

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

All Solzaima products come with a 2-year warranty.

SOLZAIMA

SOLUÇÕES DE AQUECIMENTO A BIOMASSA

APPROVED PRODUCT

SOLZAIMA

SOLUÇÕES DE AQUECIMENTO A BIOMASSA

Instruction Manual

English

Free Standing Fires

K3 | K4 | M1 | M2 | M12-F

M20 | M30

**Thank you for purchasing a SOLZAIMA unit.
Please read this manual carefully and keep it for future reference.**

* All our products fulfil the requirements of the European Regulation (Reg UE 305/2011) and have been certified with the **CE** conformity trademark;

* SOLZAIMA disclaims responsibility for damages to the unit if it is installed by non-qualified personnel;

* SOLZAIMA disclaims responsibility for damages to the stove if the rules for installation and use described in this manual are not followed;

* All local regulations, including those referring to national and European standards, should be complied with when installing the stove;

* Our **Free Standing Fires** have been tested according to standards EN 13240:2002 + EN 13240:2002/A2:2005 + EN 13240:2002/AC:2006 + EN 13240:2002/A2:2005/AC:2006 and EN 12815:2002 + EN 12815:2002/A1:2005 + EN 12815:2002/AC: 2006 + EN 12815:2002/A1:2005/AC:2006;

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

* Whenever you need assistance, you should contact your unit's supplier or installer. You should provide its serial number, which is on the identification plate located on the left side of the ash drawer, as well as on the label on the back cover of this manual.

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Solzaima

Solzaima's vision has always been to provide a clean, renewable and more cost-effective energy. This is why we've been dedicating ourselves for more than 35 years to the manufacturing of biomass heating equipment and solutions.

As a result of the persistence and unconditional support from our partner network, Solzaima is today a leading player in the production of biomass heating solutions, best illustrated by our backboiler fires for central heating.

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

Solzaima is the only manufacturer in Portugal with ISO9001 quality certification and ISO14001 environmental certification – we believe we are a role model in this respect.

Technical Specifications

Free Standing Fires are designed to heat their surroundings. The M12-F model has the added advantage of a built-in oven for purposes other than just heating. These units are easy to install and do not require any finishing of any kind, integrating perfectly into the room around them.

* Technical specifications across the range:

- * CE certified
- * Energy Class  Class 1
- * Fuel: Dry firewood
- * Voltage: 230 V (*Except M20 and M30*)
- * Frequency: 50 Hz (*Except M20 and M30*)
- * Power: 2x9 W (*Except M20 and M30*)
- * Type of Equipment: intermittent use

Table 1 – Technical Specifications for each Unit

W – Width; H – Height

Dimensions	K 3		K 4		M 1		M 2		M 12-F	
	W	H	W	H	W	H	W	H	W	H
Front (inches/mm)	31.5/ 800	35/ 890	31.5 /800	35/ 890	21.4 /545	35.2 /895	21.4/ 545	35.2 /895	23.5 597	40.9/ 1040
Total Depth (inches/mm)	22.9/582		22.9/582		16.5/420		16.5/420		20/508	
Flue Ø (inches/mm)	Ø 5.9/150 int.		Ø 5.9/150 int.		Ø 5.9/150 int.		Ø 5.9/150 int.		Ø 5.9/150 int.	
Rated output (kW)	10,4		10,4		10,4		10,4		9,2	
Efficiency (%)	75		75		75		75		77	
CO Emissions (13%O ₂) (%)	0,77		0,77		0,77		0,77		0,69	
CO ₂ Emissions (%)	10,3		10,3		10,3		10,3		11,1	
Average combustion temperature (°F/°C)	572/300		572/300		572/300		572/300		564.8/296	
Combustion flow (g/s)	9		9		9		9		7	
Power output ¹ (kW)	7,3 – 13,5		7,3 – 13,5		7,3 – 13,5		7,3 – 13,5		6,4 – 12	
Firewood consumption ² (pounds/kg / h)	4.8/2.2 – 9/4.1		4.8/2.2 – 9/4.1		4.8/2.2 – 9/4.1		4.8/2.2 – 9/4.1		4.2/1.9 – 7.7/3.5	
Weight (pounds/kg)	251.3/114		233.6/106		178.5/81		209.4/95		321.8/146	
Maximum heated volume (m ³)	307		307		307		307		273	
Energy efficiency rating	1		1		1		1		1	
Length firewood (inches/mm)	9.8/250		9.8/250		9.8/250		9.8/250		300	

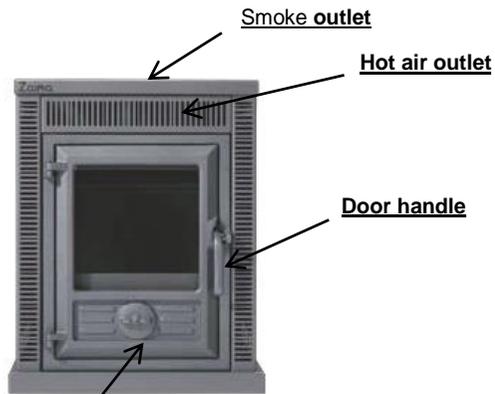
Dimensions	M 20		M 30	
	W	H	W	H
Front (inches/mm)	19.4/ 494	24.6 /626	20.9 /533	36.4 /925
Total Depth (inches/mm)	13.9/355		15/383	
Flue Ø (inches/mm)	Ø 4.9/125 int.		Ø 4.9/125 int.	
Rated output (kW)	9,2		9,2	
Efficiency (%)	69		69	
CO Emissions (13%O ₂) (%)	0,64		0,64	
CO ₂ Emissions (%)	10,6		10,6	
Average combustion temperature (°F/°C)	737.2/392		737.2/392	
Combustion flow (g/s)	8		8	
Power output ¹ (kW)	6,4 – 12		6,4 – 12	
Firewood consumption ² (pounds/kg / h)	4.6/2.1 – 8.6/3.9		4.6/2.1 – 8.6/3.9	
Weight (pounds/kg)	101.4/46		112.4/51	
Maximum heated volume (m ³)	273		273	
Energy efficiency rating	1		1	
Length firewood (inches/mm)	9.8/250		9.8/250	

¹ Power output is calculated by taking into account a variation of ± 30% in relation to the rated output.

² Consumption of firewood, taking into account the range of power outputs.

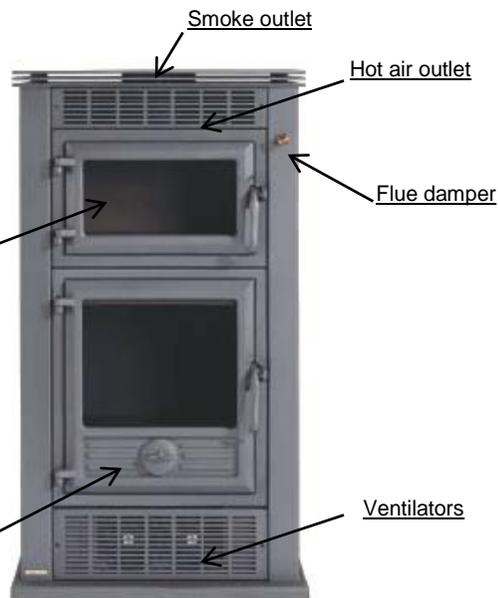
Your Unit

M 20 (without forced ventilation)



Combustion air intake regulator

M 12-F (with forced ventilation)



Combustion air intake regulator

Fig. 1 – Free Standing Fires M20 and M12-F.

Components

* The combustion chamber and casing of all our Free Standing Fires are made of top-quality carbon steel plate with a thickness of 0.1 inches (5mm) and 0.019 inches (1.5mm), respectively.³ The M12-F model includes a stainless steel oven with a gas exhaust duct connected to the flue;

* The front panel and ash grate are made of grey cast iron.

* Heat-resistant ceramic glass. Can withstand temperatures of up to 1382°F (750°C) in continuous use;

* Heat-resistant paint for temperature peaks up 1652°F (900°C) and operating temperatures in the order 1112°F (600°C);

Installation

Attention: all regulations and standards must be complied with when installing this unit.

1. Combustion air and gas circulation

* This type of stove should be installed in well-ventilated areas. Any air intake grilles should be placed in locations that are not liable to become blocked;

³ The combustion chamber in models M20 and M30 has a thickness of 3mm.

* The combustion air enters the fire through the combustion air intake damper on the front of the unit. This flow should be kept clear at all times;

* Additional air inlets may be needed if the stove is used in simultaneous with other devices that require an air supply. The installer should evaluate the situation according to the overall air flow requirements;

* Under normal operating conditions, the combustion gas flow should create a draught of 12 Pa one metre above the throat of the flue. For proper installation, at least 78.7 inches (2 metres) of metal flue tube with the same diameter as the unit's smoke outlet should be fitted vertically above the unit. After this section, sections of tubing with a maximum angle of 45° may be used;

Figs. 2 and 3 illustrate correct and incorrect angles for installing a bend, if required.

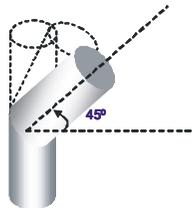


Fig. 2 – **Correct** angle for bends

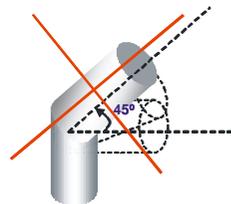


Fig.3 – **Incorrect** angle for bends

* A single-walled tube installed on the outside of a building results in the condensation of water vapour in the combustion gases. Instead, use of a double-walled, insulated tube is recommended;

* The flue outlet should allow for good air circulation and be placed at least 23.6 inches (60cm) above the top of any obstacle located within a distance of 9.8 feet (3m);

* The ash grate should be installed with the narrow slots facing upwards;

* The same flue should not be used for more than one unit or open fireplace. With shared chimneys, each flue should reach its outlet independently and these should be at the same level to ensure that the air circulation expels the gases;

* Brick chimneys should not be too wide, as the smoke will cool as it disperses, reducing the draft. In case of draft problems, a revolving chimney cowl can be installed;

2. Installation location requirements

* The unit should stand on a masonry hearth made of refractory bricks or another type of non-combustible material;

* Combustible materials should not be installed close to the walls of the stove;

* The floor on which the unit will stand must be able to support a permanent load of 2.2 pounds (1kg)/cm². If the load capacity of the floor is insufficient, a solid plate can be used to distribute the load over an area larger than the unit's base;

* The building's air intake grilles should not be obstructed;

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

* Materials/objects placed near the stove should be able to withstand the heat radiated from the glass and walls, so should not be combustible;

* Refractory cement or other refractory material should be applied on the chimney walls.

* The use of wood finishings may increase the risk of fire. Therefore, we recommend the use of adequate insulation or that wood not be used at all.

3. Forced Ventilation and Circuit Diagram

* Units that are equipped with forced ventilation include two 9 W ventilators that generate an air flow of 8 cubic mile (84m³) /h each, connected in parallel through a thermostat according to the circuit diagram below.

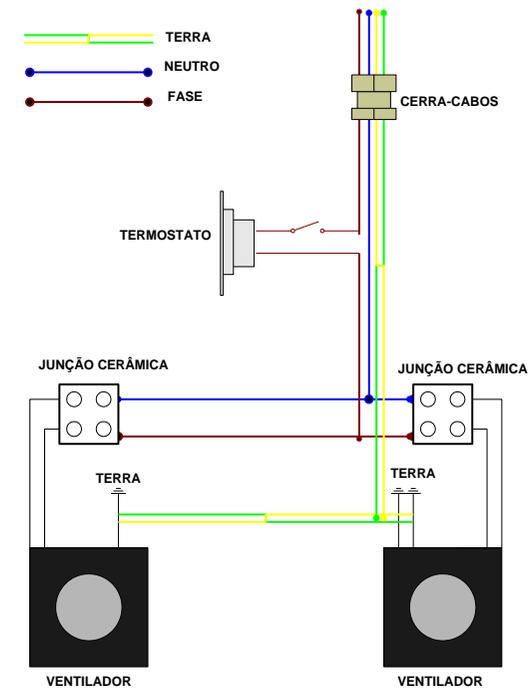


Fig. 4 – Circuit diagram

Attention: all three wires in the power feed cable – earth, neutral and live – should be connected. We take no responsibility for any damage resulting from non-compliance with this warning.

* The electrical components should always be connected to the power supply;

* The cable used for the electrical connection should be silicon-coated and heat-resistant to 356°F (180°C). If the power feed cable is damaged, it should only be replaced by a qualified technician;

* **You should take care to not lay the cable where it may be crushed;**

* The electrical installation should incorporate means to switch the unit off, with a minimum separation of 0.118 inches (3mm) between the contacts, pursuant to the applicable legislation in force.⁴

Instructions for Use

*Attention: **all** regulations and standards must be complied with when installing this stove.*

1. Fuel

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

* Exotic firewood should also not be used as fuel;

* The firewood should have low water content (less than 20%). We advise that it should be placed in 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 Table 2, which lists some of the types of wood that can be used in these units;

⁴ We recommend the use of a 30 mA differential switch and a 0.5 A circuit breaker for the unit's electrical installation.

Table 2 – List of types of firewood that may be used in SOLZAIMA fires, their geographical distribution and calorific value/reactions.

Common Name	Scientific name	Distribution (total: 18 districts)	Characteristics				
			Smoke	Heat	Lighting	Combustion Speed	Hardness
Pine	Pinus	Europe, except Finland; Northern Sweden and Norway.	Little	High	Easy	Fast	Soft
Cork Oak (+)	Quercus suber	Southern Europe	Little	Very High	Easy	Regular	Hard
Eucalyptus	Eucalyptus	Mediterranean Region	Lot	Regular	Difficult	Slow	Hard
Holm Oak (+)	Quercus ilex	Southern Europe	Little	Very High	Difficult	Slow	Hard
Olive tree	Olea	Mediterranean Region	Little	Very High	Difficult	Slow	Hard
Oak	Quercus	Across Europe	Little	High	Difficult	Slow	Hard
Ash	Fraxinus	Across Europe	Regular	High	Difficult	Slow	Hard
Birch	Betula	Across Europe	Little	Very High	Easy	Fast	Soft
Beech	Fagus	Europe, except Iberian Peninsula and Northern Europe, including United Kingdom.	Little	High	Difficult	Slow	Hard
Elm	Ulmus	Across Europe	Regular	High	Difficult	Slow	Hard
Maple	Acer	Across Europe	Little	Regular	Regular	Slow	Soft
Poplar	Populus	Across Europe	Little	High	Easy	Fast	Soft
Chestnut	Castanea	Across Europe	Regular	High	Difficult	Slow	Hard

(+): greatest availability

1.1. Power

The power of your unit indicates its heating capacity, i.e. the energy your unit transfers from the firewood to your home (usually measured in kW) and is directly related to the amount of firewood that you place in it.

The rated output is the measure of a standard load of firewood when tested in laboratories during a certain amount of time.

The power output is a manufacturer's recommendation from tests to the equipment with firewood loads within a reasonable operation range. This power output range will present different firewood consumptions per hour.

1.2. Energy Efficiency and Performance Ratings

Implementing solutions that seek to achieve greater energy efficiency allows for substantial reductions in energy needs, and thus reduces our current dependence on fossil fuels and other non-renewable sources of energy.

Energy efficiency enables you to make large savings from both an economic and an environmental point of view.

As a result of Solzaima's commitment towards the equipment's efficiency, most of our products are classified as efficiency class 1, i.e., with an efficiency rate equal to or greater than 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.

EFFICIENCY RATING*	EFFICIENCY RATE* (fire door closed)
1	≥ 70 %
2	≥ 60% < 70 %
3	≥ 50% < 60 %
4	≥ 30% < 50 %

*in accordance with EC classification standards for insert fires.

A Solzaima 5kW unit with an efficiency rate of 75%, i.e. efficiency class 1, will consume approximately 3.5 pounds (1.6kg) of firewood per hour to warm a 389 sq ft room (35m²).

Typically, a traditional fireplace has an efficiency rate of approximately 10%, which means it will consume about 26.5 pounds (12kg) of firewood to produce the same 5kw necessary to warm the same 389 sq ft room (35m²).

FIREWOOD CONSUMED IN ONE HOUR TO WARM
APPROXIMATELY 389 SQ FT (35 M²) WITH A 5kw STOVE



A traditional fireplace with an efficiency rate of 10% consumes 26.5 pounds (12kg) of firewood



A fireplace equipped with a simple fire (class 4) and providing an efficiency rate of 30% consumes 8.8 pounds (4kg) of firewood



A fire with an efficiency rate of 50% (class 3) consumes 5.3 pounds (2.4kg) of firewood



A Solzaima fire with an efficiency rate of 75% (class 1) consumes only 3.5 pounds (1.6kg) of firewood

2. First Use

* Ask the installer to light the unit to ensure that all is functioning correctly;

* The stove's paint is cured by the heat when it is first used, which may give rise to additional smoke. If this happens, you should ventilate the room by opening external windows and doors.

3. Normal Use

* Lighting:

a) Open the flue damper completely – lever on the top right-hand side of the unit (where applicable);

b) Place some pine cones (preferably) on the ash grate;

c) Place some kindling wood on top, piled horizontally;

d) Open the combustion air intake regulator;

e) The lighting period is over when the body of the unit has reached a constant temperature. You should then regulate the combustion air intake;

* You should check that there is sufficient ventilation in the room where the unit is installed, otherwise it will not work properly. For this reason, you should check if there are any other heating devices which consume air during operation (e.g. gas-fired equipment, braziers, etc). We recommend against using these devices all at once;

* The air for combustion is drawn from the surrounding room, consuming oxygen. You should check that ventilation grilles and other devices for allowing air to enter from outside remain unobstructed;

* You must open the flue damper (where applicable) before reloading the stove with firewood. First, open the flue damper completely, then wait a little while to allow a good draught, and only then open the door slowly to prevent drawing smoke out into the room;

* You should only open the door during reloading. Normal conditions of use require the door to remain closed;

* Reload before the previous load has burnt completely, in order to make it easier for the combustion to continue;

* Use of the unit is not recommended when weather conditions are so bad that the draught is seriously affected (particularly when there are very strong winds).

4. Safety

* The ventilators should always be connected to the power supply (where applicable);

* You should take care to not lay the cable where it may be crushed;

* The exposed metal parts reach high temperatures - 212°F (100°C) on the door and 140°F (60°C) on the frame. The door handle does **not** reach temperatures above 113°F (45°C). Do not touch the hotter areas;

* You should use a glove or other protection if you have to touch the unit when it is in operation;

* In case of **fire in the flue, immediately close the door, flue damper** (where applicable) **and air intake**;

* If there is a power cut, resulting in the ventilators cutting out when the unit is in operation, close the combustion air intake and do not load the unit with any more firewood. Keep the door closed;

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

5. Cleaning and Maintenance

* You should remove ash from the drawer on a regular basis (after the unit is switched off), so that the combustion air can enter through the ash grate unobstructed;

* The window should be cleaned with a suitable product,⁵ by following the instructions for use and not allowing the product to come into contact with the sealing string and painted metal parts, which could initiate oxidation. The sealing string is glued; therefore it should not be moistened with water or cleaning products. If it becomes detached, it can be reattached with contact glue after cleaning the groove with fine sandpaper;

* You should not clean the cast or plate iron parts with detergents. These should be cleaned with just a dry cloth to remove the dust and you may treat the cast iron parts with a special polish⁶ as often as you feel necessary.

* We advise you to clean the flue and flue throat (at the exit of the unit) at least once a year. This can be done by removing the baffle plate (removable plate in the ceiling of the combustion chamber);

* If you do not use the unit for a prolonged period, check to make sure that the flue pipes are clear before lighting it;

⁵ Seek advice from your installer.

⁶ Seek advice from your installer.

Troubleshooting

Problem	Solution
Glass gets dirty quickly	. Check moisture of firewood
	. Increase burn intensity by opening the combustion air intake regulator slightly
	. Open flue damper (<i>where applicable</i>)
Excessive draft	. Check if the combustion air intake regulator is open. If so, close it. . Contact the installer
Weak draught, causing smoke to be expelled into the room	. Check that the flue is clear of obstructions . Clean the flue . There may be exceptional weather conditions
Weak fire	. Check moisture of firewood and opening of the combustion air intake regulator . Check entry of air into the room
Ventilation stopped working	. Check possible obstruction of ventilators . Check and/or reconnect power supply . The stove may not be hot enough to make the ventilators switch on
Ventilation working but flow is weak	. Clean all dust, ash or other residue that may have accumulated in the ventilator grilles
Problems associated with the weather	. Contact the installer

End of Life

* Around 90% of the materials used in the manufacture of these units is recyclable, thus helping to reduce environmental impact and contributing to the sustainable development of the planet;

* End-of-life units should be taken to licensed waste operators. We advise you to contact your local council for collection.

Sustainability

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

* Solzaima cares about being up to date with and assessing the existing forest area while efficiently responding to energetic demands, with a constant watch on biodiversity and natural wealth, critical aspects to the quality of life in our planet.

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.
- * **Groove:** housing for the sealing ring.
- * **cm** (centimetres): unit of measurement.
- * **CO** (carbon monoxide): Lightly flammable, colourless, odourless and very dangerous gas, due to its toxicity.
- * **CO₂** (carbon dioxide): Gas needed by plants on the one hand for photosynthesis, and emitted into the atmosphere on the other, contributing to the greenhouse effect.
- * **Combustion:** a process that releases energy. Combustion is basically a chemical reaction that requires three things in order to take place: fuel, oxidant and ignition temperature.
- * **Oxidant:** chemical substance that feeds combustion (essentially oxygen) and is essential for it to take place.
- * **Fuel:** anything that can undergo combustion, in this case wood.
- * **Creosote:** chemical compound created by combustion. This compound is sometimes deposited on the glass and flue of an insert fire.
- * **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% O₂):** carbon monoxide content corrected for 13% of O₂.
- * **Differential Switch:** protects people and property against earthing failures, preventing electric shocks and fires.
- * **kcal** (Kilocalorie): multiple unit of measurement of calories. Equivalent to 1,000 calories.
- * **kW** (Kilowatt): Unit of measurement equal to 1,000 watts.
- * **mm** (millimetres): unit of measurement.
- * **mA** (milliampere): unit of measurement of electric current.
- * **Pa (Pascal):** standard SI unit of pressure and tension. This unit is named after Blaise Pascal, eminent French mathematician, physicist and philosopher.
- * **Calorific Value:** also known as specific combustion heat. Represents the quantity of heat released when a certain quantity of fuel is completely burned. Calorific value is expressed in calories (or kilocalories) per unit of weight of fuel.
- * **Rated output:** Electric power consumed by an energy source. Measured in watts.
- * **Nominal heat output:** 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.
- * **Efficiency:** 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.
- * **Ceramic glass:** Highly resistant ceramic material produced through controlled crystallisation of vitreous materials. Used widely in industrial applications.
- * **W** (Watt): SI unit of power.

Warranty

* All SOLZAIMA free standing fires have a 2 (two) year warranty from the date the invoice was issued. In order for your warranty to be valid, you must keep the invoice or receipt of purchase throughout the warranty period.

* The warranty applies only to defects in materials or manufacture;

* The unit's components – ventilators, thermostats, terminals, electric cables, etc. have a 2 (two) year warranty;

* SOLZAIMA is happy to replace defective elements free of charge, following analysis and verification by a qualified agent/installer.

* Exclusions:

* Fracture of the glass due to misuse of the unit does not fall within the scope of this warranty; the chances of natural fracture of the glass are minimal, as this would only be possible due to overheating. The glass can withstand temperatures of 750°C in constant operation, as well as temperature peaks of 850°C – temperatures which are never reached during normal operation;

* The type of fuel used and how the unit is handled are not within SOLZAIMA's control, so the parts in direct contact with the flame – the ash grate, comb and baffle plate – are not covered by this warranty;

* The vermiculite and sealing ring are not included in the warranty;

* The installer bears full responsibility for all problems and/or defects resulting from the installation process;

* Costs associate with moving, transport, labour, packaging, disassembly and immobilisation of the unit incurred during warranty operations shall be borne by the purchaser;

* Any malfunctioning caused by mechanical or electrical parts not supplied by SOLZAIMA and which are prohibited under the instructions governing heating appliances are not covered by this warranty;

* SOLZAIMA bears no responsibility for damage caused by the use of any fuel other than firewood.