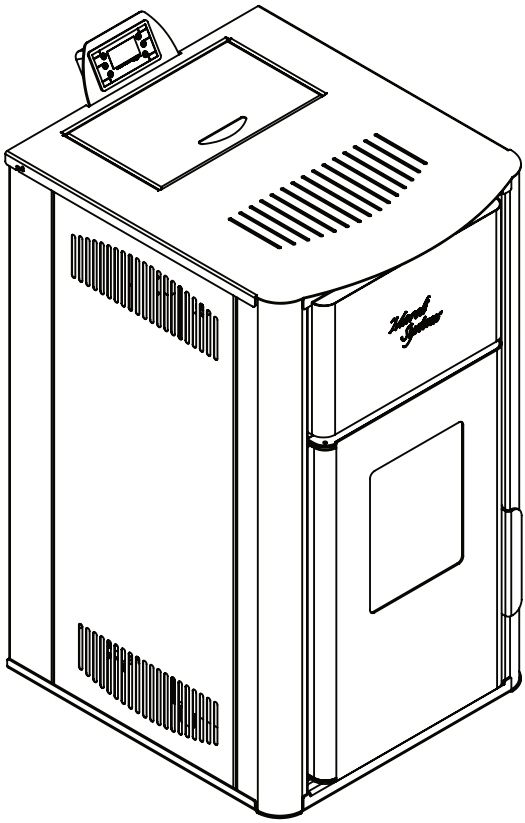
Mareli Systems

STEP FORWARD



Pellet stove

PS 13/18/24/30

User manual

rev. 2.1

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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.

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 stove 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 stove;
- Do not wash the stove 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 stove. 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 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 stove are extremely hot (the door handle, glass, flue pipe, etc.). Avoid contact with these parts before assuring yourself that you us temperature resistant gloves as well as suitable temperature resistant instruments;

- The product must be electrically connected to a system equipped with an effective earth conductor. (Must be grounded);
- Turn off the stove in case of failure or malfunction;
- The product must be electrically connected to a system equipped with an effective earth conductor. (Must be grounded);
- Turn off the stove in case of failure or malfunction;
- 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 stove (connection to the flue pipe);
- Pellet stove is not a cooker;
- Under no circumstances should the fire be ignited with the door open or broken glass;
- Do not light the stove 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 stove, 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 fallow 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.

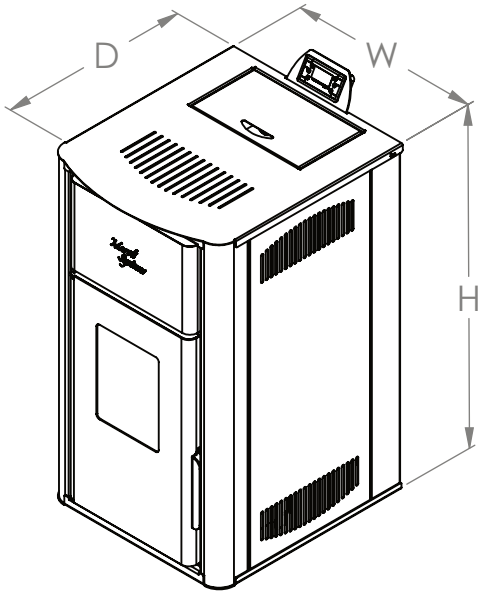
The main quality certifications for pellets currently available on the European market guarantee that the fuel complies with class A1/A2 according to ISO17225-2. These certifications include, for example, EN Plus, DIN plus, Ö-Norm M7135, and specifically assure that the following characteristics are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

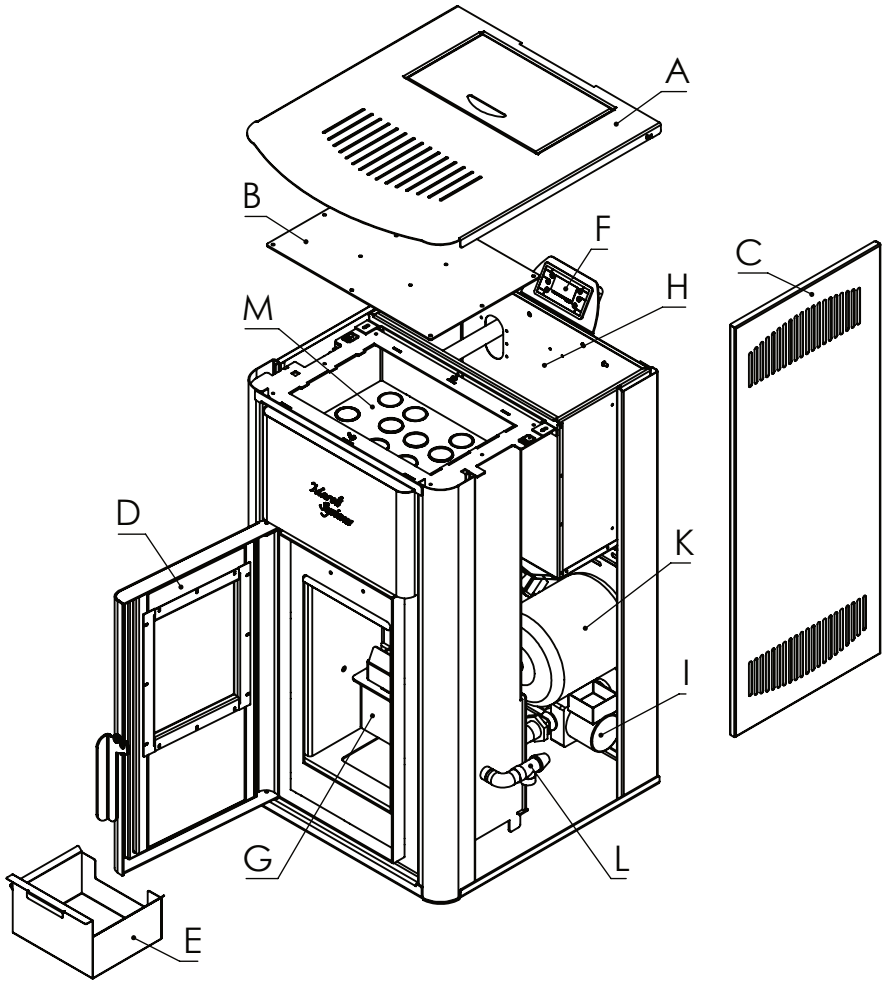
- Calorific value: 4.6 - 5.3 kWh/kg.
- Water content: ≤ 10% of the weight.
- Percentage of ash: max 1.2% of the weight (A1 less than 0.7%).
- Diameter: 6±1/8±1 mm.v
- Length: 3-40 mm.
- Content: 100% untreated wood without the addition of binding agents.

	**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	13	18	24	30
Heated area	m³	250	350	500	600
Height H	mm	880	1005	1005	1005
Width W	mm	555	568	618	634
Depth D	mm	556	632	633	674
Pellet bunker volume	kg	22	30	35	35
Fresh air pipe	ϕ mm	48	48	48	60
Exhaust gas pipe	ϕ mm	80	80	80	80
Weight	kg	165	180	190	215
Fuel type		Pellets Φ6-Φ8	Pellets Φ6-Φ8	Pellets Φ6-Φ8	Pellets Φ6-Φ8
The chimney draft	Pa	12	12	12	12
Electrical consumption	V/Hz	60/310	60/310	60/310	60/310
Electrical supply	V/Hz	230/50	230/50	230/50	230/50
Water jacket capacity	L	26	31	37	41
Working pressure	bar	0,5-2,0	0,5-2,0	0,5-2,0	0,5-2,0
Space heating output	Kw	1	2	3	4
Working at environment temperature	C	5-40	5-40	5-40	5-40
Humidity at 30^{O} C environment temperature	%	85	85	85	85
Energy conversion efficiency	%	>94	>92	>92	>93
Co Emissions	Mg/m3	<300	<300	<300	<300
Temperature of the flue gas	C	110	141	143	145
Max. water temperature	C	90	90	90	90

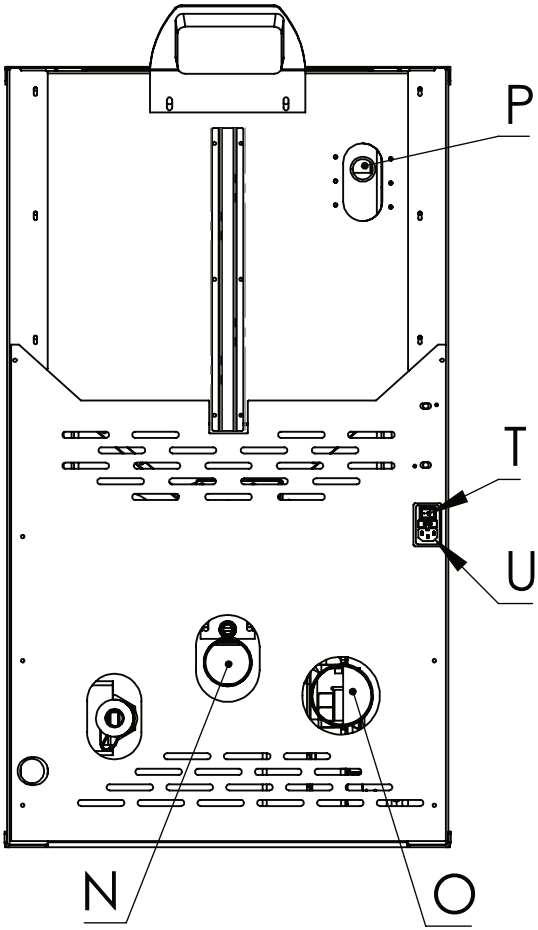




A - top cover
B - flue pipes cover
C - side metal panel
D - front door
E - ash tray
F - control display
G - combustion chamber
H - pellet bunker
I - inlet circulation pump*
K - expansion vessel**
L - safety valve
M - flue pipes

*Optional, it can be mounted outside of the product.

**Optional, depends on the installation type.



N - air inlet
O - exhaust gas fan
P - water outlet
T - power switch
U - power supply inlet

5. Installation

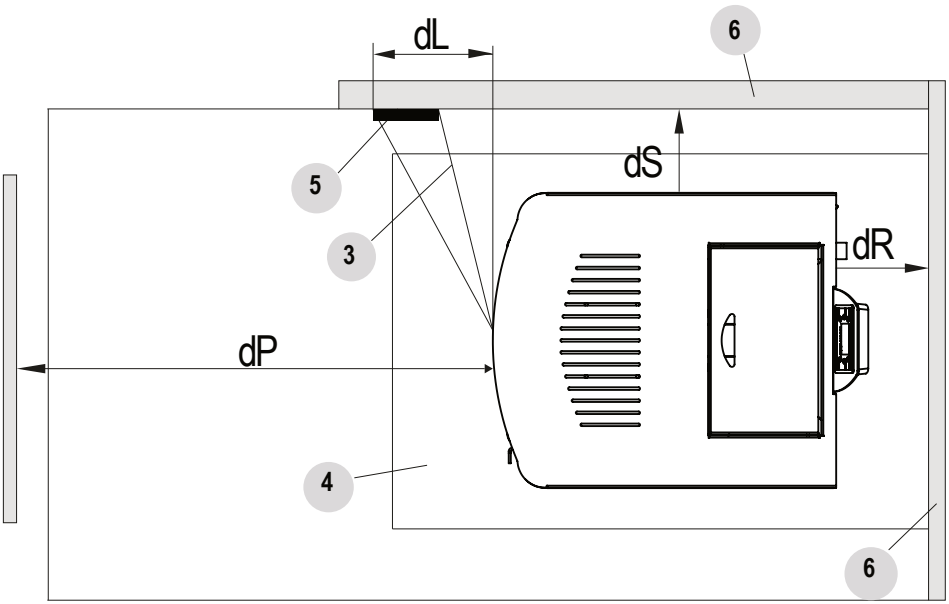
5.1 Placing

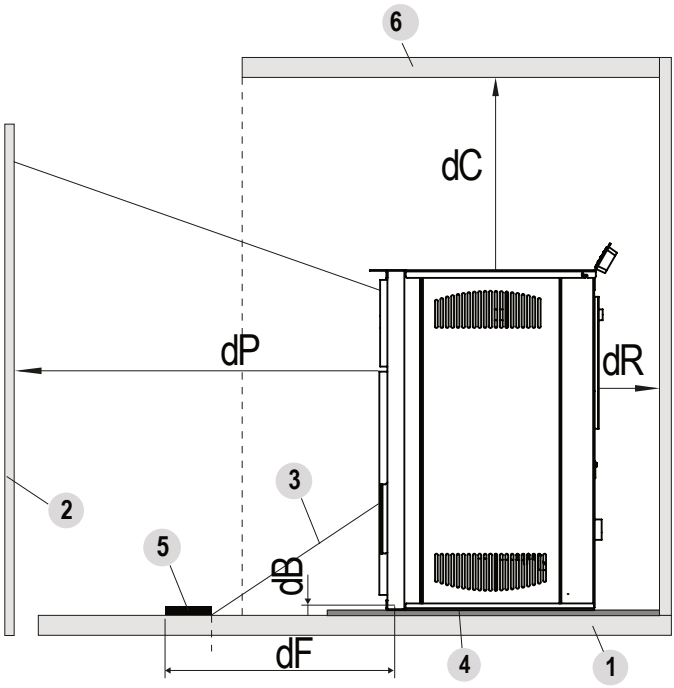
All national, regional and European requirements for safe operation of the appliance must be respected during installation and operation.

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

- The installation of the stove and its accessories must be carried out by authorised technician.
- The floor where the stove is installed should be flat and horizontal, made of fire-resistant materials.
- Minimum distances from the wall to the stove should be at least 400 mm. The minimum space in front of the fireplace should be 1500 mm. The minimal distance of the stove 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:

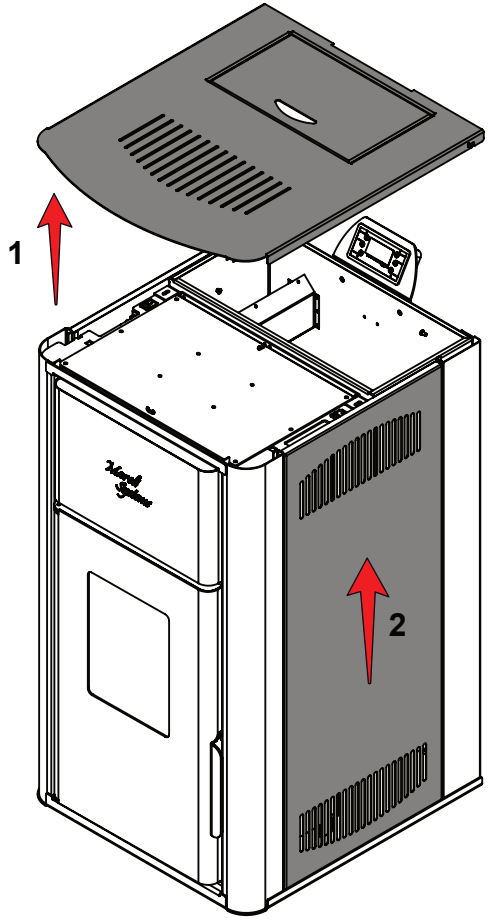




1	Floor	4	Floor guard
2	Front flammable material	5	Radiated surface to be protected
3	Area subject to radiation	6	Rear/side/upper flammable surface

	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. Remove the top cover;
2. Pull the side panel up.

The stove with water jacket operates on water heating boiler principle.
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 or other parts are situated in non-heated premises.

- The circulation pump can be chosen by the capacity required by using the following formula:

$$G=0,043.\ P\ ,\ (m^3/h)$$

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.

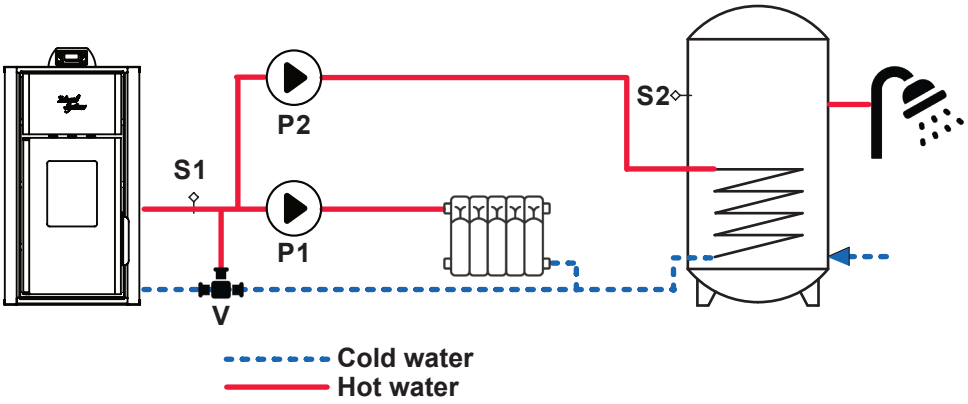
- The filling or unloading of the system is done via a hose through a facet mounted in the lowest area.

- 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 litres on a single start-up. The accumulating char reduces the temperature difference and the condensation.

- The warranty is not valid in case of a stove with a swollen water jacket which is a result of pressure increase in the system and improper connecting.

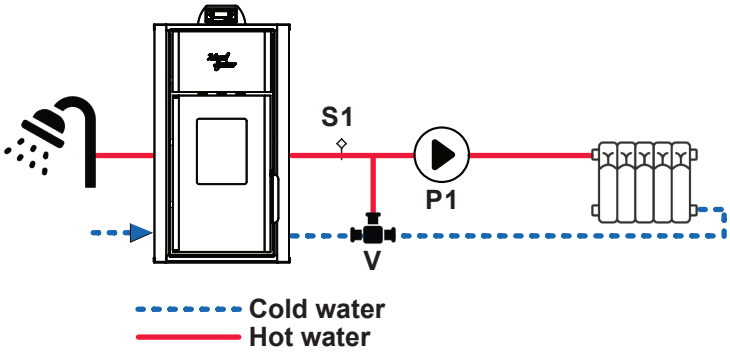
- The water jackets are tested under pressure of 400 kPa (4 bar).



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 open system with DHW:

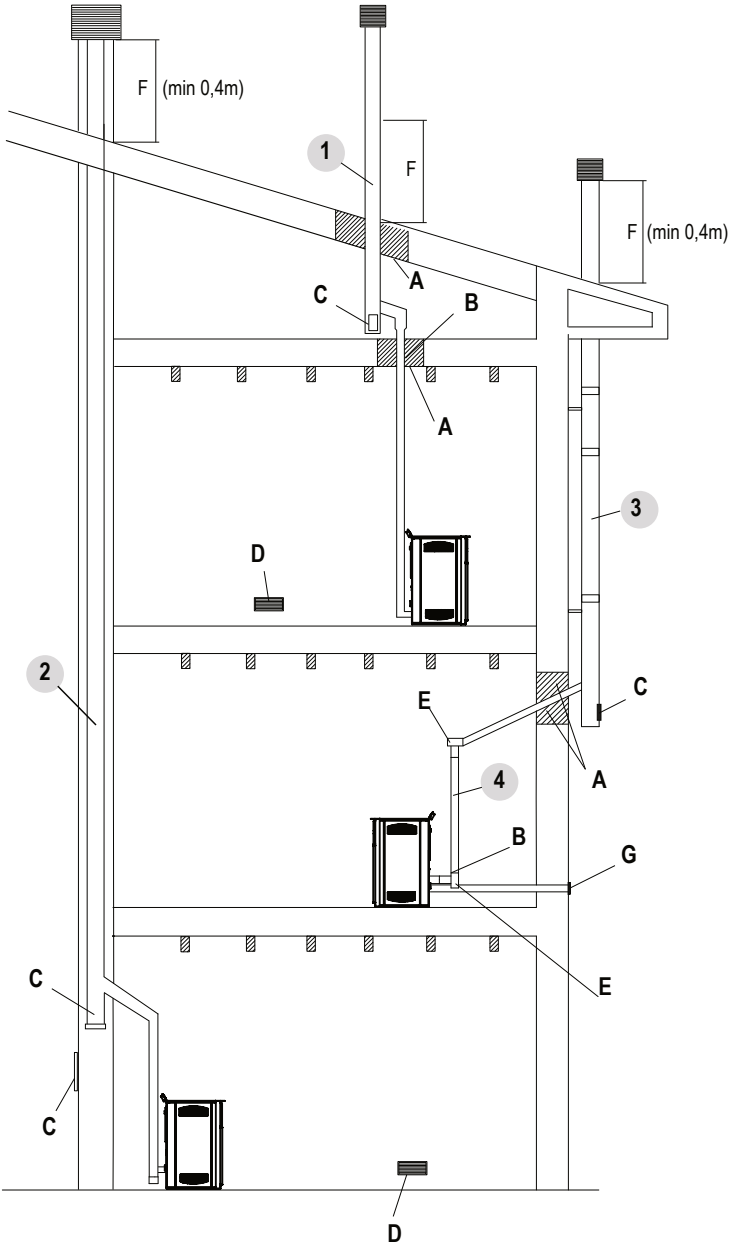


P1 - Heating system pump S1 - Heating system temperature probe

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)

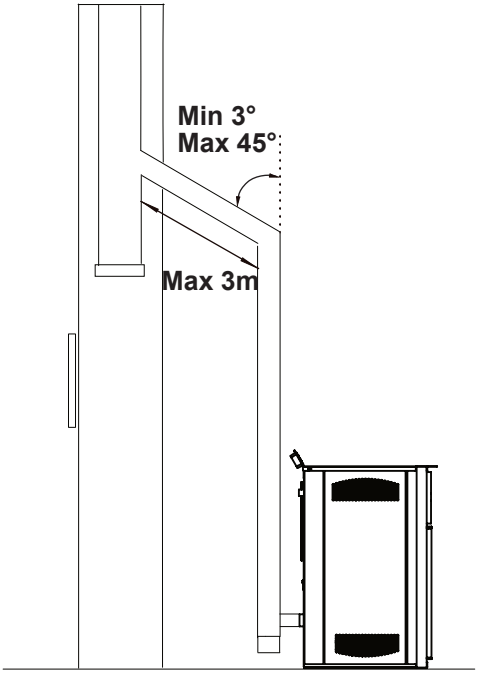
G - air ducting with protective grid

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.**



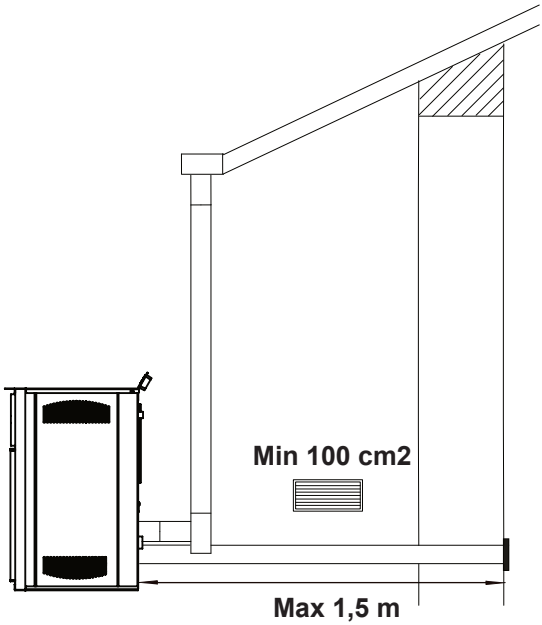
For the assembly of the flue pipes the use of non-flammable materials, fire and condensation resistant products is obligatory. The assembly must be performed in such a manner so it guarantees the airtight sealing and prevents condensation. If possible, avoid adding horizontal sections. Direction shift 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 “MARELI SYSTEMS” stoves, 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



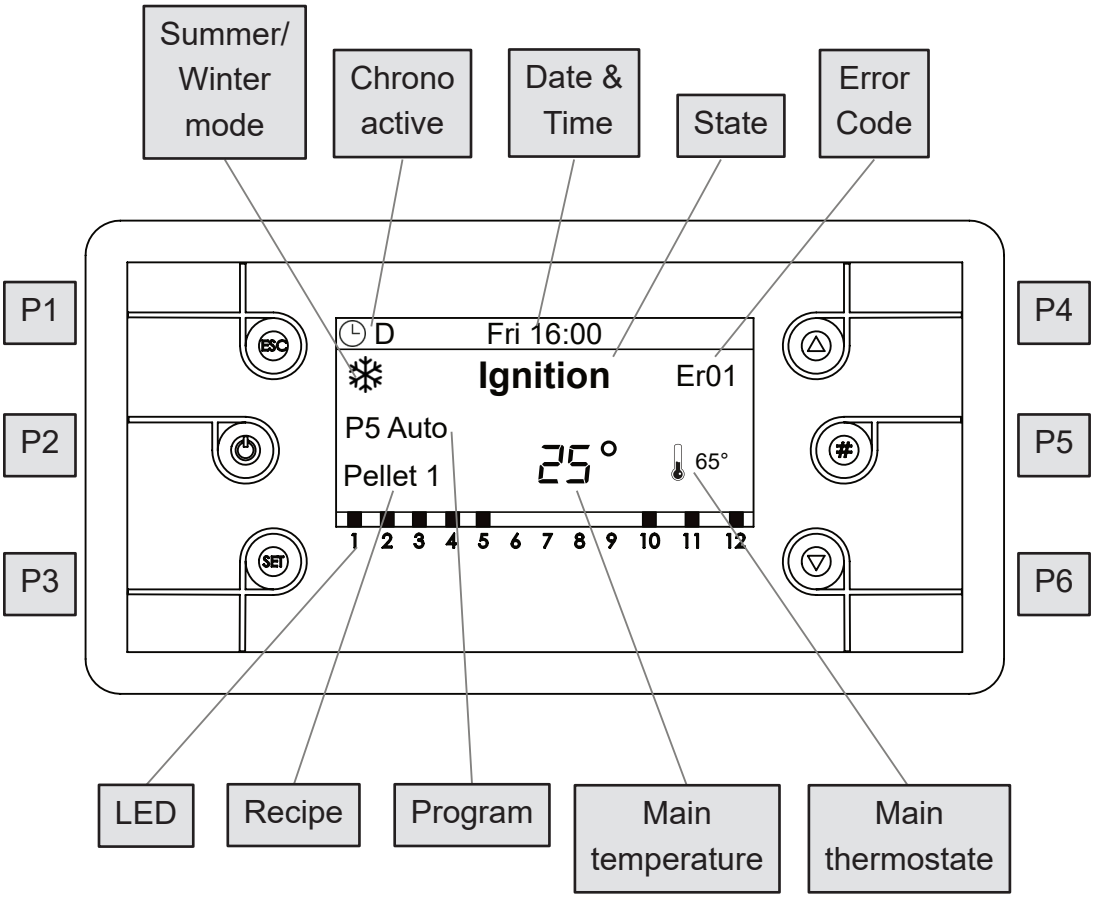
Suction pipe or air intake is placed in the back and has a circular section with a diameter of 48 mm. The combustion air can be aspirated:

- 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.
- Or by connecting directly outside with a suitable tubing having an inner diameter of 48 mm and a maximum length of 1,5 m.

⚠	**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.**

6. Operating with the display

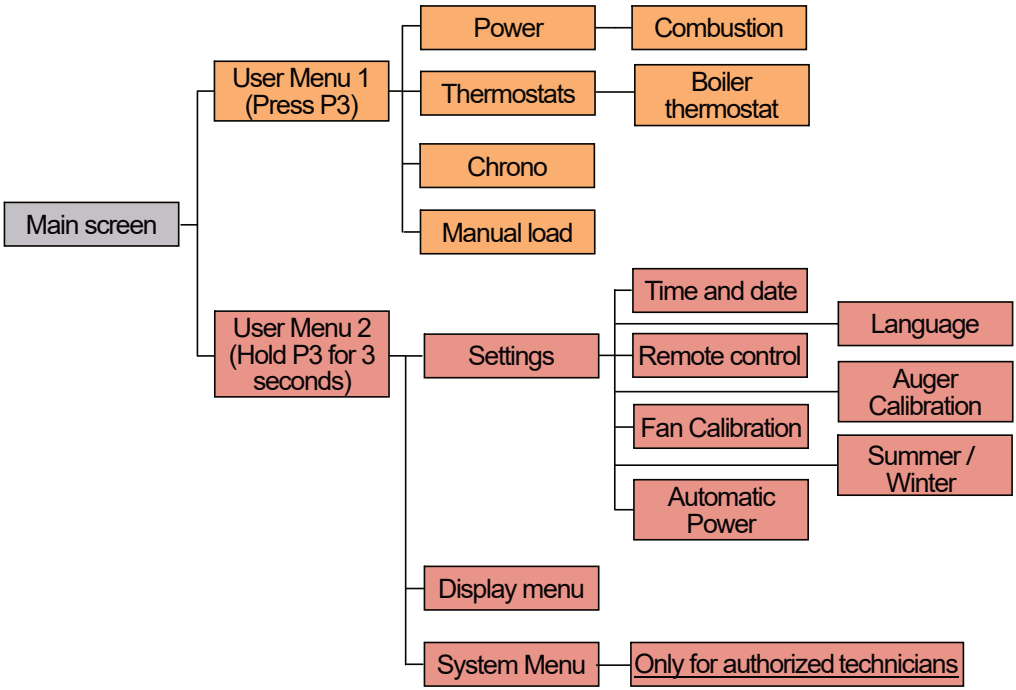
6.1 Home screen



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

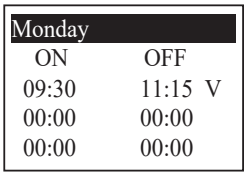
Boiler thermostat - Menu to change the value for the boiler thermostat.

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.

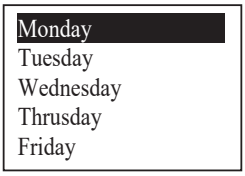
Chrono - This Menu allows selecting the programming modalities and and the Ignition/Extinguishing time slots.



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. Enterthe 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.

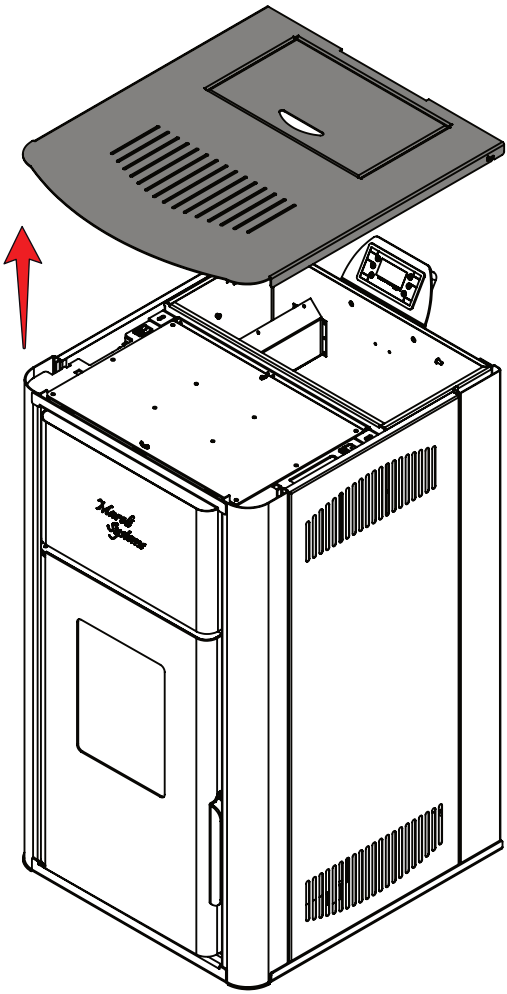
Node List - This menu shows the communication address of the board, typology of the board, firmware version and code.

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

7. Cleaning

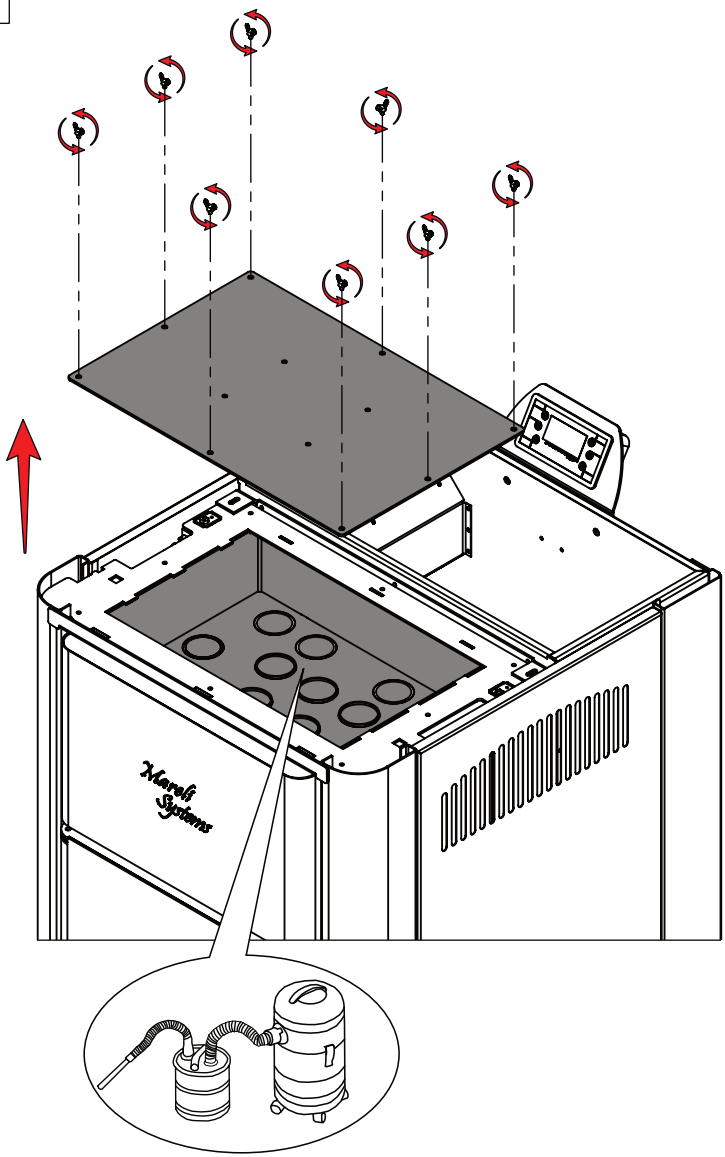
Before any type of cleaning of the stove be sure it is switched off and cooled down!

Step 1



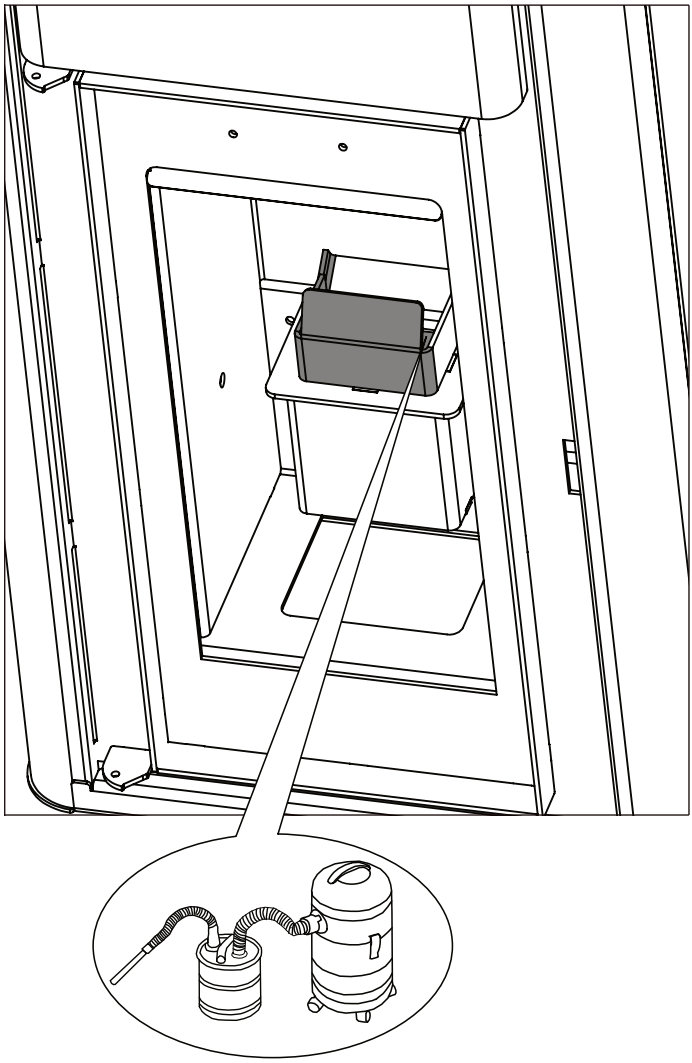
Remove the top cover.

Step 2



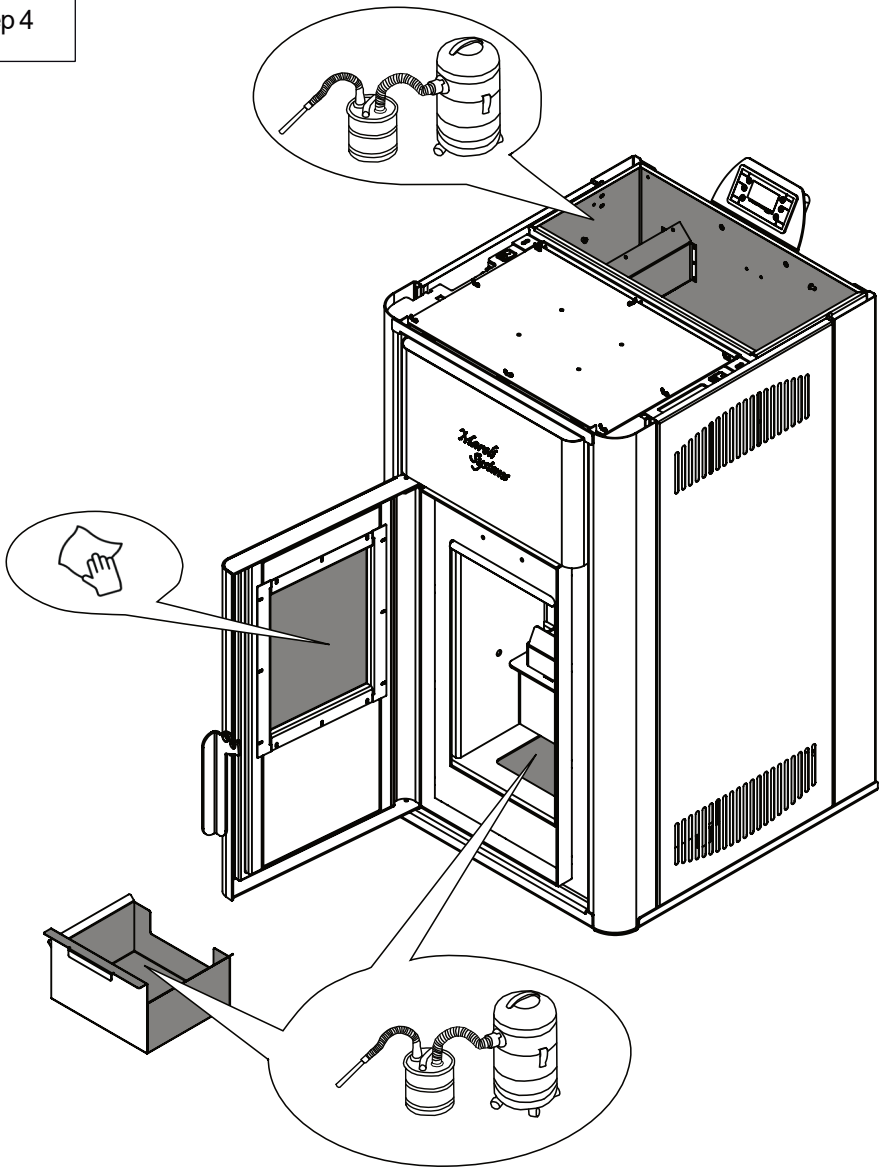
Unscrew by hand the bolts holding the flue pipes cover and remove it. Use ash vacuum cleaner to clean any dust left inside.

Step 3



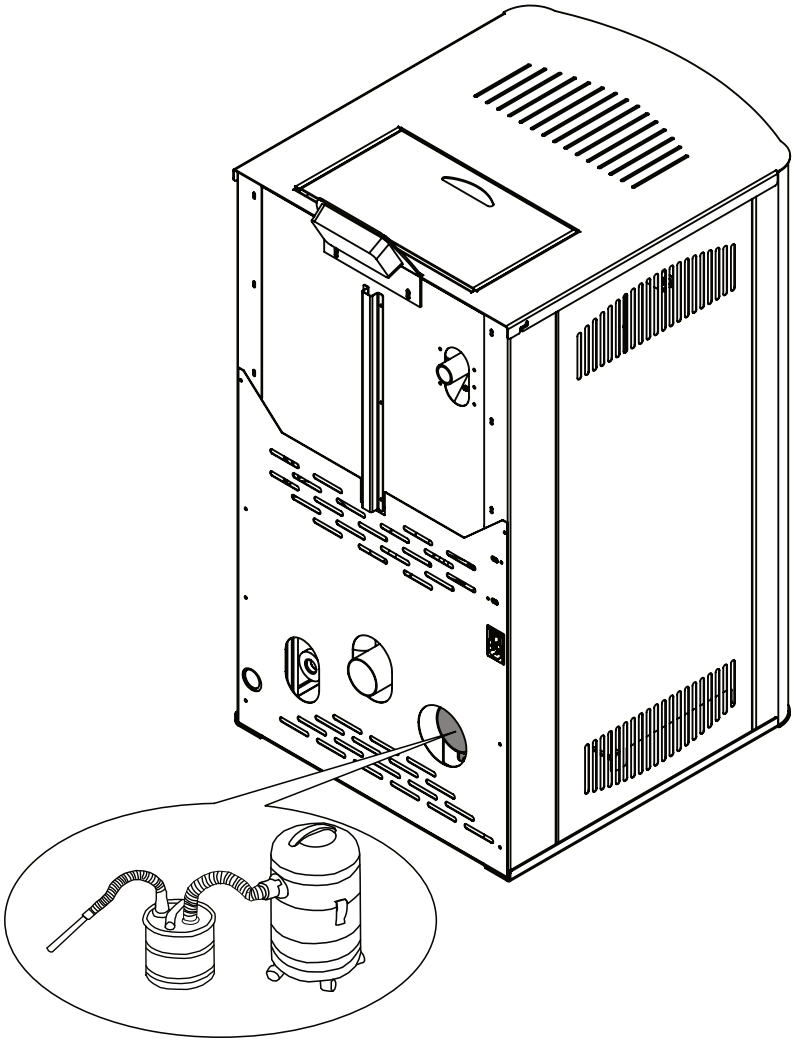
Use ash vacuum cleaner to clean the combustion pot.

Step 4



Use ash vacuum cleaner to clean the fuel bunker, the ash tray and the dust compartment below.
Use non-abrasive cloth to clean the window.

Step 5



Use ash vacuum cleaner to clean the flue gas outlet.

Step	Every day	Weekly	Twice per year
1			X
2			X
3	X		
4		X	
5			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

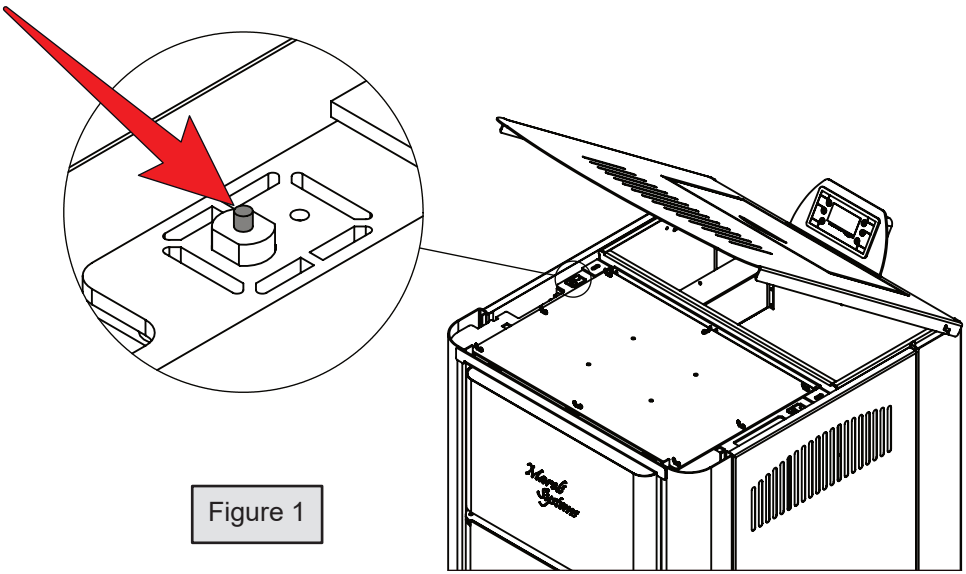


Figure 1

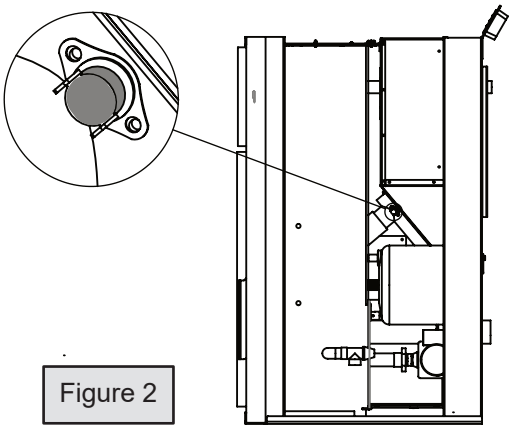


Figure 2

Er01 High voltage error 1	The temperature of the water is above the maximum for safety.
	The stove 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.
	Fallow 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 stove. Sensor malfunction.
	Fallow 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. Fallow 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 stove or buffer is malfunctioning.
	Check the sensors are in order. Check their connection to the board.
Er41 Minimum airflow	Open door. Uncleaned stove. Blocked or missing draft in the chimney.
	Check the door and the seal on it. Fallow 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

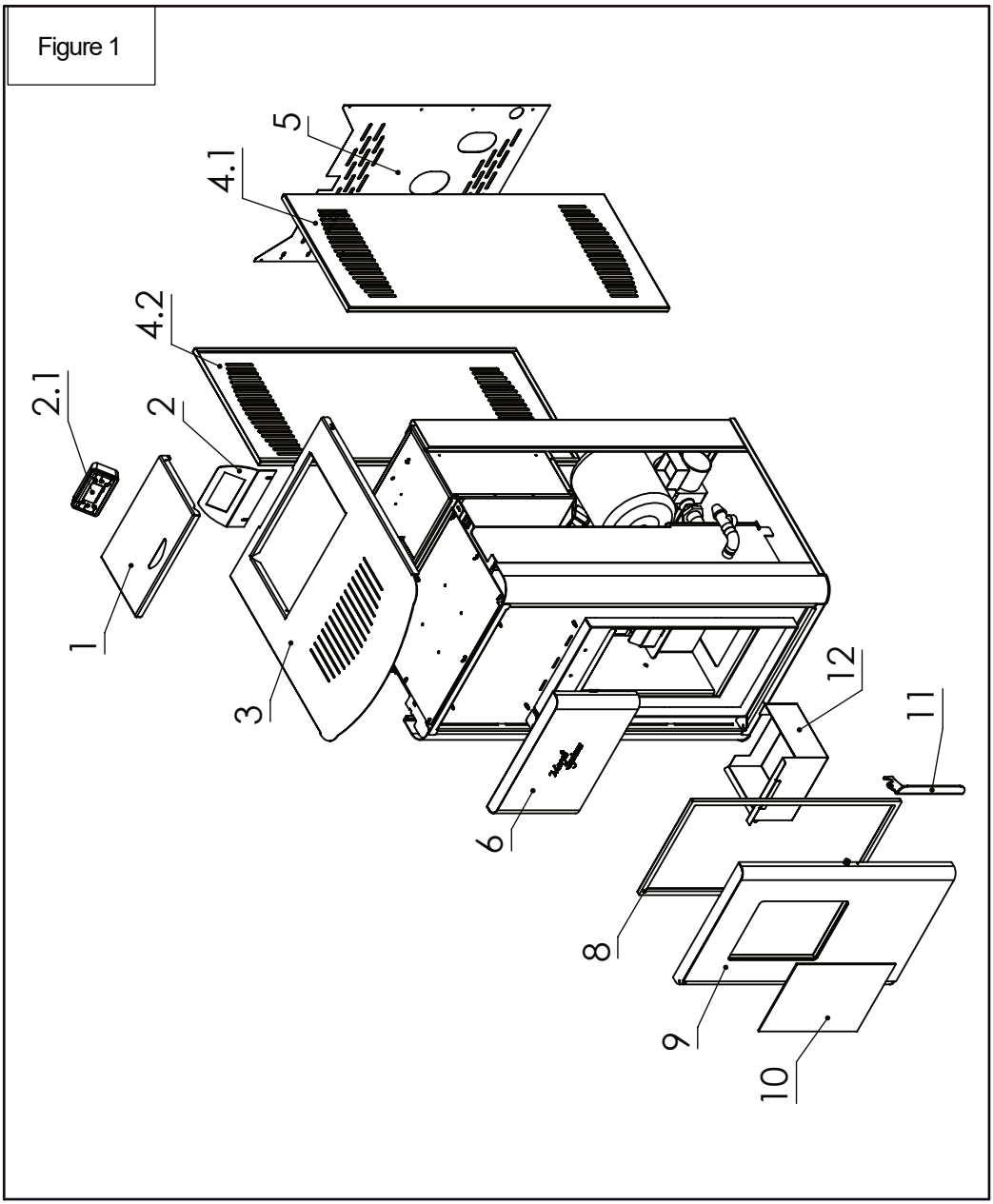


Figure 2

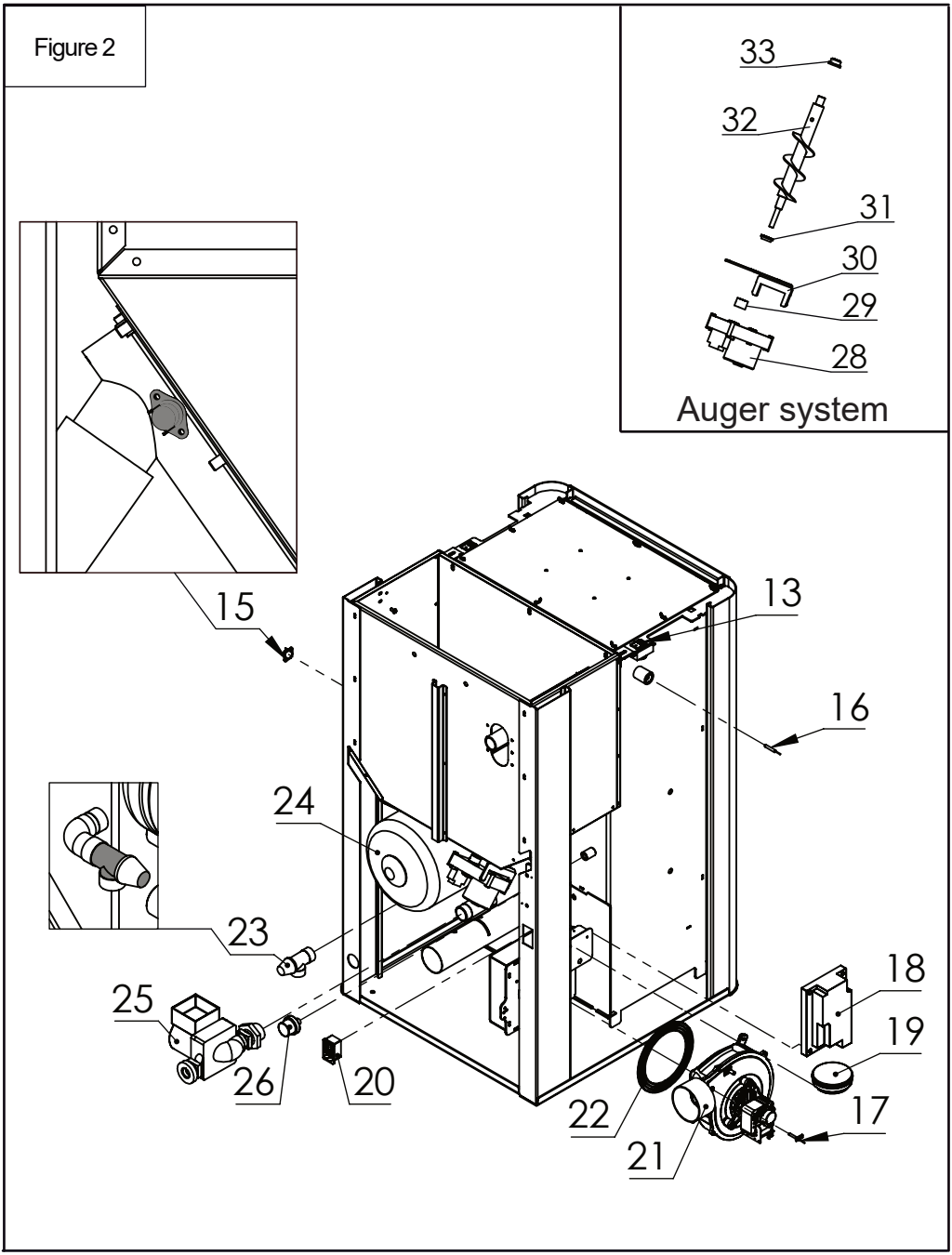
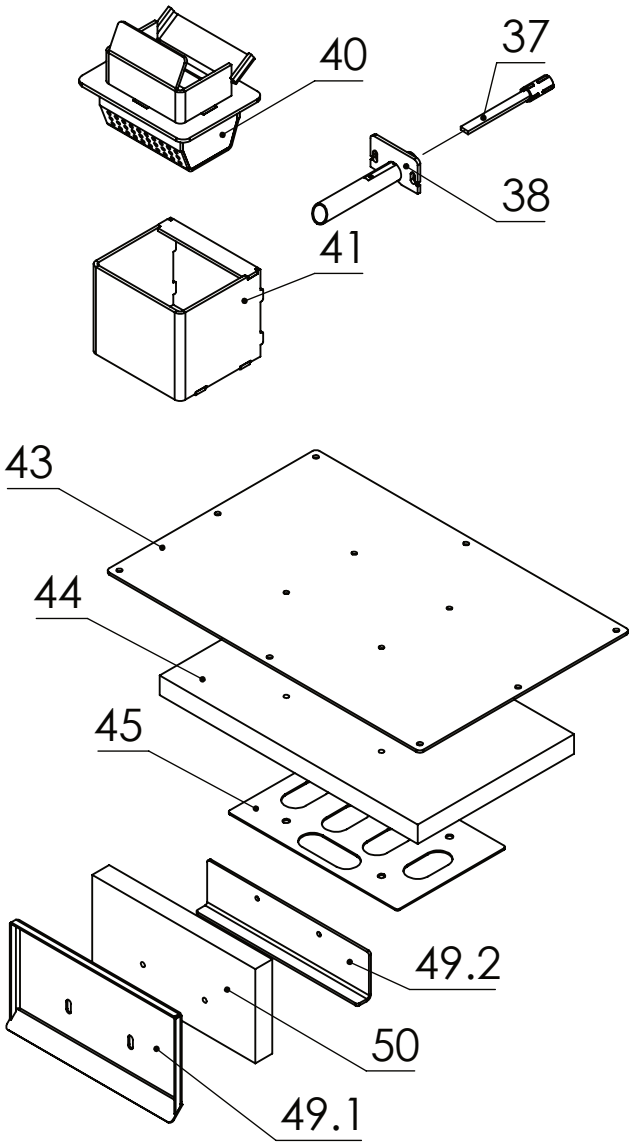


Figure 3

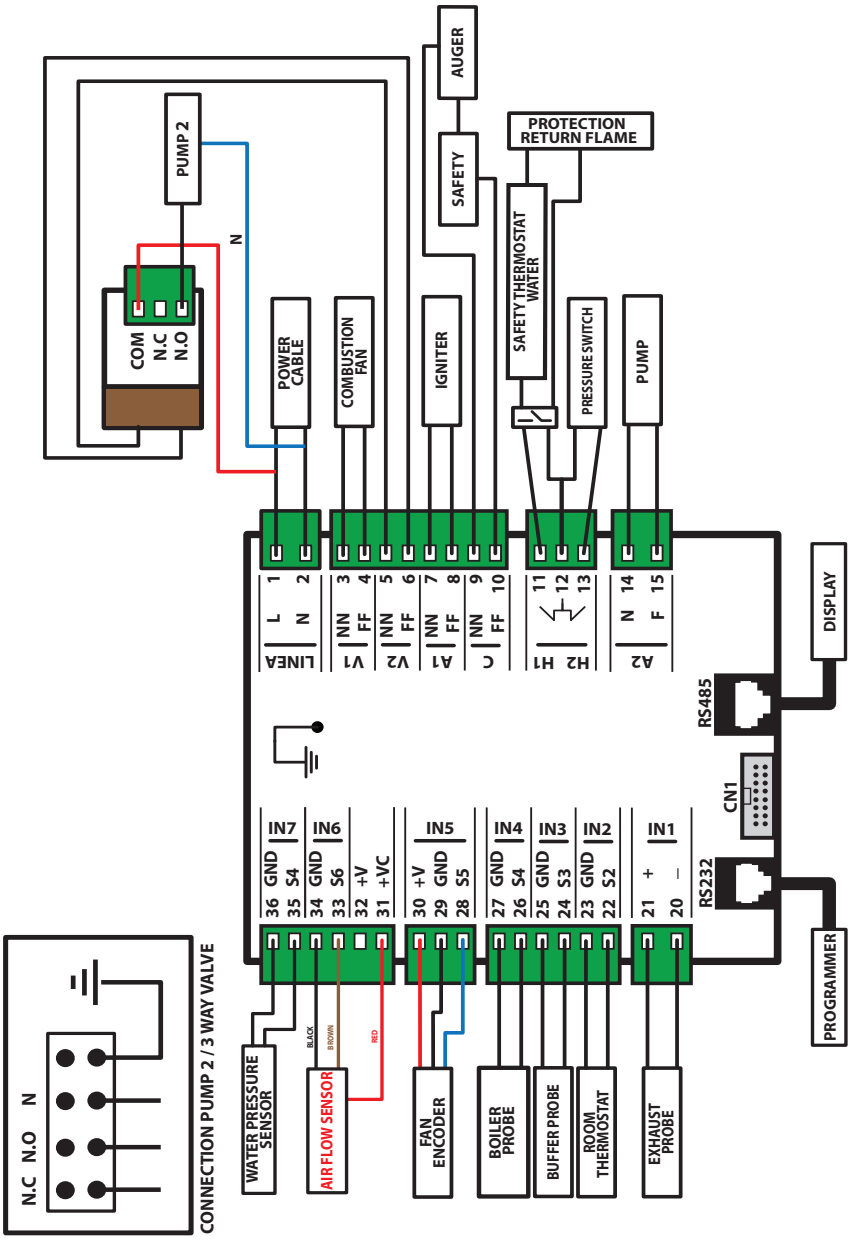


Pos.	Name
1	Bunker door
2	Display stand
2.1	Display
3	Top cover
4.1	Right side decorative panel
4.2	Left side decorative panel
5	Rear decorative panel
6	Front upper panel
8	Front door seal
9	Front door
10	Glass
11	Door handle
12	Ash container
13	Water overheating safety
15	Return flame sensor
16	Water temperature sensor
17	Exhaust temperature sensor
18	Control board
19	Air regulator sensor
20	Power supply inlet 3P Alternating current with AC-01 power socket
21	Exhaust fan
22	Exhaust fan gasket
23	Safety valve
24	Expansion vessel
25	Water pump
26	Water pressure sensor
28	Motor reducer auger
29	Connector between auger spiral and motor
30	Holding plate for motor reducer auger
31	Bottom plastic sleeve for auger spiral
32	Auger spiral with axle
33	Upper plastic sleeve for auger spiral

Pos.	Name
37	Quartz igniter
38	Quartz igniter holding pipe
40	Combustion pot
41	Combustion box
43	Top holding plate for flue pipes cover
44	Vermiculite insulation plate for flue pipes cover
45	Bottom holding plate for flue pipes cover
49.1	Back holder for the vermiculite in the combustion chamber
49.2	Front holder for the vermiculite in the combustion chamber
50	Vermiculite in the combustion chamber

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

10. Control board wiring diagram





Mareli Systems

STEP FORWARD

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