

ENGLISH

# BELVEDERE 20

## wood boiler stove

INSTALLATION, USE, MAINTENANCE  
AND TIPS



**KLOVER**  
F U O C O E P A S S I O N E



# SERVICE DECLARATION

Ref. Annex III EU Regulation no. 305/2011

## DoP/KLOVER-028

1. Identification number : **BV20**
2. Model and/or lot no. and/or serial no. (Art.11-4) : **BELVEDERE 20**
3. Intended use of the product according to the relevant harmonised technical specification : **Home heating appliance fed with wood logs which can also produce domestic hot water KLOVER s.r.l.**
4. Name or trademark of the manufacturer (Art11-5) : **I - 37047 San Bonifacio (VR) – Via A. Volta, 8**
5. Name and address of the representative (Art.12-2) : **-**
6. Assessment and verification system of the performance constancy (Annex 5) : **System 3**
7. Notified laboratory : **ACTECO s.r.l.**  
**I - 33084 Cordenons (PN) – Via Amman, 41**
- Number of test report (based on System 3) : **1880-CPR-050-15**

8. Declared performances

| <b>HARMONISED TECHNICAL SPECIFICATION</b>  | <b>EN 13240</b>                     |
|--|-------------------------------------|
| <b>PERFORMANCE FEATURES</b>  | <b>PERFORMANCE</b>                  |
| Fire resistance  | A1                                  |
| Distance from combustible material   | 200 mm                              |
| Fuel spillage risk   | Compliant                           |
| Emission of combustion products<br>- Nominal power   | CO at 13% of O <sub>2</sub> 0.186 % |
| Effective temperature  | Compliant                           |
| Electrical safety  | Compliant                           |
| Accessibility and cleaning   | Compliant                           |
| Maximum operating pressure   | 2.5 bar                             |
| Mechanical strength  | NPD (performance not determined)    |
| Thermal performance<br>- Nominal power<br>- Nominal power yielded to the environment<br>- Nominal power yielded to water | 22.6 kW<br>9.5 kW<br>13.1 kW        |
| Yield<br>- Nominal power   | $\eta$ 80.4 %                       |
| Flue gas temperature<br>- Nominal power  | T 310° C                            |

9. The performance of the product referred to in points 1 and 2 is compliant with the declared performance in point 8.

This declaration is released on the sole responsibility of the manufacturer referred to in point 4.

Signed in the name and on behalf of the manufacturer by:

San Bonifacio (VR), 24/08/2015

**Mario Muraro**  
Chairman of the Board



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Dear client,

First of all we would like to thank you for choosing a “KLOVER” product and we hope you will be satisfied with this product.

Read the warranty guarantee carefully, which is found on the last page of this *User guide*; fill out the attached warranty card in full and return it **within 10 days** from the date of purchase.

We would like to thank you again for trusting KLOVER products, and we would also like inform you that these models are the result of forty years of experience in the manufacture of solid fuel products using water as heat transfer fluid. Every single detail of the product is manufactured by qualified staff, using the most advanced equipment.

The manual contains a detailed description of the appliance and its operation, instructions for proper installation, basic maintenance and control points, which must be periodically performed; furthermore it contains practical advice which helps to obtain maximum performance from the appliance with minimum fuel consumption.

Stay warm with KLOVER!

### **Technical Support**

Klover wood and pellet appliances are imported and distributed by FirePower Heating, Dunkeswell, Dunkeswell Business Park, Honiton, EX14 4RD.

UK technical and product support to dealers is provided by FirePower Heating who can be reached on 0844 3320156 or alternatively you can email them at [Technical@firepowerheating.co.uk](mailto:Technical@firepowerheating.co.uk).

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## **INTRODUCTION**

### **Important safety instructions**

Please read these instructions before installing and using the appliance.

- The installation and initial start-up of the appliance must be performed by skilled personnel trained in the relevant safety standards. They will be responsible for the definitive installation of the appliance and its proper operation. KLOVER srl shall not be held liable if these precautions are not observed.
- During installation of the appliance, all local regulations - including those referring to national and European Standards - must be observed.
- Connect the flue gas outlet to a flue with the specifications described in the "Flue and its connection" section of this User guide.
- The appliance is not suitable for installation on a shared flue system.
- If the flue should catch fire, use appropriate fire extinguishing equipment or call the fire brigade.
- Connect the appliance to an earthed power socket. Avoid using sockets controlled by switches or automatic timers.
- Do not use the power supply cable if damaged or worn.
- If a multiple socket is used, make sure that the total voltage of the connected devices does not exceed the rated voltage for the socket. Also make sure that the total voltage of all the devices connected to the socket does not exceed the maximum permitted level.
- Do not use flammable substances to clean the appliance or its parts.
- Do not leave flammable containers and substances in the place where the appliance is installed.
- The appliance works exclusively with logs and only with the hearth door shut.
- NEVER open the door of the appliance during normal operation.
- The use of poor quality wood or any other material can damage the appliance operation, voiding the warranty and exempting the manufacturer from all liability.
- Do not use the appliance as an incinerator or for any use other than that for which it was designed.
- Do not use fuels other than those recommended.
- Do not use liquid fuels.
- The appliance, and its outer surfaces in particular, become very hot to the touch during operation; handle with caution in order to avoid burns.
- Use the anti-burn glove to open the fire door and to regulate the smoke dampers and combustion air.
- Only use original spare parts recommended by the manufacturer.
- Do not make any unauthorised modifications to the appliance.
- Do not touch the hot components of the appliance (ceramic glass, flue pipe and the entire outer frame) during normal operation.
- Never touch the appliance if you are barefoot and/or if you have wet or damp parts of the body.
- Use the appropriate button to switch off the electrical panel. Do not disconnect the power supply cable while the appliance is operating.
- During the ignition phase and normal operation of the appliance, maintain the necessary safety distance and do not remain standing in front of it.
- Keep children away from the appliance when it is running since they could get burned by touching its hot components.
- Do not leave the packaging elements within reach of children or unassisted disabled persons.
- Children and inexperienced people must not be allowed to use the appliance.
- Do not use the appliance in ways other than those indicated in this user guide.
- The appliance is designed for indoor use only.
- This user guide constitutes an integral part of the appliance. If the appliance is sold to another user, this manual must be passed on to the new owner.

**KLOVER S.R.L. DECLINES ALL LIABILITY IN CASE OF ACCIDENTS DUE TO FAILURE TO COMPLY WITH THE SPECIFICATIONS OF THIS MANUAL.**

**KLOVER S.R.L. DECLINES ALL LIABILITY DUE TO INCORRECT USE OF THE APPLIANCE BY THE USER, UNAUTHORISED MODIFICATION AND/OR REPAIRS, AND USE OF NON-ORIGINAL SPARE PARTS OR SPARE PARTS NOT SPECIFICALLY DESIGNED FOR USE ON THIS APPLIANCE MODEL.**

**KLOVER S.R.L. SHALL NOT BE HELD LIABLE FOR THE INSTALLATION OF THE APPLIANCE. THE INSTALLER IS THE SOLE PARTY RESPONSIBLE FOR THIS OPERATION AND IS ALSO ENTRUSTED WITH CHECKING THE FLUE, EXTERNAL AIR VENT AND THE CORRECTNESS OF THE PROPOSED INSTALLATION SOLUTIONS. ALL THE SAFETY REGULATIONS SET OUT IN THE SPECIFIC LAWS IN FORCE IN THE COUNTRY OF THE STOVE'S INSTALLATION MUST BE OBSERVED.**

**NON-ROUTINE MAINTENANCE MUST ONLY BE PERFORMED BY AUTHORISED AND QUALIFIED STAFF.**

**To ensure the validity of the warranty, the user must comply with the instructions contained in this guide and, in particular, must:**

- Use the appliance within its operating limits;
- Regularly perform all maintenance activities;
- Authorise expert and competent people to use the appliance.

**Failure to comply with the instructions contained in this guide shall automatically void the warranty.**

## ***THE APPLIANCE AND WOOD***

### **Components of the appliance**

The table below shows the standard features of the appliance:

|                          |                         |
|--------------------------|-------------------------|
| Expansion tank           | 6 l                     |
| Safety valve             | 2.5 bar                 |
| Pressure gauge           | 0 – 4 bar               |
| Check valve              | Yes                     |
| Automatic air vent valve | Yes                     |
| Heating system pump      | Yes. Mod.25/70          |
| Heating exchanger        | Yes                     |
| DHW heat exchanger       | On prepared models only |
| System loading cock      | Yes                     |
| Boiler unit loading cock | Yes                     |

The appliance is delivered with the following equipment:

- No. 1 - user, installation and maintenance guide;
- No. 1 - power supply cable;
- No. 1 brush D.65-300 mm L.700 mm.
- No. 1 bottle 1 l "LONG LIFE" protective.

**Draught regulation handle.**  
Turn the handle to the vertical position to open.  
Turn the handle to the horizontal position to close.

**Electronic control unit.**

**Combustion chamber.**

**Upper smoker damper.**

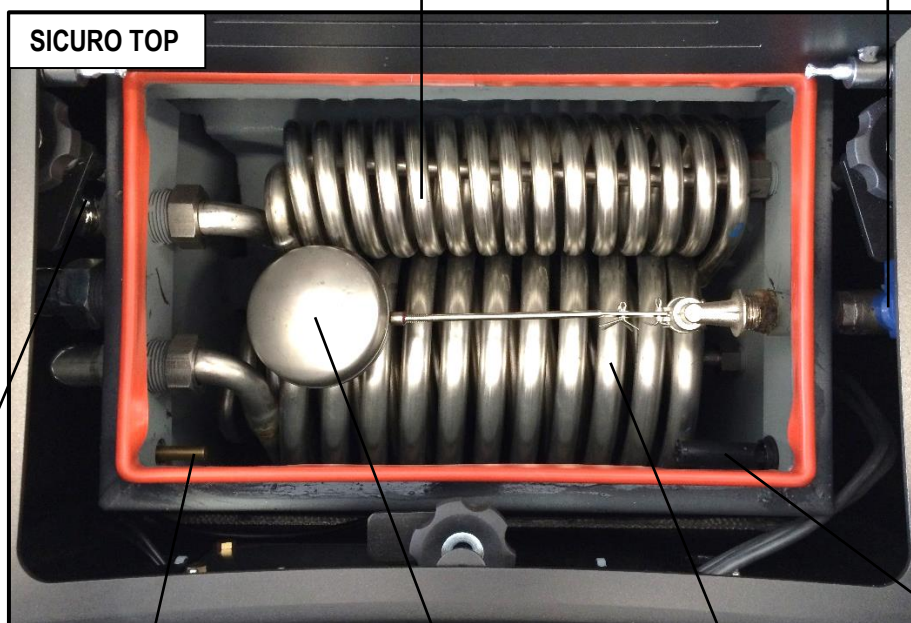
**Cover  
SICURO TOP.**

**Primary manual combustion air damper.** Move the knob right to open.  
Move the knob left to close.

**Technical compartment.**

**Secondary exchanger (domestic)**  
(on prepared models only).

**Boiler unit loading cock.**



**Automatic air vent valve (jolli)**

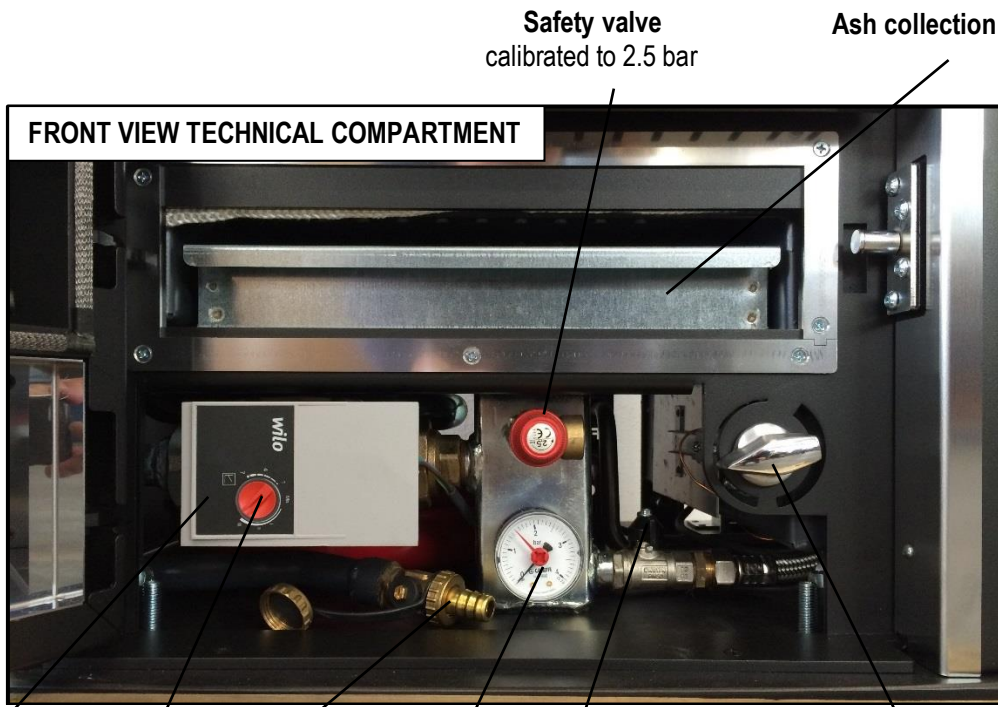
**Sensor pocket for water temperature.**

**Float to load boiler unit water.**

**Primary exchanger (heating).**

**Level switch (water level sensor).**





Safety valve  
calibrated to 2.5 bar

Ash collection drawer.

High-efficiency circulating  
pump for heating system.

Boiler unit drain  
cock.

Heating system loading  
cock.

Secondary automatic combustion air damper.  
Turn the knob anti-clockwise to open.  
Turn the knob clockwise to close.

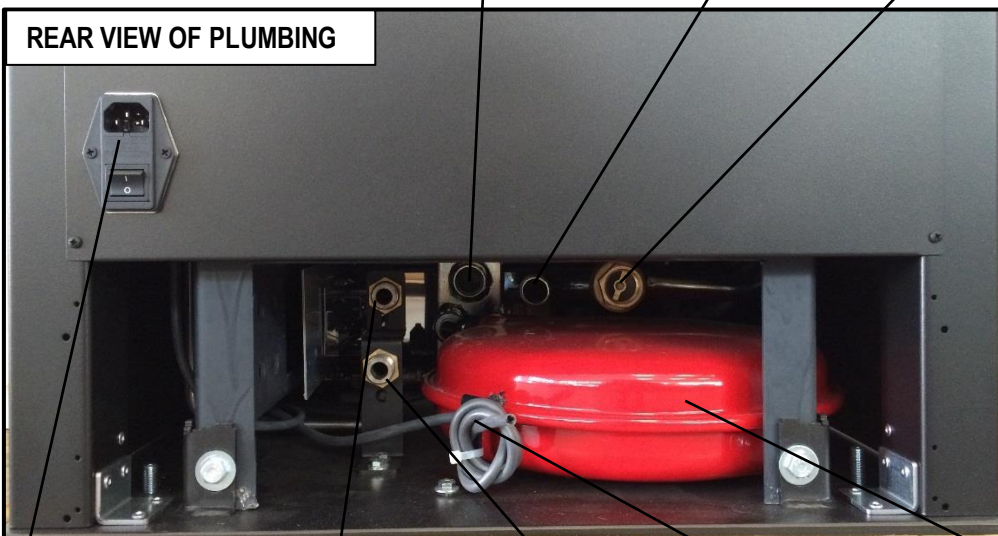
Circulating  
pump speed  
switch.

Pressure gauge (indicates the  
pressure of the heating system).

Delivery pipe connection of the heating  
system with check valve.

Return pipe connection of the  
heating system.

Boiling discharge pipe  
connection SICURO TOP.



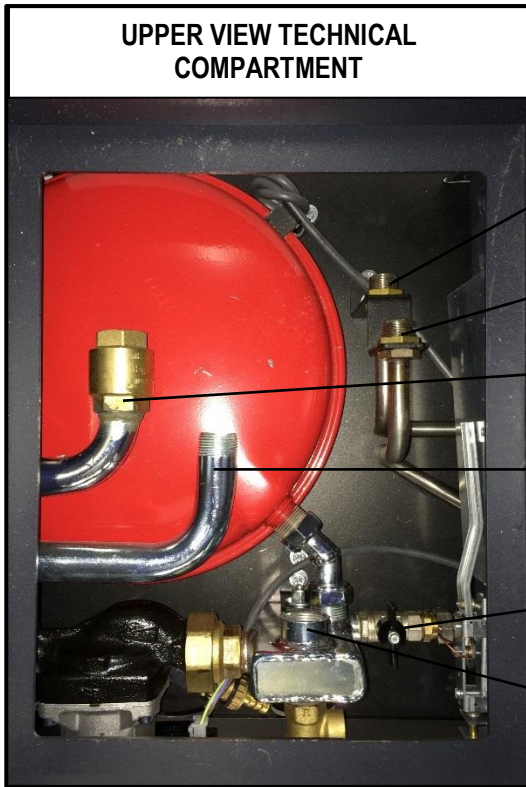
Anti-interference filter  
Main switch, connection for power supply  
cable with 2 built-in fuses (4A 250V).

DHW outlet pipe connection  
(on prepared models).

Expansion vessel 6 l  
with pre-load 1 bar.

DCW inlet pipe connection.  
+ System load.  
+ Boiler unit load.

Cable connecting 3-way  
motorised valve for domestic  
water system.



**UPPER VIEW TECHNICAL  
COMPARTMENT**

**Domestic hot water outlet pipe connection** (on prepared models only).

**DCW inlet pipe connection.**  
+ System load.  
+ Boiler unit load.

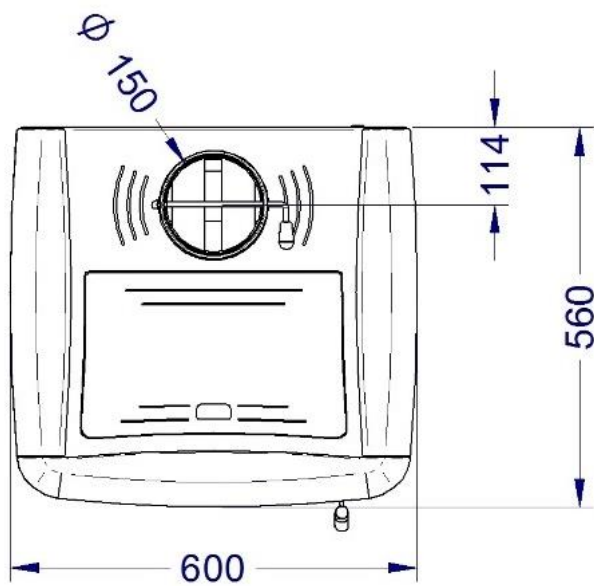
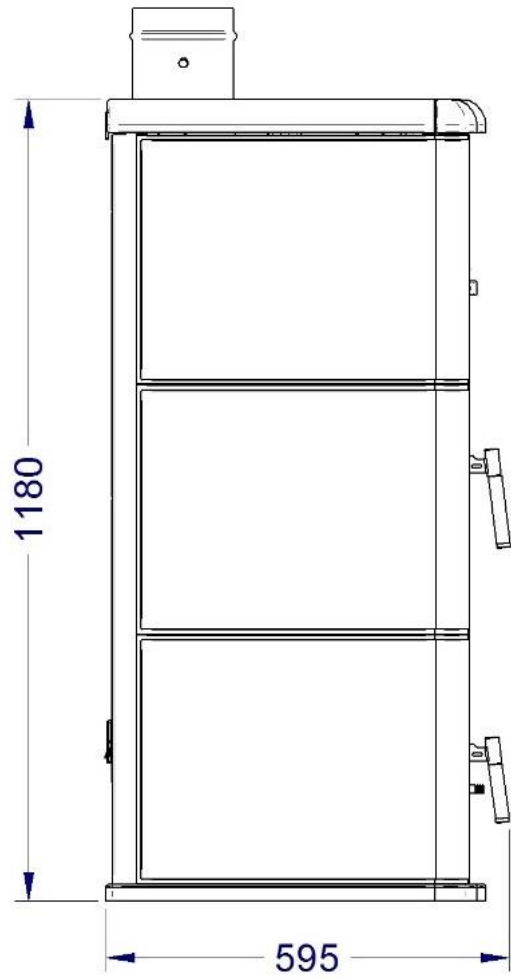
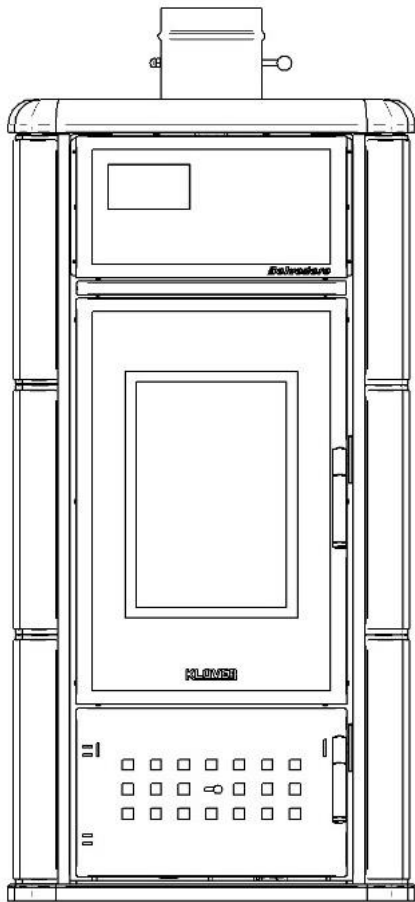
**Delivery pipe connection of the heating system with check valve.**

**Boiling discharge pipe connection SICURO TOP.**

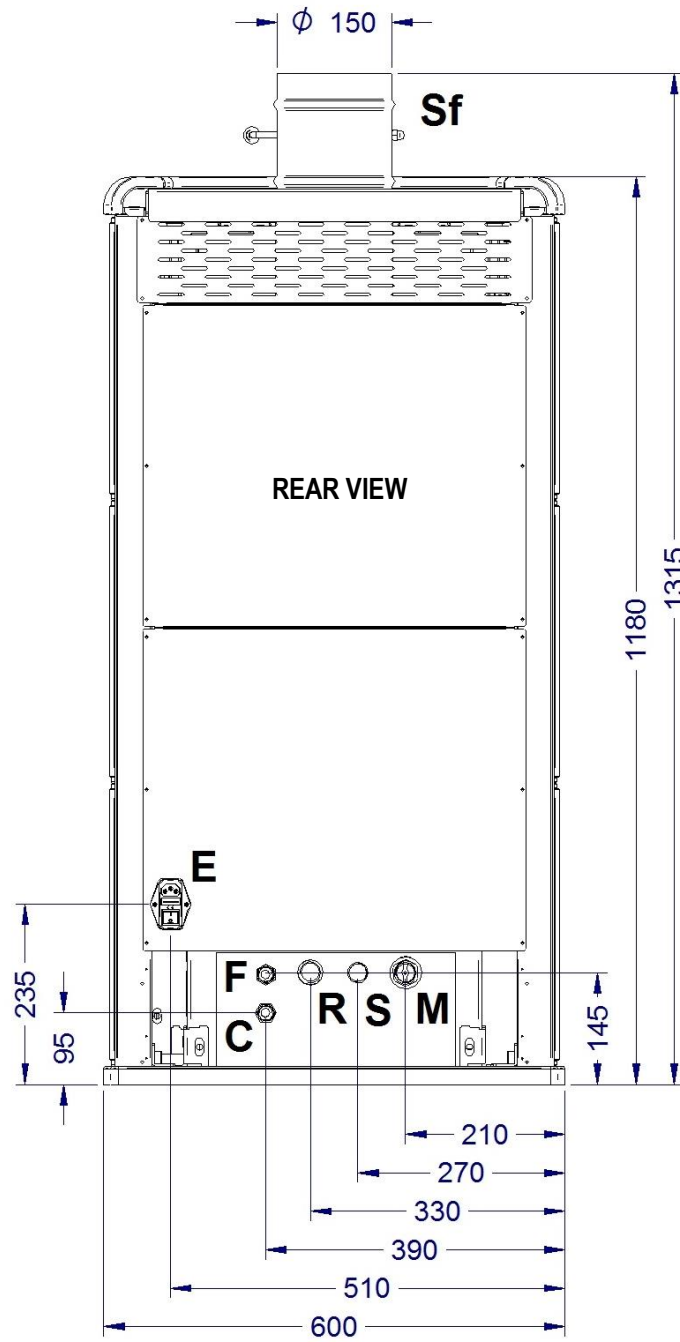
**Heating system loading cock.**

**Return pipe connection of the heating system.**

Overall dimensions



Connections data sheet



| Description of connections  |  |          |
|---|--|----------|
| M = System Delivery   |  | 3/4" F   |
| R = System Return   |  | 3/4" F   |
| F = Domestic cold water inlet (on prepared models only) and boiler unit and system load |  | 1/2" M   |
| C = Domestic hot water outlet (on prepared models only)                                 |  | 1/2" M   |
| S = Boiling discharge   |  | 3/4" M   |
| Sf = Flue gas outlet  |  | 150 mm M |
| E = Electricity connection  |  |          |

## Technical Specifications

|   |             |                      |
|---|-------------|----------------------|
| Nominal heat input  | kW (Kcal/h) | <b>28.1 (24,200)</b> |
| Nominal thermal output  | kW (Kcal/h) | <b>22.6 (19,500)</b> |
| Nominal power released to heating water                       | kW (Kcal/h) | <b>13.1 (11,300)</b> |
| Nominal power delivered to room due to radiation              | kW (Kcal/h) | <b>9.5 (8,200)</b>   |
| Efficiency at thermal nominal power                           | %           | <b>80.4</b>          |
| CO at 13% oxygen at nominal thermal power                     | %           | <b>0.185</b>         |
| Nominal voltage   | V           | <b>220</b>           |
| Nominal frequency   | Hz          | <b>50</b>            |
| Expansion vessel litres/preloading bar                        |             | <b>6 / 1</b>         |
| Maximum operating/recommended pressure                        | bar         | <b>2.5 / 1.5</b>     |
| Flue pipe diameter  | mm          | <b>150</b>           |
| Minimum chimney draught at nominal thermal power              | Pa          | <b>10</b>            |
| Combustion gas mass at nominal thermal power                  | g/s         | <b>14.85</b>         |
| Average exhaust flue gas temperature at nominal thermal power | °C          | <b>315.7</b>         |
| Hourly wood consumption *                                     | Kg/h        | <b>6.4</b>           |
| Wood loading interval *                                       | min         | <b>45</b>            |
| Boiler unit capacity  | litres      | <b>50</b>            |
| Width   | mm          | <b>600</b>           |
| Height  | mm          | <b>1180</b>          |
| Depth   | mm          | <b>560</b>           |
| Minimum safety distance from flammable materials              | mm          | <b>200</b>           |
| Weight model with majolica sides (painted steel)              | Kg          | <b>260 (250)</b>     |

\*Wood consumption is subject to the quality and dryness of the wood.

The values provided above are obtained in accordance with standard EN 13240

## Types of wood

Wood is one of the most precious materials offered by nature. For heating purposes, it must be verified that the features of the wood satisfy some important requisites that must not be ignored, the most important of which is without a doubt the correct seasoning or drying, in other words the wood must have the correct amount of humidity, around 10-15%, therefore also the period of the year in which it is felled becomes important. This should coincide with the winter period. Correct seasoning (at least 2 years) provides fuel with an excellent yield that is not very pollutant.

It must be kept in covered, well-aired places, already cut into pieces of a suitable size for the appliance.

The wood is divided into softwood and hardwood on the basis of the weight kg of a cubed metre of material. Softwoods weighing 300-350 kg/m<sup>3</sup> include fir, pine, poplar, European alder, chestnut and willow, while hardwoods weighing 350-400 kg/m<sup>3</sup> include beech, ash, elm, acacia and oak.

Softwood ignites easily, burns quickly, produces a long flame and is used in stoves needing a long flame pass.

Hardwood is more compact, the combustion is slower with short flame, it lasts longer and is more suitable for domestic central heating.

The wood to be burned for heating purposes has different features according to the plant variety from which it is obtained. Not all woods are equal, and the drying time and the calorific value vary from plant to plant. The calorific value depends on the humidity and density of the wood. Top quality woods are beech, ash, elm and acacia. **Avoid resinous woods as they reduce the appliance's service life.**

Resinous woods generate a lot of soot and require the flue and the appliance to be cleaned more frequently. The calorific value of the different types of wood depends greatly on their humidity and consequently the power of the stove

is directly affected by the type of wood used, on average a well-seasoned wood has a calorific value of 3200 kcal/kg.

Calorific value of wood in relation to humidity:

| % humidity | Calorific value kcal/kg |
|------------|-------------------------|
| 15%        | 3490                    |
| 20%        | 3250                    |
| 25%        | 3010                    |
| 30%        | 2780                    |
| 35%        | 2450                    |
| 40%        | 2300                    |

**CALORIFIC VALUE** of the wood means the amount of heat yielded during combustion, referring to the unit quantity of the material burned.

The calorific value of a wood species depends on the presence of **lignin** (6000 Kcal/kg) or **cellulose** (4000 Kcal/kg) as well as the abundance of **resin** (8500 Kcal/kg).

The calorific value per unit of weight (= absolute) is highest in Conifers

- Absolute calorific value of conifers: 4700 Kcal/kg
- Absolute calorific value of broad-leaved species: 4350 Kcal/kg.

On the other hand the **SPECIFIC WEIGHT** of the "broad-leaved species" is greater; therefore with equal volumes introduced into the appliance, both the weight and amount of heat available for combustion are greater; in practice the relative calorific value is higher (referring to a unit of volume).

**For example:** the calorific value of the white fir is practically the same as that of the oak, but the oak has a specific weight that is twice that of the fir. Therefore half the volume of oak must be introduced into the appliance in order to have the same "heat" obtained from the fir.

|                     | *Calorific value<br>(Kcal/Kg) | **Specific weight<br>(Kg/m3) |
|---------------------|-------------------------------|------------------------------|
| WHITE FIR           | 4650                          | 440                          |
| RED FIR             | 4857                          | 450                          |
| <b>MAPLE</b>        | <b>4607</b>                   | <b>740</b>                   |
| <b>BIRCH</b>        | <b>4968</b>                   | <b>650</b>                   |
| <b>BLACK ELM</b>    | <b>4640</b>                   | <b>820</b>                   |
| CHESTNUT            | 4599                          | 580                          |
| <b>TURKISH OAK</b>  | <b>4648</b>                   | <b>900</b>                   |
| CYPRESS             | 5920                          | 620                          |
| <b>BEECH</b>        | <b>4617</b>                   | <b>750</b>                   |
| <b>ASH</b>          | <b>5350</b>                   | <b>720</b>                   |
| <b>HOLM OAK</b>     | /                             | <b>960</b>                   |
| LARCH               | 4050                          | 660                          |
| EUROPEAN ALDER      | 4700                          | 530                          |
| FLOWERING ASH       | /                             | 760                          |
| <b>PLANE TREE</b>   | /                             | <b>690</b>                   |
| CYPRESS POPLAR      | 4130                          | 500                          |
| <b>FALSE ACACIA</b> | <b>4500</b>                   | <b>790</b>                   |
| <b>DOWNY OAK</b>    | <b>4631</b>                   | <b>880</b>                   |

\* theoretical absolute value

\*\* wood seasoned in the air; residual humidity 12-15 %

## REQUIREMENTS OF THE PLACE OF INSTALLATION

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### Positioning

The initial phase for best installation of the appliance is to determine its optimum location; the following elements need to be considered:

- The possibility of creating an external air vent;
- The possibility of creating a straight flue, preferably coaxial to the outlet of the appliance;
- The possibility of creating piping required for the boiling discharge;
- Proximity to the main water drain and/or the boiler (if one already exists);
- Proximity or ease of connection to the water system;
- Ease of access for cleaning the appliance, the flue gas exhaust pipes and the flue.

The unit must be installed on a floor with a suitable load capacity. If the existing building does not fulfil this requirement appropriate measures (e.g. load distribution plate) must be taken.

**The minimum safety distance from flammable materials must be at least 200 mm from the sides and back of the appliance.**

Relocating the appliance should not be done by forcing on the handle, glass or ceramics/steel sides.

The installation must guarantee easy access for cleaning the appliance, the flue gas exhaust pipes and the flue, and any subsequent maintenance operation by the Authorised technical assistance centre.

Once you have found the best location for the appliance, position it following the instructions given below.

Furniture and movable objects must be positioned at least 15 cm from the side surfaces of the appliance; these objects must be moved when performing maintenance on the appliance.

Protect all structures that can catch fire against the radiated heat of the fire.

---

### External air intake

During operation, the appliance takes in air from the environment in which it is installed; It is therefore essential that this air is replaced through an external air vent. The absence of the air vent may affect the flue draught and therefore the combustion and the safety of the appliance.

Therefore **it is mandatory** to install an external air vent with a minimum completely free passage of **at least 80 cm<sup>2</sup>** (round hole with minimum diameter of 15 cm protected with a special fixed large mesh grid).

It is recommended to drill the hole in immediate proximity to the appliance.

If it not possible to put the external air vent in the same room as where the appliance is installed, this hole can be made in an adjoining room as long as this room communicates permanently, by means of a transit hole (15 cm minimum diameter).

The hole must be protected externally with a fixed grille. The protective grille must be checked periodically to ensure that it is not obstructed, thereby impeding the passage of air. **Therefore keep the air vents clear of obstructions.**

The UNI 10683 Standard FORBIDS the drawing of combustion air from garages, warehouses storing combustible materials, or from business premises with a fire hazard.

If there are other heating or extraction devices inside the room, the air vents must guarantee a sufficient amount of air for properly operating all the devices.

Only sealed appliances (e.g. C type gas appliances, according to the UNI 7129 Standard) or appliances that do not cause a lower pressure compared with the external environment can pre-exist or be installed in the place where the appliance is installed.

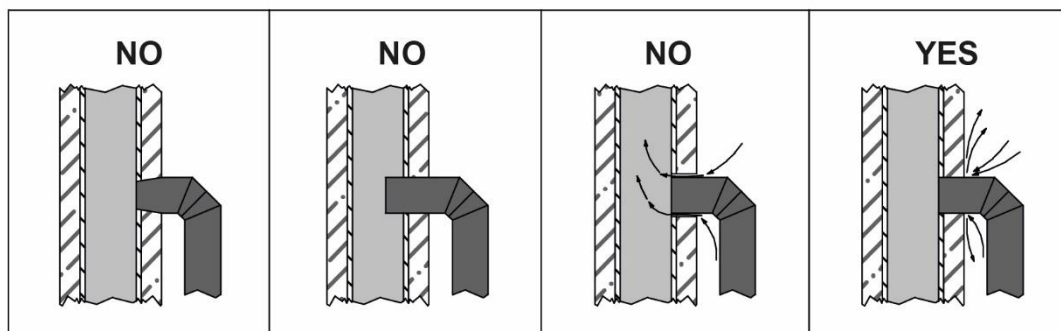
Extractor fans can cause malfunctions to the appliance if used in the same room.

## The flue pipe and connection to the same

The **flue pipe** is an essential element for the efficient operation of the appliance. The boiler stove smoke outlet is 150mm in diameter. The flue must have a minimum cross section of 180 mm with a minimum height of 4 metres. Each product must be equipped with its own flue, without other adjoining elements (boilers, chimneys, stoves etc.). The flue dimensions are closely related to its height, which must be measured from the appliance flue gas outlet to the base of the stack. In order to guarantee adequate draught, the chimney stack flue outlet surface must be twice as big as the flue pipe cross-section. The discharge pipe for combustion products generated by the forced draught device, must comply with the following requirements:

- It must seal off the combustion gases, as well as being waterproof and suitably isolated and insulated in relation to the conditions of use (refer to UNI 9615);
- It must be made of suitable materials capable of withstanding normal mechanical stress, heat, and the effects of combustion gases and condensate, if any;
- It must go upwards after the vertical section, for the entire remaining part, with a minimum gradient of 20%; The sub-horizontal section must not have a length greater than  $\frac{1}{4}$  of the effective height H of the flue or chimney, and **must not be longer than 2,000 mm**;
- It must preferably have a round internal cross-section: square or rectangular cross-sections must have rounded corners with radius not inferior to 20 mm;
- It must have a constant, free and independent internal cross section;
- Rectangular cross-sections must have a maximum ratio of 1.5 between the sides;
- **If the flue pipe is installed on the outside it is essential that it is insulated** in order to avoid the flue gas cooling allowing condensation to form;
- Parts made from non-combustible materials (**it is absolutely prohibited the use of aluminium flue pipe**) - capable of withstanding combustion gases and potential condensation - must be used for mounting the flue gas pipes (for the section from the appliance to the flue inlet);
- It is forbidden to use fibre cement pipes to connect the appliance to the flue;
- Flue pipes must not pass through rooms in which the installation of combustion devices is prohibited;
- The flue pipes must be assembled in such a way as to guarantee adequate sealing of flue gases during low pressure operation of the appliance;
- **The installation of horizontal sections is prohibited;**
- **It is prohibited to use counter sloping elements;**
- The flue gas pipe must allow for the recovery of soot or be cleanable, and must have a constant cross-section;
- It is forbidden to allow other air intake conduits and system pipes to transit inside the flue gas pipes, even if they are over-sized.

Below are examples of pipe connections to the flue pipe:



## Chimney

The **chimney** is a device crowning the flue, used to ease dispersion of combustion products.

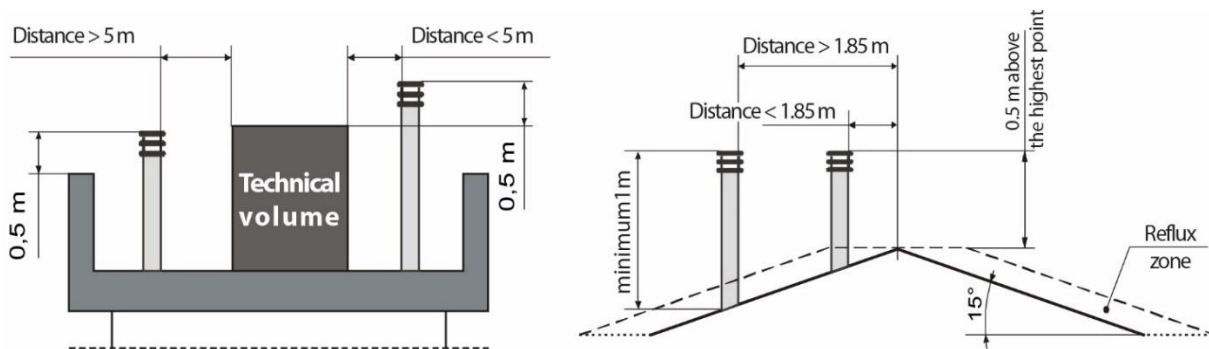
It must satisfy the following requirements:

- It must have a usable outlet cross-section no less than double that of the flue onto which it is inserted;
- It must be shaped in such a way as to prevent rainwater or snow from seeping into the flue;
- It must be built in such a way as to ensure the discharge of combustion by-products even in the event of winds from every direction and inclination.



The outlet height (where height refers to the top of the flue, regardless of any chimney stacks) must be outside of the so-called reflux zone, in order to prevent the formation of counter-pressures preventing the free discharge of combustion by-products into the atmosphere.

It is therefore necessary that the minimum heights - indicated in the following diagrams - are observed:



## ELECTRICAL CONNECTION

The electric connection must only be performed by **qualified staff**, in compliance with all general and local safety standards.

**Check that the power supply voltage and frequency correspond to 230V – 50 Hz.**

The appliance's safety is ensured when it is properly connected to an efficient earthing system.

In the electric connection to the mains power supply, include a 6 A – Id 30 mA differential trip-switch with suitable breaking load. The electric connections, including the earth connection, must be made after shutting off the electrical system.

When completing the system, bear in mind that the cables must be laid in an unmovable manner and far from parts subject to high temperatures. During the final wiring of the circuit, only use components with a suitable electrical protection rating. Do not pass electric cables in the immediate vicinity of the flue gas pipe, unless they are insulated with suitable materials. Connection to the mains power supply should only be carried out after the wires have been connected to the terminal board.

**KLOVER srl declines all responsibility for injury to persons and animals or damage to objects due to failure to connect the appliance to earth or to comply with IEC specifications.**

## Electronic control unit

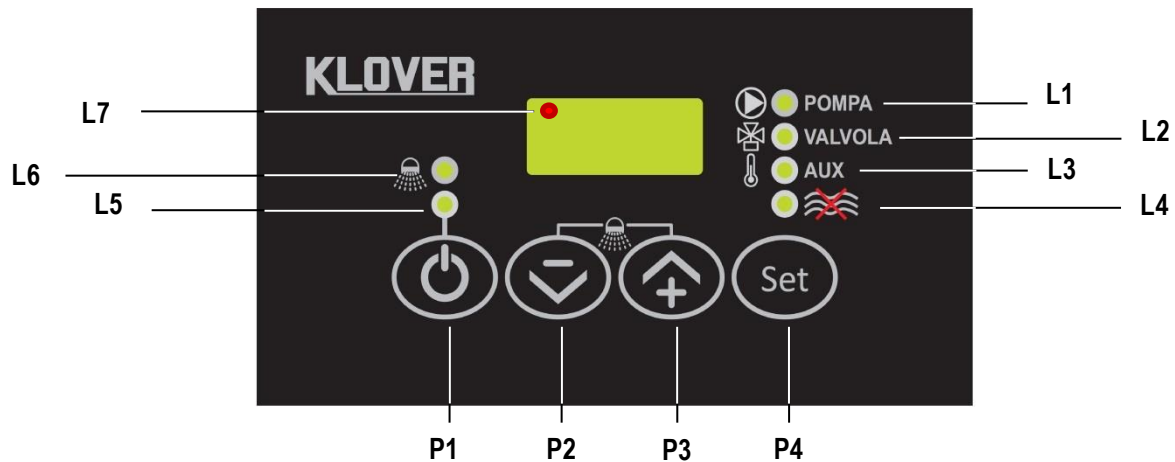
The electric control unit installed on the appliance controls the heating pump, switches the 3-way motorised valve fitted on the water system, switches on and off the heat generator, if installed, and starts any additional pumps.

It is composed of:

- **Master switch** (used to supply power to the control unit itself);
- **Pump adjustable thermostat** (used to activate or deactivate the pump on reaching, or not, the temperature we set on the thermostat itself);
- **Valve adjustable thermostat** (used to exchange any motorised valve on reaching, or not, the temperature we set on the thermostat itself. It is normally used for DHW in combination with another heat generator);
- **AUX adjustable thermostat** (used to control whether or not the heat generator reaches the temperature set on the thermostat);
- **SERV adjustable thermostat** (used to activate or deactivate an additional pump on reaching, or not, the temperature set on the thermostat);
- **Thermometer** (indicates the temperature of the water inside the boiler unit);
- **Acoustic alarm** (activated whenever the boiler water temperature reaches 90-95°C);
- **Level switch** (indicates that water is not up to level inside the boiler).

Two cables exit the control unit, one of which has no plug. The cable with the plug should be connected to a mains socket with the specifications detailed above. The insulated cable with 4 wires should be connected to the three-way motorised valve installed in the domestic water system (*see section “Control of a possible three-way motorised valve for the DHW system”*).

The control unit has an internal fuse **T 3,15A**.



### DESCRIPTION OF THE KEYS

#### - P1 ON/OFF

this button, when pressed for two consecutive seconds, switches the control unit on/off, depending on whether it is off or on respectively.

**During normal operation of the appliance, the control unit must ALWAYS be switched on.**

#### - P2 DECREASE TEMPERATURE

Depending on which thermostat is selected, it decreases the value set.  
If pressed at the same time as P3, it activates the *DHW* function.

#### - P3 INCREASE TEMPERATURE

Depending on which thermostat is selected, it increases the value set.  
If pressed at the same time as P2, it activates the *DHW* function.

#### - P4 SET/MENU

Provides access to the set thermostat values signalled by the associated PUMP / VALVE / AUX / SERV LEDs flashing.  
It also allows you to save changes made to the values for each thermostat.

### DESCRIPTION OF LEDS

#### - L1 PUMP LED

The led turns on when the pump thermostat is selected.  
The LED lights up when the pump thermostat temperature setting is reached.

#### - L2 VALVE LED

The LED turns on when the valve thermostat is selected.  
The LED lights up when the valve thermostat temperature setting is reached.

#### - L3 AUX LED

The LED flashes when the auxiliary thermostat is selected.  
The LED lights up when the auxiliary thermostat temperature setting is reached.

**- L4 LEVEL SWITCH LED**

The LED turns on when the tank is empty or the water level is too low.

**- L5 OFF LED**

This LED is lit when the control unit is off.

**- L6 DHW LED**

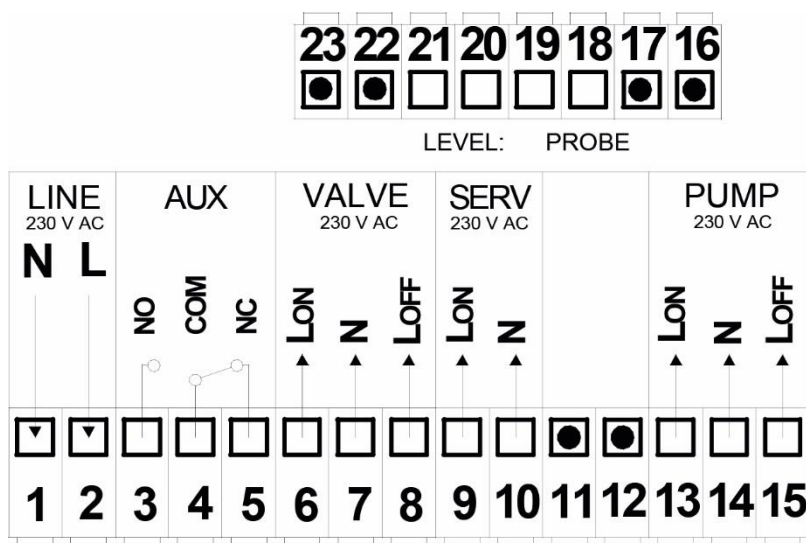
This LED flashes when the *DHW function* is being set.

The LED is lit when the DHW function is on.

**- L7 SERV LED**

The LED lights up when the service thermostat is selected (for additional pump).

The LED lights up when the service thermostat (for additional pump) temperature setting is reached.



|        |                        |   |
|--------|------------------------|---|
| Inputs | PROBE                  | Water Probe: Temperature Range 0 – 100 °C |
|        | H <sub>2</sub> O LEVEL | ON/OFF permission: Level switch           |

|         |       |              |                       |   |
|---------|-------|--------------|-----------------------|---|
| Outputs | PUMP  | System pump: | 230 V AC power supply | Terminal clamps 13(FON) - 14(N)         |
|         | SERV  | Service:     | 230 V AC power supply | Terminal clamps 9(FON) - 10(N)          |
|         | VALVE | Valve:       | 230 V AC power supply | Terminal clamps 6(FON) - 7(N) - 8(FOFF) |
|         | AUX   | Auxiliary:   | Free contacts         | Terminal clamps 3(NO) - 4(COM) - 5(NC)  |

**OPERATION**

**- ON/OFF:**

The control unit is switched on/off by pressing and holding the **P1 (ON/OFF)**

The **OFF** status is signalled by the fact that the **L5** LED turns on.

**- SAFETY function:**

If the temperature detected by the **H2O PROBE** exceeds the value of the **Safety Thermostat**, this forces the activation of the **PUMP**.

**- SAFETY function:**

If the temperature detected by the **H2O PROBE** exceeds the value of the **Alarm Thermostat**, this activates the acoustic and visual signal.

**SILENCE:** pressing any button deactivates the acoustic signal for **5 minutes**.

- **NO ICE function:**

If the temperature detected by the **H2O PROBE** goes below the value of the **ANTIFREEZE Thermostat**, this activates the timed **PUMP** outlet.

The relative **L1** LED turns on and **ICE** starts flashing on the display.

- **PUMP ANTI-LOCKING programme:**

In the event of inactivity of the **PUMP** outlet for longer than the **ANTILOCKING Timer**, this activates the outlet of the **PUMP**.

The relative **L1** LED turns on and **blP** appears on the display.

- **SECURE TEMP function:**

If the device is **OFF** and in **SECURE** mode, the device automatically positions itself to **ON** status.

- **LEVEL SWITCH function:**

The closure of the input closure determines the activation of the **L4** LED.

- **OUTLET function:**

- **PUMP ON:** for temperatures above the PUMP thermostat setting  
for temperatures above the ALARM thermostat setting  
for temperatures below the ANTIFREEZE thermostat setting
- **VALVE ON:** for a temperature above the VALVE Thermostat temperature
- **AUX ON:** for a temperature above the AUX Thermostat temperature
- **SERV ON:** for a temperature above the SERVICE Thermostat temperature

- **DHW function:**

By holding down the **P2 (-)** and **P3 (+)** buttons at the same time it is possible to activate the DHW function. At this point, while the **L6** LED flashes, just set the time (in minutes) for which you want to have all the heat burned for the production of domestic hot water. This function turns the pump off for the set time in minutes. When this function is active, the pump will turn on only if the safety temperature of 85 ° C is reached. It is possible to deactivate this function by holding down the **P2 (-)** and **P3 (+)** buttons again.

## MAIN MENU

With a simple **click** of the **P4 (SET)** button, it is possible to scroll through the values of the set Thermostats signalled by the flashing of the associated **PUMP / VALVE / AUX** LED.

To change the value:

- Go to the Thermostat value to be changed.
- By using the **P2 (-)** and **P3 (+)** buttons, it is possible to increase/decrease the value.
- To save the change, press **P4 (SET)**.
- To exit the menu, press **P1 (ESC)** or wait for 5 seconds.

| Parameters       | Symbol | Min   | Factory setting | Max   | Recommended values                  | Reference led |
|------------------|--------|-------|-----------------|-------|-------------------------------------|---------------|
| PUMP thermostat  | A01    | 50 °C | <b>55 °C</b>    | 85 °C | <b>Minimum 55 °C</b>                | <b>L1</b>     |
| VALVE thermostat | A02    | 20 °C | <b>65 °C</b>    | 85 °C | <b>65 °C</b><br>(only if connected) | <b>L2</b>     |
| AUX thermostat   | A03    | 20 °C | <b>85 °C</b>    | 85 °C | <b>50 °C</b><br>(only if connected) | <b>L3</b>     |
| SERV thermostat  | A04    | 20 °C | <b>85 °C</b>    | 85 °C | <b>60 °C</b><br>(only if connected) | <b>L7</b>     |

## FAULT SIGNALLING AND ALARMS

The control unit signals faults associated with the **H2O PROBE** via a flashing message:

- **Lo:** indicates a value below the set scale (temperature below 0°C)  
**Occurs when the H2O PROBE is off.**
- **Hi:** indicates a value above the set scale (temperature above 100°C)  
**Occurs when the H2O PROBE has had a short circuit.**

## PARAMETER SETTINGS

| <b>PROGRAMMABLE PARAMETERS</b>                 |       |            |
|--|-------|------------|
| ANTIFREEZE activation thermostat               | [°C]  | <b>6</b>   |
| SAFETY activation thermostat                   | [°C]  | <b>85</b>  |
| ALARM function activation thermostat           | [°C]  | <b>90</b>  |
| PUMP thermostat hysteresis (A01)               | [°C]  | <b>3</b>   |
| VALVE thermostat hysteresis (A02)              | [°C]  | <b>3</b>   |
| AUX thermostat hysteresis (A03)                | [°C]  | <b>3</b>   |
| SERV thermostat hysteresis (A04)               | [°C]  | <b>3</b>   |
| ANTILOCKING timer                              | [h]   | <b>168</b> |
| ANTILOCKING pump activation time               | [sec] | <b>30</b>  |
| ANTIFREEZE Pump OFF time                       | [min] | <b>5</b>   |
| ANTIFREEZE Pump ON time                        | [sec] | <b>20</b>  |
| Type of Probes (10K blue='0' - 100K grey= '1') | no.   | <b>0</b>   |
| STANDBY enabling                               | no.   | <b>1</b>   |
| ANTIFREEZE function enabling                   | no.   | <b>1</b>   |

| <b>NON-PROGRAMMABLE PARAMETERS</b> |      |          |
|------------------------------------|------|----------|
| ANTIFREEZE thermostat hysteresis   | [°C] | <b>1</b> |
| SAFETY thermostat hysteresis       | [°C] | <b>1</b> |
| ALARM thermostat hysteresis        | [°C] | <b>1</b> |

## TECHNICAL SPECIFICATIONS

|                              |   |
|------------------------------|---|
| <b>Power supply</b>          | 230 V AC ±10%~50Hz<br>Protective fuse T3,15A  |
| <b>Mechanical dimensions</b> | Built-in temperature controller: 120 x 80 x 50 mm   |
| <b>Temperature probe</b>     | silicone/pvc cable<br>Operating temperature: -50°C /130°C<br>Measurement limits: 0 - 99°C – Precision: ± 1°C  |
| <b>Outputs</b>               | PUMP output: power supply - 230 V AC Max capacity 5 A 250 VAC<br>VALVE output: power supply - 230 V AC Max capacity 5 A 250 VAC<br>AUX output: free contact – max capacity 5 A 250 VAC<br>SERV output: power supply - 230 V AC Max capacity 5 A 250 VAC |
| <b>Standards applied</b>     | EN 60730-1, 50081-1 / EN 60730-1 A1, 50081-2  |

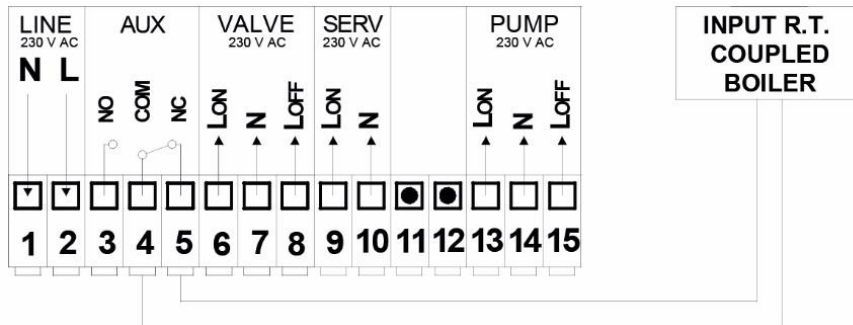
## Control of any coupled boiler

If the wood-burning appliance is to be coupled to a previously installed boiler in the system (e.g. wall-hung gas boiler), the latter can be switched on and off via the AUX thermostat in the control unit. The coupled boiler will switch on/off once it has reached the temperature set on the AUX thermostat. This way, there will never be two heat generators operating

at the same time on the same system, thus maximising performance and management of the system itself. The coupled boiler may however be used for the production of domestic hot water.

**The contact on the two terminals at the back of the control unit (TERMINAL 4 COM and TERMINAL 5 NC) is normally closed if the temperature of the wood-burning appliance is lower than that set on the AUX thermostat. The contact is closed only when the temperature set on the same thermostat is reached.**

It is therefore necessary to connect the two terminals (TERMINAL 4 COM and TERMINAL 5 NC) to the input of the room thermostat on the coupled boiler (depending on the coupled product) as shown in the example below:



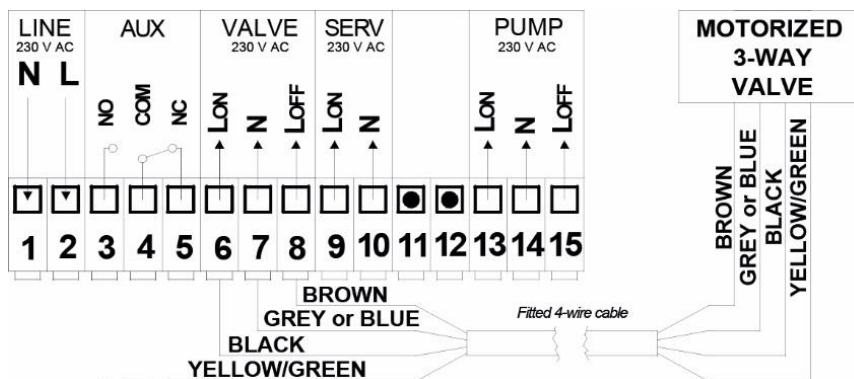
**Control of a possible three-way motorised valve for the DHW system (on prepared models only)**

The wood-burning appliance is equipped as standard with a control for a possible 3-way motorised valve to be installed on the domestic water circuit. In the rear technical compartment of the appliance there is a 4-wire cable (See section "Components of the appliance"), to be used to control the valve. The four wires in the cable have different colours, and precisely:

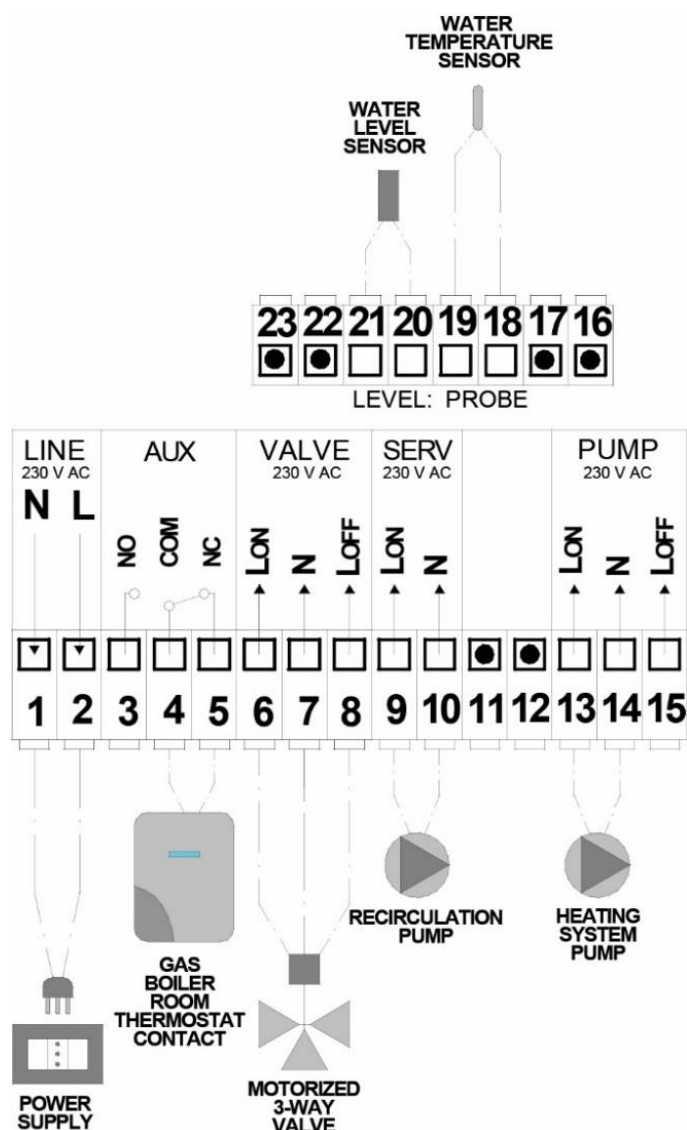
- Grey or blue wire = 3 WAY VALVE COMMON - Neutral
- Black wire = WOOD-BURNING APPLIANCE SIDE - Valve opening phase  
(wire has power until temperature set on valve thermostat is reached or exceeded)
- Brown wire = COUPLED BOILER SIDE (e.g. gas boiler) - Valve close phase  
(wire has power below temperature set on valve thermostat)
- Yellow/green wire = GND

Note that the plumbing connection must be done in such a way that when the valve is at rest, the domestic water passes from the coupled gas. Only when the wood-burning appliance temperature is sufficiently high (value set via control unit on valve thermostat) is the three-way valve powered, closing the water circuit in the coupled boiler and opening the water circuit in the wood-burning appliance.

Below is an example of connection to the three-way: motorised valve:



Example of electrical connection



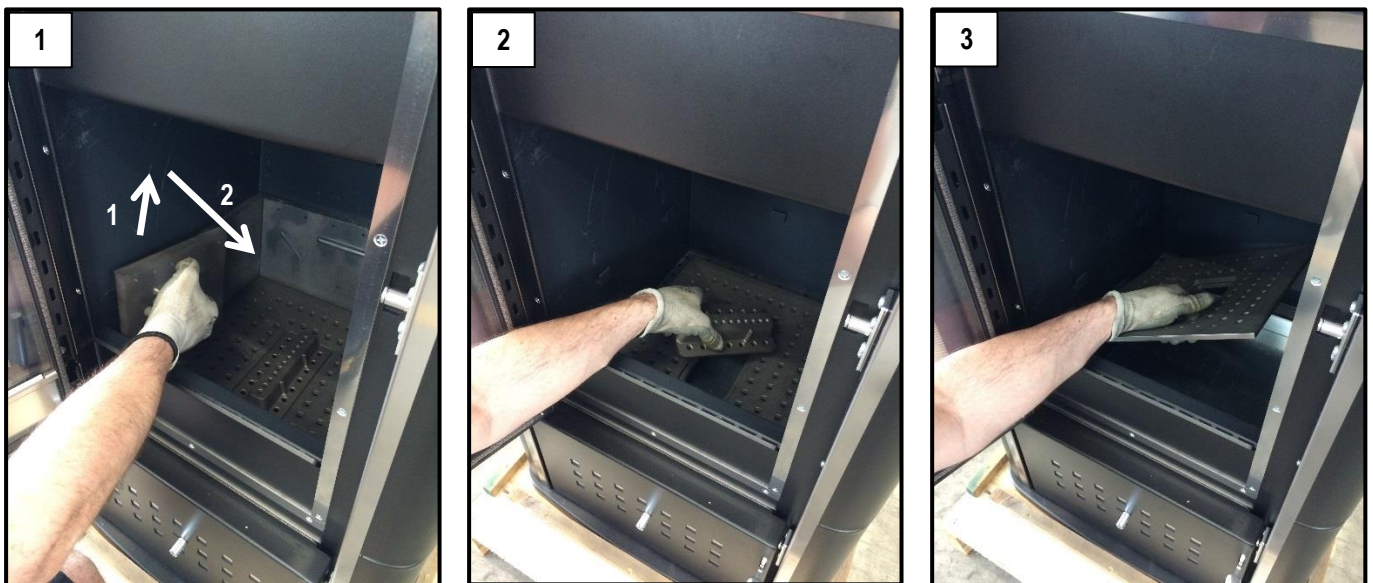
- **LINE:** Connect terminals 1 and 2 to the electrical power supply (terminals already connected to power supply cable in the factory).
- **AUX:** This is used to control a boiler coupled with the heating system where present. Connect terminals 4 and 5 (or 3 and 4 depending on the type of connection to the coupled boiler) to the RT (Room Thermostat) contact on the boiler. It is then possible to control the coupled boiler using the temperature set on the *AUX thermostat*; above the set temperature the coupled boiler turns off and comes on again only below the set temperature.
- **VALVE:** Connect terminals 6, 7 and 8 to the 3-way motorised valve. This is used to control a 3-way motorised valve (or two 2-way motorised valves) installed on the DHW system. The valve opens the DHW circuit on the wood-burning appliance at temperatures higher than those set on the *VALVE thermostat* (230V voltage on terminals 6 and 7) and closes the DHW circuit at lower temperatures (230V voltage on terminals 7 and 8). (Terminals already connected at the factory to a cable suitable for connection to a 3-way valve).
- **SERV:** Connect terminals 9 and 10. This is to control an additional pump installed inside the appliance. The additional pump will operate at temperatures higher than those set on the *SERV thermostat*. If connected to an additional pump, we recommend setting the *SERV thermostat* to temperatures no lower than 55°C to prevent the formation of condensation, which would damage the appliance's boiler unit.
- **PUMP:** Connect terminals 13 and 14 to the pump on the heating system. This is used to control the pump installed on the heating system. The heating pump will operate at temperatures higher than those set on the *PUMP thermostat*. We recommend setting the pump thermostat to temperatures higher than 55°C to prevent the formation of condensation, which would damage the appliance's boiler unit. (Terminals already connected to pump cable in the factory).

- **PROBE:** Connect the water temperature probe to terminals 18 and 19. This is used to detect the water temperature inside the appliance. If the probe is not connected, the control unit's display shows "Lo"; if the probe is short-circuited, the display shows "Hi". (Terminals already connected to H2O Probe in the factory).
- **LEVEL:** Connect the level switch (water level sensor) to terminals 20 and 21. This is used to signal low water level inside the appliance's boiler unit. (Terminals already connected to level switch in the factory).

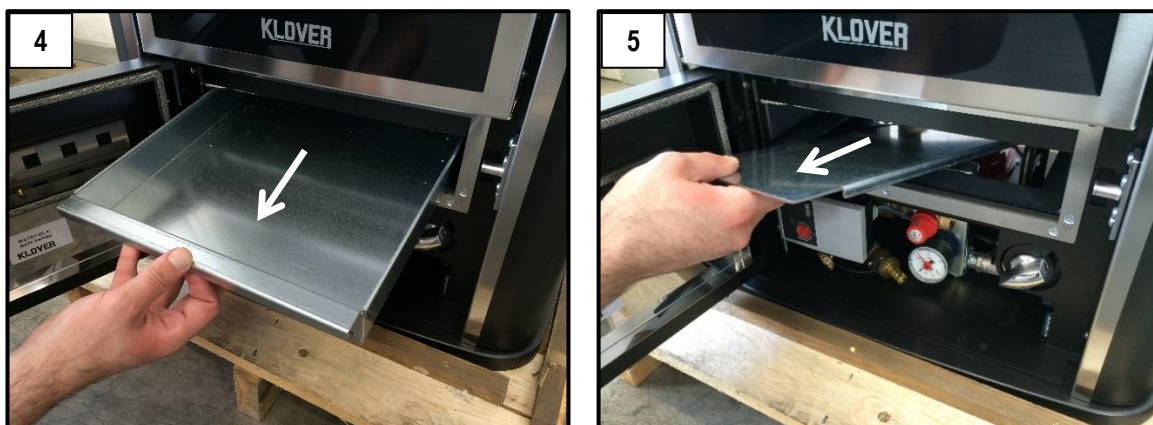
## HYDRAULIC CONNECTION

The plumbing connections must be made in a rational way using the connections on the template of the appliance. To facilitate the connection of the pipes, all the plumbing connections have been fitted in the technical compartment, leaving space to make the appropriate connections.

To access the unit and to make the necessary plumbing connections, proceed as follows:



Remove the five cast iron partitions inside the combustion chamber (figure 1). Next, remove the cast iron grate (figures 2 and 3).



After removing the ash drawer (figure 4) pull out the bottom (two pieces) (figure 5).





Now open the fire door to access and make the plumbing connections inside the combustion chamber (figure 6). Once the connections have been made, reverse the above procedure, carefully replacing all the parts previously removed, paying particular attention to repositioning the cast iron grate as shown in the photo above (figure 7) to prevent ash from compacting and falling into the ash drawer, which would reduce the flow of combustion air.

The appliance can be coupled with any other boiler already installed on the system. In this case it is essential to fit all the necessary safety devices and shut-off valves based on the system and intended use. It is also necessary to consider all laws and national, regional, provincial and municipal regulations of the country where the appliance is installed.

A safety valve calibrated to 6 bars must be installed in the DHW system.

**N.B.: THE SYSTEM MUST BE DIMENSIONED FOR AN AVERAGE FLOW TEMPERATURE OF 55°C.**

The maximum mains water pressure should never exceed 2.5 bar; recommended operating pressure: 1.5 bar (during operation).

In the event of water with hardness exceeding 28 °f, an anti-limescale device must be installed. This must be selected on the basis of the specific properties of the water.

**TO AVOID COMPROMISING THE FUNCTION AND LIFE OF THE HEAT PUMP, INSTALLATION OF A FILTER AND A MAGNETIC DIRT SEPARATOR IS REQUIRED DOWNSTREAM OF THE RETURN PIPE ON THE APPLIANCE.**

You can install the appliance in the same room as another boiler only if this has a sealed chamber; installation must be performed in compliance with the current regulations.

The appliance must be mounted exclusively by qualified personnel. Scrupulously comply with the instructions given in this guide.

**The manufacturer declines any liability for damages caused due to incorrect assembly.**

## INITIAL START-UP

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### Filling the boiler unit and the system for the first time

After connecting the appliance to the water system, fill the boiler unit as follows:

- Dilute the *Long Life* product to 2% by pouring the contents of the bottle directly into the boiler unit (See section "[Maintenance of the boiler unit](#)");
- Open the "*Boiler unit loading cock*" to fill the entire boiler unit until the water reaches the level of the "*Boiling discharge pipe*".

**N.B.: the water level inside the boiler unit should cover the exchangers (primary and/or secondary) Regularly check that the water in the boiler unit is at the level of the "*boiling discharge pipe*" at 80 ° c. top up as necessary.**

The appliance is fitted with a water level sensor which signals when there is insufficient water in the boiler unit. If the level is too low, the "*Level switch - L4*" LED will light up on the display (see section "[Electronic control unit](#)"). If this happens, fill to the appropriate level by opening the "*boiling unit loading cock*" and fill the boiler unit until the water level reaches the "*boiling discharge pipe*".

After filling the boiler unit, fill the system as follows:

- Check the seal of all piping, the expansion vessel, and the circulation pump;
- Open the "automatic air release valve" on the appliance;
- Open the "*and system load cock*" to fill the system. Gradually allow the air to come out from the appliance through the "*automatic air release valve*"; **optimum working pressure is 1.5 bar (when the appliance is operating)**;
- Vent all radiators and any other de-aeration systems to ensure that there are no air bubbles in the system.

After installation, check the seal of all plumbing joints for the first few days of operation.

The system and the water inside the boiler unit can be emptied by opening the "*boiler unit drain cock*" situated at the back of the appliance.

In a system subject to being emptied frequently, it is essential that filling is performed with water suitably treated to remove hardness which can give rise to scaling.

**NEVER OPERATE THE APPLIANCE STOVE WITHOUT WATER IN THE BOILER UNIT. IN ADDITION TO NOT HEATING, IT MAY ALSO COMPROMISE THE OPERATION AND LIFE OF THE APPLIANCE.**

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### Antifreeze protection

In intensely cold periods it is good practice to leave the heating system running. In the event of a prolonged absence, antifreeze must be added to the heating water and to the water in the boiler unit. **For the choice of antifreeze and the quantity to add to the boiler unit, see section "[Maintenance of the boiler unit](#)" in order to avoid compromising the operation and life of the appliance.**

The emptying of the heating system should also be considered. If it is being emptied frequently, it is essential that filling is performed with water suitably treated to remove hardness which can give rise to scaling.

**The boiler unit should always have treated water (see section "[Maintenance of the boiler unit](#)"); never leave it without water, in order to avoid rusting which would affect its life.**

---

### Switching on

Perform the following operations:

- Connect the appliance to the electrical system by using the provided cable;
- **Set the "*power ON/OFF switch*" on the rear side of the appliance to "I" (on)**;
- **Make sure that there is water in the system and the boiler unit**;
- set the thermostat that controls the pump to a temperature of 55-60 °C; **NEVER set the temperature to lower than 55 °C because condensation could form in the boiler unit, which in time could ruin the appliance**;

- open the smoke damper on the flue port by setting the handle to the vertical position;
- Open the "primary manual air combustion damper" by turning the knob left.
- Open the "secondary automatic air combustion damper" by turning the knob fully anti-clockwise.
- Light the fire using seasoned, thin wood;
- When the wood has ignited well, close the "primary manual air combustion damper" by turning the knob completely right and adjust the combustion air via the "secondary automatic air combustion damper", by adjusting the opening of the relative knob;
- If necessary adjust the draught in the flue pipe by adjusting the "upper smoke damper" on the flue pipe inlet.

Combustion might be difficult when lighting, until the flue pipe and the connection pipes are hot. Weather conditions may also affect the way the flue draws.

The fire door must be kept closed at all times except during refuelling in order to prevent the escape of smoke.

Never light the appliance with alcohol or other highly flammable liquids.

The fire door has an opening for the flow of post-combustion air between the glass and the frame. This opening does not assure a seal in the combustion chamber. Any smoke escaping during lighting and/or normal operation of the appliance are not a defect, but is related to low draught in the flue pipe, a lack of air vents in the room or the type/quality of wood burned.

Always remember to open the smoke damper a few seconds before loading the combustion chamber with new wood in order to prevent the backflow of smoke into the room.

#### **ATTENTION!!!**

**IN ORDER FOR THE APPLIANCE TO OPERATE PROPERLY THE CAST IRON GRATE INSIDE THE COMBUSTION CHAMBER MUST BE POSITIONED AS SHOWN BELOW , TAKING CARE NOT TO INVERT IT, TO PREVENT THE ASH FROM COMPACTING AND NOT FALLING INTO THE ASH DRAWER. IF THE CAST IRON GRATE IS NOT TURNED PROPERLY, THIS WOULD AFFECT ITS LIFESPAN.**



**Warning: during the ignition phase and normal operation of the appliance, maintain the necessary safety distance and do not stand in front of it.**

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## Operation

To avoid possible damage and/or deformation to the appliance, it is essential not to load excessive amounts of fuel. It is also recommended to burn only good quality, dry and well-seasoned wood (cut at least 2 years).

Do not, under any circumstances, burn waste and/or any fuel other than wood for burning, to avoid reducing the life of the appliance.

To maximise the performance of the appliance during normal operation, adjust the opening of all dampers (air and smoke) according to draught; once combustion is complete, close all smoke and combustion air dampers to retain heat for longer.

---

## Production of domestic hot water (suitable models only)

Domestic hot water is produced instantly via a double heat exchanger immersed in the water inside the appliance. To obtain sufficient amounts of hot water, the appliance must have a minimum temperature of 65°C.

If a lot of hot water is needed, manually set the appliance to the "DHW Function" mode (see section "Electronic control unit"). The purpose of the "DHW Function" is to postpone operation of the heating pump to higher temperatures, so that all heat is used for hot water. Hence, the circulating pump in the heating system is off during this phase. When working in "DHW Function" mode, the timer can be set to delay the pump until 85°C is reached. This function should be disabled, when hot water is no longer needed (see section "Electronic control unit").

**If water is particularly hard, it is essential to install an anti limescale device at the DHW exchanger inlet, to be chosen according to the water type.**

If there is a drop in the quantity or the temperature of hot water, the heat exchanger may need to be cleaned (chemically) by the installer.

---

## Boiling

If for any reason (power cut, a pump fault, too much fuel, etc....), the water in the boiler unit reaches boiling point, carry out the following operations immediately:

- Fully open all smoke dampers;
- Fully close all combustion air dampers;
- Open a hot water tap and leave the water to run until the temperature in the appliance drops (models connected to the DHW system only).

After ascertaining the reason for the high temperature, wait for everything to go back to normal (temperature below 70°C), **then check the water level in the boiler unit and top up if necessary, by opening the "boiling unit loading cock"**. A low water level inside the boiler unit is signalled by the "Level switch – L4" LED on the control unit (see section "Electronic control unit").

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## PROBLEMS, ALARMS, USEFUL ADVICES

### Useful info...

Listed below is some important information regarding the appliance:

- It is normal for the appliance to emit a smell of paint during its first few days of operation. We recommend ventilating the installation room during the initial start-up.
- The boiler unit is treated with anti-oxidant paint in order to protect it against oxidation in the event of long periods of inactivity. After initial start-up, this paint no longer preserves its original features and any wear of the paint inside the combustion chamber should not be regarded as a manufacturing fault.
- Do not clean with water inside the combustion chamber; any oxidation of the combustion chamber after a long period of inactivity is not to be considered as a manufacturing fault.

- Any perceived noise during operation may be caused by the expansion settling of the plates that make up the boiler unit. These noises are accentuated especially during ignition and switching off phases of the appliance and are not to be considered a manufacturing fault.
- The door of the appliance does not provide airtight closing (opening for secondary-post combustion air passage); any perceived smoke smell (especially during ignition) is not to be considered a manufacturing fault.
- The appliance works exclusively with wood logs; do not burn different fuels.
- **The appliance can work only if connected to the heating system and with water inside the boiler unit.** Do not start the appliance for any reason if a plumbing connection in compliance with current regulations has not been done and if you have not filled the entire boiler unit and system with water in order not to compromise its life.
- If you find soot and fine particles in the room where the appliance is installed, check the sealing of flue pipes and the filter of the ash vacuum device used for cleaning.
- **Clean the boiler unit regularly (at least every 2 years) by changing the water inside and removing any solid residues. Next, fill the boiler unit with fresh water to restore the right dilution of LONG LIFE. Do not leave the boiler unit without any water, to avoid rusting which would reduce its lifespan.**
- **The temperature of the thermostat that controls the pump must never, for any reason, be set below 55°C,** to prevent the formation of condensate that could corrode the internal boiler.
- When priority is to be given to DHW (prepared models only), set the "*DHW Function*" and burn small pieces of dry wood in order to increase the flame and performance. After use of DHW water, disable the "*DHW Function*".
- Open the *smoke damper* before loading the wood and close the *combustion air damper* to prevent the release of smoke from the fire door.
- When necessary, "move" the wood using the fire hook supplied or by adjusting the grille raising lever in order to revive the flame.

**What happens if..**

- INSUFFICIENT DRAUGHT.
- DIFFICULT FLUE GAS EVACUATION.
- FLUE GAS ESCAPING INTO THE ROOM.

| ELEMENTS TO CHECK                     | ORIGIN  |
|---------------------------------------|---|
| External air intake                   | <ul style="list-style-type: none"> <li>- Non-existent;</li> <li>- Shutter closed;</li> <li>- Accidental obstruction;</li> <li>- Insufficient cross section.</li> </ul>  |
| Air intake (pipe)                     | <ul style="list-style-type: none"> <li>- Insufficient cross section.</li> </ul>   |
| Combustion air damper                 | <ul style="list-style-type: none"> <li>- Closed or incorrectly set.</li> </ul>  |
| Smoke damper                          | <ul style="list-style-type: none"> <li>- Closed or incorrectly set.</li> </ul>  |
| Wood                                  | <ul style="list-style-type: none"> <li>- Excessive humidity.</li> </ul>   |
| Flue<br>Hood fitting/flue gas channel | <ul style="list-style-type: none"> <li>- Insufficient cross section;</li> <li>- Insufficient height;</li> <li>- Accidental obstructions;</li> <li>- Periodical cleaning not performed;</li> <li>- Heat insulation or insulation insufficient or non-existent;</li> <li>- Use of unsuitable materials;</li> <li>- Heat insulation or insulation absent or insufficient;</li> <li>- Inadequate cross section (square or rectangular) or incorrectly sized;</li> <li>- Narrowing or presence of obstacles to the flow of flue gas;</li> <li>- Accidental obstructions;</li> <li>- Infiltrations of parasite air due to the use of materials not impermeable to gas and liquids;</li> <li>- Insufficient height.</li> </ul> |
| Chimney                               | <ul style="list-style-type: none"> <li>- Outlet height in reflow zone;</li> <li>- Close to or adjoining other chimneys;</li> <li>- Vicinity of obstacles, both natural and artificial;</li> <li>- Obstruction ( e.g.: birds nests);</li> <li>- Inadequate chimney pot shape;</li> </ul>   |

- Insufficient emission cross section.

- CONDENSATE ESCAPING THROUGH THE MASONRY.

| ELEMENTS TO CHECK | ORIGIN   |
|-------------------|--|
| Flue gas channel  | <ul style="list-style-type: none"> <li>- Use of inadequate material;</li> <li>- Absence of or incorrect installation of the dedicated condensate collector with drain connected to the disposal system.</li> </ul> |
| Flue              |  |
| Condensate tray   |  |

- SELF-COMBUSTION INSIDE THE FLUE.

| ELEMENTS TO CHECK             | ORIGIN   |
|-------------------------------|--|
| Hood fitting/flue gas channel | <ul style="list-style-type: none"> <li>- Periodical cleaning not performed.</li> </ul> |
| Flue gas channel              |  |
| Flue                          |  |

- WATER INSIDE THE COMBUSTION CHAMBER AND/OR THE ASH DRAWER

| ELEMENTS TO CHECK | ORIGIN   |
|-------------------|--|
| Flue              | <ul style="list-style-type: none"> <li>- In the event of the total or partial absence of a chimney, the flue has not been installed parallel to the appliance;</li> <li>- Unsuitable chimney.</li> </ul> |
| Chimney           |  |
| Pump thermostat   | <ul style="list-style-type: none"> <li>- Pump start-up at temperatures that are too low (condensate is created).</li> </ul>  |

## CLEANING AND MAINTENANCE

### Precautions before cleaning

Before carrying out any cleaning or maintenance operations, make sure that:

- the appliance is off and has cooled down completely;
- the ash is completely cold;
- the ash vacuum device used for cleaning is suitable and its filter is in good condition.

Before re-starting the appliance, re-install all previously removed components.

During cleaning operations, use the personal protection devices specified in Directive 89/391/EEC.

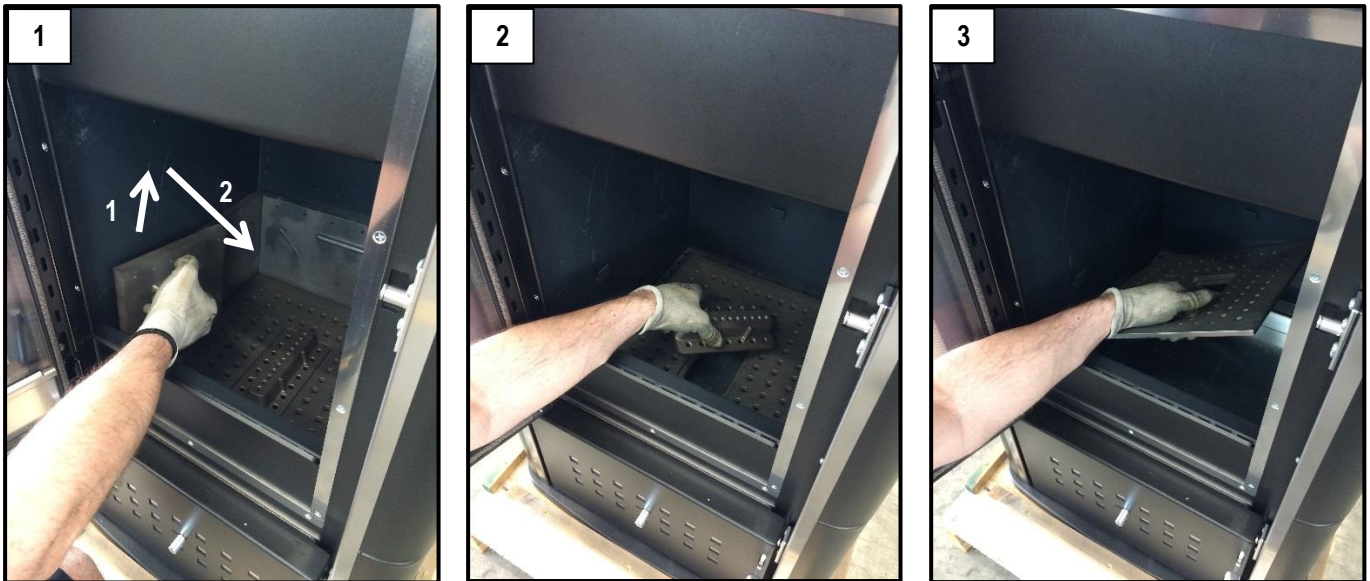
The required cleaning frequency depends on the type and quality of the pellets used. The schedule indicated below may therefore vary.

**Any problem affecting the appliance caused by lack of cleaning will not be covered by the warranty. The failure of these operations could affect the safety of the product.**

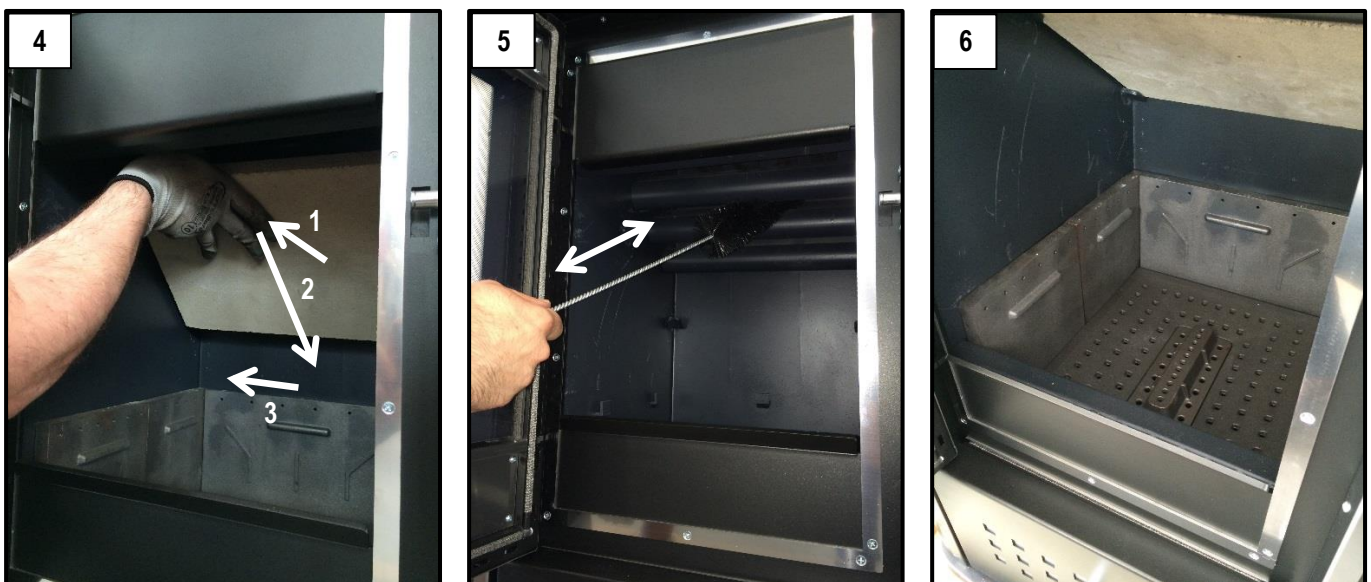
### Cleaning the combustion chamber

It is important to clean the combustion chamber at least once a month to ensure the proper and an optimum performance and operation of the appliance. Please proceed as follows:

Remove the pipes connecting the appliance to the flue pipe and clean them if necessary;



Remove the five cast iron partitions inside the combustion chamber (figure 1). Next, remove the cast iron grate (figures 2 and 3). Remove any deposits from the walls of the combustion chamber.



Remove the refractory brick above the combustion chamber (figure 4) and clean the upper flue by passing the supplied brush repeatedly between the pipes (figure 5). Once clean, reverse the above procedure, carefully replacing all the parts previously removed, paying particular attention to repositioning the cast iron grate as shown in the photo above (figure 6) to prevent ash from compacting and falling into the ash drawer, which would reduce the flow of combustion air.

When cleaning, do not pull out the ash draw, to avoid dirt falling into the technical compartment.

**WARNING:** use suitable ash vacuum devices equipped with a fine mesh filter in order to prevent ash from being blown into the room and to prevent damaging the vacuum cleaner. We do not recommend the use of normal vacuum cleaners.

Deposits on the walls of the combustion chamber (if particularly resinous wood is burned) can be eliminated by running the appliance at maximum for 30-40 minutes (in this case set the thermostat to 80°C) with thin dry wood. Leave the fire to go out and then scrape the inside walls using a steel spatula. Do not use tools that can reduce the thickness of the metal sheet of the boiler unit.

**After a long period of disuse, check for obstructions in the flue before turning on the appliance.**

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## Cleaning the ash drawer

Too much combustion residue inside the ash drawer prevents the proper supply of oxygen for combustion, reducing the performance of the appliance, as well as possibly damaging the cast iron grate inside the combustion chamber.



We recommend you periodically empty the ash drawer (figure 7) to ensure an efficient flow of combustion air at all times. It is also recommended to occasionally remove residual ash from the combustion chamber.

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## Cleaning the ceramic glass

Always clean the glass when the appliance is off and has cooled down completely. Use a damp cloth or a detergent specifically formulated for ceramic glass. Do not use abrasive sponges. Do not clean the glass if still warm; changes in temperature can lead to breakage.

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## Cleaning the flue pipe

The flue pipe cleaning must be performed at least once a year, at the beginning of winter, and anyway whenever necessary.

It is important to check for any obstructions in the flue before switching the appliance on following long periods of inactivity.

If cleaning of the flue pipe is not performed, the operation of the appliance and its components may be jeopardised.

**The frequency for cleaning the appliance and flue depends on the quality of wood used.**

USE TOP QUALITY WOOD TO OBTAIN THE BEST RESULTS.

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## Maintenance

Timely and systematic maintenance is essential for guaranteeing correct operation, optimal heat performance and durability of the device. Therefore, qualified staff should check the appliance at least once a year at the beginning of the season.

You must periodically check the seals because the latter guarantee the air- and water-tightness of the appliance and its good functioning; if they are worn or damaged you need to be replaced immediately by contacting a **Klover Authorised technical assistance centre**.

**For proper operation, the appliance must undergo routine maintenance performed by a Klover Authorised technical assistance centre at least once a year.**

Klover wood and pellet appliances are imported and distributed by FirePower Heating, Dunkeswell, Dunkeswell Business Park, Honiton, EX14 4RD.

UK technical and product support to dealers is provided by FirePower Heating who can be reached on 0844 3320156 or alternatively you can email them at [Technical@firepowerheating.co.uk](mailto:Technical@firepowerheating.co.uk).



## Maintenance of the boiler unit

The appliance is supplied with a special additive call LONG LIFE, designed to protect the boiler unit and heat exchangers from rust and to keep the water inside the boiler unit clean. LONG LIFE should be diluted to 2% with water inside the boiler unit. It can be poured directly into the boiler unit before or after filling it with water.



For ease of use, a table is provided of the annual dilution dosages of LONG LIFE:

| Boiler unit water capacity | Recommended dose of LONG LIFE (2%) before filling | Recommended dose of LONG LIFE (1%) after the first year | Recommended dose of LONG LIFE (2%) after the second year  |
|----------------------------|---|---|---|
| 50 l                       | 1000 ml   | 500 ml  | Empty and clean out the boiler unit entirely Restore the water level, adding 1000 ml of LONG LIFE |

**It is recommended to empty the boiler unit water every 2 years and remove any solid residues caked on the bottom. These residues reduce the effectiveness of LONG LIFE. The boiler unit should then be refilled and the optimum dosage of LONG LIFE should be added. If too much LONG LIFE is added by accident, empty and refill the boiler unit. Observance of the proper frequency for cleaning the boiler unit will prolong its life and is essential for the validity of the warranty.**

**ATTENTION!!! NON-USE AND OR AN INCORRECT DOSAGE OF LONG LIFE WILL INVALIDATE THE WARRANTY ON THE BOILER UNIT.**

LONG LIFE has been designed and tested on SICURO TOP products; KLOVER declines all liability arising from the use of LONG LIFE in products or applications other than those indicated.

Contact your agent/retailer to purchase LONG LIFE.

**Below are a number of special warnings for the use of LONG LIFE:**

- Causes serious eye irritation.
- May cause an allergic skin reaction.
- Harmful to aquatic organisms with long-term effects
- Avoid breathing dust/fumes/gases/fog/vapour/aerosols.
- Wear gloves/protective clothing/protect the eyes/face.
- Do not dispose of in the environment.
- IN CASE OF CONTACT WITH EYES: rinse thoroughly for several minutes. Remove contact lenses if it is easy to do so. Continue rinsing.
- IN CASE OF IRRITATION OR SKIN RASH: consult a doctor.
- Wash contaminated clothes before wearing them again.
- Dispose of the product/container in accordance with local/regional/national/international regulations.

**Dilution with antifreeze:** LONG LIFE is compatible with pure glycol mixtures and always with water in any proportion. Several antifreeze products on the market contain additives, however which may be not very compatible. To avoid doubt, test-mix the antifreeze solution with LONG LIFE to see how it behaves. If the components are mixed gently for a short time in the recommended proportions and then do not separate in the system, the products are compatible. If there is heavy clouding of the mixture which does not improve by stirring, the products are not compatible.

## WARRANTY CONDITIONS

The warranty period starts from the date of purchase of the appliance, which must be demonstrated by a delivery document and the warranty coupon duly completed and sent in a sealed envelope to the address of KLOVER SRL. These documents must be shown to the Technical Assistance Centre, if required.

- A copy of the warranty coupon must be stored together with the purchase document received.
- KLOVER s.r.l. disclaims any liability for accidents resulting from failure to comply with the instructions contained the user and maintenance manual attached to the appliance.
- Furthermore, KLOVER s.r.l. declines any liability arising from misuse of the appliance on the part of the user, unauthorised modifications and/or repairs, as well as the use of non-original spare parts or parts not suitable for this model.

### **KLOVER s.r.l. guarantees the materials, construction and operation of the appliance for 2 years, under the following conditions:**

1. On its own unquestionable judgement, the device evidencing material or construction faults will be repaired or replaced; with the exception of all costs relating to transport, restoration (hydraulic disassembly and assembly operations, any masonry works and any other necessary intervention) and accessory materials.
2. The warranty does not cover:
  - the ceramic glass and ceramic-majolica and/or varnished steel linings, as they are very fragile and can get accidentally damaged;
  - any part made of ceramic-majolica evidencing altered colour shades, pitting, cracks, shading and slight dimensional variations, as these cannot be regarded as product defects but features deriving from the handmade processing techniques used;
  - the cast iron brazier, the cast iron grid and plate, smoke deflector or flame arresters, gaskets, fuses or batteries inside the device's electronic system and any other removable component, where it is not proved that their condition is due to a manufacturing defect rather than the effects of wear;
  - electric and electronic parts, in which the malfunction can be traced to a non-compliant electrical connection, natural disaster (lightning, electrical discharges, etc.) and variation in voltage other than the nominal voltage;
  - any parameter calibration intervention due to the type of fuel or installation of the device.
3. The replaced components are guaranteed for the remaining period of the warranty, starting from the date of purchase and/or for a period not exceeding 6 months.
4. The use of poor-quality wood pellets or other fuel could damage the components of the device thereby voiding the relevant warranty and the manufacturer's liability. Therefore, we recommend using the fuel type indicated in our specifications;
5. Incorrect installation carried out by unqualified personnel, tampering with, failure to comply with the instructions contained in this "use and maintenance manual" and those regarding "workmanlike installation" shall void any warranty rights; the same applies to damages deriving from external factors. At all events, any compensation for direct or indirect damages is excluded, regardless of the nature and cause of the damages.
6. Please bear in mind that the goods travel under the customer's responsibility, even if delivered carriage free, therefore we shall not be held liable for any damages due to loading and unloading operations, accidental knocks, storage in unsuitable places, etc.
7. The boiler unit of water-based products only connected to a heating and/or sanitary water system is guaranteed for 5 years, at the above-mentioned conditions.
8. **The warranty is only valid if the duly filled-in warranty coupon - clearly legible in all its parts - is mailed in a closed envelope.**

The competent law court for settling any disputes is the Court of Verona.



**KLOVER**  
F U O C O E P A S S I O N E

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