INSTRUCTIONS BOOKLET
FOR INSTALLATION, USE AND MAINTENANCE

VERSOCALD ECO - CONDENSING BOILERS

TECHNICAL MANUAL

INSTRUCTIONS FOR INSTALLATION – USE - MAINTENANCE

VERSOCALD ECO

HOT WATER BOILERS
STAINLESS STEEL ONLY - VERY LOW TEMPERATURE
CONDENSING BOILER

Dear Customer,

Thank you for choosing a boiler by VERSOL.
In your interest and to maintain the highest level of performance and duration of your appliance, we recommend that you follow the instructions contained in this booklet and have regular maintenance performed by qualified personnel.
We would like to remind you that failure to follow the instructions contained in this booklet may invalidate the guarantee.

CE
0085

WARNING

Different types of burners can be installed on this boilers – even those not included in the approved lists but always respecting the furnace output and counterpression values.
The burner must be CE certified according to the current Gas Directive and compliant with the relevant standards.
The installation, as well as the ordinary and extraordinary maintenance of the appliance must be carried out by qualified personnel.
This boiler is not suitable for the production of domestic hot water.

CONTENTS

GENERAL WARNINGS

This instruction booklet is an integral and essential part of the product.

Should the appliance be sold or transferred to another owner, or if you move and leave the appliance behind, always ensure that this booklet accompanies the appliance so that the new owner and/or installation technician can consult it.

This appliance must be used for the purpose for which it was specifically intended.
All contractual or non-contractual responsibility of the manufacturer is excluded in the event of damages to persons, animals or things caused by errors in installation, adjustment, maintenance and improper use.

The manufacturer's responsibility is excluded for all damage to persons and/or things resulting from a clear risk for the user which he could have avoided by taking suitable safety measures.

After having removed the packaging, check the contents for breakages. If you are in doubt do not use the appliance, contact your supplier.
Do not leave the packaging materials (wooden cage, nails, staples, plastic bags, polystyrene foam, etc.) within the reach of children, as they are potential sources of risk.

The installation must be performed in compliance with the regulations in force, following the manufacturer's instructions, by professionally qualified personnel. The term "professionally qualified personnel" means persons with specific technical skills in the sector of heating systems and components for domestic use and domestic hot water production.

To guarantee the efficiency of the appliance and ensure correct operation, it is indispensable to have regular maintenance performed by professionally qualified personnel, following the manufacturer's instructions.
Any repairs to the appliance must be carried out using only original spare parts.

If you decide not to use the appliance for a long period, ensure you have professionally qualified personnel to carry out the necessary operations here below:
- set the appliance main switch and the general switch on "off";
- close fuel and water taps;
- empty the thermal system in case of freezing conditions.

GENERAL SAFETY RULES

The use of any component utilising energy power, fuels and water requires that certain fundamental rules be respected, such as:

Do not allow children or unskilled people to use the appliance;

If you notice smell of gas, do not turn on electric switches, household appliances, telephone or any other objects that could cause sparks. If this is the case:
- open doors and windows immediately to clear the air in the room;
- turn off the fuel taps;
- contact professional qualified personnel.

Do not touch the appliance with wet or damp parts of the body and/or with bare feet.
Do not perform any maintenance and cleaning operations without having disconnected the electric power and turned off the fuel supply tap(s)..

Do not pull, disconnect, unwind electric cables coming from the boiler, even if they are disconnected from the mains supply.

Do not block or reduce the ventilation openings in the room to prevent the formation or toxic and explosive mixtures caused by gas leakage; it is also uneconomic and polluting because it causes bad combustion.

Do not expose the appliance to atmospheric agents.
The generator has not been designed to work outdoors and is not provided with automatic anti-freezing systems. Keep the boiler turned on in freezing conditions.

Other important warnings to be respected:

- If the power cable of the appliance is damaged, have it replaced by professionally qualified personnel;

- do not fix (and do not allow other persons to fix) electric cables on the system pipes or near sources of heat;

- ensure that the earthing cables of the appliance are not connected to the water system;

- do not touch the hot parts of the system (in particular the manhole and the smoke box) as they normally remain hot even for some time after the appliance has been turned off.

- In the event of a water leak, turn off the system and contact exclusively professionally qualified personnel.

DESCRIPTION OF THE APPLIANCE

The steel boiler from the VERSOCALD ECO range is a high performance heating boiler for heating systems up to 95°C. When combined with a hot water tank, this generator can be used also for the production of domestic hot water.

It can work at very low temperature/condensing (system return > 15°C) and, given its all-stainless steel construction (AISI 316 for the furnace and tube bundle) it provides an efficient protection against the acid corrosion from condensation.

This is an en-bloc pressurised combustion three-gas passes boiler : the flame produced by the burner develops in the furnace (1st passage); the opening at the end of the furnace leads to a duct through which smokes are conveyed until they reach the front area (2nd passage) .
Combustion gas inversion is clearly separated from the furnace in order to reduce NOx. Smoke stay time in the high temperature area causes NOx formation.
In the front area, through the groove in the door insulation, smokes are conveyed to the tube bundle nest (3rd passage)..

Here smokes are forced by special turbolators to follow a whirling path which increases the heat transfer due to convection. Max heat absorption is therefore obtained without noxious thermal stresses and above all with over 95% increase in the working efficiency.

On leaving the dry pipes, smokes are collected in the rear chamber and conveyed to the flue.
Given its special geometrical structure (tube bundle overlapping the combustion chamber), it is much narrower than the traditional pressurised boilers and it fits easily in thermal plants with narrow passages or reduced overall dimensions.

Fuel oil, light oil, natural gas fired burners can be also installed.

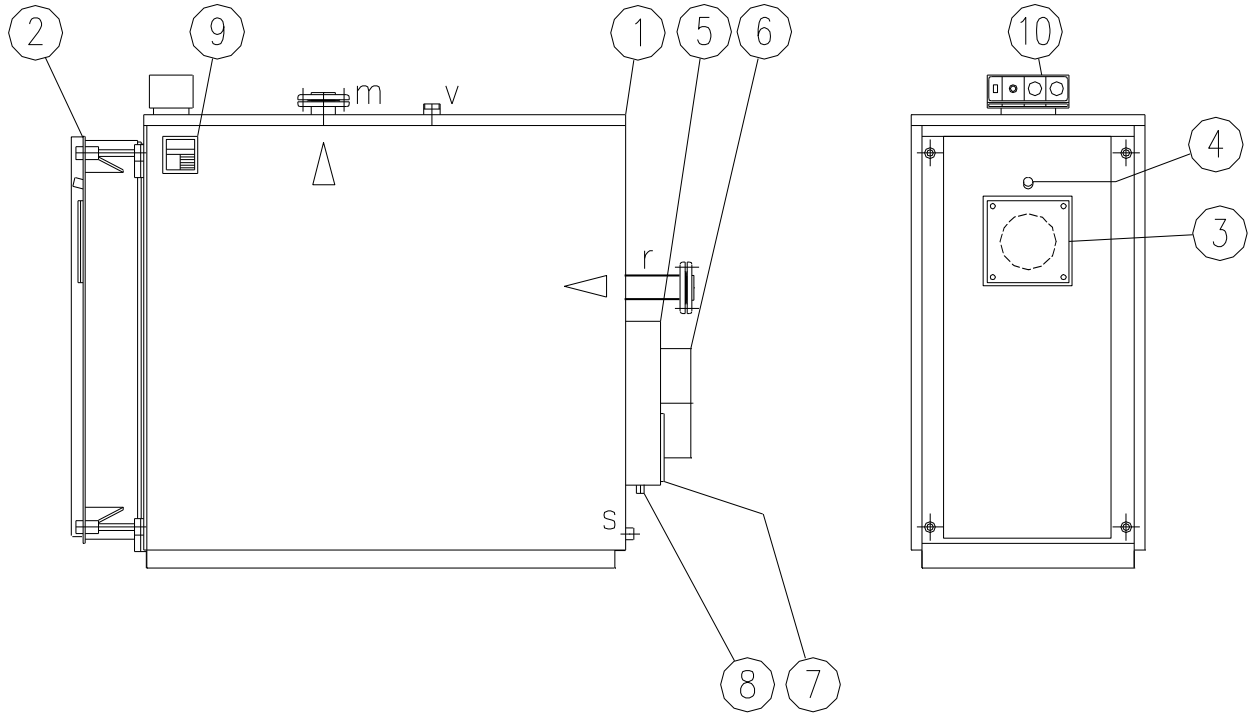
WARNING: when using light oil and fuel oil, water min temperature when returning to the boiler must be > 40°C.

The burner is installed on a hinged door; this facilitates regulation and maintenance of the boiler and the burner without having to take out the latter.

The thermal insulation of the boiler body is obtained by applying a pad of highly insulating mineral wall.
Elegant stainless steel panels complete the outside finish.

The pre-connected electric control board that runs automatically the boiler is positioned over the boiler itself.
The electric diagram can be found inside the control board.

On request, a weather conditions electronic controller can be supplied together with an external probe to adjust the outlet water temperature according to the external one. The controller has also many other functions.



1 - Boiler body
2 - Door
3 - Burner plate
4 - Pilot flame
5 - Smokebox
6 - Flue pipe
7 - Cleaning door
8 - Flue condensate discharge
9 - Technical specs and identification plate
10 - Instrument board
r - Return heating
m - Heating delivery
s - Mud purging
v - Safety valve connection or expansion vessel

TECHNICAL DATA

MODEL **VERSOCALD ECO**	**110**	**150**	**190**	**230**	**290**	**345**	**440**	**520**	**580**	**640**	
Nominal capacity	110	148	185	227	286	345	436,7	518,9	570,4	641,3	kW
Furnace capacity	113,3	152	189,6	232,3	292	351,7	458,7	545	599	673,6	kW
Nominal capacity at 30%	33	44,4	55,5	68,1	85,8	103,5	131	155,7	171,1	192,4	kW
Efficency at 100%	97,1	97,4	97,6	97,7	97,9	98,1	95,2	95,2	95,2	95,2	%
Efficency at 30%	104,5	105,6	105,5	105,2	105,5	105,6	104	104,2	104,4	104,5	%
Standby loss	2,0	1,8	1,7	1,6	1,5	1,3	4,2	4,3	4,3	4,3	%
Fornace counterpressure	1	1,2	1,6	2	2,3	3,3	3,5	4,2	5,5	6,6	mbar
Water content	209	258	308	356	425	425	585	698	698	698	dm3
Empty weight	370	430	500	545	615	620	1030	1120	1130	1130	kg
Max working pressure	5										bar
Min return temperature allowed *	15										°C
Max temperature allowed	100										°C

* with light oil and fuel oil > 40°C

VERSOL reserves the right to make any modifications considered necessary for improving production

IDENTIFICATION ELEMENTS

The appliance can be identified through the TECHNICAL PLATE that contains the performing values and identification data.
The plate is applied in the front upper part, right.

For any servicing and spare part the correct identification of the boiler model will facilitate all operations

IMPORTANT: ensure that the boiler is provided with a technical plate. If not, ask the installation technician to have it installed

LIST OF SPARE PARTS

The spare parts recommended for two years of operation are the following:

No. 1 working thermostat
No. 1 safety thermostat
No. 1 door gasket
No. 1 smoke box gasket
No. 1 burner plate gasket
No. 1 flame sight glass
No. 1 flame sight glass gasket

The following spare parts may also be supplied in the event of accidental damage or malfunction:

- Thermometer
- Complete control panel
- Complete door
- Complete smoke box
- Complete or partial casing
- Complete turbolator set

STARTING UP THE BOILER

The boiler must be started up for the first time by professionally qualified personnel; subsequently it will operate automatically.
At times it may be necessary for the user to re-start the boiler manually, for example after a period of prolonged absence.
In this case the following must be checked:

- that the heating system fuel and water taps are open;
- that the pressure of the hydraulic system when cold ranges from 1 to 1.5 bar;
- that the calibration of the boiler regulation thermostat; is included between 35 and 90°C;
- that the ambient thermostat is active and set to 20°C;
- that the system pumps are not blocked.

Turn on the master switch and then the main switch on the control panel

The boiler will perform an ignition phase and once started will remain on until the set temperatures have been reached.
Operation will be automatic from now on.

If ignition or operation problems occur, switch the boiler off and call professionally qualified personnel.

TURNING OFF

In the event of temporary periods of inactivity (week-ends, short trips, etc.) with no danger of frost, follow the procedure below:

- turn off the main switch on the control panel (OFF);
- turn of the plant main switch.

CAUTION: if there is danger of frost, do not carry out the above operations but set the ambient thermostat on approx. 10°C.

In the event of a long period of inactivity, follow the procedure below:

- turn off the main switch on the control panel (OFF)
- turn of the plant main switch.
- close fuel and thermal plant water taps.

CAUTION: if there is danger of frost, have the thermal plant emptied by professional qualified personnel.

CLEANING

Before cleaning operations make sure that:

- the main switch on the control panel has been turned off (OFF);
- the plant main switch has been turned off.

The user should only clean the outside casing of the boiler using a wet cloth with soap.

If the dirt is particularly difficult to remove, soak with water and methylated spirit. Do not use abrasive sponges or products and do not clean with jets of water.

MAINTENANCE

Periodic maintenance and measurement of the combustion efficiency are required by law and the person in charge of the heating system must ensure that these checks are carried out by professionally qualified personnel.

PRODUCT RECEIPT

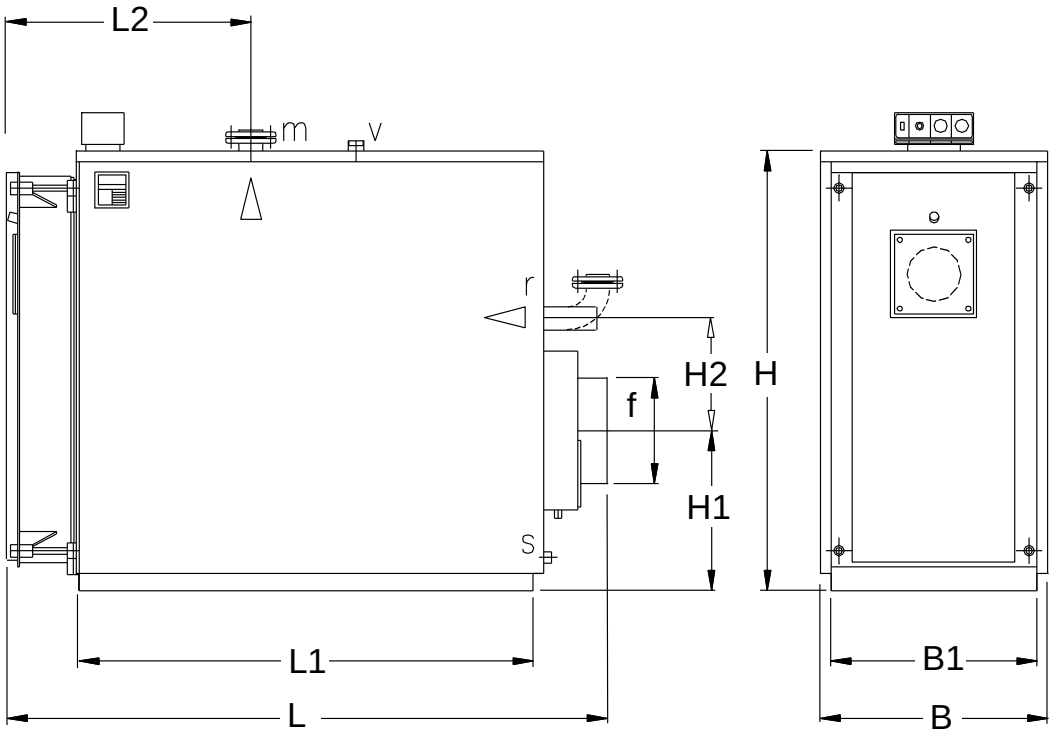
The VERSOCALD ECO boilers are delivered already with the insulation and the casing and are packed on a wooden pallet:

In the boiler furnace there are:
- documents
- 1 electric panel box
- the condensate neutralizing device
- ceramic fibre mat for plugging the burner draught tube crack
- counter-flanges with bolts and seals (only for the models from 190 to 580).

The boiler body must be handled by means of the appropriate lifting equipment also with eyebolts fixed on top of the boiler (remove the casing cover to find them) and using suitable equipment.

Given the weight of the boiler, you are advised not to attempt to move it manually.

DIMENSIONS



MODEL **VERSOCALD ECO**		**110**	**150**	**190**	**230**	**290**	**345**	**405**	**440**	**520**	**580**	**640**	
dimensions	B	660	660	660	740	740	740	740	870	870	870	870	mm
	L	1430	1680	1930	1750	2000	2000	2300	2090	2390	2390	2390	mm
	H	1150	1150	1150	1300	1300	1300	1300	1550	1550	1550	1550	mm
	B1	620	620	620	700	700	700	700	830	830	830	830	mm
	L1	1010	1260	1510	1260	1510	1510	1810	1512	1812	1812	1812	mm
	L2	760	910	1060	960	1110	1110	1260	1100	1250	1250	1250	mm
	H1	300	300	300	330	330	330	330	400	400	400	400	mm
	H2	200	200	200	240	240	240	240	285	285	285	285	mm
fittings	r/m	2″	2″	2″	65	65	65	65	80	80	80	80	DN
	v	1″1/4	1″1/4	1″1/4	1″1/2	1″1/2	1″1/2	1″1/2	2″	2″	2″	2″	DN
	s	¾″	¾″	¾″	¾″	¾″	¾″	¾″	¾″	¾″	¾″	¾″	DN
	∅f	200	200	200	250	250	250	250	300	300	300	300	mm

INSTALLATION

INSTALLATION PREMISES

The boiler must be installed in a room that complies with the provisions and minimum distances established by the current regulations and is provided with suitably sized air vents.

The boiler must be positioned on a flat surface capable of uniformly supporting the base structure section bars.
The surface should be raised from the floor.

CAUTION: if the burner is powered with combustible gas with specific gravity higher than the specific gravity of air, the electrical parts must be positioned above 0.5 metres from ground level.

The boiler must not be installed outside as it has not been designed for outdoor installation and is not provided with automatic anti-freeze systems.

DISCHARGE OF COMBUSTION PRODUCTS

Correct burner/boiler/flue coupling drastically reduces consumption, optimises combustion with low emission of contaminants and provides effective protection against condensation.

The FLUE must be resistant to heat and condensation, thermally insulated, hermetically sealed, without bottlenecks or obstructions, as vertical as possible and sized according to current regulations.

The CONNECTION BETWEEN THE BOILER AND THE FLUE must comply with the current regulations and legislation and consist of rigid hermetically sealed pipes resistant to high temperatures, condensation and mechanical stress.

For sealing the joints, use materials that can withstand at least 200°C

Badly sized and shaped flues and couplings between boiler and flue can amplify the combustion noise, negatively affect the combustion parameters and cause condensation problems.

CAUTION: non-insulated outlet pipes are a potential source of danger.

HYDRAULIC CONNECTION

The choice and installation of the system components is the responsibility of the installer who must operate in accordance with correct working practice and the current legislation.
The following recommendations should be observed:

- The boiler fittings must not be strained by the weight of the system connection pipes as this can be dangerous and the latter must therefore be sustained and appropriately positioned.

- Cut-off devices must not under any circumstances be fitted between the boiler and the expansion vessel and between the boiler and the safety valves.

- The expansion vessel must be correctly sized (there must be no leaks of water due to normal expansion) and, if the expansion vessel is closed, the safety valves must open only in exceptional cases in order to minimise any subsequent introduction of water and in any case to ensure that it is introduced and controlled by one single point in the system

- Ensure that the safety valve outlets are connected to an outlet funnel. If not, when the valves cut in they will flood the room and the manufacturer will accept no liability for this.

- Ensure that the hydraulic pipes are not used as earth connections for the electrical or telephone system. They are not suitable for this use and can rapidly deteriorate leading to serious damage.

- Before connecting up the boiler, wash all the system pipes to remove any debris that could affect correct operation.

- If the water available for filling the system is hard (> 15 French degrees) or corrosive (pH < 7.2), a treatment plant should be provided otherwise permanent damage can occur.

- If the mains water supply contains impurities, a suitable filter must be fitted.

- Avoid any accidental contact between the heating system water and the sanitary water as the former is not drinkable.

After connection to the hydraulic system, ensure that the latter is completely de-aerated.

You are advised to insulate the heating system pipes to avoid heat dispersion resulting in increased fuel consumption and environmental pollution.

Before making all the hydraulic connections, dismantle the casing cover to avoid all damages.

SMOKE CONDENSING

Combustion smokes contain water partially in form of vapour. By condensing this vapour, a consistent part of heating can be recycled instead of being dispersed in the atmosphere.

Vapour condensing temperature of smokes varies according to the fuel used: with gas oil, smokes must reach approx. 45°C, while with methane gas, approx. 55°C

The condensation starts when smokes find a surface with a far lower temperature than the one mentioned above. This explains why condensation is much more efficient when using methane.

With gas oil or fuel oil, condensation is not recommended because the fuel contains sulphur : smoke condensate contain sulphates which are corrosive for metals.

The condensate is acid (pH 3÷3,5) and before discharging it in the sewage it must be neutralised, restoring the pH on values ranging from 6.5 to 9 and using special products (such as calcium carbonate).

The VERSOCALD ECO boiler has been provided with special devices to drain the condensate that can be found in the smoke path. Connect the condensate discharge under the smoke box to the collecting trap which contains the neutralising product.

ELECTRICAL SYSTEM

The electrical system must comply with the current regulations and be installed by professionally qualified personnel.

Electrical safety of the equipment is ensured only when it is correctly connected to an efficient earth system in compliance with the current safety regulations.
The manufacturer will not be liable for any damage caused by failure to earth the system.

Call professionally qualified personnel to check that the electrical system is suitable for the maximum power absorbed by the equipment, ensuring in particular that the system cable sections are suitable for the power absorbed by the equipment.

Adapters, multiple sockets and extension leads must not be used for general power supply of the equipment from the mains.

For connection to the mains, a twin-pole switch must be provided in compliance with the current regulations.

FUEL SUPPLY

The fuel supply line must comply with current regulations and be laid by professionally qualified personnel.

Before installation, you are advised to thoroughly clean the inside of all the fuel supply pipes in order to remove any debris that may affect correct operation of the boiler.

Check the fuel supply system internal and external seal.
If using gas, the connections must be perfectly sealed.

Check that the fuel supply system is provided with the safety and control devices prescribed by the current regulations.

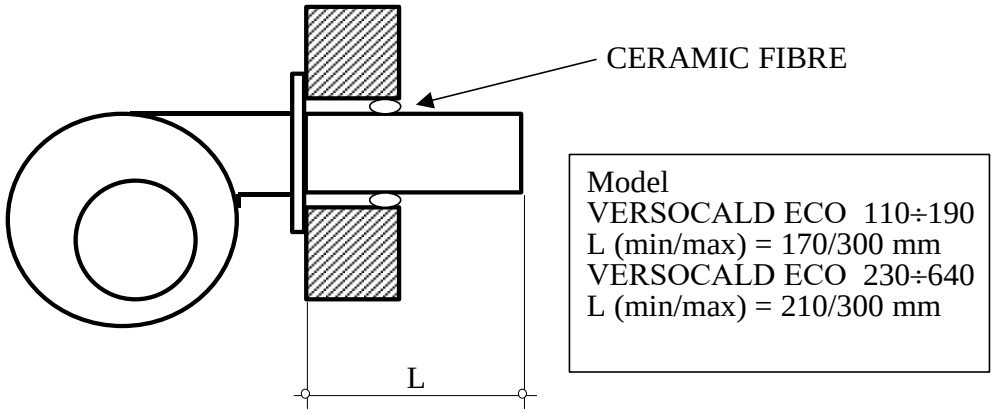
Do not use the fuel system pipes to earth electrical or telephone systems.

Check that the boiler is pre-set for operation with the type of fuel available.

BURNER CONNECTION

For installation of the burner, the electrical connections and the necessary settings, consult the burner instruction manual.
Ascertain that the correct type of burner has been chosen for the boiler, checking the technical specifications of both.

The burner draught tube must be sized as shown below:



Secure the burner to the door by means of the fixing plate so that the flame is parallel and centred in the furnace; if not, combustion problems can occur with the risk of seriously damaging the boiler.

IMPORTANT: after installing the burner, fill any crack between the draught tube and the hole of the door with the material provided, resistant to 1000°C (ceramic fibre mat).

This operation prevents overheating of the door which would otherwise be permanently deformed.

If the burner is provided with an air intake, connect it by means of a rubber tube to the intake located on the flame inspection window: in this way the glass will remain clear.
If the burner is not provided with air intake, remove the intake on the flame inspection window and close the hole with a ∅ 1/8” BSP plug.

The fuel connections to the burner must be positioned in order to permit complete opening of the boiler door with the burner fitted.

CONTROL PANEL ASSEMBLY

On request, a control panel can be purchased together with the boiler

The instrument panel is inside a box in the boiler furnace. Power supply voltage: 220V - 50Hz.

Open the instrument panel by unscrewing the self-tapping screws.

Uncoil the instrument probe capillaries making sure that you do not damage them and pass them through the hole on the bottom of the panel.
Take the boiler casing cover and insert the probe capillaries in the hole and fix the control panel to the casing.
Lean the cover on the boiler and insert the probes in the bulbs and ensure that they don’t come out accidentally.

CAUTION: all the control board capillary probes must be inserted in the boiler body bulbs near the heating system delivery fitting.

The electrical connections must be carried out following the attached electric diagram.

Do not fix the electrical cables on the boiler body sheet metal panels, on the door or on the smoke box.

Close the board.

PRELIMINARY OPERATIONS PRIOR TO STARTING UP

Before starting up:

- ensure that the regulation and control instrument probes are positioned correctly in their wells;

- ensure that the turbolators do not protrude from the front of the fume pipes;

- check that the system is filled with water, de-aerated and at a pressure ranging from 1 and 1.5 bar;

- check that all the control and safety devices are in efficient working order and correctly set;

- check that the furnace is free from foreign bodies;

- check that the refractory lining of the door has not been damaged;

- check that the burner draught tube has been correctly plugged (see page 17);

- check that the door has been correctly tightened (see page 21);

- check that the system on-off valves are completely open and that the pumps rotate correctly;

- ensure that there is enough fuel available and that the fuel cocks are open.

FIRST START UP

After performing the preliminary checks, perform the following operations to start the boiler:

- set the boiler thermostat(s) on the control panel between 35 and 90°C according to the type of installation;

- set the ambient thermostat to a temperature of approximately 20°C;

- set the master switch to “on”;

- press the main control panel switch (the button light will come on).

The boiler will perform an ignition phase and, once started, will remain on until the set temperatures have been reached.
Operation will be automatic from now on.

CHECKS DURING AND AFTER INITIAL SWITCH

Once the boiler has been started, check that it stops and then starts again by:

- altering the boiler thermostat setting;
- turning the control panel main switch off;
- altering the setting of the ambient thermostat.

Check the seal on all the gaskets on the water and fume side; they must be further tightened while hot in order to guarantee a perfect seal.

This operation is of fundamental importance for the gaskets of the door, of the burner plate and of the smoke box to prevent leakage of toxic and therefore hazardous combustion fumes into the boiler room.

Tightened while hot in order to guarantee a perfect seal.

The weight of the overhanging burner tends to loosen the gasket of the burner plate and the door at the top

It is also very important to check the boiler/flue coupling seal for the above reasons.

Check correct rotation of the pumps.

Check total stoppage by means of the master switch.

Once all the conditions are satisfied, the burner must be correctly set to the maximum power permitted by the boiler, analysing the combustion products to obtain correct combustion and lowest possible emission of contaminants.

Ideal fume temperature during normal operation is approximately 120÷ 150°C.

Given that the pressure of the water contained in the system increases during operation, ensure that its maximum value does not exceed the boiler boiling pressure.

MAINTENANCE

Periodical maintenance is essential for the safety, efficiency and long life of the equipment.

It is also required by law and must be carried out by professionally qualified personnel.

Before carrying out any work, you are advised to perform a combustion analysis to ascertain the operating conditions and obtain any other useful information.

After performing the combustion analysis and before any other operation:

- disconnect the electricity supply by switching off the master switch;

- close the fuel on-off taps.

OPENING AND ADJUSTMENT OF THE DOOR

The door can be opened from both sides.
The opening is normally from left to right.
To open the door, remove the fixing nuts from the left.

Lifting equipment must be used to change the door opening direction.
Proceed as follows:
- hook the door to the lifting device from the two holes provided at the top;
- remove the four tightening nuts;
- slide the door out;
- unscrew the two locknuts remaining on the tie rods and screw them onto the tie rods on the other side;
- refit the door ensuring correct location of the locknut seats into the door bushes;
- tighten the four fixing nuts.

To adjust the tightening:
- tighten the adjustment locknuts ensuring that they do not protrude from the door bush seat;
- tighten the fixing nuts adopting a cross sequence. Tighten only as far as required to ensure a uniform airtight closure.
- screw the adjustment locknuts in until locked.

Usually, at each maintenance operation, the door adjustment should be inspected.

CLEANING OF THE BOILER

The boiler should be cleaned at least once a year to remove carbon deposits from the heat transfer surfaces

Open the door, open the cleaning door and take the turbolators out.

Clean the smoke pipes using a steel brush and remove the soot from and the rear cleaning door.

CHECKS AFTER THE BOILER CLEANING

After performing the maintenance and cleaning operations, repeat the preliminary operations prior to switching on for the first time (see page 19), check the burner setting and perform a fume analysis.

Check the fuel supply system seal: this check is particularly important when using gaseous fuels.

Check that the fume circuit is perfectly sealed and replace any worn gaskets.

Check the system hydraulic seal to avoid unnecessary exchange of water and topping up which will increase the risk of scaling.

Should the boiler inside walls be scaled, a chemical washing is needed to remove scale. This operation must be performed by qualified companies.
The specifications of the plant water should be examined and, if needed, a treatment system should be installed.

Never leave highly inflammable substance containers in the premises where the boiler has been installed.

TROUBLESHOOTING

Below is the description of the most common faults and their remedy:

FAULT: the burner does not turn on.
REMEDY:
- check electric connections;
- check the regular fuel supply;
- check the integrity and the cleanness of the fuel supply system and that no air is present;
- check that ignition sparks form regularly and the burner appliance works correctly;
- check the boiler safety thermostat intervention with manual reset;
- check the calibration of the environment thermostat.

FAULT: the burner turns on well but turns off immediately after.
REMEDY:
- check the pilot flame, the air calibration and that the burner appliance works correctly.

FAULT: the burner is difficult to be adjusted and/or no output.
REMEDY:
- check for the cleanness of burner, boiler, boiler/flue pipes and flue;
- check the hermetic seal of the smoke circuit (door, smoke box, boiler/flue connection);
- check that the fuel supply is flowing regularly and verify the effective power of the burner;
- check for the presence of scale and carry out a chemical washing.

FAULT: the boiler gets easily covered with soot.
REMEDY:
- check the burner regulation (smoke analysis);
- check the fuel quality;
- check the flue for clogging and the cleanness of the burner air intake (dust).

FAULT: smell of gas and/or unburnt products.
REMEDY:
- check the seal of the fuel supply system (if gas fuel);
- check the hermetic seal of the smoke circuit (manhole, burner plate, smoke box, boiler/flue connection);
- check that the rubber holder on the flame warning light is connected to the burner air inlet or clogged.

FAULT: the boiler does not reach set pressure.
REMEDY:
- check that the smoke side and water side of the boiler are clean;
- check the combination, regulation and performance of the burner;
- check the regulation of the pressure switches and that they work correctly;
- check the position of the thermostat gauges;
- ensure that the boiler capacity is appropriate for the plant.

FAULT: the boiler reaches the appropriate temperature but the heating system is cold.
REMEDY:
- check that no air is in the system
- check that the circulation pumps are working well;
- check the ambience thermostat setting.

FAULT: the safety pressure switch intervenes.
REMEDY:
- check electric wires;
- check that the gauges bulbs are positioned correctly
- check that all thermostats are working and set correctly;

FAULT: the safety valve of the boiler intervenes often.
REMEDY:
- check the system pre-loading pressure;
- check the efficiency of the expansion vessel;
- check the calibration of the valve itself.

FAULT: membranes overheating due to lack of water in the boiler.
REMEDY:
- Turn off the burner, do not pour water and do not open the door; wait until the ambience temperature is restored before performing any operation.

FAULT: water on the floor near the smoke box (condensate).
REMEDY:
- check that the vent in the smoke box is connected to a collecting trap.

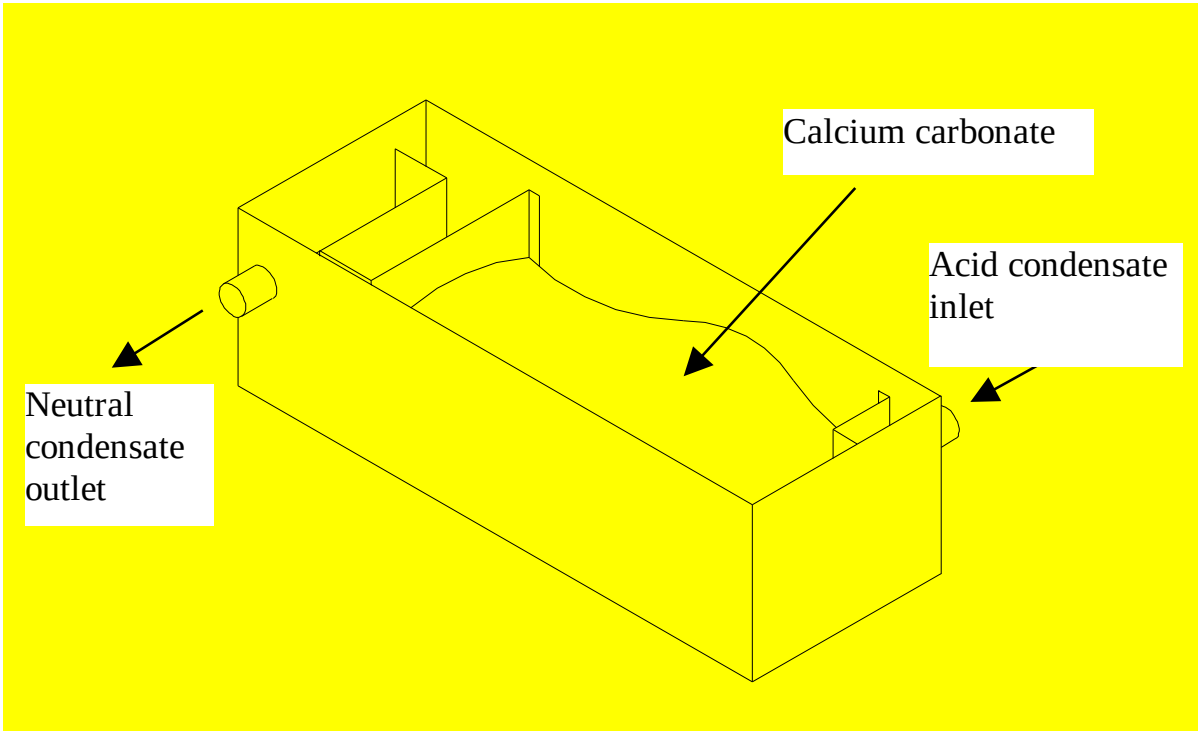
CONDENSATE NEUTRALIZING DEVICE

Use the standard hose supplied to connect the condensate neutralising device to the sleeve of the boiler smoke box.

Pour the calcium carbonate in the tank and fill it halfway. Ensure that the calcium carbonate doesn't invade the decanting labyrinth near the outlet connection.

While neutralizing the acid condensate, the calcium carbonate expires: check it periodically and refill it when the residue from the bottom is lower than 3 cm.

The neutralized condensate can be discarded in the sewage.



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