

BIOMASS HEATING SOLUTIONS

Instruction Manual

English

Firewood Round Stove

AMBER

Thank you for purchasing a SOLZAIMA appliance. Please read this manual carefully and retain it for future reference.

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

* SOLZAIMA disclaims any responsibility for damage to the unit when installed by non-qualified personnel;

* SOLZAIMA disclaims any responsibility for damage to units not installed and operated in compliance with 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;

* SOLZAIMA free standing fire units are tested and found to be in compliance with the EN 13240:2002 + EN 13240:2002/A2:2005 + EN 13240:2002/AC:2006 + EN 13240:2002/A2:2005/AC:2006 standards;

* Technical support is normally provided by SOLZAIMA, except in special cases to be determined by the installer or support technician;

* For assistance, please contact the unit's supplier or installer. Please provide the unit serial number, which can be found on the identification plate located on the back of the unit, as well as on the sticker posted on the back cover of this manual.

Contacts for technical support:

www.solzaima.pt apoio.cliente@solzaima.pt Address: Rua da Cova da Areia (E.M. 605), 695; 3750-071 Aguada de Cima Águeda - Portugal

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1. Solzaima

Solzaima's vision has always been to provide clean, renewable and more cost-effective energy. This is why we have been manufacturing biomass units and heaters for the past 40 years.

As a result of the persistence and unconditional support from a network of partners, Solzaima is currently the leading manufacturer of biomass heating units, especially with its range of central heating stoves with backboilers.

We provide approximately 20000 homes a year with biomass heating solutions. This market has been growing at annual rate of 20%, indicating that consumers are becoming increasingly aware of ecological and more cost-effective heating solutions.

Solzaima is the only Portuguese manufacturing company to have obtained ISO 9001 International Quality Certification and ISO 14001 International Environmental Certification – because we believe in high standards and aim to lead by example.

2. Technical specifications

Solzaima's free standing fires are designed as interior heating appliances. These units are easy to install and do not require any kind of finishing, thus promoting their seamless integration with the room setting.

* Technical specifications across the free-standing fire range:

- * CE approved
- * Fuel: Dry firewood
- * Type of Equipment: Intermittent

* The combustion chamber and external casing of all our free-standing fires are made of first-rate carbon steel plate, with thicknesses varying between 4 mm and 1,5 mm, respectively.

* Heat-resistant ceramic glass. Withstands continuous operation temperatures of up to 750°C.

* Coated with heat-resistant paint for temperature peaks up to 900°C and operating temperatures of around 600°C.



Figure 1 - Equipment identification – Amber







Тор



Figure 2 - General dimensions of the Amber stove

Features	Amber
Flue Ø (mm)	Ø 150 int.
Rated power (kW)	7,3
Performance (%)	81
CO emission (13 %O ₂) (%)	0,0727
CO ₂ emission (vol%)	8,67
Average temperature of combustion products (°C)	233
Combustion flow (g/s)	7
Weight (kg)	115
Maximum heated volume (m ³)	166
Firewood length (mm)	300
Firewood consumption (kg/h)	1,6
Height (mm)	1153
Widdth (mm)	538
Depth (mm)	506
Particles (mg/Nm3)	13
OCG (mg C/m3)	88
NOX (mg/m3)	81

Table 1 - Technical characteristics of Amber stove

3. Unit components

3.1. Components



Figure 3 A - Components of the Amber stove



Figure 3 B - Components of the Amber stove

This wrench is a component that is shipped inside the equipment and has the functionality of removing the ash grid from the equipment for proper cleaning of the equipment (Chapter 10).

An accessory - a stainless steel collar with a diameter of 152 mm - is placed in the neck for access to the smoke outlet.



Figure 3 C – Stainless steel neck

3.2. Optional

3.2.1. Vertical/horizontal fume outlet

The Amber stove has the option of using the smoke outlet horizontally or vertically, the latter being the way in which the salamander is prepared for the customer.

To convert the smoke outlet to horizontal mode, the vermiculite pieces must be removed from the combustion chamber, the double baffle must be removed by loosening the two screws that fix it, and the screws that fix the neck must be loosened. Then do the reverse process to reposition the parts you have removed.

With the bottleneck in the horizontal position, it may originate some smoke exit through the door, at the moment of lighting the equipment, for this reason, it is recommended that the bottleneck is in the vertical position, to obtain a good draught of smoke and reduce the smoke exit at the moment of lighting.

3.2.2. Connecting the external air inlet

If you wish to use the external air inlet, you should purchase this optional kit separately.

The purpose of this optional accessory is to establish a connection point between the equipment and the outside ambient air, thus installing a more suitable piping for this purpose. This optional accessory is intended to provide the connection of a tube that allows the equipment to be supplied with air from outside.

You can supply the equipment with outside air in the following ways:

1- From the back of the equipment in the lower area:

If it is at the rear of the equipment at the bottom of the side covers, as shown in Figure 4, the microdots of the side covers must be broken (M).



Figure 4 - Rear view of the equipment; (M) section to remove for external air inlet

Then remove the cover that blocks the external air inlet by loosening the 4 nuts as shown in Figure 5.



Figure 5 - Rear view of the equipment; (M) section to remove for external air inlet

After removing the cover, place the optional air inlet kit as shown in Figure 6, tightening the kit with the 4 nuts that come in the package.



Figure 6 - Rear view of the equipment, placement of the outside air inlet kit

The cover that you removed to place the external air inlet kit must be placed in the lower part of the equipment, as shown in Figure 7, to do this you must loosen the 3 screws that fix the base to the equipment to have access to the place where you place the cover.

Then you must fix the cover with the 4 nuts that you removed from the rear of the equipment, thus covering the external air intake.



Loosen the 3 screws that fix the base to the equipment.

Fixing the cover, blocking the outside air intake.

Figure 7 - Bottom view of the equipment, blocking the external air intake under the equipment

2- From the base of the equipment

If the installation of the air inlet kit is from the base of the equipment, you can choose from 2 installation zones, from the back of the base or from below the base as shown in Figure 8. You must break the micro assemblies of the zone (M), using the option you chose to apply the kit.



Figure 8 - External air inlet, (M) section to be cleared for external air inlet

The external air inlet kit must be placed in the lower area of the equipment, as shown in Figure 9. To do this, loosen the 3 screws that fix the base to the equipment and apply the external air inlet kit with the 4 nuts that come in the package.



Loosen the 3 screws that fix the base to the equipment

Attachment of the external air inlet kit

Figure 9 - Bottom view of the equipment, application of the external air inlet kit

3.2.3. Optional Modules

3.2.3.1. Firewood Base Door

If you want to put the door in the base of the equipment, you must purchase this accessory separately and must follow the following steps.

1- Using a key, carefully fold the tab on the right side of the base, so that it is perpendicular to the side, as shown in Figure 10.



Figure 10 - Preparation of the base of the equipment, to place the door

2- Place the magnet on the bent tab and secure it with the nut. These accessories come with the door Figure 11.



Figure 11 - Preparation of the base of the equipment, to place the door

3- Place the door on the base by first inserting the door axes in the upper hole of the base and then in the lower hole of the base, as shown in Figure 12.



Tilting to place the door on the base.





Place the upper axis of the door, on the upper axis of the base, with the door semi-open. lower axis

Place the lower axis of the door on the lower axis of the base.

Figure 12 - Placing the door on the base of the equipment

NOTE:

So that the door, once fitted to the base, aligns with the circumference of the equipment, you can do so by adjusting the door handle, giving more or less inclination.

You can also adjust the alignment of the door, by the tab of the base, also giving more or less inclination.

3.2.3.2. Top cover in stone

<u>Vertical smoke outlet</u> - If you want to apply a stone worktop, simply remove the worktop by pulling it upwards, then apply the stone worktop.



Figure 13 - Placing the top cover on the equipment with vertical smoke outlet

Horizontal smoke outlet - Place and fix the board that comes with the stone worktop with two screws, then apply the stone worktop.



Figure 14 - Placing the top cover on the equipment with horizontal smoke outlet

4. Assembly and disassembly of casings

If you need to remove the casings from the equipment, you should follow this procedure:

1- Remove the top, just lift it up, as shown in Figure 15.



Figure 15 - Disassemble the worktop in the equipment

2- Loosen the screws on the upper part of the casings, as shown in Figure 16, so that the casings are free.



Figure 16 - Disassembly of the side casings in the equipment

3- Disassembly direction, to remove the casings, follow the direction of the arrows, as shown in Figure 17.



Figure 17 - Disassembly of the side casings in the equipment

4- When you are about to mount the side casings pay attention to the following, the lower area of the covers has 2 holes, these holes, must match the screws that come in the machine, you can see in Figure 18.



Figure 18 - Centering of the side casing with the equipment

5- Then, tighten the casings in the upper area of the equipment by tightening the screws as shown in Figure 19.



Figure 19 - Assembly of the side casings in the equipment

5. Installation

Warning: when installing this unit, be sure to follow all model-specific information, warnings, safety notices and local codes.

5.1. Combustion air and gas circulation

* This heating appliance must be installed in a well-ventilated area. Any required air inlet vents must be installed where not prone to becoming blocked;

* The air for combustion goes into the unit through the combustion air inlet located at the bottom of the unit. This air flow should be kept clear of obstacles at all times;

* Additional air inlets may be needed if the unit is used concurrently with other appliances that require an air supply. The installer should assess this need, according to the existing appliances overall air flow requirements; * The Amber units cannot be installed in areas where air extraction appliances, such as kitchen extractor fans, may operate simultaneously, as this may prevent the correct operation of the unit;

* Under rated operating conditions, the circulation of combustion gases should create a draught of 12 Pa about one metre above the chimney throat. For proper installation, at least 2 metres of metal flue tubing, with the same diameter as the unit's smoke outlet, should be fitted vertically above the unit. Additional lengths to this tubing may use piping sections with a max angle of 45°. Figure 20 and 20 illustrate the correct and incorrect angles for pipe elbows, should they need to be installed.



Figure 20 - Correct elbow angle

Figure 21 - Incorrect elbow angle

* Single-walled tubes installed on the exterior of a building results in the condensation of water vapour in the combustion gases. To prevent this, we recommend that you use a double-walled, insulated tube.

* All tube bindings should be properly sealed to prevent the admission of air through any existing fissures;





* Ensure that the tube bindings do not strangle the tube (narrowing the flow), the inner tube walls are smooth and free of obstacles, and that the caps do not disturb the air circulation;



* The chimney dome should allow proper air circulation and be placed at least 1 m above the roof peak or 3 m away from other obstacles. If you need to increase the air circulation, you should extend the height of the flue;



* Never use the same chimney flue for more than one unit or open fireplace. For shared chimneys, each flue should individually reach the external outlets at the same level, to ensure that the air circulation adequately expels the exhaust fumes;

* If the chimney is made of brick, the flue should extend up to the very top, preferably in isolation. Otherwise, the fume temperature will drop, impairing air circulation. A suitable cap should be installed at the top of your chimney in accordance with its air circulation condition. Depending on atmospheric conditions, other types of chimney caps may be installed, such as the rooster cap.

5.2. Installation space requirements

* The unit should stand on a masonry hearth made of refractory bricks or other type of noncombustible material;

* Keep any combustible materials away from this appliance. For safety reasons, you should maintain a minimum clearance distance around the unit of 20 cm from the back, 30 cm from the sides and 120 cm from the front (Figure 28);



Figure 28 - Minimum safety distances

* The floor on which the unit will stand must be capable of supporting a permanent load of 1 kg (2,2 lbs)/cm². If the floor's bearing capacity is insufficient, a solid plate may be used to distribute the load over an area larger than the base of the unit;

* Before proceeding with the installation, please check whether the intended location allows an easy access to the unit, to facilitate any cleaning procedures as well as the inspection of the fume outlet connection;

* Please make sure the air intake vents from the building are not obstructed;

* Ensure that the structure built into the wall is of an appropriate size to house the unit;

* Any materials/objects placed near the unit should be capable of withstanding the heat radiated through the glass and walls of the appliance, so no combustible materials are allowed;

* A refractory material - refractory cement or other - should be applied around the chimney gasket.

* The use of wood in the finishing may increase the risk of fire. We therefore recommend that any wood used be adequately insulated, or that no wood be used at all.

6. Instructions for use

6.1. Fuel

* Only firewood should be used in this type of appliance. The unit cannot be used as an incinerator, nor should other materials such as coal, painted wood, varnishes, thinners, liquid fuels, glues or plastics be used as fuel. Also avoid burning common combustible materials, such as cardboard and straw;

* Do not use exotic firewood as fuel;

* The firewood used with this appliance should have low water content (less than 20%). We recommend that it should be placed under covered storage for around 2 years after felling, in order to ensure efficient combustion and avoid creosote build-up in the smoke duct, combustion chamber and on the glass. See the list in Table 2, for additional information on the types of wood that can be used in these units;

	Scientific Distribution			Features				
Common name	name	(total: 18 districts)	Notes	Smoke	Heat	Lighting	Combustion Speed	Hardness
Pine	Pinus	Bragança, Castelo Branco, Coimbra, Guarda, Leiria, Viana do Castelo, Vila Real and Viseu	Predominant species	Little	High	Easy	Fast	Soft
Cork Oak	Quercus suber	Évora, Faro, Portalegre, Santarém and Setúbal	Predominant species	Little	Very High	Easy	Regular	Hard
Eucalyptus	Eucalyptus	Aveiro, Porto and Lisbon	Predominant species	A lot	Regular	Difficult	Slow	Hard
Holm Oak	Quercus ilex	Beja and Évora	Predominant species	Little	Very High	Difficult	Slow	Hard
Olive tree	Olea	Entire country except mountainous regions	Less predominant than above	Little	Very High	Difficult	Slow	Hard
Oak	Quercus	Entire country, with range of subspecies	Less predominant than above	Little	High	Difficult	Slow	Hard
Ash	Fraxinus	Riverbank areas (Lower Vouga)	Small numbers distributed around the country	Regular	High	Difficult	Slow	Hard
Birch	Betula	High ground (Serra da Estrela)	Smaller numbers distributed around the country	Little	Very High	Easy	Fast	Soft
Beech	Fagus	Cold, humid regions (North of Portugal – - Serra do Gerês)	Smaller numbers distributed around the country	Little	High	Difficult	Slow	Hard
Maple	Acer	Minho, Beira Litoral and Serra de Sintra	Smaller numbers distributed around the country	Little	Regular	Regular	Slow	Soft
Poplar	Populus	Entire country, but mainly in the Centre	Smaller numbers distributed around the country	Little	High	Easy	Fast	Soft
Chestnut	Castanea	Northern and centre part of Portugal, and mountain regions	Smaller numbers distributed around the country	Regular	High	Difficult	Slow	Hard

Table 2 - Types of firewood that may be used in SOLZAIMA heat exchanger appliances, their geographical distribution and respective calorific value/reactions

6.2. Power

* The power of your unit translates its heating capacity, i.e. the heat transfers your unit gets from the energy of the firewood used (usually measured in kW), which is directly dependent on the amount of firewood placed in the units.

* The rated power is measured for standard load of firewood when tested in laboratory conditions over a specific period of time.

6.3. Combustion Principles

The stove is designed to be a slow-burning device. With a maximum wood charge and a gentle flame, it will heat up with maximum efficiency for several hours. The salamander may burn very slowly with a low flame for a few hours. However, we do not recommend this procedure because incomplete combustion creates smoke which, when condensed, deposits tar in the stove, chimney and glass panel. An accumulation of tar becomes unpleasant to the eye and also requires more frequent chimney cleaning to prevent possible fires in the chimney. If you are using wet or green firewood, the combustion control should always be more open to ensure proper combustion.

Radiant heating

It is emitted by the embers, the steel plate and the vermiculite plates on the back of the stove. The radiant heating is also transmitted through the glass to the compartment and heats the area in front of the stove.

Convection heating

Cold air passes through the crankcase from the bottom, running across the back and top of the equipment, expelling hot air from the front of the equipment.

This convective hot air reaches the far corners of the room.



Figure 29 - Convection circuit represented in the stove

6.4. Air control

Combustion air control

The combustion air regulator is shown in Figure 30. It controls the amount of air entering the salamander, thus controlling the burning of the fuel. On the side of the salamander there is 1 regulator that regulates the primary and secondary air at the same time.

The primary air must be open during starting, until the wood is properly started, i.e., all the regulator is in the (+) position. On the side cover, there is a mark indicating the point from which the primary air is completely closed and part of the secondary air is open.

After igniting, and for good combustion, the regulator should be between the markings, as you can see in Figure 30.



Figure 30 - Air regulator in equilibrium point position

The secondary air also has the function of cleaning the glass, creating a sweeping effect through the passage of preheated air over the entire interior surface of the glass, helping to keep the glass cleaner for longer.

6.5. Energetic efficiency and performance ratings

* The implementation of solutions promoting greater energy efficiency results in a substantial reduction in energy needs, which in turn helps reduce our current dependence on fossil fuels and other non-renewable sources of energy. Energy efficiency therefore encourages significant savings, both economically and environmentally speaking.

* Solzaima's commitment to developing energy efficient heating units results in products that can claim to have an efficiency rate equal or above 70%. A 70% efficiency rate means that 70% of the energy contained in the firewood is used to warm your home or, in other words, you are able to produce the same amount of energy with much less firewood. A Solzaima unit of 5kW with an efficiency rate of 75% is expected to consume approximately 1,6 kg (3,5 lbs) of firewood per hour to heat a 35 m² (377 sq ft) room.

* Generally, the efficiency rate of a traditional fireplace is only about 10%, which means it will need to consume approximately 12 kg (26,5 lbs) of firewood to produce the same 5kW required to warm the same 35 m² (377 sq ft) room.

FIREWOOD CONSUMED IN ONE HOUR TO HEAT A SPACE OF APPROXIMATELY 35 m² (377 sq ft) USING A 5 kW STOVE



7. Using the unit for the first time

* Ask the installation technician to turn on and start-up the unit to check its proper operation;

* The first time the unit is used, the paint finish is cured by the heat, which may generate additional fumes. If this happens, ventilate the room by opening windows and any doors leading to the exterior;

* 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 300°C and for 30 minutes.

8. Normal usage

* Lighting:

1 - Fully open the door of the unit;

2 - Place pine cones (preferentially) on the vermiculite plates at the base of the combustion chamber;

3 - Place kindling on top of the pine cones, piled horizontally;

4 - Open the primary and secondary controls to allow the admission of combustion air, leaving the door ajar for more rapid lighting;

5 - The lighting period is completed when the unit chassis reaches a stable temperature. At this point, close the door and adjust the admission flow of combustion air to ensure a slow burn;

6 - If, while the door is ajar, there is smoke leakage from the unit, this means that you have insufficient chimney draught or that the firewood used has a high moisture content.

* You MUST make sure the room where the unit is installed is adequately ventilated; otherwise, the unit will not work properly. For this reason, it is important to also check whether any other air-consuming heating appliance is present in the room (e.g. gas-fuelled heating appliances, braziers, among others). We recommend that you do not operate these devices concurrently;

* Before refuelling the stove, please verify whether the previous load is completely burned down. If the firewood has burned down, only embers should remain. These will help to ignite the fresh load of firewood. As such, do not allow the embers to die down to mere ash, seeing as it will not produce sufficient heat to ignite the new load. Next, slowly open the door of the unit, leaving it slightly ajar for a few seconds. Wait a while to ensure that the fumes are being exhausted before opening the door completely and slowly to prevent smoke from entering the room;

* The door of the unit should only be opened during the reloading process. Under normal operating conditions, the door must remain closed;

* Remember to reload the unit before the previous load has burned down to ash, in order to ensure continuous combustion;

* We do not recommend that you use the unit during adverse weather conditions that may seriously affect the fume draught (especially under strong wind conditions).

* We recommend that you use logs of firewood with a length of 25 cm. This will allow you to place the firewood longitudinally or transversely in relation to the base of the combustion chamber;

9. Safety

* Please note that the exposed metallic parts of the unit reach very high temperatures – 100°C on the door and 60°C along the external casing. The door latch does not heat beyond 45°C, but avoid any contact with other parts that may be hot;

* If any contact with the unit is necessary while it is in operation, remember to use a glove or other form of protection;

* In case of fire in the chimney, immediately close the door of the unit, as well as the primary and secondary air inlets;

* We recommend that you use only spare parts supplied by the manufacturer – (SOLZAIMA).

10. Cleaning and Maintenance

10.1. Cleaning

- Ash build up should be regularly removed from the chamber (but only after turning off the unit and allowing it to cool down);

- The glass should always be cleaned with an appropriate product¹, following the instructions for use and avoiding any contact of the cleaning product with the window rope gasket OR any painted metal parts, – which can lead to oxidation. To ensure this, only apply the cleaning product on a cloth, never directly on the glass. The rope gasket is glued on to the glass, so do not expose it to the direct contact with water or any other liquids. If the rope gasket eventually becomes unglued, you can reattach it using high temperature silicone sealant or refractory glue, but only after having carefully cleaned the groove using fine sandpaper; it is recommended to use gloves to clean the glass or other protective equipment.

- Do not use detergent to clean the metallic parts of the unit. These should be cleaned using a dry cloth to remove any accumulated dust;

- We recommend cleaning the chimney flue and its throat (located at the outlet of the unit) at least once a year. This can be done by removing the fume baffle (removable plate located in the ceiling of the combustion chamber);

- If the unit has not been used for a long time, check whether the flue pipes are free of any blockage before lighting the stove;

- We recommend regular inspections of the unit and its fume outlet by an expert technician.

¹ For more information, contact the unit's installer.

10.2. Removing the fume baffle

To remove the fume baffle, please follow the steps below:

1 - Hold the fume baffle using both hands, one placed under and the other above the plate.

2 - Gently push up the baffle to release it from its lower support (the rear vermiculite plate) and upper brackets (steel rods). Once you release the plate, lift and pull it forward to create a proper gap between the baffle and the rear vermiculite plate (Figure 31 A).

3 - Using this gap, rotate the baffle plate sideways and downwards (Figure 31 B).

4 - Remove the baffle plate away from the unit (Figure 31 C).

5 - Be careful not to damage any of the unit's vermiculite plates (side, rear and back) when removing the baffle plate.



Figure 31 - Action sequence to remove the fume baffle

11. Troubleshooting

Problem	Solution
	- Check moisture level of firewood
	- Check for any obstructions in the fume outlet / Check installation (insufficient
Glass gets dirty quickly	draught)
	- Increase the intensity of the burn by opening the primary air intake regulator slightly more
	- Verify whether the combustion air inlets are at their maximum If they are,
Fundation due ft	readjust to reduce the intensity of the burn
Excessive draft	- If necessary, install a draught stabilizer
	- Contact the installer
	- Check that the flue is clear of any obstructions
	- Clean the flue
Weak draught, causing	- Check that the fume outlet pipe reaches up to the very top of the chimney flue
smoke to be expelled into	- Check that the pipe is correctly sealed from the chimney
the room	- Check whether the existing chimney cap is appropriate and whether it is
	sufficiently open
	- May be due to exceptional weather conditions
	- Check moisture level of firewood
Weak fire	- Regulate the unit's air controls to increase the intensity of the burn
	- Check whether air is entering the compartment
Problems associated with the weather	- Contact the installer

Table 3 - Identifying potential problems and their respective solutions

12. End-of-life units

* Around 90% of the materials used in the manufacture of these Solzaima units are recyclable, contributing towards a reduced environmental impact and a more sustainable planet;

* End-of-life units should be taken to licensed waste operators. We advise contacting your local council to ensure their correct collection.

13. Sustainability

* Solzaima designs and manufactures biomass heating solutions and appliances. This is our contribution towards promoting a more sustainable planet - – an economically-viable and environmentally-friendly alternative that safeguards the best environmental management practices to ensure effective carbon cycle management.

* Solzaima seeks to discover and study Portugal's forested areas, efficiently responding to energy demands while safeguarding biodiversity and natural wealth, which are fundamental to preserving our planet's quality of life.

* SOLZAIMA is a member of the Sociedade Ponto Verde, which manages waste packaging from products placed on the market by member companies; as such, the packaging that comes with your unit (i.e. plastic and cardboard) can be taken to your nearest recycling point.

* SOLZAIMA also participates in the Amb3E project, responsible for collecting waste electrical and electronic equipment (WEEE); as such, end-of-life heating units with forced ventilation systems must be taken to an appropriate WEEE processing facility.



When disassembling your end-of-life unit, keep its electrical components to be delivered at your nearest WEEE collection point. For more information, visit: <u>www.amb3e.pt</u>

14. Glossary

* **cal** (Calories): the amount of heat required to increase the temperature of one gramme of water by one degree centigrade.

* **cms** (centimetres): unit of measurement.

* **CO** (carbon monoxide): A lightly flammable, colourless, odourless gas that is very dangerous due to its high 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.

* **Combustion agent**: chemical substance that fuels combustion (essentially oxygen) and which is fundamental to the process.

* Fuel: 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.

* **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 O₂): carbon monoxide content corrected for 13% of O₂.

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

* **kW** (Kilowatt): unit of measurement equal to 1,000 watts.

* **mm** (millimetres): unit of measurement.

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

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

* **Rated calorific power:** heating capacity or, in other words, the calorific transfer extracted by the unit from the energy of the firewood– measured for a standard wood load at a given period of time.

* **Operating power:** manufacturer's recommendation based on tests performed on the heating units using firewood loads within a reasonable operating range. This power range, from minimum to maximum, will present different levels of firewood consumption per hour.

* **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.

* Heat-resistant: resistant to high temperatures and thermal shock.

* **Glass ceramic**: highly resistant ceramic material produced from the controlled crystallisation of vitreous materials. Widely used in industry.

15. Warranty

1. Social name and address of the producer and Object

Solzaima, S.A. Rua dos Outarelos, 111 3750-362 Belazaima do Chão

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 which 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 boilers, and every 2000-3000 kg of pellets consumed in the case of automatic boilers. 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 channeled 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 toves, boilers, 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 (eg 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 decalcification 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. Costo f 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.

16. Statement of performance

DECLARAÇÃO DE DESEMPENHO | DECLARACIÓN PRESTACIONES | DECLARATION OF PERFORMANCE | DÉCLARATION DE PERFORMANCE | DICHIARAZIONE DELLE PRESTAZIONI

<u>Nº DD-044</u>

1. Código de identificação único do produto-tipo | Código de identificación único del tipo de producto | Unique identification code of the product type | Le code d'identification unique du type de produit | Codice unico di identificazione del tipo di prodotto

<u>AMBER PORTA EM VIDRO – EAN 05600990452930</u> <u>AMBER – EAN 05600990452923</u>

2. Número do tipo, lote ou série do produto | Número de tipo, lote o serie del producto | Number of type, batch or serial product | Nombre de type, de lot ou de série du produit | Numero di tipo, di lotto, di serie del prodotto

3. Utilização prevista | Uso previsto | Intended use | Utilisation prévue | Destinazione d'uso

<u>AQUECIMENTO DE EDIFÍCIOS DE HABITAÇÃO | CALEFACCIÓN DE EDIFICIOS RESIDENCIALES | HEATING OF RESIDENTIAL</u> <u>BUILDINGS | CHAUFFAGE DE BATIMENTS RESIDENTIELS | RISCALDAMENTO DEGLI EDIFICI RESIDENZIALI</u>

4. Nome, designação comercial registada e endereço de contacto do fabricante | Nombre, marca registrada y la dirección de contacto de lo fabricante | Name, registered trade name and contact address of the manufacturer | Nom, marque déposée et l'adresse de contact du fabricant | Nome, denominazione commerciale registrata e Indirizzo del costruttore

<u>Fogo Montanha</u> <u>Rua dos Outarelos, №111</u> 3750-362Belazaima do Chão - Águeda - Portugal

5. Sistema de avaliação e verificação da regularidade do desempenho do produto | Sistema de evaluación y verificación de constancia de las prestaciones del prodoto | System of assessment and verification of constancy of the product | Système d'évaluation et de vérification de la Constance des performances du produit | Sistema di valutazione e verifica della costanza della prestazione del prodott

<u>Sistema 3</u>

6. Norma Harmonizada | Estandár armonizado | Harmonized standard | Norme harmoisée | Standard armonizatta

<u>EN 13240</u>

7. Nome e número de identificação do organismo notificado | Nombre y número de identificación del organismo notificado | Name and identification number of the notified body | Nom et numéro d'identification de l'organisme notifié | Nome e numero di identificazione dell'organismo notificato

<u>CEIS – CENTRO DE ENSAYOS INOVACION Y SERVICIOS</u> <u>NB: 1722</u>

8. Relatório de ensaio | Informe de la prueba | Test report | Rapport d'essai | Rapporto di prova

<u>CEE/0178/17-1</u>

9. Desempenho declarado | Desempeño declarado | Declared performance | Performance déclarée | Dichiarazione di prestazione

Características essenciais Características esenciales Essencial characteristics Caractéristiques essentielles Caratteristiche essenziali	Desempenho Desempeño Performance Prestazione	Especificações técnicas harmonizadas Especificaciones técnicas armonizadas Harmonized technical specifications Spécifications techniques harmonisées Specifiche tecniche armonizzate
Segurança contra incêndio Seguridad contra incêndios Fire safety Sécurité incendie Sicurezza antincendio	OK (A1). De acordo com relatório de ensaio De acuerdo com informe de la prueba According to the test report Selons le rapport d'essai Secondo i rapporto di prova CEE/0178/17-1	De acordo com os requisitos De acuerdo con los requisitos According to the requirements Selons les exigences Secondo i requisiti 4.2.1, 4.2.3, 4.2.4, 4.2.6, 4.2.7, 4.2.8, 4.2.10, 4.2.12, 5.2, 5.4, 5.6, 6.1 (EN13240)
Emissão de produtos da combustão La emisión de produtos de combustión Emission of combustion products Emission des produits de combustion Emissione dei prodotti di combustione	OK. Caudal térmico nominal Caudal térmico nominale Nominal heat output Le débit calorifique nominal Nominal heat output Flusso termico nominale – CO: 0,073%	Caudal térmico nominal Caudal térmico nominale Nominal heat output Le débit calorifique nominal Nominal heat output Flusso termico nominale – CO < 1,0%
Libertação de substâncias perigosas Emisión de sustâncias peligrosas Release of dangerous substances Dégagement de substances Rilascio di sostanze pericolose	OK. De acordo com relatório de ensaio De acuerdo com informe de la prueba According to the test report Selons le rapport d'essai Secondo i rapporto di prova CEE/0178/17-1	De acordo com o Anexo ZA.1 (EN13240) De acuerdo con lo Anexo ZA.1 (EN13240) According to the Annex ZA.1 (EN13240) Selons le Annexe ZA.1 (EN13240) Secondo l'allegato ZA.1 (EN13240)
Temperatura de superfície Temperatura de la superfície Surface temperature La température de surface Temperatura superficiale	OK. De acordo com relatório de ensaio De acuerdo com informe de la prueba According to the test report Selons le rapport d'essai Secondo i rapporto di prova CEE/0178/17-1	De acordo com os requisitos De acuerdo con los requisitos According to the requirements Selons les exigences Secondo i requisiti 4.2.1, 5.4, 5.5, 5.6 (EN13240)
Segurança eléctrica Seguridad eléctrica Electrical safety Sécurité électrique sicurezza elettrica	OK. De acordo com relatório de ensaio De acuerdo com informe de la prueba According to the test report Selons le rapport d'essai Secondo i rapporto di prova CEE/0178/17-1	De acordo com os requisitos De acuerdo con los requisitos According to the requirements Selons les exigences Secondo i requisiti 5.8 (EN13240)
Resistência mecânica Resistencia mecânica Mechanical strength résistance Resistenza meccanico	OK. De acordo com relatório de ensaio De acuerdo com informe de la prueba According to the test report Selons le rapport d'essai Secondo i rapporto di prova CEE/0178/17-1 A cada 10 m de conduta de fumos deve ser colocado um suporte de carga cada 10 m de la salida de humos se debe colocar un soporte de carga every 10 m of the flue should be placed a load support tous les 10 m de conduit de fumée doit être placé un support de charge ogni 10 m della canna fumaria deve essere posto un supporto di carico	De acordo com os requisitos De acuerdo con los requisitos According to the requirements Selons les exigences Secondo i requisiti 4.2.1, 4.2.4 (EN13240)
Rendimento energético Eficiencia energética Energy efficiency L'efficacité énergétique Efficienza energetica	ОК. 81%	≥ 50% para potência térmica nominal de potencia térmica nominal for rated termal input Pour puissance thermique nominale di potenza termica nominale

10. O desempenho do produto declarado nos pontos 1 e 2 é conforme com o desempenho declarado no ponto 9. A presente declaração de desempenho é emitida sob exclusiva responsabilidade do fabricante identificado no ponto 4. I El funcionamento del producto se indica en los puntos 1 y 2 es compatible con las prestaciones declaradas en el punto 9. La presente declaración se expide bajo la exclusiva responsabilidade del fabricante identificado en lo punto 4. Performance of the product stated in points 1 and 2 is consistent with the declared performance in point 9. This declaration of performance is issued under the sole responsibility of the manufacturer identified in point 4. Les performances du produit indiqué dans les points 1 et 2 est compatible avec les performances declares au point 9. Cette declaration de performance est établie sous la seule responsabilité du fabricant identifié dans le point 4. Les prestazioni dei prodotti indicati ai punti 1 e 2 è conforme alla prestazione dichiarata al punto 9. Questa dichiarazione di prestazione è rilasciata sotto l'esclusiva responsabilità del fabricante di cui al punto 4.

Nome e cargo | Nombre y cargo | Name and title | Nom et titre | Nome e titolo

Nuno Sequeira (Director Geral | CE

Please read this Instruction Manual carefully and keep it for future reference.

All Solzaima products come with a 2-year warranty.



SOLUÇÕES DE AQUECIMENTO A BIOMASSA

APPROVED PRODUCT