SOLUÇÕES DE AQUECIMENTO A BIOMASSA

Pellet-run Boilers

Instruction Manual

English

Models

Automatic boilers

18 kW, 24 kW and 30 kW

Read these instructions carefully before installing, using and servicing the unit. The product is supplied with this instruction manual.

Mod. 440-H

Thank you for purchasing a SOLZAIMA unit.

Please read this manual carefully and retain it for future reference.

* All products here detailed meet the requirements of the EU Construction Products Regulation (Reg. No. 305/2011) and meet EC; conformity approval.

* The pellet-run boilers are manufactured in compliance with European standard EN 303-5:2012.

* SOLZAIMA is not responsible for any damage to units installed by non-qualified personnel;

* SOLZAIMA is not responsible for any damage to units not installed and used in compliance to the instructions included in this manual;

* All local regulations, including but not limited to national and European standards, must be observed when installing, operating and servicing the unit;

* For assistence, please contact the unit's supplier or installer. Remember to provide the serial number of your boiler, which is detailed on the identification plate located on the back panel of the unit, as well as on the sticker found on the plastic cover of this manual.

* The technical service must be performed by the unit Installer or Supplier, except on situations where the assessment performed by the installer or service engineer determines that SOLZAIMA should be contacted, if required.

* If you need more information about the electronics applied in the SOLZAIMA equipment you can scan the following QR Codes.

Columbus Electronics

Not applicable Columbus Electronics

Contact technical assistance:

www.solzaima.pt

apoio.cliente@solzaima.pt

Morada: Rua da Cova da Areia (E.M. 605), 695

3750-071 Aguada de Cima

Águeda – Portugal

Contents

1. Solzaima

Solzaima's vision has always been to provide the cleanest, renewable and more cost-effective energy. This is why we have been dedicated to manufacturing biomass heating equipment and solutions for the past 35 years.

Due to its persistence and the unconditional support of its network of partners, Solzaima is currently leader in the production of biomass heating systems, best illustrated by its water heat recovery central heating units and its range of pellet stove fires and boilers.

We deliver biomass heating units to approximately 20,000 homes every year. This effectively demonstrates consumers' interest in more ecological and economic solutions.

Solzaima was awarded the international Quality Certificate ISO 9001 and the Environmental Certificate ISO 14001.

2. Package content

Solzaima ships the unit with the following components:
- Automatic Boiler (18 kW or 24 kW or 30 kW);
- Instruction manual;
- Power cable;
- Linear cleaning motor arm protection;
- 2 temperature probes to connect the buffer tank and/or DHW tank (only for equipment with Columbus electronics);
- 2 three-pole connectors to connect the system pump and a 3-way valve (only for equipment with Columbus electronics);
- 3 two-pole connectors with electrical bridges (only for equipment with Columbus electronics);
- Protection for the arm with respective fixing of the linear cleaning motor.

2.1 Unpacking the Boiler

To unpack the unit, first remove the retractable bag covering the cardboard box. Then, lift out the cardboard box and remove the bag containing the boiler and the styrofoam blocks. Finally, unscrew the four parts securing the unit to the wood pallet.

3. Safety precautions ⚠

Solzaima is not liable for any damages to the unit if the specified precautions, warnings and operating procedures are not followed.
Units manufactured by Solzaima are easy to operate and special attention was given to their components in order to protect users and installers against accidental damages.
The units must only be installed by an authorised engineer, who should supply the client with a relevant statement of conformity and who shall be liable for the final installation and consequent product good operating conditions.
This unit must be used according to its intended use as specified by the manufacturer. The manufacturer is excluded from all liability, by contract or by tort, caused by injury to people, animals or property arising from misuse or faulty installation or servicing.

After removing the packaging, verify the contents to check its integrity and completeness. If the package contents does not correspond to the parts list specified on item 1, please contact the entity from whom you purchased the unit.
All the unit's components guarantee its operation and energy efficiency and should only be replaced with original parts provided by an authorised technical assistance centre.

Equipment maintenance should be carried out at least once a year. To do so, you should contact your specialist installer.

The unit must be serviced at least once a year by the installation engineer.
This manual is provided with the product. Please keep it beside the unit.

For your safety, we recommend that:

- You fully read and understand the information detailed in this manual before handling the pellet-run boiler, which is a biomass heating unit.
- You make sure the hydraulic circuit was correctly assembled and connected to the water supply before turning on the pellet-run boiler.
- The boiler is not intended for use by children or persons with limited physical, sensory or mental capabilities, nor by those lacking experience and knowledge, unless under direct supervision or instruction.
- Do not touch the boiler when barefoot, nor when any part of your body is wet or humid.
- Do not tamper with safety or adjustment features without the manufacturer's authorization;
- Do not cover or reduce the size of the vents at the installation area;
- The pellet-run boiler requires good air supply to guarantee correct combustion; as such, if the unit is kept in an air tight environment or is exposed to other existing sources of air extraction, its correct functioning may be impeded.
- The existence of vents is a requisite for proper combustion;
- Do not leave the packing materials near children;
- When the unit is operating normally, the boiler door cannot be opened.
- Avoid direct contact with parts of the unit that tend to become hot during operation;
- Check the existence of any obstructions on the fume duct before turning on the unit after a long period of inactivity;
- This pellet-run boiler is intended for residential use, within a protected environment. Safety systems may intervene to shut down the boiler. If this occurs,

contact technical assistance. In any circumstances should you attempt to interfere with the safety systems;

- The pellet-run boiler is a biomass heating unit equipped with an electric fume extractor. The occurrence of any power failure during its use may prevent fume extraction and the room will be filled with smoke. For this reason, you should have a natural fume extraction system, like a chimney, available;
- Solzaima offers an optional safety system that allows you to connect your boiler to a UPS unit, thus avoiding problems related to a power failure and ensuring that the fume extractor will continue to operate under such conditions until the complete extraction of all fumes;
- If you intend to use your boiler when leaving it unattended or while you are away from home, it is advised that you utilise the safety system specified above to guarantee its safe functioning in the eventuality of a power failure;
- While in operation, NEVER disconnect the electric plug of your pellet-run boiler. Seeing as the boiler's fume extractor is power-operated, disconnecting the plug would prevent the extraction of combustion fumes;
- Your unit must be disconnected from the mains for servicing. Before doing this, the unit must be totally cooled down (if operating before);
- Never touch the interior of the boiler without first disconnecting it from the power mains;
- The maximum water temperature (set-point temperature) that the user can set for the boiler is 80°C. In the event of the boiler reaching a temperature of 95ºC, it will automatically switch off and activate a corresponding alarm.

4. Technical specifications

FEATURES	18 kW Boiler	24 kW Boiler	30 kW Boiler	Units
Weight	373	386	386	kg
Height	1355	1355	1355	mm
Width	677	677	677	mm
Depth	1110	1110	1110	mm
Diameter of the fume discharge pipe	100	100	100	mm
Reservoir capacity	45	45	45	kg
Maximum heating capacity	410	545	660	m³
Maximum thermal power (water)	18	24	29	kW
Minimum thermal power (water)	5,7	5,7	5,7	kW
Minimum fuel consumption	1.3	1.3	1.3	kg/h
Maximum fuel consumption	4.4	5.3	6,1	kg/h
Rated electrical current	110	110	110	W
Electric power at start-up (<10 min.)	410	410	410	W
Rated voltage	230	230	230	V
Nominal frequency	50	50	50	Hz
Thermal yield at rated thermal power	90,1	90.2	90.4	%
Thermal yield at reduced thermal power	87,8	87,8	87,8	%
Max. gas temperature	102	112	122	ºC
Min. gas temperature	74	74	74	ºC
CO emissions at rated thermal power	0.01	0.02	0.02	%
CO emissions at reduced thermal power	0.03	0.03	0.03	%
Draught in the chimney	12	12	12	Pa
Unit water volume	60	60	60	L
Fume extractor sound level	54	54	54	dB(A)

Table 1 - Technical specifications

Tests performed using wood pellets with a heating capacity of 4.9 kWh/kg.

The above information was obtained during product homologation tests performed at independent laboratories accredited for pellet unit tests.

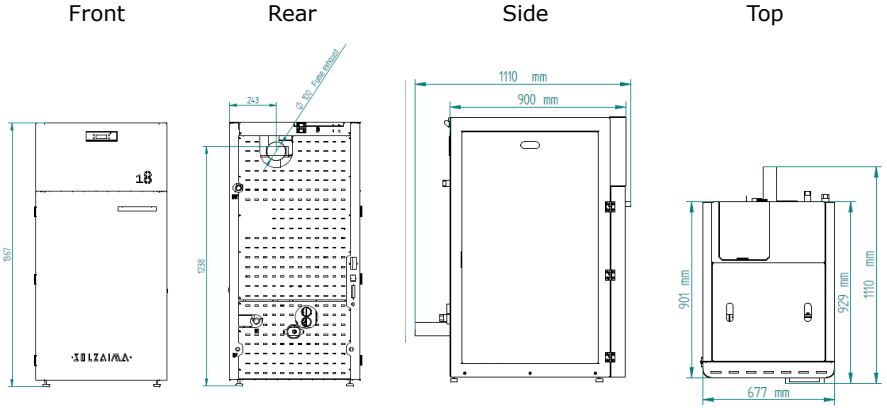


Figure 1 - Dimensions of automatic pellet-run boiler

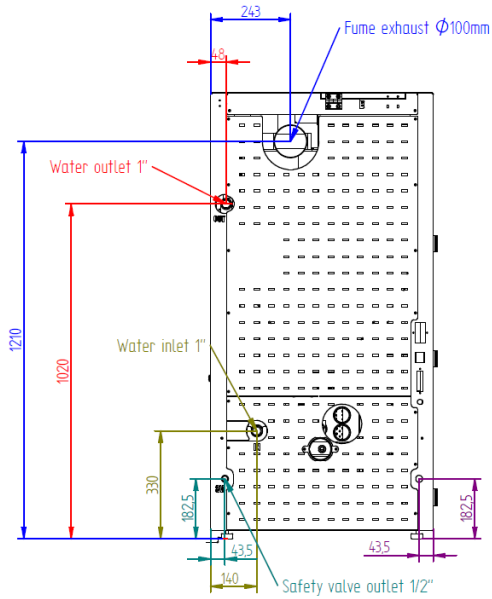


Figure 2 - Hydraulic connections of the automatic pellet-run boiler

5. Installation of the pellet-run boiler

Before installing, please perform the following steps:

- Upon reception, check the product for completeness and to determine that is does not show any damage signs. Any damages or defects should be checked before the unit is installed.
- The unit is equipped with four height adjustable feet at its base, allowing for simple adjustments when installing on non-flat surfaces.

Figure 3 - Adjustable feet

- Remove the instruction manual from the package and hand it over to the client;
- Connect a 100 mm diameter pipe between the boiler's combustion gases output and the fume extraction pipe leading out of the building (e.g. through the chimney) – please check diagrams in point 6;
- If a tube is used for combustion air inlet from the outside, it shall be no longer than 60cm horizontally or present offsets (such as bends);
- Carry out the hydraulic installation (please consult point 7);
- Connectthe 230 VAC power cable to an grounded socket;
- The unit's remote control has a programmable thermostat. Optionally, a conventional external programmer may be used (not included) to automatically define the unit's operating periods.

6. Installation requirements

The minimum distance required between the pellet-run boiler and any highly flammable surfaces is found specified in 4.

The top of the boiler must be at a distance of at least 100 cms from the ceiling, especially in rooms with ceilings composed of flammable materials.

The base supporting the boiler cannot be of flammable material. As such, adequate protection should always be used.

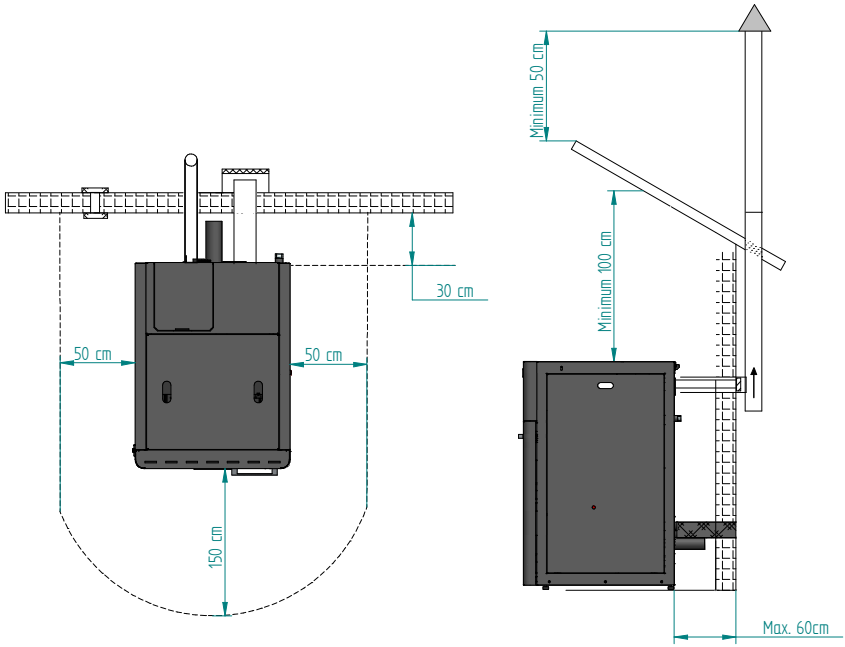


Figure 4 - Minimum distances from all surfaces: a) upper view of the unit's installation; b) side view of the unit's installation

Warning!

Keep combustible and flammable materials at a safe distance.

6.1 Installation of pipes and fume exhaust systems:

- The exhaust pipe must have been designed for this purpose, in compliance to the location requirements and in accordance with any applicable regulations.
- Important! An inspection-"T", fitted with a hermetic lid, must be attached to the end of the boiler's exhaust pipe to allow for the regular inspection of the system, as well as the discharge of heavy dust and condensates.
- As indicated in Figure 5, the exhaust duct must be assembled so as to permit its cleaning and maintenance through the inspection points.
- Under normal operating conditions, the combustion gas flow should create a draught of 12 Pa one meter above the chimney neck.
- The boiler must not share the chimney with any other equipment.
- The pipes located outside the boiler's working area must have an internal diameter of 100 mm and be of double stainless steel insulation.
- **The fume exhaust pipe may generate condensation, so we recommend that the appropriate systems for collecting condensates should be installed.**

6.2 Installation without a shaft

Figure 5 and 6 illustrate the basic requirements when installing the boiler's chimney. A "T" should be included at the base of the piping system for the purpose of periodic inspections and annual maintenance, as exemplified. Double-walled stainless steel insulated pipes must be used and properly fastened to avoid condensation.

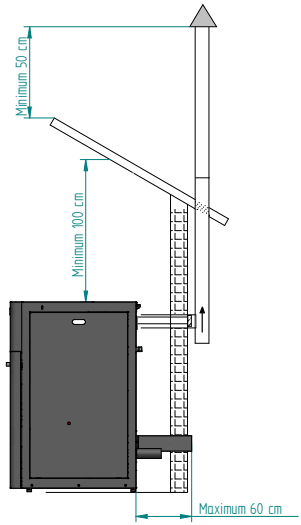
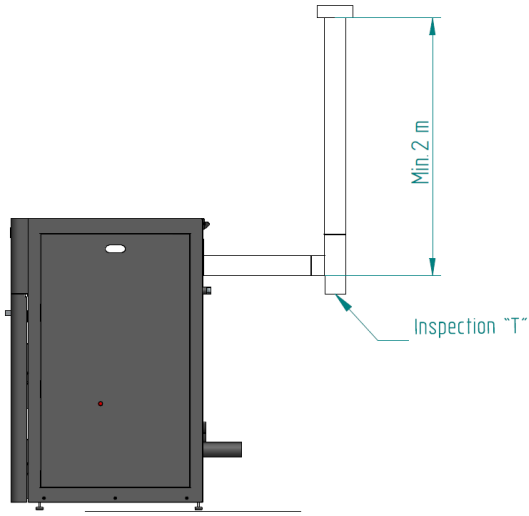
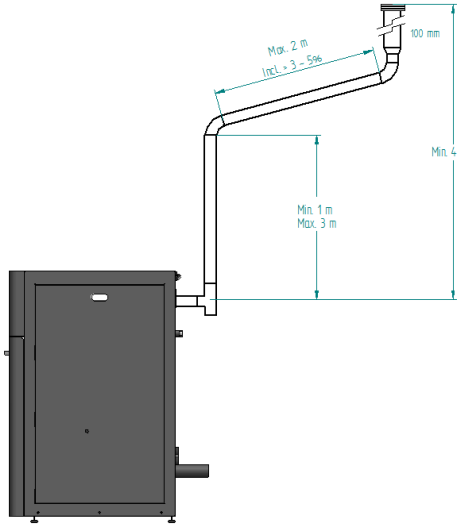


Figure 5 - Side view of the boiler installation without a shaft, highlighting the inspection point

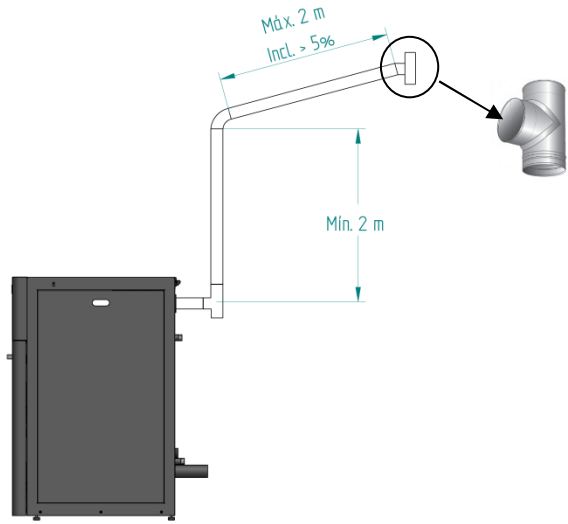
Note: whenever the chimney exceeds 4 metres in height, the diameter of the chimney must be increased from this height to the section immediately following the machine's gas outlet, Figure 6-b. For example, for a 100 mm diameter outlet, from 4 metres onwards it must have a diameter of 120 mm. Alternatively, you can install the entire system with a diameter of 120 mm from the base.



a)



b)



c)

Figure 6 - Examples of standard installations

⚠ Failure to comply with the requirements here detailed may prevent the correct operation of the unit. Follow all the instructions presented on the diagrams.

⚠ The boilers operate with the combustion chamber in depression, which is why it is absolutely necessary that they include a fume exhaust pipe to adequately extract combustion gases.

Fume duct material: The tubing must consist of 0,5 mm thick rigid stainless steel, with fastening joints attaching the different sections and accessories.
Insulation: The fume ducts must be double-walled and insulated to make sure that fumes do not cool down going outwards, which would cause an inadequate circulation and condensation that may damage the unit.
Output "T-tube" : Always attach a regulator "T-tube" to the output of the boiler.
Windproof terminal: A windproof terminal must always be installed to avoid the backflow of fumes.
Chimney draught: The figures below show three standard diagrams, specifying adequate lengths and diameters. Any other type of installation must guarantee a draught of 12 Pa (0,12mbars) measured when hot and at the maximum power.
Ventilation: To ensure the boiler's optimum operation, **the installation location should be fitted with an air vent, with a minimum cross-section of 100 cm², preferably close to the unit's back panel**. The boiler includes a circular pipe (∅ 50mm) that may be routed to the exterior of the house.

6.3. Installation with a shaft

As shown in Figure 7, the pellet-run boiler is installed with a ∅ 100 mm exhaust pipe directed up the chimney. If the chimney is too large, an 80 mm-wide pipe should be installed at the fume outlet.
A "T"-tube must be attached to the base of the piping to allow for periodic inspections and annual maintenance, as illustrated in Figure 7.

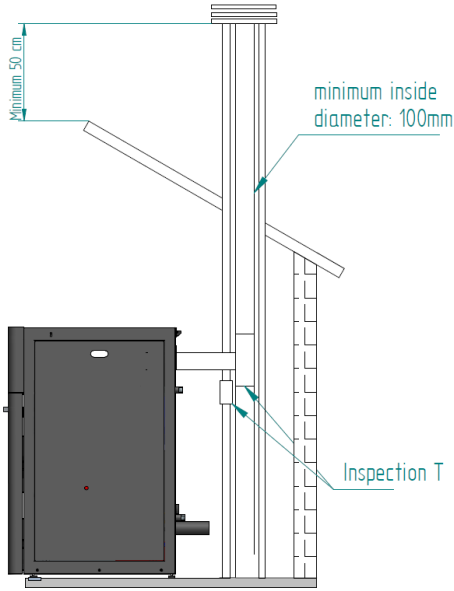


Figure 7 - Side view of the boiler installation with a shaft, highlighting the inspection point

It is recommended that the boiler not be used during adverse weather conditions that may seriously disrupt the unit's fume extraction capacity (this is especially the case with very strong winds).

If you do not use the unit for a long time, check it to make sure that the flue pipes are clear before lighting the fire.

7. Hydraulic Installation

* Chapter 12 (installation diagrams) includes diagrams illustrating the range of possible connections that may be used in the installation of a central heating system, with or without the feature of heating water for domestic use;

* The pellet-run boiler comes equipped with a circulating pump, an expansion tank (with a volume of 10 litres, in the case of the 18kW model, and of 16 litres, in the case of the 24kW and 30kW models) with a pre-charge pressure of 1.0 bar, as well as a 3 bar safety valve;

* Operating pressure is between 0,8 and 1,2 bars;

* To empty the unit, attach a "T-tube" with a tap to the outlet (connected to the household sewage); the safety valve (3 bar) outlet must also be connected to the household sewage;

* The heat transporting fluid must consist of water mixed with an anti-corrosion, non-toxic product added in the quantity recommended by the manufacturer. If there exists any risk of freezing in the space where the boiler is installed, or within its fluid pipes, the installation engineer must add the manufacturer's recommended quantity of anti-freeze agent to the circulating fluid, in order to avoid freezing at the absolute minimum expected temperature.

7.1. Operating mode for radiator/Buffer tank

 IMPORTANT! The boiler is programmed to work directly for radiators, in case you want to install the boiler with a buffer or AQS tank, we recommend changing the temperature "OFF" of the circulation pump by placing the same temperature as the deposit or 1°C higher than this temperature, should disable the "hYDRO Menu" modes "Modulating Pump" and "hydro independent" and switch the mode display "Auto" to "Manual" mode and select the power 5 (Fire 5).
For these changes is necessary to access the "Installer Menu" on the display, please request a password manufactures.

8. Fuel

The boiler must be exclusively fuelled by *pellets.* No other fuel may be used.
Use only*pellets* certified by standard EN 14961-2 grade A1, **6mm in diameter** and a length between **10-30mm**.

The pellets may have a maximum humidity of 8% their weight. To guarantee a good combustion, the *pellets* must maintain these characteristics so they should be stored in a dry place.
The use of *pellets* of varied quality reduces the boiler's efficiency and leads to an inadequate combustion process.
You should always use certified pellets and must not forget to test a sample before buying large bulks.

The physical/chemical properties of the pellets (calibre, friction, density and chemical composition) may vary within specific tolerances and according to each manufacturer. Please note that this may cause alterations to the feeding process and, consequently, the need for different doses (more or less pellets).
The boiler's pellet dosage can be adjusted during the start-up phase and at the power thresholds of± 25% (see the manual – temporary and power settings)

Warning!
The unit must NOT be used as an incinerator.

9. Use of the pellet-run boiler

⚠ Pellet-fired appliances require a start-up service as mentioned in section 3.6, page 125 (Warranty). In order to adjust the boiler's operating parameters (pellet-fired appliance) you must adjust the dose as described in section 8 of this manual. It is necessary to adjust the pellet dose according to the gas temperature and pellet consumption of the appliance at the nominal power described in Table 1, page 6, in order to ensure that the equipment delivers the correct power.

Recommendations

Before starting up the unit, please check the following:

- Guarantee that the boiler is properly connected to the power mains by means of the 230 VAC power cable.

Figure 8 - Electric power plug

- Check to see whether the *pellet* reservoir is supplied with pellets. Inside the*pellet* reservoir is a safety grid to prevent users from reaching theworm screw.
- Always check whether the burner is unblocked before igniting the boiler.

⚠ **The boiler's combustion chamber, as well as its doors, are made of iron plate painted with high temperature resistant paint. Fumes are released during the initial burning sessions due to the curing of this paint. Avoid touching the unit during its first burn to prevent leaving permanent marks on the paint. The paint goes through a more plastic phase during the curing process. The curing of the paint occurs at approximately 300ºC and for 30 minutes.**

Ensure that the hydraulic circuit was correctly assembled and is connected to the water supply;
You should check that there is sufficient ventilation in the room where the unit is installed, otherwise it will not work properly. You should therefore check to see whether there are other heating air-consuming units in the room (e.g. gas units, oil boilers, etc.), which should not be used simultaneously with the unit.

The pellet-run boiler is equipped with a sensor probe for measuring room temperature. This probe is attached to the grid located on the back panel of the unit (Figure 9). For a good reading of the room temperature, avoid the contact between the end of the probe and the unit chassis. You may also attach the probe to the wall beside the unit.

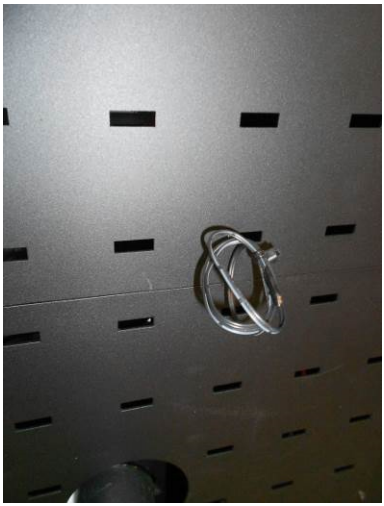
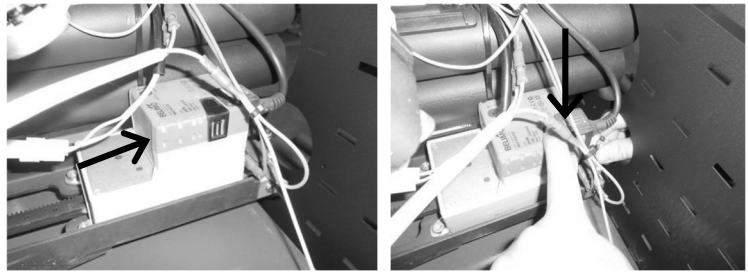
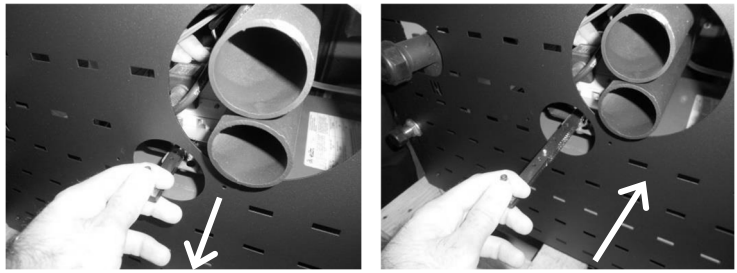


Figure 9 - Room temperature sensor probe

⚠ At the first start of the boiler or After some time without use, the **linear cleaning** motor might create some mechanical resistance to movement, hindering its proper functioning. Before putting the boiler into operation you must press the black button, in the upper zone of the motor (fig. 10-a), and holding the button (fig. 10-b), move the arm repeatedly back and forth (as shown in the figures 10-c and d) until it returns to work normally.



a) b)



c) d)

Figure 10 - The cleaning motor

Note: The cleaning motor arm of the boiler backs to clean the burner as shown in Figure 11.

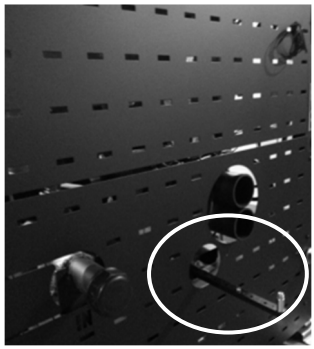


Figure 11 - The cleaning motor

10. Remote Control

10.1 Remote control and display

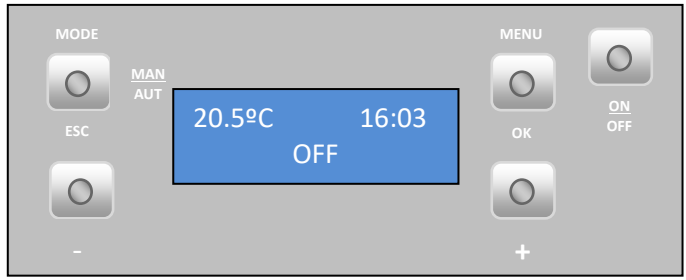


Figure 12 - Command panel and display

a) Key to toggle between manual and automatic mode and exit menus (esc).

b) Key to access menus and confirmation key (ok).

c) Key to start/stop the unit operation and reset error messages

d) Key to scroll the menus to the left, to increase and reduce the fan flow and increase or reduce the set-point temperature.

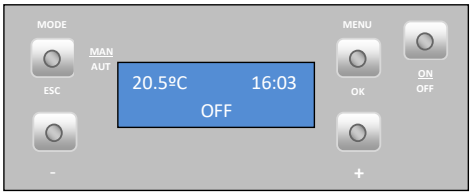
e) Key to scroll menus to the right and increasing and to reduce the unit's power.

Figure 13 - Command panel buttons

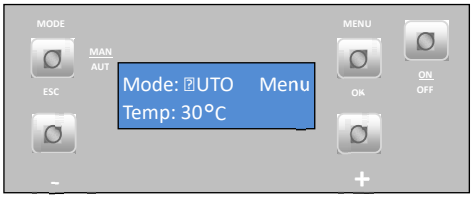
10.2 Display information summary

10.2.1 Menu

Menu indicating the room temperature in ºC, the time and that the boiler is "OFF".



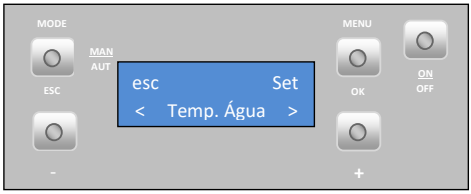
"Auto" mode: in this mode, the unit shall be turned on at maximum power until reaching a temperature of 1ºC above the temperature selected (set point temperature). Upon reaching the set temperature, the unit changes to minimum operating power.



The set-point temperature can be set between 5 and 40ºC by pressing the "-" key. The "+" key allows the user to set the ventilation speed between 1-5 and automatic mode.

10.2.2 Water temperature

Press the Menu key twice to set the water temperature; "Temp. Agua" (Water Temp.) appears on the display. Press Set to see the "T. Aquecimento" (Heating T.) menu.



- Heating temperature

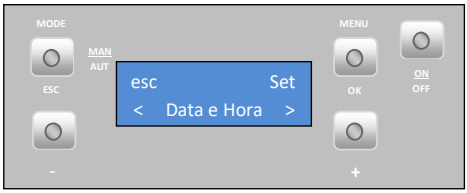
To set the desired **heating temperature** press "set"; the display starts to flash. Press the "+" or "-" key to select the desired value and then "ok" to confirm. Press the "+" key to go to the "Temperatura de sanitários" (Bathroom Temperature) menu.

Note: in the water equipment, the water temperature can be adjusted by the user (water set-point temperature) between 50 and 80ºC.

- Bathroom temperature **(this mode is disabled)**

10.2.3 Date/Time

To set the **date and time**: press the Menu key twice and "Dia e Hora" (Date and Time) appears on the display. Press "set" to see the "Hora" (Time) menu.



- Time

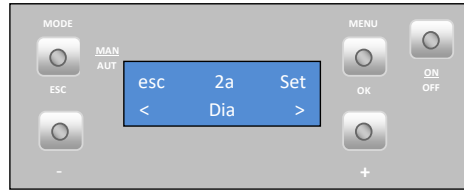
To set the **time** press "set". The display starts to flash. Press the "+" or "-" key to select the desired time and then "ok" to confirm. Press the "+" key to go to the "Minutos" (Minutes) menu.

- Minutes

To set the **minutes** press "set". The display starts to flash. Press the "+" or "-" key to select the desired minutes and then "ok" to confirm. Press the "+" key to go to the "Dia" (Day) menu.

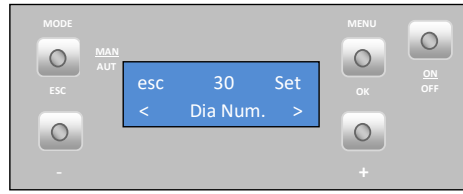
- Day

To set the **weekday** press "set". The display starts to flash. Press the "+" or "-" key to select the desired day and then "ok" to confirm. Press the "+" key to go to the "Dia Num." (Day Number) menu.



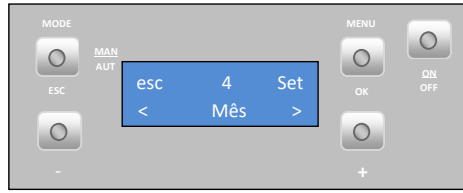
- Day of the month

To set the **day of the month** press "set". The display starts to flash. Press the "+" or "-" key to select the desired day and then "ok" to confirm. Press the "+" key to go to the "Mês" (Month) menu.



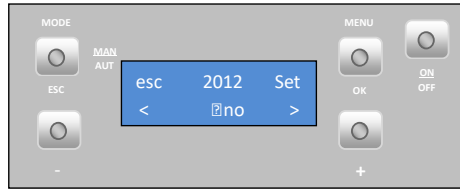
- Month

To set the **Month** press "set". The display starts to flash. Press the "+" or "-" key to select the desired Month and then "ok" to confirm. Press the "+" key to go to the "Ano" (Year) menu.



- Year

To set the **year** press "set". The display starts to flash. Press the "+" or "-" key to select the desired year and then "ok" to confirm. Press "esc" to return to the "Dia e Hora" (Date and Time) menu then "+" scroll to the next menu. The Crono (Timer) menu appears.



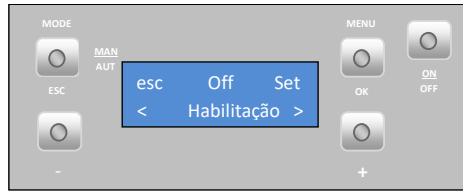
10.2.4 Timer

The boiler is equipped with a timer that allows it to be programmed to turn on or off at a specified time of day.

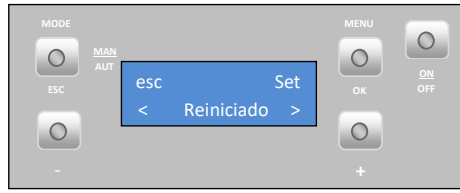
- Activation

To **activate the timer** press "set". The "Habilitação" (Activation) menu appears. The timer may only be activated after setting the configurations, as shown in the following paragraph.

To **activate the timer mode** press “set”. The display starts to flash. Press the “+” or “-“ key to select the "On" or "Off" and then “ok” to confirm. Press the "+" key to go to the "Reiniciado" (Reset) menu.

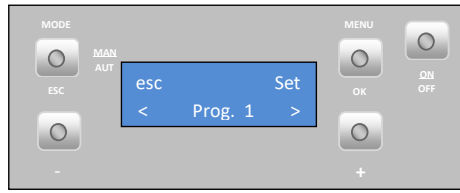


This menu allows you to delete any programme settings. To do this, press "set". The "Confirmar?" (Confirm?) prompt appears. Press "set" again to confirm that you want to delete the settings or "esc" to exit.

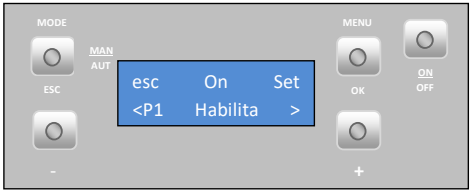


The unit's **programmer** lets you choose from 6 different programmes for each day of the week.

To setup **programmes “P1” to “P6”**, select the desired programme using the “-” e “+” keys, and press “set” to select. “P1 Habilitação” (P1 Activation) menu appears.

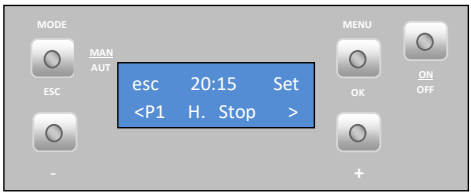


Press “set” again and when the display starts to flash, press “+” or “-” to select “On” or “Off”. Press “ok” to confirm the selection. Press the “+” key to go to the “P1 A. Inicio” (P1 A. Start) menu.

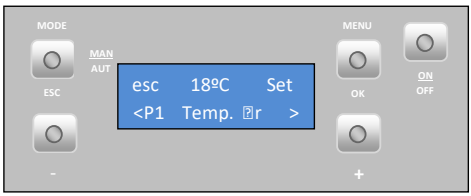


To set the **starting time** in Programme 1, press "set". The display starts to flash. Press the "+" or "-" key to select the desired time and then "ok" to confirm. Press the "+" key to go to the "P1 A. Stop" menu.

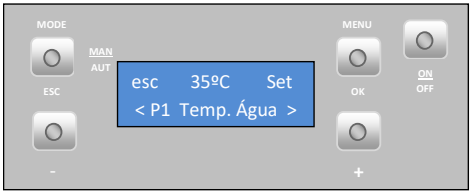
To set the **stopping time** in P1, press "set". The display starts to flash. Press the "+" or "-" key to select the desired time and then "ok" to confirm. Press the "+" key to go to the "P1 Temp. Ar" (P1 Air Temp.) menu.



To set the **set point room temperature** in programme 1, press "set". The display starts to flash. Press the "+" or "-" key to select the desired temperature and then "ok" to confirm. Press the "+" key to go to the "P1 Temp. Ar" (P1 Water Temp.) menu.



To set the **water set point temperature** (only for the **backboiler model**) of P1, press "set". The display starts to flash. Press the "+" or "-" key to select the desired temperature and then "ok" to confirm.
Press the "+" key to go to the "P1 Fire" menu.



To set the **set point room temperature** in programme 1, press "set". The display starts to flash. Press the "+" or "-" key to select the desired temperature and then "ok" to confirm. Press the "+" key to go to the "P1 Dia" (P1 Day) menu.

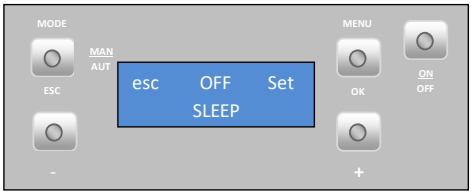
To select the **days of the week** that you want the P1 programme to run, press "set" and then select the day of the week using the "-" and "+" keys. Press "set". The display starts to flash. Select "On" or "Off" using the "-" and "+" keys. Press "ok" to confirm the selection. Press the "esc" key to go to the "P1 Dia" (P1 Day) menu. Press "esc" twice and then "+" to access the "Configurações" (Configuration) menu.

Repeat the above steps for programmes P2 to P6.

Note: After setting up the programmes, please remember to activate them on the "Habilitações" (Activation) menu.

10.2.5 Sleep

The "Sleep" menu allows you to set the time you want the unit to turn off.

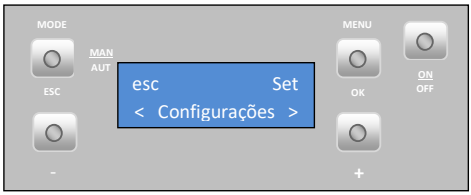


Press "set". The display starts to flash. Select the desired time using the "-" and "+" keys. After choosing the time, press "ok" to confirm. Press "esc" to return to the menu and "+" to go to the configuration menu.

10.2.6 Configuration menu

To modify the boiler's **settings**, press "Set".

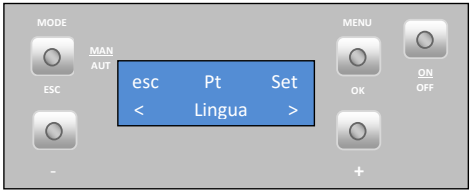
The "Língua" (Language) menu appears allowing you to select the language.



- Language

To select the**language**, press "set". Using the "+" or "-" keys, select the desired language (**Pt** – Portuguese; **Nl** – Dutch; **Gr** – Greek; **It** – Italian; **En** – English; **Fr** – French; **Es** – Spanish; **De** – German). Press "ok" to confirm.

Press the "+" key to go to the "eco" menu.



- Eco mode

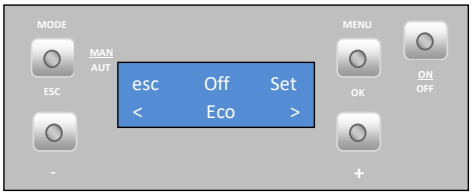
When you activate the mode "ECO" with the Thermostat function, the boiler operates at full power until the thermostat open contact (NO) and passing operating at minimum power during a predetermined time interval (Shutdown delay time: factory setting : 20 minutes). After this time, the boiler is turned off. From the beginning of boiler shutdown phase we have to count another predetermined time interval (delay time Starup: default value: 20 minutes), so that when the thermostat closes the contact (NC), Pass to activation phase.

Startup delay time (waiting time On) is the waiting time after the thermostat contact close (NC), to enable the boiler.

Shutdown delay time (waiting time Off) is the waiting time after the thermostat contact open (NO) to switch off the boiler.

To activate the eco mode, press "set". The display starts to flash. Select "On" or "Off" using the "-" and "+" keys. Press "set" to confirm the selection.

Press "esc" to return to the previous menu and "+" to go to the "Iluminação" (Lighting) menu.



- Lighting

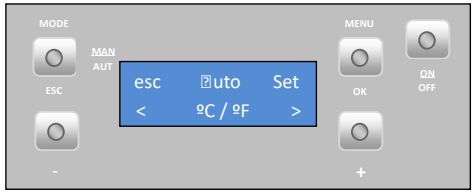
To select **lit screen**, press "set". The display starts to flash. Press the "+" or "-" key to select the time at which you want the screen to light up, or choose "On" to keep the light on at all times. Press "ok" to confirm. Press the "+" key to go to the "Tons" (Tones) menu.

- Tones

To activate the **key tone**, press "set". The display starts to flash. Press the "+" or "-" key to select "On" or "Off". Press "ok" to confirm. Press the "+" key to go to the "ºC/ºF" menu.

- Temperature unit (ºC/ºF)

To select **ºC / ºF**, press "set". The display starts to flash. Press the "+" or "-" key to select "ºC", "ºF" or "Auto",and then "ok" to confirm. Press the "+" key to go to the "Receita Pellet" (Pellet Qty) menu.

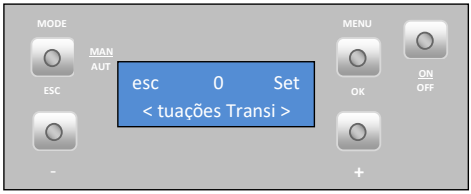


- Pellet quantity

Press "set" to see the "Actuações transitórias" (Temporary settings) menu.

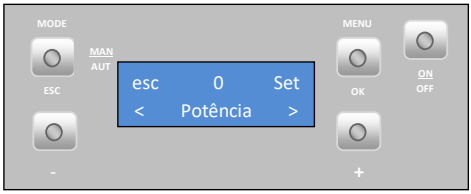
- Temporary settings

This feature allows you to increase or decrease by 25% the **amount of pellets at start-up**. Press "set". The display starts to flash. Press "+" or "-" to increase or decrease (between -5 to +5), accordingly. Each unit must be multiplied by 5 to obtain the correct percentage. Press "ok" to confirm. Press the "+" key to go to the "Actuações de Potência" (Power settings) menu.



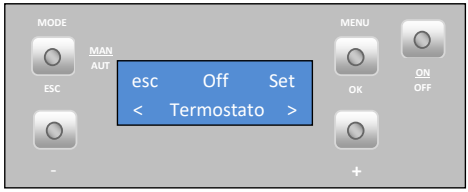
- Power settings

This feature allows you to increase or decrease by 25% the amount of pellets at each power level. Press "set". The display starts to flash. Press "+" or "-" to increase or reduce (from -5 to +5), accordingly. Each unit must be multiplied by 5 to obtain the correct percentage. Press "ok" to confirm. Press "esc" to return to the "Receita de pellets" (Pellet Qty) menu and "+" to go to the "Termostato" (Thermostat) menu.



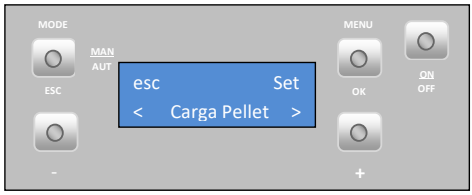
- Thermostat

This feature allows you to enable or disable **the room temperature thermostat**. Press "set"; the display starts to flash. Press the "+" or "-" key to select the "On" or "Off" and then "ok" to confirm. Press the "+" key to go to the "Carga Pellet" (Pellet loading) menu.



- Pellet loading

This feature allows you to enable the **worm drive** to fill the channel when it is empty to keep the unit running. Press "set"; the "ok" option appears. Press "ok" to activate the drive (the "habilitada" (Activated) message appears) and "esc" to stop it. Press the "+" key to go to the "Limpeza" (Cleaning) menu.



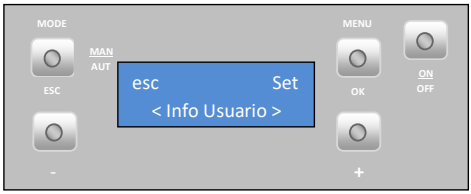
- Cleaning

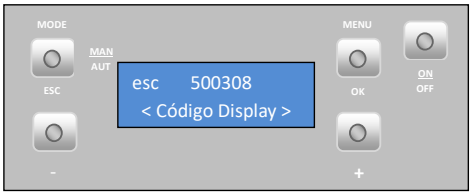
This feature allows you to **clean** the burning basket manually. Press "set"; the "ok" message appears. Press "ok" to start the cleaning; the "Habilitada" (Activated) message appears. When you wish to stop, press "ok". Press the "+" key to go to the "Técnico" (Technical) menu.

The technical menu is not available to the end user since it includes exclusively factory settings that must never be changed.

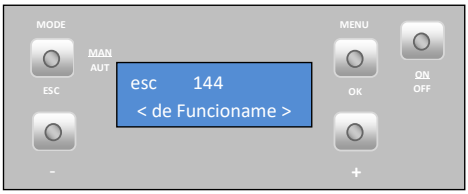
10.2.7 User Info

This menu allows the user to visualise information about the boiler. Press "set"; the "Código de Ficha" (File Code) menu appears. Display software/firmware code Press the "+" key to go to the "Horas Funcionamento" (Operating Hours) menu.

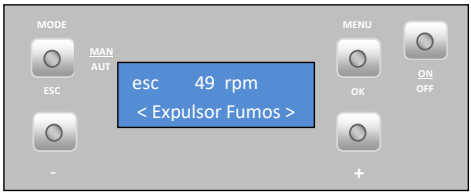




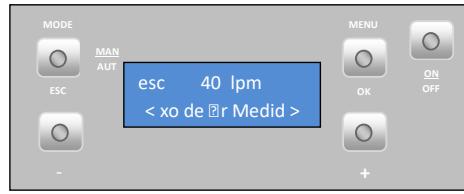
This menu indicates the number of hours the boiler has been operating.



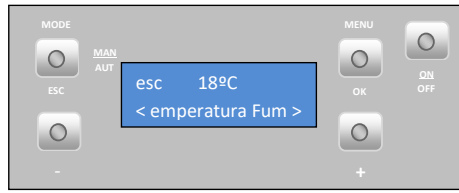
Fume extractor operating speed (rotation per minute).



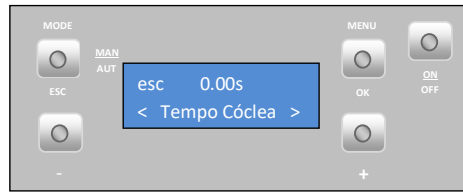
Airflow measured by the air probe.



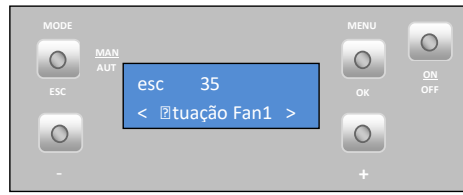
Fume temperature.



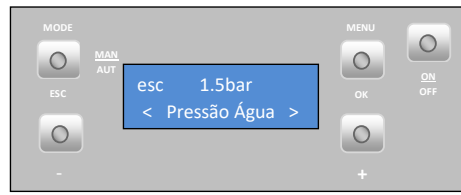
Worm drive rotation time (“On”).



Ventilation power level.



Hydraulic circuit pressure



11. Alarms / failures / recommendation list

Alarm	Code		Troubleshooting
Ignition failure	A01	Maximum time 1800 sec	- empty worm drive channel – restart the unit - heater resistor burnt - ignition – replace resistor - linear motor resistor burnt - faulty micro switch - the burning basket has been incorrectly installed - linear cleaning motor is blocked - fume temperature not exceed the activation setting
No flame or lack of pellets	A02	Fume temperature below 45 °C	- pellet reservoir is empty
Excess heat in the pellet drum	A03	110 °C	- the fan is not working – call for assistance - faulty thermostat - call for assistance - machine with faulty ventilation
Excess fume temperature	A04	Over 260 ºC	- fan not working or set to a low power level – increase the level to maximum (if the problem persists, call assistance) - insufficient extraction - excess of pellets - faulty fume probe
Pressure switch alarm	A05	The door is open, lack of draught or extractor fault for 120 sec	- close the door and clear the error message on the faulty pressure regulator - obstruction of the exhaust pipe or faulty extractor
Air mass probe	A06	40 Ipm delta for 3600 sec	- pipes with insufficient extraction or obstructed pipes
The door is open	A07	Door open for 120 seconds	- close the door - clear the error message - air mass sensor damaged
Fume extractor is faulty	A08	Connection failure	- check connection - check the smoke extractor is not blocked
Fume probe failure	A09	Connection failure	- check connection - smoke probe damaged
Pellet resistance error	A10	Connection failure	- check connection - resistance damaged
Worm drive error	A11	Connection failure	- check connection - Worm motor damaged
Pellet level alarm	A15		- check connection - put pellets in the external silo (only active in automatic boilers)
Water pressure outside operating range	A16		- check connection - check pressure in the hydraulic circuit - adjust pressure in the hydraulic circuit (working range 0.5 to 2.9 bar)
Excess water temperature	A18	95 ºC	- check connection - check if the pump works - purge hydraulic circuit - check if the heat sinks are open

Table 2 - list of alarms

Important note: all alarms cause the machine to shut down. The alarm must be reset and restarted. To reset the unit, press the "On/Off" button for 10 seconds until the alarm sounds.

- Troubleshooting

Troubleshooting
Maintenance "Service"
Air mass probe failure
Low pellet level
The door is open
Air temperature probe failure
Water temperature probe failure
Water pressure sensor fault
Water pressure close to being outside operating range

Table 3 - List of anomalies

Important notice: The maintenance anomaly (the "service" message appears on the display) indicates that the unit has exceeded 2100 operating hours. The unit must be serviced; only then hour meter can be restarted (Technical menu) and the warning cleared. This anomaly does not influence the normal operation of the boiler, it is merely a warning.

Important notice: when the alarm "A16" is triggered, you can check the pressure reading on the unit. To do so, press the "Mode" button for 10 seconds to access the standard menus. You have a 2-minute window to access the "info usuario" (user info) menu and check the pressure reading at the unit.

Important notice: you can only reset error messages that are flashing on the display. If the error message is steady on the display, press the "Mode" button once.

Important notice: the anomalies do not cause the unit to shut down.

WARNING!

In case of an emergency, switch the unit off using the standard shutdown procedure.

WARNING!

THE UNIT WILL BE HOT DURING OPERATION, SO YOU NEED TO BE ESPECIALLY CAREFUL OF THE DOOR HANDLE.

12. Control Columbus

Solzaima boilers can be equipped with Columbus electronics; the Columbus display is shown below. To confirm whether your equipment is equipped with these electronics, check the equipment serial number and consult Table 4.

Columbus Electronic	Serial No. of equipment
SZM A 18kW	≥ 01-25-01129
SZM A 24kW	≥ 01-25-01485
SZM A 30kW	≥ 01-25-00747

Table 4 - Serial No. with Columbus electronic

12.1 Display

When connecting the equipment, the display indicates the "OFF" status of the stove, and can also indicate the chrono activation, system errors, selected combustion power, selected ventilation power, current room temperature and selected room temperature set-point.

In the Home Page by pressing the key:

- "P1" it's possible to exit the menu/submenu;
- "P2" it's possible to switch on the equipment, or, switch off the equipment. The same button allows the errors reset, by pressing 3 seconds continuously, it also allows the activation of Chrono in the corresponding submenu;
- "P3" it's possible to access the user menu 1, by pressing 3 seconds on the same button we can access the user menu 2 and it also allows saving

changes;

- "P4" it's possible to enter the Combustion Power menu;
- "P5" it's possible to enter the Information menu and also activate a Chrono time slot;
- "P6" it is possible to enter the Room Thermostat menu;
- "P3" + "P5" for 3 seconds it is possible to access the secondary information menu present in the service menu where it is possible to check a set of variables.

Led	Function	Led	Function
D1	Ignition On	D7	Exit Aux3 On
D2	-	D8	-
D3	Pump On	D9	External chrono range
D4	Valve On	D10	Lack of pellets in the tank
D5	Exit V2 On	D11	Room thermostat range
D6	Exit Aux2 On	D12	Domestic hot water demand

Led	Meaning
D W WE	• When this Led is active it means that the Chrono is in Daily Mode ON, Weekly Mode ON or Weekend Mode ON.
R_1 R_2	• When this LED is active, it indicates which fans are running, local and remote.
	• When this LED is active, it means that the required room temperature has been reached.

THE STOVE MUST ALWAYS BE DEACTIVATED IN THE SAME WAY IT WAS ACTIVATED. THE EQUIPMENT MUST NEVER BE UNPLUGGED DURING THE ACTIVATION PROCESS.

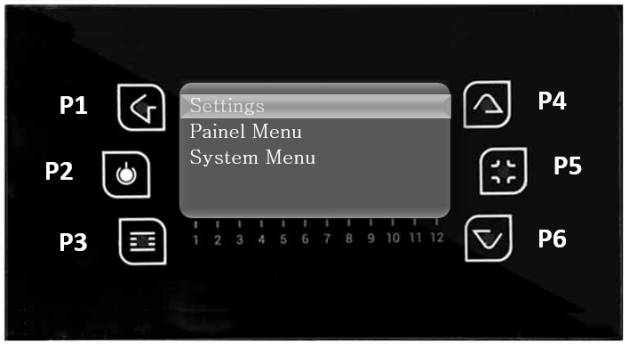
12.2 Settings Menu

12.2.1 Language

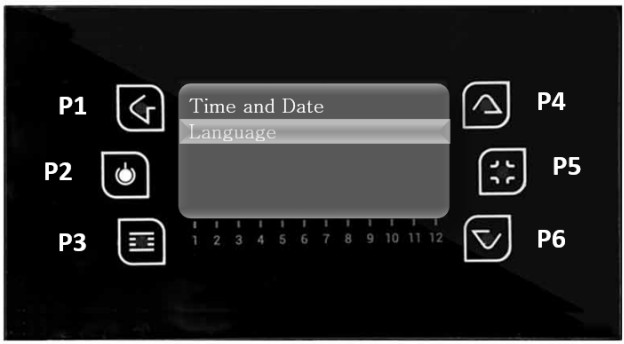
By pressing the P3 key for 3 seconds, you will display the Settings, Service, Display and System menus.

SYSTEM MENU IS AN EXCLUSIVE ACCESS MENU FOR THE TECHNICAL SERVICE AND REQUIRES A PASSWORD.

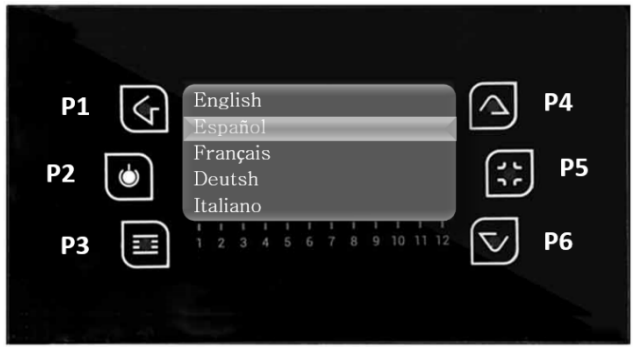
With the P4 and P6 keys you must select the required menu and then press P3 to validate your choice, in this case the Settings menu.



Select the Language submenu with the P6 key and to validate the entry in this submenu the P3 key.



Within this submenu, with P4 and P6 select the required language and press P3 again to confirm.

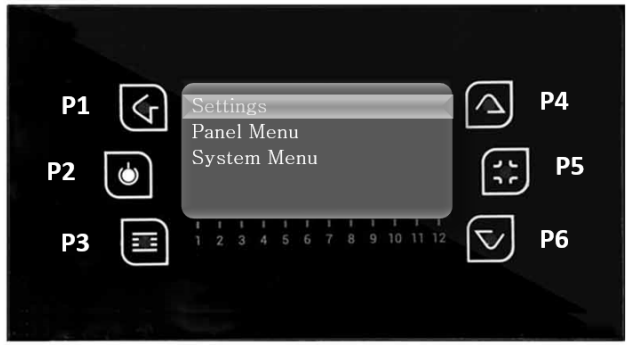


To exit the Language menu, press the P1 key.

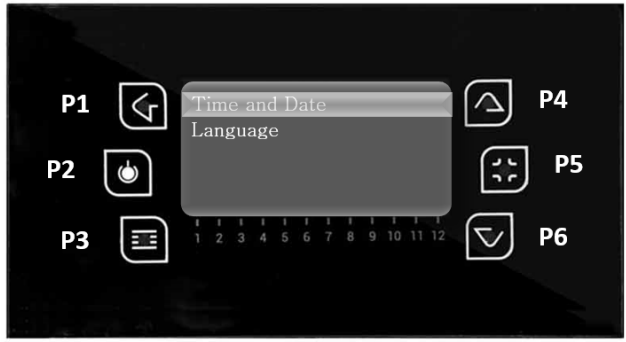
12.2.2 Time and Date

- **Time**

From the main screen, by pressing for 3 seconds the P3 key, you can access the Settings menu, by pressing again on P3 to enter this menu.

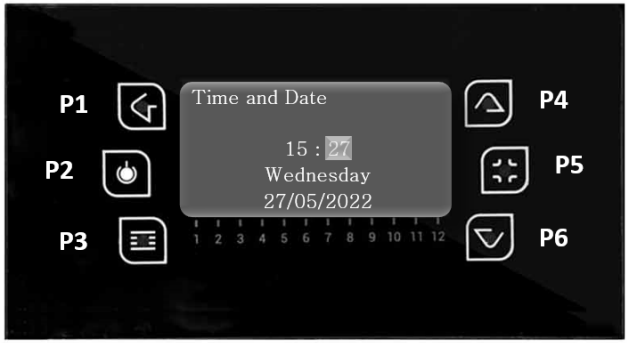


Use the P3 key to select Date and Time.



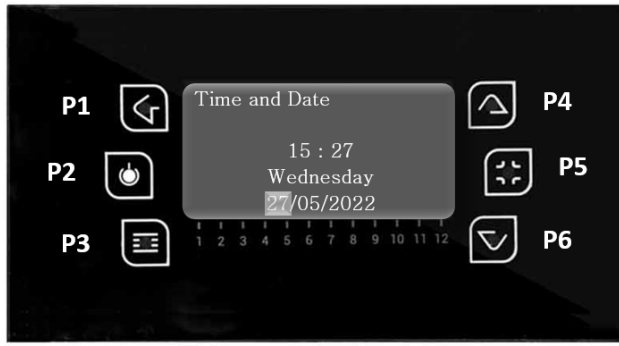
In the Date and Time menu, select Time, with the P4 and P6 keys, and press the P3 key, the time will appear in editable mode, flashing, with P4 and P6 select the correct time and press P3 to validate.

The same must be done for Minutes, with P6 select Minutes and press P3, the minutes will appear in editable mode, flashing, with P4 and P6 select the correct minutes and press P3 to validate.

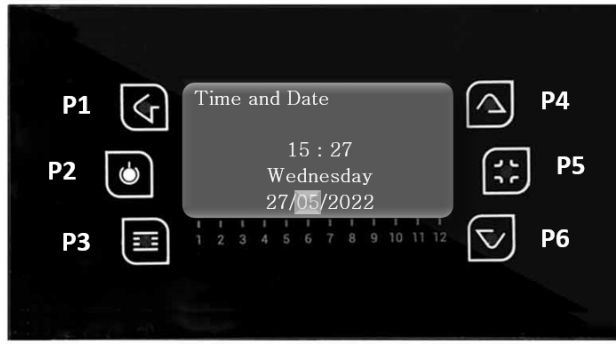


- **Date**

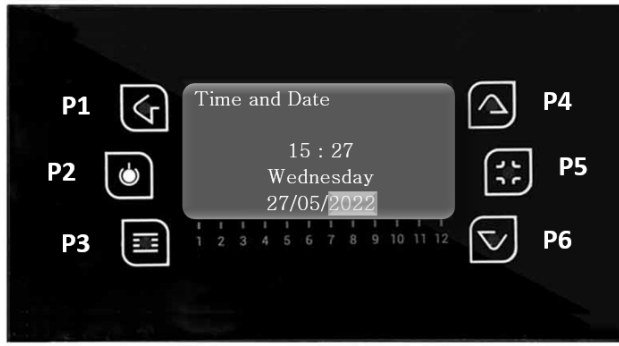
In the same menu, select Day with the P4 and P6 keys and press P3, the day will appear in editable mode, flashing, with P4 and P6 select the correct day and press P3 to validate.



To edit the Month, you must use the P4 and P6 keys to select this information and then P3, the month will appear in editable mode, with P4 and P6 select the desired month and then press P3 again to validate.



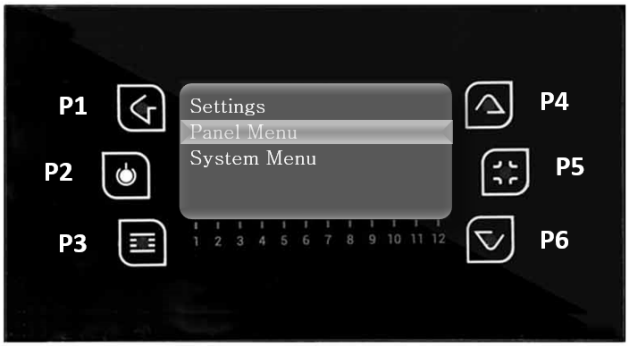
The Year follows the same procedure, press the P4 and P6 keys to move to the Year, use the P3 key to edit this field, the year will appear in editable mode. With P4 and P6 select the desired year and press P3 to validate.



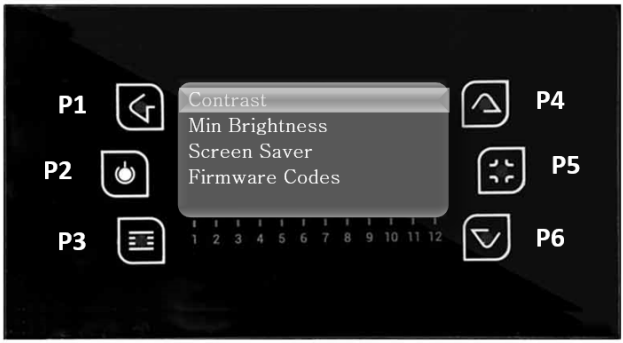
THE DAY OF THE WEEK (SUNDAY TO SATURDAY) CHANGES ACCORDING TO THE DAY OF THE WEEK SELECTED.

12.3 Painel Menu

By pressing the P3 key for 3 seconds, you will see the Settings, Painel Menu and System Menu. Use the P4 and P6 keys to select the required menu and then press P3 to confirm the choice, in this case the Display menu.

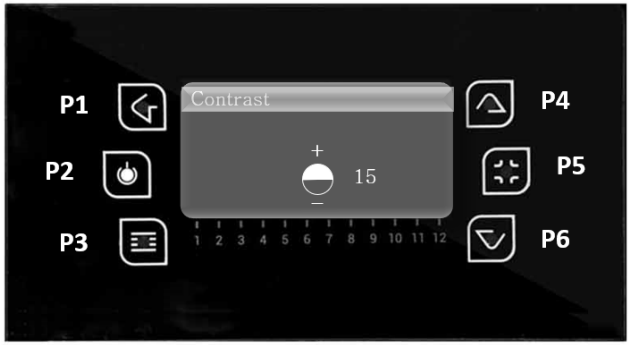


In this menu there are the functions Contrast, Min Brightness, Screen Saver and Firmware Codes.



12.3.1 Contrast

Press the P3 key to validate the choice of this function, with the P4 and P6 keys you can set the contrast between 0 and 30 for your screen. To return to the Display menu, press P1.

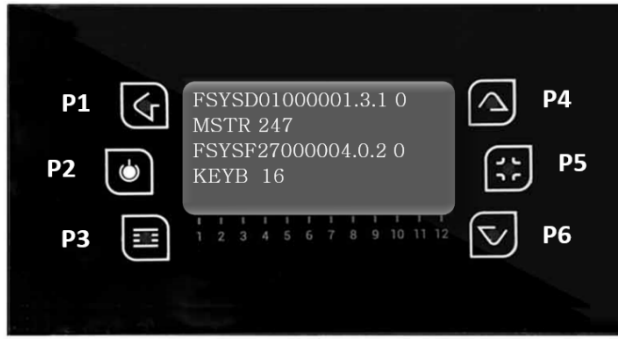


12.3.2 Min Brightness

In the Display menu with P4 and P6 select the Min Brightness function by pressing on the P3 key. With the P4 and P6 keys you can set the brightness between 0 and 20 for your display. To return to the Display menu, press P1.

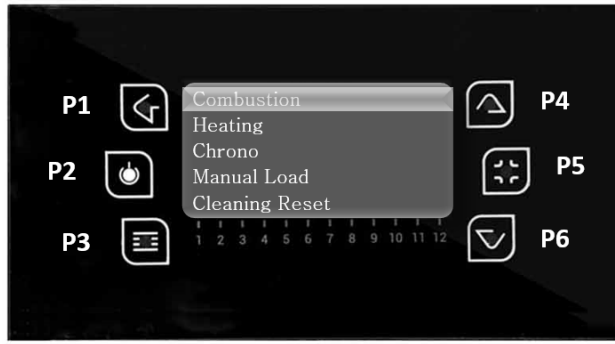
12.3.3 Firmware Codes

In the Display menu with P4 and P6 select the Firmware codes function by pressing on the P3 key. This function, for reference only, allows you to see the communication address of the control board, type of control board and firmware version.



12.4 Combustion Menu

By pressing the P3 key for 3 seconds, you will display the Combustion, Heating, Chrono, Manual Load and Cleaning Reset. Use the P4 and P6 keys to select the required menu and then press P3 to confirm the choice, in this case the Combustion menu.

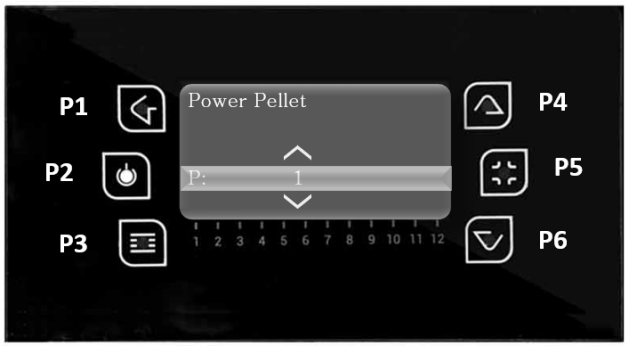


This menu contains the following functions.

12.4.1 Power *Pellet*

Select Power Pellet with the P3 key, to validate the entry in this submenu.

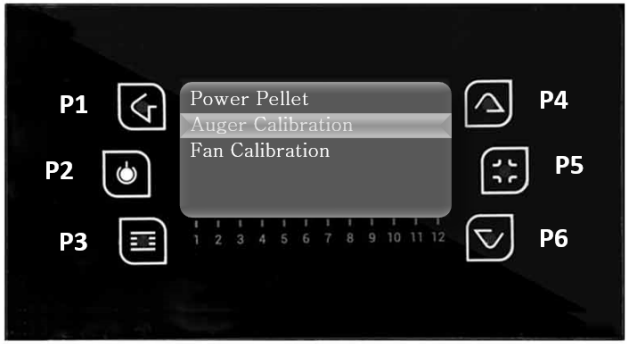
With the P4 and P6 keys you can modify the combustion power of the system.



Press the P3 key to save your changes and use P1 to go back.

14.4.2 Auger Calibration

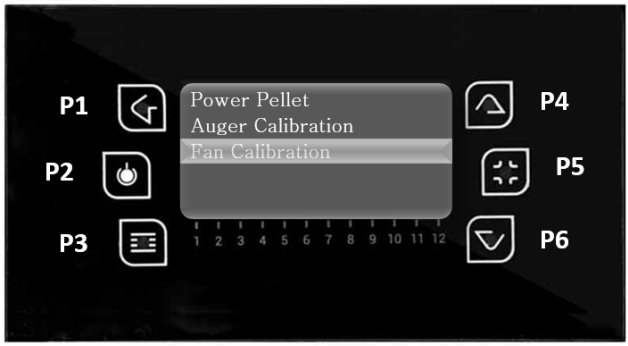
In the Combustion menu with P4 and P6 select the Auger Calibration submenu, pressing the P3 key to validate.



In this submenu with the keys P4 and P6 you can adjust the amount of pellets to be fed, between -7 (-14%) and 7 (+14%). To return to the Combustion menu press P1.

14.4.3 Fan Calibration

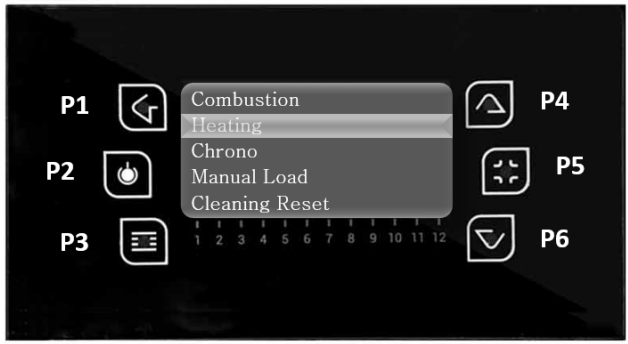
In the Combustion menu with P4 and P6 select the submenu Fan Calibration by pressing on the P3 key.



In this submenu with the keys P4 and P6 you can adjust the fan speed, between -7 (-21%) and 7 (+21%). To return to the Combustion menu press P1.

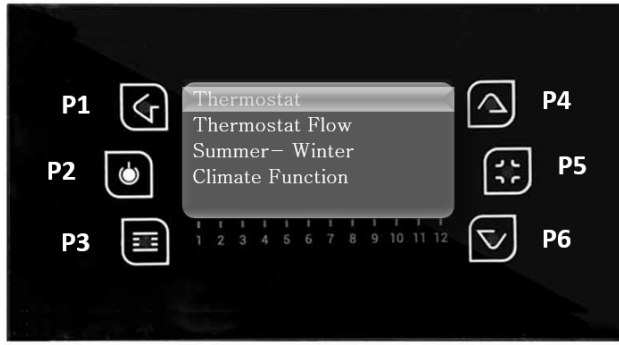
12.5 Heating Menu

By pressing the P3 key for 3 seconds, you will display the Combustion, Heating, Chrono, Manual Load and Cleaning Reset. Use the P4 and P6 keys to select the required menu and then press P3 to confirm the choice, in this case the Heating menu.



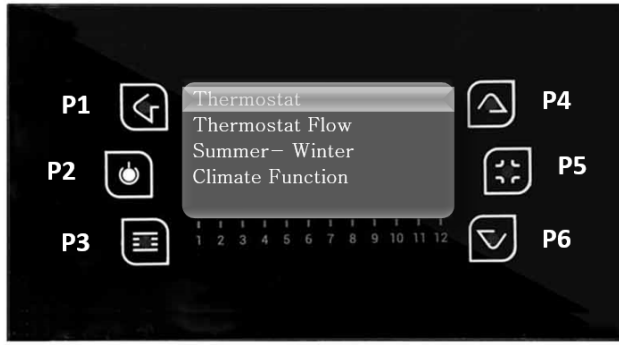
Note: Depending on the hydraulic system, the end customer may have access to the temperature settings for the buffer tank and the DHW tank.

This menu contains the following functions.

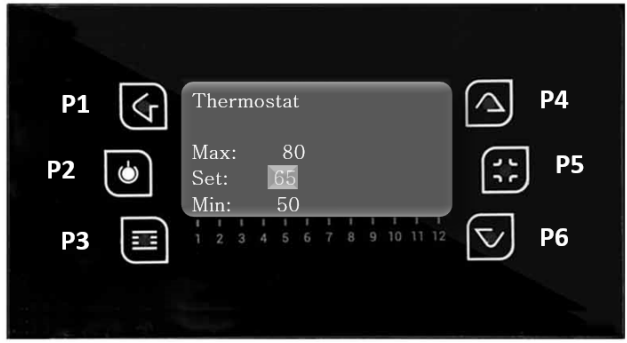


12.5.1 Boiler Thermostat

In the Heating menu, access the Thermostat menu using the P3 key to confirm your selection of this menu.

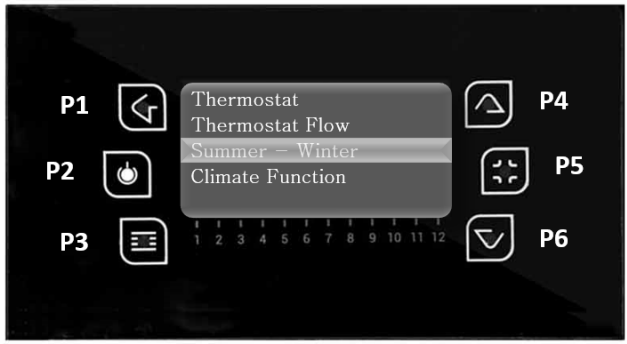


You can set the target temperature between 80 and 50°C using the P4 and P6 keys. Press the P3 key to save your changes and use P1 to go back.

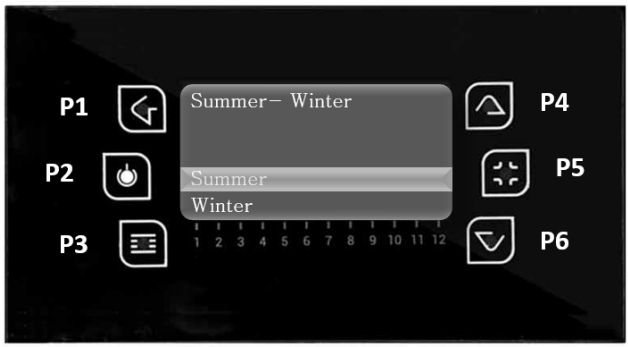


12.5.2 Verão - Inverno

In the Heating menu, access the Summer-Winter menu using the P6 key and then press P3 to confirm your selection of this menu.

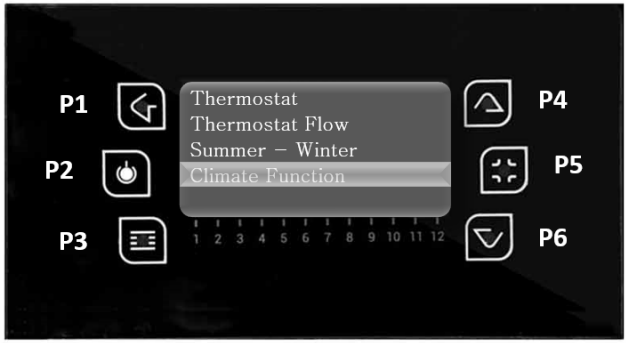


By pressing the P4 and P6 keys, you can choose between Summer or Winter mode. This menu allows you to modify the operation of the hydraulic unit according to the season. Use the P3 key to confirm your choice.

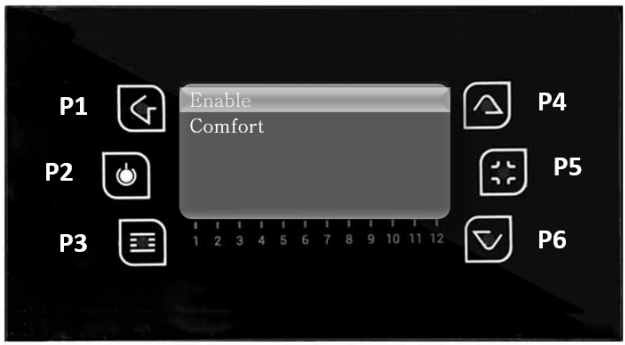


12.5.3 Climate Function

In the Heating menu, access the Climate Function menu using the P6 key and then press P3 to confirm your selection of this menu.



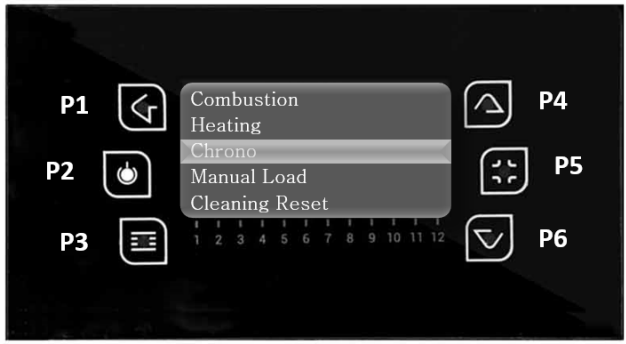
By pressing the P4 and P6 keys, you can choose between Enable or Comfort mode. Use the P3 key to confirm your choice or P1 to go back in the menu.



12.6 Menu Crono

The equipment has a time scheduler that is used to automatically turn the insertable on and off. It can be daily (you can select the day of the week you want and set up to 3 different times for the respective day), weekly (you can select up to 3 times during a day, the same program will be applied every day of the week) and weekend (you can select 3 times during the day for weekdays and weekends).

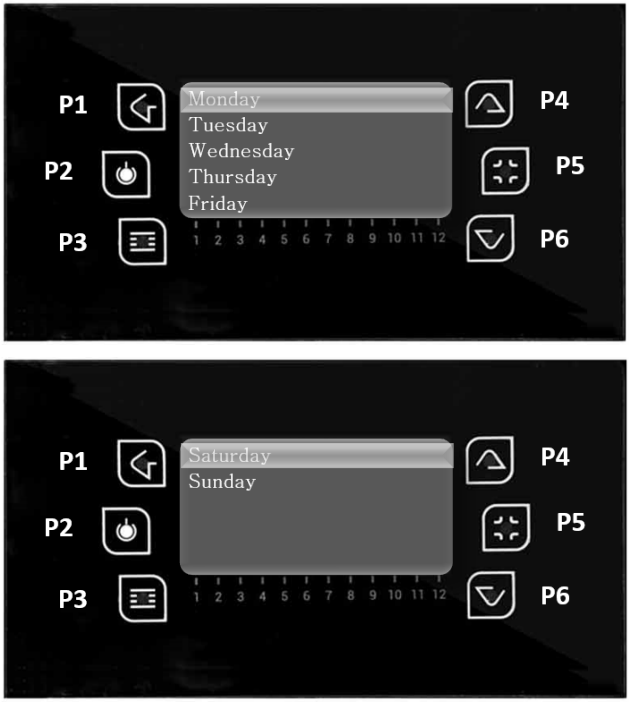
In the main screen, pressing the P3 key accesses the menus. With the P4 and P6 keys you must select the Chrono menu and then press P3, to validate your choice.



Then you must enter the Program submenu, using the P6 key to select and P3 to validate the choice.

Then with the P4 and P6 keys you must select Daily, Weekly or Weekend. You must press P3 to validate the choice.

For the Daily program you must, with the P4 and P6 keys, select the day of the week, in this case the program for Monday, and then press P3 to validate the choice.



You should press P3 and this field will be in editable mode, flashing. Press P4 and P6 to select the desired time and then use the P3 key to save. You must repeat this process for the time at which the equipment should shut down, with the P4 and P6 keys. Finally you must captivate the interval with the P5 key, and a check mark will appear on the right side of the interval.

In the image above the system will turn on at 20:30 on Monday and turn off at 06:30 on Tuesday. When programs are developed around midnight with the intention of starting operation the day before and ending operation the next day it will be pertinent:

- End the last program on the previous day by 23:59;
- Start the first program the next day by 00:00.

For the Weekly program, the programs are the same for every day of the week, from Monday to Sunday. You must, with the P4 and P6 keys, select Weekly, in the Program submenu, and press P3 to validate the choice.

You should press P3 and this field will be in editable mode, flashing. Press P4 and P6 to select the desired time and then use the P3 key to save. You must repeat this process for the time at which the equipment should shut down, with the P4 and P6 keys. Finally you must captivate the interval with the P5 key, and a check mark will appear on the right side of the interval.

For the Weekend program, you must, with the P4 and P6 keys, select Weekend and press P3 to validate your choice.

For this mode you must choose between the Monday to Friday and Saturday to Sunday time slots by pressing the P3 key.

You should press P3 and this field will be in editable mode, flashing. Press P4 and P6 to select the desired time and then use the P3 key to save. You must repeat this process for the time at which the equipment is to turn off, with the P4 and P6 keys. Finally you must activate the interval with the P5 key, and a check mark will appear on the right side of the interval.

AFTER DEFINING THE PROGRAMS IT IS NECESSARY TO DEFINE WHICH MODE YOU WANT TO ACTIVATE.

In the main screen, press the P3 key to access the menus. With the P4 and P6 keys you must select the Chrono menu and then press P3, to validate the choice.

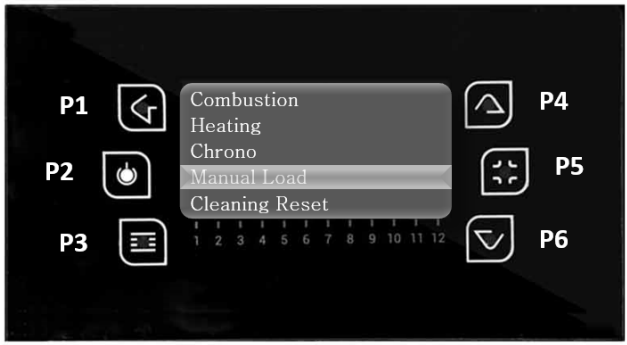
Ao selecionar Modalidade com a tecla P3 poderá selecionar qual modalidade de crono que pretende. Use as teclas P4 e P6 para selecionar entre Diariamente, Semanal ou Fim Semana, use a tecla P2 para ativar/desativar a escolha e P3 para salvar as alterações.

By selecting Modality with the P3 key you can select which chrono mode you want. Use the P4 and P6 keys to select between Daily, Weekly, or Weekend, use the P2 key to activate/deactivate the choice, and P3 to save the changes.

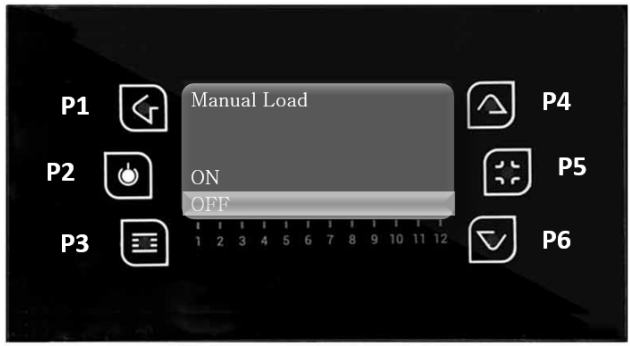
The main screen after activating the mode gets Led **D**, **S** or **FS** active in the upper right corner.

12.7 Manual Load

By pressing the P3 key, you will see the Combustion, Heating, Chrono, Manual Load and Cleaning Reset menus. Use the P4 and P6 keys to select the desired menu and then press P3 to confirm your choice, in this case the Manual Load menu.



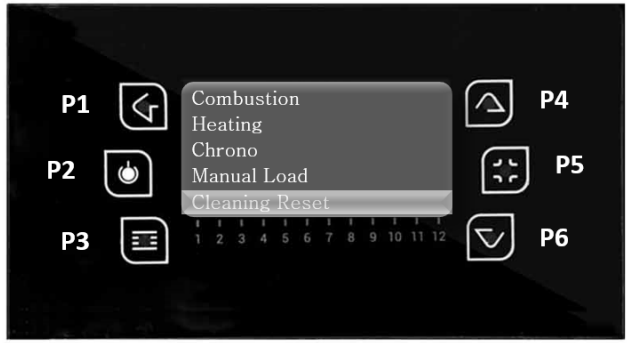
This function activates manual pellet loading.



By pressing the P1 key twice, you will return to the main menus.

12.8 Cleaning Reset

By pressing the P3 key, you will see the Combustion, Heating, Chrono, Manual Load and Cleaning Reset menus. Use the P4 and P6 keys to select the desired menu and then press P3 to confirm your choice, in this case the Cleaning Reset menu.

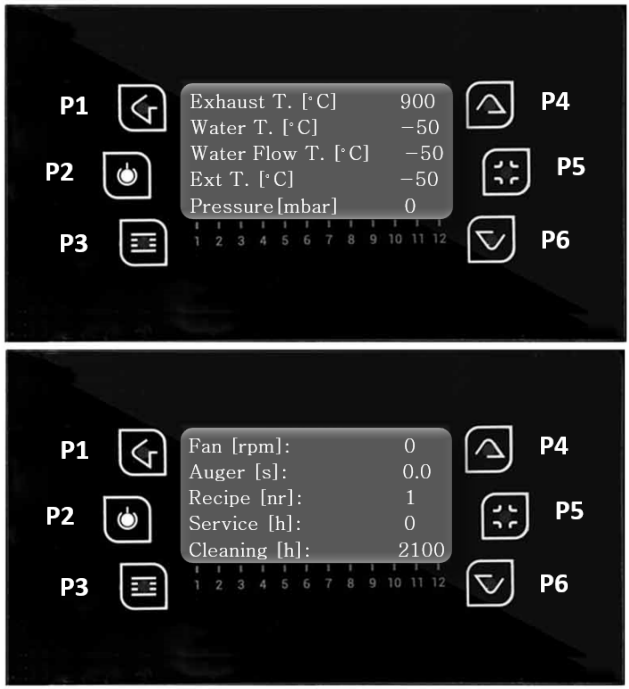


In this function you can turn this function on or off.

12.9 User Info

In this menu, the user can view information about the equipment, such as measured values and aspects related to electronics. In the initial menu, press the P4 or P6 key once and the menu will appear.

You can check the product code, the status of the fume extractor, the auger, the ambient fan, the status of the outputs, measured values, and aspects related to electronics.



It is possible to check the flue gas temperature and water temperature. Whether the inlet status is open (0) or closed (1).

The following table explains the meaning of each variable.

T. Smoke [°C]	Read in degrees Celsius (°C) it tells you the exhaust temperature monitored by the thermocouple.
Ambient T. [°C]	This is read in degrees Celsius (°C) and gives the ambient temperature monitored by the NTC probe placed outside the stove.

Fan [rpm]	Read in rpm, it tells you the rotation speed of the fan.
Auger [s]	Read in seconds and within 4 seconds the auger is active and feeding pellet to the burner.
Service [h]	Read in hour's shows the number of hours remaining to show faults due to lack of maintenance. These must be reset by the technical service during maintenance. The maintenance period must respect the kilos of pellets burned.
Working hours [h]	Read in hours tells you the number of hours in Run Mode, Modulation and Safety Mode.
Ignition [nr]	Read in number of occurrences informs how many ignitions have been carried out since they were reset to zero.
Cód. Artic.	Product Code.

Table 5 - Meaning of the variables

13.List Alarms / Failures / Recommendation Lis – Columbus

Anomalies

- Sond – Probe's anomaly during the control in Check Up.
- Ignition Block – The message appears if the system has been is turned off during Ignition (after Preload) by an external dverãoevice: the system will stop only when it goes in Run Mode.
- Link Error – Lack of communication between the LCD or K control panels and the control board.
- Cleaning On – Periodic cleaning in progress.
- Flashing Hours - Wrong time and date in the event of prolonged power failure.

THE ANOMALIES DO NOT ORIGINATE THE SHUTDOWN OF THE EQUIPMENT.

To switch off the device, in case of emergency, you must do the normal shutdown of the equipment. To do this, press the off button for 3 seconds and allow it to deactivate until the word off appears on the display.

All alarms cause the machine to switch off with information about the error and activation of the alarm led. It will be necessary to reset the alarm and restart. To reset the machine, press the "On/Off" button for 3 to 4 seconds until you hear a

beep accompanied by the message "Reset alarms in progress".

If the resetting of alarms is successful, new information is displayed - Reset alarms Successful. In the Off state, if for any reason the smoke temperature rises above 85ºC, the unit enters deactivation mode.

Code	Alarm	Troubleshooting
Er01	Safety thermostat alarm HV1	- Verificar ligação elétrica. - Verificar se a bomba trabalha. - Purgar circuito hidráulico. - Se o problema persistir, contacte o serviço técnico.
Er02	Smoke pressure switch alarm HV2	- Close the door and clear the faulty pressure switch error. - Blocked exhaust pipe or faulty extractor fan.
Er03	Extinguishing due to low smoke temperature (35 ºC)	- Pellet hopper is empty. - Microswitch is not closed.
Er04	Extinction due to excessive water temperature	- Check that the pump is working. - Bleed the hydraulic circuit. - If the problem persists, contact technical support.
Er05	Extinction due to high fume temperature	- Insufficient draught. - Excessive pellet dosage. - Faulty smoke probe. - If the problem persists, contact technical support.
Er07	Encoder error. The error may occur due to a lack of signal.	- Restart the boiler. If the problem persists, contact technical support.
Er08	Encoder error. The error may occur due to problems regulating the number of rotations of the fume extractor.	- Contact your technical support representative.
Er09	Low water pressure <0.5 Bar	- Check and adjust the pressure in the hydraulic circuit. If the problem persists, contact technical support.
Er10	High water pressure >2.9 Bar	- Check and adjust the pressure in the hydraulic circuit. If the problem persists, contact technical support.
Er11	Clock error. The error occurs due to problems with the internal clock.	- Restart the boiler. If the problem persists, contact technical support.
Er12	Ignition failure	- Empty auger channel – restart. - Faulty ignition resistor – replace the resistor. - Burner incorrectly positioned. - Flue gas temperature does not exceed the value set for activation.

Er15	Power failure	- In the event of a power failure (<10s), the boiler continues to operate normally. - If the system is ON and the power failure lasts for more than 10s and less than 5 minutes, the boiler restarts after going into standby mode.
Er16	RS485 communication error	- Restart the boiler. If the problem persists, contact technical support.
Er17	Combustion air regulation not achieved	- Chimney flues with insufficient extraction or obstructed.
Er18	Boiler without pellets	- Pellet hopper is empty. - Microswitch is not closed.
Er23	Boiler probe or buffer tank probe open	- Check the electrical connection. - Restart the boiler. If the problem persists, contact technical support.
Er25	Burner cleaning motor broken	- Burner cleaning motor broken or blocked.
Er26	Broken cleaning motor	- Burner cleaning motor broken or blocked.
Er39	Damaged differential pressure sensor	- Check electrical connection. - Check for obstructions in the measurement sockets.
Er41	Minimum differential sensor value not reached during CheckUp	- Check electrical connection. - Check for obstructions in the measurement sockets.
Er42	Maximum value of differential sensor exceeded	- Check electrical connection.
Er52	Modules Error I/O I2C	- Restart the boiler. If the problem persists, contact technical support.
Er56	Modified hydraulic installation	- Restart the boiler. If the problem persists, contact technical support.

THE MAINTENANCE FAULT ("SERVICE" MESSAGE ON THE DISPLAY) MEANS THAT THE STOVE HAS MORE THAN 2100 HOURS IN SERVICE. THE CUSTOMER MUST HAVE THE EQUIPMENT SERVICED AND ONLY THEN RESET THE HOUR METER TO ELIMINATE THE FAULT MESSAGE. THIS DOES NOT INFLUENCE THE NORMAL OPERATION OF THE EQUIPMENT; IT IS ONLY A WARNING.

14. Start-up

To start up the pellet-run boiler, press the start/stop button for 3 seconds. The display should indicate "Acendimento" (Lighting) until this completion of this phase.

The *pellets* will be pushed through the supply channel into the burning basket (combustion chamber), where they will be ignited using a heater coil. This process may take between 10 and 15 minutes, depending on whether the *pellet* transport worm screw has been previously loaded with fuel or is empty. Upon completion of the ignition phase, the word "On" should appear on the *display*.

14.1 Stoppage

The unit stop sequence is activated by pressing the "On/Off" key for 3 s. The display shows the **"desactivação"** (deactivation) message until this phase is completed. The extractor will remain active until the fume temperature reaches 59 ºC.

14.2 Turn off the unit

The unit should only be disconnected after stoppage.
Make sure that the display indicates **"Off"**. If necessary, disconnect the power cable from the mains.

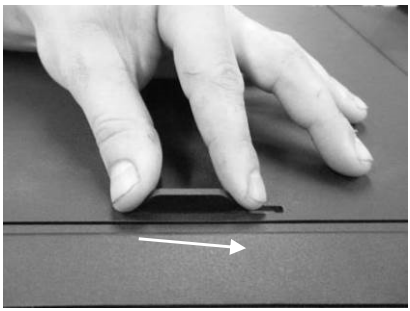
15. Instructions for removing the side covers

Lift the cover, pulling up and forward, thus removing it from the upper and frontal slots. Do the opposite to assemble the unit.

Figure 14 - Removal of side covers

16. Pellet reservoir lid

The pellet reservoir is opened by sliding the bolt sideways (Figure 15-a) and then lifting up the lid (Figure 15-b).



a)

b)

Figure 15 - Opening the lid

16.1 Filling the pellet reservoir

1 – Open the pellet reservoir lid located at the top of the unit, as shown in Figure15-b.

2 – Pour the pellets into the reservoir, as shown in Figure 16.

Figure 16 - Refilling the pellet reservoir

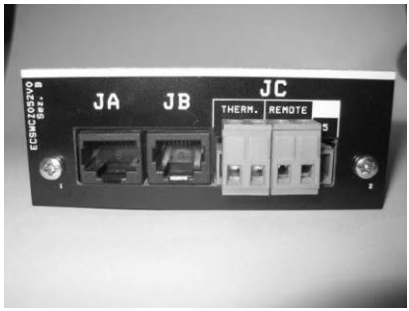
3 – Turn on the unit and close the lid of the reservoir, pressing down as shown in Figure 15.

17. Installation and operation using remote command (chrono-thermostat) – not included with the boilers

The pellet-run boilers are mass produced with a command *display*. Alternatively, the units can be operated using a generic remote command unit (chrono-thermostat). **Note:** the remote command unit normally comes accompanied by a manual. An interface must be installed in order to use the remote command (17–c).

a)

b)



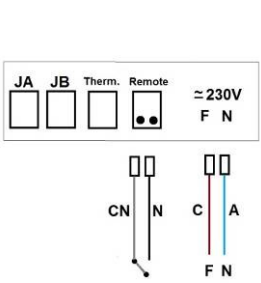
c)

Figure 17 - Remote command unit (chrono-thermostat) and connection interface – both not included

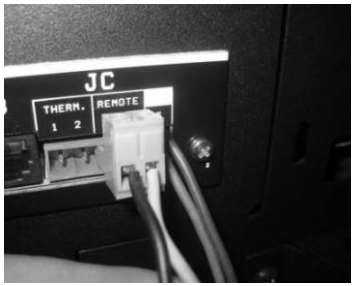
This board has two entries "remote" and "therm" to conect the chrono-thermostat into the "remote" the user of the start (closed contact NC) and stop (open contact NO) the boiler.

If connecting into the "thermostat" This will only change the power of the machine between minimum output (open contact NO) and maximum power (closed contact NC).

Note: the external command, as a rule, comes with a manual. In the case of wireless remote control is necessary to connect the two wires as shown in the following figure:



a)



b)

Colour codes:
CN - grey
N - black
C - brown
A - blue

Figure 18 - Wireless remote command connection

For the **wired** remote control, the black and grey wires must be connected to the receiver as shown in the following figure.

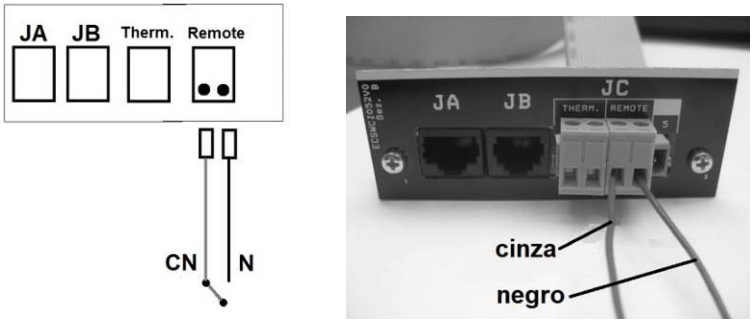


Figure 19 - Wired remote command connection

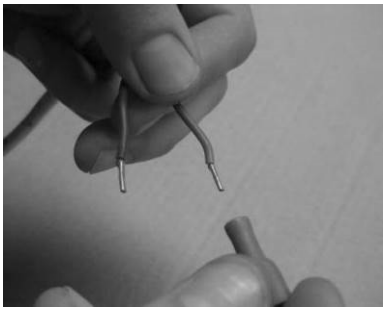
18. Instructions for remote control assembly

1 – Turn off the equipment at the main power switch and remove the right-hand side of the pellet-run boiler.

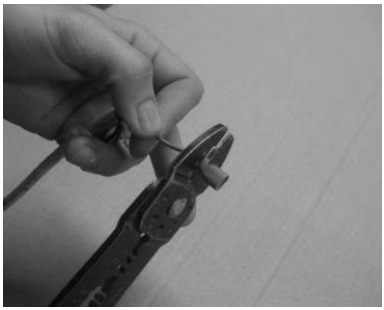
2 – Remove the unit's terminals phase (F) and neutral (N).

a)

3 – Rivet the terminals of the 220V wire supplying power the transmitter.

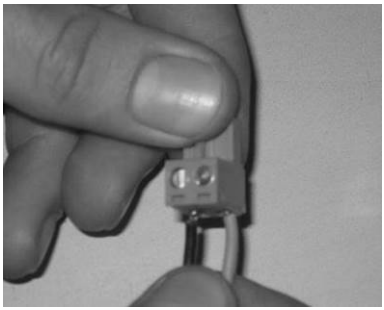


b)

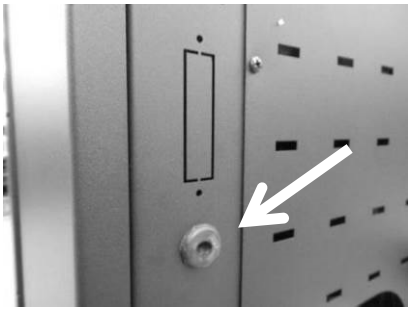


c)

4 – Attach the wires to the connector of the ON/OFF contact (Figure 20-d); Direct these same wires through the cable gland into the interior of the boiler (Figure 20 – e);



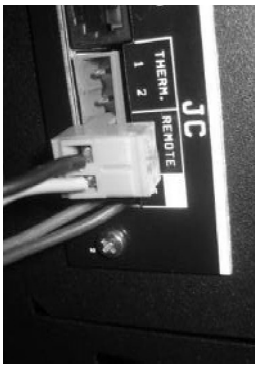
d)



e)

5 – Connect the plug of the remote command (On/Off contact) to the "Remote" socket (Figure 20);

f)



g)

Figure 20 - Installation of the chrono-thermostat

19. Installation of the external silo

Solzaima's automatic wood pellet boiler has an internal tank with a capacity of 45kg of wood pellets. Solzaima's optional storage unit allows you to increase by about 200kg the amount of wood pellets available, significantly increasing the autonomy of the boiler.

The optional storage unit set includes:

- Storage unit;
- Casters for moving the storage unit;
- Worm drive channel to transport the pellets into the boiler's internal tank;
- Electric power enginer to rotate the worm drive screw;
- Circuit board with wiring included;
- pellet level sensor of the storage unit

Together with the storage unit a connection kit to the boiler is provided and it includes:

- Instruction manual;
- Storage unit instruction manual;
- Flexible hose with metal bracket to connect the storage unit to the boiler;
- Cable to connect the storage unit level sensor and Pellet level sensors for the boiler's internal tank to the circuit board;
- Cable for electrical connection of the deposit;
- Ramp to put inside the boiler's tank;
- Parts for the rear and lateral fixation of the storage unit to the boiler;
- Screws for attaching the level sensors to the tank of the boiler.

Description of operation

When the level sensors of the boiler's internal tank ceases to detect pellets (the sensor lights go off) the electric power engine of the storage unit is triggered, by rotating the worm drive screw of the storage unit. Thus the pellets are transported from the storage unit to the boiler's internal tank. The electric power engine will run continuously until the sensors in the boiler's tank detect pellets again (sensor lights turn on). When this happens, the electric power engine stops.

Thus, the storage unit system will be triggered each time the pellets level in the boiler's tank is low, preventing the boiler's flame is extinguished due to the lack of pellets.

In the storage unit, there is also a sensor that detects the level of pellets. When the

pellets level is low, the sensor will cease to detect the pellets (the sensor light goes off) and will appear on the display a message of troubleshooting. After 40 seconds will appear on the boiler's display na alarm signal (code A15) and the boiler shuts down. The electric power engine keeps running, fueling the boiler's internal tank until the sensors detect pellets.
To restart the boiler, you will have to refill the storage unit with pellets (at least until the level sensor detects pellets) and reset the error (see automatic boiler instruction manual).

The wood pellet storage unit can be installed on either the left or right side of the boiler. By default, it is configured to be installed on the right side of the boiler.

For greater ease you should proceed to the assembly and adjustment of the storage unit before installing the boiler.

Adjusting the height of the boiler

With the boiler placed in its final position, and before starting the installation of the storage unit, you should level the boiler and put it at the same height of the storage unit. To do so, you should place the storage unit beside the boiler (left or right) and adjust the leveling feet of this until it is aligned with the storage unit by the upper zone, as shown in the following pictures.

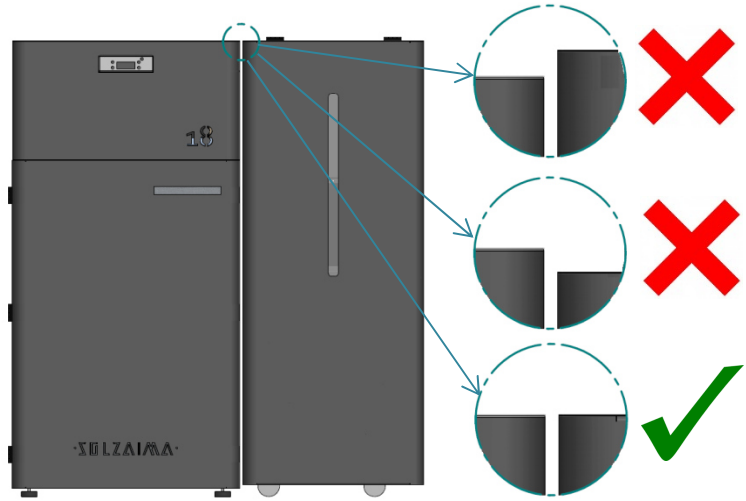


Figure 21 - Adjusting the height of the boiler

Installing the storage unit on the right side of the boiler

The level sensor of the storage unit must always be installed on the side closest to the boiler.

1 – If you want to install the storage unit on the **right side** of the boiler you must install the level sensor on the left side of the storage unit, in the same place where he comes assembled by default. Before, you should disconnect the plug of the cable connected to the circuit board, to facilitate the assembly. To fasten it, you should use the screws previously removed, and put it in the position shown in Figure 22.

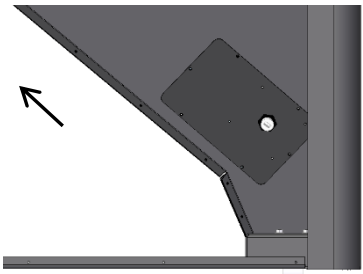


Figure 22 - Installing the sensor level in the storage unit

2 – Then, you should install the ramp to drop the pellets in the boiler's internal tank. For this, you should start by removing the right side cover of the boiler's tank – removing the 4 screw securing it (Figure 23).

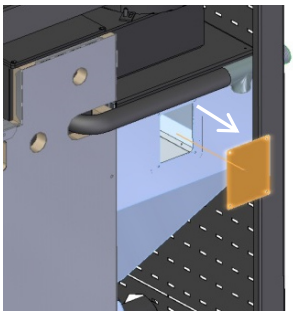


Figure 23 - Removing the lateral cover of the boiler's tank

3 – To assemble the ramp to drop the pellets you should insert it in the tank, as shown in the following pictures, and fasten it with the screws previously removed.

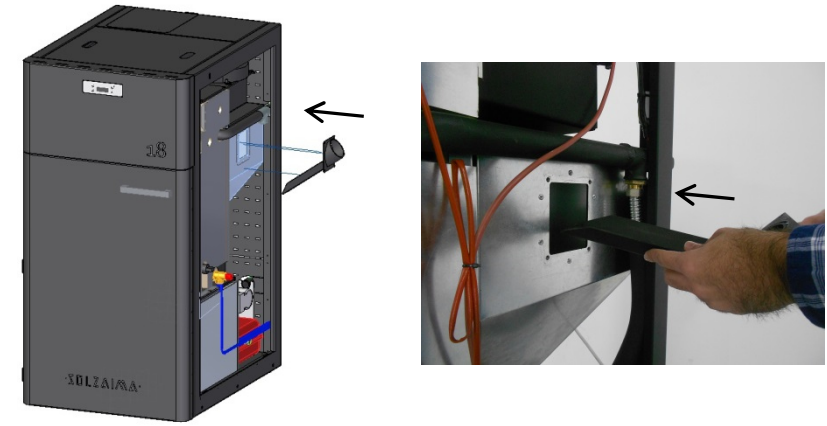
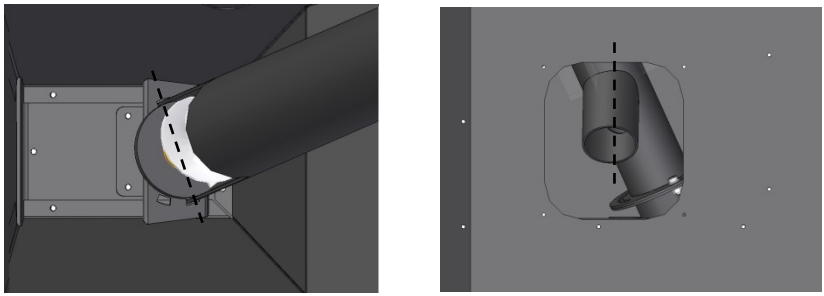


Figure 24 - Assembly of the ramp to drop the pellets in the boiler's tank

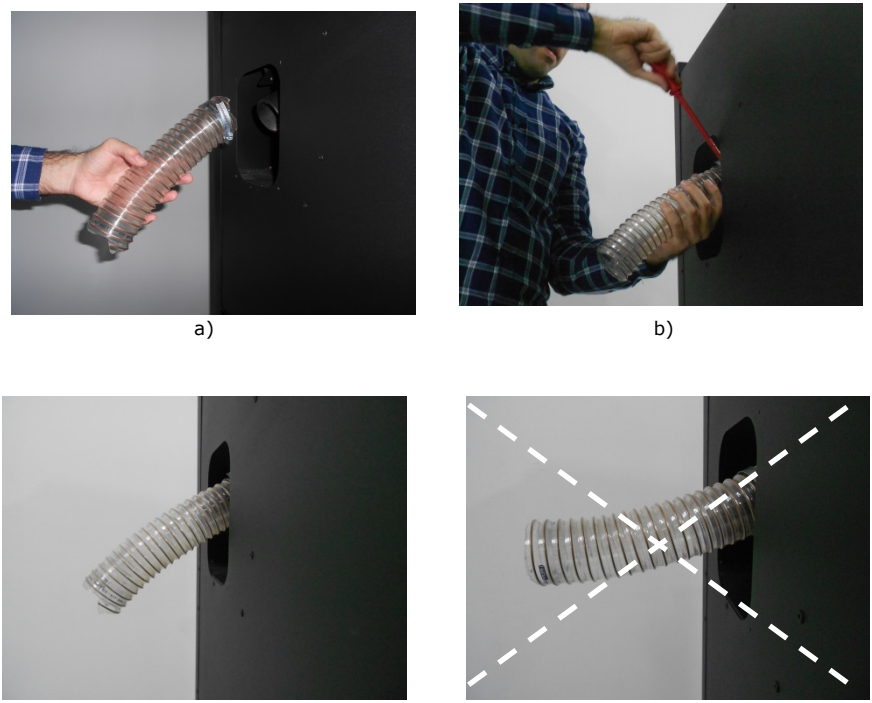
4 – Before proceeding with the assembly of the storage unit, you should check if the worm drive channel is properly docked in its base. To do this, open the lid of the storage unit and check if the docking is in accordance with Figure 25-a. Also, check if the pellet's output tube is in line with the opening of the storage unit (Figure 25-b).



a) b)

Figure 25 - Worm drive channel for storage unit installation on the right side

5 – Place the flexible hose on the storage unit's pellet output tube and attach it using the metal bracket provided. The flexible hose must make a downward curve (Figure 26-c).

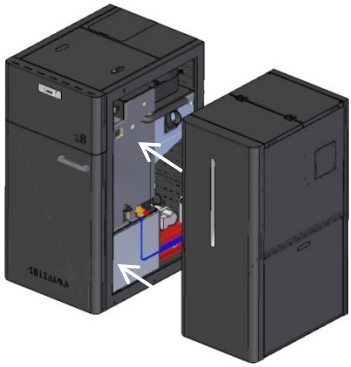


a) b)

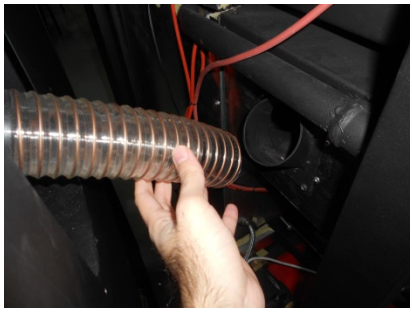
c) d)

Figure 26 - Installing the flexible hose

6 – Then, you should approach the storage unit to the boiler and insert the flexible hose into the ramp to drop the pellets (Figure 27 – b e c). The storage unit must be at a spacing of 1 cm to the side of the boiler and must be aligned with this by the rear.



a)



b)

c)

Figure 27 - Placing the storage unit next to the boiler (a); connecting the storage unit to the boiler's pellet tank (b e c)

7 – To make the fixing of the storage unit to the boiler you will have to remove the upper lids of the storage unit. Remove the 2 screws at the back (Figure 28-a); open the front lid and remove the 3 screws that secure the lids to the central bar (Figure-c).

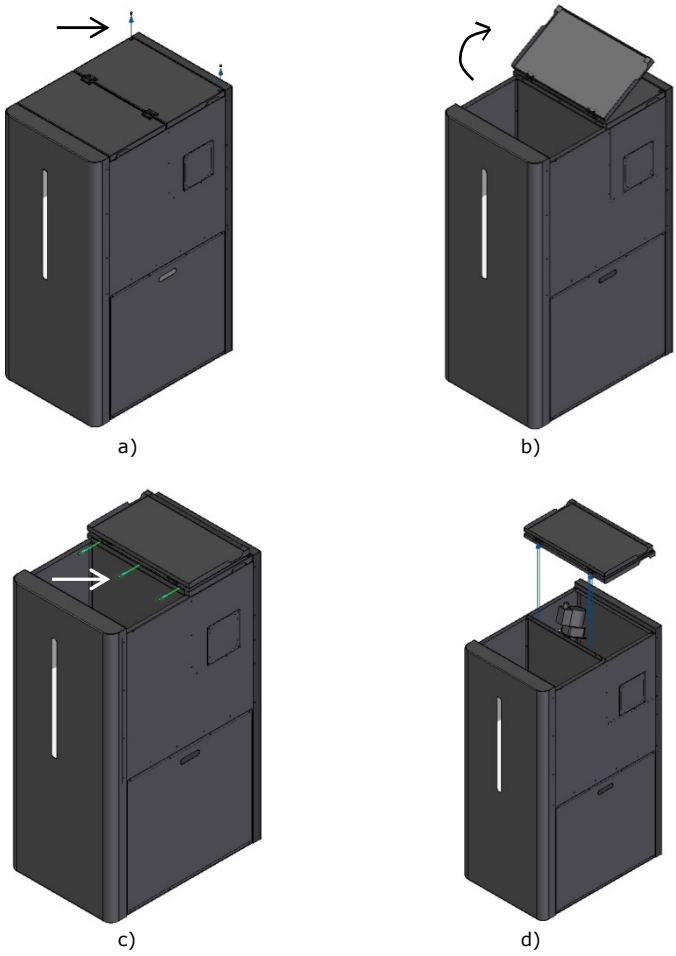
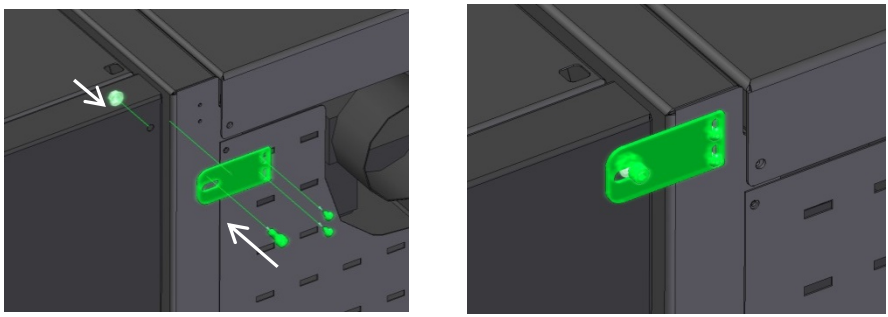


Figure 28 - Removing the upper lids

8 – After removing the lids you should secure the storage unit to the boiler assembling, at the back, the provided part, and secure it with the screws, as shown in the following figures.



a) b)

Figure 29 - Attaching and securing the storage unit to the boiler – Rear view

9 – The adjoining sides of the storage unit and the boiler should be secured in place using the screw and the mounting bracket provided.

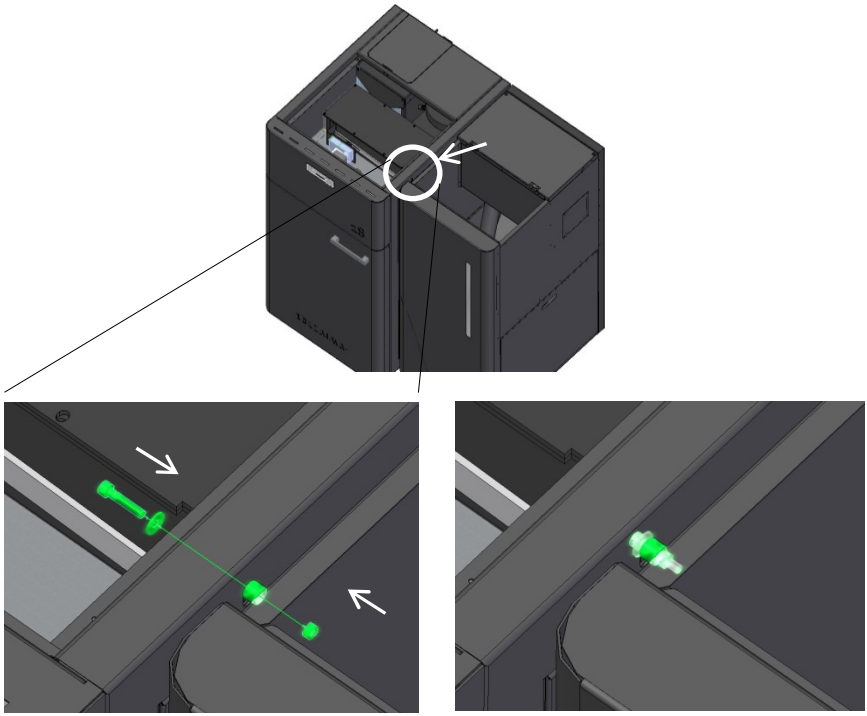


Figure 30 - Attaching and securing the storage unit to the boiler – Side view

10 - Finally, you should place the upper lids and re-attach the screws.

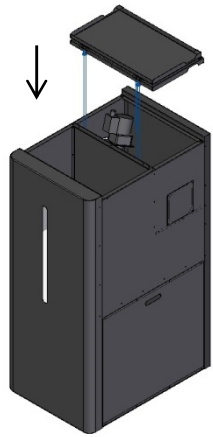


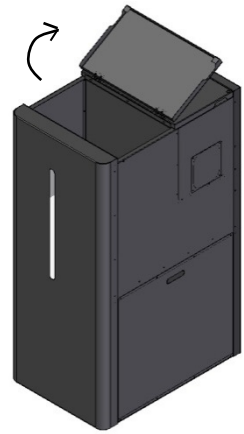
Figure 31 - Replacing the upper lids

Installing the storage unit on the left side of the boiler

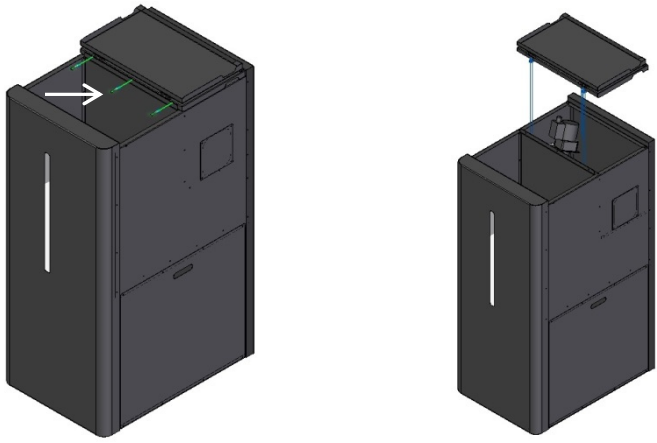
The storage unit is set up by default to te installed on the right side of the boiler. If you wish to install it on the left side, please follow these steps.

1 – First, remove the upper lids by loosening and removing the two retaining screws on the rear (Figure 32-a). Then, open the front lid and remove the 3 scres (Figure 32-c) that hold the lids in place.

a)



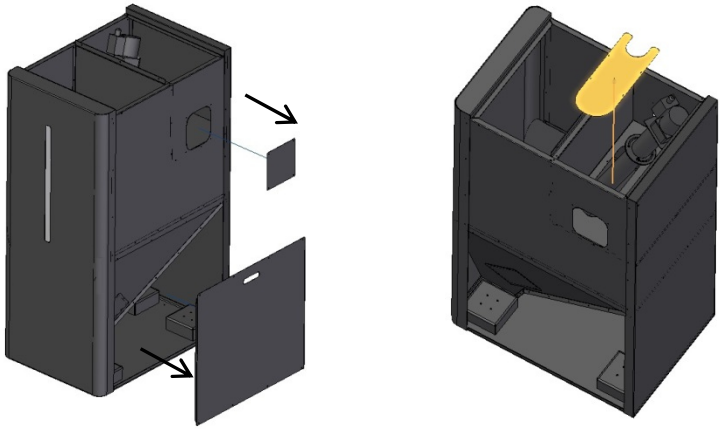
b)



c) d)

Figure 32 - Removing the upper lids

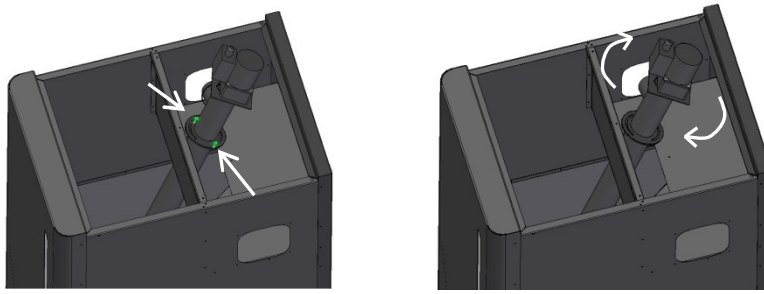
2 – Next, remove both side lids (Figure 33-a) and the retainer that holds the worm drive screw channel in place, inside the storage unit (Figure 33-b);



a) b)

Figure 33 - Removing the side lids and plate

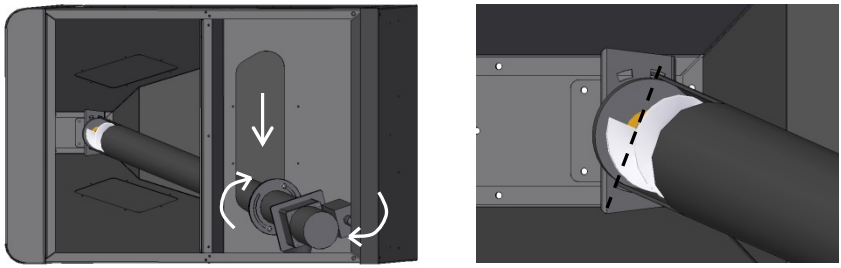
3 – To place the pellets' output on the right side of the storage unit, loosen both screws shown in Figure 34-a (you don't need to remove them completely), and rotate the channel upper assembly (including the drive's assembly) clockwise. Once the procedure is completed, retighten the two screws.



a) b)

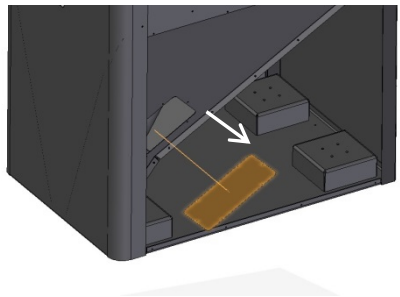
Figure 34 - Worm drive set rotation

4 – Afterwards, you must slide the worm drive channel to the right side of the storage unit (Figure 35-a), by lifting it up and rotating it clockwise so that it fits the base aligned diagonally with the holes (Figure 35-b).



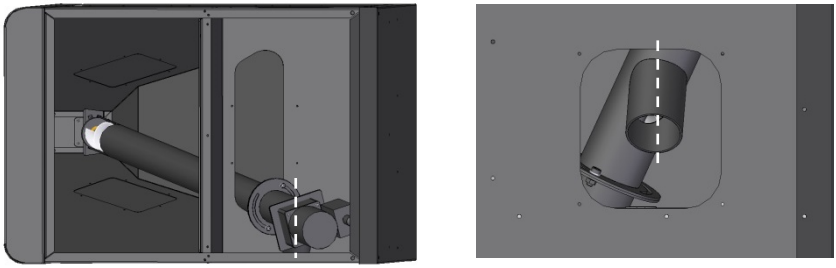
a) b)

You should remove the lower side lid of the storage unit to access the worm drive channel retainer to facilitate its placement at the base.



c)

When the procedure is complete, the pellet output should be perpendicular to the side panel of the storage unit.

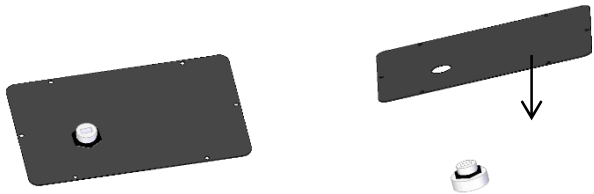


d) e)

Figure 35 - Sliding the channel to the right side

5 – The level sensor must be assembled on the right side of the storage unit (on the closest side to the boiler). For this, you must change the position of the sensor in the mounting plate in which it is fixed:

- remove the level sensor of the mounting plate, by removing the 4 screws that secure it;



a) b)

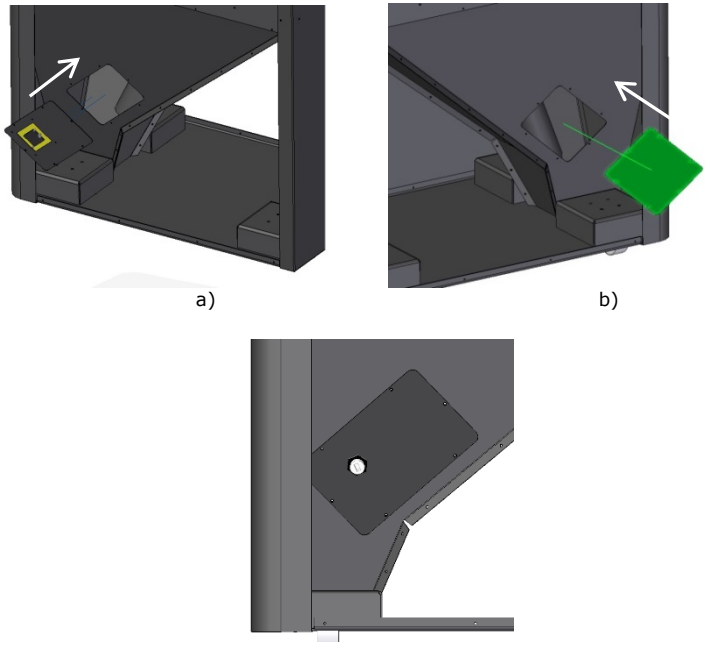
Figure 36 - Removing the level sensor from the mounting plate

- To assemble the sensor on the opposite side of the mounting plate you should mount it as shown in the following figure:

a) b)

Figure 37 - Assembling the level sensor on the mounting part

- Finally, you can mount the two mounting plates at the bottom of the storage unit, putting the plate with the level sensor on the right side and the plate without level sensor on the left side. The level sensor must be assembled as shown in Figure 38-c.

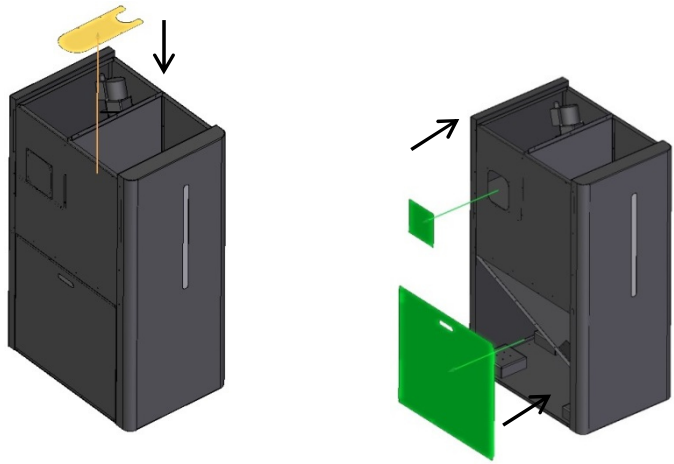


a) b)

c)

Figure 38 - Installing the pellet level sensor on the storage unit (storage unit on the left side of the boiler)

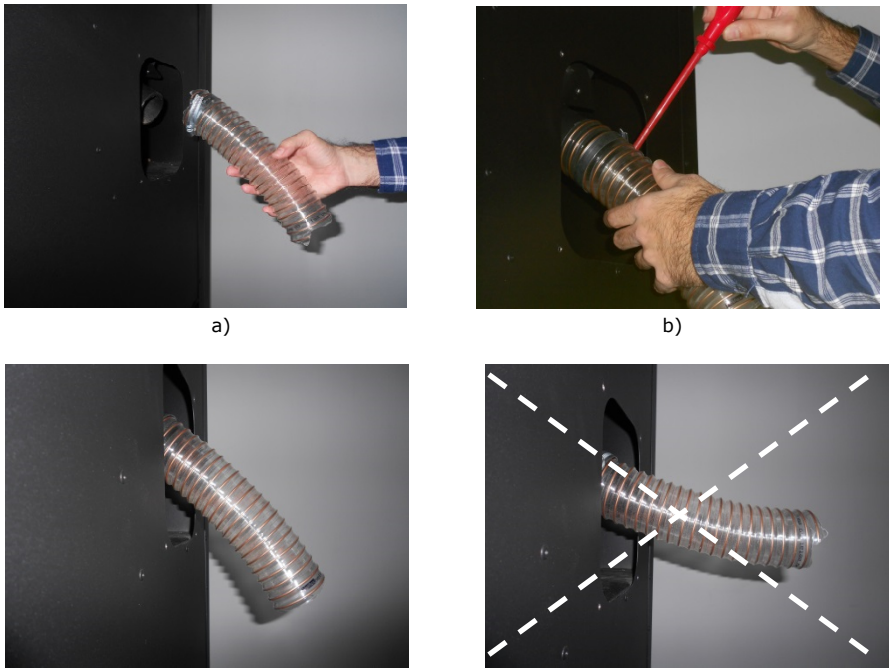
6 – Replace the worm drive channel retainer inside the storage unit (Figure 39-a). The side lids should now be attached to the left of the storage unit (Figure 39-b).



a) b)

Figure 39 - Installing the worm drive channel retainer and side lids

7 – You should place the flexible hose on the storage unit's output tube and attach it using the metal bracket provided. The flexible hose must make a downwards curve (Figure 40-c).

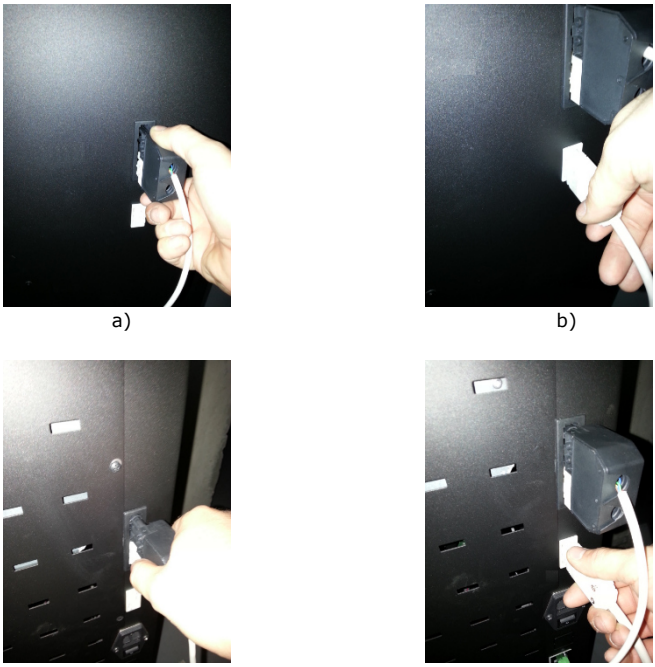


a) b)

b) d)

Figure 40 - Installing the flexible hose

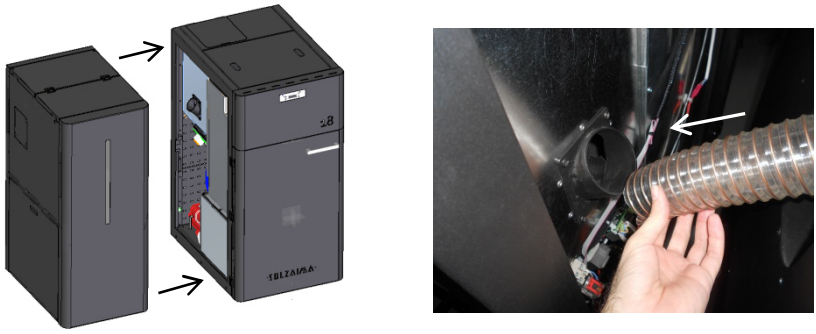
8 – To adjust the sensitivity must connect the tank to the boiler using the cable Kit.



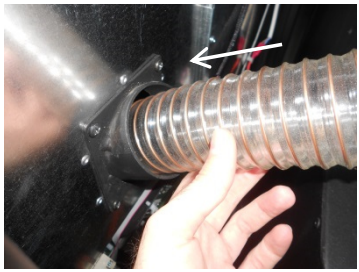
a) b) d) e)

Figure 41 - Connecting the level sensor to the boiler

9 – Then, you should approach the storage unit to the boiler and insert the flexible hose into the ramp to drop the pellets (Figure 42 – b e c). The storage unit must be at a spacing of 1 cm to the side of the boiler and must be aligned with this by the rear.



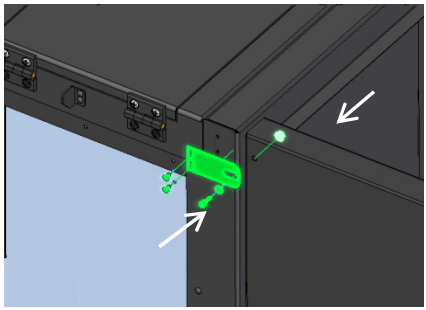
a) b)



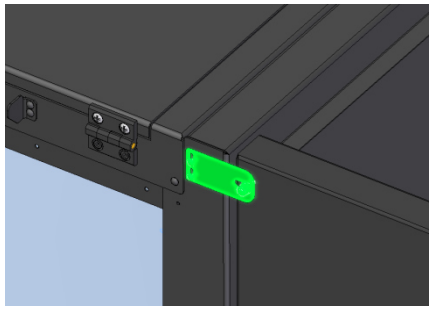
c)

Figure 42 - Placing the storage unit next to the boiler (a); connecting the storage unit to the boiler's pellet tank (b e c)

10 - Then, you should secure the storage unit to the boiler assembling, at the back, the provided part, and secure it with the screws, as shown in the following figures.



a)



b)

Figure 43 - Securing the storage unit to the boiler in the back

11 – The adjoining sides of the storage unit and the boiler should be secured in place using the screw and the mounting bracket provided.

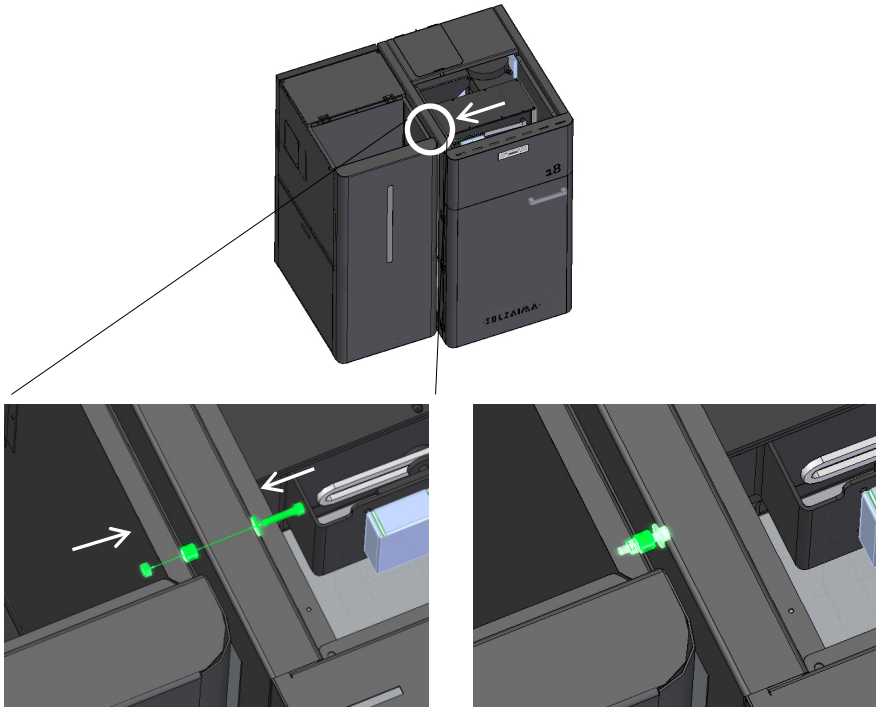


Figure 44 - Attaching and securing the storage unit to the boiler, on the side

12 – Finally, you should place the upper lids and re-attach the screws.

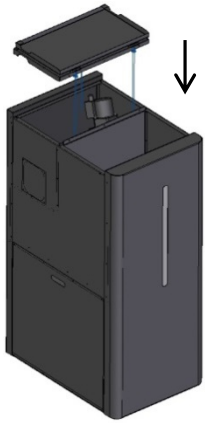


Figure 45 - Placing the upper lids

Enabling the pellet level sensor

At the end of the storage unit's installation it is necessary to activate the pellet level sensor in the boiler's display. For this, you should enter the *technical menu*. (Password only provided to authorized technical personnel)

Within this menu, you should enter the *General Settings*, and in the *Pellet Level Sensor* menu you should press *Set*, and then the keys "+" and "-" until it shows *On* on the display.

When the storage unit runs out of pellets, the level sensor sends a signal and an alarm appears in the boiler's display (A15 code). You should refill the storage unit with pellets, *reset* the alarm and restart the boiler.

Boiler startup

With the storage unit properly fixed to the boiler (right or left side) you should carry out the hydraulic connections and the connection of the boiler to the fumes outlet.

After making the connections, you should introduce some pellets inside the storage unit and start the operation of the boiler. You must observe the pellets falling from the storage unit to the boiler's internal tank and check if the level sensors work properly.

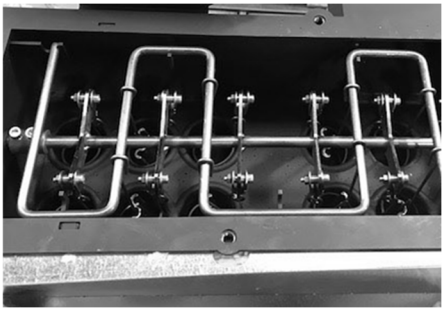
If the sensors do not work properly, you should remove them and re--adjust the sensitivity.

You must observe the boiler working for a time period corresponding to 3 or 4 charges of pellets and check if the pellet level does not rises above the level of the sensors.

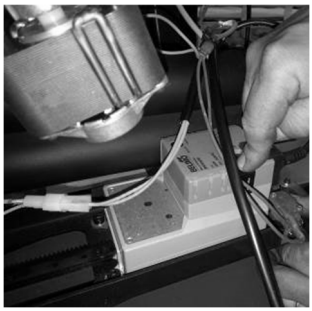
20. Maintenance

20.1 Weekly maintenance

Solzaima's pellet-run boiler includes automatic cleaning systems: one, is found in the upper part of the boiler and is meant for cleaning the fume pipes (Figure 46-a); the other, is located near the base of the burner and is meant for cleaning ashes and any other remaining residue (Figure 46-b).



a)



b)

Figure 46 - Automatic cleaning systems

Care should be taken to clean the ash drawer located in the lower part of the boiler (see label warnings and maintenance tasks in Chapter 25). To access the drawer, open the front door (Figure 47) and then the lower door of the boiler (Figure 48).

Figure 47 - Front door of the boiler

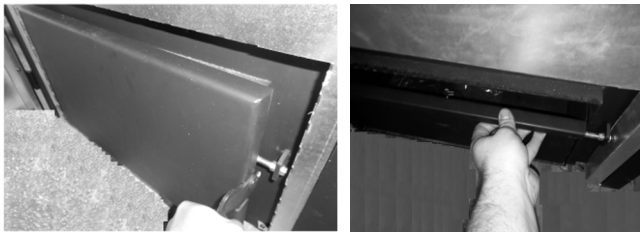
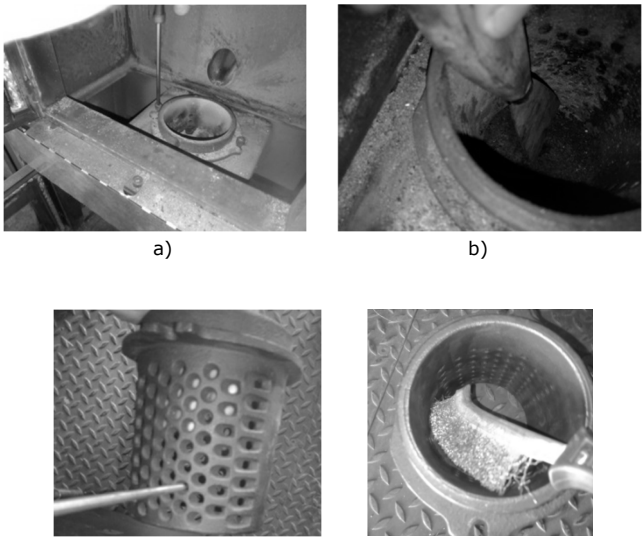


Figure 48 - Lower door and ash drawer

Note: Before cleaning the boiler, ensure that the power is turned off and that the unit is cool enough to handle, in order to prevent possible injury.

Cleaning the burner and plate

A cleaning the burner and the plate, as shown in the figures, to prevent obstruction of the holes in the burner or some kind of residue ashes must not be made to be gripped plate cleaning.



a) b)

c) d)

Figure 49 - Cleaning the burner and plate

WARNING! the frequency of maintenance tasks is dependent on the quality of pellets

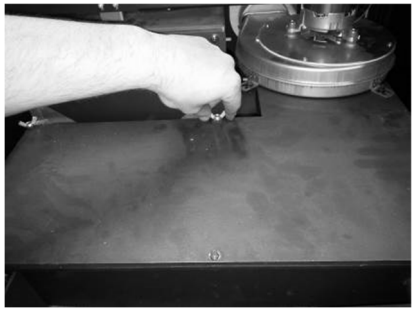
20.2 Additional cleaning

Additional cleaning should be carried out for every 2000 kg of pellets consumed.

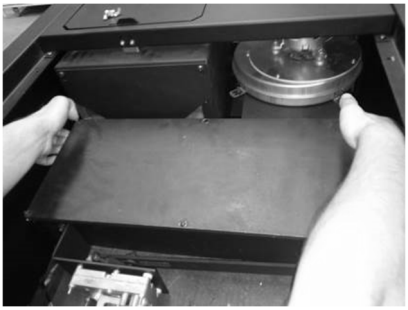
The boiler's air pipes and respective turbulators must be cleaned. To do this, start by opening the lid located on the top of the unit (Figura 50-a) and removing the six butterfly nuts securing the lower lid (Figura 50-b e c). Next, pull up the turbulators (Figure 50-d), also removing the spring support (Figure 50-f). A vacuum cleaner should be used to clean this area and the interior of the pipes may be cleaned using a steel brush (Figure 50-g) The turbulators and springs previously removed should also be cleaned with a steel brush.

To reinstall the turbulators, execute in reverse the above procedure shown in the figures.

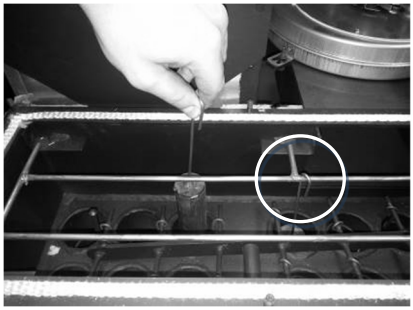
a)



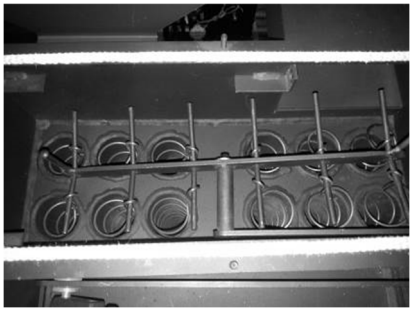
b)



c)



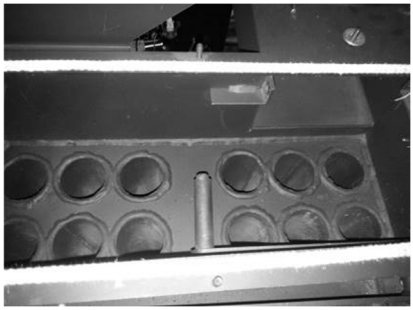
d)



e)

f)

g)



h)

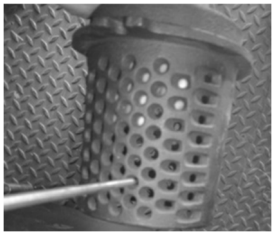
Figure 50 - Cleaning of air pipes and turbulators

Cleaning the burner and plate

A cleaning the burner and the plate, as shown in the figures, to prevent obstruction of the holes in the burner or some kind of residue ashes must not be made to be gripped plate cleaning.

a)

b)

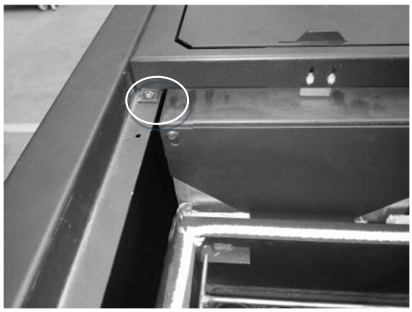


c)

d)

Figure 51 - Cleaning the burner and plate

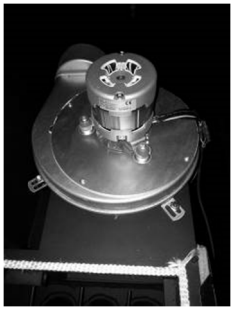
In the event that fume extraction is not operating under the best conditions, the extractor should be cleaned as illustrated in Figure 52 and Figure 53. In any case, it is recommended that this procedure be carried out at least once a year.



a)

b)

Figure 52 - Remove the screws securing the upper lid, both in the front and back of the boiler, to access the extractor



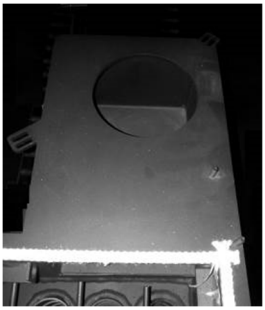


Figure 53 - Remove the screws of the extractor and vacuum the air flow area

Note: you must annually to check the pre-charge of the expansion vessel, check security valve and the liquid state of the hydraulic circuit.

WARNING! the frequency of maintenance tasks is dependent on the quality of pellets

21. Installation Diagrams

Simple connection only the central heating radiators

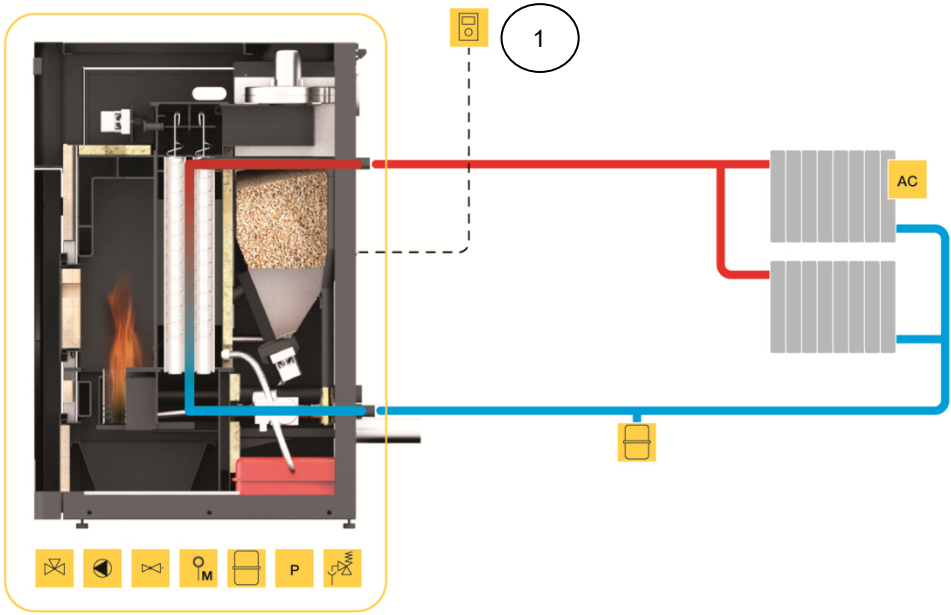


Figure 54 - Simple connection only the central heating radiators

Note:

- The chrono-thermostat should have 1 to 2 ° C of hysterisis. (1)
- Hydro independiente "On" (water temperature controlled regulation)
- Modulating pump "On"
- Water sensing inhibition "On"
- Alternative hydro shutdown "On"
- Pump "On" = 50 ° C
- Pump "Off" = 50 ° C

We can set / change according to the customer's discretion to another temperature.

Connection to central heating radiators and sanitary water combined with solar panel

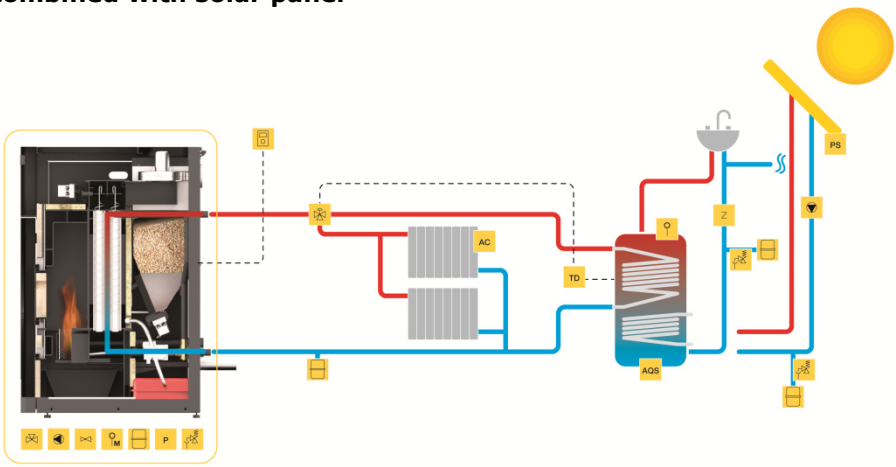


Figure 55 - Connection to central heating radiators and sanitary water combined with solar panel

Example: electrical connection of a thermostat (ambient air monitoring) of a differential thermostat connected to the deposit and three-way valve to a relay box

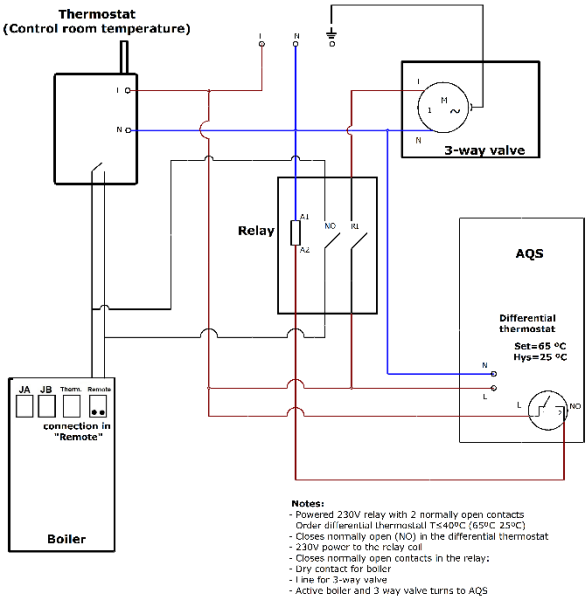


Figure 56 - Electrical connection of a thermostat (ambient air monitoring) of a differential thermostat connected to the deposit and three-way valve to a relay box

Connection to central heating radiators with another boiler support and sanitary water combined with solar panel

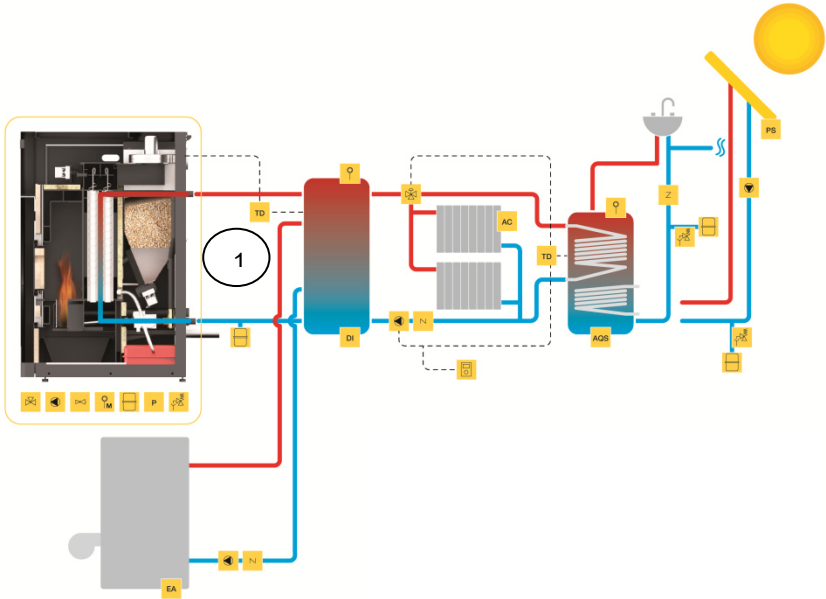


Figure 57 - Connection to central heating radiators with another boiler support and sanitary water combined with solar panel

Note:

- The chrono-thermostat Earth leakage must have a hysterisis of 15 to 25 ° C. 1

- Hydro independiente "Off" (water temperature controlled regulation), put the boiler in "manual" mode and power nivle to "5"

- Modulating pump "On"

- Water sensing inhibition "On"

- Alternative hydro shutdown "On"

- Pump "On" = 50 ° C

- Pump "Off" = same or thermostat temperature 1 ° C below the temperature differential thermostat

When using the generator with differential thermostat the machine must be connected in the CONNECTION "Remote".

Calculation deposits of inertia: the boilers for pellets is recommended that the buffer tank has 20l/kW.

Connecting underfloor heating in conjunction with another boiler support and sanitary water combined with solar panel

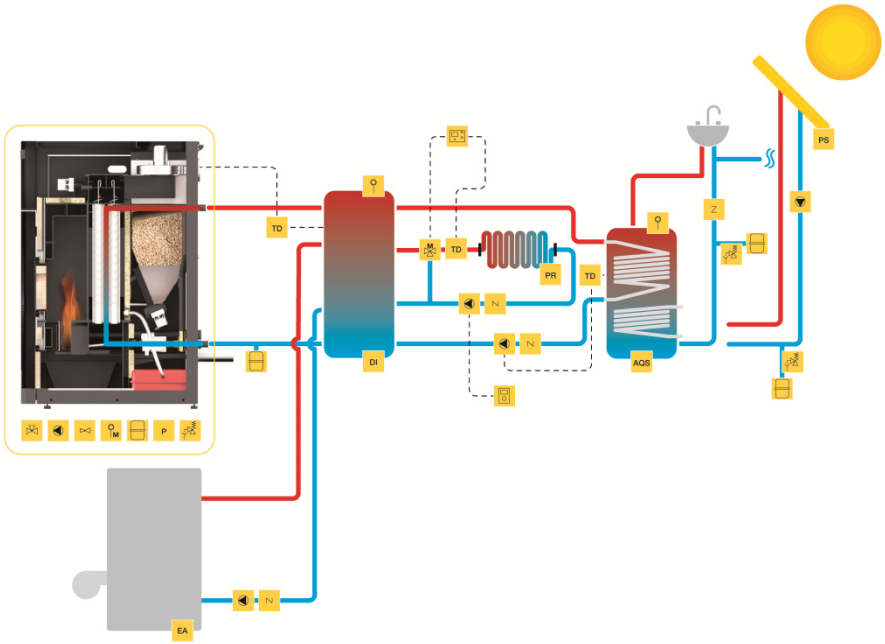


Figure 58 - Connecting underfloor heating in conjunction with another boiler support and sanitary water combined with solar panel

Simbology

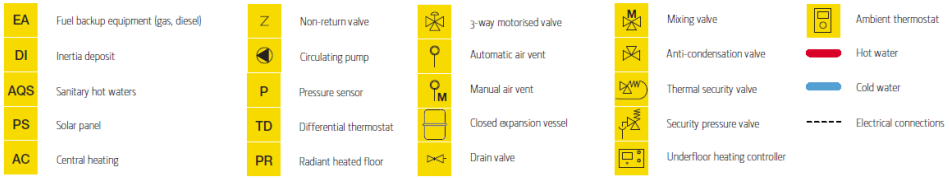


Figure 59 – Simbology

22. Electrical diagram of the pellet-run boiler

20.1 Electrical diagram – Not applicable to Columbus electronics

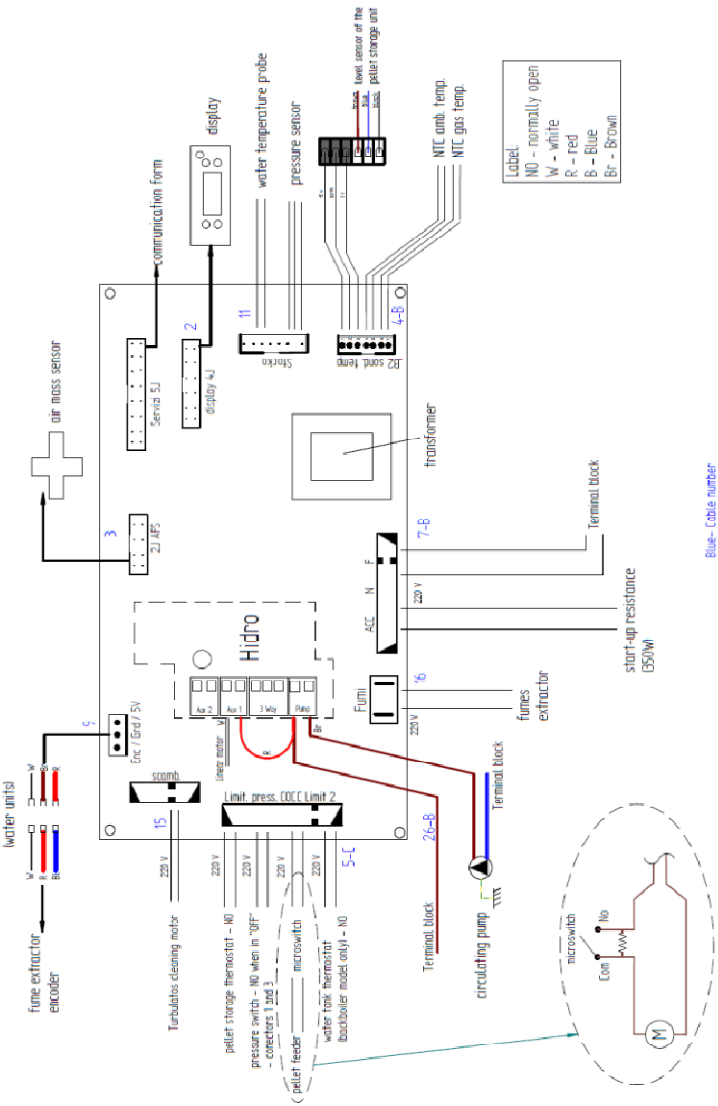


Figure 60 – Electrical diagram of the circuit board

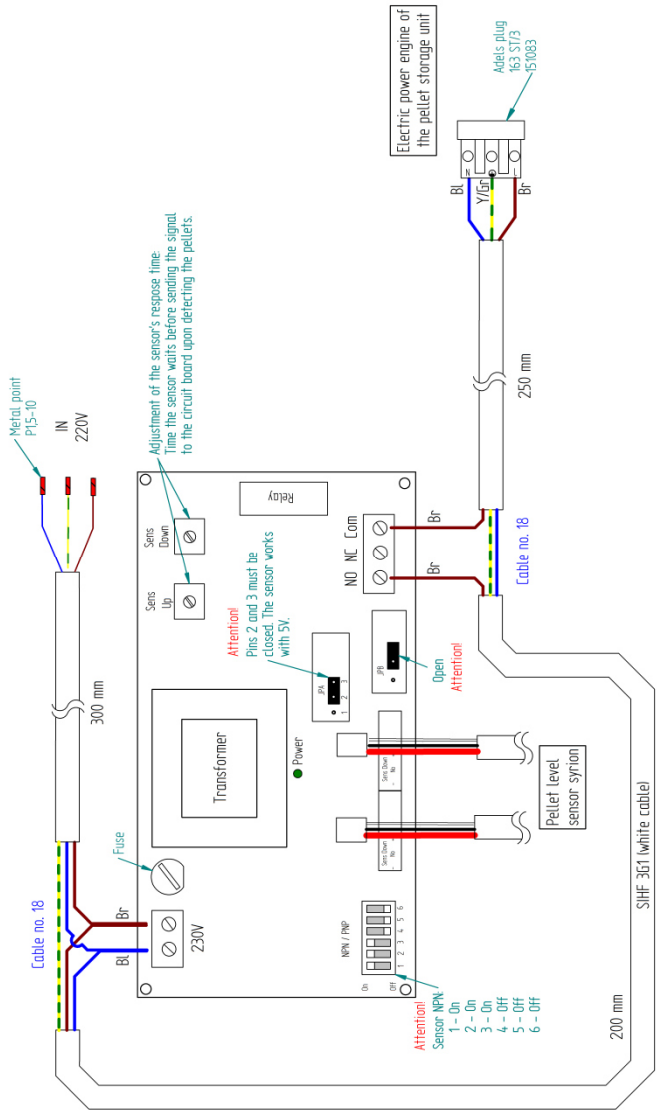
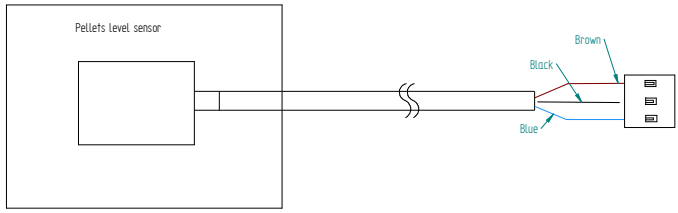
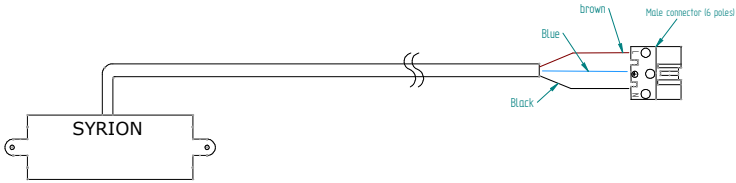


Figure 61 – Electrical diagram of the external silo's circuit board



a)



b)

Figure 62 – Level sensor

23. Circulating pump

23.1 UPM3 FLEX AS 25-70 130mm circulating pump

Circulating pump performance graph

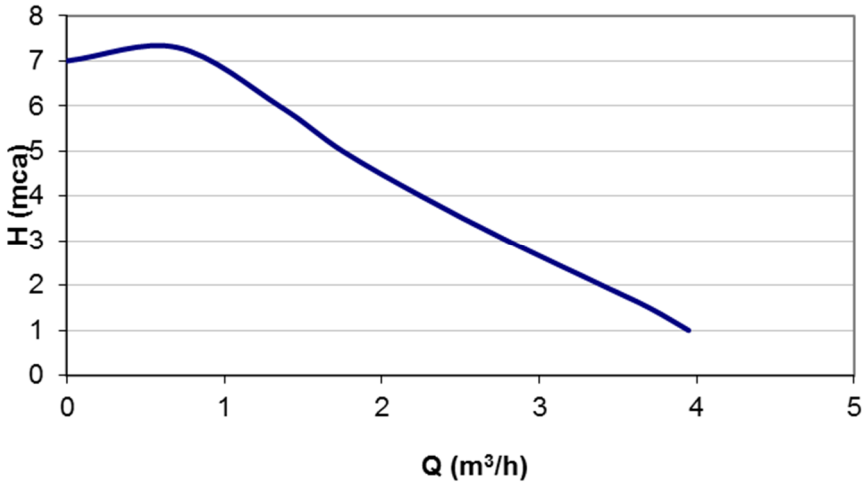


Figure 63 – Circulating pump performance graph

User interface

The user interface was designed with a single button, a red/green LED and four yellow LEDs

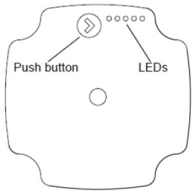


Figure 64 – User interface

When the pump is operating, the LED 1 is green. 4 yellow LEDs indicate the current performance of the pump, as shown in the following table (Figure 65).

LED activo	Performance (%)
LED Green	0 (Standby)
LED Green + 1 LED yellow	0 - 25
LED Green + 2 LED yellow	25 - 50
LED Green + 3 LED yellow	50 - 75
LED Green + 4 LED yellow	75 - 100

Table 6 - Performance of the pump

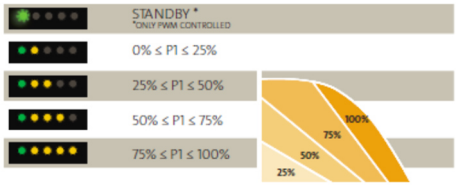


Figure 65 – Performance of the pump

Note: the pump is configured as standard at full capacity (75-100%).

Changing the setting of the pump

Can be chosen between the the view of the performance of pump and th view of settings, just press the button once.

If you need to change the pump performance, you must press the button for 2 seconds (see Figure 66), after this action the LEDs start blinking, then you must press the button until the desired setting (see Table 7), after 10 seconds the display automatically switches to the view of performance with alteration saved.

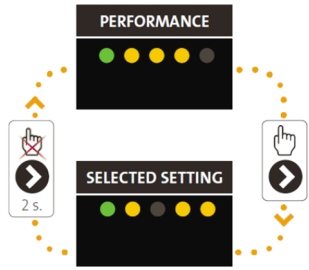


Figure 66 – Pump settings

Altura manométrica máxima (m)	Configuración
2-4	
3-5	
4-6	
5-7	

Table 7 - Pump settings

Alarms

If the pump detects one or more errors, the LED 1 changes from green to red when the alarm is activated the yellow LED indicates the type of alarm (see Table 8), if we have several alarms at the same time, the yellow LED indicates the alarm with higher priority, the priority sequence is defined on table as follows:

Display	Priority	Alarm	action
LED 1 red + LED 5 yellow 	1	Rotor is blocked	Wait or deblock the shaft
LED 1 red + LED 4 yellow 	2	Supply voltage too low	Control the supply voltage.
LED 1 red + LED 3 yellow 	3	Electrical error	Control the supply voltage or replace the pump.

Table 8 - Alarms

24. Maintenance plan

To ensure the smooth operation of your boiler is essential to make maintenance operations that have detailed in chapter 20 of the instruction manual or on the label with maintenance guide and cleaning. There are tasks that must be done by an authorized technician. Contact the installer. Not to lose the warranty of your device must perform all maintenance at the intervals specified in the manual, the technician who do, must complete and sign the maintenance log.

Name:	
Adress:	
Phone:	
Model:	
Serial number:	

Company/SAT: _____

Technical: _____

Dates: _____

Service hours of boiler: _____

Quantity of pellets burned: _____

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

Signature/stamp

Company/SAT: ______
Technical: ______
Dates: ______
Service hours of boiler: ______
Quantity of pellets burned: ______

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

______
Signature/stamp

Company/SAT: ______
Technical: ______
Dates: ______
Service hours of boiler: ______
Quantity of pellets burned: ______

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

______
Signature/stamp

Company/SAT: ______
Technical: ______
Dates: ______
Service hours of boiler: ______
Quantity of pellets burned: ______

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

______
Signature/stamp

Company/SAT: ____________________
Technical: ____________________
Dates: ____________________
Service hours of boiler: ____________________
Quantity of pellets burned: ____________________

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

Signature/stamp

Company/SAT: ____________________
Technical: ____________________
Dates: ____________________
Service hours of boiler: ____________________
Quantity of pellets burned: ____________________

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

Signature/stamp

Company/SAT: ____________________
Technical: ____________________
Dates: ____________________
Service hours of boiler: ____________________
Quantity of pellets burned: ____________________

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

Signature/stamp

Company/SAT: _____

Technical: _____

Dates: _____

Service hours of boiler: _____

Quantity of pellets burned: _____

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

Signature/stamp

Company/SAT: _____

Technical: _____

Dates: _____

Service hours of boiler: _____

Quantity of pellets burned: _____

Task	Check	Obs.
Clean burner and plate		
Clean smoke circuit and turbulators		
Vacuum pellet tank sawdust		
Check pressure of the expansion vessel		
Check safety valve 3 bar		
Check the fluid on the hydraulic circuit		
Clean the smoke extractor		
Check and clean the inspection T		
Clean chimney		
check the tightening of the screws		
Check engine cap pellet hopper		

Signature/stamp

25. Maintenance guide label

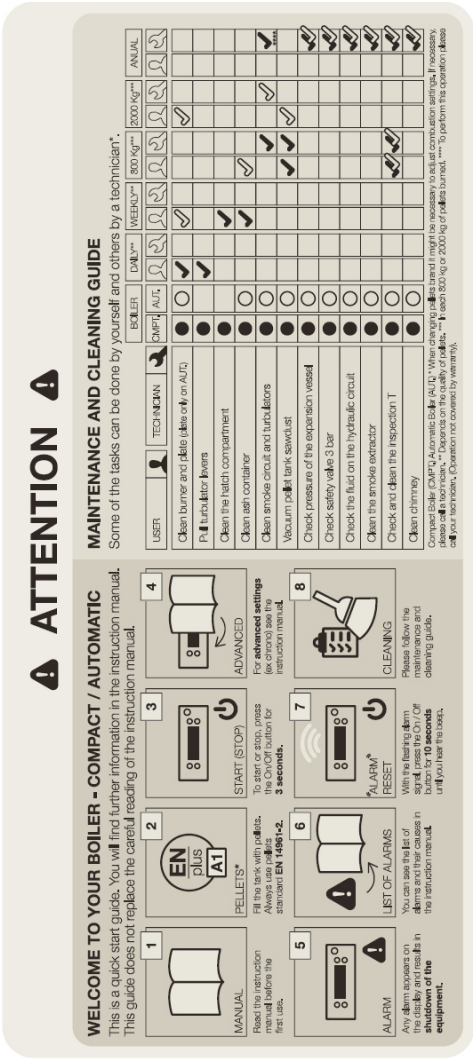


Figure 67 – Maintenance guide label

Note: the label warnings will default pasted in the boiler door in the Portuguese version, next to the boiler manual labels are in various languages (ES, EN, FR and IT) if necessary remove the label in Portuguese and paste the respective language of the country.

26. Life cycle of a pellet-run boiler

About 90% of the materials used in the manufacture of these units are recyclable, thus contributing towards a reduced environmental impact and the sustainable development of our planet. As such, units that have reached their end of useful life should be delivered to authorised waste operators. It is advised to contact your local authorities for the appropriate collection instructions.

Solzaima designs and manufactures biomass solutions and equipment as a primary energy source. This is our contribution to the sustainability of our planet – an economically viable and environmentally-friendly alternative, following the best environmental management practices to ensure efficient carbon cycle management.

Solzaima makes all efforts to learn and to know the national forest park while efficiently responding to energy demands, taking permanent care to maintain its biodiversity and natural wealth that are essential for the quality of life on our Planet.

SOLZAIMA is a member of the **Sociedade Ponto Verde**, the entity that manages package waste, thus you can take the packaging that comes with your unit, such as plastic and cardboard, to your nearest recycling point.

SOLZAIMA is part of the **Amb3E**, the entity responsible for collecting waste electrical and electronic equipment (WEEE); as such, end-of-life units with forced ventilation systems must be taken to an appropriate WEEE-processing location. When you disassemble your unit, you can take its electrical components to your nearest WEEE collection point.

27. Glossary

Ampere (A): SI unit of measurement of electric current

bar: unit of pressure equal to exactly 100,000 Pa. This pressure is very close to standard atmospheric pressure.

cal(Calorie): equal to the amount of heat required to increase the temperature of one gram of water by one degree centigrade.

cm (centimetres): unit of measurement.

CO (carbon monoxide): Lightly flammable, colourless, odourless and very dangerous gas, due to its toxicity.

CO_2 (carbon dioxide): Gas needed by plants for photosynthesis on the one hand, and emitted into the atmosphere on the other, contributing to the greenhouse effect.

Combustion: a process for obtaining energy. Combustion is basically a chemical reaction that requires three items in order to take place: fuel, oxidant and ignition temperature.

Oxidiser: chemical substance used for combustion (essentially oxygen) which is required for it to take place.

Combustible: anything that can undergo combustion, in this case referring to wood.

Creosote: chemical compound created by combustion. This compound is sometimes deposited on the glass and shaft of the heating recovery unit.

Circuit breaker: Electromechanical device that protects a given electrical appliance.

Energy Efficiency: capacity to generate large quantities of heat with the least amount of energy possible, causing the least environmental impact and reducing the energy budget.

CO Emissions: emission of carbon monoxide gas into the atmosphere.

CO emissions (13% of O_2): carbon monoxide content corrected to 13% of O_2.

Differential Switch: protects people and property against grounding failures, preventing electric shocks and fires.

kcal (Kilocalorie): multiple unit of measurement of calories. Equivalent to 1000 calories.

kW (Kilowatt): Unit of measurement equal to 1000 watts.

mm (millimetres): unit of measurement.

mA (milliampere): unit of measurement of electric current.

Pa (Pascal): standard IS unit of pressure and tension. This unit is named after Blaise Pascal, an eminent French mathematician, physicist and philosopher.

Net Heating Value: also known as specific combustion heat. It represents the amount of heat released when a certain amount of fuel is completely burned. Net heating value is expressed in calories (or kilocalories) per unit of weight of fuel.

Rated power: Electrical power consumed from the energy source. Measured in watts.

Rated net heating value: heating capacity, i.e. the heat energy the unit transfers from energy present in the firewood – measured for a standard load of firewood over a given period of time.

Power output: a manufacturer's recommendation from tests on the equipment with firewood loads within a reasonable operating range. This power output range will present different firewood consumptions per hour.

Plumb: vertically above the installation.

Performance: expressed as a percentage of "useful energy" that can be extracted from a given system, taking into account the "total energy" of the fuel used.

Ignition temperature: temperature above which the fuel can enter into combustion.

Thermoresistant: resistant to high temperatures and thermal shock.

Glass ceramics: highly resistant ceramic material produced through controlled crystallisation of vitreous materials. Used widely in industry.

W(Watt): IS unit of power.

28. Warranty

1. Social name and address of the producer and Object

Solzaima, S.A.
Rua da Cova da Areia (E.M. 605), 695
3750-071 Aguada de Cima, Águeda

This document does not substantiate the provision by Solzaima S.A. of a voluntary warranty on its produced and marketed products (from now on mentioned as "Product (s)"), but rather a guide, intended to be enlightening for the effective activation of the legal warranty that benefits consumers (from now on mentioned as "Warranty"). This document does not affect the legal rights of warranty, emerging from the purchase agreement whose purpose is the Product(s).

2. Product identification on witch rests the warranty

The activation of the warranty presupposes prior and correct identification of the product object towards Solzaima, SA, being promoted by providing the Product ´s packing data indicated in the purchase invoice or in the product characteristics plate (model and serial number).

3. Product warranty terms

3.1 Solzaima, S.A., responds to the Buyer, for the lack of conformity of the Product with the respective contract of sale, within the following periods:
3.1.1 A period of 24 months from the date of delivery of the good, in the case of domestic use of the product, save the provisions of the following number regarding the intensive use;
3.1.2 A term of 6 months from the date of delivery of the goods, in the case of professional, or industrial, or intensive use of the products - Solzaima means by professional, industrial or intensive use of all products installed in industrial spaces, commercial, or whose use exceeds 1500 hours per calendar year;

3.2 A functional test of the product must be performed before finishing the installation (plaster, masonry, coatings, paintings, among others);

3.3 No equipment can be replaced after the 1st Burn without the express authorization of the producer;

3.4 Any product must be repaired on the site of installation without causing serious inconvenience to the parties, save, if this proves impossible, or disproportionate;

3.5 In order to exercise its rights, and provided that the term indicated in 3.1 is not exceeded, the Buyer must report in writing to Solzaima, S.A., the lack of conformity of the Product within a maximum period of:
3.5.1 60 (sixty) days after the date on which it has detected it in the case of domestic use of the product;
3.5.2 Thirty (30) days from the date of its detection, in the case of professional use of the Product.

3.6 In the pellet range equipments, the commissioning service is required to activate the waranty. It must be registered up to 3 months after the date of invoice, or, 100 hours of work of the product (whichever occurs first);

3.7 During the Warranty period referred to in paragraph 3.1 (and for this to remain valid), repairs to the Product must be performed exclusively by the Official Technical Services of the Brand. All services provided under this Guarantee will be performed Monday through Friday within the working time and calendar legally established in each region.

3.8 All requests for assistance must be submitted to the Solzaima, S.A. Customer support service, by means of a proper form present on the Website www.solzaima.co.uk, or, e-mail: support.cliente@solzaima.pt. At the time of the technical assistance to the Product, the Buyer must present, as proof of the Product Warranty, the purchase invoice of the same or another document demonstrating its acquisition. In any case, the document proving the acquisition of the Product must contain the identification of the Product (as mentioned in point 2 above) and its date of acquisition. Alternatively, and in order to validate the Product Warranty, the PSR - document certifying the commissioning of the machine (when applicable)).

3.9 The Product will have to be installed by a qualified professional for the purpose, in accordance with the regulations in force in each geographical area, for the installation of these Products and complying with all the regulations in force, especially regarding chimneys, as well as other applicable regulations for aspects such as water supply, electricity and / or other related to the equipment or sector

and as described in the instruction manual.
A product installation that does not conform to the manufacturer's specifications and / or does not comply with the legal regulations on this subject will not give rise to the application of this Warranty. Whenever a product is installed outdoors, it must be protected against weather effects such as rain and wind. In these cases, it may be necessary to protect the appliance by means of a cabinet, or a properly ventilated protective caseAppliances should not be installed in places that contain chemicals in their atmosphere, in saline or high humidity environments, as mixing them with air may produce rapid corrosion in the combustion chamber. In this type of environment, it is especially recommended that the appliance be protected with anti-corrosion products for this purpose, especially during times of operation. As a suggestion it is indicated the application of graphite greases indicated for high temperatures with function of lubrication and anti-corrosion protection.

3.10 In equipment belonging to the pellet family, in addition to the daily and weekly maintenance contained in the instruction manual, it is also obligatory to carry out the cleaning inside and in the respective chimney for the evacuation of fumes. These tasks should be carried out every 600-800 kg of pellets consumed, in the case of stoves (air and water) and compact compacts, and every 2000-3000 kg of pellets consumed in the case of automatic compacts. In the event that these quantities are not consumed, at least one systematic preventive maintenance must be carried out annually.

3.11 It is the Buyer's responsibility to ensure that periodic maintenance is carried out, as indicated in the instruction and handling manuals accompanying the Product. Whenever requested, it must be proved by submitting the technical report of the entity responsible for it, or alternatively by registering them in the instruction manual in the dedicated section.

3.12 In order to avoid damage to the equipment caused by overpressure, safety elements such as pressure relief valves and / or thermal discharge valves, if applicable, as well as an expansion vessel fitted to the installation, shall be ensured at the time of installation and its correct functioning must be ensured . It should be noted that: the valves referenced must have a value equal to or less than the pressure supported by the equipment; there shall be no cut-off valve between the equipment and its safety valve; provision should be made for a systematic

preventive maintenance plan to attest to the correct functioning of the said safety features; irrespective of the type of appliance, all safety valves shall be channelled to drained sewage to prevent damage to the dwelling by water discharges. Product Warranty does not include damages caused by non-channeling of water discharged by said valve.

3.13 In order to avoid damage to the equipment and attached pipes by galvanic corrosion, it is advisable to use dielectric separators in the connection of the equipment to metal pipes whose characteristics of the materials applied to this type of corrosion. Product Warranty does not include damages caused by non-use of such dielectric separators.

3.14 The water or thermofluid used in the heating system (hydro stoves, compacts, central heating stoves, among others) must comply with the legal requirements in force, as well as guarantee the following physical and chemical characteristics: absence of solid particles in suspension; low level of conductivity; residual hardness of 5 to 7 degrees; neutral pH, close to 7; low concentration of chlorides and iron; and absence of air inlets by depression or others. In case the installation enhances automatic water make-up, it should consider upstream a preventive treatment system composed of filtration, decalcification and preventive dosing of polyphosphates (scale and corrosion), as well as a degassing step, if necessary. If in any circumstance any of these indicators show values that are not recommended, the Warranty will cease to have effect. It is also compulsory to place a non-return valve between the automatic filling valve and the mains water supply, and that said supply always has constant pressure, even with a lack of electricity, not depending on lift pumps, autoclaves, or others.

3.15 Except as expressly provided by law, a warranty intervention does not renew the warranty period of the Product. The rights arising from the Warranty are not transferable to the purchaser of the Product.

3.16 The equipment must be installed in accessible places and without risk to the technician. The means necessary for access to them shall be made available by the Buyer, and the Buyer shall be responsible for any charges arising therefrom.

3.17 The Warranty is valid for the Products and equipment sold by Solzaima SA

solely and exclusively within the geographical and territorial zone of the country where the Product was sold by Solzaima.

4. Circumstances that exclude the application of the Warranty

Excluded from the Warranty, being the total cost of the repair borne by the Buyer, the following cases:

4.1. Products with more than 2000 operating hours;

4.2. Refurbished and resold products.

4.3. Maintenance operations, Product settings, commissioning, cleaning, elimination of errors or anomalies that are not related to deficiencies of equipment components and replacement of the batteries

4.4. Components in direct contact with fire such as: vermiculite supports, deflector or protective plates, vermiculite, sealing lanyards, burners, ash drawers, wood chips, smoke registers, ash grates, whose wear is directly related to the conditions of use. Degradation of the paint, as well as corrosion due to degradation of the paint, due to overloading of fuel, use of an open drawer or excessive drainage of the installation chimney (the chimney must respect the drawing recommended in the Product Technical Data Sheet). Glass breakage due to improper handling or other reason not related to Product deficiency. In the pellet family, the ignitors are aware part, so they are only guaranteed for 6 months, or 1000 ignitions (whichever comes first);

4.5. Wear considered components, such as bearings and bushes;

4.6. Deficiencies of components external to the Product that may affect its correct functioning, as well as material or other damages (e.g. tiles, roofing, waterproofing, pipes, or personal injury) caused by improper use of materials in the installation or by non-execution of the product installation in accordance with the rules for the installation, applicable regulations or rules of good art, in particular when the application of suitable piping to the temperature in use, expansion vessels, non-return valves, safety valves , anti-condensation valves, among others;

4.7. Products whose operation has been affected by failures or deficiencies of

external components or by poor sizing;

4.8. Defects caused by the use of accessories or replacement components other than those determined by Solzaima, S.A.;

4.9. Defects arising from non-compliance with the installation, use and operation instructions or applications not conforming to the intended use of the Product, or from abnormal climatic factors, unusual operating conditions, overload or maintenance or cleaning performed improperly;

4.10. The Products that have been modified or manipulated by people outside the Official Technical Services of the brand and consequently without the explicit authorization of Solzaima, SA.;

4.11. Damage caused by external agents (rodents, birds, spiders, etc.), atmospheric and / or geological phenomena (earthquakes, storms, frost, hailstorms, thunderstorms, etc.), humid or saline aggressive environments such as proximity of the sea or river, as well as those derived from excessive water pressure, inadequate power supply (voltage with variations greater than 10%, with a nominal value of 230V, or, neutral voltage greater than 5V, or absence of earth protection); pressure or supply of inadequate circuits, acts of vandalism, urban confrontation and armed conflict of any kind, as well as derivatives;

4.12. Failure to use the fuel recommended by the manufacturer is a condition of exclusion from the Warranty.;

Explanatory note: In the case of pellet appliances the used fuel must be certified by EN 14961-2 grade A1. Also, before buying large quantity you should test the fuel to see how it behaves. In wood equipment, this moisture content must be of less than 20%.

4.13. The appearance of condensation, either by poor installation or by the use of non-virgin fuels (such as pallets or wood impregnated with paints or varnishes, salt or other components), which may contribute to the accelerated degradation of equipment and especially to your combustion chamber;

4.14. All Products, Components or damaged components in transportation or installation;

4.15. Cleaning operations carried out on the appliance or its components due to condensation, fuel quality, bad settings or other circumstances of the installation location. Also excluded from the Warranty are interventions for the descalsification of the Product (the removal of limestone or other materials deposited inside the apparatus and produced by the quality of the water supply). Also excluded from this warranty are air bleeding interventions of the circuit or unblocking of circulating pumps.

4.16. The installation of the equipment supplied by Solzaima, S.A. should contemplate the possibility of their easy removal, as well as points of access to the mechanical, hydraulic and electronic components of the equipment and the installation. When the installation does not allow immediate and safe access to the equipment, the additional cost of access and security will always be borne by the Buyer. The cost of disassembling and assembling boxes of plasterboard or masonry walls, insulation or other elements such as chimneys and hydraulic connections that prevent free access to the Product (if the Product is installed inside a carton of plasterboard , masonry or other dedicated space must comply with the dimensions and characteristics indicated in the instruction manual and use accompanying the appliance).

4.17. Interventions of information or clarification at home about the use of its heating system, programming and / or reprogramming of control and regulating elements, such as thermostats, regulators, programmers, etc.;

4.18. Interventions for the adjustment of fuel receipes in pellet devices, cleaning, detection of water leaks in pipes external to the apparatus, damage caused due to the need to clean the gas evacuation machinery or flues;

4.19. Urgency interventions not included in the provision of Warranty i.e., weekend and holiday interventions because they are special interventions not included in the Guarantee coverage and which therefore have an additional cost, will be carried out exclusively on request expressed by the Buyer and upon the availability of the Producer.

5. Warranty Inclusion

Solzaima, S.A. will correct without any charge to the Buyer the defects covered by the Warranty through the repair of the Product. The replaced Products or Components shall become the property of Solzaima, S.A.

6. Responsibility of Solzaima, S.A

Notwithstanding legally established, Solzaima, S.A., liability in respect of warranty is limited to that established in the present warranty conditions.

7. Cost of Services performed outside the scope of the warranty

The interventions carried out outside the scope of the warranty are subject to the application of the current tariff.

8. Warranty Services performed out of scope Warranty

The interventions carried out outside the scope of the Warranty and carried out by the official technical assistance service of Solzaima have a 6-month guarantee.

9. Warranty Spare Parts provided by Solzaima

The Parts supplied by Solzaima, in the scope of the commercial sale of spare parts, that is, not incorporated in the equipment, do not have warranty.

10. Replaced Parts under the of Scope Technical Service

From the moment they are removed from the equipment, the Parts used are considered as waste. Solzaima as a producer of waste in the scope of its activity is obliged by the legislation in force to deliver them to a licensed entity that performs the proper waste management operations under the law and therefore is prevented from giving them another destination, whatever. Therefore, the customer will be able to see the used parts resulting from the assistance, but cannot keep them in their possession.

11. Administrative expenses

In the case of invoices for services rendered, they are not processed in any stipulated period with default interest at the maximum legal rate in force.

12. Competent court

For the resolution of any dispute arising from the purchase and sale agreement

having as object the products covered by the warranty, the contracting parties attribute exclusive jurisdiction to the courts of the district of Águeda, with express waiver of any other.