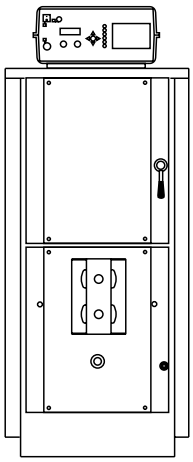
Unical®



FIREX 2S

OPERATING INSTRUCTIONS FOR THE USER

TABLE OF CONTENTS

1 - SYMBOLS USED IN THE MANUAL

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

DANGER!
Serious danger for personal safety and life

ATTENTION!
Possible hazardous situation for the product and the environment

NOTE!
Suggestions for the user

2 - APPROPRIATE USE OF APPLIANCE

The FIREX appliance has been constructed 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 intended to operate in hot air circulation heating systems. Any other use must be considered improper.
UNICAL shall not be held liable for any damage resulting from improper use; in this case the user is fully responsible for the risk.
Use according to the intended purposes also includes careful compliance with the instructions in this manual.

3 - WATER TREATMENT

- The hardness of the feed water conditions the frequency at which the domestic hot water producer must be cleaned.
- If the water has a hardness greater than 15°f, we recommend using water softeners, chosen according to the characteristics of the water.
- We recommend checking and cleaning any installed D.H.W. exchanger at the end of the first year of use and every two years thereafter; on this occasion, also check the state of wear of the anode.

4 - INFORMATION PROVIDED TO THE USER BY THE INSTALLATION/MAINTENANCE TECHNICIAN

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 indispensable nature and strict 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.
- 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 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.

5 - SAFETY WARNINGS

ATTENTION!
The appliance must be installed, adjusted and maintained by professionally qualified personnel, in compliance with 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, authorised by Unical. 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.

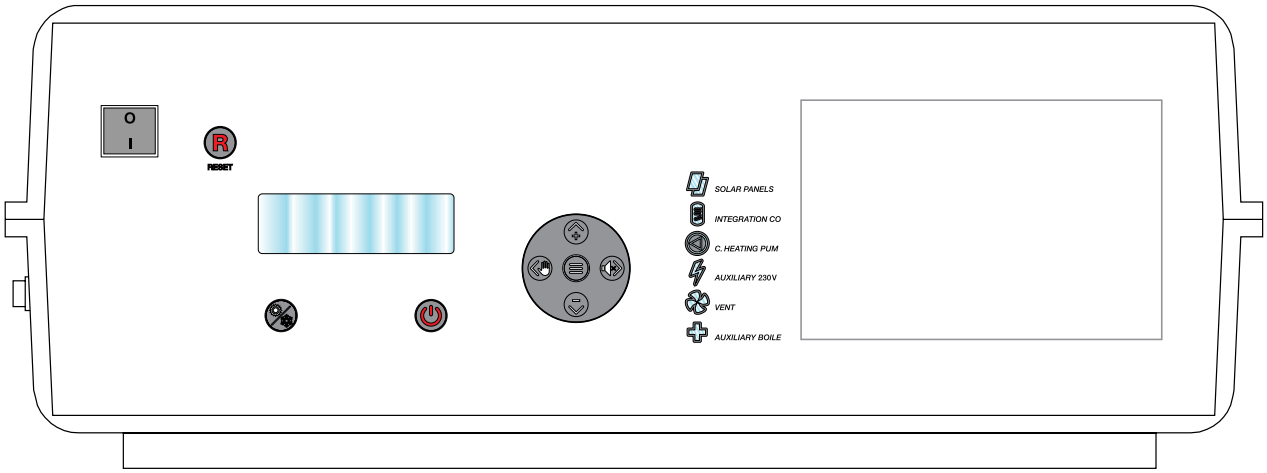
Modifying parts connected to appliance
Do not modify the following parts:
- the boiler
- the gas, air, water and electricity lines
- the flue gas pipe, safety valve and heating water drain pipe
- the construction parts which affect the operating safety of the appliance.

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.

6 - OPERATING INSTRUCTIONS

6.1 - CONTROL PANEL



Functions of switches:

- Luminous main switch (green)
- fan start key
- control unit RESET key
- summer / winter key
- safety thermostat reset key (located on the left side)
- boiler functions adjustment MENU key
- functions value increase key
- functions value decrease key
- key to change priority domestic hot water /heating
- boiler maximum temperature sound alarm acknowledge

Functions of indicator lights:

- solar panel pump start indicator light
- load pump start indicator light storage tank
- heating pump start indicator light
- free indicator light
- fan start indicator light
- auxiliary boiler start indicator light oil/gas

FUNCTIONS OF CONTROL SWITCHES / CONTROL KEYS:

Pressing the switch 

powers the panel and all the operations connected to it.

By holding key  for few seconds it is possible to select the following operation options:
- **WOOD COMB**
- **AUTO COMB**
- **BURN COMB**
- **- - - - -** Stand-by (all off)

WOOD COMB
In this mode the wood boiler is in operation.
When boiler operation stops, the back-up boiler is NOT activated.

AUTO COMB
In this mode the wood boiler is in operation and the words Leg Auto flash on the display; the boiler is working on wood.
When loading is completed, in the event of demand, the back-up boiler is automatically activated.

BRUC COMB
In this mode the back-up boiler is in operation.

After selecting the **LEGN COMB** or **AUTO COMB** mode, by pressing  for one second the fan is powered. This will remain active as long as there is wood in the boiler wood compartment. This cycle is timed; therefore when activated with this key, the board controls the boiler's ability to produce heat; when it runs out, the boiler returns to the standby status after a preset time during which no more heat is available. The load end status is brought about by the flue gas temperature

The  key changes the SUMMER / WINTER setting; in SUMMER mode the heating system pump is disabled.

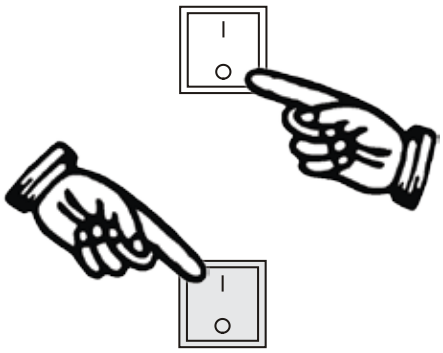
The key  changes the priority between domestic hot water and heating.
This key is active if there is a storage tank with a coil. It stops heating in favour of DHW production and vice versa.
The storage tank water production cycle or storage tank loading will automatically activate when the storage tank minimum temperature is reached and it will de-activate when the storage tank has reached the desired temperature.
When room heating is managed by the chronothermostat (or room thermostat) control, with closed contact and sufficient boiler temperature, the board activates the heating system pump.
The arrangement will be viewed on the display according to the following phases:
- "DHW" setting, the boiler automatically activates domestic hot water priority when the storage tank has reached the minimum temperature.
- "OFF" setting when the boiler has requested neither DHW or heating.
- "CH" setting when the boiler has been requested heating through the chronothermostat (or room thermostat) input contact.
- "MAINT" when a DHW or heating request is activated, and parameter "P 0" is met.

The key  silences the sound alarm in case of overtemperature alarm.
In case of an alarm, all the pumps configured according to the programmed operating mode are activated to disperse excess heat (ANTI-INERTIA FUNCTION) and the fan stops.
The sound alarm is triggered automatically should the boiler's flow temperature exceed the "P 2" value. At the same time, the STORAGE TANK PUMP function LED and the SYSTEM PUMP function LED on the display switch on.

The 

key is used to reset the "self-diagnostics" controller.
This operation does not affect the set parameters, which are not modified.

IMPORTANT!
Before powering the panel board, ensure the main switch is on* O *and that the safety thermostat is "reset".



Starting up the boiler

This switch connects and disconnects power to the **boiler**.

- With the switch at **0** , the boiler is not powered electrically (green indicator light off).
- With the switch at **I** , the boiler is powered electrically (green indicator light on) and is set up for operation. **The recirculation pump works.**

The detected boiler flow, return and flue gas temperatures will be shown on the first screen of the display.

Flue gas extraction start up

When the panel is turned on by means of the switch  the fan will be automatically powered.

When the indicator light  is blue, it means that a possible auxiliary boiler can be powered by means of output 11-12 of terminal J1 on the board.

When the indicator light  is red, it means that the wood-fired boiler fan is running.
To interrupt the combustion stage and stop the fan, press key  for one second;

Door opening micro-switch operation check

To check correct wiring and operation of the door opening micro-switch, open the upper wood loading door; the controller will start emitting short BEEPS at short intervals and the lower row of the display will read BOILER DOOR OPEN.
Just close the wood loading door to silence the alarm.

Summer / Winter mode selection

The Summer / Winter function can be selected with key  and the lower row of the display will read alternatively SUMMER WATER WOOD COMB. or WINT HEAT. WOOD COMB. if there is demand for domestic hot water or if the room thermostat is requesting.

If the room thermostat is not requesting the words WINT OFF WOOD COMB. are displayed, or if there is no demand for DHW the words SUMMER OFF WOOD COMB.
In Summer mode, the heating system pump is disabled.

Programming procedure (only qualified personnel)

To enter parameter programming, hold the key pressed for about 8 seconds until the first modifiable parameter (**parametro 0**) appears on the display with the default value.

Now press the key and the figure will start flashing.

Change the figure with the keys and .

Press to confirm the figure.
Press the key for 8 seconds to exit the menu.

For the range of values that can be set according to the system installed, see chapter 4 of the Installation instruction booklet (Parameters list / Settable values) page 23.

By pressing the keys and , the next parameters can be viewed in sequence. Set the desired values by acting as explained previously and, when programming is completed, confirm all the selections by holding the key pressed for 8 seconds.
This will transfer all the changes to the non-volatile memory of the control board.

Resetting the safety thermostat

The safety thermostat is triggered when the boiler temperature exceeds 100°C and blocks the fan. The pumps enabled according to the type of diagrams will continue working.

IMPORTANT: The reset control of the FIREX boiler safety thermostat is located on the left of the panel board.

The thermostat resets operation of the wood-fired boiler.

To access it when the boiler blocks, unscrew the plastic cap with a screwdriver; after resetting the boiler, put the plastic cap back on.

The safety thermostat can be triggered when the boiler overheats. This can be solved first of all by lowering the operating temperature of the boiler (see next point).

If the safety device of the boiler trips repeatedly, do not try to restore operation of the boiler on your own, but contact an After Sale Service Centre.

Heating system temperature adjustment

It is possible to **control the temperature of the FIREX** boiler system water by changing **PARAMETER 0**
The P0 parameter is the only parameter the user is able to modify; the remaining parameters may exclusively be changed by an After Sale Service Centre.
Temperature is adjusted between a **minimum of 70°C and a maximum of 85°C.**
See previous point ***"Programming procedure".***

Lighting the boiler

The top door is open to load wood and the fan runs at full speed.
Light the wood as described in Chap. 6.3.

With lower boiler door closed, upper door open and operating fan after lighting the wood, the upper door closes and fan is switched off.
To activate the actual combustion cycle just press the  on/off key for one second: The fan starts and goes to nominal speed set in parameter P13.
The board displays the message “Wood comb”. The boiler on or off status is brought about by the flue gas temperature reached in a certain period of time.
When the on/off key is pressed a timer is activated, the time of which is set in parameter P11. During this time the flue gas temperature must reach the value set in parameter P14 (minimum flue gas temperature for boiler ignition detection), upon reaching it the boiler continues operating regularly.
If however, when the set time has elapsed the flue gas temperature has not reached the value set in P14, the boiler fan switches off and the combustion cycle stops.
This may depend on the amount of fuel loaded or adjustment of primary and secondary boiler air. Always check the flame is present during the ignition phase through the flame sight glass located in the lower door of the boiler.
Pump operation is connected to the boiler water temperature and does not follow the flue gas temperature figure, therefore the case may occur where the boiler is in standby and the pumps are operating.

When the water temperature in the boiler goes below the figure set in parameter P1 the pumps stop.

Heating system pressure

For systems with open expansion vessel, pressure does not need to be restored as it is done automatically by the level switch placed inside the vessel.

6.2 - CHECKS BEFORE COMMISSIONING

Before commissioning the appliance, the following should be checked:

- Make sure that the shut-off valves for maintenance on the flow and return pipes of the system are open.
- Check the connection of the safety valves to the sewer system.
- Make sure the boiler is powered electrically; the main switch on the panel board must be on when placed at .
- Check the water pressure on the boiler pressure gauge (see "heating system pressure"); for best operation, the pressure should be between 1 and 1.2 bar (with pump stopped).
- Make sure that the fan always runs at maximum speed when the loading door opens.
- Check proper operation of the by-pass when the door is opened, proper operation and seal with “door closed”. Opening the loading door causes the fan to start up automatically. In this way the flue gas accumulated in the wood storage is extracted and conveyed directly to the chimney.
  The bypass, in conclusion, allows the flue gas to be discharged to the chimney without escaping into the room when loading the wood or during lighting.

Complete decommissioning

When the system is put completely out of service, hot water production is fully deactivated.

In the event of putting completely out of service, disconnect power to the boiler by opening the contact on the two-pole switch upstream of the boiler and flicking the main switch on the panel board to **0** : the indicator light will switch off.

Close the cold water and gas shut-off tap (if back-up boiler with gas-fuelled burner is present).

ATTENTION!
The heating system can be effectively protected against ice by using specific antifreeze products suitable for multi-metal plants.

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

6.3 - FIREWOOD

Wood is formed mainly by cellulose and lignite. It also contains other substances, such as resin (fir - pine), tannin (oak - chestnut) and, obviously, a large quantity of water.
Good quality woods are oak, ash, beech, maple and fruit trees, except cherry; medium quality wood is: chestnut and birch; sufficient quality wood: lime tree, poplar and willow.
Resinous trees are, normally, second-rate quality fuels.
Wood is therefore an extremely heterogeneous fuel, due to different essences (beech, oak, fruit, resinous), different moisture content, and due to different shapes and dimensions.
Boiler operation will inevitably be effected by all these factors. Especially by the log dimensions, the moisture content and the way wood is loaded in the boiler.

6.4 - WOOD MOISTURE

The calorific value of the different types of wood depends on their moisture content, as illustrated in the table. Boiler output and autonomy will diminish as the moisture increases. The table provides the power reduction factor based on the moisture of the wood being used. The heat output of the FIREX boiler is calculated for wood with a 15% moisture content.
As an example, wood which has been dried for 2 years in a sheltered area has a 25% moisture content.
Example:
moisture of the wood being used = 25%
output = nominal output x 0.86

Correction factors for wood moisture

% OF HUMIDITY	CALORIFIC VALUE kWh/kg	CALORIFIC VALUE MJ/kg	CORRECTION FACTOR
15	4.50	16.20	1
20	4.18	15.05	0.93
25	3.87	13.93	0.86

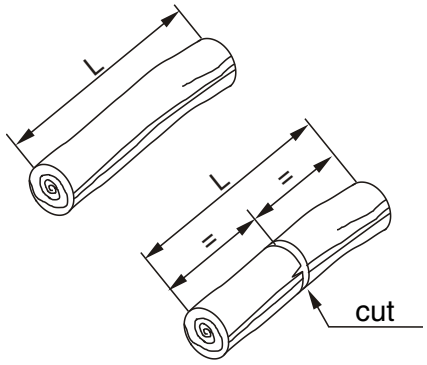
6.5 - FIREWOOD DIMENSIONS

The dimensions, together with the moisture content, contribute to determine the boiler's output. Small pieces (with a length, however, conforming to indications indicated hereby) are more easily flammable and therefore have the tendency to increase the boiler's output and therefore to reduce its autonomy. Moreover, they fall with greater facility, in the lower chamber, reducing the risk of the formation of "bridges". The so-called "bridge" is an empty space in the firewood storage compartment, where unburnt wood logs remain. In this case the bed of embers is not fed with continuity and the refractory burner's slot is uncovered. In these conditions, preferential air ducts are created with a very small flame due to an excess of air.
The FIREX boiler must be fed with natural wood logs of the length set out in paragraph 6.6. The log section must normally be round (Ø approximately 10 cm).

6.6 - START-UP

Ensure the checks referred to in point 6.2 have been performed.
Close the bottom door and power the control board (for the operation mode, see point 6.1).
Open the top loading door and place some dry wood kindling crosswise on the main stone, above the central slot.
Use highly flammable material on the wood, avoiding large and square logs.
Light the wood using thin sheets of paper (newspaper or the like).
The first ignition of the new boiler could be difficult due to moist refractory cement casting.
Accordingly, we advise fully opening the primary air and lowering the secondary air.
Close the upper door and wait a few minutes for the fire to start and produce some embers (about 5 minutes).
After a few minutes, if looking through the flame sight glass of the lower door you see that flame inversion is beginning, add other larger logs.
Close the top door.
Press key  for 1 second, and the combustion phase will start.

The wood must have the following length:
a) 50 cm (+ 1 cm, - 4 cm)
   for model FIREX 34
b) 50 cm (+ 1 cm, - 4 cm)
   for models FIREX 45
c) 70 cm (+ 1 cm, - 4 cm)
   for model FIREX 55



These measurements must always be strictly complied with.
As even wood feeding is essential for good combustion, it is necessary to ensure the length of the wood logs fed, their shape and the manner of loading do not prevent regular feeding of the fuel.
The wood logs must be placed lengthwise and horizontally. No log should be tilted or placed sideways.
Once you have checked flame inversion, it is possible to proceed with further loading (bear in mind that the primary and secondary air adjustment indications in the table are approximate).

FURTHER LOADING
Before loading wood once again, consume the previous one as much as possible.
You can add more wood when the bed of embers in the firewood compartment is about 5 cm deep.
Open the loading door and the internal anti-smoke door slowly.
It is necessary to use wood logs with the length stated in the previous paragraph.
Place the new wood logs as described above.

USEFUL TIPS AND WHAT TO AVOID
- Logs which are too long do not fall down properly and can cause "bridges".
- Logs which are too short cause irregular air ducts, with consequent reduction in output and efficiency.
- If the quality of the wood causes "bridges", it could become necessary to load logs cut in half so that the total length "L" is as indicated in the previous paragraph. To avoid the formation of "bridges", it is unadvisable to place logs against the side walls of the wood storage compartment.
- Always open the upper door slowly, in order to avoid blowbacks and smoke formation.

During normal operation, it is strictly forbidden to open the lower door.

6.7 - COMBUSTION AIR MODULATION

PRIMARY AND SECONDARY AIR ADJUSTMENT

The FIREX boiler is equipped with a combustion air intake fan, a combustion air adjustment unit (pos. 1) and primary air (pos. P) and secondary air regulators (pos. S).
When commissioning the boiler, the primary and secondary air need to be adjusted bearing in mind that the primary air determines the boiler heat output and therefore the amount of wood that is burned, and the secondary air completes combustion.
The following are the optimal adjustments of primary and secondary air using good quality wood (beech) with low moisture content (15%).

	primary air pos.	secondary air pos.
FIREX 34	**3÷4**	**~1**
FIREX 45	**4÷5**	**1÷2**
FIREX 55	**3÷4**	**1÷2**

For proper air adjustment based on the type of wood used and its actual moisture level, it is necessary to observe the flame through the flame sight glass placed on the lower door. The flame should fill about two-thirds of the lower combustion chamber and gently lap the bottom cradle, without dragging too much ash and without noise.

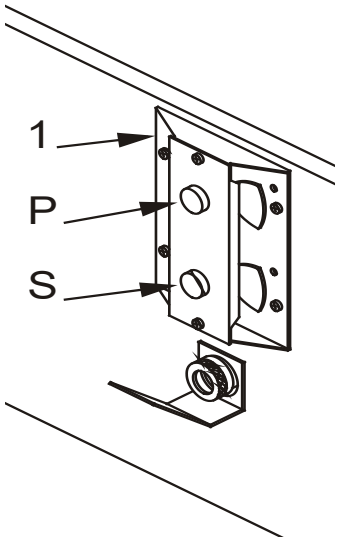
The flame must have an orange-pink-white colour, it must not too transparent and the centre should tend towards blue.

To bring the flame to optimum conditions you should then **adjust the primary air by turning the knob (pos. P)**. Do the same **for the secondary air (pos. S)**.

Example no.1
Thick damp wood that is difficult to burn
S - Very closed (try to obtain the maximum dimension of the flame, but not reddish in colour).
P - Reasonably open in order to obtain sufficient gasification.
Example no. 2
Very flammable wood logs
S - Completely open.
P - Slightly closed in order to keep gasification low, but sufficiently open to evacuate the ash that might close the combustion head.

GENERAL ADVICE

- Better performance will be achieved after two or three days of running. In fact the refractory material must be fired and the tar must encrust the upper walls of the wood storage compartment.
- The flame should have a good size and fairly fill the combustion chamber.
- The flame should not be too red (lack of secondary air S).
- The flame should not be too blue (excess of secondary air S).
- The flame should not be too noisy (excess of primary air P).
- The flame should not be too small (lack of primary air P).
- If the ashes do not go down well (increase primary air P).
- If too many ashes fall (decrease primary air P).
- If the chimney is smoking (open secondary air S all the way).
- If smoke continues to escape (open secondary air S to a maximum, choking primary air P partially as well).



1 Air adjustment unit
S Secondary air adjustment screw
P Primary air adjustment screw

AIR ADJUSTMENT FAULTS

1) If the primary air is excessive, a lot of ash and small pieces of coal will fall. The flame is too fast, dry, has a cold colour and is noisy.
The boiler is consuming a lot of wood and the door's insulation is white.
2) If the primary air is insufficient, the flame will be slow, hesitant, affected by air currents and by the chimney draught, very small, incapable of touching the lower cradle, with low ash production and the door's refractory insulation will be dark coloured.
3) If the secondary air is excessive. the flame will be small, of a bluish colour and very transparent.
4) If the secondary air is insufficient the flame will be big, it will touch the lower cradle, it will completely fill the combustion chamber and, above all, it will be of a red colour and not at all transparent.

6.8 - CHECKS TO BE CARRIED OUT AFTER COMMISSIONING

CHECKING SEALS

During the initial start-up, check the tightness of the smoke circuit and connection to the chimney. If there is any noticeable smoke leakage, alert the installer and/or our After-Sales Service. If there is any noticeable air suction through the door seals, tighten the handle with greater force.
Make sure the working thermostat Te (32) is in good running order at full power until it stops the fan.
Check for leaks from plumbing connections.

After the initial start, with the boiler off, open the lower door and inspect the internal walls and insulation of the door: they should be of a light colour, indicative of proper air adjustment.
Otherwise, if the walls are blackened, it means the secondary air is not adjusted properly (par. 6.7).

6.9 - WARNINGS

HOW TO AVOID CORROSION IN THE WOOD STORAGE COMPARTMENT

The use of wood with a high moisture content (higher than about 25%) and/or loads not proportioned to the system's heat request (long OFF periods with the wood storage full) can cause considerable condensate formation in the storage compartment's internal wall.
Check the steel walls of the upper wood storage once a week.
They must be covered by a slight layer of dry tar, opaque coloured, with bubbles tending to break and fall off. On the other hand, if the tar looks glossy, runny and liquid appears if removed with a poker: accordingly, wood that is less damp must be used and/or the amount of loaded wood must be reduced.
If, despite these measures, the tar does not dry, it is obligatory to report the anomaly to the After-Sales Service.
The condensate inside the firewood storage compartment causes the steel sheets to corrode.
Corrosion is not covered by the warranty, as it is caused by improper use of the boiler (wet wood, excessive loading, etc.).

CORROSION OF THE FLUE CIRCUIT

Flue gas is rich in water vapour, due to combustion and the use of wood which retains water.
If the flue gas comes into contact with relatively cold surfaces (having minimum temperature below 60 - 70 °C), the water vapour condensates and, combining with other combustion products, leads to corrosion of the metal parts.
Check daily whether there are signs of flue gas condensation (black liquid on the floor and behind the boiler). In this case wood with a lower moisture content must be used; check recirculation pump operation and the flue gas temperature at partial load, and increase the operating temperature. In order to control the room temperature, it is therefore necessary to install a mixing valve. **The corrosion caused by the flue gas condensation is not covered by the warranty, as it is caused by the wood's moisture content and the way the boiler is used.**

WARNINGS DURING USE

Every time the air is adjusted, wait 5-10 minutes before proceeding with the next adjustment. When you have established the best air adjustment, at the end of the day check the surfaces of the combustion chamber and the door insulation, which should be white.
There must be only a few unburnt embers in the ash deposited in the cradle. If there is too much primary air, there will be embers and small pieces of coal in the ashes, the flame will be quick, dry, a cooler colour and will be noisier, excessively powerful (chap. 6.7).
If the primary air is insufficient, the flame will be slow, small, it will not caress the lower cradle, dragging few ashes and the heat output will be insufficient.
If the flame is dark orange, the secondary air is insufficient and the surfaces of the combustion chamber will not be white; if it is small and blue, there is too much secondary air.
Always open the loading door and the internal anti-smoke door slowly.
If despite this warning there are blowbacks, you must use large logs which are a bit moister, make sure the boiler is not stopped for too long (reduce primary air - par. 6.7) and check whether any broken grates or foreign objects (nails, metal pieces) have obstructed the refractory burner hole.

6.10 - SUMMER MODE

The use of the boiler in summer only for the production of domestic hot water is not advisable, unless the boiler is run strictly following these rules:
1) Use very dry wood.
2) Load a small amount of wood in the boiler 1 or 3 times a day as needed.

Important.
It is very wrong to load the boiler completely, providing it with long self-sufficiency (for example 24 hours). This way the boiler (with the fan stopped) would produce much acid condensation corroding the wood storage compartment.

6.11 - MAINTENANCE

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

Warnings

Never drain water from the system, even partially, unless absolutely necessary.

Periodically check the proper operation and integrity of the flue gas exhaust pipe and/or device.

Do not clean the boiler and/or its parts with easily flammable substances (e.g. petrol, alcohol, etc.).
Do not leave flammable substances in the room where the boiler is installed.

Do not clean the boiler room while the boiler is running.

IMPORTANT
Clean with brushes and a vacuum cleaner; if you use any rags, make sure you collect all these.
Keep screws and nuts oiled and protect them with grease.

CLEANING AND ROUTINE MAINTENANCE OF THE WOOD-FUELLED BOILER

Every day

- Remove the ashes from the lower cradle.
- Shake down, with the scraper supplied with the boiler, the embers so that the ashes, accumulated in the fire bed will fall down through the slots in the grate. This operation will prevent grate obstruction and subsequent poor operation of the boiler. The operation is to be carried out when the flame dies down, before loading wood.

Every week

- Remove carefully all combustion residues accumulated in the firewood storage compartment.
- Use the supplied brush to clean the triangular ducts in the combustion chamber.
- Remove the ashes contained in the smoke chamber from the side doors using a scraper.
- Make sure that the slots in the grate are not obstructed: if they are, clear them up using the poker.
- If the boiler continues to operate badly, even after having cleaned it as described above, the cause can be attributed to bad distribution of the secondary air.

In this case:
1) check the adjustment of the air setting, according to the instructions given in the paragraph “Combustion air adjustment”.
2) ensure the two secondary air supply holes into the grate housing are not obstructed: if they are, use a **soft brush** to clean out each duct.

Every month

Check by-pass operation.
When the loading door is open the by-pass allows the fan to start up automatically, extracting the flue gas accumulated in the wood storage compartment, and conveying it to the chimney.
The bypass, in conclusion, allows the smoke to be discharged to the chimney without escaping from the top door when loading the wood or lighting.

UNSCHEDULED MAINTENANCE OF WOOD-FUELLED BOILER

At the end of each heating season, perform a general cleaning of the boiler by removing all the ashes from the firewood storage compartment.
During summer, keep the boiler doors closed.

Cleaning the fan

ATTENTION:
This operation is reserved for qualified personnel as incorrect maintenance could jeopardise operation of the boiler.

6.12 - TROUBLESHOOTING

Probe alarm signal:
In case of failure or disconnection of one or more temperature probes, the control unit signals that they are missing indicating the number of the missing probe by a short beep of the buzzer. To eliminate the problem, check the connection of the probe and/or replace it.

Maximum boiler temperature alarm signal:
If the boiler reaches the maximum operating temperature, the alarm sounds automatically and the display flashes indicating the safety status; at the same time the control unit activates all enabled pumps, according to the type of system controlled, in order to disperse excess heat. To silence the alarm, press the Buzzer silencing key  .

Boiler door open alarm signal:
When the wood loading door opens, the bypass connected mechanically opens allowing the fan to directly extract the flue gas at maximum speed through the bypass.
After the door has closed, the system continues working automatically following the panel board
logic.
A microswitch is connected to the bypass opening system which is activated when the door opens; the controller will begin to emit a series of short beeps at regular intervals and the message “BOILER DOOR OPEN” will appear at the bottom of the display.

- The fan will run at full speed to extract the flue gas through the bypass.
- After the door has closed, the system continues working automatically following the panel board logic.

Just close the door to silence the alarm.
Remember that keeping the door open for long periods “during reloading”, could deform the flue gas extraction impeller.

Faulty probe temperature measurement:
Should one or more probes supply faulty temperature measurements, try to replace it/them; also check to ensure no voltage reaches the input of a possible chronothermostat.
In case of faulty readings, try to disconnect the wires from the chronothermostat input.

Safety device trip:
When the set boiler water temperature has been reached (PARAMETER 0), the boiler fan stops.
If this temperature is exceeded and the temperature set in PARAMETER 2 is reached, an acoustic alarm signal will be triggered and all pumps will be enabled to run.
When the water temperature of the system drops, boiler operation will be restored automatically; if on the other hand the temperature increases beyond the safety thermostat calibration value (100°C), standard operating conditions must be restored manually by resetting the safety thermostat: the key is on the left side of the panel board.

Power outage:
Safety is assured by the thermal discharge valve (the mounting of which is **mandatory** for all solid fuel fired appliance) which disposes of excess inertia.

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