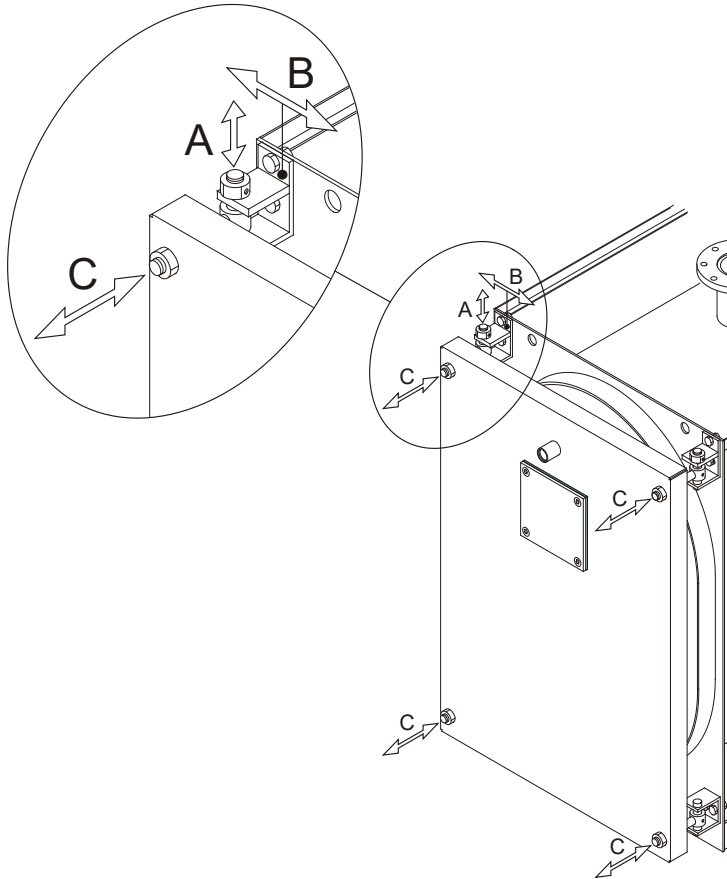
XC-K 3 1250 ÷ 2000 adjustment A - B - C

XC-K 3 2500 ÷ 3000 adjustment A - B - C

A) Vertical adjustment: only by inserting suitably thick washers below the hinge which the door turns on.

B) Crosswise rotation: loosening the hinges fixed on the front plate of the boiler and moving them sideways.

C) Axial rotation: screwing different tightening nuts.



IMPORTANT NOTE

Before opening the door of the furnace, take the following

safety measures:

- Close the fuel supply to the burner.
- Cool the boiler off by having water circulate and then disconnect electrical power.
- Place a sign on the boiler with the following text:

**DO NOT USE, BOILER MAINTENANCE UNDERWAY,
OUT OF SERVICE.**

3.7 - FLUE GAS EXHAUST PIPE CONNECTION

To connect the flue gas exhaust pipe, local and national standards must be observed.

It is recommended to insulate the pipe connecting to the chimney to reduce heat loss and noise.



Along the section connecting the boiler to the flue there must be suitable points for measuring flue gas temperature and analysing combustion products.

Use only exhaust pipes suitable for the type of fuel used. The supplier will have no contractual or extra-contractual liability for damage caused due to incorrect installation and use and anyway failure to comply with the instructions provided by the manufacturer.

When performing replacement installations, ALWAYS replace the flue gas exhaust accessory as well. The flue must comply with standards in force.

3.8 - CONNECTION

XC-K 3	CONNECTIONS						
	G Gas Inlet [Inch]	M (T1) Flow [PN 6 - DN]	R (at / bt) (T2 - 3) Return [PN 6 - DN]	T4 Expansion vassel [PN 6 - DN]	T5 Drain Boiler [Inch]	T7 Flue gas exhaust [Ø mm]	T8 Condensation drain [Ø mm]
1000	X	125	125	65	G 1"	350	DN 40
1250	X	150	150	80	G 1"	400	DN 40
1500	X	150	150	80	G 1"	400	DN 40
1750	X	200	200	100	G 1"	450	DN 40
2000	X	200	200	200	G 1"	450	DN 40
		[PN 16 - DN]	[PN 16 - DN]	[PN 16 - DN]			
2500	X	250	250	225	G 1"	550	DN 40
3000	X	250	250	125	G 1"	550	DN 40



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.



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.



If you smell gas:

- Do not operate electric switches, the telephone or any other object that may cause sparks;
- Immediately open doors and windows to create air current to purify the room;
- Shut the gas cocks.
- Ask for the intervention of professionally qualified personnel.

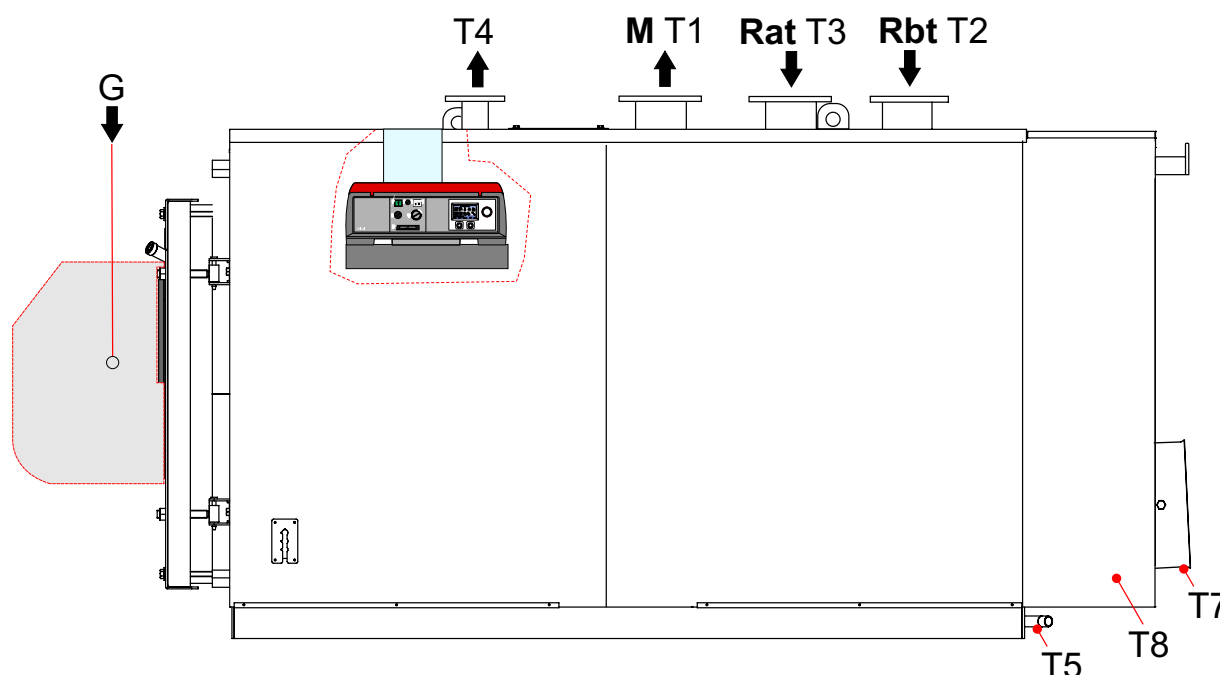


The mains pressure must be within 0.5 and 6 bar (in the event of greater pressure install a pressure reducer).



Warning!

If it is not necessary to have the 2 returns in the system, ever use the low temperature return Rbt (T2).



Technical features and dimensions

3.9 - CONDENSATE DISCHARGE

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".

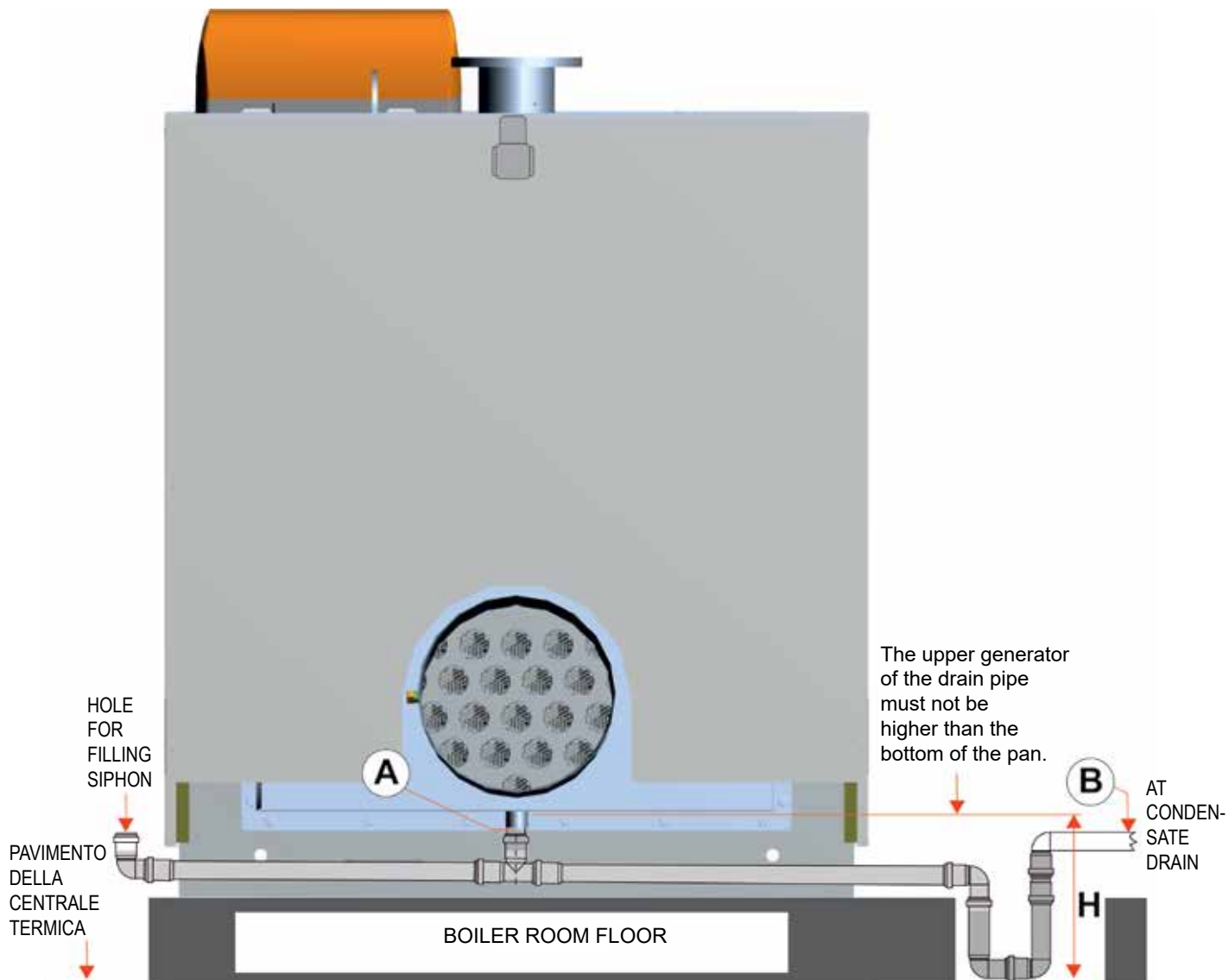


Danger!

Before commissioning the appliance:

- check that the trap is assembled of the siphon (H)
- 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.



H = Siphon head

Capacity conditions 0 and Max Fan Head

C-K 3 1000
 XC-K 3 1250 ÷ 1500
 XC-K 3 1750 ÷ 2000
 XC-K 3 2500 ÷ 3000

H = 150 mm
 H = 150 mm
 H = 150 mm
 H = 150 mm



If you do not want to or cannot create a basement, the boiler can be mounted at ground level a dig H mm deep can be made to house the siphon.



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



NOTE!

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

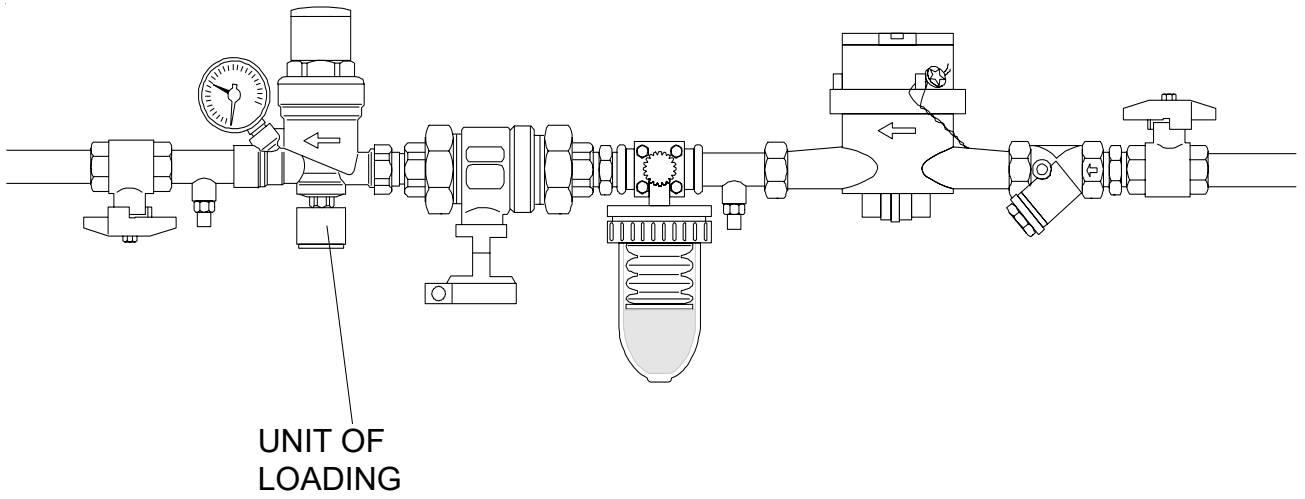
3.10 - FILLING AND EMPTYING THE SYSTEM



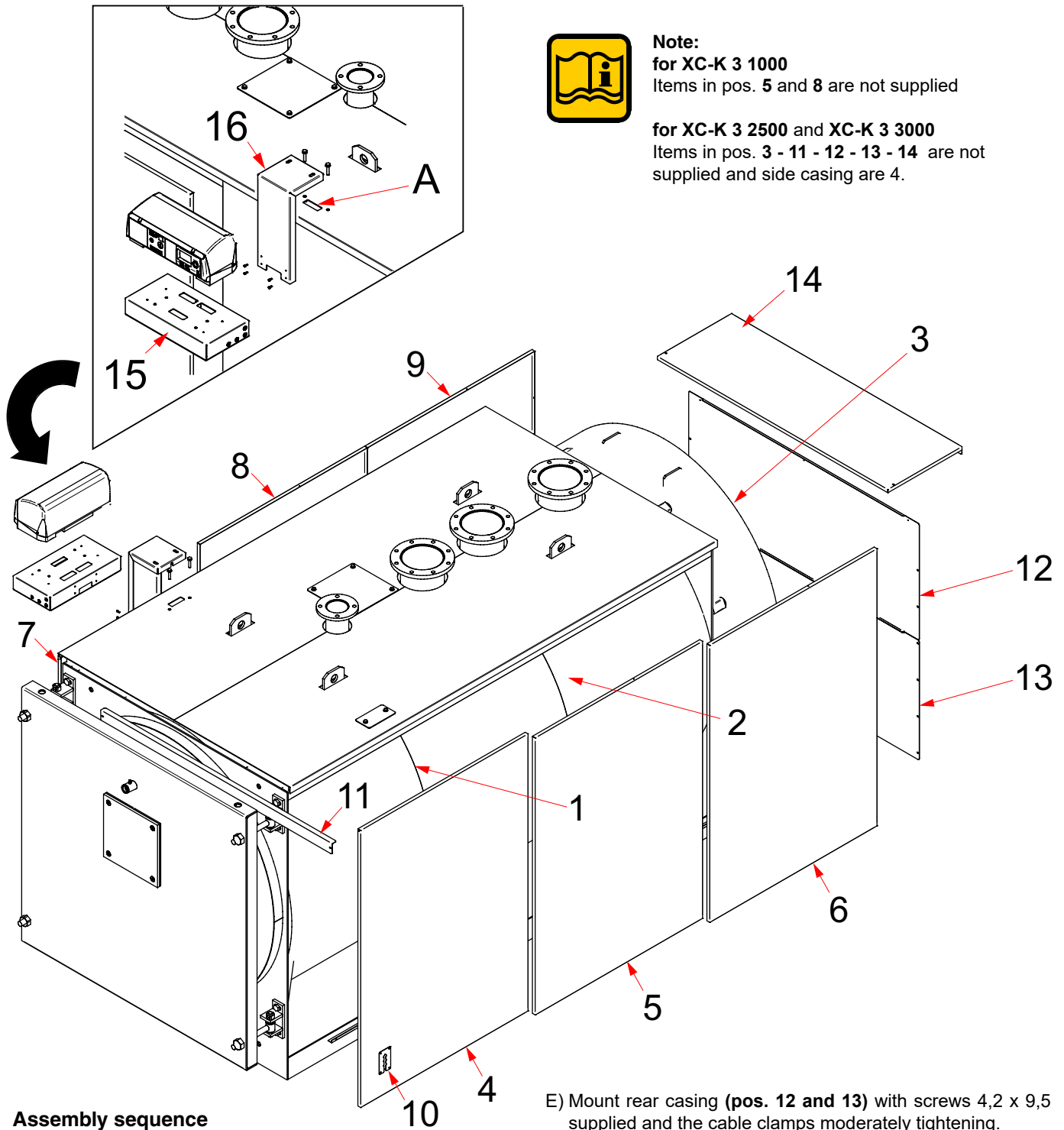
When all system connections have been completed, the circuit can be filled.

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

EXAMPLE OF THE SYSTEM'S LOADING UNIT



3.11 - ASSEMBLING CASING



Note:
for XC-K 3 1000
Items in pos. 5 and 8 are not supplied

for XC-K 3 2500 and XC-K 3 3000
Items in pos. 3 - 11 - 12 - 13 - 14 are not
supplied and side casing are 4.

Assembly sequence

- A) mount shelf (pos. 15) to the support (pos. 16)
Mount electrical panel on the shelf (pass the cables through the slot (pos. A)). Fix support (pos. 16) to the boiler
- B) Mount the insulation jackets (pos. 1, 2 and 3) of the boiler body and secure the 2 edges with the elastic straps supplied in the accessory box, hooking them to the external fabric part of the insulation.
- C) Position the side panels (pos. 4, 5, 6, 7, 8, 9) with the lower bend inside the L-shaped profile at the base and on top of the boiler body and hook the upper part in the plate cuts.
To determine which is the right side and which is the left side, refer to the cable gland plates (pos. 10), they must face the front of the boiler.
- D) Connect the front reinforcement profile (pos. 11) to the two sides (pos. 4 and 7) with screws 4,2 x 9,5 supplied

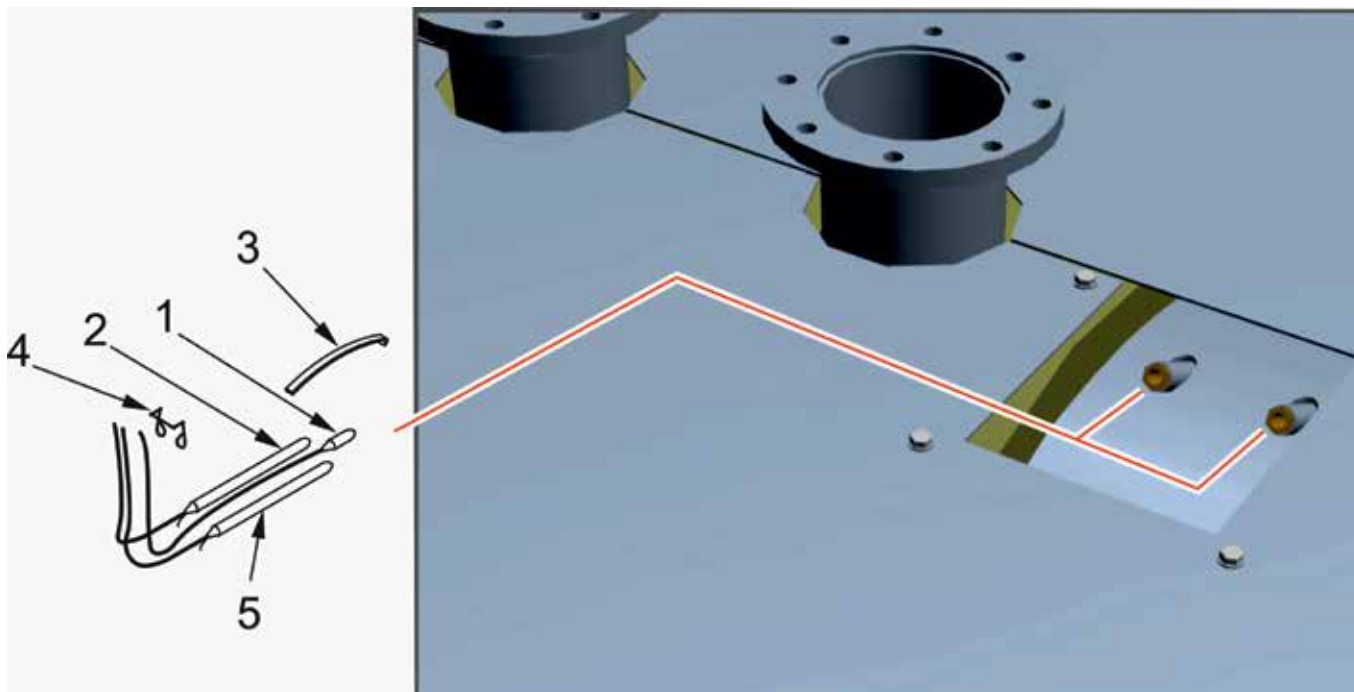
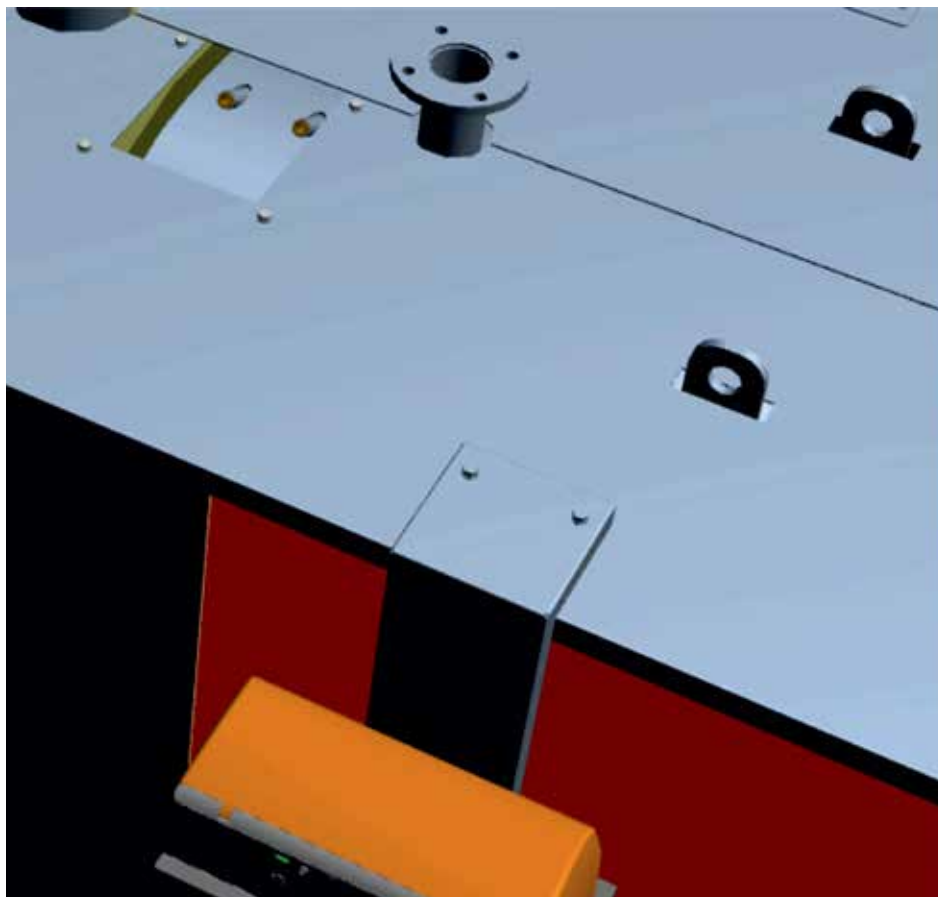
E) Mount rear casing (pos. 12 and 13) with screws 4,2 x 9,5 supplied and the cable clamps moderately tightening.

F) Fix the boiler data plate to the side panel after having greased the relevant part with the specific solvent.

The plates are included in the document envelope.

XC-K 3	n. side casing		n. piece back casing
	dx	sx	
1000	2	2	1
1250	3	3	1
1500	3	3	1
1750	3	3	2 (pos. 12 - 13)
2000	3	3	2 (pos. 12 - 13)
2500	4	4	none
3000	4	4	none

3.11.1 - PROBE CONNECTION



Technical features and dimensions

KEY	
N°	Description
1	Thermometer probe (where included)
2	Working thermostat probe

3	Contact spring
4	Safety spring
5	Safety thermostat probe

3.12 - ELECTRICAL CONNECTIONS

General warnings

The electrical safety of the appliance is guaranteed only when it has been properly connected to an efficient earthing system carried out as intended by safety standards in force: pipes of the gas, water and heating systems are absolutely unsuitable as earthing electrodes.

It is necessary to verify this fundamental safety requirement. If in doubt, have the electric system carefully checked by professionally qualified personnel as the manufacturer is not liable for damage caused by failure to provide an earthing system.

Have professionally qualified personnel check that the electric system is adequate for the maximum power absorbed by the appliance, indicated on the data plate. Make sure in particular that the cross-section of the cables is suitable for the power absorbed by the appliance.

Adapters, multiple sockets and/or extension cords cannot be used to power the appliance.

Use of any type of component using electric energy requires the observance of some fundamental rules, such as:

- do not touch the appliance with wet and/or moist parts of the body and/or in bare feet;
- do not pull the electric cables;
- do not leave the appliance exposed to atmospheric agents (rain, sun, etc.) unless expressly designed;
- do not allow children or unskilled persons to use the appliance.

230V electric power supply connection

Boiler installation requires connection to a 230 V - 50 Hz electric mains: this connection must be performed up to standard as intended by current IEC regulations.



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.

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.



The power cable must be replaced by authorised technical personnel. Failure to comply with the above can jeopardise the safety of the appliance.

3.13 - PANEL BOARD

MODULATING MASTER cod. 37892 (MASTER DUAL-STAGE cod. 38778)

The main switch [14] powers the board and the equipment connected to it.

The switches [18] and [19] control the burner and P1 pump if the boiler operates in cascade.

The switches [20] and [21] control the Z1 pump (direct) and Z2 pump (mixed).

The working temperature of the boiler is regulated by the heating controller: to achieve this, the thermostat must be placed at maximum full-scale pos. [33].

Modulation of the burner will be managed by heat control.

The electric power line of the boiler's control board must have a switch with protective fuses.


Technical features and dimensions

KEY	
N°	Description
14	Main switch with indicator light
16	Burner switch
18	Interruttore bruciatore

19	P1 system pump switch (cascade)
20	Pz1 direct zone system pump switch
21	Pz2 mixed zone system pump switch
33	Working thermostat
35	Safety thermostat

For use of the panel board, see the system manager instruction booklet

The heating controller probes (boiler, storage tank, external, flow) are included in the supply; the ambient probes 1 and 2 are optional; the mixer valve and relative control motor are not included in the supply.

Should ambient probes be mounted (optional), the room

temperature will only be determined with the boiler curve set by the program.

Should 2 boilers in cascade be mounted, see chap. 3.14

3.13.1- PROGRAMMING HEATING CONTROLLERS WITH SINGLE BOILER

Per la regolazione / programmazione dei termoregolatori, si veda libretto istruzioni allegato ai singoli termoregolatori. Di seguito si

riportano i parametri programmati in fabbrica e pertanto "non modificabili".

Per quanto riguarda i parametri programmabili dall'utente in base alle proprie esigenze, si rimanda al libretto istruzioni per il Responsabile dell'impianto.

PARAMETERS PROGRAMMABLE BY TECHNICIAN AND PROTECTED BY ACCESS CODE FOR HEATING CONTROLLER E8			
INSTALLATION			
Description	Value range	Default	Individual values
CODE NUMBER	0000 - 9999	ENTRY	
CODE NUMBER (adjustment)	0000 - 9999	0	
BOILER BUS ID, 01 - 08	----	
BUS ID 1	(00), 01 - 015	1	
BUS ID 2	(00), 01 - 016	2	
AF SUPPLY	00,01 (OFF/ON)	01 (ON)	
BUS CONNECTION	1	1	
BUS SUPPLY	00,01 (OFF/ON)	01 (ON)	
TEMPERATURE MASTER	00, 01 (OFF/ON)	01 (ON)	
MAX-T HS1 MAX T-HEADER	30 °C - 110 °C	85 °C	
MIN-T HS1 MIN T-HEADER	10 °C - 80 °C	10 °C	
MAX-T HS2	30 °C - 110 °C	85 °C	
MIN-T HS2	10 °C - 80 °C	10 °C	
CURVE VOLTAGE	0 - 11	11	
CURVE11-U2	0,00-10,00V	0V	
CURVE 11-U2	0,00-10,00V	10V	
CURVE 11-T1	00 - 120 °C	0 °C	
CURVE 11-T2	00 - 120 °C	100 °C	
CURVE 11-UA	0,00-10,00V	0V	
T-WARME-UP	10 °C - 85 °C	10	
MINIMUM LIMIT	00, 01, 02	0	
HYSTERESIS	2K - 20K	5	
HYSTERES TIME	00 - 30 min	00 min	
BOILER DETECTED	DISPLAY ONLY		
OUTPUT LEVEL	00 - 1000kW	* see note	
NEW CONFIGURATION	00,01 (OFF/ON)		
MINIMUM MODULATION CASCADE	00 - 100	0	
DHW LEVEL	00 - 08	0	
CONTROL VARIANCE	(K)	DISPLAY	
NOMINAL OUTPUT INDEX	0 - 100%	DISPLAY	
SWITCH VALUE	(-99) - 0 - (99)	DISPLAY	
BLOCK TIME	REMAINING (min)	DISPLAY	
MAXIMUM BOILER TEMPERATURE	50 - 110 °C	85	
BOILER DYNAMICS UPWARD	20 - 500K	30K	
BOILER DYNAMICS DOWNWARD	20 - 500K	20K	
RESET TIME	5 - 500	50	
MODULATION MAX	0% - 100%	80%	
MODULATION MIN	0% - 100%	50%	
MIN MODULATION HS	0% - 100%	0%	
MODULATION DHW	40% - 100%	80%	
BOILER SEQUENCE 1	----	12345678	
BOILER SEQUENCE 2	----	87654321	


Description	Value range	Default	Individual values
SEQUENCE MODE	01 - 06	1	
SEQUENCE CHANGE	10 - 800 HOURS	200 HOURS	
CYCLE BLOCK	00 min - 30 min	00 min	
HYSTERESIS BURNER 2	2K - 20K	2K	
BOILER COOLING FUNCTION	00 - 01	0	
BOILER COOLING TEMPERATURE	30°C - 120°C	95	
HS 1 TYPE	00 - 06	6	
HS 1 BUS	00 - 04	4	
HS 2 TYPE	00 - 05	0	
HS 2 STORAGE TANK	01 - 03	0	
PUFFER TYPE	01 - 01 - 02	0	
SCREED	00, 01 (OFF - ON)	00 OFF	
SCREED PROGRAM	** see note		

(*) Set value of first stage of first boiler at 1, in the second leave dashes


All other boiler stages must be disabled.



(**) See E8.5064 heating controller instruction book

DOMESTIC HOT WATER PRODUCTION

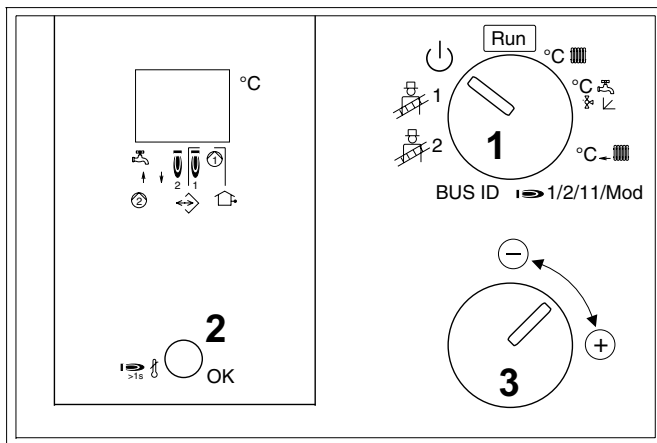
Description	Value range	Default	Individual values
CHARGE PUMP	00 - 01 (OFF / ON)	01 (ON)	
PARALLEL PUMP RUNNING	00 , 01, 02, 03	1	
T DHW	00K - 50K	20K	
DHW HYSTERESIS	5K - 30K	5 DEGREES	
DHW FOLLOWUP	00 MIN - 30 MIN	00 MIN	
THERMOSTAT INPUT	00, 01 (OFF / ON)	00 OFF	
THERMOSTAT FUNCTIONING	00, 01 (OFF / ON)	00 OFF	
LOAD THROUGH	00, 01 (OFF / ON)	00 OFF	
RETURN	Exit level using 		

HEATING CIRCUIT 1

Description	Value range	Default	Individual values
HEATING CIRCUIT FUNCTION	00 - 04	0	
PUMP MODE	00 - 03	0	
MIXER OPEN		----	
MIXER CLOSED		----	
MAX FLOW TEMPERATURE	20 °C - 110 °C	80 °C	
MIN FLOW TEMPERATURE	10 °C - 110 °C	30 °C	
FROST PROTECTION TEMP	(-15)°C - (5)°C	0 °C	
OUTSIDE TEMP DELAY	0:00 - 24:00	0,00	
HEATING SLOPE DISTANCE	00K - 50K	5 °C	
B-HEAT SINK	00 - 01 (OFF / ON)	1	
RETURN			

HEATING CIRCUIT 2			
Description	Value range	Default	Individual values
HEATING CIRCUIT FUNCTION	00 - 04	0	
PUMP MODE	00 - 03	0	
MIXER OPEN	5 - 25	----	
MIXER CLOSED	5 - 25	----	
MAX FLOW TEMPERATURE	20 °C - 110 °C	45 °C	
MIN FLOW TEMPERATURE	10 °C - 110 °C	10 °C	
FROST PROTECTION TEMP	(-15)°C - (5)°C	0 °C	
OUTSIDE TEMP DELAY	0:00 - 24:00	0,00	
HEATING SLOPE DISTANCE	00K - 50K	5 °C	
B-HEAT SINK	00 - 01 (OFF / ON)	1	
RETURN	Exit level using 		
SOLARE M/F			
Description	Value range	Default	Individual values
MF (1-4) FUNCTION	00 - 26	00,00,01,02	
MF (1-4) T- NOM	00 - 03	30°C	
MF (1 - 4) HYSTERESIS	5 - 25	5°C	
F 15 FUNCTION	5 - 25	0	
RETURN	Exit level using 		

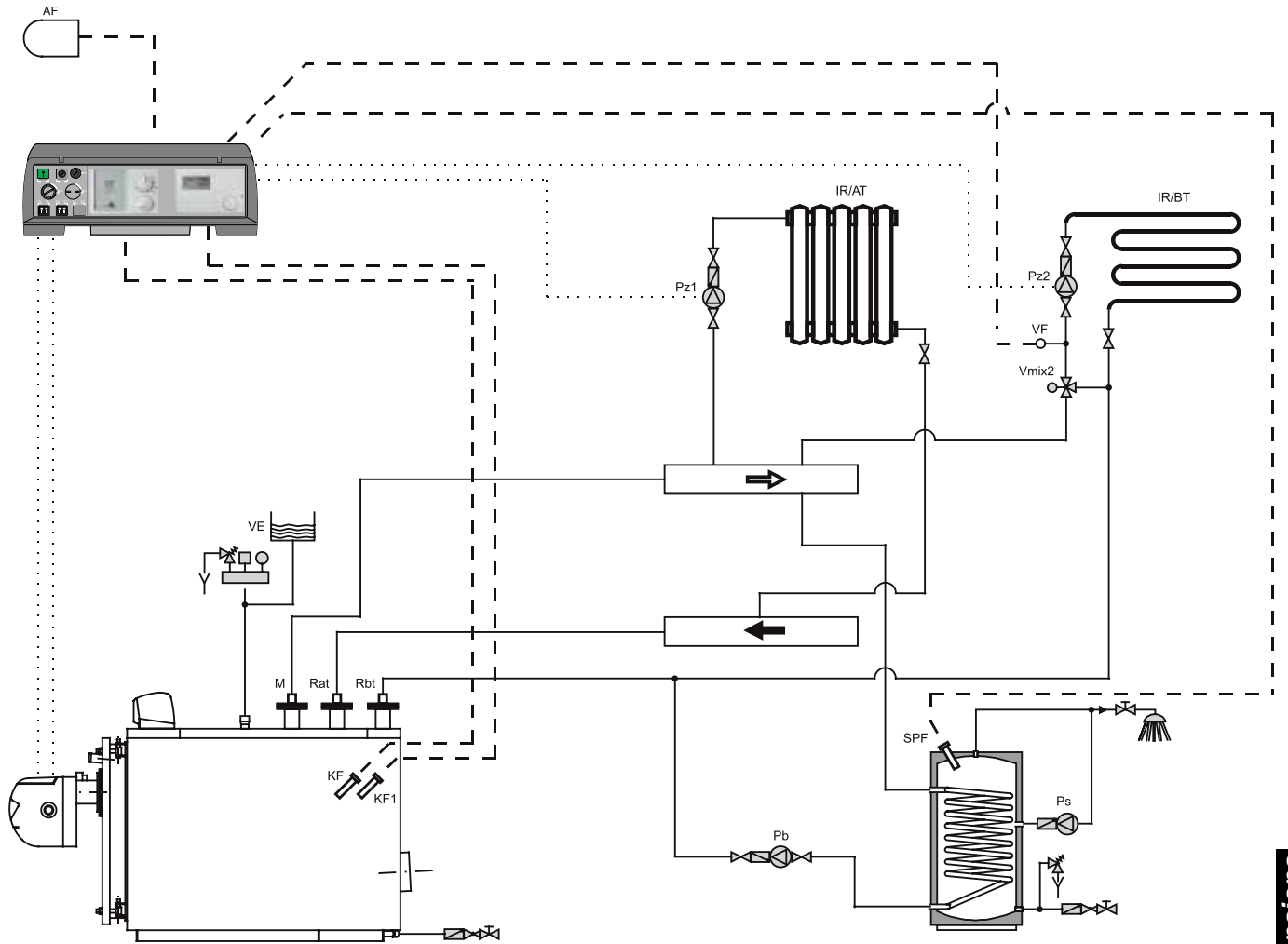
3.13.2 - PARAMETERS PROGRAMMABLE BY TECHNICIAN FOR HEATING CONTROLLER Lago Basic



1	1 - Switch selector to burner (1)
	2 - Press OK (2)
	3 - Turn the knob (3) until mm appears on the display (modulating burner)
	4 - Press OK (2)
2	1 - Switch the selector (1) to the symbol of the mixer valve
	2 - Press OK (2)
	3 - Turn the knob (3) until the number 15 appears on the display (burner servomotor time)
	4 - Press OK (2)
3	1 - Switch the selector (1) to BUS ID
	2 - Press OK (2)
	3 - Turn the knob (3) until the number 1 appears on the display (boiler ID)
	4 - Press OK (2). Turn the knob 1 back to pos. RUN.

3.13.3 - HYDRAULIC AND ELECTRIC SYSTEM CONNECTION WITH PANEL BOARD

Figure shows the typical layout of the connection of the boiler to the heating system consisting in 1 direct high temperature zone + 1 low temperature zone controlled by a motorised mixer valve + domestic hot water production.



IMPORTANT NOTE: when there is only one zone (high or low temperature) always insert the system return pipe in the lower rear connection.

KEY	
M	Flow
Rat	HIGH temperature return
Rbt	LOW temperature return
Vmix2	zone mixer valve (motorised)
Pz1	HIGH TEMPERATURE zone heating system pump
Pz2	LOW TEMPERATURE zone heating system pump
VE	expansion vessel
IR/AT	HIGH TEMPERATURE heating system distribution
IR/BT	LOW TEMPERATURE heating system distribution

Ps	DHW recirculation pump
Pb	DHW production charge pump
SPF	storage tank probe
KF	heat control boiler probe E8
KF1	heat control boiler probe Lago Basic
VF	flow probe
AF	external probe
For connections, wiring and probes, refer to the diagrams supplied with the electric panel.	

Technical features and dimensions

The panel board of the XC-K boiler automatically switches the burner off when the temperature in the boiler reaches the value set on the heating controller.

It also manages the pump to fill a storage tank for DHW production.

The heating systems are managed automatically based on the data detected by the boiler, external, ambient and flow probes. The high temperature zone system pump is made ready for operation by the control switch pos. 20, and will only switch off when the temperature set on the heating controller has been reached. The low temperature zone system pump is made ready for operation by the control switch pos. 21, and will only switch off when the temperature set on the heating controller has been reached. The storage tank charge pump for DHW production switches on automatically and will only switch off when the temperature set on the heating controller has been reached.

The panel is set up to manage the modulating burners. With this system configuration, the heat controller is capable of regulating:

- direct zone system; the control unit commands the system pump. The room temperature is controlled by the programming curves set in the heating controller;
- one zone system with motorised mixer valve: the flow probe (downstream the mixer valve) must be fitted; the control unit commands the system pump and the mixer valve. The room temperature is controlled by the programming curves set in the heating controller;
- DHW production through storage tank;
- anti-legionella function with increase of water temperature in storage tank (function not enabled in factory, but can be enabled by customer)


3.13.4 -PROGRAMMING HEATING CONTROLLERS WITH BOILERS IN CASCADE

by parameter value:

- INSTALLATION -
- DOMESTIC HOT WATER PRODUCTION
- HEATING CIRCUIT 1
- HEATING CIRCUIT 2
(only the grayed parameters change)

- SOLAR M/F.

see Par. 3.13.1

HEATING CIRCUIT 2			
Description	Value range	Default	Individual values
HEATING CIRCUIT FUNCTION	00 - 04	0	
PUMP MODE	00 - 03	0	
MIXER OPEN	5 - 25	18	
MIXER CLOSED	5 - 25	12	
MAX FLOW TEMPERATURE	20 °C - 110 °C	45 °C	
MIN FLOW TEMPERATURE	10 °C - 110 °C	10 °C	
FROST PROTECTION TEMP	(-15)°C - (5)°C	0 °C	
OUTSIDE TEMP DELAY	0:00 - 24:00	0,00	
HEATING SLOPE DISTANCE	00K - 50K	5 °C	
B-HEAT SINK	00 - 01 (OFF / ON)	1	
RETURN	Exit level using 		

For programmable parameter values Lago Basic on boiler n 1. - see par. 3.13.2.

3.14 - PANEL BOARD MODULATING CASCADE cod. 37900 (DUAL-STAGE CASCADE cod. 37901)

The main switch [11] powers the board and the equipment connected to it.

The switches [12] and [13] control the burner and P1 pump if the boiler operates in cascade.

The working temperature of the boiler n°2 is regulated by the heating controller: to achieve this, the thermostat must be placed at maximum full-scale pos. [32].

Modulation of the burner will be managed by heat control.

The electric power line of the boiler's control board must have a switch with protective fuses.



KEY	
N°	Description
11	Main switch with indicator light
12	Burner switch
13	P1 system pump switch (cascade)

31	Safety thermostat
32	Working thermostat
41	General fuse
42	Thermometer

For use of the panel board, see the system manager instruction booklet

The boiler probe is included in the supply.

The heating controller probes (boiler, storage tank, external, flow) are included in the supply; the ambient probes 1 and 2 are optional; the mixer valve and relative control motor are not included in the supply.

Should ambient probes be mounted (optional), the room

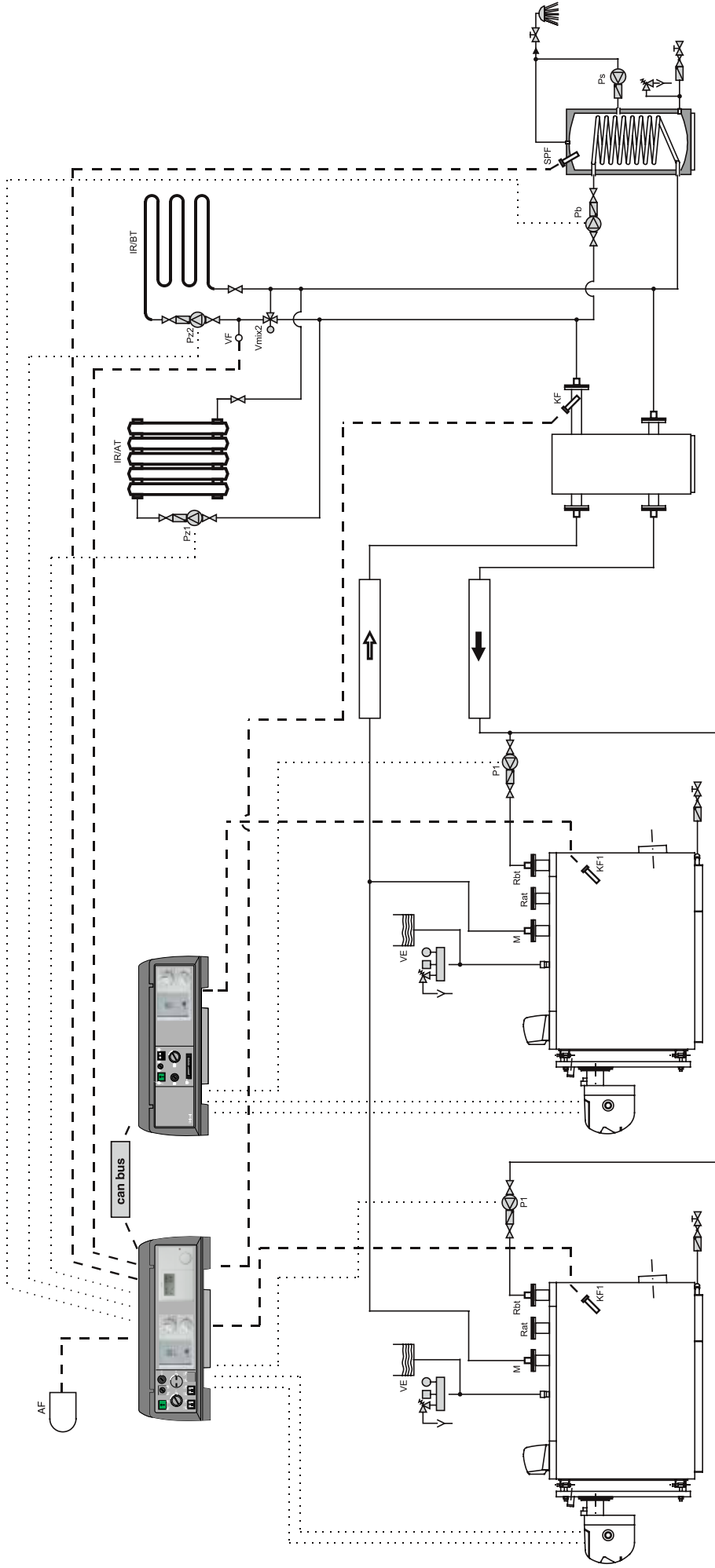
temperature will only be determined with the boiler curve set by the program.

To change programmable parameter values Lago Basic on boiler n. 2. - see par. 3.13.2.

3.14.1 - HYDRAULIC AND ELECTRIC SYSTEM CONNECTION WITH BOILERS IN CASCADE PANEL BOARD cod. 37892-38778 and cod. 37900-37901

Figure shows the typical layout of the connection of the boiler to the heating system consisting in 2 boilers in cascade serving 1 high temperature zone + 1 low temperature zone controlled by a motorised mixer valve + domestic hot water production.

Boiler n°1 is fitted with a panel board code 37892-38778, boiler n° 2 is fitted with a panel board code 37900-37901.



KEY	
M	Flow
Rat	HIGH temperature return
Rbt	LOW temperature return
Vmix2	zone mixer valve (motorised)
Pz1	HIGH TEMPERATURE zone heating system pump
Pz2	LOW TEMPERATURE zone heating system pump
VE	expansion vessel

IR/AT	HIGH TEMPERATURE heating system distribution
IR/BT	LOW TEMPERATURE heating system distribution
Ps	DHW recirculation pump
P1	circulation pump
Pb	DHW production charge pump
SPF	storage tank probe

KF	heat control boiler probe E8
KF1	heat control boiler probe Lago Basic
VF	flow probe
AF	external probe

For connections, wiring and probes, refer to the diagrams supplied with the electric panel.

The panel boards of the XC-K boilers (in cascade) automatically switch the burners off when the temperature in the boiler reaches the value set on the heating controller.

They also manage the pump to fill a storage tank for DHW production.

The heating systems are managed automatically based on the data detected by the boiler, external, ambient and flow probes. The high temperature zone system pump is made ready for operation by the control switch pos. 20 of the MASTER board, and will only switch off when the temperature set on the heating controller has been reached.

The low temperature zone system pump is made ready for operation by the control switch pos. 21 of the MASTER board, and will only switch off when the temperature set on the heating controller has been reached.

The storage tank charge pump for DHW production switches on automatically and will only switch off when the temperature set on the heating controller has been reached.

The panel is set up to manage the modulating burners.

With this system configuration, the heat controller is capable of regulating:

- direct zone system; the control unit commands the system pump. The room temperature is controlled by the programming curves set in the heating controller;
- one zone system with motorised mixer valve: the flow

probe (downstream the mixer valve) must be fitted; the control unit commands the system pump and the mixer valve. The room temperature is controlled by the programming curves set in the heating controller;

- DHW production through storage tank;
- anti-legionella function with increase of water temperature in storage tank (function not enabled in factory, but can be enabled by customer)

For practical connections, both electrical and of the probes, see the diagrams supplied with the panel boards.

3.15 - COMMISSIONING

Preliminary checks



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

Before commissioning the boiler, check that:

- installation complies with standards for the gas and electrical power;
- the adduction of combustion air and flue gas evacuation are performed correctly according to that laid down by standards in force;
- the fuel feed system is dimensioned according to the flow rate required for the boiler and is provided with all safety and control systems prescribed by current standards;
- the power supply of the boiler is 230V - 50Hz;
- the system is filled with water (approximately 1 bar pressure on the pressure gauge with the pump stopped);
- any system shut-off gate valves are open;
- the gas used corresponds to boiler calibration: if not, modify the boiler to use type of gas available; this operation must be carried out by qualified technical personnel according to standards in force;
- the gas feed valves are open;
- there is no gas leakage;
- the external main switch is connected;
- the system safety valves are not blocked and are connected to the sewer system drainage;
- there is no water leakage;
- ventilation conditions and minimum distances are guaranteed to perform maintenance should the boiler be enclosed between furniture or in a niche.

Switching boiler on and off

To switch the boiler on and off, see the “**SYSTEM MANAGER OPERATING INSTRUCTIONS**”.

Information for system manager

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

- Give the system manager the “**SYSTEM MANAGER OPERATING INSTRUCTIONS**”, as well as the other appliance documents inserted in the envelope inside the packaging. **The system manager must keep this documentation for future consultation.**
- Inform the system manager 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 system manager concerning control of the system’s water pressure as well as operations to restore it.
- Inform the system manager concerning correct control of temperatures, control units/thermostats and radiators to save energy.
- Remember that the system must receive regular maintenance at least once a year and a combustion analysis must be performed in the timetable foreseen by standards in force.
- 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.

XC-K boilers are forced circulation boilers: It is therefore necessary to make sure that water circulates while the boiler is running.

Do not allow the burner to run without the system pump being activated; otherwise the safety thermostat could be triggered. Room temperature will be regulated by the mixture valve commanded by the heating controller.

When the burner switches on and off, slight sounds could be heard due to settling of the structure. Do not worry about this as expansions are foreseen during design.

3.29 - ADJUSTING THE BURNER



The following instructions are intended exclusively for **service personnel authorised by the manufacturer of the burner**.



IN CASE OF LOW NOX BURNERS, use FLAME INVERSION KIT for Low NOx burners supplied by the burner manufacturer.



Note: FOR MAINTENANCE MANAGER
The boiler work properly, if calibrating the burner to a minimum power (Q_{min}) \geq 30% of the nominal power (Q_n).



Burner calibration and preliminary operations are provided in the burner's instruction booklet.

4

INSPECTIONS AND MAINTENANCE



OBBLIGO!
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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.

We therefore recommend stipulating an inspection or maintenance contract.

Inspections help to determine the actual status of the appliance and to compare it with the nominal status. This is done through measuring, controls and observation.

Maintenance is required to eliminate any differences between the actual status and the nominal status. This is normally done by cleaning, setting and replacing individual components subject to wear.

Maintenance intervals and their extent are determined by a specialist based on the status of the appliance ascertained through inspection.

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.

Before proceeding with maintenance, always perform the following operations:

- Disconnect the electric mains switch.
- Isolate the appliance from the electric mains by means of an isolated device with a contact opening of at least 3 mm (e.g. safety devices or power switches) and make sure that it cannot be re-connected accidentally.
- Close the gas shut-off valve upstream the boiler.
- Close any shut-off valves on the heating flow and return pipes.

After having completed all maintenance work, always perform the following operations:

- Open the heating flow and return pipes.
- If necessary, restore the heating system pressure until it reaches the static pressure relative to the highest point of the system.
- Open the gas shut-off valve.
- Reconnect the appliance to the electric mains and engage the switch.
- Make sure the appliance is gas tight and watertight.
- Vent the heating system and restore pressure if necessary.

Should you decide to temporarily deactivate the boiler, you must:

- a) shut off the various supplies: electric, water and fuel;
- b) empty the water system if antifreeze is not used.

Boiler body maintenance



Danger!
Before performing any maintenance, make sure the boiler and its components have cooled off.

Disconnect the boiler from the electric mains and shut the gas supply to the appliance.



Attention!
Before cleaning the boiler body, protect the panel board against any water sprays.

Once a year, at the end of the heating season, the boiler must receive a general cleaning.

Before performing any maintenance, make sure that all the precautions referred to in the previous point have been taken.

To proceed with maintenance you must:

- disconnect power by acting on the main switch;
- remove the burner, which could be overhauled at the same time;
- open the furnace door to access the combustion chamber;
- make sure the internal parts are intact.

Checking gasket status



Check the status of the seal gaskets which must not show signs of deterioration; if so, they must be replaced, using only original spare parts.

Maintenance of burner

Burner maintenance must be carried out by personnel authorised by its manufacturer (or else the warranty shall be terminated).

Checking ignition electrode

Burner maintenance must be carried out by personnel authorised by its manufacturer (or else the warranty shall be terminated).

Components to check during yearly inspection

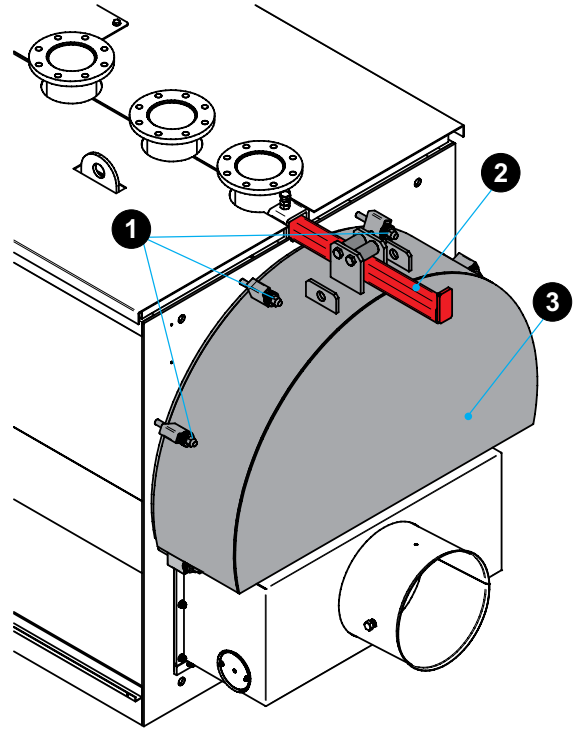
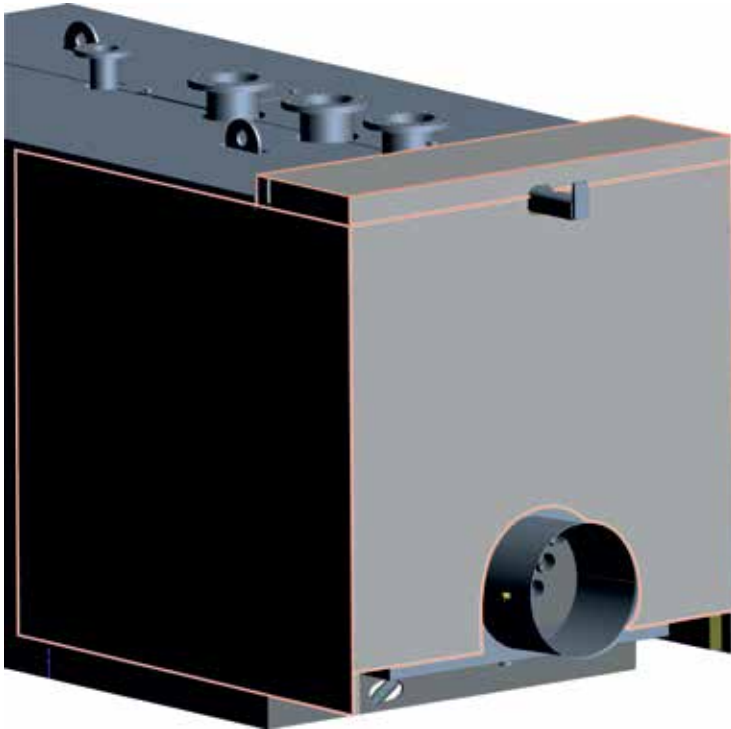
COMPONENT:	VERIFY:	CONTROL/INTERVENTION MEASURE:
Safety thermostat	Does the thermostat place the boiler in safety when overheating?	Bring the boiler to operating temperature with the pumps stopped.
System expansion vessel	Does the vessel contain the right amount of air?	Check the nitrogen pressure. Pressurise the boiler (open the pump bleeder). Open the heating circuit closing valves.
Door gaskets	Does smoke seep through the door gaskets?	Further tighten the door nuts. Replace the sealing gasket.
Door gaskets	Does smoke seep through the smoke chamber gaskets?	Further tighten the smoke chamber nuts. Replace the sealing gaskets.

Rear door opening for maintenance operations



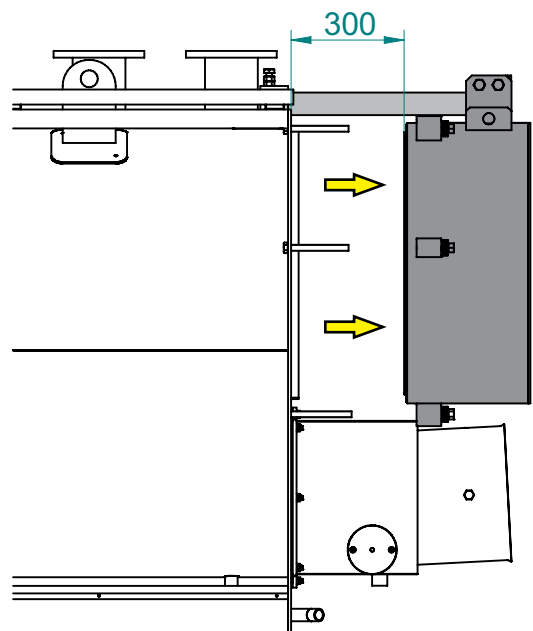
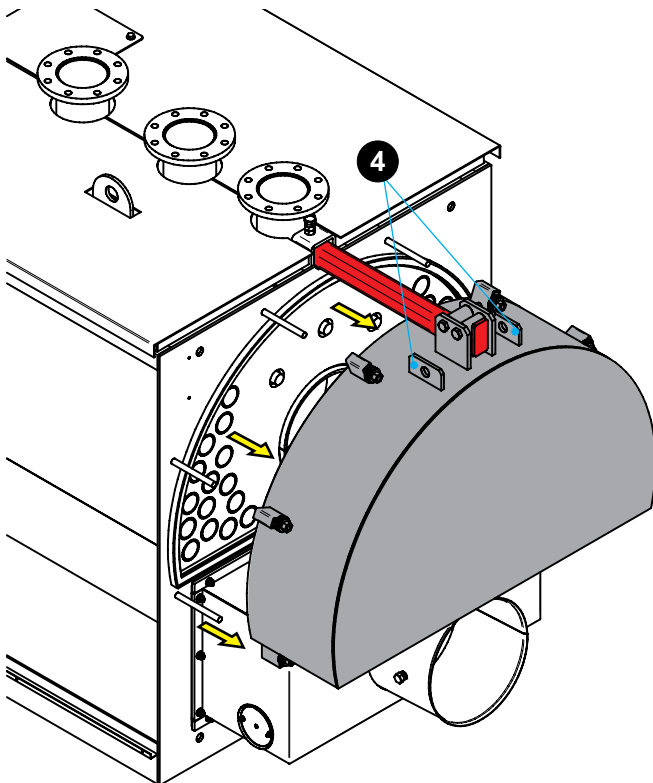
- Remove the casings:
rear, right side, left side and cover

- Remove the fixing nuts "1" of the rear door "3"



- Remove carefully door "3" using the slide "2".
(limit stop at 300 mm)
- If necessary, remove whole door using
hydraulic crane, (lifting holes "4").

- After maintenance operations, reassemble the rear door,
checking correct tightening of the nuts "1", after a few
hours of operation.



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