

BOIPELLET PRO Pellet boiler
Assembly and exploitation manual



Observing the prescriptions of the present manual is in the user's favour and is one of the warranty conditions. Compliance with this instruction is in the interest of the consumer and one of the warranty terms.

INSTRUCTIONS FOR SECURITY:

- This appliance is not intended for use by people (including children) with limited physical, sensory or mental abilities or lack of experience and knowledge. The installation must be performed by a qualified expert in the field of heating installations or authorized by "FERROLI" service. The place and way of connecting the boiler should be selected carefully in accord with the safety instructions. Install away from flammable objects!
 - Before starting any operation, the user must read and fully understand the contents of this instruction manual. Incorrect setup may cause hazardous conditions and / or incorrect function of the boiler;
 - Do not wash the boiler with water. Water can get inside the fireplace and damage the electronics and cause an electric shock;
 - Do not put clothes to dry on the boiler. Any clothes hangers and other objects must be located within a reasonable distance from the fireplace. Fire hazard;
 - The user is fully responsible for the proper use of the product which exempts the company from liability of any users errors or misbehaviour or omissions;
 - Any intervention or replacement that is made by unauthorized people or using non original spare parts for the product can be risky for the user and release the company from all liability;
 - Most surfaces of the boiler are extremely hot (the door handle, glass, flue pipe, etc.). Avoid contact with these parts before assuring yourself that you use temperature resistant gloves as well as suitable temperature resistant instruments;
 - Under no circumstances should the fire be ignited with the door open or broken glass;
 - The product must be electrically connected to a system equipped with an effective earth conductor. (Must be grounded);
 - Turn off the boiler in case of failure or malfunction;
 - All unburned pellets in the burner after each unsuccessful attempt ignition must be removed before a new ignition;
 - When installing the product all fire safety requirements must be respected
- If there is a fire in the flue pipe, extinguish the boiler, disconnect the power cord and never open the door.
- • Call competent authorized service technicians;
 - Do not light the boiler with flammable materials if the ignition system failed;
 - Periodically check and clean the smoke outlet ducts of the boiler (connection to the flue pipe);
 - Pellet boiler is not a cooker;
 - Always keep the cover closed;

SAFE DISTANCES:

When installing the product a safe distance of at least 600 mm must be respected. This distance applies to the product located near materials of B or C flammability level. The safe distance is doubled if the product is close to materials of C3 combustion level.

1. PURPOSE

The boiler is purposed to heat domestic and public premises by the means of pellets. The boiler is equipped with a steel water jacket designed for heating systems with water temperature up to 90° C at a maximum super pressure up to 0,15 Mpa. Tests are run at pressure of 0,3 Mpa. The boiler is designed and manufactured to work with A-class pellets only (DIN plus 51731) with the following characteristics:

- Material 100% pure conifer or broad-leaf wood;
- Diameter $\Phi 6/8$ mm;
- Length 20-30mm;
- Calorie capacity 5.2 kW/kg;
- Ash content < 8%;

The use of pellets with characteristics different from the recommended may result in power decrease, unstable and inconsistent work of the boiler.

What are the pellets.

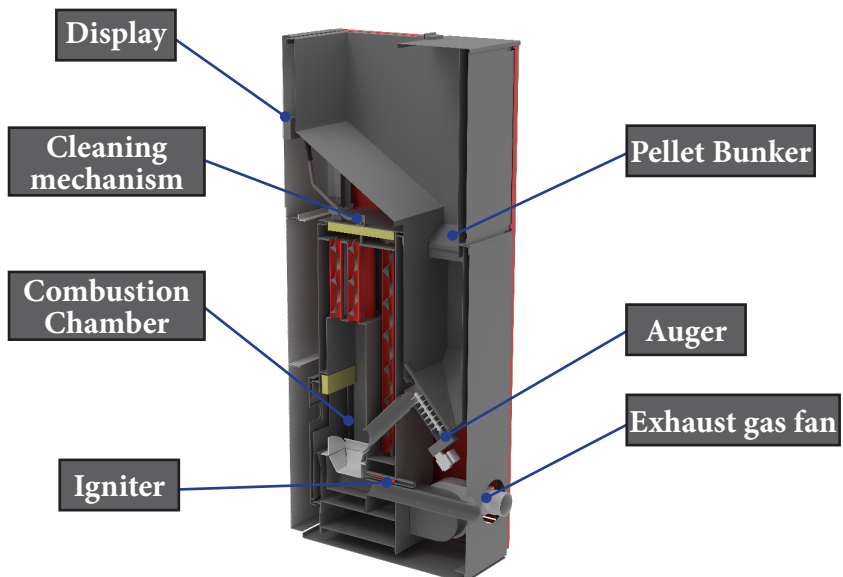
The pellets are produced by compressed wooden waste left from the production of various furniture, sawmills and others. This type of fuel is environmentally friendly because in the production process no agglutinate agents (glues, resins and others) are added. Actually, the integrity of the pellets is guaranteed by the lignite – a natural ingredient contained in the wood itself. While the wood has a calorie capacity of 4.4 kW/kg (15% humidity at 18 months drying), the pellets have 5.2 kW/kg.

Info: To ensure the proper work of the boiler the pellets must be stored in a dry place!

Recharging of pellets can be done during work, with the following sequence:

1. Open the bunker (located at the top rear of the product);
2. Fill the hopper, using non-combustible container;
3. Close the lid of the bunker;

Attention!!! Use gloves! Beware of hot surfaces!



2. TECHNICAL DATA

| Boilers BioPellet PRO | | | | | |
|--|---------|--|--|--|--|
| Maximum / minimum power | kW | 12,00 / 3,60 | 18,00 / 5,50 | 24,00 / 7,50 | 30,00 / 9,30 |
| Average consumption of pellets | kg/h | 1,6 | 2,4 | 3,2 | 3,9 |
| Efficiency (nominal / reduced) | % | 94 / 96 | 95 / 96 | 95 / 96 | 93 / 96 |
| Temperature of the flue gas | °C | 114 / 83 | 118 / 84 | 120 / 84 | 147 / 71 |
| Co Emissions 13% O | mg/Nm³ | 105 | 113 | 122 | 141 |
| The chimney draft | Pa | 12 | 12 | 12 | 12 |
| Exhaust gas pipe | Φ mm | 80 | 80 | 80 | 80 |
| Fresh air pipe | Φ mm | 48 | 48 | 60 | 60 |
| Electrical consumption | min/max | 310/60 | 310/60 | 310/60 | 310/60 |
| Electrical supply | V/Hz | 230 / 50 | 230 / 50 | 230 / 50 | 230 / 50 |
| Minimum safety distances | mm | Back - 350 Sides - 200 Front - 800 | Back - 350 Sides - 200 Front - 800 | Back - 350 Sides - 200 Front - 800 | Back - 350 Sides - 200 Front - 800 |
| Fuel type | | Pellets Ø6-Ø8 | Pellets Ø6-Ø8 | Pellets Ø6-Ø8 | Pellets Ø6-Ø8 |
| Capacity expansion vessel | litri | 5 | 8 | 8 | 8 |
| Flow connection (outer thread) | " | 1 | 1 | 1 | 1 |
| Return connection (internal thread) | " | 1 | 1 | 1 | 1 |
| Working at environment temperature | °C | 5 - 40 | 5 - 40 | 5 - 40 | 5 - 40 |
| Max. water temperature | °C | 90 | 90 | 90 | 90 |
| Humidity at 30°C environment temperature | % | 85 | 85 | 85 | 85 |
| Water jacket capacity | litri | 30 | 48 | 48 | 65 |
| Working pressure | Bar | 2 | 2 | 2 | 2 |
| Height H (max) | mm | 1490 | 1564 | 1564 | 1650 |
| Width W (max) | mm | 640 | 638 | 638 | 700 |
| Depth D (max) | mm | 750 | 772 | 772 | 790 |
| Pellet bunker volume | kg | 105 | 105 | 105 | 105 |
| Weight | kg | 220 | 230 | 230 | 250 |
| Heated area | m² | 250 (max.) | 350 (max.) | 500 (max.) | 600 (max.) |

3. ASSEMBLY

3.1 General conditions.

For ensuring the proper and safe work of the boiler the observation of the following prescriptions is required:

The assembly of the boiler and the related equipment must be performed by authorized personnel only.

The foundation upon which the boiler is going to be placed must be even and horizontal, made out of non-flammable materials with a dimension of at least 40 cm. in front of the boiler and not less than 20 cm from both sides and the rear side.

If flammable materials or constructions are present, the distance between them and the boiler must be at least 80 cm.

When assembling the boiler make sure that the joints between the separate pipes and the chimney socket are well insulated.

A smell on first start-up of the boiler is due to the burning of the paint.

The boiler is painted with thermal resistant paint which reaches its final resistance after a couple start-ups and warm ups. **THAT IS WHY THE OUTER SURFACES MUST NOT BE TOUCHED** in order to avoid damage to the casing.

The periodic cleaning of the ash tray must be done only when the boiler is cold.

3.2 Basic rules and prescriptions.

The boiler with water jacket operates on water heating boiler principle.

The advantage of this type of heating system is the maximum utilization of the heat that is produced during the combustion process. With this method the heat from the combustion chamber is taken to remote and hard to reach for a normal heat exchange premises in order to maintain an even temperature and warmth comfort.

- Ensure that every branch and element of the installation is airtight at every single moment of its exploitation.
- All elements of the installation must be protected from freezing, especially if the enlarging pot or other parts are situated in non-heated premises.
- The circulation pump can be chosen by the capacity required by using the following formula:

$G=0,043 \cdot P$, (m^3/h), in which:

P , kW is the heat output of the water jacket. The circulation pump can be turned on and off by the means of a thermostat in combination with an electric switch

- The first service cleaning of the pump's filter must be done immediately after testing the installation.
- If an old installation is going to be used it must be washed several times to ensure the removal of any accumulated dirt on the surfaces of the water jacket.
- Do not drain the circulating water of the installation during the non-heated season.
- Chemical treatment of the circulating water is not recommended.

Chart 1 is a basic combined chart for heating with solid fuel boiler, electrical boiler equipped with water serpentine and a solar panel. For economy and efficiency of the system and a constant availability of cheap hot water a qualified assembly of the automatic shifter controlling the thermal flows to and out of the solar panel and the boiler is required.

Chart 2 shows a one storey heating with a compulsory circulation. The advantage of this chart is that the water-conducting elements can be hidden.

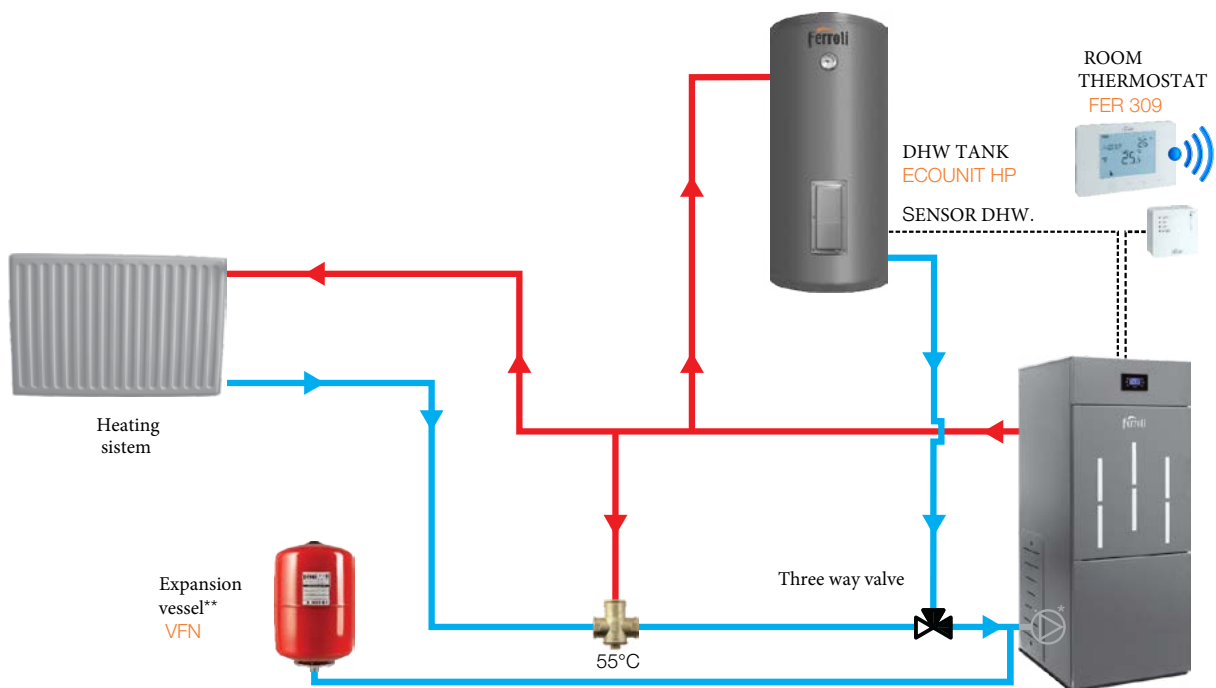
The enlarging pot must have a direct atmosphere connection which means that it must be placed on the highest spot in the system. Its capacity can be determined as 0,1 part of the total capacity of the system. The filling or unloading of the system is done via a hose through a facet mounted in the lowest area. Mounting a membrane enlarging pot is permitted when constructing a closed type system.

During the initial 3-4 start-ups a condensation on the surfaces of the water jacket may occur which depending on the fuel's humidity and the temperature of the incoming water may reach 0,3 liter on a single start-up. The accumulating char reduces the temperature difference and the condensation.

- "FERROLI" provides a warranty and out of warranty service and replacement of the water jackets.
- The warranty is not valid in case of a boiler with a swollen water jacket which is a result of pressure increase in the system and improper connecting.
- The water jackets are tested under pressure of 400 kPa (4 bar).

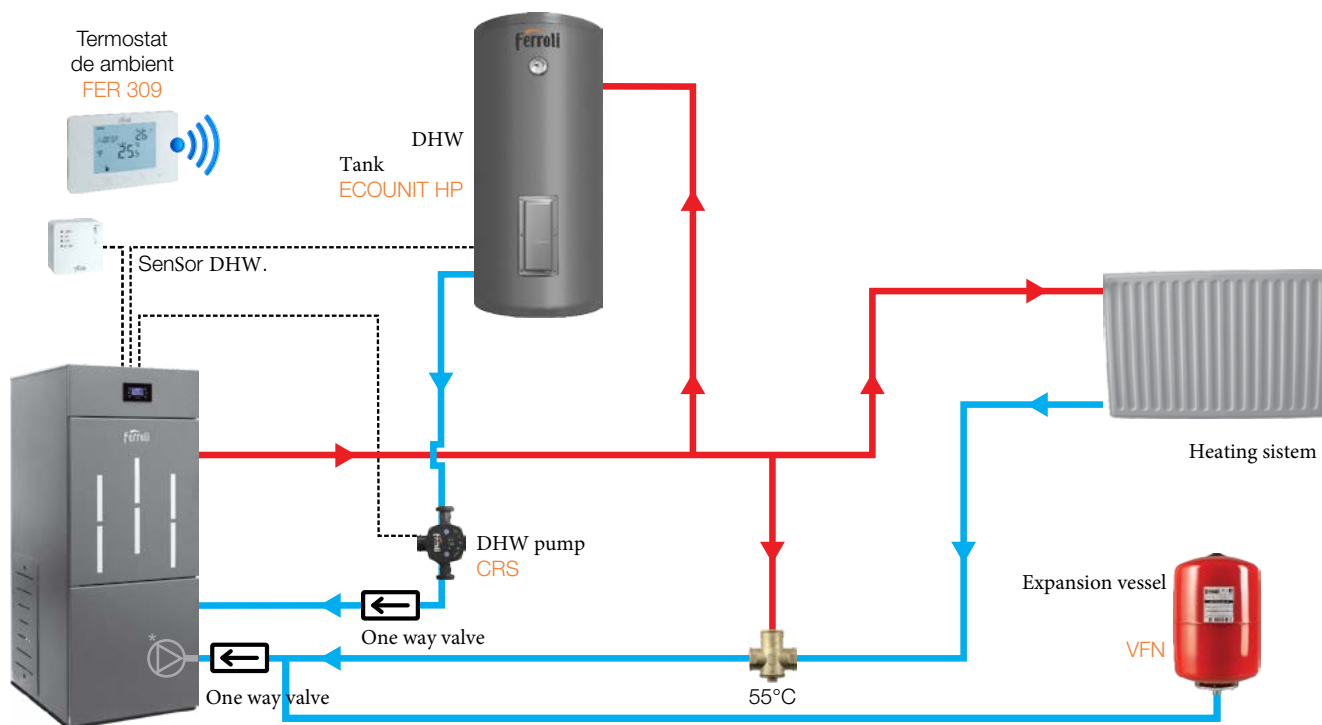
It is recommended that the assembly is performed by an authorized specialist.

HIDRAULIC DIAGRAM



*Boiler included pump

** The expansion vessel is necessary if the volume of water in the installation exceeds the capacity of the vessel included in the boiler (8 liters).



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3.3 Assembly of the duct components.

Duct components and pipes

For the assembly of the duct pipes the use of non-flammable materials, resistant to the flammable products and condensation is obligatory. The assembly must be performed in such a manner so it guarantees the airtight sealing and prevents condensation. If possible, avoid adding horizontal sections. Direction shift is done by using knee joints with a max angle of 45°. For heating devices equipped with a smoke ventilator, i.e all of the "Ferrol" boilers, the following instructions must be observed:

- Horizontal sections must have a minimum incline of 3° upwards;
- The length of the horizontal sections must be as short as possible, but without exceeding 3 m;
- More than four direction shifts are forbidden, including the cases where a T-shaped element is used;
- The duct components must be airtight and to be insulated if extending outside the premises in which the fireplace is installed;
- The duct components must allow a soot cleaning;
- The duct components must have a constant section. A section change is allowed only in the chimney joint;

Chimney

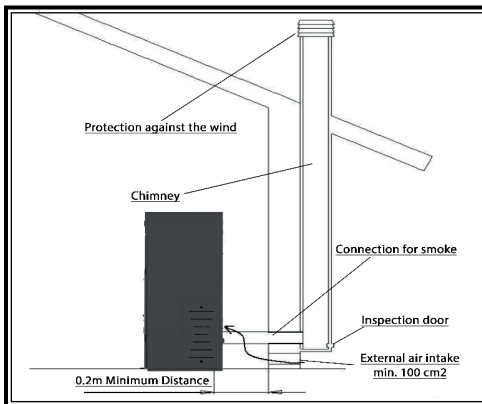
The chimney or the duct component must conform with the following requirements: to be airtight, waterproof and properly insulated, to be constructed with materials resistant to the normal mechanical wear and to the heat coming from the combustion products and condensation.

- To be kept away from flammable materials.

The recommended chimney draft at work - from 12-20 Pa.

Attention!!! In case of a fire hazard turn off the product from the display. This will stop the oxygen flow to the product.

3.4 Air intake



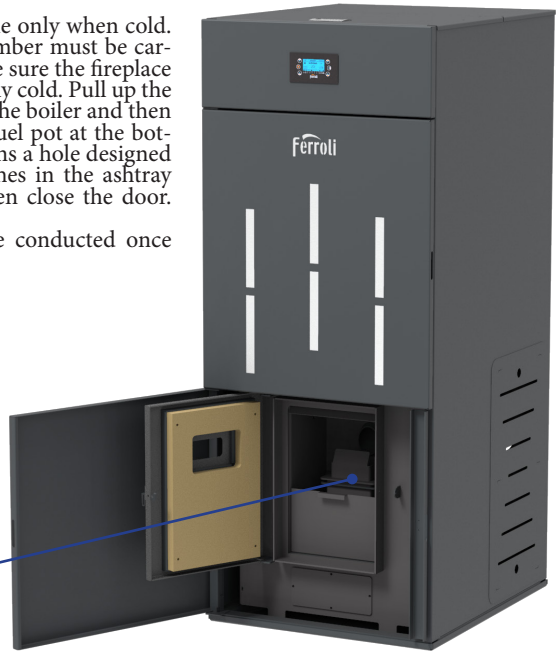
Suction pipe or air intake is placed in the back and has a circular section with a diameter of 48-60 mm.

The combustion air can be aspirated:

- From the camera, as long as it is near an air intake communicating with the outside wall having a minimum area of 100 cm², properly positioned and protected by a grid.
- Or by connecting directly outside with a suitable tubing having an inner diameter of 48-60 mm and a maximum length of 1.5 M.2

4. Cleaning

Cleaning the fireplace should be done only when cold. The cleaning of the combustion chamber must be carried out daily. For this purpose, make sure the fireplace has ceased operation and is completely cold. Pull up the combustion pot and remove it from the boiler and then clean it from soot. When removed fuel pot at the bottom of the combustion chamber opens a hole designed for the accumulated ash. Collect ashes in the ashtray and return fuel pot in place and then close the door. The fireplace is ready for operation. Cleaning of flues and chimneys are conducted once every 1.5 tons of fuel used



Combustion pot

Once clean audits and close the cleaning lid. Check that the bolts are tightened well. Every time you open check for violations of the isolation seal. If this happens do not use the product until the isolation seal is repaired.



Mechanical Cleaning mechanism



1. Mechanical cleaning mechanism.
2. Combustion Pot.

3. Ashtray.
4. Inferior cleaning door.

Once the client uses the manual cleaning mechanism the ash will drop to the ashtray in the combustion chamber as well as in the service chamber that is located beneath.



Right Service Door

The right and left Service doors allow easy access to all the components of the boiler.

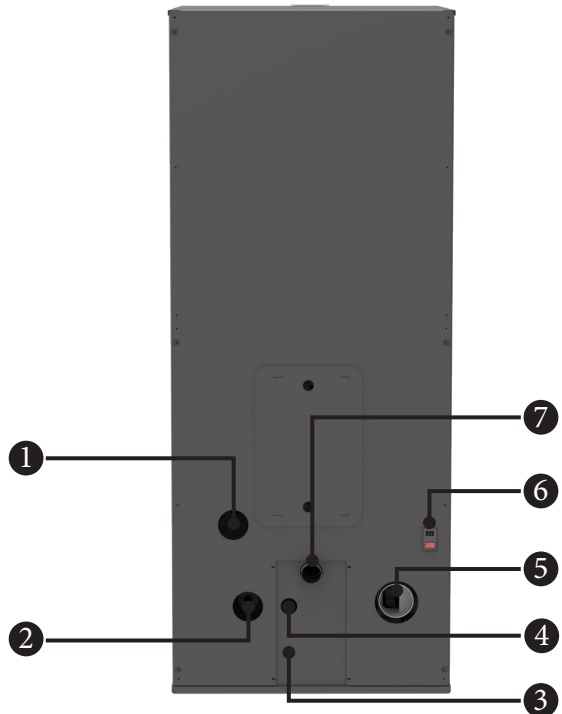
Left Service Door





Back Service Door for
the cleaning of the pellet
bunker

- 1. DHW PUMP;
- 2. PUMP COLD WATER;
- 3. SAFETY VALVE;
- 4. HOT WATER;
- 5. EXHAUST FAN;
- 6. POWER SUPPLY;
- 7. AIR INTAKE;



| Maintenance program | | | | |
|----------------------------------|-------------------------|---------------|-------------------------|---------------|
| | At each ignition | Weekly | Twice per season | Annual |
| Combustion chamber | V | | | |
| Clean the ashtray | | V | | |
| Glass | | V | | |
| The Door | | V | | |
| Clean the flue gas outlet | | | V | V |
| Door seals | | | | V |
| Chimney | | | V | V |

5 Safety and unexpected risks

Terms of danger may arise in the following cases:

- Automated pellet boiler is used incorrectly;
- The unit is installed by unqualified personnel;
- The safety instructions described in this management are not met;

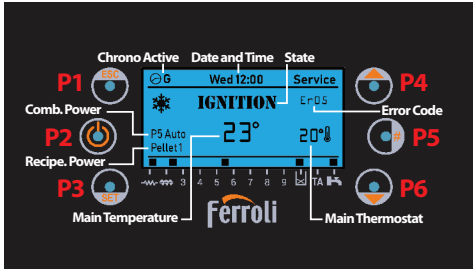
Unforeseen risks:

Pellet fireplace “FERROLI” has been designed and manufactured in accordance with the safety requirements on the national, regional and European levels. Although considered possible risks arising from improper use, you may experience the following risks:

- Risks of spreading combustion outside fireplace - opening the door of the chamber of the fireplace may fall hot / burning particles (as hot ash and small particles burning coal), which could lead to a fire in the heated room. It is therefore necessary that the product always works with a tightly closed door. It can only be opened when the product has completely cooled down;
- Risks of burns caused by high temperatures as a result of the combustion process in the combustion chamber and / or access to the door of this burn chamber when the product is not completely cool;

In case of fire hazard the product should be stopped by the controller and power supply until the cause of the problem is determined.

CONTROL PANEL: USE AND FUNCTIONS



The main frame shows:

time and date, chrono activation, combustion power and recipe, functioning state, error cod main temperature, main thermostat, summer/winter mode.

| Button | Function |
|-----------|--|
| P1 | Exit Menu/Submenu; |
| P2 | Ignition and extinguishing (push for 3 seconds), Reset errors (push for 3 seconds), Enable/disable chrono; |
| P3 | Enter in User Menu 1/submenu, Enter in User Menu 2 (push for 3 seconds), Save data; |
| P4 | Enter in Visualizations Menu, Increase |
| P5 | Activation chrono time band |
| P6 | Enter in Visualizations Menu, Decrease |

| Led | Function |
|------------|-------------------------------|
| D1 | Igniter ON |
| D2 | R: Igniter ON |
| D3 | A: Pump ON |
| D5 | V2: Pump DHW ON |
| D9 | External Chrono reached |
| D10 | Lack of pellet |
| D11 | Local Room Thermostat reached |
| D12 | Sanitary water demand |

ALARMS

Er01 - Security Error input H 1. It may also intervene with the system off. High temperature boiler;
Er02 - Security Error input H 2. It can only intervene if the Combustion fan is active. High temperature auger;
Er03 - Extinguishing for low exhaust temperature or missing light in the brazier;
Er04 - Extinguishing for water over temperature;
Er05 - Extinguishing due to high exhaust temperature;
Er06 - Pellet Thermostat open (flame return from the brazier);
Er07 - Encoder Error. The error may occur due to lack signal from Encoder;
Er08 - Encoder Error. The error can occur due to problems of adjustment of the number of revolutions;
Er09 - Water pressure low;
Er10 - Water pressure high;
Er11 - Clock Error. The error occurs due to problems with the internal clock;
Er12 - Extinguishing for ignition failure;
Er15 - Extinguishing due to power failure for more than 50 minutes;
Er16 - RS485 communication error (Display);
Er17 - Adjusting the Air Flow Failed;
Er18 - No more Pellet in the bunker;
Er23 - Boiler probe or Back boiler probe or probe Buffer open;
Er25 - Engine cleaning brazier broken;
Er26 - Engine cleaning broken;
Er27 - Engine cleaning 2 broken;
Er34 - Depression below the minimum threshold;
Er35 - Depression above the maximum threshold;
Er39 - Sensor Flowmeter broken;
Er41 - Minimum air flow in Check Up is not reached;
Er42 - Maximum air flow exceeded;
Er44 - Open door error;
Er47 - Error Encoder Auger: missing signal Encoder;
Er48 - Error Encoder Auger: Auger regulation speed not achieved;
Er52 - Error Module I/O I2C;
Er57 - Test 'Forced Draught High' in Check Up fail;
Service - Service error. It notifies that the planned hours of functioning is reached. It is necessary to call for service.

MESSAGES

| Description | Code |
|---|-----------------------|
| Anomaly of the probes checking, during Check Up phase. | Sond |
| Room temperature greater than 99 °C. | Hi |
| This message notifies that the planned hours of functioning are reached. | Clean |
| Door Open. | Port |
| The message appears if the system is turned off during Ignition (after Preload) not manually: the system will stop only when it goes in Run Mode. | Ignition block |
| Periodical Cleaning in progress. | Cleaning on |
| No communication between motherboard and keyboard | Link Error |

VISUALIZATIONS

Exhaust T. [°C] - Exhaust temperature;
Room T. [°C] - Local room temperature; it is visible only if;
Buffer T. [°C] - Buffer Temperature;
Pressure [mbar] - Water pressure;
Air Flux - Air flow;
Fan Speed [rpm] - Exhaust fan speed;
Auger [s] - Auger work time;
Recipe [nr] - Combustion recipe set;
Product Code: 510 - Product code;

USER MENU 1

Combustion Management

Power - In this menu is possible to modify the combustion power of the system. It can be set in automatic or manual modality . In the first case the system chooses the combustion power. In the second case the user selects the desired power. On the left side of the display are signalled the combustion modality (A=automatic combustion, M=manual combustion) and the working power of the system.
Recipe - Menu to select the combustion recipe. The maximum value is the number of recipes visible to the user.
Auger Calibration - It allows to modify the value set in firm of Auger's speed or On times. The values are in the range $-7 \div 7$. The firm's value is 0.
Fan Calibration - It allows to modify the value set in firm of Combustion Fan's speed. The values are in the range $-7 \div 7$. The firm's value is 0.

Heating Management

Boiler thermostat - Menu to change the value of the boiler thermostat .
Buffer thermostat - Menu to change the value of the Buffer Thermostat.
Room Thermostat - This Menu allows to modify the Local Room Thermostat's value. It is visible only if the ambient probe is select.
Summer-Winter - Menu that allows the selection Summer-Winter.

Manual Load

The procedure activates the pellet manual loading with activation in continue modality of the Auger engine. The loading is stopped automatically after 600 seconds. The system must be OFF for the function can be activated.
Cleaning Reset
 Menu to reset the 'System Maintenance 2' function.

CHRONO

This Menu allows selecting the programming modalities and and the Ignition/Extinguishing time slots.

Modality - It allows selecting the disired modality, or disable all set programming.

1. Enter modification mode through the key **P3**.
2. Select the chosen modality (Daily, Weekly or Week end).
3. Enable/disable chrono modality through the keys **P2**.
4. Save the settings through the keys **P3**.

Disable

Daily

Weekly

Week -End

Programming

The system includes three type of programming: Daily, Weekly, Week end.
After selecting the desired kind of programming:

1. Select the programming time through the keys **P4/P6**.
2. Enter the adjustment modality (selected time will be flashing) through the keys **P3**.
3. Change the time via keys **P4/P6**.
4. Save the programomg with the keys **P3**.
5. Enable (a "V" is displayed) or disable the time slot (a "V" is not displayed") by pressing the keys **P5**.

Monday

ON

OFF

09:30

11:15 V

00:00

00:00

00:00

00:00

Daily

Select the day of the week to program and set the ignition and extinguishing times.

Programs around midnight

Set the clock On of the previous day at the desired time: Ex. 20.30

Set the clock of OFF of the previous day at: 23:59

Set the clock On of the following day at 00:00

Set the clock of OFF of the following day at the desired time: Ex. 6:30

The system turns on at 20.30 on Tuesday and turns off at 6.30 on Wednesday

Monday

Tuesday

Wednesday

Thursday

Friday

Weekly

The programs are the same for all days of the week.

Week-end

Choose between 'Monday-Friday' and 'Saturday-Sunday' and then set the switching on and off times.

Mon-Fri

Sat-Sun

USER MENU 2

Menu is accessed by pressing the **P3** buttons for 3 seconds .

Keyboard Settings

Time and Date - Used to set the day, month, year and current time.

Language - Menu to modify the language of the LCD board.

Keyboard Menu

Set Contrast - Menu used to regulate the display contrast.

Set Minimum Light - Menu used to regulate the lighting of the display when the command aren't used.

Keyboard Address - It allows to change the address of the RS485 node. In the RS485 bus it is not possible to have more nodes with the same address. It is possible to configure the keyboard as local or remote by changing the address (16 for local , 17 for remote).

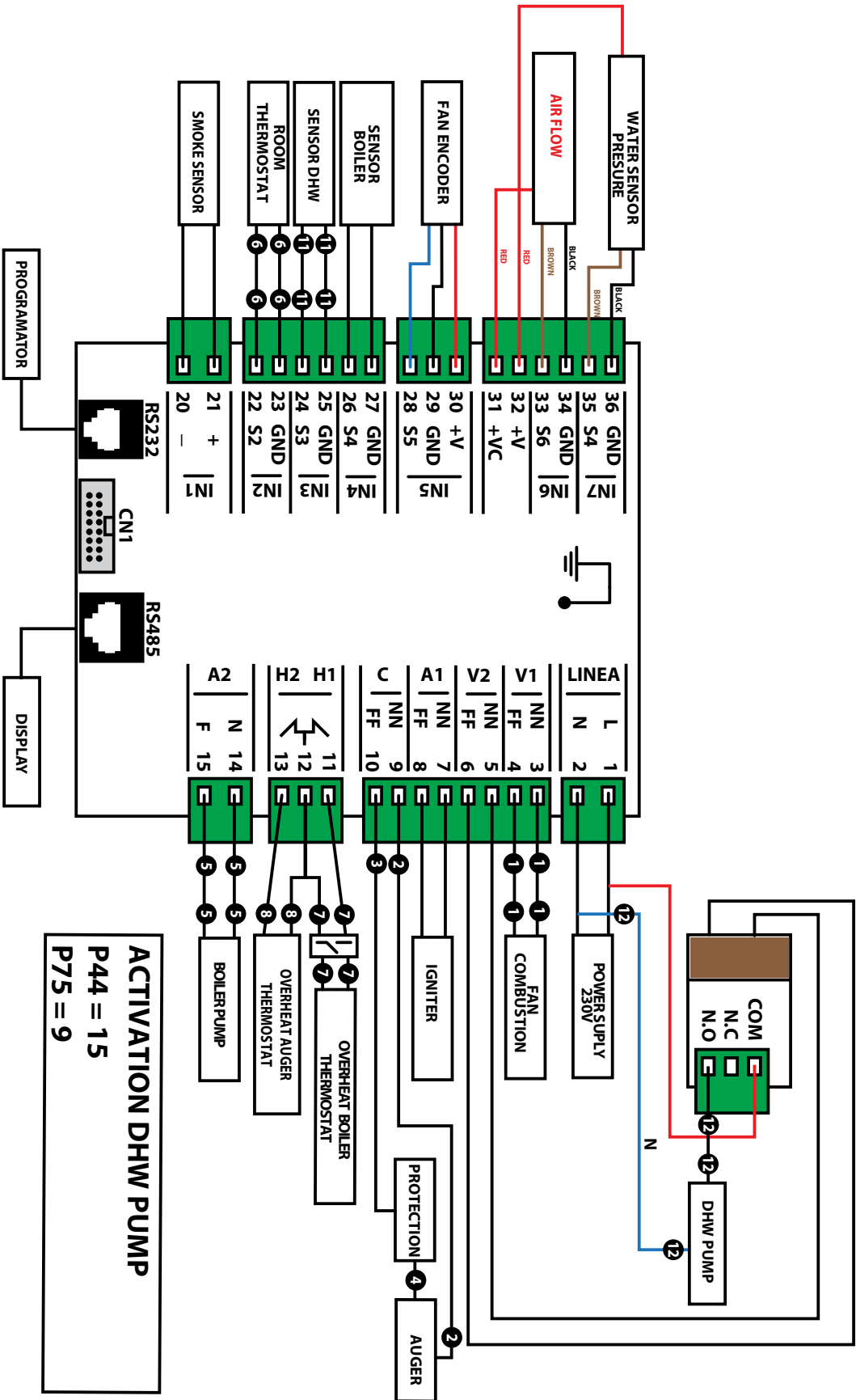
Node List - This menu shows: communication address of the board, typology of the board, firmware code and firmware version. Data are not modifiable. The typologies of board that can appear are:

MSTR - Master; INP - Input; KEYB - Keyboard; OUT - Output;

CMPS - Composite; SENS - Sensor; COM - Communication;

Acoustic Alarm - It allows to enable or disable the acoustic alarm of the keyboard.

ELECTRICAL DIAGRAM



FERROLI disclaims any responsibility for possible inaccuracies contained in this manual if they are due to printing or transcription errors. We reserve the right to make any change that appears to be necessary or useful without harm the essential characteristics.
