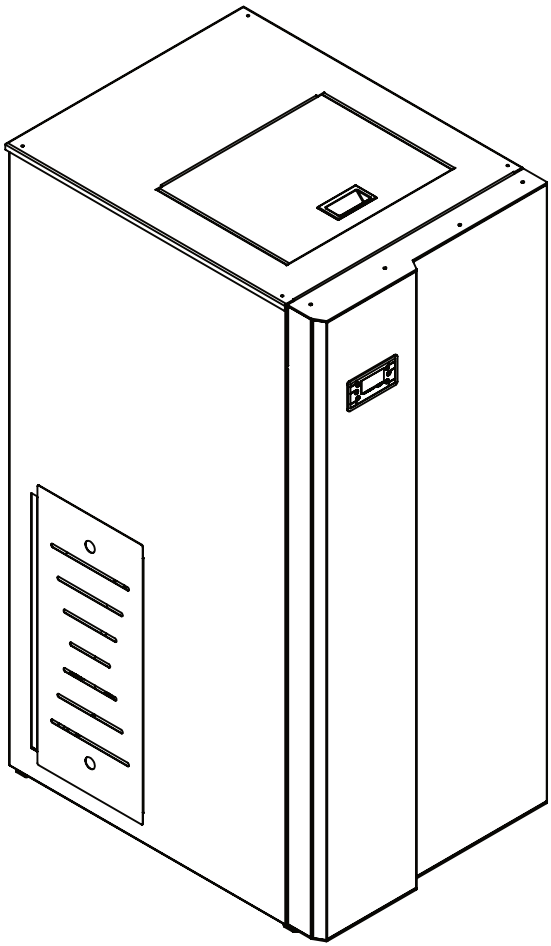
Mareli Systems

STEP FORWARD



Pellet boiler

UnicPel 12/18/24/30

User manual

rev. 1.1

Content

1. Introduction

Dear Customer,
Our products are designed and manufactured in accordance with standards in force, with high quality materials and using our extensive experience in the transformation processes.

To get the best performance, we suggest you read the instructions in this manual carefully. It is and integral part of the product so ensure that the manual is always supplied with the appliance, even if it changes owner.

If the manual is lost you can download it directly from the company's website.

Data plate with all the specifics of the appliance can be found on the back panel.

2. Warnings and safety instructions

The pellet heating system may only be installed and started up for the first time by an authorised technician. Professional installation and start up is the prerequisite for safe and economical operation.

- Never make any changes to the heating system or flue gas system;
- Never close or remove safety valves;
- 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 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. 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 unauthorised 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;
- Turn off the boiler in case of failure or malfunction;
- The product must be electrically connected to a system equipped with an effective earth conductor. (Must be grounded);
- It is strictly forbidden to use alcohol, petrol, liquid fuel for lanterns, diesel, bio-ethanol, charcoal or any other similar liquids to light up the flame in the device. Keep such liquids away;
- Do not put any fuel other than wood pellets in the hopper;
- Periodically check and clean the smoke outlet ducts of the boiler (connection to the flue pipe);
- Pellet boiler is not a cooker;
- Under no circumstances should the fire be ignited with the door open or broken glass;
- Do not light the boiler with flammable materials if the ignition system failed;
- All unburnt pellets in the burner after each unsuccessful ignition attempt 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 authorised service technicians;
- The product maintenance operations must be exclusively carried out by a qualified operator on a yearly basis;
- A non-compliant or improper maintenance of the product can cause hazardous situations and/or irregular operation;
- Always keep the cover closed.

	**Seeing this sign means you must strictly follow the instructions for your own safety!**

3. Type of fuel

The pellet is obtained from natural dried wood sawdust (without paint). The compactness of the material is guaranteed by the lining contained in the wood itself, without glue or binders.

The market offers different type of pellets with characteristics that vary according to the wood mixture. The most common diameter on the market is 6 and 8mm, with a length between 3 and 40mm. A good quality pellet has a density of between 600 and 750kg/cubic meter (or even more). The moisture content must account for 5 to 8% of its weight.

Pellets have technical advantages besides being an ecological fuel, as the wood residue is used completely, thereby achieving cleaner combustion than the fossil fuels.

While good-quality wood has calorific value of 4.4 kW/kg (15% moisture after 18 months of seasoning), that of the pellets is around 4.9 kW/kg. To ensure good combustion, the pellets must be stored in a dry place protected from dirt. Good quality pellets guarantee good combustion, thereby decreasing harmful emissions into the atmosphere.

The main quality certifications for pellets currently available on the European market guarantee that the fuel complies with class A1/A2 according to ISO17225-2. These certifications include, for example, EN Plus, DIN plus, Ö-Norm M7135, and specifically assure that the following characteristics are complied with:

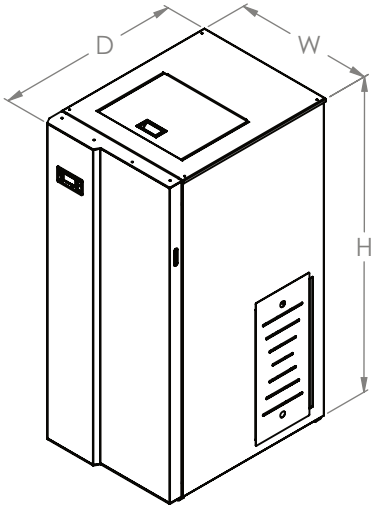
- Calorific value: 4.6 - 5.3 kWh/kg.
- Water content: ≤ 10% of the weight.
- Percentage of ash: max 1.2% of the weight (A1 less than 0.7%).
- Diameter: 6±1/8±1 mm.v
- Length: 3-40 mm.
- Content: 100% untreated wood without the addition of binding agents.

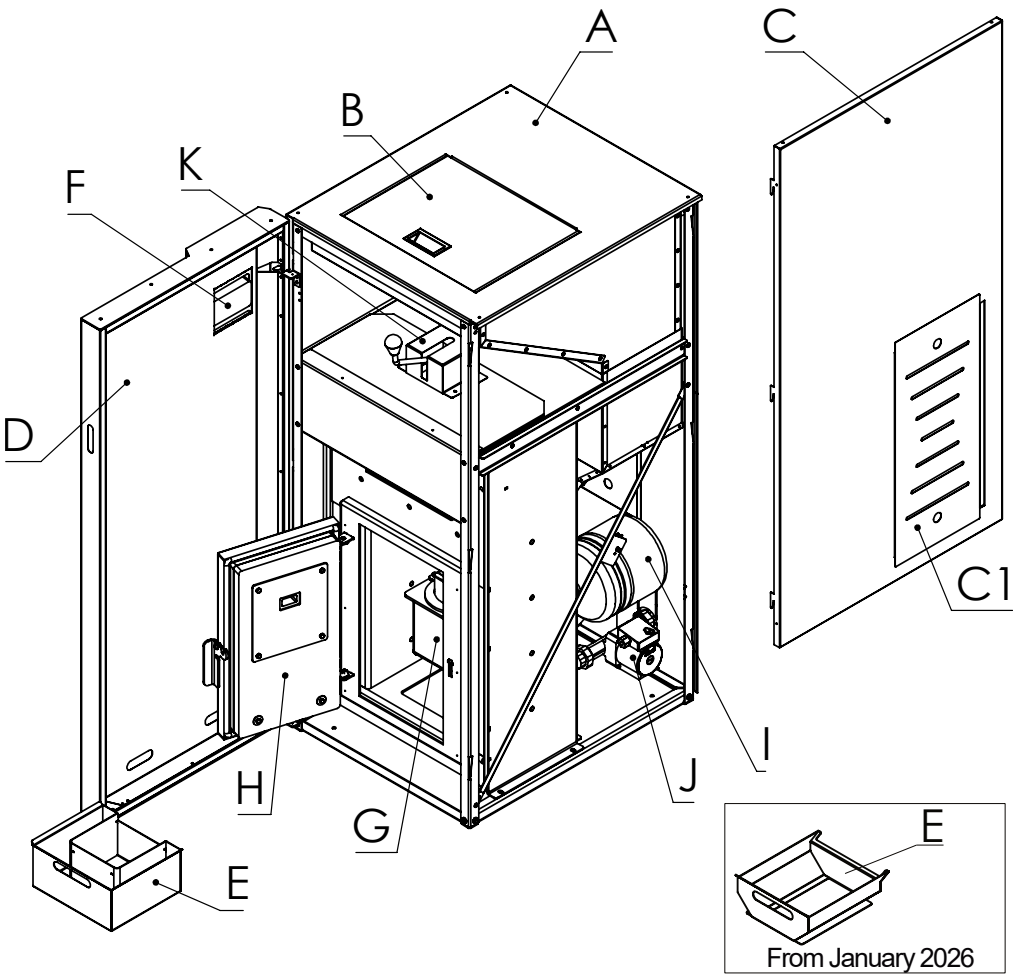
	**The use of pellets that do not comply with the above characteristic may compromise the operation of your product!**

4. Technical data

Maximum output	KW	12	18	24	30
Heated volume*	m³	342	514	685	857
Height H	mm	1420	1460		1560
Width W	mm	630	630		640
Depth D	mm	800	840		840
Pellet bunker volume	kg	100			110
Exhaust gas pipe	ф mm	80			
Air inlet	ф mm	60			76
Weight	kg	260	275		292
Fuel type	Pellets	Φ6-Φ8			
Chimney draft	Pa	10-12			
Electrical consumption	W	60/400			
Electrical supply	V/Hz	230/50			
Water jacket capacity	L	42	45		60
Working pressure	bar	0.5-2.0			
Working at environment temperature	°C	5-40			
Humidity at 30°C environment temperature	%	85			
Energy conversion efficiency	%	>91	>92	>92	>92
Co emissions	mg/m³	<330	<320	<300	<270
Temperature of the flue gasses	°C	99	122	123	126
Max water temperature	°C	90			

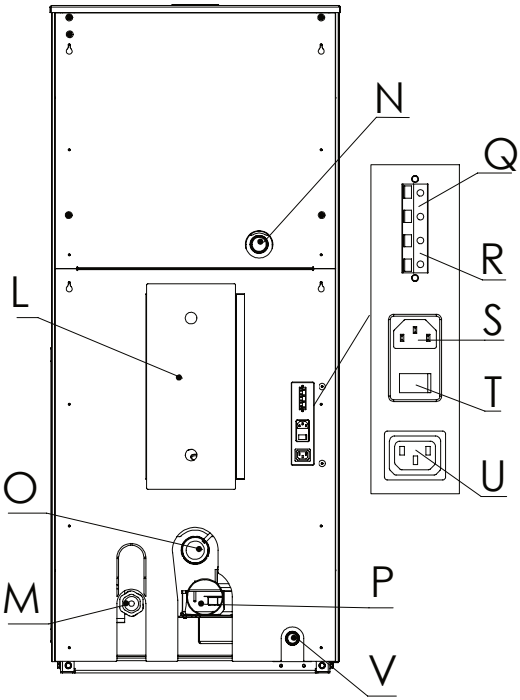
*if the heating needs are the average 0,035 kW/m³





A - top cover
B - bunker door
C - side panel
C1 - side panel revision door
D - front door
E - ash tray
F - control display
G - combustion chamber
H - combustion chamber door
I - expansion vessel
J - pump
K - manual cleaning turbolator system

This is a depiction of the different component placements. Some components like the pumps / expansion vessels / safety valve could be optional extras and might not be included in the products in some regions / countries.



L - back service door
M - water inlet
N - water outlet
O - air inlet
P - exhaust fan
Q - room thermostat
R - DHW temperature probe
S - power inlet
T - power switch
U - second pump power supply
V - safety valve outlet

5. Installation

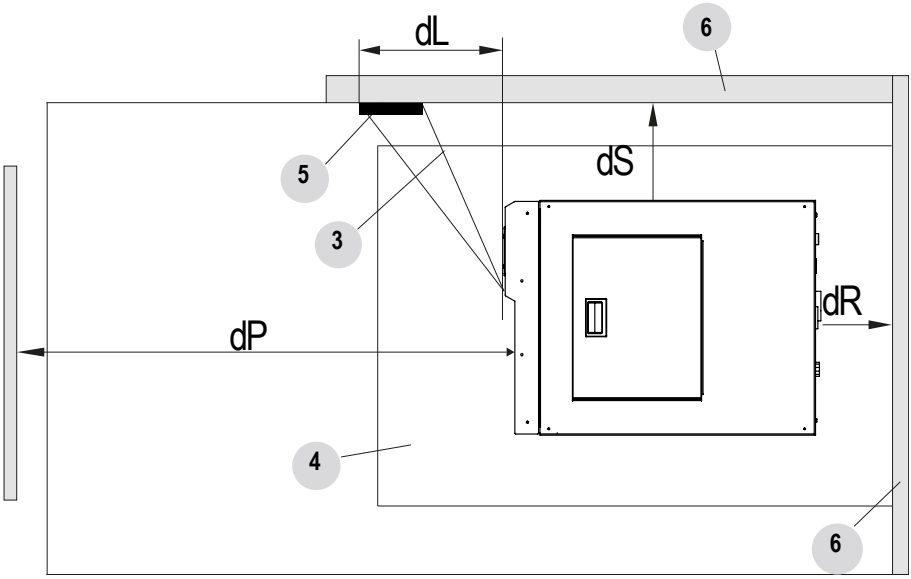
5.1 Placing

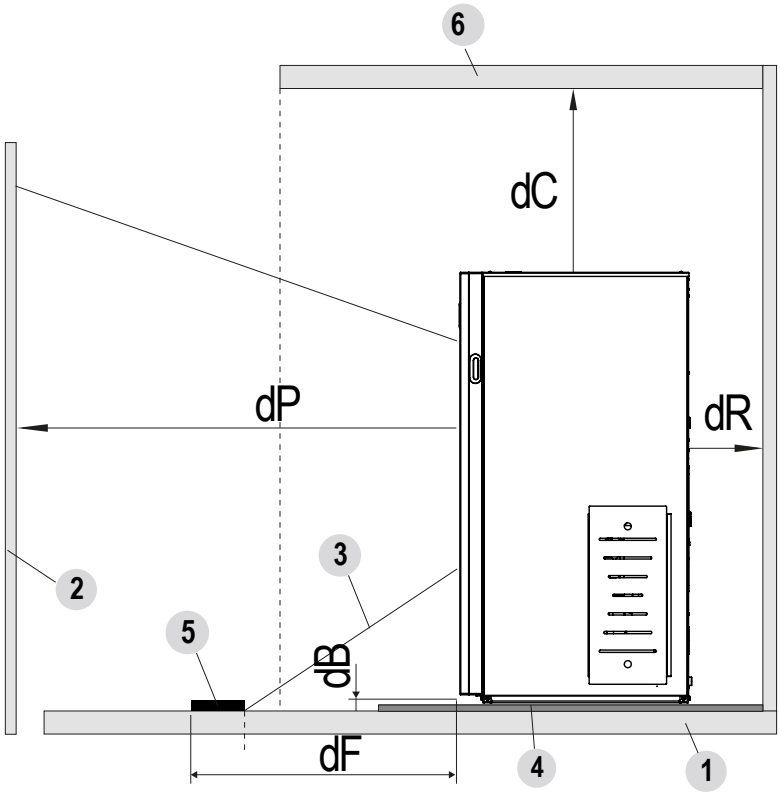
All national, regional and European requirements for safe operation of the appliance must be respected during installation and operation.

Prior to installation, load capacity of the place where the boiler will be intended must be ensured. The weight of the boiler is specified in the technical data table.
To ensure the correct and safe operation of the boiler, the following conditions must be met:

- The installation of the boiler and its accessories must be carried out by authorised technician.
- The floor where the boiler is installed should be flat and horizontal, made of fire-resistant materials.
- Minimum distances from the wall to the boiler should be at least 400 mm. The minimum space in front of the fireplace should be 1500 mm. The minimal distance of the boiler from combustion materials should be no less than 1500 mm.

Observe the distances from flammable objects (sofas, furniture, wood panelling, etc..) as specified in the following diagrams:

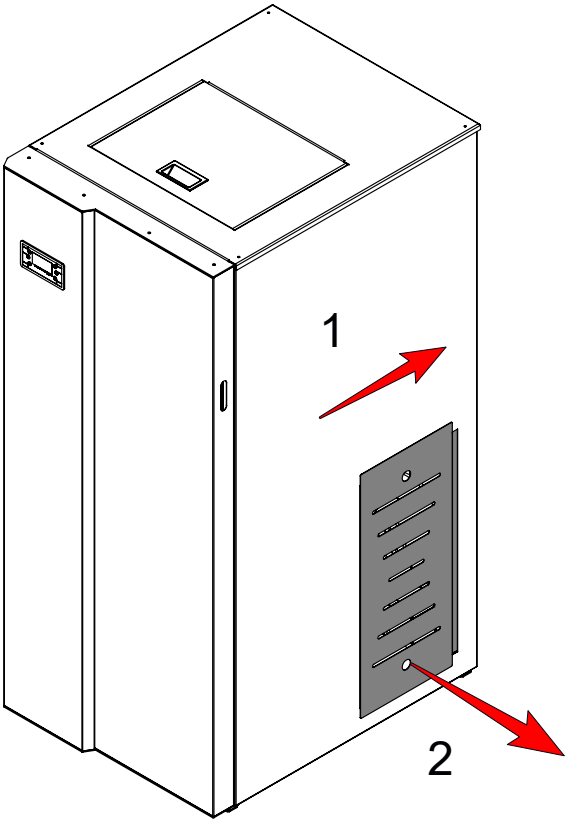




1	Floor	4	Floor guard
2	Front flammable material	5	Radiated surface to be protected
3	Area subject to radiation	6	Rear/side/upper flammable surface

	Minimum safety distance (mm)
dR (rear distance)	600
dS (side distance)	400
dB (lower distance)	0
dC (upper distance)	800
dP (front distance)	1500
dF (floor radiation)	1000
dL (side radiation)	1000

5.2 Connecting with the hydro system



To remove the side covers:

1. Push the revision cover back;
2. Pull the revision cover out;

The advantage of this type of heating system is the maximum utilisation 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 boiler or other parts are situated in non-heated premises.
- The circulation pump can be chosen by the capacity required by using the following formula:

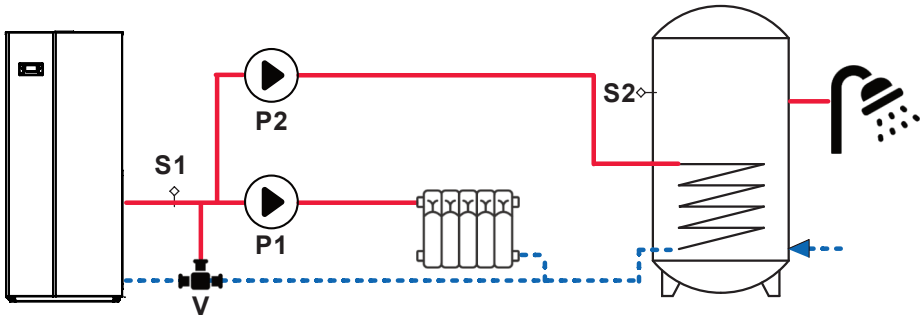
$$G=0{,}043.\ P\ ,\ (m^3/h)\ \text{(accepting dT=20°C)}$$

P (kW) is the heat output of the water jacket. The circulation pump can be turned on and off by 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.
- The expansion vessel 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 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.
- 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.
- It is advisable to check the water quality and provide treatment if the water is very hard, have pollution or some other deviation.

	**The chemical-physical characteristics of the system and replenishing water are important for the proper operation and service life of the appliance.**

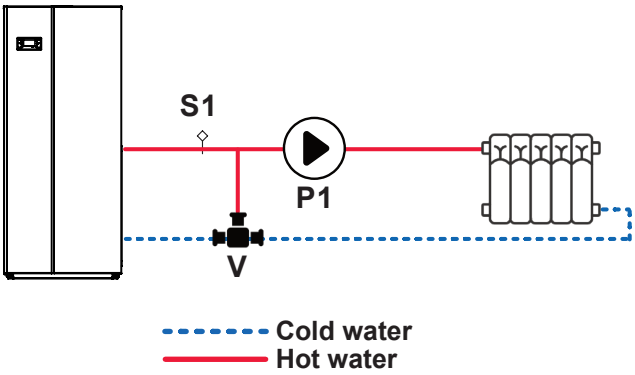
Option 1 system with domestic hot water (DHW) buffer:



P1 - Heating system pump S1 - Heating system temperature probe
P2 - DHW pump S2 - DHW buffer tank probe

V - Anti-condensation valve t ≥ 50° C

Option 2:

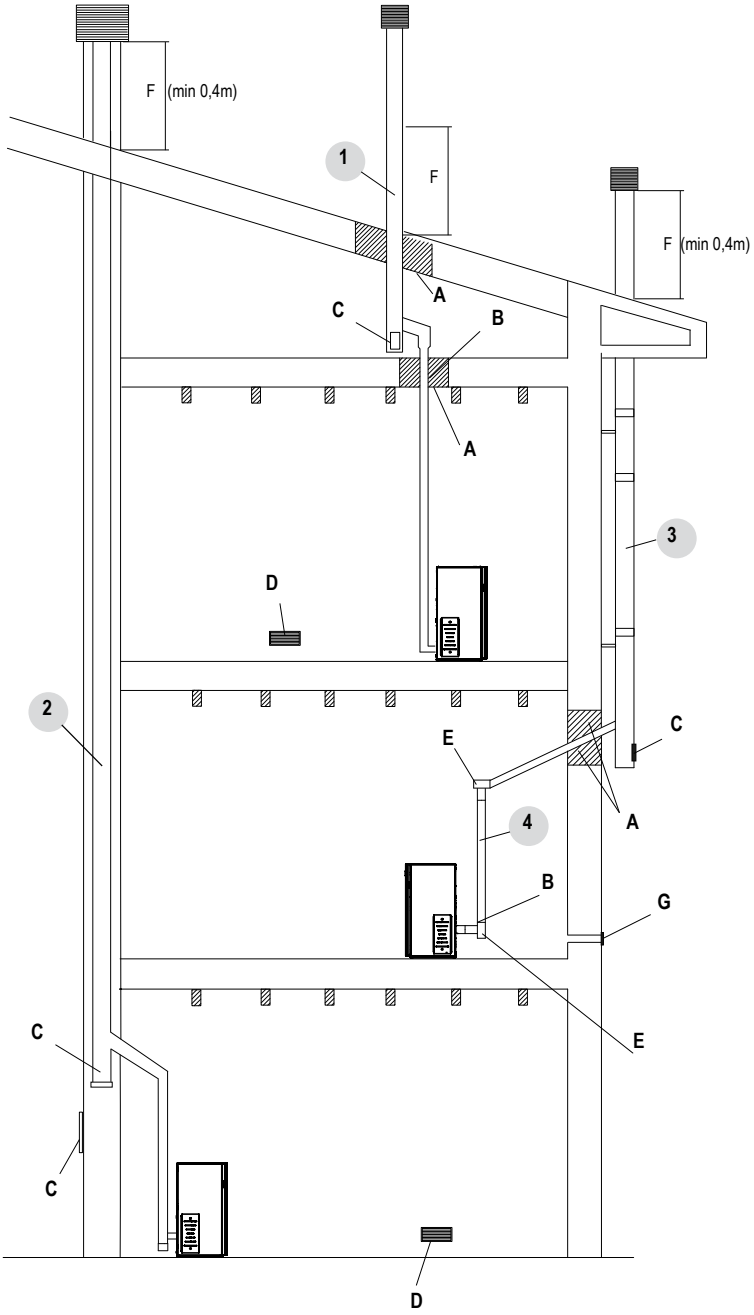


P1 - Heating system pump S1 - Heating system temperature probe

V - Anti-condensation valve t ≥ 50° C

⚠	**The above options are just a few of the all available. It is mandatory that the assembly is performed by an authorised specialist who can offer other more suitable scheme for you type of installation. Anti-condensation valve must be installed to prevent moisture and system malfunction.**

5.3 Connecting to chimney



Option 1. Flue installation with hole for the passage of the pipe:

- minimum 100mm around the pipe if next to non-flammable parts such as cement, brick, etc.;
- minimum 300mm around the pipe if next to flammable parts such as wood etc.

In both cases, install suitable insulation between the flue and the ceiling. Those previous rules also apply for holes made in walls.

Option 2. Built in chimney by bricks or concrete. With insulation and moisture channel. Suitable access door for chimney cleaning.

Option 3. External flue made of insulated stainless-steel pipes. i.e. with double walls. Must be securely mounted on the wall. With windproof chimney pot.

Option 4. Ducting system using T fittings that allow easy access for cleaning without having to remove the pipes.

A - insulation

B - possible diameter increase

C - inspection access panel

D - air inlet with protective grid

E - T fitting with inspection cap

F - reflux area (min 0,4m)

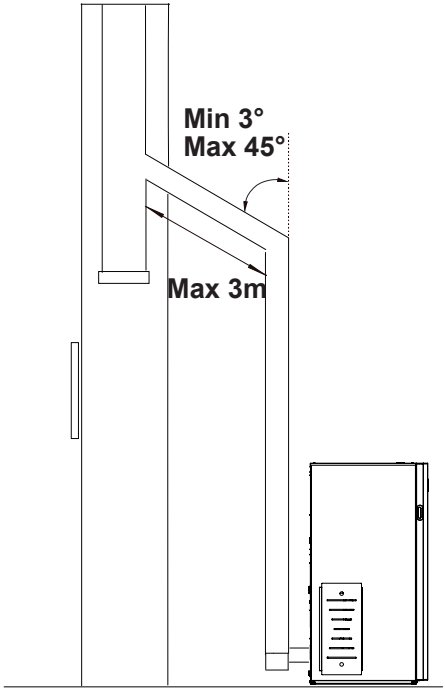
G - air ducting with protective grid

The figure shows typical, but not exhaustive, examples of all possible installations (which must always be approved by a qualified technician).

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

The recommended chimney draft at work is from 12 Pa up to 20 Pa. To ensure smooth operation of the product and no sudden changes due to strong winds the chimney must have a suitable anti-wind cover at the top.

	**The chimney and the flue pipes must be cleaned and checked regularly depending on the installation and the fuel quality, but no less than once per year before the heating season.**



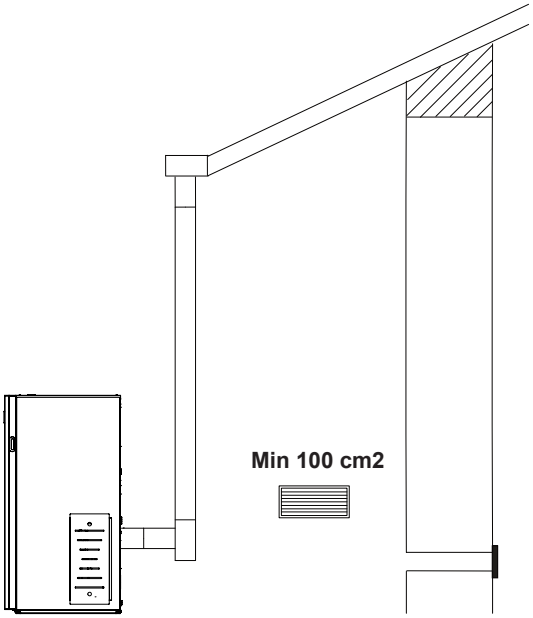
For the assembly of the flue pipes the use of non-flammable materials, fire and condensation resistant products is obligatory. The assembly must be performed in such a manner so it guarantees the airtight sealing and prevents condensation. If possible, avoid adding horizontal sections. Direction shift 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 manufacturer 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 flue components must be airtight and to be insulated if extending outside the premises in which the fireplace is installed;
- The flue components must allow a soot cleaning;
- The flue components must have a constant section. A diameter change is allowed only in the chimney joint;

⚠	**In case of a fire hazard turn off the product from the display. This will stop the oxygen flow.**

5.4 Air inlet



Air intake is placed in the back and has a circular section. The combustion air can be aspirate from the camera, as long as it is near an air intake connected with the outside wall having a minimum area of 100 cm2, properly positioned and protected by a grid.

⚠	**When the fire is ignited for a first time, a smell occurs as a result of the paint being heated. The firereplace is painted with heat-resistant paint, which achieves maximum resistance after being heated multiple times.**

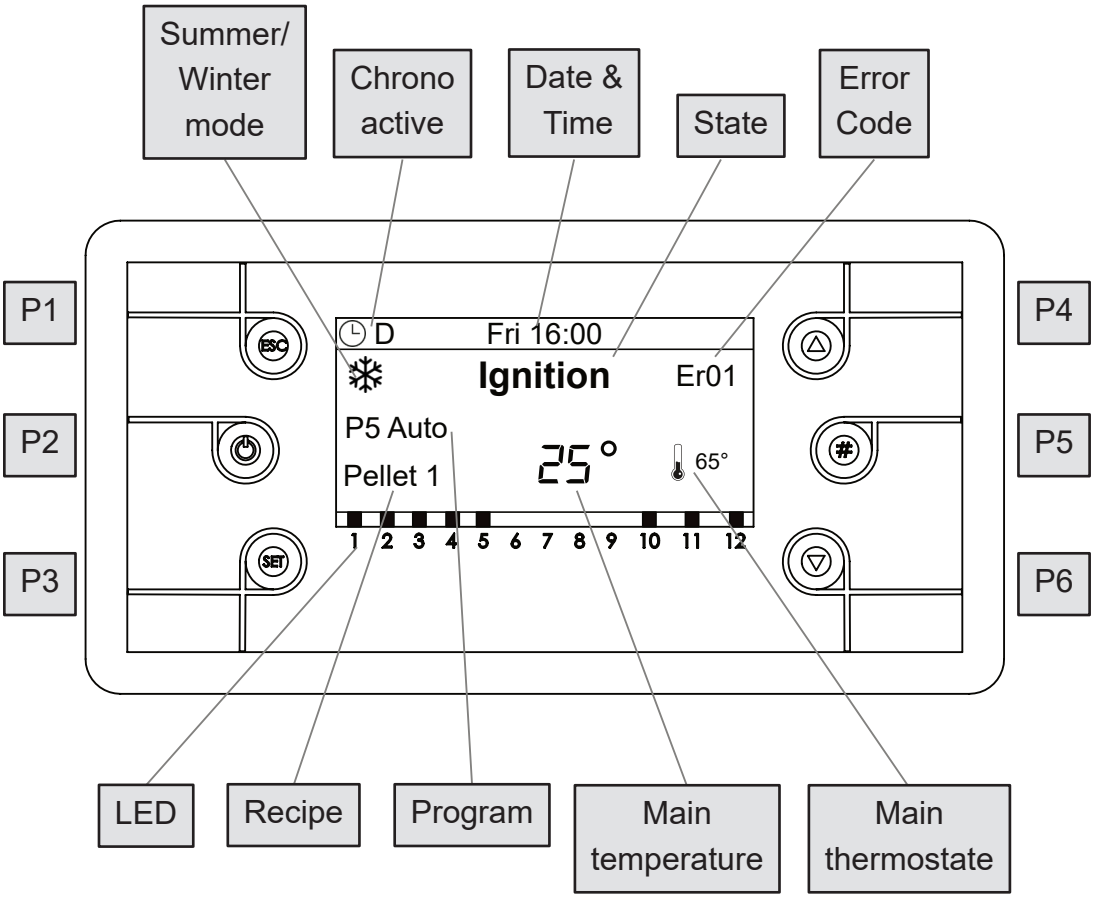
5.5 Connecting to electricity

The product must be electrically connected to a system equipped with an effective earth conductor. (Must be grounded); The other requirements can be found on the data plate on the back. The power socket must be easily accessible.

⚠	**The power cable must never touch the exhaust pipe or other hot surfaces.**

6. Operating with the display

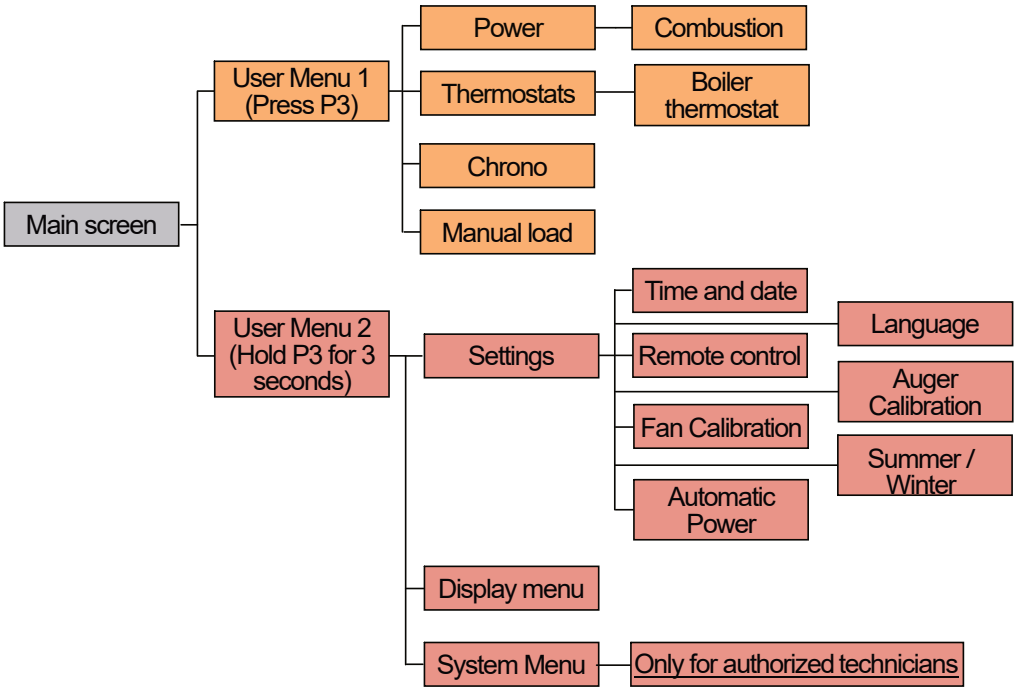
6.1 Home screen



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 Visualisations Menu, Increase
P5	Activation Chrono time band
P6	Enter in Visualisations Menu, Decrease

LED	Function		
D1	Igniter ON	D9	External Chrono reached
D2	Auger ON	D10	Lack of pellet
D3	Pump 1 ON	D11	Local room thermostat reached
D4	**V2**: Pump 2 ON	D12	Sanity water demand

6.2 Menus and submenus



User Menu 1

Power

Combustion- 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.

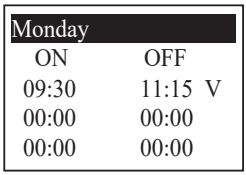
Thermostats

Boiler thermostat - Menu to change the value for the boiler thermostat.

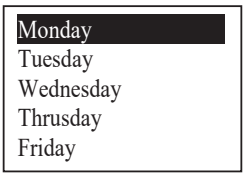
Manual Load - The procedure activates the pellet manual loading with activation in continue modality of the Auger motor. The loading is stopped automatically after 600 seconds. The system must be OFF for the function can be activated.

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**.



Programming
The system includes three type of programming: Daily, Weekly, Weekend. 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 programmong 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**.



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.

Weekly
The programs are the same for all days of the week
Weekend
Choose between 'Monday-Friday' and 'Saturday-Sunday' and then set the switching on and off times.

User Menu 2

Settings

Time and date - Menu used to set the time and date of the controller.

Language - Menu used to choose suitable language.

Auger Calibration - Allows to modify the value for the auger feeding speed. The preset value is 0.

Fan Calibration - Allows to modify the value for flue gases fan speed. The preset value is 0.

Summer-Winter - This Menu allows you to modify the hydraulic plant functioning depending on the season.

Display Menu

Contrast - Menu used to regulate display contrast.

Keyboard Address - This menu is protected by password and it is for technicians.

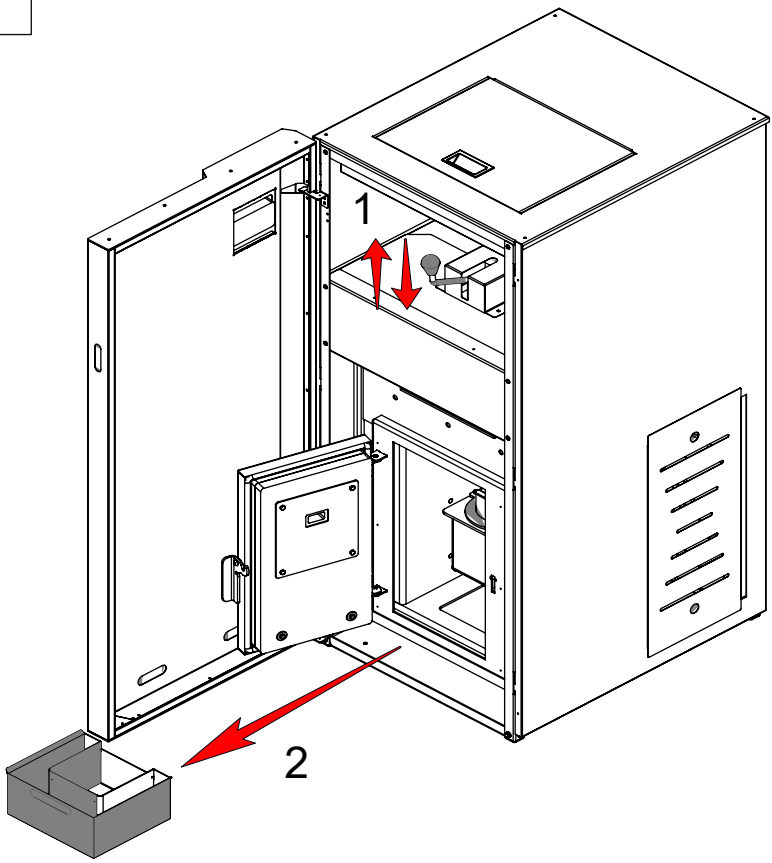
Node List - This menu shows the communication address of the board, typology of the board, firmware version and code.

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

7. Cleaning

⚠	**Before any type of cleaning of the boiler be sure it is switched off and cooled down!**

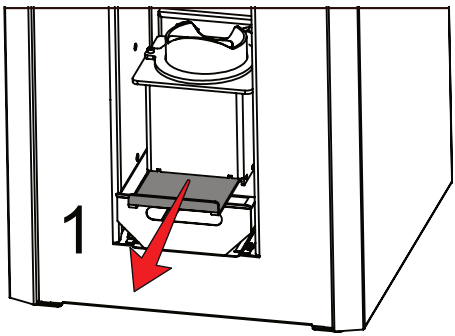
Step 1

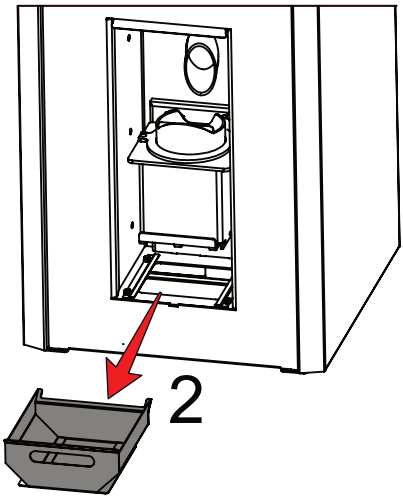


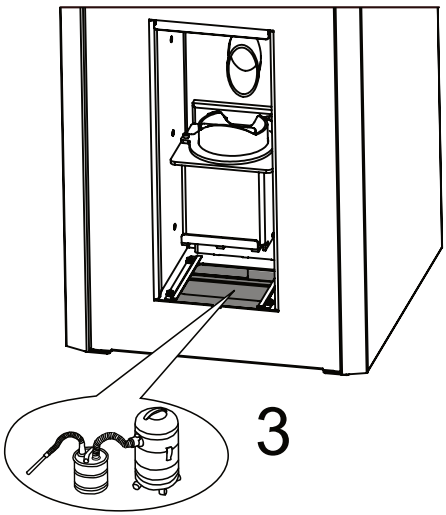
1. Pull the lever for manual cleaning.

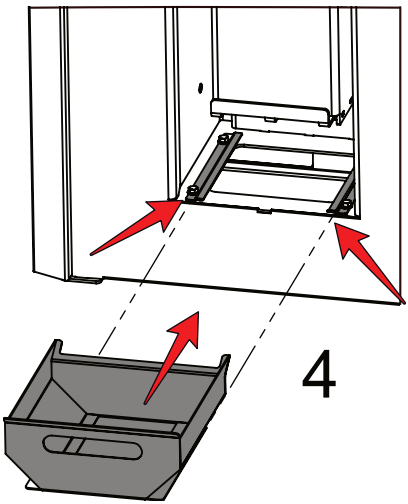
2. Pull the ash container and empty it.

Step 2	FOR PRODUCTS PRODUCED **FROM** JANUARY 2026 USE THE FOLLOWING CLEANING PROCEDURE FOR THE BURNING CHAMBER.



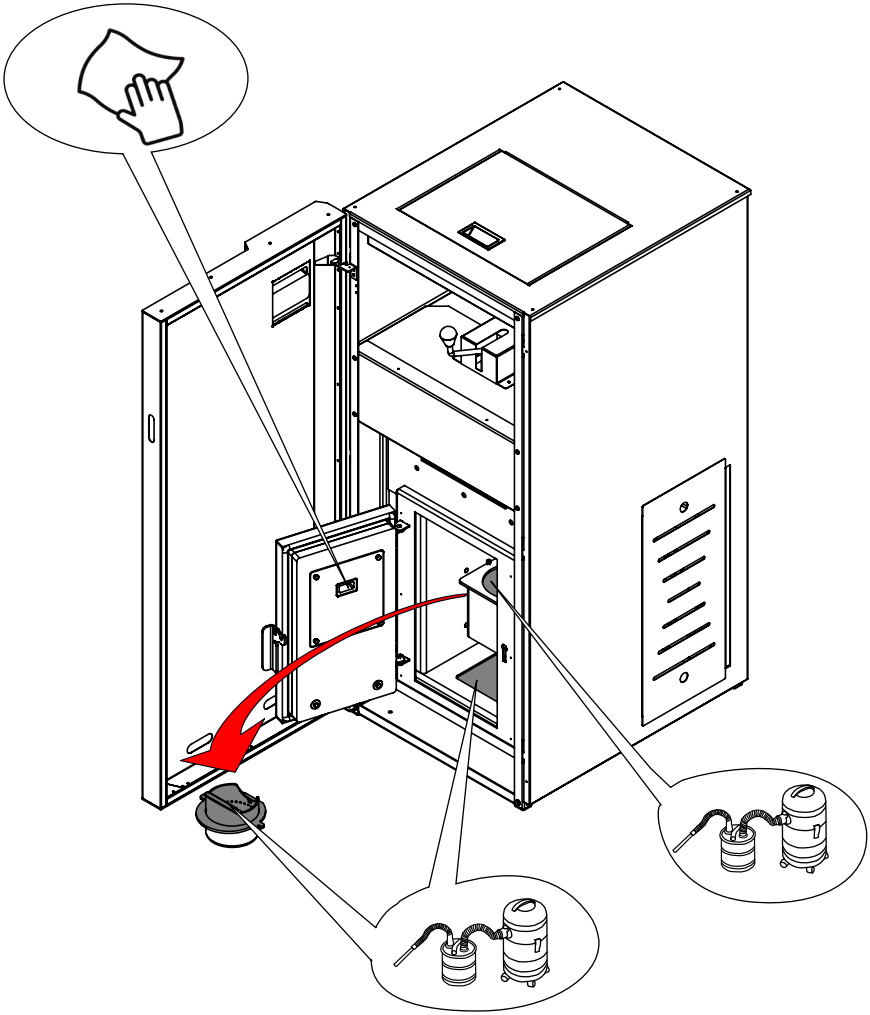






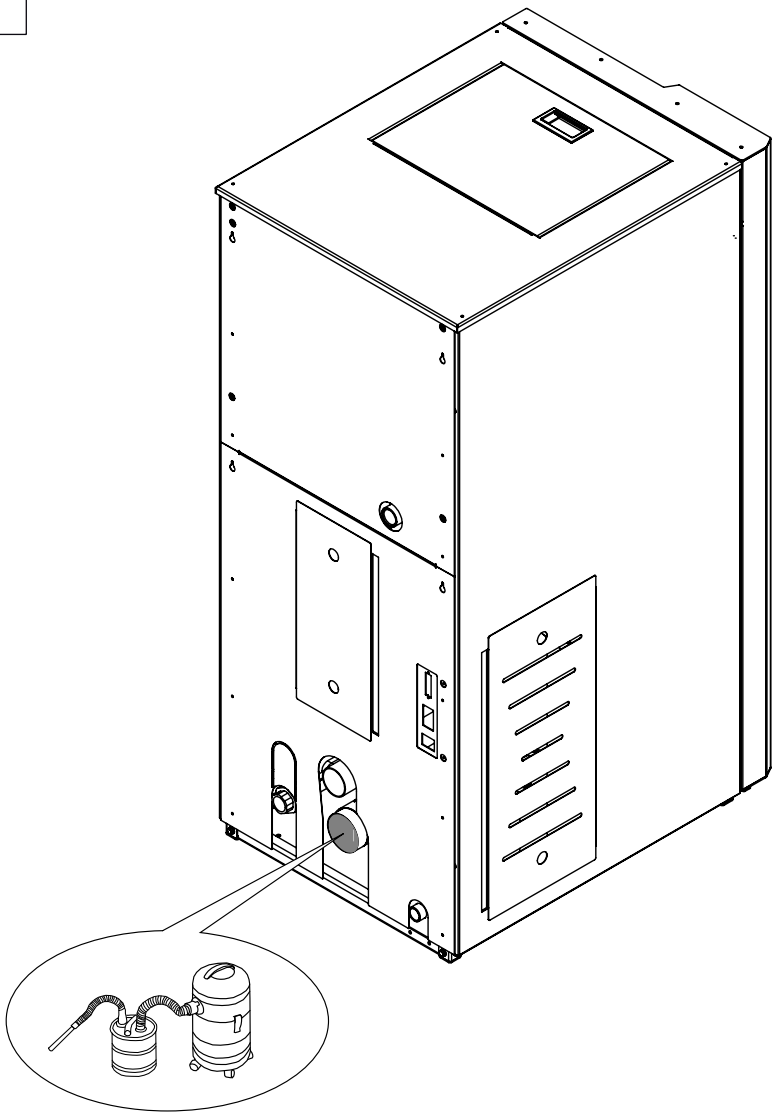
1. Pull the bottom revision plate of the burning box so the ash can fall down in the ash container.
2. Pull out the ash container for cleaning.
3. Use an ash vacuum cleaner to clean the compartment below the ash container.
4. Push back the ash container using the guide rails to position it.

Step3



Pull out the combustion pot. Use ash vacuum cleaner to clean it, the burning pot and the compartment below. Use non-abrasive cloth to clean the window.

Step4



Use ash vacuum cleaner to clean the flue gas outlet.

Step	Weekly	Twice per year
1	X	
2	X	
3	X	
4		X

Cleaning intervals are recommended by the manufacturer and may vary according to the type of pellets and legal regulations in the respective country.

	Always check all the seals integrity when performing some of the steps. If some seal is compromised it should be replaced as soon as possible.

8.Error codes and messages

Error code/message	Possible cause
	Solution

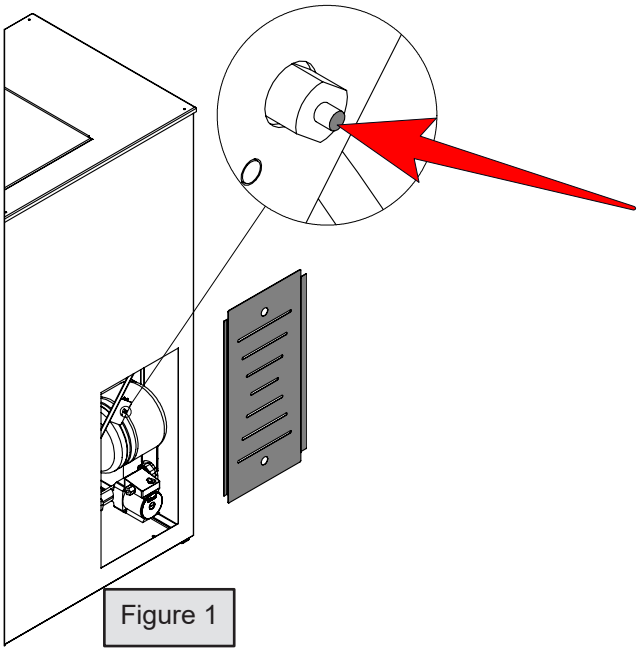


Figure 1

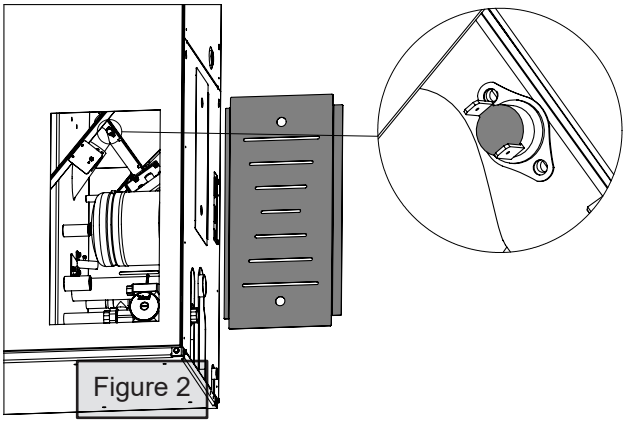


Figure 2

Er01 High voltage error 1	The temperature of the water is above the maximum for safety.
	The boiler will automatically turn off. Wait for it and chek the water pump for malfunction. Check water safety protection and reboot it by pressing it. This error will not dissapear or let you start the product before that. Check Figure 1 for location.
Er02 High voltage error 2	High temperature in the pellet hopper caused by poorly cleaned fire pot, sensor malfunction or backfire to the fuel bunker by any reason. Check Figure 2 for sensor location.
	Follow the cleaning procedure described in this manual and check for stuck fuel. If the error continues contact your technician.
Er03 Low flue gases temperature	Poor quality pellets, lack of pellets in the hopper, wet pellets.
	Check the quantity and quality of the pellets. Check the fuel pot for clogging and the fuel bunker for dust.
Er04 High water temperature in the water jacket	Pressure drop in the installation. Circulation pump malfunction. Badly vented installation.
	Check the system for leaks. Check the circulation pump. Check if there is something blocking the air inlet at the room.

Er05 High flue gas temperature	Uncleaned boiler. Sensor malfunction.
	Follow the cleaning procedure described in this manual. If this does not help contact your technician.
Er07 Encoder error	Encoder does not receive signal or fan failure. Broken encoder.
	Check the fan cable for damage. Try to disconnect and connect the fan cable.
Er08 Encoder fan error. Fan speed control failed.	The fan can not reach the set speed. Defective fan. Problem with the electronics. Low voltage of the power grid.
	Check the fan cable for damage. Try to disconnect and connect to power grid.
Er09 Low system pressure	The pressure in the system is lower than the minimum for normal exploitation.
	Check the water level in the system. Check for leaks.
Er10 High system pressure	The pressure in the system is higher than the maximum for normal exploitation.
	Check the system.
Er11 Electronics get wrong data.	Due to a power failure the clock and date are not correct. Failure in the electronics.
	Set the time and date correctly.

Er12 Ignition failed	Igniter malfunction. Lack of pellets. Uncleaned fuel pot. Need of adjustment.
	Visual inspection of the burning pot during start. Check the pellets quantity and if there is something blocking their way going down. Follow the cleaning procedure described in this manual for the fuel pot.
Er15 No power supply	Power failure during operation.
	Clear the error and check if the pot is clean to continue the work process.
Er16 Error RS485 Communication connection	Faulty connection of the control board with the display or damaged cable between them.
	Check the plug and the cables between the control board and the display.
Er23 Water temperature sensor	Some of the temperature sensors of the boiler or buffer is malfunctioning.
	Check the sensors are in order. Check their connection to the board.
Er41 Minimum airflow	Open door. Uncleaned boiler. Blocked or missing draft in the chimney.
	Check the door and the seal on it. Follow the cleaning procedures described in this manual.
Er42 Maximum airflow reached	High pressure in the chimney.
	Check the airflow sensor and the fresh air pipe. Please avoid to connect the fresh air pipe to exterior without a proper cap in the end.

9. Spare parts

Figure 1

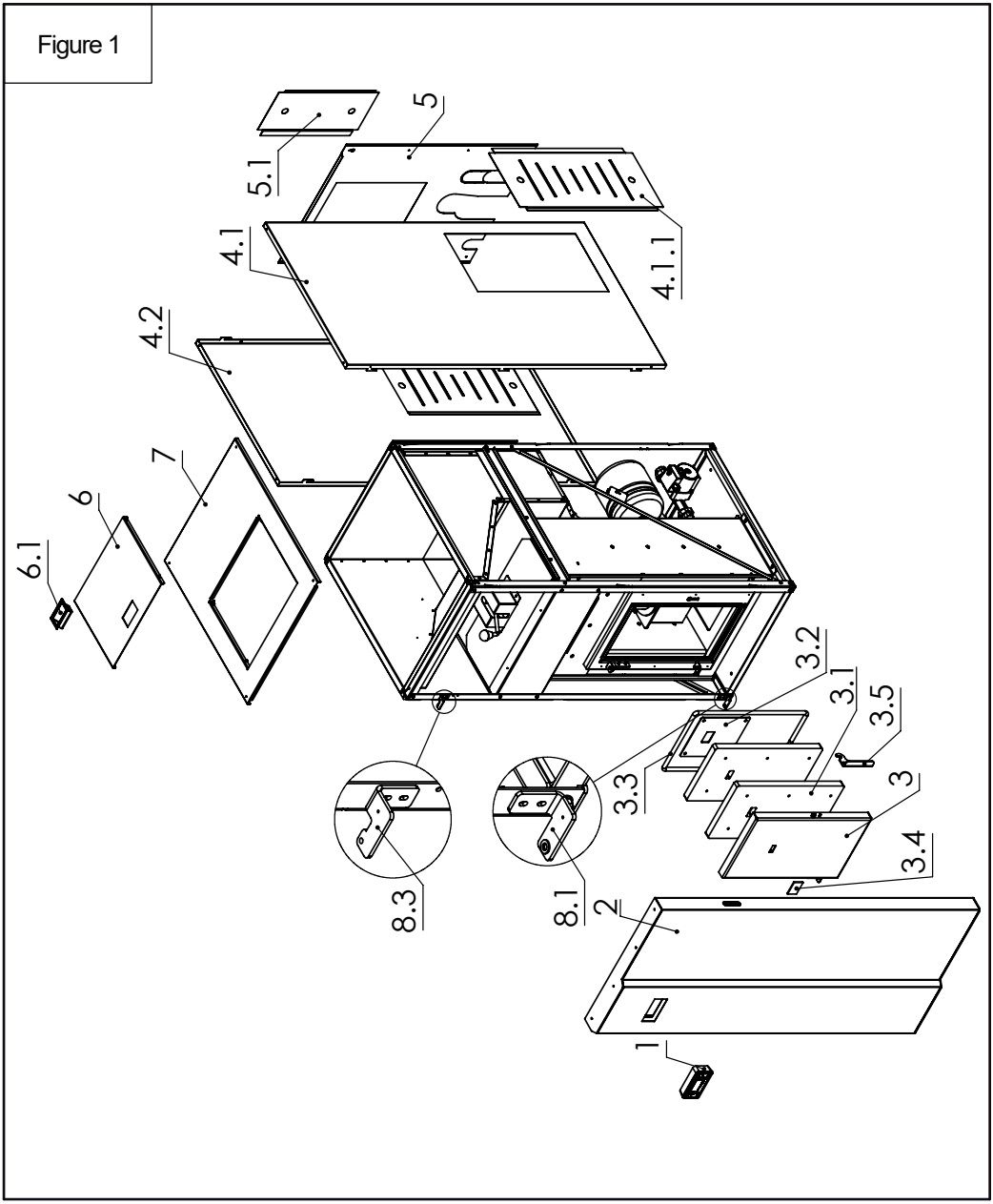


Figure 2

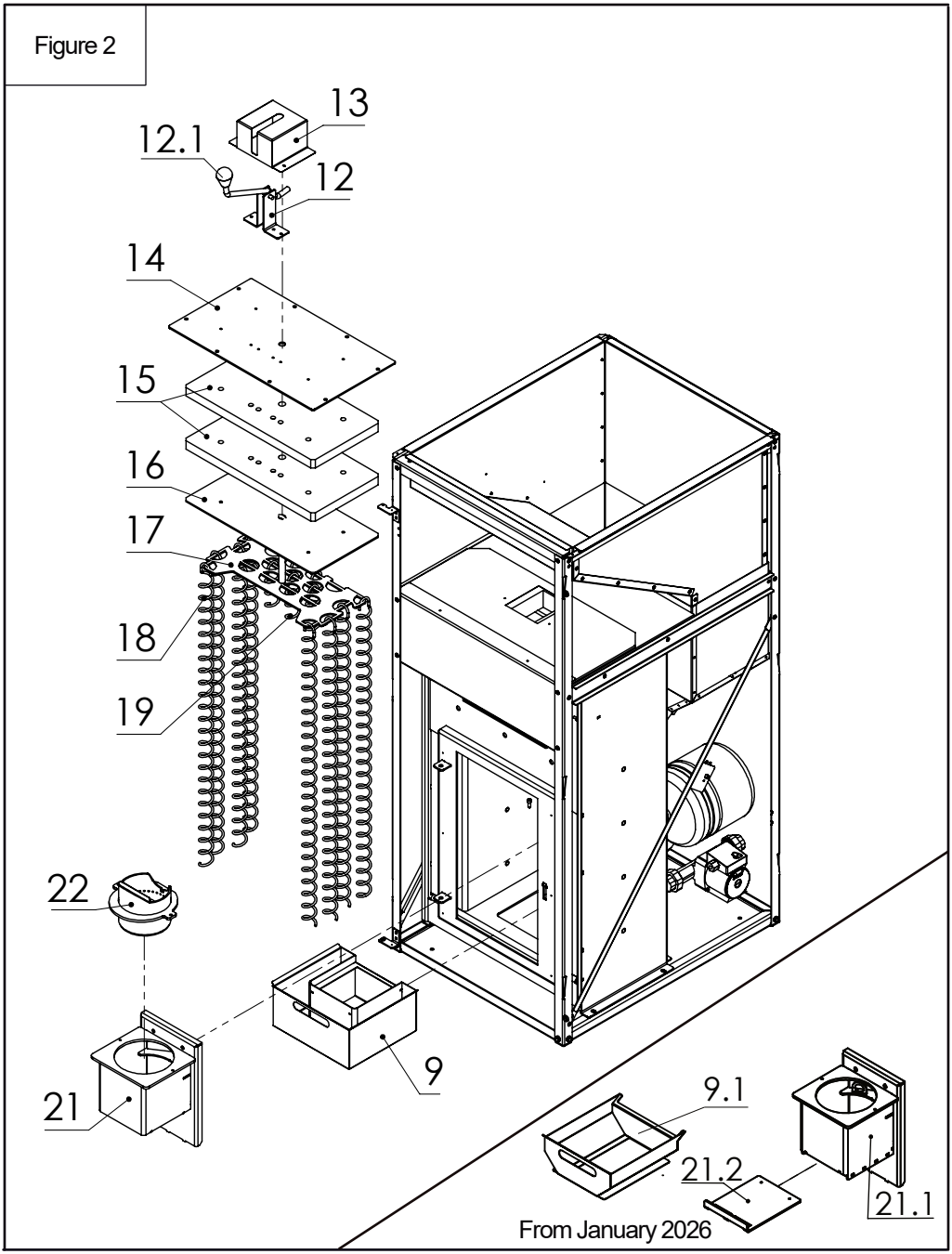
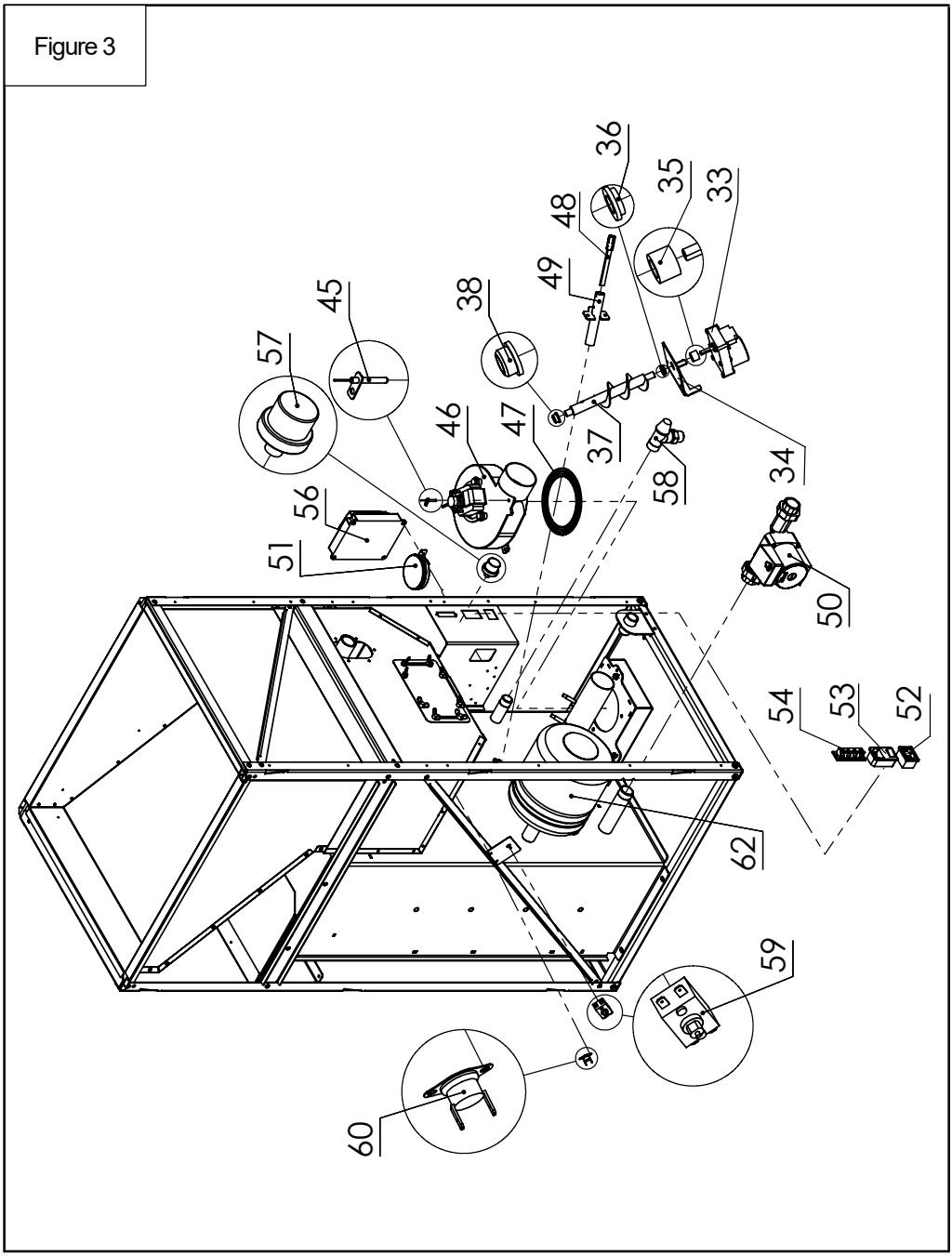


Figure 3

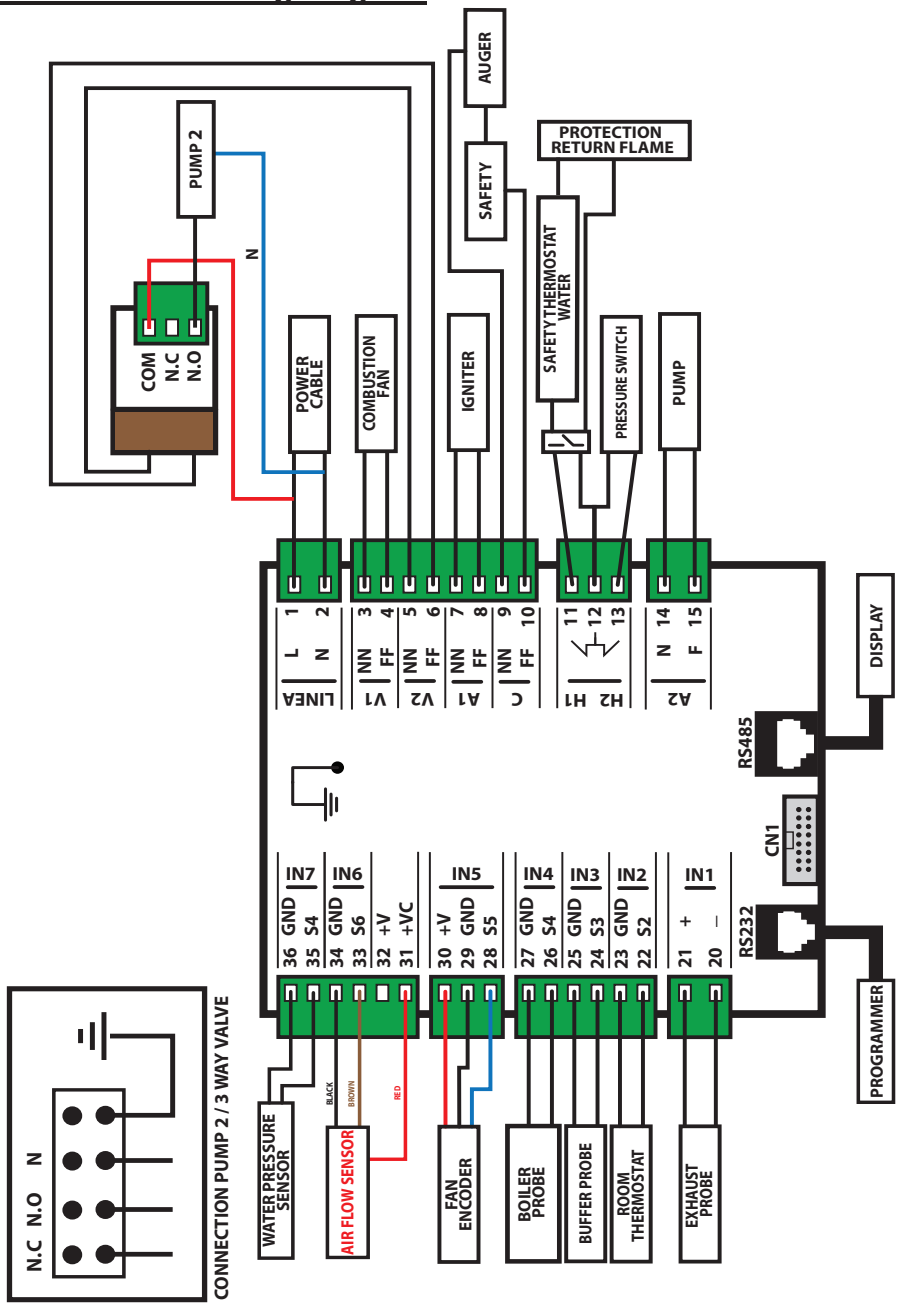


Pos.	Name
1	Display
2	Front door
3	Combustion chamber door
3.1	Vermiculite for combustion chamber door (1 piece)
3.2	Combusion chamber door insulation holder
3.3	Insulation rope for combustion chamber door
3.4	Glass for combustion chamber door
3.5	Combusion chamber door insulation handle
4.1	Right side decorative cover
4.1.1	Service door for left/right decorative panel
4.2	Left side decorative cover
5	Back panel
5.1	Service door for back panel
6	Bunker door
6.1	Bunker door handle
7	Top decorative cover
8.1	Bottom front door hinge
8.3	Upper front door hinge
9	Ash container
9.1	Ash container from January 2026
12	Holder for manual cleaning handle
12.1	Handle for manual cleaning the turbolators
13	Cover for manual cleaning system
14	Top plate for the vermiculite above turbulators
15	Vermiculite above turbulators (1 piece)
16	Holding plate for the vermiculite above turbulators
17	Holding plate for the turbulators
18	Turbulator long (1 piece)
19	Turbulator short (1 piece)
21	Combustion box
21.1	Combustion box from January 2026
21.2	Combustion box revision plate from January 2026
22	Combustion pot

Pos.	Name
33	Motor reducer 5 RPM AUGER
34	Holding plate for the Motor reducer 5 RPM AUGER
35	Connector Spiral with Auger motor
36	Bottom plastic sleeve for the auger spiral
37	Auger Spiral
38	Top plastic sleeve for the auger spiral
45	Exhaust temperature sensor
46	Exhaust fan
47	Exhaust fan gasket
48	Quartz igniter
49	Quartz igniter pipe
50	Circulation pump (optional)
51	Air flow regulation sensor
52	Power outlet socket
53	Power supply outlets - 3P AC POWER CONNECTOR AC-01
54	Connection socket
56	Control board
57	Water pressure sensor (optional)
58	Safety valve (optional)
59	Water overheating safety
60	Return flame sensor
62	Expansion tank (optional)

Using original spare parts provided only by the manufacturer or authorized dealer is obligatory! Self repair or using non-original parts may lead to malfunction or injury.

10. Control board wiring diagram



11. Storage and disposal

11.1 Disposal of package

The package of the appliance consist of wood, cardboard and plastic wrap. They should be separated and disposed according to local regulations.

11.2 Not used for idle periods

If the appliance is not used for a long periods (and/or at the end of each season), proceed as follows:

- Remove the pellets from the hopper.
- Disconnect the power supply.
- Clean following the procedures in this manual and check for damaged parts. Get them replaced by a qualified personnel.
- Protect the appliance from dust with suitable covering.
- Store in dry and sage place protected from atmospheric agents.

11.3 Disposal of the appliance

Follow the operations below for appliance decommissioning:

- Disconnect the appliance from the power supply and unplug it from the socket.
- Empty all pellets from the hopper.
- Seal the appliance inside strong packing.
- Dispose of the appliance as required by the regulations in force in the country of installation.

Scrapping and disposal of the appliance are the sole responsibility of the owner, who must act in compliance with the applicable laws in the country, regarding safety, respect and protection of the environment. At the end of its useful life the product must not be disposed of together with municipal waste. It can be taken to the appropriate recycling centres set up by the municipalities, or to retailers that provide this service. Disposing of the product separately avoids possible negative consequences for the environment.
In particular, the electrical and electronic components must be separated and disposed of at centres authorized for this activity.

This symbol means the product must not be disposed together with domestic waste. For the purpose of preventing damage to health or the environment, users are kindly asked to separate this equipment and/or batteries or accumulators included from other types of waste and to arrange for disposal by a suitable service, organization or dealer. For more information about how to collect electric and electronic equipment and the appliances, batteries and accumulators, please contact your local council or public authority competent to issue the relevant permit.

Mareli Systems

STEP FORWARD

Mareli Systems
Industrial Zone
Simitli, 2730
Region Blagoevgrad
Bulgaria

info@mareli-systems.com
www.mareli-systems.com