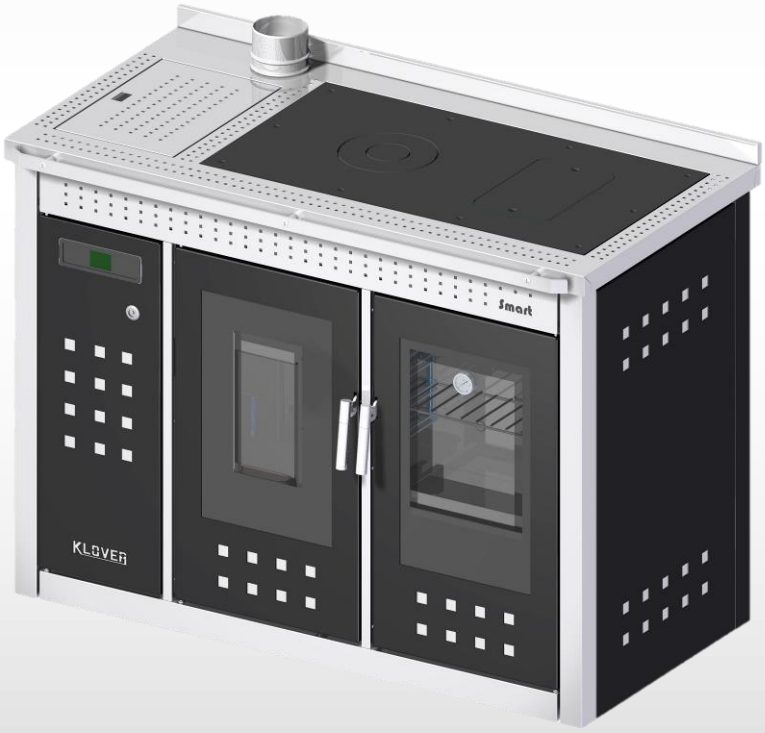
EN

KLOVER

Pellet-fired central heating cooker

SMART 120



INSTALLATION,
USE AND MAINTENANCE
USEFUL TIPS

User guide

Dear customer,

First of all we would to thank you for choosing a “KLOVER” product, and we hope you are completely satisfied with your purchase.

We recommend that you read the warranty certificate carefully, which you will find on the last page of this *User Guide*; call the Authorised Technical Assistance Centre (TAC) immediately for commissioning and validating your warranty.

We would like to thank you again for trusting KLOVER products, and we also inform you that these models are the result of forty years experience in the manufacture of solid fuel products using water as heat transfer fluid.

Each and every single part of our central heating cookers is manufactured by qualified staff using the most modern work equipment.

The manual contains a detailed description of the central heating cooker and its operation along with instructions for proper installation, basic maintenance and checks to be run regularly. It also contains practical advice to achieve maximum efficiency with minimum fuel consumption.

The cooker heat output can vary depending on the type of pellet used.

Enjoy heat with KLOVER!

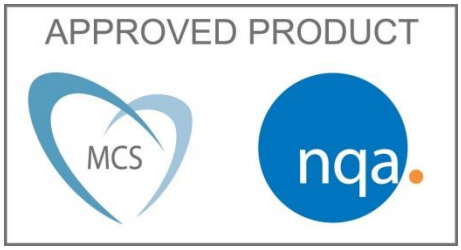
Smoke Control Areas

Under the Clean Air Act local authorities may declare the whole or part of the district of the authority to be a smoke control area. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an "unauthorised fuel" for use within a smoke control area unless it is used in an "exempt" appliance ("exempted" from the controls which generally apply in the smoke control area).
The Secretary of State for Environment, Food and Rural Affairs has powers under the Act to authorise smokeless fuels or exempt appliances for use in smoke control areas in England. In Scotland and Wales this power rests with Ministers in the devolved administrations for those countries. Separate legislation, the Clean Air (Northern Ireland) Order 1981, applies in Northern Ireland. Therefore it is a requirement that fuels burnt or obtained for use in smoke control areas have been "authorised" in Regulations and that appliances used to burn solid fuel in those areas (other than "authorised" fuels) have been exempted by an Order made and signed by the Secretary of State or Minister in the devolved administrations.
Further information on the requirements of the Clean Air Act can be found here :
http://smokecontrol.defra.gov.uk/
Your local authority is responsible for implementing the Clean Air Act 1993 including designation and supervision of smoke control areas and you can contact them for details of Clean Air Act requirements”

“The Klover SMART 120 (models - SM120, SM120-BP, SM120-P, SM120-B) have been recommended as suitable for use in smoke control areas when burning wood pellets.”

Technical Support

Klover pellet stoves are imported and distributed by FirePower Heating, Unit 11/12 Quadrant Distribution Center, Quedgeley, Gloucester, GL2 2RN.
UK technical and product support is provided by FirePower Heating who can be reached on 0844 3320156.



Certificate number NQA B 0002/29 - NQA B 0002/30 - NQA B 0002/31 - NQA B 0002/32

Copyright

Latest revision: 1.0 – May 2014

DICHIARAZIONE DI CONFORMITÀ

CE

DECLARATION OF CONFORMITY

In accordo con la Direttiva **89/106/CEE** (Prodotti da Costruzione), il Regolamento CE n. **1935/2004** (Materiali e Oggetti destinati a venire a contatto con prodotti alimentari), la Direttiva **2006/95/CEE** (Bassa Tensione) e la Direttiva **2004/108/CEE** (Compatibilità Elettromagnetica).

*According to the Directive **89/106/EEC** (Construction Products), the EC Regulation No. **1935/2004** (Materials and Articles intended to come into contact with foodstuffs), the Directive **2006/95/EEC** (Low Voltage) and the Directive **89/336/EEC** (Electromagnetic Compatibility).*

N° di identificazione - *Identification No.*	:	**SM120-01**
Emesso da - *Issued by*	:	**KLOVER s.r.l.** **Via A. Volta, 8** **37047 San Bonifacio (VR)**
Tipo di apparecchio - *Type of equipment*	:	**Wooden pellet burning appliance for domestic heating and cooking with the possibility of producing domestic hot water.**
Marchio commerciale -*Trademark*	:	**KLOVER**
Modello o tipo - *Model or type*	:	**SMART 120**
Uso – *Use*	:	**Domestic heating and cooking with possibility of producing domestic hot water**
Costruttore – *Manufacturer*	:	**KLOVER s.r.l.** **Via A. Volta, 8** **37047 San Bonifacio (VR)**
Ente – *Laboratory*	:	**NB 1880** **ACTECO S.R.L.** **I – 33084 Cordenons (PN)** **Via Amman, 41**

Le norme armonizzate o le specifiche tecniche (designazioni) che sono state applicate in accordo con le regole della buona arte in materia di sicurezza in vigore nella CEE sono:

The following harmonised standards or technical specifications (designations) which comply with good engineering practice in safety matters in force within the EEC have been applied:

Norme o altri riferimenti normativi *Standards or other normative documents*	Rapporto di Prova ITT *Initial Type Tests Report*
EN 12815 **EN 14785** **EN 60335-1** **EN 50165** **EN 55014-1** **EN 61000-3-2** **EN 61000-3-3** **EN 55014-2**	**0140-21NB**

In qualità di costruttore e/o rappresentante autorizzato della società all'interno della CEE, si dichiara sotto la propria responsabilità che gli apparecchi sono conformi alle esigenze essenziali previste dalle Direttive su menzionate.

As the manufacturer's authorised representative established within EEC, we declare under out sole responsibility that the equipment follows the provisions of the Directives stated above.

San Bonifacio (VR), 01/03/12

Mario Muraro
Chairman of the Board

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INTRODUCTION

Important safety instructions

ATTENZIONE! Read these instructions before installing and using the product.

- **The central heating cooker installation and commissioning must be performed by skilled personnel aware of the importance of respecting the Safety Standards in force. They will be responsible for the definitive installation of the machinery and its consequent proper operation.**
  KLOVER srl will not be held responsible if these precautions are not respected.
- **During installation of the appliance all local regulations, included those referring to National and European Standards, must be followed.**
- Connect the product flue gas outlet to a flue that has the features given in the *Connections* section in this *user guide.*
- The appliance is not suitable for the installation on a shared flue system.
- If the flue should catch fire, you must be provided with appropriate systems for damping down the fire or call the fire service.
- Connect the product to sockets with earth. Avoid using sockets controlled by switches or automatic timers.
- Do not use a damaged or worn power supply cable.
- If a multiple socket is used, make sure that the total voltage of the connected devices does not exceed that supported by the socket. Furthermore make sure that the total voltage of all these devices connected to the socket does not exceed the maximum level accepted.
- Do not use flammable substances to clean the appliance and its elements.
- Do not leave flammable containers and substances in the room where the central heating cooker is installed.
- Do not use the appliance as incinerator or in any other way different from that for which it has been designed.
- Do not use fuels different to those which are recommended.
- Do not use liquid fuels.
- External surfaces of the appliance reach high temperatures when it is running; operate with caution in order to avoid burns.
- Only use original spare parts recommended by the manufacturer.
- Do not perform any unauthorised modification to the appliance.

ATTENZIONE!

- **The use of poor pellet or any other material can damage the central heating cooker features, leading to the termination of the warranty and exempting the manufacturer from all responsibility.**
- The Klover pellet products are not suitable for use in smokeless zones.

Some Precautions

- Do not touch the *hot components* of the product (ceramic glass, flue pipe) during normal operation.
- Use the appropriate button to switch the electrical panel off. Do not disconnect the power supply cable while the central heating cooker is running.
- Keep children away from the central heating cooker when it is running since they could get burnt by touching its *hot components.*
- Children and inexperienced people are not allowed to use the appliance.
- **NEVER open the door of the central heating cooker while it is running.**

Conventions used in the manual

ATTENZIONE! Danger to the central heating cooker features.

General danger to personal safety.

Danger to people and objects due to materials at high temperatures.

Danger to people and objects due to electric power.

Burns hazard for people due to pressurised hot liquids.
(with temperature not exceeding boiling point at atmospheric pressure).

Destination of use

The new automatic operation **SMART 120** central heating cooker by KLOVER has been designed for heating your home.

The central heating cooker works exclusively with wood pellets and only with the hearth door shut. Never open the door when the appliance is running.
The central heating cooker has a DOUBLE COMBUSTION system that ensures an extraordinary efficiency average and “clean” flue gas exhaust with an emission of CO in the atmosphere which is among the lowest in Europe.

Do not use the central heating cooker in disagreement with the directions contained in this user guide. The central heating cooker is an indoor product.

This user guide is integral part of the central heating cooker.
If the product is transferred the user must give this manual to the new purchaser.

KLOVER S.R.L. DECLINES ANY RESPONSIBILITY IN CASE OF ACCIDENTS DUE TO THE FAILURE TO COMPLY WITH THE SPECIFICATIONS OF THIS MANUAL.
FURTHERMORE, KLOVER S.R.L. DECLINES ANY RESPONSIBILITY DUE TO INCORRECT USE OF THE PRODUCT BY THE USER, MODIFICATION AND/OR UNAUTHORISED REPAIRS, USE OF NON - ORIGINAL SPARE PARTS OR SIMPLY NOT SPECIFIC FOR THIS PRODUCT.
KLOVER S.R.L. IS NOT RESPONSIBLE FOR INSTALLATION OF THE THERMO STOVE. THE INSTALLER IS THE ONLY PERSON RESPONSIBLE FOR THIS OPERATION AND HE IS ALSO ENTRUSTED WITH CHECKING THE FLUE, THE EXTERNAL AIR VENT AND THE CORRECTNESS OF THE SOLUTIONS SUGGESTED FOR INSTALLATION. ALL THE SAFETY STANDARDS CONTAINED IN THE SPECIFIC LAW IN FORCE OF THE STATE WHERE THE THERMO STOVE IS INSTALLED MUST BE RESPECTED.

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

For the validity of the warranty, the user must comply with the directions contained in this guide and in particular:

- **Use the central heating cooker according to its operational limits;**
- **All maintenance must be performed constantly;**
- **Only authorise experienced and competent people to use the central heating cooker.**

Failure to comply with the requirements of this guide will void the warranty.

Installation Regulations

These operating and instructions cover the basic principles to ensure the correct installation of the pellet stove, although particulars may need modification to reflect local site conditions. In all cases the installation must comply with current Building Regulations, Local Authority By-laws and other regulations that affect the installation of the stove.
The Building Regulations requirements can be met by adopting the relevant recommendations given in British Standards BS 8303, BS 6461 and BS 7566 as
an alternative means to achieve an equivalent level of performance to that obtained by following the guidance given in Approved Document J.

Health and Safety

Care must be taken when installing a Klover pellet stove to ensure that the requirements of the Health and Safety at Work Act are met.
Handling
Adequate facilities must be available for loading, unloading and site handling the appliance bearing in mind the weight of the appliance.

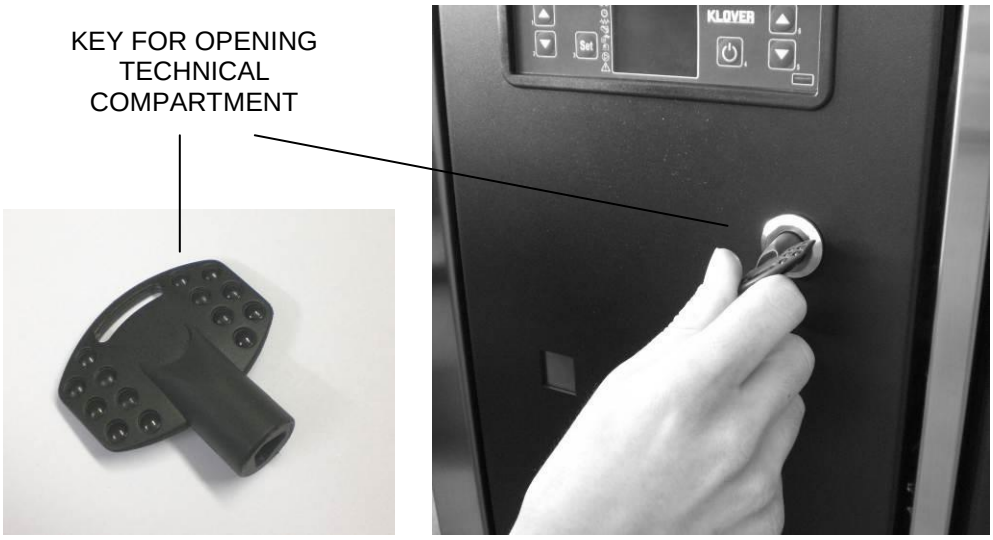
THE MACHINE AND THE PELLETS

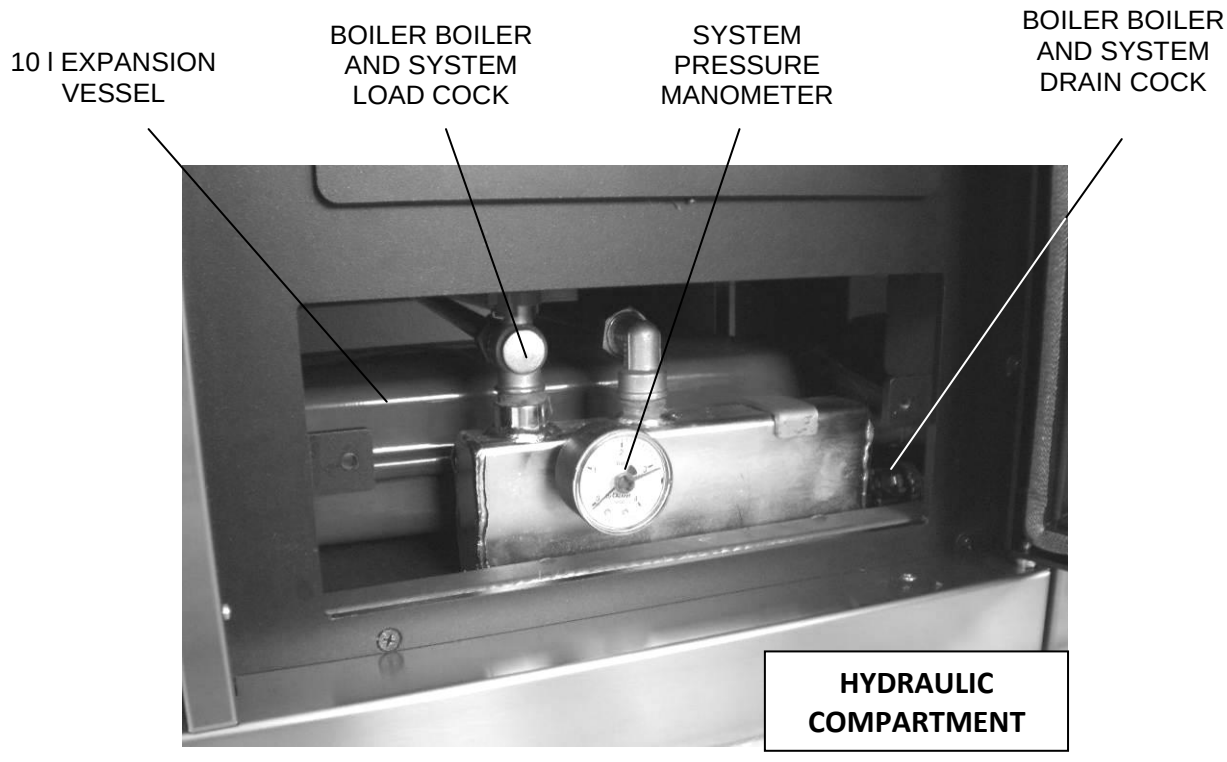
Central heating cooker components

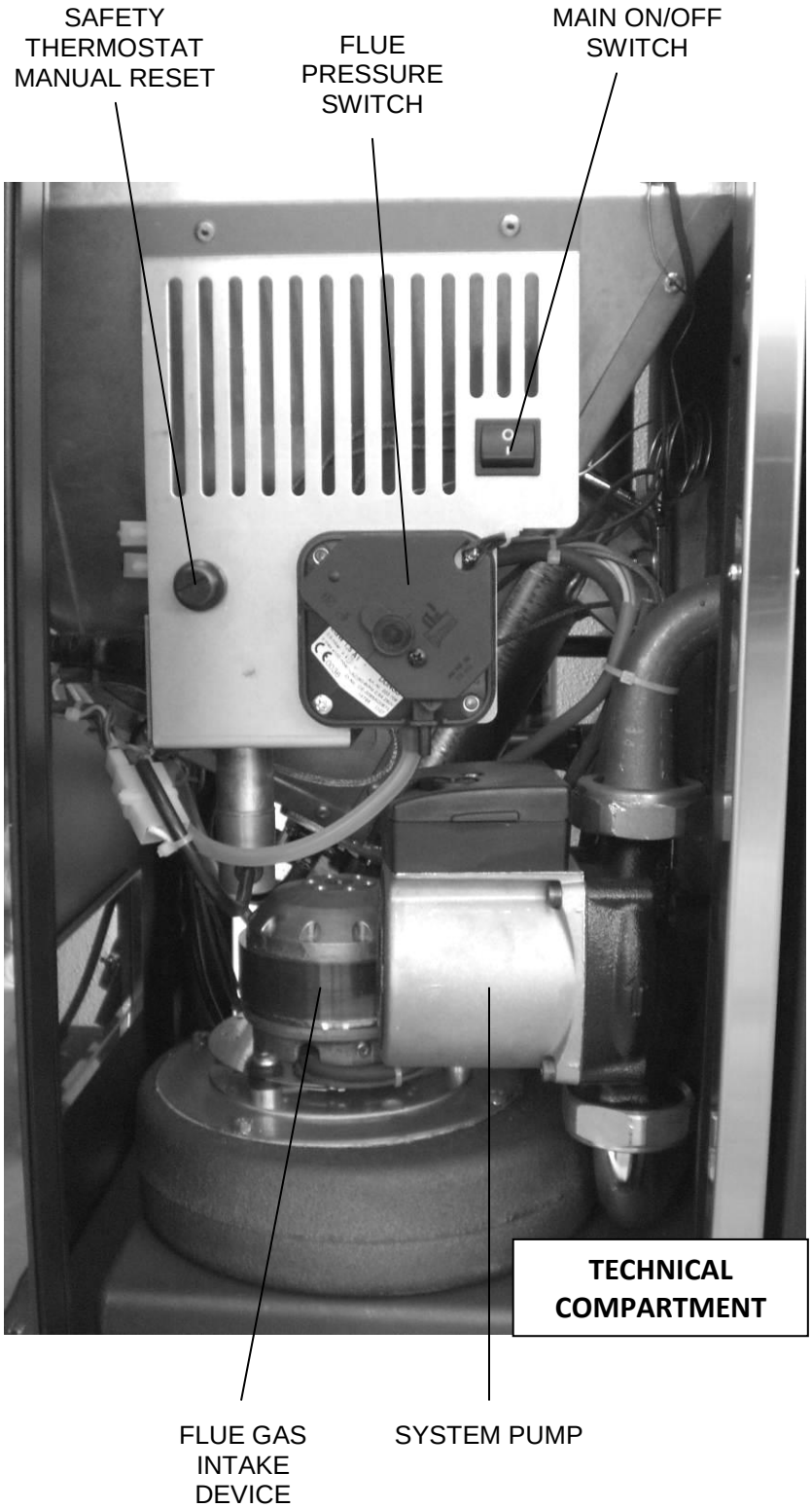
The central heating cooker is delivered with the following equipment:

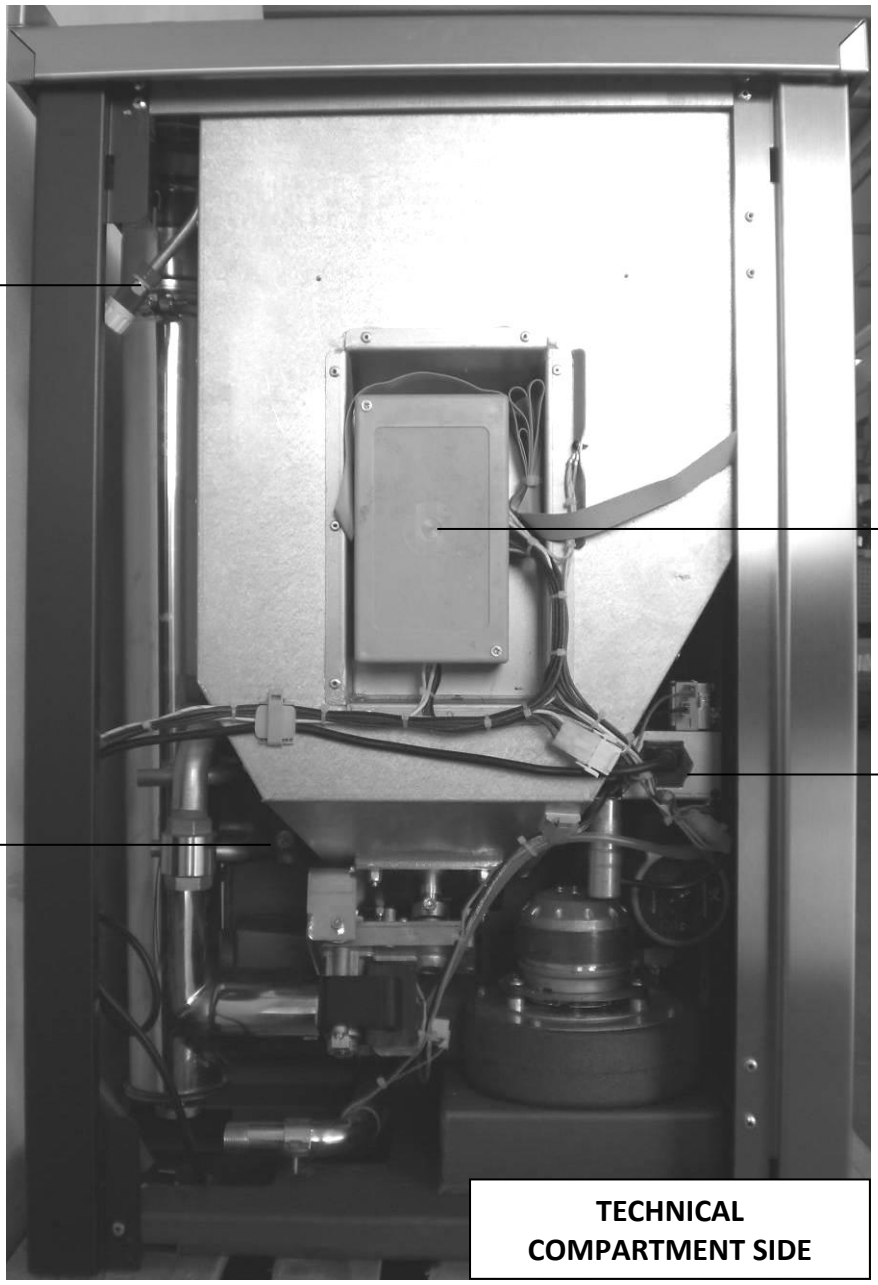
- USE, INSTALLATION AND MAINTENANCE GUIDE;
- 1 POWER SUPPLY CABLE;
- 1 KEY FOR OPENING TECHNICAL COMPARTMENT;
- 2 BRUSHES FOR FLUE GAS TURN CLEANING (65 mm and 40 mm diameter).

This manual is an integral part of the machine. Should the central heating cooker be sold, the manual must be provided to the new purchaser.

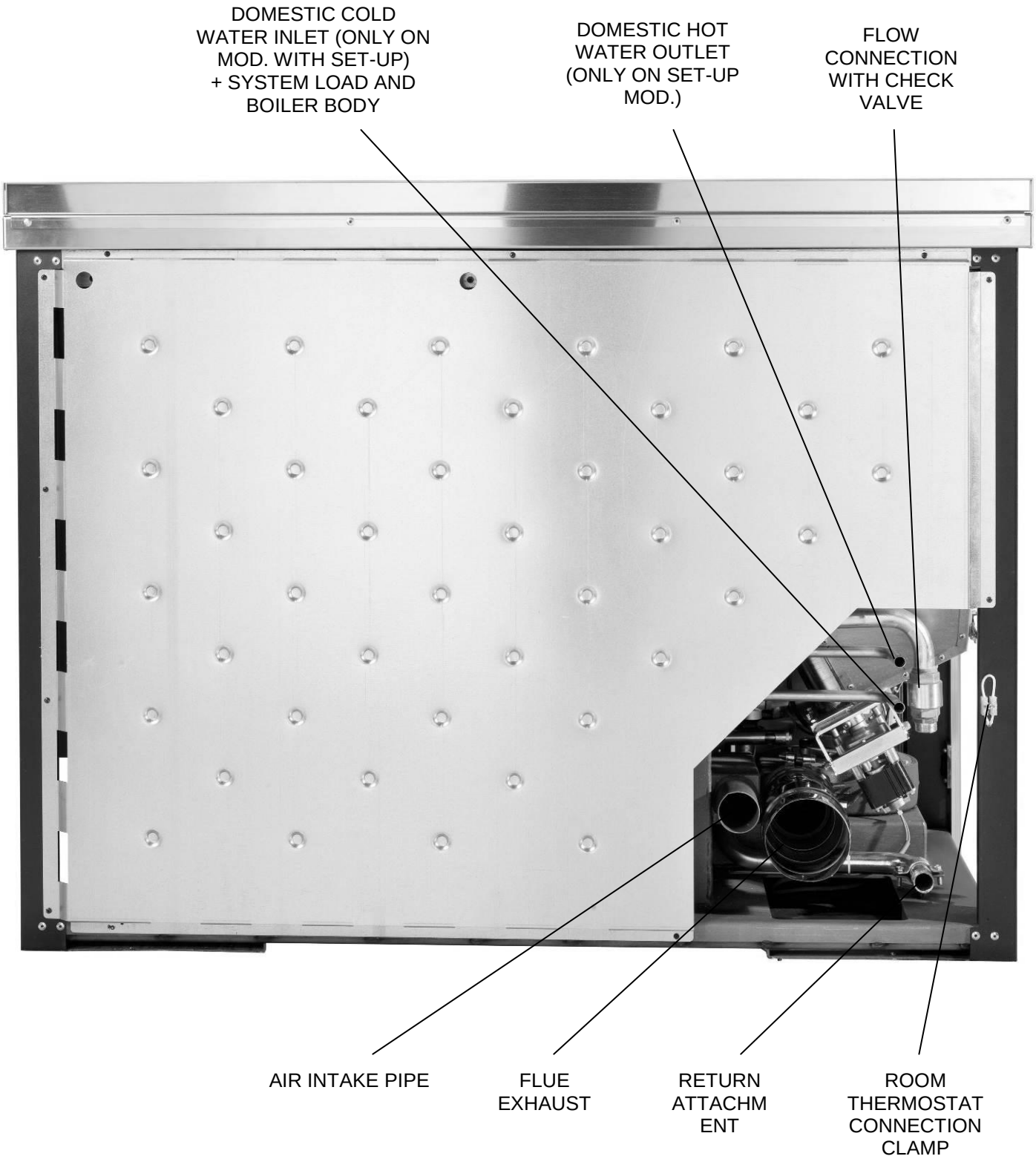




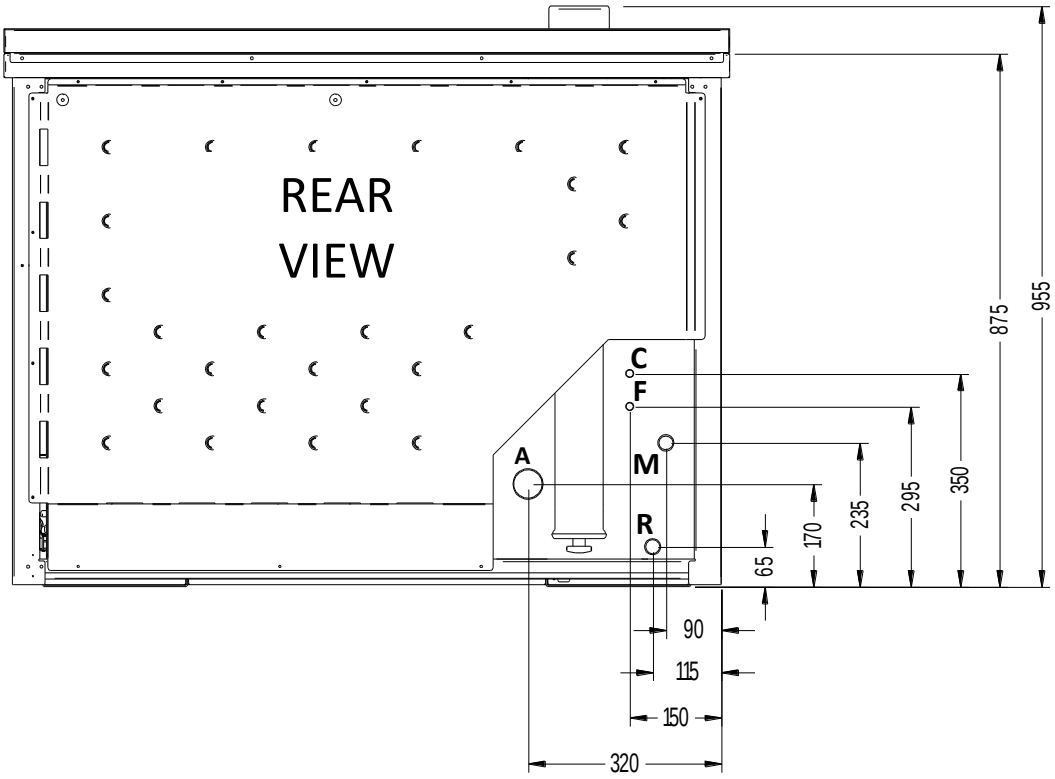

SAFETY
THERMOSTAT
MANUAL RESET
FLUE
PRESSURE
SWITCH
MAIN ON/OFF
SWITCH
TECHNICAL
COMPARTMENT
FLUE GAS
INTAKE
DEVICE
SYSTEM PUMP

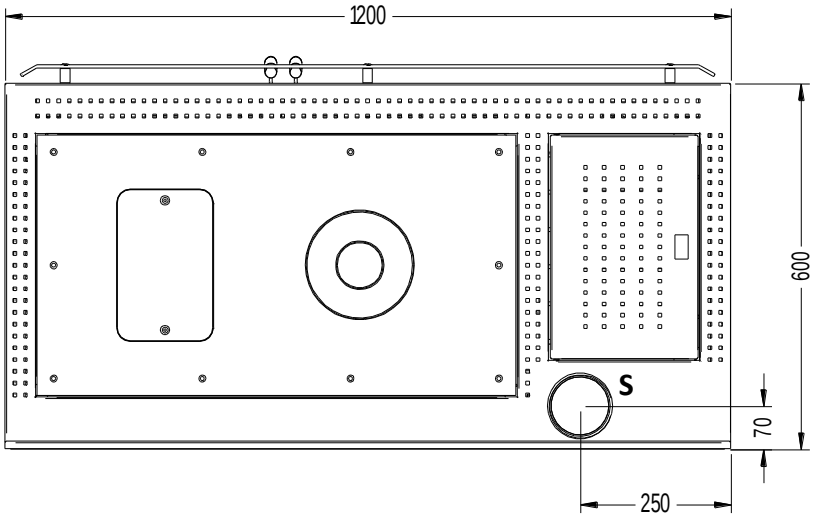


WARNING: the central heating cooker is supplied with already connected power supply cable to anti-disturbance filter.


DOMESTIC COLD WATER INLET (ONLY ON MOD. WITH SET-UP) + SYSTEM LOAD AND BOILER BODY
DOMESTIC HOT WATER OUTLET (ONLY ON SET-UP MOD.)
FLOW CONNECTION WITH CHECK VALVE
AIR INTAKE PIPE
FLUE EXHAUST
RETURN ATTACHMENT
ROOM THERMOSTAT CONNECTION CLAMP

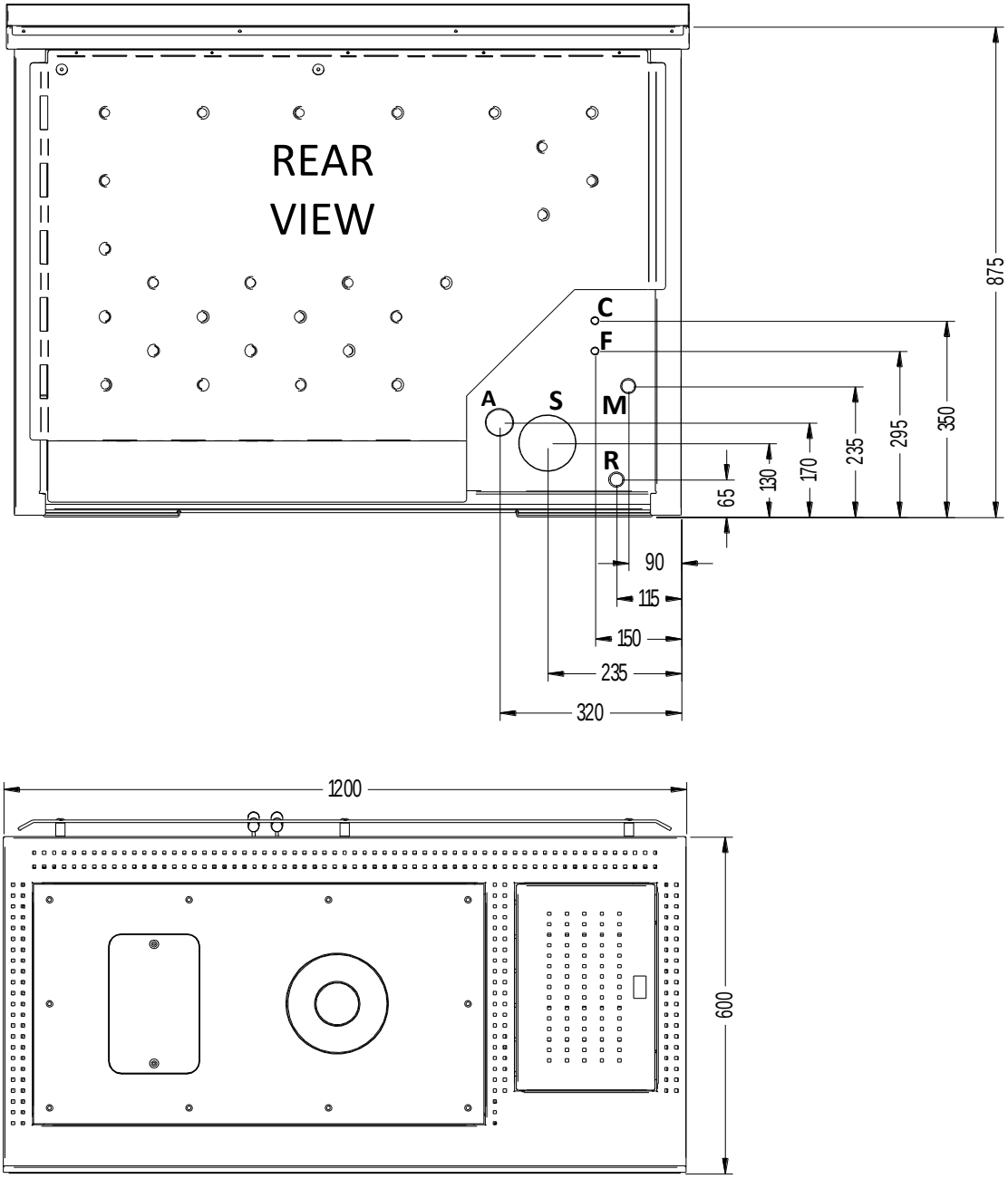
Connections data sheet (Model with upper flue gas outlet)





M = Ø ¾" F GAS SYSTEM FLOW
R = Ø ¾" M GAS SYSTEM RETURN
C = Ø 14 mm DOMESTIC HOT WATER OUTLET (on prepared models only)
F = Ø 14 mm DOMESTIC COLD WATER INLET
S = Ø 100 mm M FLUE OUTLET
A = Ø 50 mm AIR SUCTION DEVICE

Connections data sheet (Model with rear flue gas outlet)



M = Ø ¾" F GAS SYSTEM FLOW
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Technical features

Nominal heat input (reduced)	kW	**25,2 (7,5)**
Nominal heat output (reduced)	kW	**22,7 (6,9)**
Nominal heat output given-up to heating water (reduced)	kW	**17,5 (4,5)**
Nominal heat output given-up to the room (reduced)	kW	**5,2 (2,4)**
(Reduced) nominal output efficiency	%	**90,1 (92)**
CO at 13% oxygen at (reduced) nominal heat output	%	**0,022 (0,044)**
DHW production (Δt = 25°C)	l/min	**10**
Volume that can be heated at nominal power with a demand of 35 Kcal/m^3 (45 Kcal/m^3)	m^3	**560 (435)**
Nominal voltage	V	**220**
Nominal frequency	Hz	**50**
Expansion vessel l/preloading bar		**10 / 1**
Maximum working pressure/recommended	bar	**2,5 / 1,5**
Minimum chimney draught at nominal input (reduced)	Pa	**12,6 (10)**
Combustion gas flow at nominal input (reduced)	g/s	**16,2 (9,4)**
Exhaust flue gas temperature at nominal input (reduced)	°C	**145,1 (69,7)**
Pellet tank capacity	Kg	**32**
Pellet min – max hourly consumption	Kg/h	**1,2 – 5,1**
Operation autonomy at minimum – maximum input	h	**27 – 7**
Boiler body capacity	l	**24**
FLOW/RETURN heating pipe connections	Ø	**3/4" / 3/4"**
Domestic water pipe connections	mm	**14**
Minimum safety distance from flammable materials	mm	**200**
Flue pipe diameter	mm	**100**
Width	mm	**1200**
Height	mm	**880**
Depth	mm	**600**
Weight	Kg	**290**

The manufacturer reserves the faculty to make any modifications to the product in order to improve its performance.
The given heat output can change according to the pellet used.

Pellet features

The central heating cooker has been tested with all types of pellets available on the market. The pellets used must have the following features:

- Diameter 6 mm;
- Maximum length 35 mm;
- Maximum humidity content 8 – 9 %;
- 100% wood. Total absence of additives.
- 1.1 % maximum ash residue

ATTENZIONE! For a good performance of the central heating cooker, we recommend using good quality pellets. **Pellets should be poured into the tank using a shovel, and not directly from the bag.**

To recognise good quality pellet, make sure:

- It is made up of constant diameter cylinders, and has a smooth, glossy surface;
- There is not a lot of sawdust inside the packaging;
- If the pellet is poured into a container full of water, it will sink if it is good quality, and it will tend to float if it is not;
- The references of quality certifications and in particular compliance with international standards such as EN 14961-2 Wood pellet class A1-A2 (maximum moisture level of 10%), should be indicated on the packaging;
- Packages are intact as pellet tends to absorb humidity. Humidity not only reduces the calorific value and increases flue gas, but swells the product, which could create problems in the central heating cooker.

International standards must be complied with for pellet manufacture as already happens in France, Austria, Germany, and recently some Eastern countries, which also have to comply with DIN 51731 and O-NORM M7135 standards in the production phase. These standards establish the minimum values to check pellet quality. In Italy there are not official rules, but it is recommended using pellet meeting the previously-mentioned standards.

ATTENZIONE! **The use of poor pellet or any other material can damage the central heating cooker features, voiding the warranty and exempting the manufacturer from all responsibility.**

In order to ensure problem-free combustion, the pellets must be kept in a dry place.

REQUIREMENTS OF THE PLACE OF INSTALLATION

Positioning

The first step to ensure the best installation of the central heating cooker is to identify an excellent location; in this regard, take the following elements into account:

- The possibility of creating an external air intake;
- The possibility of creating a straight flue with possibly coaxial central heating cooker output;
- Proximity to the main liquid collector and /or the boiler if one already exists);
- Proximity or ease of connection to the water system;
- Ease of access for cleaning the central heating cooker, the exhaust gas ducts and the flue.

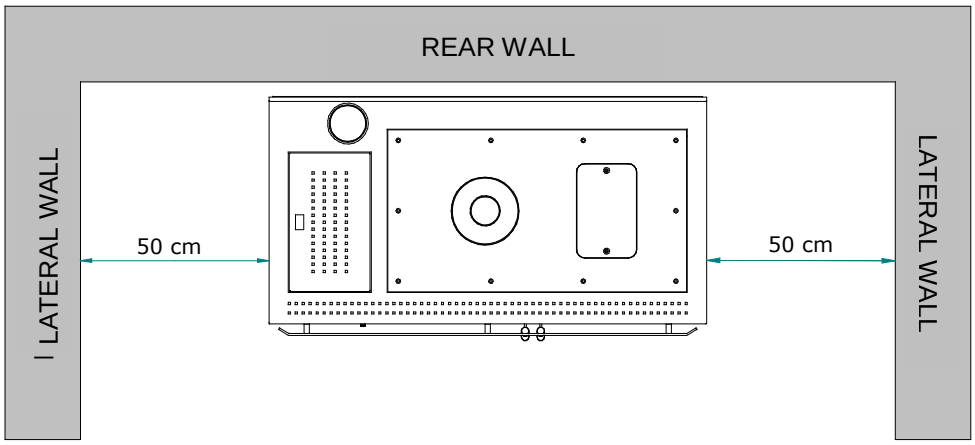
ATTENZIONE!

The central heating cooker must be installed on a floor with suitable load capacity. If the existing building does not meet this requirement, appropriate measures (e.g. load distribution plate) must be taken.
Once you have found the best location for the cooker arrangement, position it following the directions given below.

The minimum safety distance from flammable materials must be at least 200 mm from the sides and back of the central heating cooker.

Spaces around and above the central heating cooker

The figure below shows the minimum measures to be met when positioning the central heating cooker in relation to the walls.



The hood assembled above the central heating cooker must be at least 70 cm away from its upper part (also see technical features in the instructions manual attached to the hood to be installed).

Furniture and mobile objects must be positioned at least 10 cm away from the equipment side walls; **these items should be easily removable in case of maintenance work. In any case they should be moved before any operation by the authorised Technical Assistance Centre for easy access to the equipment sides.**

Hanging shelves or building countertops above the central heating cooker, especially if the latter have low heat resistance, is not recommended. Shelves or countertops should in any case be at least 70 cm away from the upper cooking plate.

Protect all structures that can catch fire from heat radiation.

External air vent

While running the central heating cooker draws air from the room in which it is installed**; It is essential, therefore, that the air is restored through an external air vent.**

ATTENZIONE!

An air vent must be made at the back of the equipment (15 cm diameter hole), at a height of 20 cm from the ground, near the central heating cooker intake pipe (see figure A and Connections technical sheet).

if the rear external air vent does not draw air directly from outside the home, a further hole in an adjacent room must be made provided it communicates with the outside of the home (minimum diameter 15 cm).

If an air vent cannot be made on the heating cooker rear wall, keep it at least 5 cm away from the rear wall and drill a hole (diameter as above) in a perimeter wall of the room where the central heating cooker is installed.

ATTENZIONE!

The hole must be protected externally with a fixed grid. **Periodically ensure the grid is not obstructed by leaves or the like, thereby preventing air passage.**

The UNI 10683 standard PROHIBITS the withdrawal of combustion air from garages, fuel stores, or businesses involving a fire hazard.

Do not connect the external air vent to the central heating cooker through piping. If there are other heating or suction appliances in the room, air vents must ensure the necessary air volume required for the proper operation of all devices.

In the room where the central heating cooker is to be installed, only sealed equipment (e.g. C type gas equipment, according to the UNI 7129 Standard), or equipment that does not cause depression with respect to the external environment can be kept or be installed.

Extractor fans may cause a malfunction in the central heating cooker when used in the same room or operational space as the cooker.

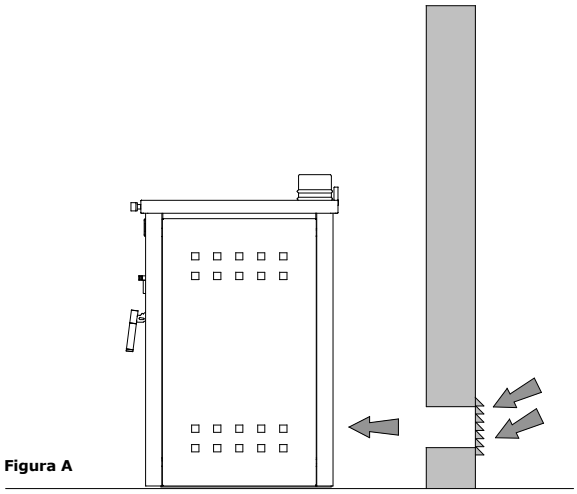


Figura A

Flue and connection to the same flue - Chimney

The **flue** is a key element for the proper operation of the central heating cooker. The minimum section of the flue must be the one indicated in the central heating cooker specifications (120 mm). Each central heating cooker must have its own flue, without other intakes (boilers, fireplaces, stoves, etc…). The flue size is closely related to its height, to be measured from the central heating cooker outlet to the chimney base. To ensure draught, the chimney flue outlet surface must be twice as big as the flue section.

ATTENZIONE!

The exhaust duct of the combustion products, generated by the forced draught unit, must meet the following requirements:

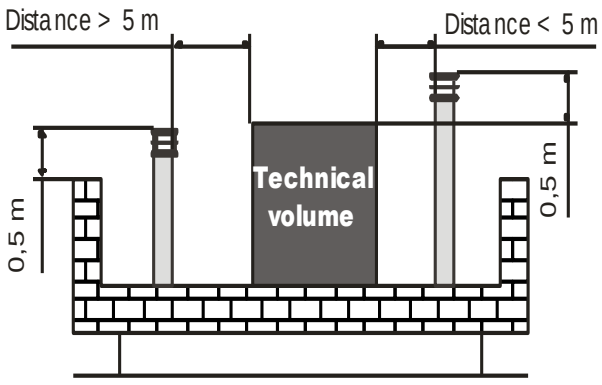
- Be airtight to combustion products, waterproof, and properly insulated according to the conditions of use (see UNI 9615);
- Being made of materials suitable to resist normal mechanical stress, heat, action of the combustion products, and condensate if any;
- Have ascending development after the vertical tract for the entire remaining path with a 5% minimum slope. The sub-horizontal development part must not have a length greater than ¼ of the effective height of the flue or chimney, and in any case not be longer than 2,000 mm;
- Have a preferably circular internal section: square and rectangular sections should have rounded corners with a radius larger than 20 mm;
- To have constant, free and independent internal section;
- To have rectangular sections with a 1.5 maximum ratio between sides;
- **If the flue is installed outdoors or in a cold room (e.g. boiler room) it is absolutely necessary that it is insulated to prevent cooling of the fumes and the formation of condensate;**
- To mount exhaust channels (stretching from the unit to the flue inlet), elements of non-combustible materials suitable for resisting combustion products and any condensation must be used;
- It is forbidden to use fibre cement pipes to connect the appliances to the flue;
- Exhaust channels must not pass through rooms in which the installation of combustion appliances is forbidden;
- When mounting exhaust channels, make sure they are flue gas sealed;
- **Installation of horizontal sections should be banned**;
- The usage of elements in counter-slope is forbidden;
- The exhaust channel must allow soot recovery or cleaning using a swab, and must have a constant section;
- It is forbidden to run other air supply channels and pipes for plant engineering use into the exhaust channels, even if oversized.

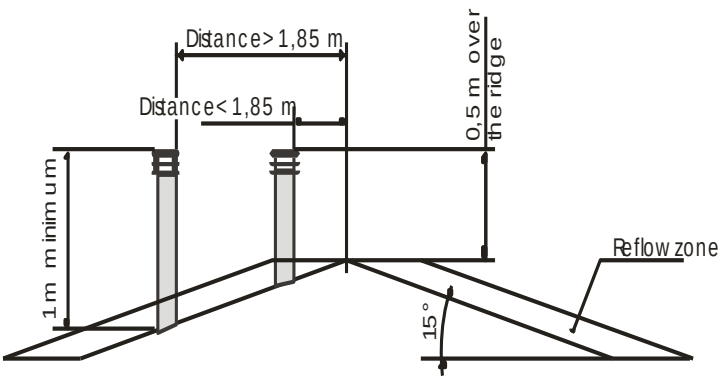
The **chimney** is a device crowning the flue, used to facilitate the dispersion of combustion products.

It must meet the following requirements:

- Have a useful outlet section not smaller than twice that of the flue on which it is inserted;
- Be shaped so as to prevent the penetration of rain and snow into the flue;
- Be built in such a way that combustion discharge is ensured even in case of wind in any direction and angle.

The outlet height (where height corresponds to the top of the flue, regardless of any chimneys) must be beyond the so-called reflow area in order to avoid the formation of counter-pressures preventing the free discharge of combustion products into the atmosphere.
It is therefore necessary to ensure compliance with the minimum heights shown in the following figures:





FURTHER SPECIFICATIONS TO BE CONSIDERED

The central heating cooker works with the combustion chamber in depression; **it is essential that the exhaust pipe is hermetically sealed.**
We recommend using rigid stainless steel pipes, with sealing gaskets having a minimum diameter of 120 mm.

The pipes must be double-walled or adequately insulated with rock wool. The maximum temperature of the pipe must not exceed 70 °C.

TO ENSURE PROPER FUME DISCHARGE PROVIDE FOR AN INITIAL VERTICAL TRACT OF AT LEAST 1.5 METRES.

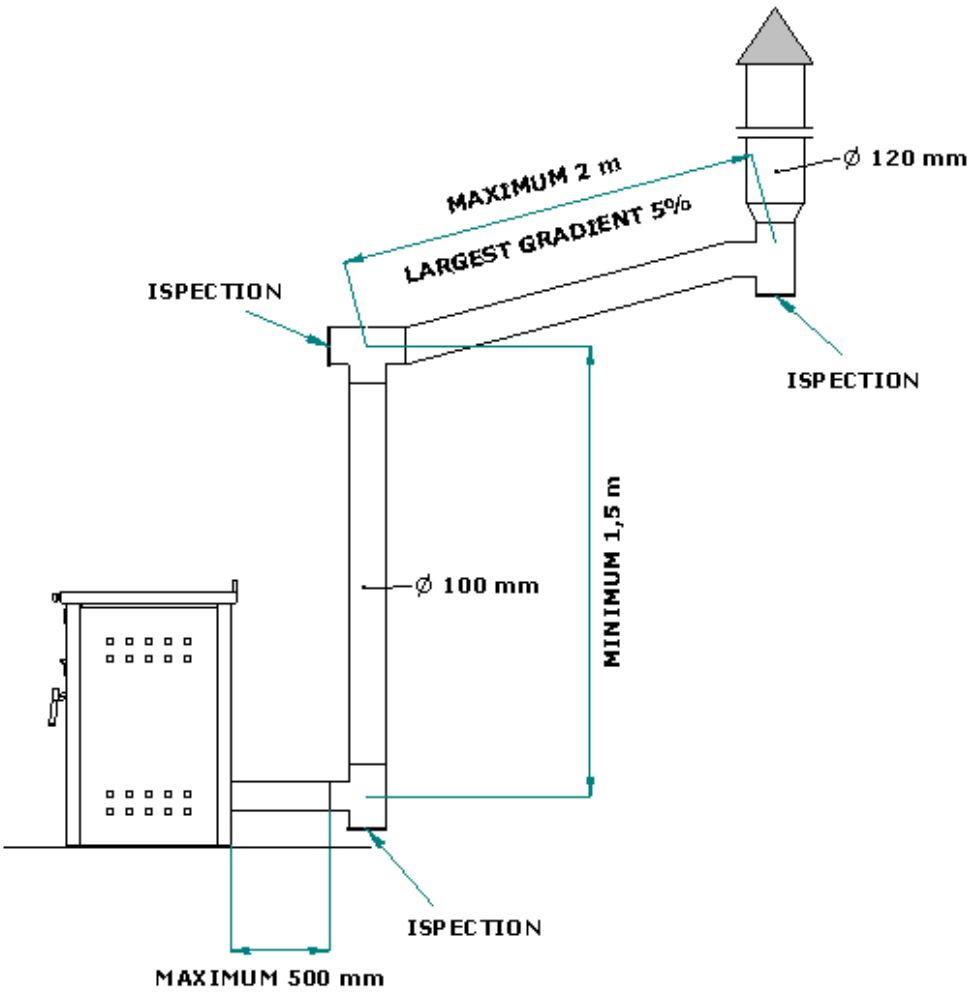
Each change of direction must be carried out with a T-shaped fitting and inspection cap.
Pipes must ensure sealing against smoke leakage via gaskets resistant to 250 °C.
Fix the pipes to the wall with suitable relevant metal collars to avoid any vibration.

ATTENZIONE!

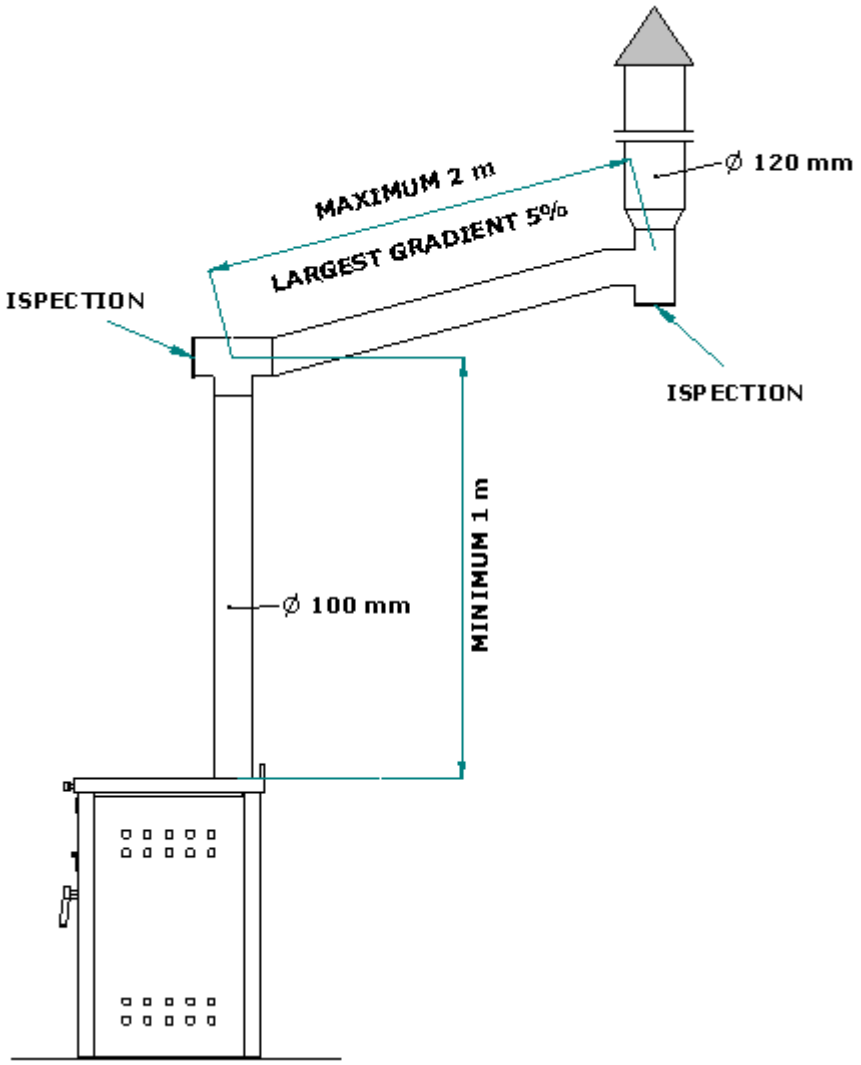
WARNING: IT IS FORBIDDEN TO INSTALL DRAUGHT REGULATING VALVES (BUTTERFLY VALVES).

There are two solutions for the connection to the flue:

SOLUTION 1 – REAR FLUE GAS OUTLET



SOLUTION 2 – UPPER FLUE GAS OUTLET



If a "conventional" flue is used to discharge flue gas, make sure it is in good working order and complies with the standards currently in force. **If the flue should be too big (internal diameter greater than 14 cm), duct the flue using a stainless steel pipe, properly insulated with rock wool or vermiculite, and sized according to the route. The connection to the flue must be properly sealed.**

ATTENZIONE!

When mounting the flue, do not make more than 4 changes of direction, including the initial T-shaped fitting. The maximum allowable length of the horizontal tract is 2 metres. Before carrying out horizontal movements, make a vertical, at least 1.5 metre-long tract.

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 220V – 50 Hz.

Product safety is obtained when it is properly connected to an efficient earthing system.

When connecting to the mains power supply, provide a differential magnetic circuit breaker 6 A – Id 30 mA switch with an appropriate breaking load. Electric wiring including grounding must be performed after removing the mains power supply.
When building the system, remember that cables must be laid in an unmovable way and away from parts subject to high temperatures. During the final wiring of the circuit, only use components with an appropriate degree of electrical protection.

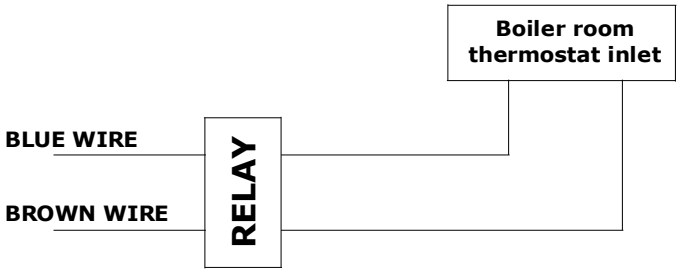
KLOVER srl disclaims all liability for damage to people, animals, or property resulting from failure to properly ground the central heating cooker in compliance with IEC standards.

The electronic control unit manages and controls all the central heating cooker features ensuring excellent operation of the entire equipment at any time.

Inspection of a possible coupled boiler

If the *Smart 120* central heating cooker is to be coupled with a previously installed boiler in the system (e.g. wall-hung gas boiler), it must be ensured that when the pellet central heating cooker takes over doing the heating the boiler stops. This is to make sure that you do not have to add up the heat output in the two appliances installed in the system. This is why our set-up intervenes on the coupled boiler when the pellet central heating cooker heating pump starts. In this way, there will never be two boilers operating simultaneously in the same system. The coupled boiler will however always be used for the production of domestic hot water.

The two wires prepared on the back of the* central heating cooker (*blue and brown wires) will have an output voltage of 220 V when the pellet* central heating cooker *pump is working, and no voltage when the pump is at a standstill.
Therefore, it is easy to connect the 2 wires to a relay that will control the Room Thermostat inlet of the coupled boiler.



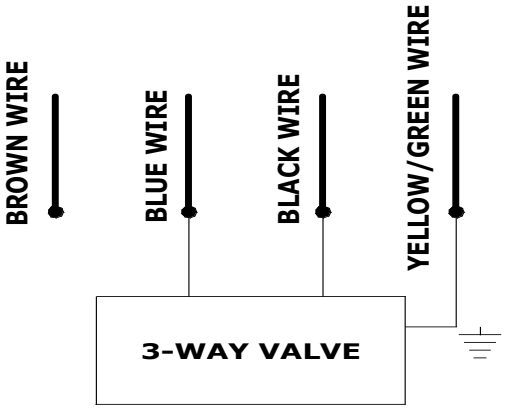
Control of a possible three-way motorized valve for the DHW system

The *Smart 120* central heating cooker is equipped as standard with a control for a possible 3-way motorized valve to be installed on the domestic hot water circuit. A 4-wire cable with protected faston connectors 4 wires escapes from the rear part of the central heating cooker, which can be used to control this valve. The four wires in the cable have different colours, and precisely:

1. **Blue wire** = **COMMON TO 3-WAY VALVE**
2. **Black wire** = **PELLET CENTRAL HEATING COOKER SIDE**
3. **Brown wire** = **GAS BOILER SIDE**
4. **Yellow/green wire** = **GND**

Below find a connection example using a 3-way valve with spring return. Remember that the pipe connection must be made in a way that when the valve is at rest, the water passes from the gas

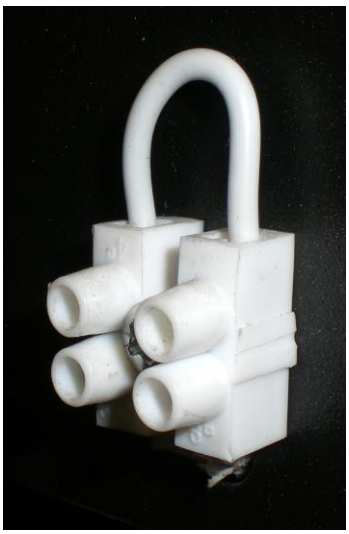
boiler. Only when the pellet central heating cooker temperature is sufficient (the value is set from control panel) is the 3-way valve powered, and so closes the gas boiler circuit and opens the *Smart 120* central heating cooker circuit.



NOTE: The brown wire can be used to control any service relay.

Connection to the room thermostat

A bridge clamp is installed on the rear of the central heating cooker (free contact), which is useful to connect any room thermostat. In this way, connecting an external thermostat with the function to open or close the contact depending on the heat demand will be easier.



OPERATION PRINCIPLE

Open contact:

1. The central heating cooker switched directly to economy mode operation *"T-OFF ECONOMY"* minimizing working output.
2. The central heating cooker pump turns off.
3. The temperature in the central heating cooker increases due to thermal inertia until reaching the temperature set on *"SET H2O" and* displaying *"T-H2O ECONOMY"* on the screen.
4. The central heating cooker will now automatically switch off if there is <u>at least</u> one of the following conditions:
   - If it remains in Economy mode operation *"T-H2O ECONOMY"* for a time set on Pr44 (30-minute default setting).
   - If it exceeds the temperature differential set on Pr43 (factory set value 5°C) or **H2O Temperature > (*"SET H2O"* + Pr43)**

NOTE: The pump is calibrated to start at temperatures ≥ 83°C in all conditions (see parameter table).

WARNING: If a room sensor on the remote control is also enabled **(see page 44 – "*Menu 04*")****, the central heating cooker enters the economy mode when both cases are satisfied.**
The room thermostat operation is excluded if one of the three OVEN OUTPUT VALUE is set.

The central heating cooker will switch on automatically if <u>both</u> the following conditions occur:

- If the contact of the room thermostat is closed.
- If it goes below the temperature differential set on Pr43 (5°C default setting) or **Temperature H2O < (*"SET H2O"* – Pr43)**.

If the above-described condition occurs when the central heating cooker is still running the switch off cycle, it is appropriate to wait until it runs out.

PLUMBING CONNECTION

The plumbing connections must be made in a rational way using the connections on the central heating cooker template. To facilitate the connection of the pipes, we have provided all plumbing connections on the rear left side, leaving space to easily make the appropriate connections.
Remove the left side of the central heating cooker to access the *"side technical compartment"* (see fig. on p. 10 and 34) to facilitate the plumbing connection.
The central heating cooker can be coupled to any other boiler already installed in the system including all necessary safety devices and wiretaps according to the system used.

NOTE: <u>The central heating cooker can be installed with a closed expansion vessel equipped with a device for stopping fuel loading, a safety manual reset thermostat and an audible alarm activated if temperatures are too high.</u>

The central heating cooker can be installed in the same room as another boiler only if it has a sealed chamber.

ATTENZIONE!

THE CENTRAL HEATING COOKER MUST BE INSTALLED <u>EXCLUSIVELY</u> BY QUALIFIED ENGINEERS. STRICTLY COMPLY WITH THE INSTRUCTIONS GIVEN IN THIS GUIDE; FOR ANY DOUBT CONTACT THE TECHNICAL ASSISTANCE CENTRE.
<u>THE MANUFACTURER DISCLAIMS ALL RESPONSIBILITY FOR DAMAGE CAUSED BY IMPROPER INSTALLATION.</u>

THE NETWORK WATER INLET PRESSURE <u>MUST NEVER EXCEED</u> 3 BAR; RECOMMENDED WORK PRESSURE: 1.2 BAR.

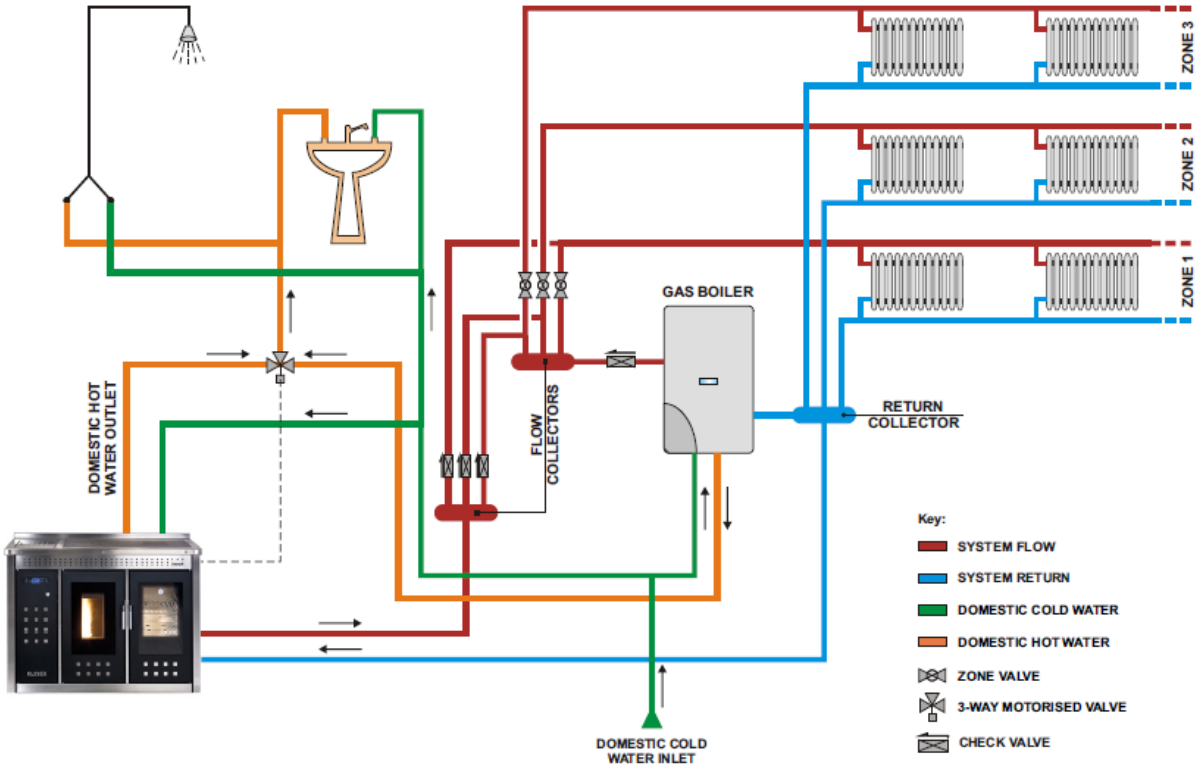
ATTENZIONE!

DO NOT PASS ELECTRIC CABLES IN THE IMMEDIATE VICINITY OF THE FLUE GAS PIPE, UNLESS THEY ARE INSULATED WITH APPROPRIATE MATERIALS.

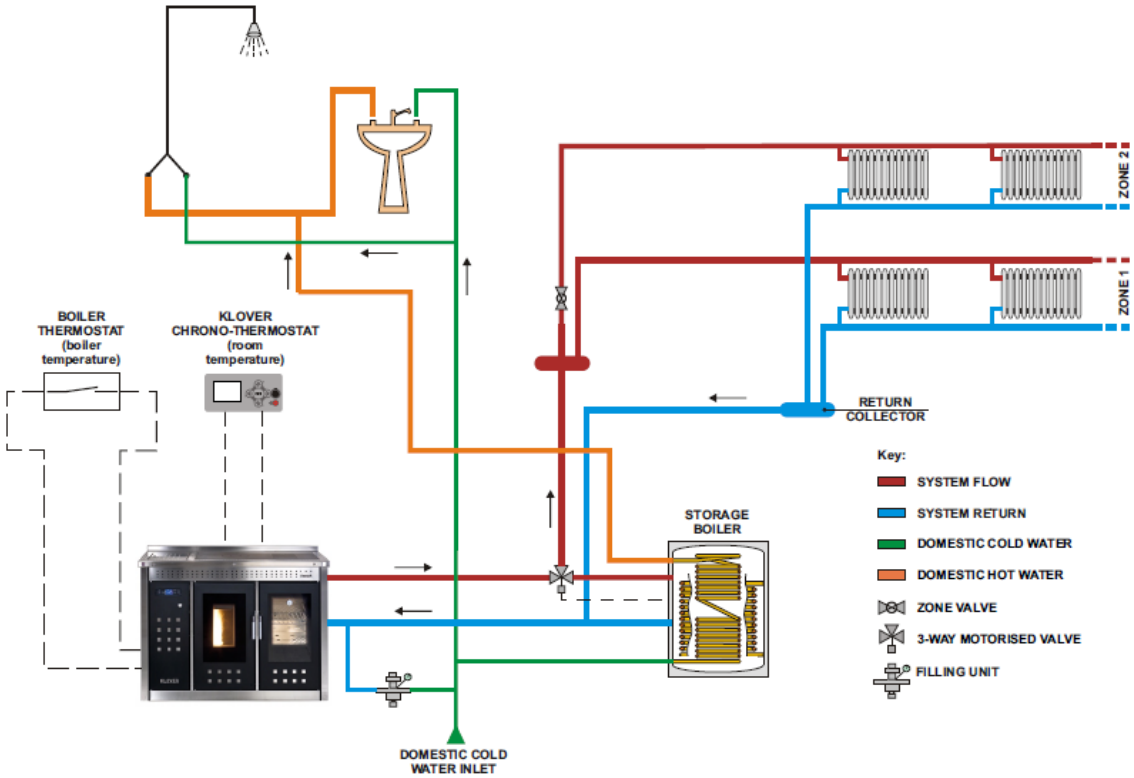
IN THE EVENT OF WATER WITH HARDNESS EXCEEDING 28 °f, AN ANTI-LIMESCALE DEVICE MUST BE INSTALLED. THIS MUST BE SELECTED ON THE BASIS OF WATER SPECIFICATIONS.

Connection examples

CONNECTION EXAMPLE WITH GAS BOILER COUPLING



CONNECTION EXAMPLE WITH DOMESTIC HOT WATER STORAGE COUPLING



These diagrams are for guidance only and do not imply any commitment or liability by KLOVER s.r.l. and its partners.
The final design and subsequent implementation will be carried out in strict compliance with regulations in force.

CLEANING AND MAINTENANCE

Precautions before cleaning

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

- **The central heating cooker is off and has cooled down completely;**
- Ash is completely cold;
- Before re-starting the central heating cooker, re-install all previously disassembled parts.

For cleaning operations, personal protective equipment should be worn.i.e. gloves, goggles and dust masks, as directed in eu 89/391/EEC.

Cleaning frequency depends on the type and quality of pellets burnt. Therefore, the schedule reported below may vary.

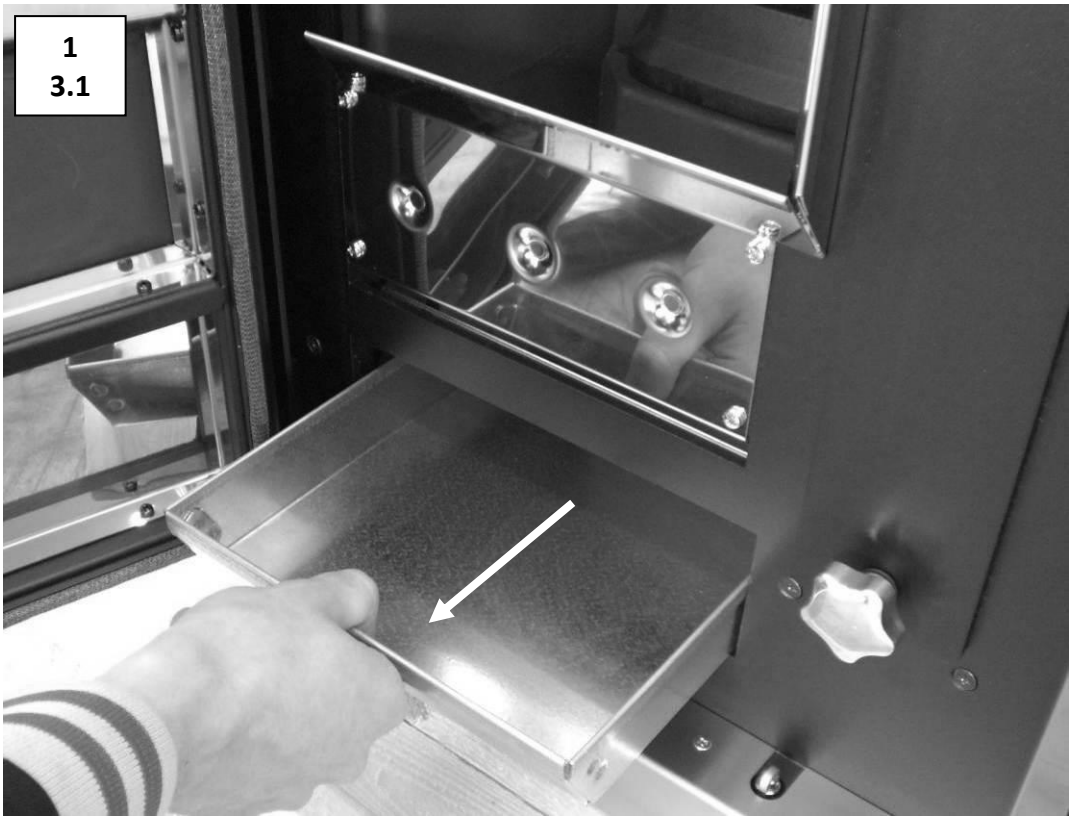
Any central heating cooker problem resulting from failure to clean it will not be accepted as collateral.

Routine cleaning (1)

The central heating cooker requires periodic cleaning to be carried out at least every 20 working hours or after 3-4 ignitions, to always ensure efficiency and excellent operation.

Carefully clean the brazier from combustion residues, by removing it from its seat.

Use a vacuum cleaner to remove the ash that is deposited under the brazier.



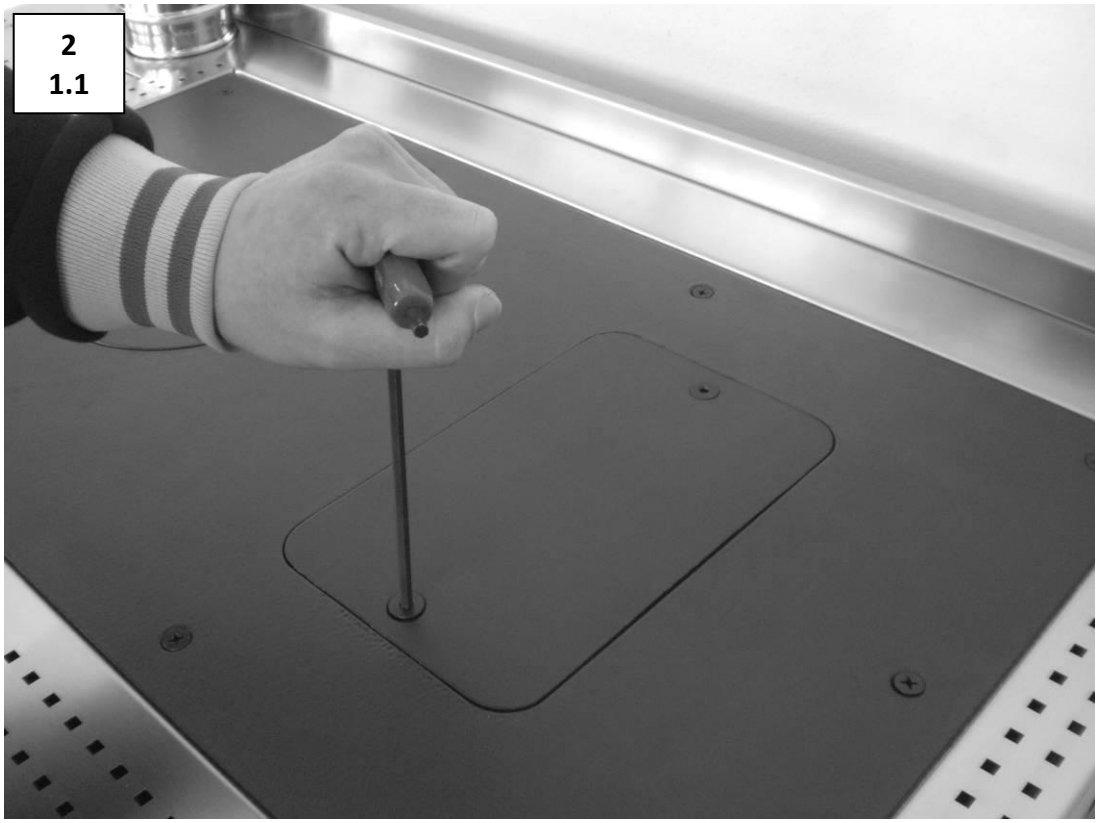
Empty the ash drawer.

WARNING: Use suitable bin vacuum cleaners with a fine mesh filter to prevent part of the ash from being discharged into the environment, and damaging the suction device itself.

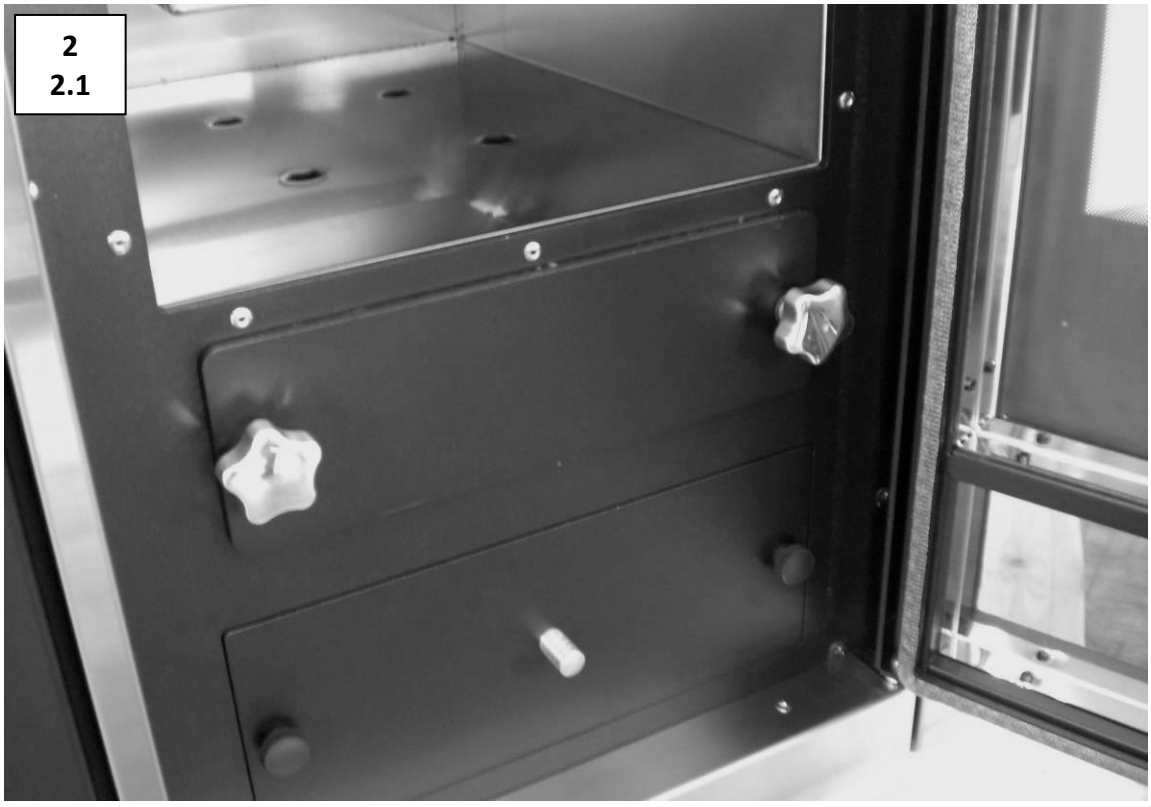
Extraordinary cleaning (2)

To be performed at least every 30 days.

Carry out routine cleaning;



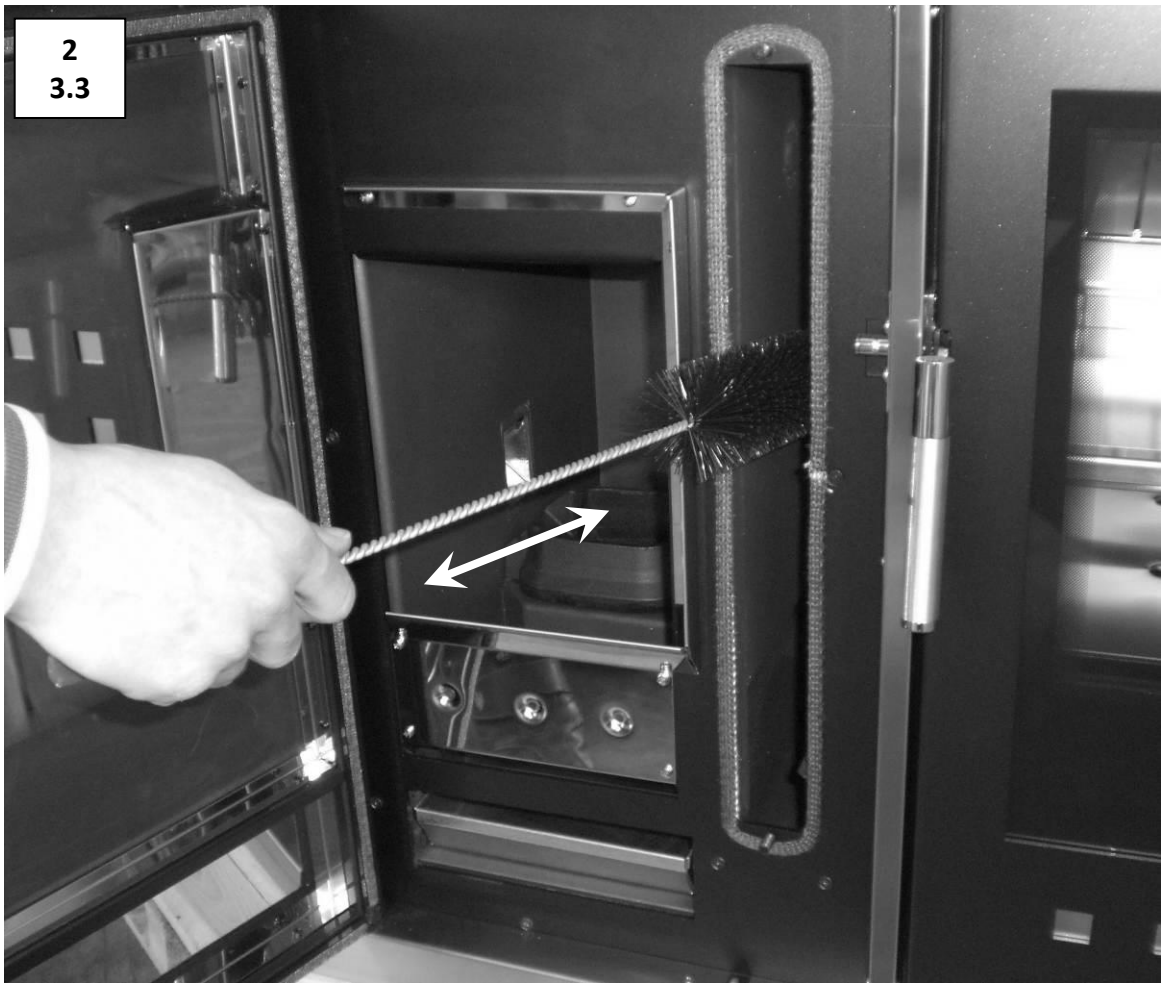
Dismantle the outlet on the cooking plate and suck the ash deposit above the oven. Properly re-position the outlet after cleaning ensuring it is flue gas sealed.



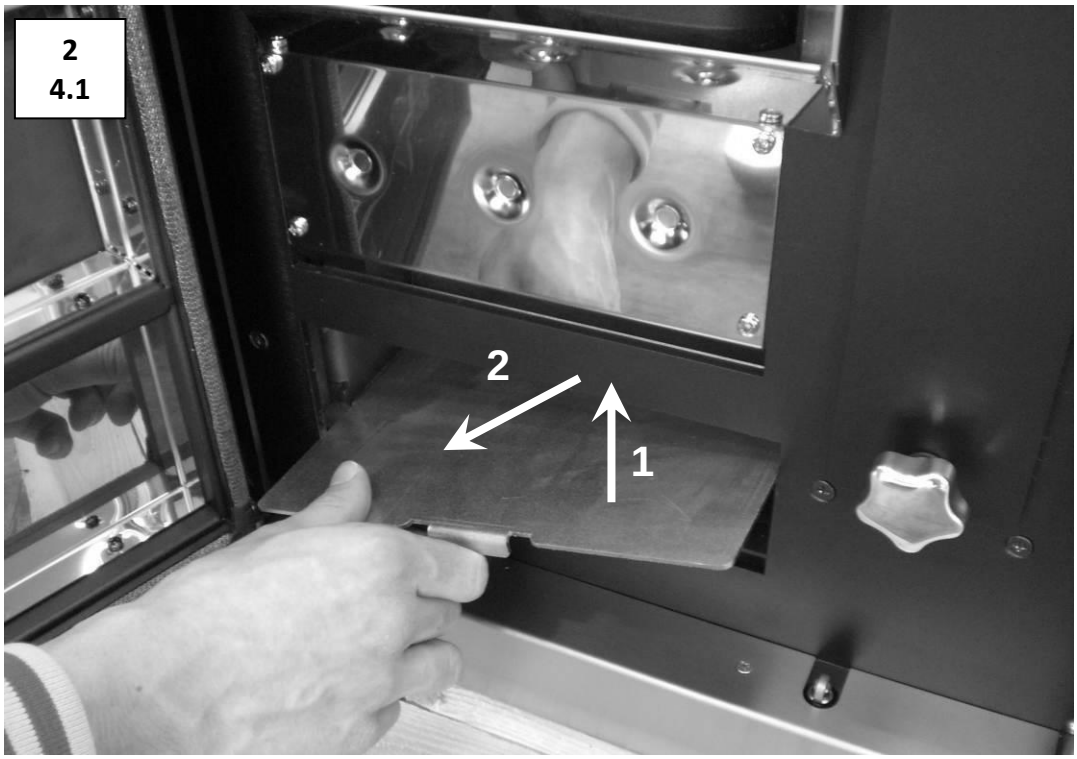
Dismantle the outlet underneath the oven and suck the ash deposit below it and on its side. Properly re-position the outlet after cleaning, ensuring it is flue gas sealed.


2
3.1

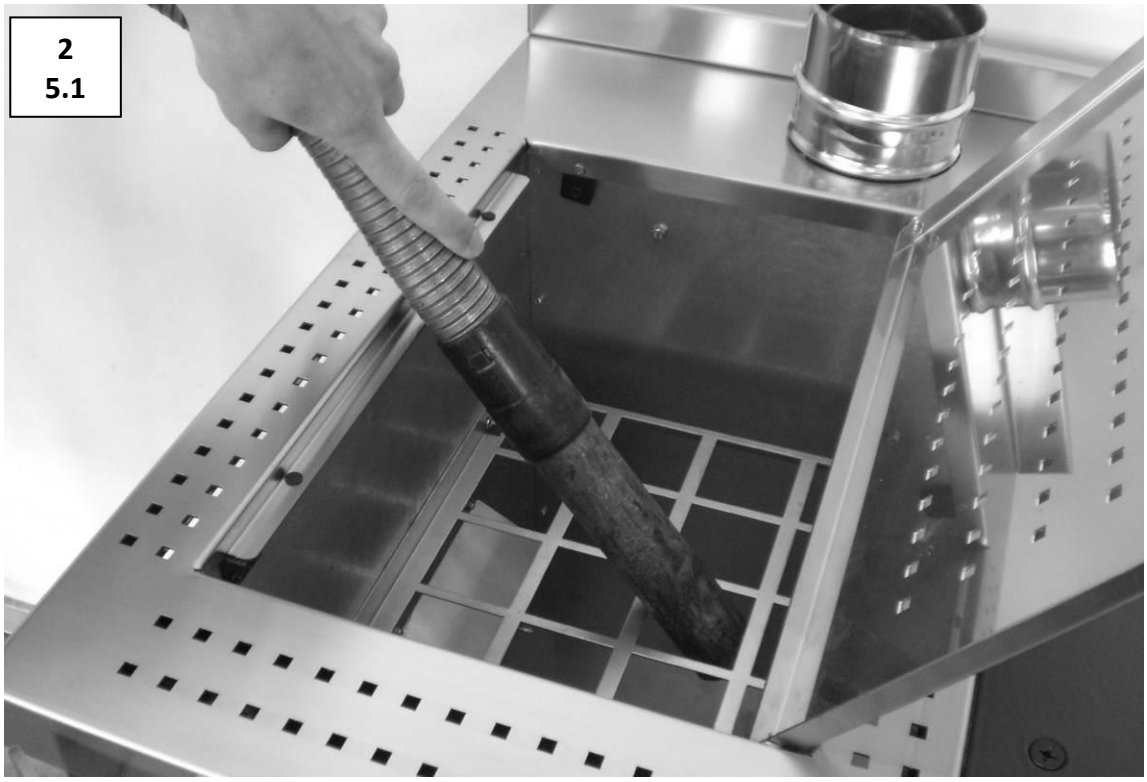

2
3.2



Dismantle the outlet side of the combustion chamber and clean the internal flue gas turn with the brush provided with the equipment. Suck the ash deposit in the part below. Properly re-position the outlet after cleaning, ensuring the outlet is flue gas sealed.



After removing the ash drawer, extract the underlying base and, using a suitable suction device, suck the deposit inside. Then re-position the base and ash drawer.



Suck the sawdust deposit from the tank base.
The pellet tank must be emptied at the end of every season.

Yearly cleaning

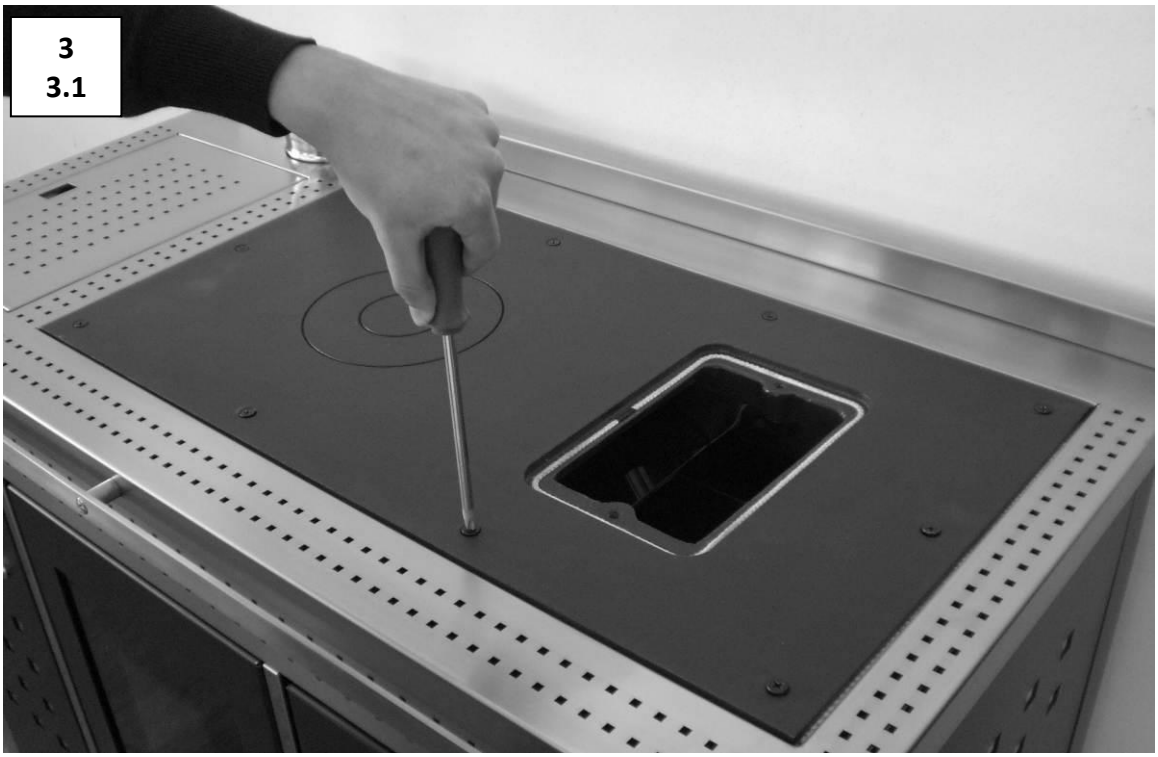
To be performed at least once a year.

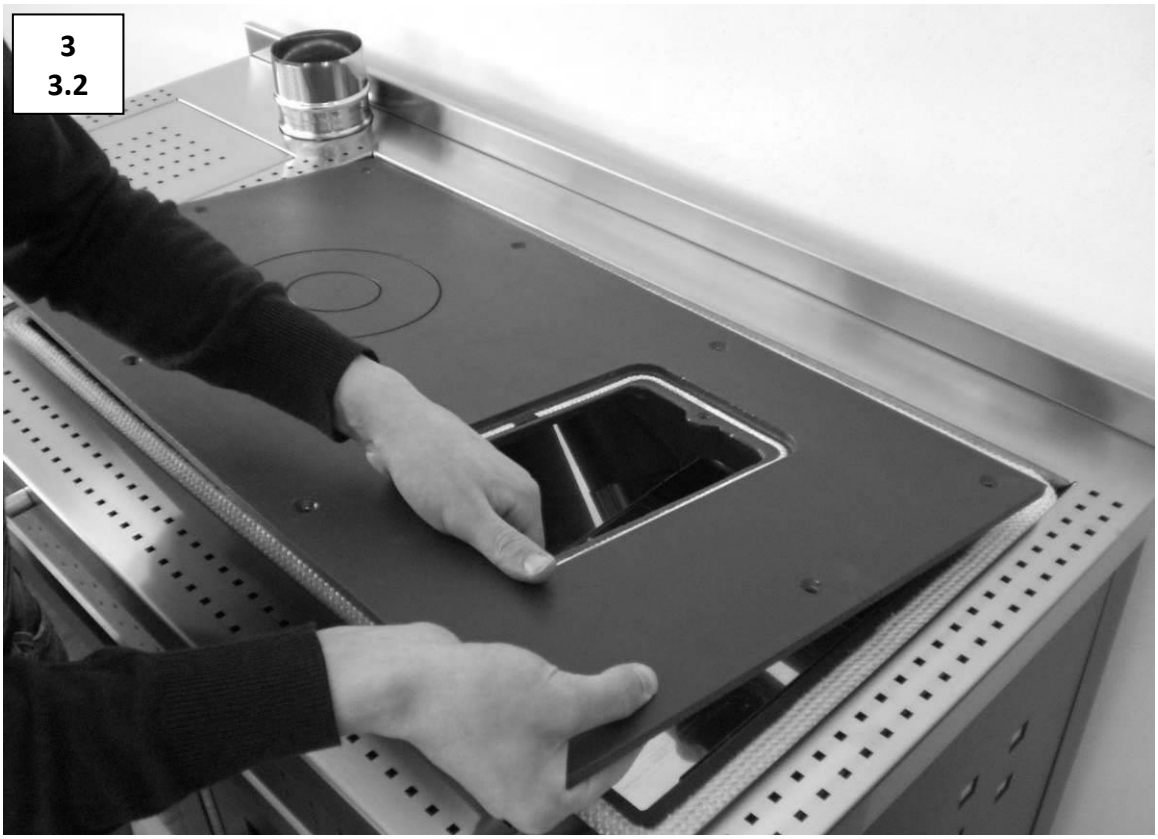
Carry out routine cleaning;

Carry out extraordinary cleaning;

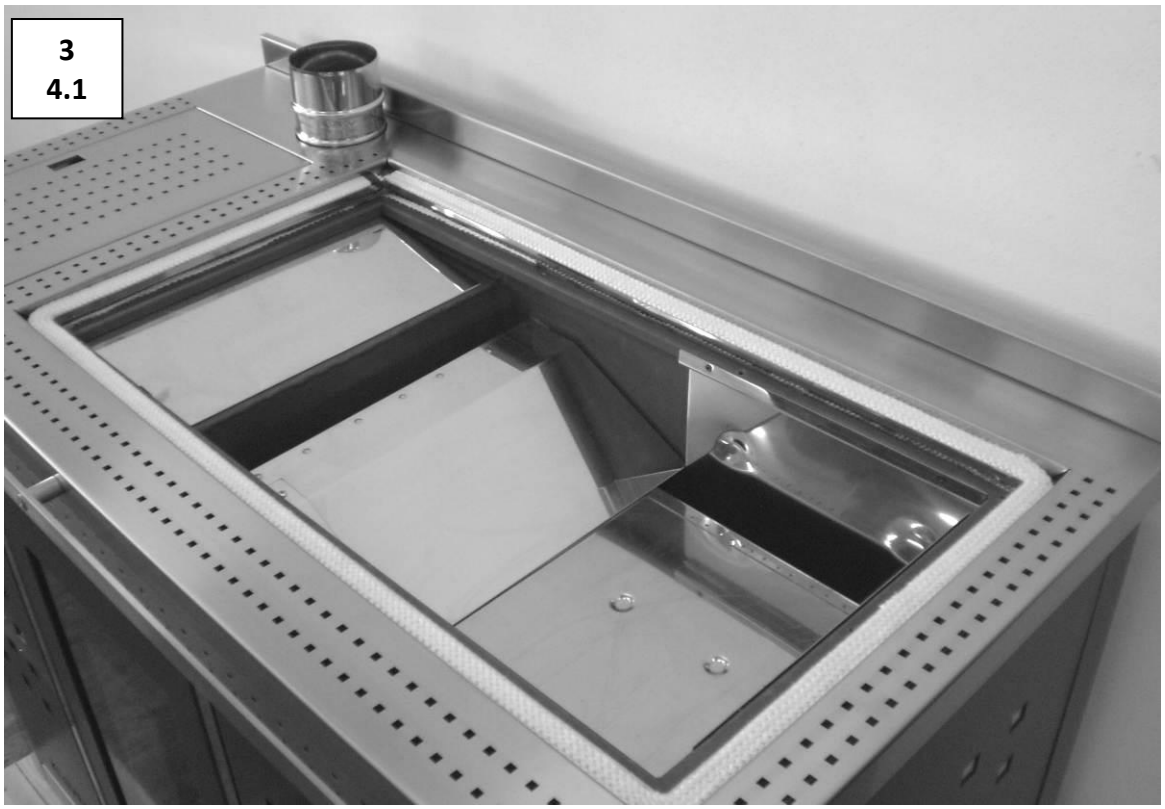
Remove the left side as in the above photo.

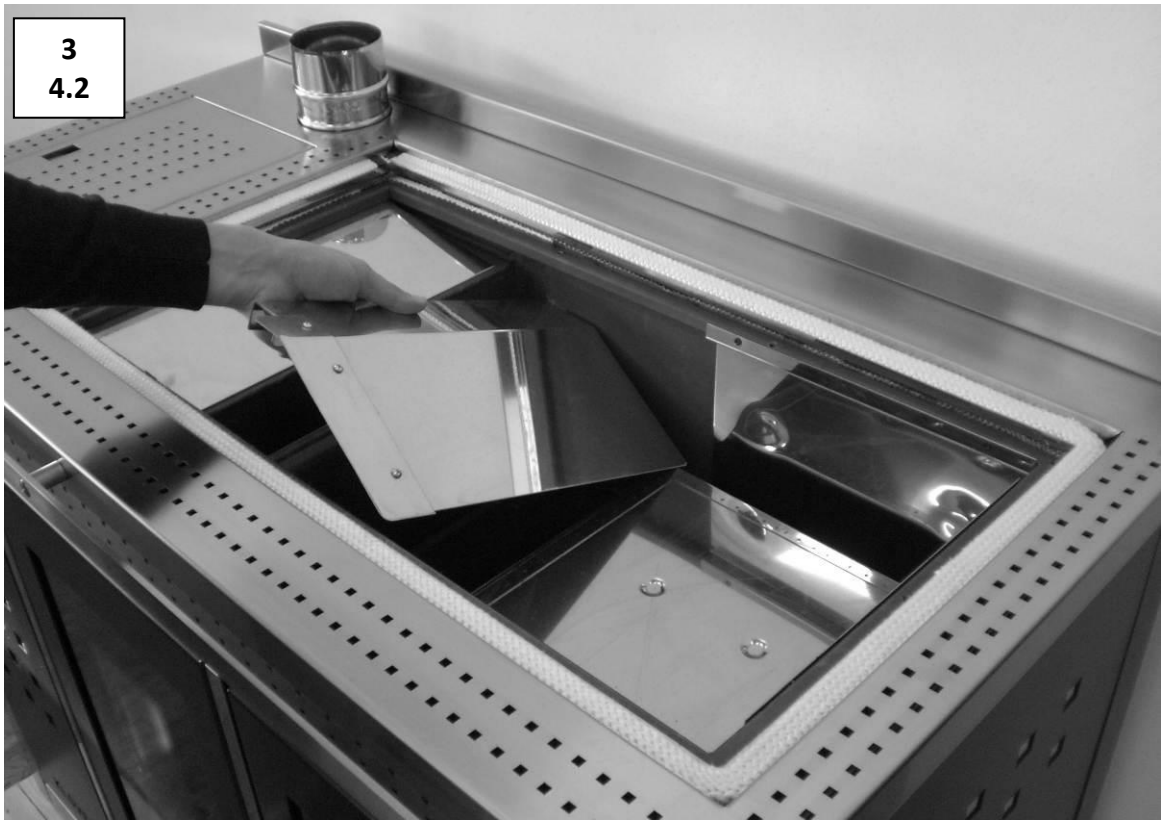
Remove cap from rear TEE and clean the entire flue pipe with a brush, sucking any soot deposit. Properly re-position the cap after cleaning, ensuring it is flue gas sealed. The rear TEE is only available in models with upper flue connection.



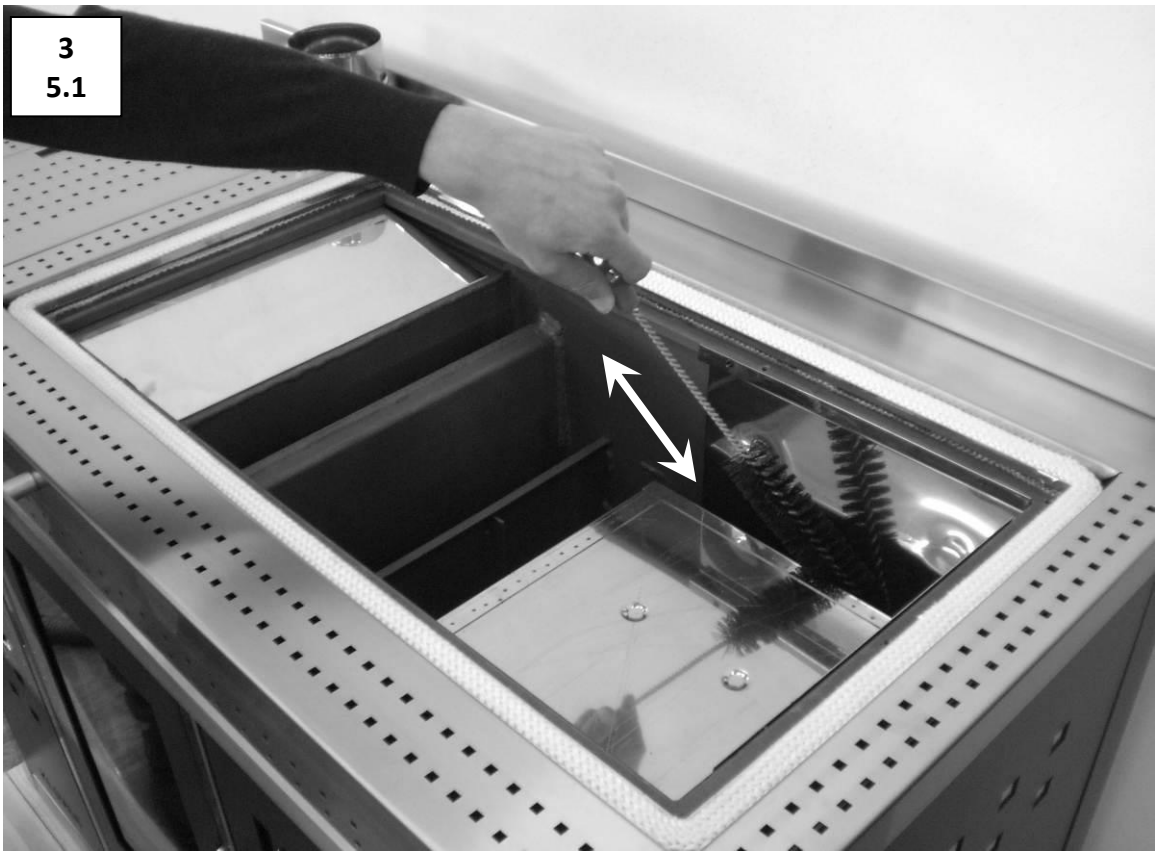


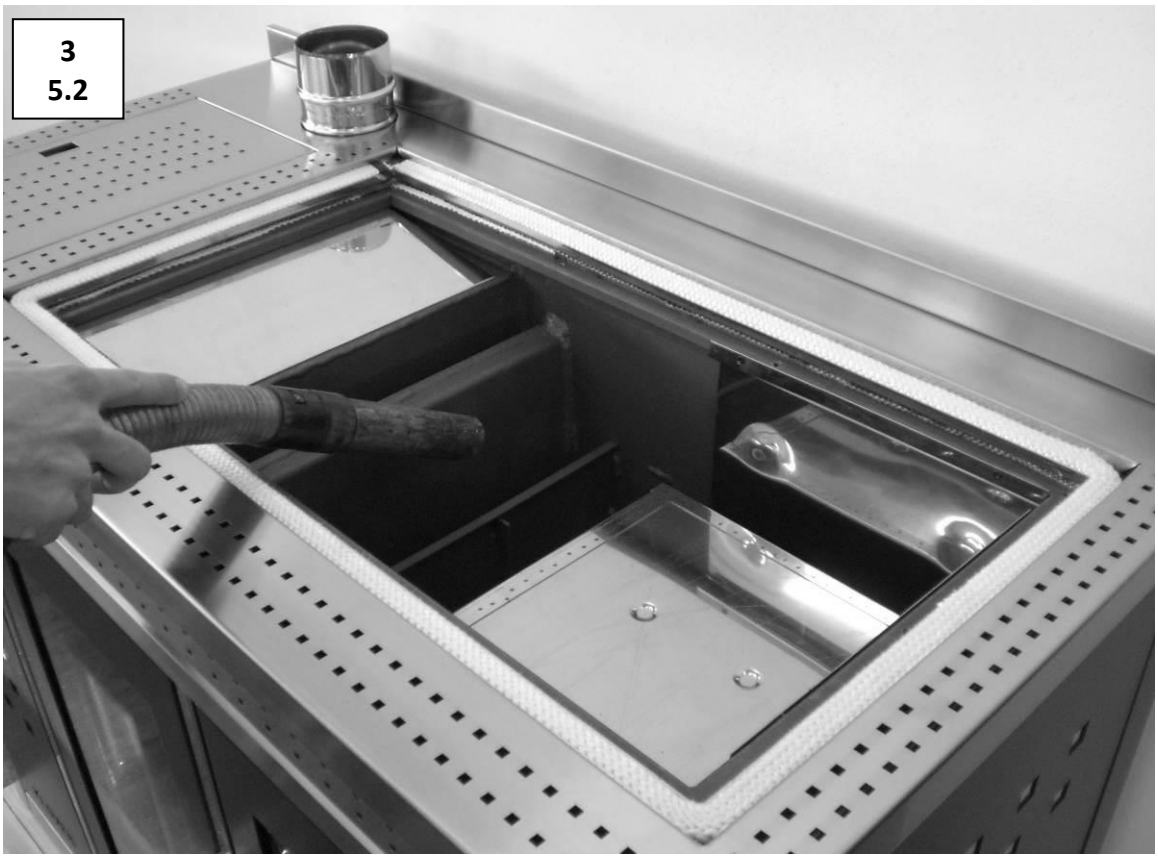
Remove the cooking plate by loosening the ten screws all around it after dismantling the upper cleaning outlet.





Remove the flue deflector located between the combustion chamber and the cooking oven.





Scrape around the oven sides using the supplied brush, and vacuum any soot deposit. Re-position the flue deflector and cooking plate after cleaning, ensuring the latter is flue gas sealed.

Ceramic glass cleaning

Always clean the glass when the central heating cooker is off and completely cold. Use a damp cloth and specific detergent for ceramic glass. Do not use abrasive sponges.

Flue cleaning

This operation must be performed at least twice a year, in early and mid winter, and whenever necessary. You need to check for obstructions in the flue before switching the central heating cooker on, following a long period of disuse.
If cleaning is not performed, the operation of the central heating cooker and its components may be impaired.

The frequency of the central heating cooker and flue cleaning depends on the quality of the pellets used.

ATTENZIONE! USE TOP QUALITY PELLETS TO OBTAIN THE BEST RESULTS.

Maintenance

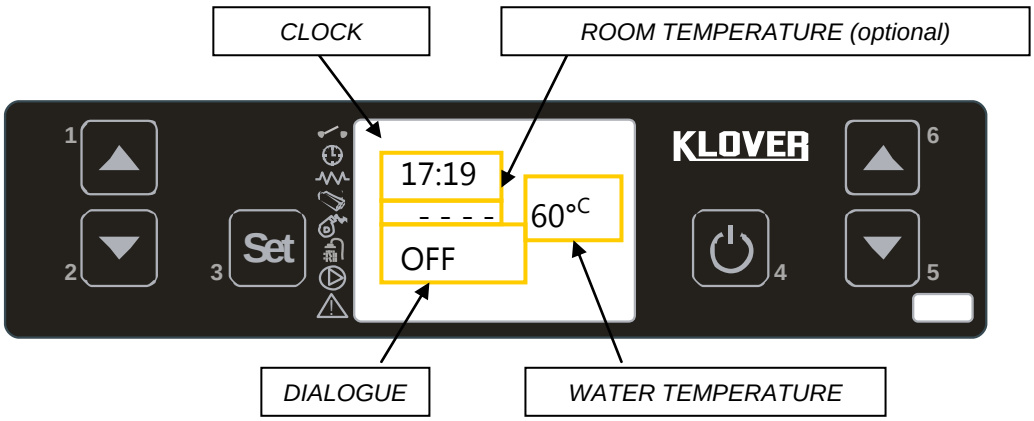
Systematic, timely maintenance is a critical component for correct operation, excellent thermal performance and duration of the appliance over time. Therefore, it is recommended that a qualified engineer checks the central heating cooker at least once a year at start of season.

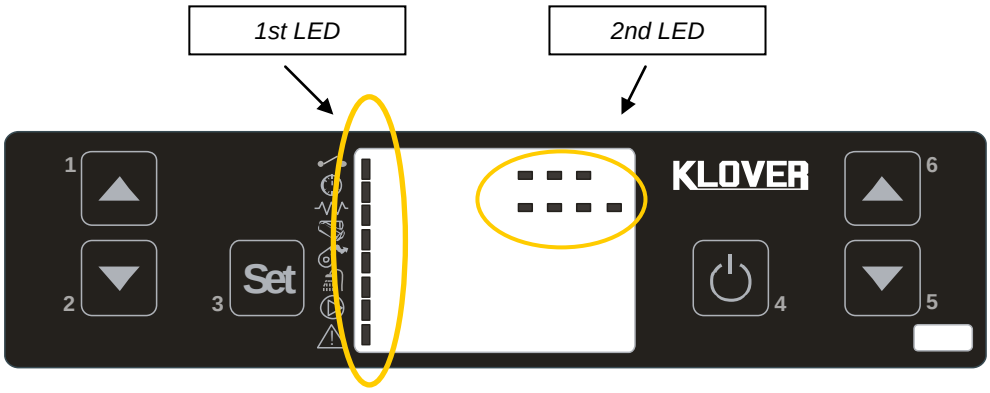
It is advisable to agree an annual contract for product maintenance with the Authorised Technical Assistance Centre (TAC).

THE DISPLAY

The console displays information about the operation of the unit. By accessing the menu, you can get various types of displays and adjust the available settings depending on the selected menu.

The figure below shows the display when the unit is in on or off mode.





The figure below describes the meanings of the state signals appearing on the display left side *(1st LED SERIES).*

ROOM THERMOSTAT: the LED lights up when the contact of the room thermostat is open.

CHRONO-THERMOSTAT: the LED lights up when at least one start-up and switch-off program is active.

START-UP RESISTANCE: the LED lights up when start-up resistance is active.

SCREW CONVEYOR: the LED lights up when the pellet loading motor reducer is started.

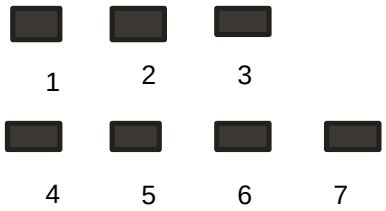
FLUE GAS EXTRACTOR: the LED lights up when the flue gas intake device is active.

DHW FLOW SWITCH: the LED lights up when the DHW flow switch contact is closed (which means there is demand for hot water). NOT USED ON THIS PRODUCT

PUMP: the LED lights up when the system circulation pump is active.

ALARM: the LED lights up when the boiler is in a state of alarm.

The figure below describes the meanings of the state signals appearing on the top right side of the display *(2nd LED SERIES).*



1 – the LED lights up when the on off settings daily program is active.

2 – the LED lights up when the on off settings weekly program is active.

3 – the LED lights up when the on off settings week-end program is active.

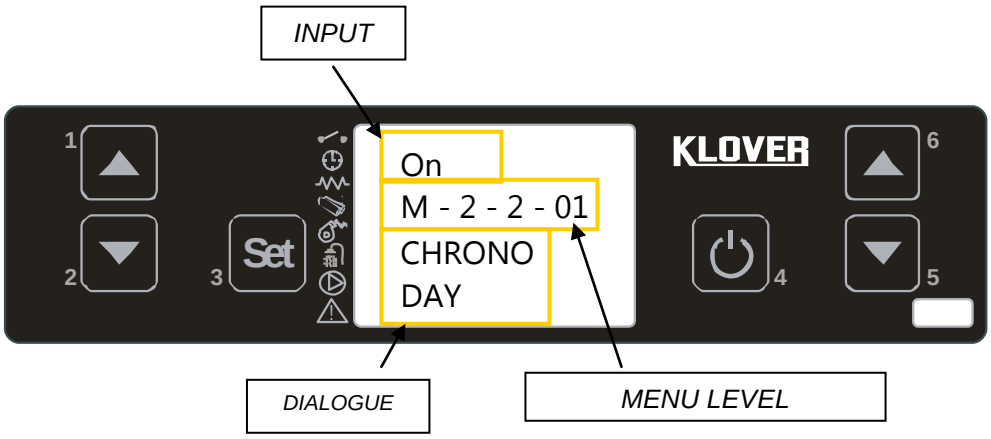
4 – the LED lights up (flashing) when the operation parameters are being edited.

5 – the LED lights up when the summer function is active (NOT USED ON THIS PRODUCT).

6 – the LED lights up when the winter function is active.

7 – the LED is not currently used.

The following figure shows the display when setting or programming operating parameters.



- The INPUT area shows the entered programming values.
- The MENU LEVEL area shows the current parameter/menu level.
- The DIALOGUE area displays the current parameter/menu meaning.

BUTTON	*DESCRIPTION*	*MODE*	*ACTION*
1	**It increases temperature (1)**	Programming..	It changes/increases the value of the selected menu.
		Working/off..	It increases the temperature of the room/water thermostat.
2	**It decreases temperature (2)**	Programming..	It changes/increases the value of the selected menu.
		Working/off..	It decreases the temperature of the room/water thermostat.

3	**Set**	-	It accesses the selected menu.
		In menu..	It accesses to the next level of sub-menus.
4	**ON/OFF Outlet**	Working..	It switches on and/or off the central heating cooker when pressed for 2 seconds.
		In alarm block..	It unlocks the alarm.
		In menu/programming..	It switches to the next submenu item by storing the changes.
5	**It decreases output (3)**	Working/off..	It decreases the DHW thermostat temperature value. It decreases the central heating cooker working output.
		In menu..	It moves to the next menu item.
		Programming..	It switches to the next submenu item by storing the changes.
6	**It increases output (4)**	Working/off..	It increases the DHW thermostat temperature value. It increases the central heating cooker working output.
		In menu..	It moves to the previous menu item.
		Programming..	It switches to the previous submenu item by storing the changes.

(1) It selects WATER TEMPERATURE SET *"SET H2O"* when first pressed.

(2) It selects ROOM TEMPERATURE SET *"SET ROOM"* when first pressed.

(3) It selects DHW TEMPERATURE SET *"SET DHW"* when first pressed.

(4) It selects WORKING OUTPUT *"SET OUTPUT"* when first pressed.

THE MENU

Access the Menu by pressing key 3 (Set).

This is divided into different items and levels that allow access to the board programming and settings.

Scroll through the menus to be changed using keys 5 and 6.
Single menus can be changed using keys 1 and 2.

The menu options allowing access to technical programming (parameters reserved for the Technical Assistance Centre) are protected by access key.

Listed below is the list of menus available on the board, with various explanations.

1. **Menu 01 – Set clock**
   It sets current date and time.

2. **Menu 02 – Set on and off settings**
   Sub-menu 02 – 01 – enable on and off settings
   It allows universal enabling and disabling of all on and off thermostat function settings.

   Sub-menu 02 – 02 – daily program
   It allows enabling, disabling and setting the daily on and off thermostat function settings.

You can set up two operating ranges bounded by the times set according to the following table where OFF requires the clock to ignore the command:

MENU LEVEL	***SELECTION***	***MEANING***	***POSSIBLE VALUES***
02 – 02 – 02	START 1	Ignition time	Time – OFF
02 – 02 – 03	STOP 1	Switch-off time	Time – OFF
02 – 02 – 04	START 2	Ignition time	Time – OFF
02 – 02 – 05	STOP 2	Switch-off time	Time – OFF

Sub-menu 02 – 03 – weekly program
It allows enabling, disabling and setting the weekly on and off thermostat function settings.

The weekly programmer has 4 independent programs whose impact consists in the combination of the 4 individual programmings.

The weekly programmer can be enabled or disabled.

Furthermore, by setting OFF in the time field, the clock ignores the corresponding command.

PROGRAM 1			
MENU LEVEL	***SELECTION***	***MEANING***	***POSSIBLE VALUES***
02 – 03 – 02	START PROG 1	Ignition time	Time – OFF
02 – 03 – 03	STOP PROG 1	Switch-off time	Time – OFF
02 – 03 – 04	MONDAY PROG 1	Days of reference	On/off
02 – 03 – 05	TUESDAY PROG 1		On/off
02 – 03 – 06	WEDNESDAY PROG 1		On/off
02 – 03 – 07	THURSDAY PROG 1		On/off
02 – 03 – 08	FRIDAY PROG 1		On/off
02 – 03 – 09	SATURDAY PROG 1		On/off
02 – 03 – 10	SUNDAY PROG 1		On/off

PROGRAM 2			
MENU LEVEL	***SELECTION***	***MEANING***	***POSSIBLE VALUES***
02 – 03 – 11	START PROG 2	Ignition time	Time – OFF
02 – 03 – 12	STOP PROG 2	Switch-off time	Time – OFF
02 – 03 – 13	MONDAY PROG 2	Days of reference	On/off
02 – 03 – 14	TUESDAY PROG 2		On/off
02 – 03 – 15	WEDNESDAY PROG 2		On/off
02 – 03 – 16	THURSDAY PROG 2		On/off
02 – 03 – 17	FRIDAY PROG 2		On/off
02 – 03 – 18	SATURDAY PROG 2		On/off
02 – 03 – 19	SUNDAY PROG 2		On/off

PROGRAM 3			
MENU LEVEL	***SELECTION***	***MEANING***	***POSSIBLE VALUES***
02 – 03 – 20	START PROG 3	Ignition time	Time – OFF
02 – 03 – 21	STOP PROG 3	Switch-off time	Time – OFF
02 – 03 – 22	MONDAY PROG 3	Days of reference	On/off
02 – 03 – 23	TUESDAY PROG 3		On/off
02 – 03 – 24	WEDNESDAY PROG 3		On/off
02 – 03 – 25	THURSDAY PROG 3		On/off
02 – 03 – 26	FRIDAY PROG 3		On/off
02 – 03 – 27	SATURDAY PROG 3		On/off
02 – 03 – 28	SUNDAY PROG 3		On/off

PROGRAM 4			
MENU LEVEL	***SELECTION***	***MEANING***	***POSSIBLE VALUES***
02 – 03 – 29	START PROG 4	Ignition time	Time – OFF
02 – 03 – 30	STOP PROG 4	Switch-off time	Time – OFF
02 – 03 – 31	MONDAY PROG 4	Days of reference	On/off
02 – 03 – 32	TUESDAY PROG 4		On/off
02 – 03 – 33	WEDNESDAY PROG 4		On/off
02 – 03 – 34	THURSDAY PROG 4		On/off
02 – 03 – 35	FRIDAY PROG 4		On/off
02 – 03 – 36	SATURDAY PROG 4		On/off
02 – 03 – 37	SUNDAY PROG 4		On/off

Sub-menu 02 – 04 – week-end program
It allows enabling, disabling and setting the week-end (Saturdays and Sundays) on and off thermostat function settings.

TIP: To avoid confusion and undesired startup and shutdown operations, turn on only one program at a time if you do not exactly know what you want to achieve.

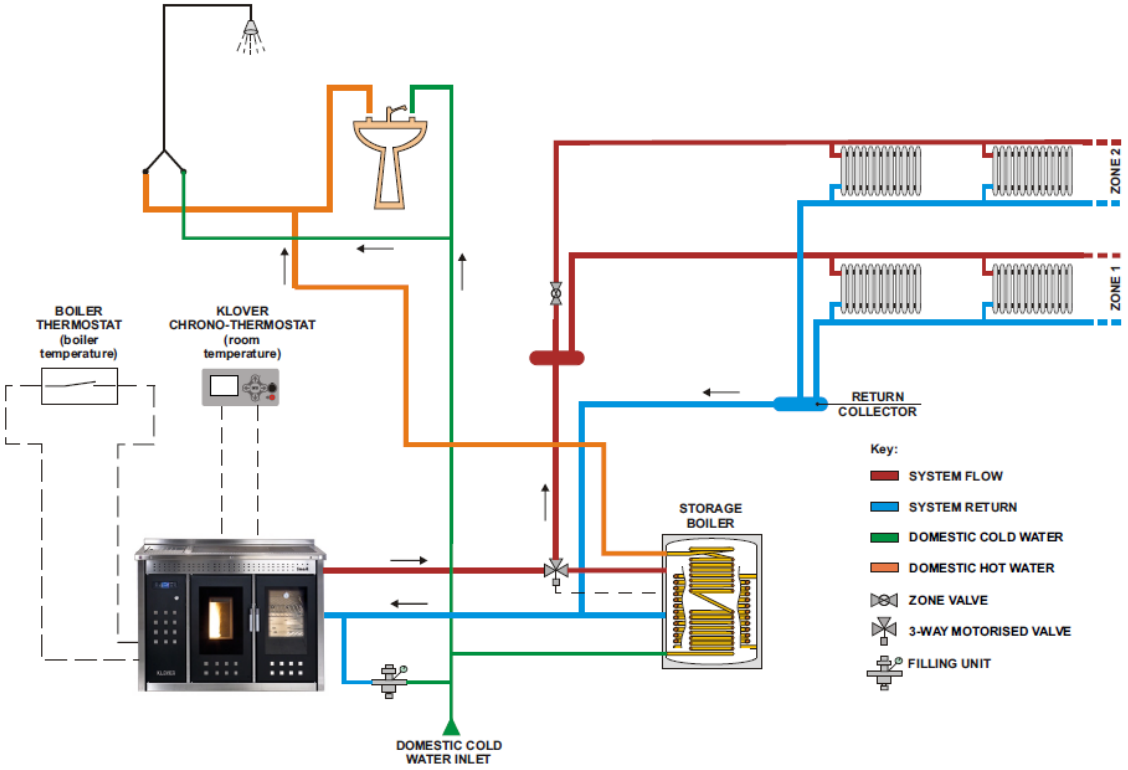
If you want to use the weekly program, disable the daily schedule. If you use the weekly program in programs 1, 2,3, and 4, always keep the week-end program disabled.

Only enable week-end programming only after disabling the weekly schedule.

3. **Menu 03 – Choose language**
   It allows selecting the dialogue language among those available (Italian, English, French, German, and Spanish).

4. **Menu 04 – Enable R.T (T.A.) contact (only active if room sensor is enabled on external remote control)**
   It enables the Room Thermostat contact operation if the room sensor on the external remote control is enabled (also see the *"Remote control"* manual).
   The Room Thermostat contact operation is always active if the room sensor on the external remote control is not enabled.

Example:



In this condition...

...if you want to operate the central heating cooker with KLOVER remote control room temperature only::

- enable the room sensor on the remote control (stove settings menu +> Enable room sensor -> ON)
- disable the boiler thermostat contact on the central heating cooker display (menu 4 enable contact -> OFF)

In this case, the central heating cooker first enters economy mode operation, and then automatically switches off when the desired room temperature (detected with KLOVER remote control) is reached.

...if you want to operate the central heating cooker with KLOVER remote control room temperature and with boiler thermostat:

- enable the room sensor on the remote control (stove settings menu +> Enable room sensor -> ON)
- enable the boiler thermostat contact on the central heating cooker display (menu 4 enable contact -> ON)

In this case, the central heating cooker first enters economy mode operation, and then automatically switches off when both temperatures have been reached.

...if you want to operate the central heating cooker with the boiler temperature only:

- disable the room sensor on the remote control (stove settings menu +> Enable room sensor -> OFF). The room sensor is automatically disabled if no external remote control is connected.
- enable or disable the boiler thermostat contact on the central heating cooker display (menu 4 enable contact -> ON/OFF)

In this case, the central heating cooker first enters economy mode operation, and then automatically switches off when the boiler temperature (measured with an external thermostat immersed in the boiler) has been reached. This may be a viable solution to heat DHW in summer.

...if you do not want to operate the central heating cooker with external thermostats but only with the water temperature in the heating system:

- disable the room sensor on the remote control (stove settings menu +> Enable room sensor -> OFF). The room sensor is automatically disabled if no external remote control is connected.
- enable or disable the boiler thermostat contact on the central heating cooker display (menu 4 enables contact -> ON/OFF). The contact must obviously be bridged (provided for in the factory).
- Only when reaching the temperature set in *"SET H2O"* or *"SET DHW"* does the central heating cooker enter economy mode operation.

Summary:

CASE	REMOTE CONTROL ROOM SENSOR	ROOM THERMOSTAT CONTACT	ACTION
1	OFF	OFF	It works with room thermostat contact
2	OFF	ON	It works with room thermostat contact
3	ON	OFF	It works with remote control room sensor only
4	ON	ON	It works with remote control room sensor and room thermostat contact

5. Menu 05 – 3-Way Valve Threshold

It allows setting the temperature threshold for switching the 3-way motorised valve installed in the DHW system. Change-over occurs after 30" from reaching the set temperature and with a hysteresis of 2°C.

Example:
3-Way Valve Threshold = 55°C
The valve opens after 30" from reaching 55°C.
The valve closes if 52°C is reached.

6. Menu 06 – Sound alarm

It allows enabling or disabling the sound signal in case of alarm. The sound signal is only available on the central heating cooker board, and not on the external remote control.

7. Menu 07 – Initial load

It allows pre-loading pellets for 90” with the central heating cooker off and cold. Start the operation using key 1 and stop it using key 4. It can be useful if the central heating cooker is ignited after fully emptying the tank, or it is the first time it is filled.

8. Menu 08 – Cooker state

It allows displaying the instantaneous central heating cooker state showing the state of the various devices connected to it. There are several pages displayed in succession. As the reported data is reserved for the Technical Assistance Centre, we recommend not accessing this menu.

9. Menu 09 – Technical calibration

It gives access to all that is reserved for the Technical Assistance Centre. Access is protected by an access key. Unauthorised access can cause serious damage to the equipment and the environment as well as personal injuries.

COMMISSIONING

Filling the system for the first time

After connecting the central heating cooker, fill the system as follows:

- Check tightness of all piping, the expansion vessel, and the circulation pump;
- Open *"manual air release valve"* of the central heating cooker, located on its left side (see fig. on page 10);
- Open the *"boiler body and system load cock"* (see fig. on page 8) to load the system. Act very slowly to allow any air to escape from the central heating cooker through the *"manual air release valve"*; **Optimum working pressure is 1.2 bar;**
- If necessary, very slowly loosen the pump vent plug draining the fluid for a few seconds;
- Vent all radiators and any other deaeration system to ensure that there are no air bubbles.

After installation, check the tightness of all hydraulic joints.

When installation has been completed, it is advised, for the first days of operation, to check the tightness of all hydraulic joints.

The central heating cooker system can be emptied through the "*boiler body and system drain cock"* located inside the "*hydraulic compartment"* below the cooking oven (see fig. on page 8).

During periods of intense cold it is appropriate that the heating system remains in operation. In the case of a prolonged absence, antifreeze must be added to the heating water, or the system be completely emptied.

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.

Pellet loading and mains connection

Perform the following steps:

- Connect the central heating cooker to the electrical system using the cable supplied;
- Put the "main *ON/OFF switch"* (see fig. on page 9) located inside the "*technical compartment"* of the central heating cooker in position "I" (ON);
- Fill the pellet tank; for the first start ever, to avoid wasting the time required for filling the entire screw feed channel (this should be done every time the central heating cooker remains without pellets), we recommend using what is mentioned in MENU 07 – INITIAL LOAD (see page 46);
- Turn on the central heating cooker using the relevant ignition key on the control panel. See the instructions below.

It is recommended to use high quality pellets so as not to impair the central heating cooker features**. Damage caused by poor pellets is not covered by the warranty.**

Central heating cooker ignition cycle

Pressing button 4 (ON/OFF) for a few seconds allows starting the central heating cooker ignition cycle. After a while, the display shows **"START",** and the flue gas intake device and ignition resistance switch on. After 40 seconds, the central heating cooker moves to a pre-load phase (**"PELLET P-LOAD")** useful to quickly fill the brazier with pellet. The central heating cooker goes into **"FLAME STAND-BY"** after the pre-load phase. When the flame is lit, the display shows the message **"FIRE"**. This step is used to allow the fire to spread evenly across the brazier. After these steps, the central heating cooker enters work mode at the pre-set output.
In case of misfire, the central heating cooker goes into **"NO IGNIT-"** alarm.
The alarm may also occur if the brazier is dirty; in this case, clean the brazier and restart the central heating cooker.

Summary:

The ignition cycle can last max 25 minutes and is divided into four steps:

1 - START : **Flue gas intake device ignition**
duration 40 seconds

2 – PELLET PRE-LOAD : **Pellet pre-load (initial continuous load) and resistance ignition**
Pr40 = Ignition pre-load time

3 - FLAME STAND-BY : **Pellet load (intermittent load) and operation resistance**
Pr01 – Pr40 = ignition cycle maximum time – Ignition pre-load time

4 - FIRE PRESENT : **Resistance switch-off and flame stabilization**
Pr02 = start time

The central heating cooker switches into working mode at the output set during ignition via buttons 1 and 2.

Central heating cooker working mode

During the working phase, by pressing 1, you can set *"SET H20"* or the water working temperature in the central heating cooker. When this temperature is reached, the cooker enters the economy mode operation *"T-H2O ECONOMY"*.
Before reaching the temperature set on *"SET H20"*, the central heating cooker starts modulating output by decreasing the pellet intake and reducing the flue gas suction speed.

Example: *"SET H2O"* set at 75 °C
Working output set at 5

- Working output automatically changes to 4 when temperature reaches 71°C.
- Working output automatically changes to 3 when temperature reaches 72°C.
- Working output automatically changes to 2 when temperature reaches 73°C.
- Working output automatically changes to 1 when temperature reaches 74°C.
- Working output automatically changes to economy mode operation *"T-H2O ECONOMY"* when temperature reaches 75°C.

At this point, the central heating cooker will shut off automatically if at least one of the following conditions occurs:

- If it remains in the economy mode operation *"T-H2O ECONOMY"* for the time set on Pr44 (30 minute default setting).
- If the temperature differential set on Pr43 (5°C default setting) or **H2O Temperature > (*"SET H2O"* + Pr43)** is exceeded.

The central heating cooker will automatically switch on if:

- It goes below the temperature differential set on Pr43 (5°C default setting) or **Temperature H2O < (*"SET H2O"* – Pr43).**

If the above-mentioned condition occurs when the central heating cooker is still carrying out the switch-off cycle, please wait until it runs out.

The cleaning cycle of the brazier (displayed under **"BRAZIER CLEANING"**) is done at predetermined time intervals for an established period (see parameter table).

Producing domestic hot water (suitable models only)

Domestic hot water is produced instantly via a double heat exchanger immersed in water in the central heating cooker.
Therefore, to have DHW, the central heating cooker must reach a temperature of at least 60°C.

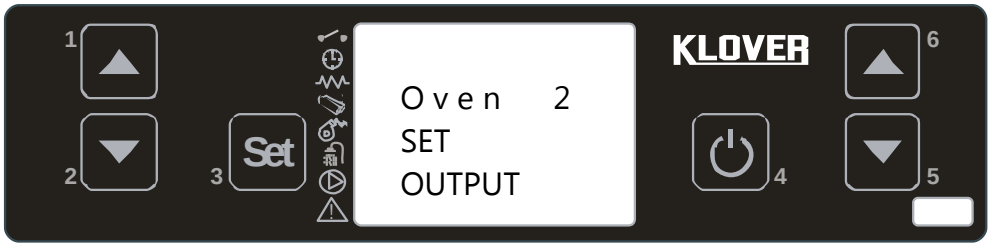
Set the central heating cooker in DHW output mode *"DHW"* if a large amount of domestic hot water is required.
The function of the "*DHW"* output mode is to postpone the heating pump start-up at higher temperatures, so as to transfer all the heat produced at these temperatures to domestic hot water.
Press 5 to set the pump starting temperature and use keys 5 or 6 to change the *"SET DHW"* temperature (we recommend keeping this temperature at 70–75°C) (also see page 51).
If *"DHW"* output mode is manually set, the central heating cooker must be reset with working output from 1 to 5 when domestic hot water is no longer required.

The central heating cooker is equipped with a predisposition for the connection to a flow switch that automatically sets *"DHW"* output mode when there is demand for hot water. Conversely, when there is more demand for hot water, the central heating cooker automatically returns to the previously set working output.
Contact the authorised Technical Assistance Centre for the electrical connection of the flow switch.

ATTENZIONE! **If water is particularly hard, it is essential to install an anti limescale device at the heat exchanger inlet, to be chosen according to the water characteristics.**

Cooking plate/oven output.

Besides setting one of the five available WORKING OUTPUT VALUE (from 1 to 5) and the DHW OUTPUT, pressing button 6 also allows selecting one of the three OVEN OUTPUT VALUE (OVEN 1, OVEN 2, OVEN 3) which can only be set when you want to cook. Therefore, press keys 5 and 6 to set the desired output.
During this operation, the display appears as in the figure below.



By setting one of the three available OVEN OUTPUT VALUE, the operation of the room thermostat (or of any other combined thermostat) is excluded. So the central heating cooker will enter modulation mode and then go off only if the temperature set on SET OVEN is reached (75°C default setting - see parameter tables).
Re-set one of the five WORKING OUTPUT VALUE (from 1 to 5) when you have finished cooking.
The oven and cooking plate temperatures reached with laboratory tests are shown in the following tables.

OVEN working output 1		
MINUTES AFTER IGNITION	**OVEN* AVERAGE TEMPERATURE**	**COOKING PLATE* MAXIMUM TEMPERATURE**
30 MINUTES	120°C	The cooking plate is normally running after 60 minutes, reaching a temperature of about 230°C (temperature measured in the middle of the plate)
45 MINUTES	165°C	
60 MINUTES	190°C	
75 MINUTES	200°C	
90 MINUTES	205°C	
105 MINUTES	205°C	
120 MINUTES	210°C	

OVEN working output 2		
MINUTES AFTER IGNITION	**OVEN* AVERAGE TEMPERATURE**	**COOKING PLATE* MAXIMUM TEMPERATURE**
30 MINUTES	130°C	The cooking plate is normally running after 60 minutes, reaching a temperature of about 260°C (temperature measured in the middle of the plate)
45 MINUTES	200°C	
60 MINUTES	220°C	
75 MINUTES	230°C	
90 MINUTES	235°C	
105 MINUTES	240°C	
120 MINUTES	240°C	

OVEN working output		
MINUTES AFTER IGNITION	**OVEN* AVERAGE TEMPERATURE**	**COOKING PLATE* MAXIMUM TEMPERATURE**
30 MINUTES	150°C	The cooking plate is normally running after 60 minutes, reaching a temperature of about 300°C (temperature measured in the middle of the plate)
45 MINUTES	230°C	
60 MINUTES	260°C	
75 MINUTES	270°C	
90 MINUTES	270°C	
105 MINUTES	275°C	
120 MINUTES	280°C	

* The temperatures in the tables are approximate and vary depending on the type of pellet burnt and frequency of cleaning the flue gas turn. The temperature may fall by about 20/30°C if food is put into the oven. The temperatures were measured starting with the central heating cooker off and cold; the temperatures may be different from those reported above after several hours of operation.

ATTENZIONE! It is recommended to periodically turn the dripping pan or the cooking grid during cooking to allow a homogenous baking of the food in the oven.

To cook on a cast iron radiant plate, you should place the pot on the hottest point of the plate or in the middle of the circles drawn on it (see figure). Only use flat bottom pots evenly adhering over the base.

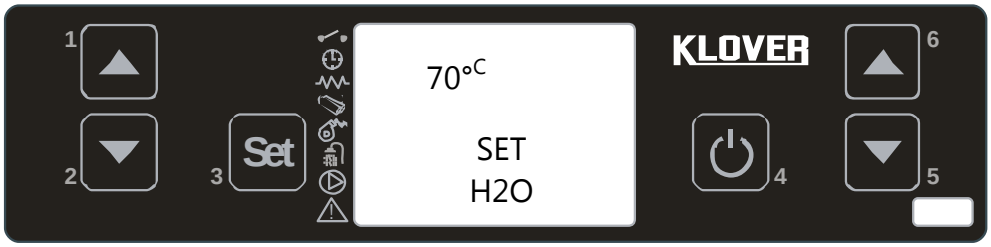
Central heating cooker switch-off

Pressing button 4 (ON/OFF) the central heating cooker is turned off. The display will show **"FINAL CLEANING"**. The pellet load is stopped turning off the motor reducer. The flue gas intake device speed is increased to maximum and switched off after the equipment cooling, displaying **"OFF"**.

Changing DHW, room, and water temperature settings.

- Water Temperature

Press key 1 and select *"SET H2O"* to change water temperature. Then press keys 1 and 2. During this operation, the display appears as shown in the figure below.

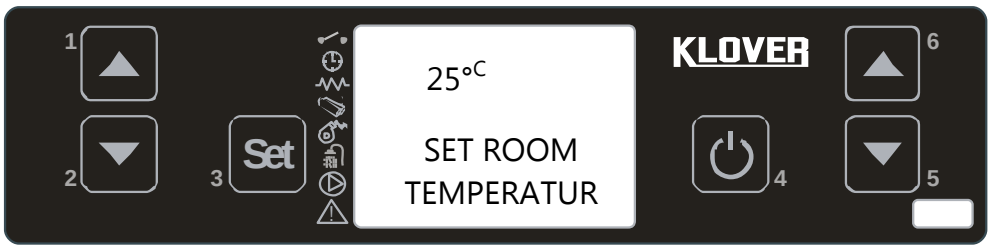


After setting the desired value, confirm by pressing button 4 or waiting a few seconds. When the set temperature is reached, the cooker enters economy mode operation. At this point, the cooker will shut off automatically if at least one of the following conditions occurs:

- it remains in economy mode operation *"T-H2O ECONOMY"* for a time set on Pr44 (30 minute default setting).
- the temperature differential set on Pr43 (factory set value 5°C) or **H2O Temperature > (*"SET H2O"* + Pr43)** is exceeded.

- Room Temperature

Press key 2 and select *"SET ROOM TEMP"* to change the room temperature. Then press keys 1 and 2. During this operation, the display appears as shown in the figure below.

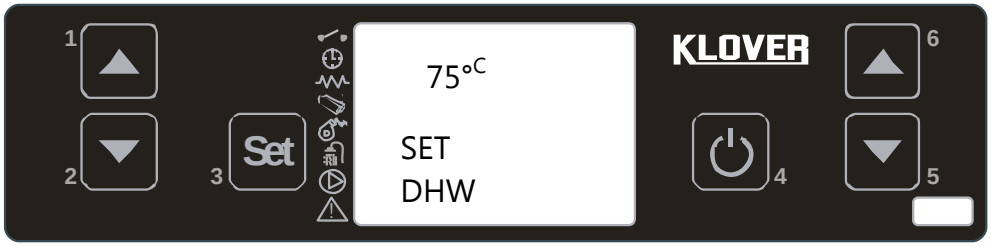


Press key 4 or wait a few seconds to confirm the desired value setting.

WARNING: The room thermostat temperature is taken into account if the remote control to be applied to the wall is connected, (also see page 44 *"Menu 04"*). The room sensor must also be enabled in the remote control (see the *"Remote control"* manual).

- DHW Temperature

Press key 5 and select *"SET DHW"* to change the DHW temperature. Then press keys 5 and 6. During this operation, the display appears as shown in the figure below.



Press key 4 or wait a few seconds to confirm the desired value setting.

Alarm signals

If there is a malfunction in the cooker the display board will activate an alarm and indicate on the display the type of malfunction that has occurred. The board has the following alarm indications.

DISPLAY	*ORIGIN OF ALARM*
AL 9 WATER PROBE ACTIVE ALARM	Faulty or disconnected water temperature probe.
AL 2 FLUE GAS PROBE ACTIVE ALARM	Faulty or disconnected flue gas temperature probe.
AL 3 HOT TEMP ACTIVE ALARM	Flue gas over-temperature. When flue gas temperature is higher than 260°C. Before displaying the alarm, or when flue gas maximum temperature is reached (Pr14). the display shows *"HOT FLUE GAS".*
AL 5 NO IGNIT- ACTIVE ALARM	No ignition. When the flue gas minimum temperature (Pr13) is not reached within maximum ignition cycle time (Pr01).
AL 6 NO PELLET ACTIVE ALARM	Sudden shutdown during working mode. When, during work, the flue gas temperature drops below the minimum threshold (Pr13).
AL 4 FAULTY INTAKE DEV- ACTIVE ALARM	Faulty intake device. When the intake device speed measured by an in-built encoder (tachometer) is equal to 0.

Each alarm condition causes an immediate shutdown.

After the time set on Pr11 (alarms delay) the alarm state is reached; press key 4 to reset it.

What you need to know...

Listed below are some things you should know about the equipment:

- It is normal to smell paint from the equipment in the first few days of operation. The first time the central heating cooker is powered, we recommend keeping the installation room ventilated. We also recommend setting the cooker at maximum power for the first few days of operation.
- The boiler body is treated with an antioxidant paint to protect it against oxidation due to long periods of disuse. After the first ignition, this paint will no longer have this function, and any wear of the paint inside the combustion chamber is not to be considered a product defect.
- Any perceived noise can be attributed to the boiler body settlement expansion, and is not considered a manufacturing defect. This noise is primarily perceived during ignition and shutdown.

WHAT HAPPENS IF..

…the pellet does not ignite
In the event of a misfire, the "NO *IGNIT-"* alarm message appears.

Cancel the alarm and reset the central heating cooker to standard condition by pressing key 4 for a few seconds.

...the fire door is open or closed improperly
If the door is open or closed improperly, the motor reducer cannot be powered electrically thereby preventing the central heating cooker from being ignited. If the fire door is opened during standard operation, the central heating cooker will burn all the pellet in the brazier and then activate the *"NO PELLET"* alarm (sudden shutdown).

...the flue is dirty, clogged or not properly manufactured
If the flue is dirty, clogged or not properly manufactured, the motor reducer is not electrically powered and therefore does not turn the cooker on. If the flue becomes clogged during normal operation, the central heating cooker will burn all the accumulated pellets in the brazier, and then go into the *"NO PELLET"* alarm (sudden shutdown).

...the central heating cooker is overheated
If the cooker water is overheated, the motor reducer is not electrically powered and a manual reset thermostat is enabled. If this happens when the central heating cooker is working, it will go into the *"NO PELLET"* alarm (sudden shutdown). It is therefore necessary to reset the thermostat before restarting the central heating cooker.

...lack of power (black out)
If an outage occurs for a shorter time than Pr48, when power is restored, the central heating cooker will immediately re-start in the working mode it had been operating with before the outage (recovering the set working output).
If an outage occurs for a longer time than Pr48, when power is restored, the central heating cooker will enter the *"STOP FIRE" (stand-by)* mode running all the switch-off cycle until cooling. When this phase is over, the cooker can be restarted resuming work at the set output.

Previous state	Black-out duration	State after power restore
OFF	Any	OFF
START	duration < Pr48	START
START	duration > Pr48	START
P-LOAD PELLET	Any	BLACK OUT ALARM
FLAME STAND-BY	Any	BLACK OUT ALARM
FIRE	duration < Pr48	FIRE
FIRE	duration > Pr48	STOP FIRE with automatic re-ignition after machine cooling
WORK (any phase)	duration < Pr48	WORK (any phase)
WORK (any phase)	duration > Pr48	STOP FIRE with automatic re-ignition after machine cooling
BRAZIER CLEANING	duration < Pr48	BRAZIER CLEANING
BRAZIER CLEANING	duration > Pr48	STOP FIRE with automatic re-ignition after machine cooling
FINAL CLEANING	duration < Pr48	FINAL CLEANING and after cooling → OFF
FINAL CLEANING	duration > Pr48	FINAL CLEANING and after cooling → OFF
STOP FIRE	Any	STOP FIRE

CIRCUIT BOARD PARAMETERS

THE PARAMETERS STORED ON THE CIRCUIT BOARD ARE ESSENTIAL FOR THE PROPER OPERATION OF THE CENTRAL HEATING COOKER.

THE PARAMETERS GIVEN BELOW HAVE ALREADY BEEN STORED DURING THE CENTRAL HEATING COOKER TESTING PHASE DIRECTLY IN THE FACTORY.

THESE PARAMETERS ARE THE RESULT OF CAREFUL TESTS WITH VARIOUS TYPES OF PELLETS, AND SHOULD NOT BE CHANGED WITHOUT THE PERMISSION OF KLOVER srl SO AS NOT TO IMPAIR THE CENTRAL HEATING COOKER OPERATION.
THE MANUFACTURER DISCLAIMS ALL LIABILITY FOR ANY DAMAGE CAUSED BY IMPROPER PARAMETER ENTRIES.

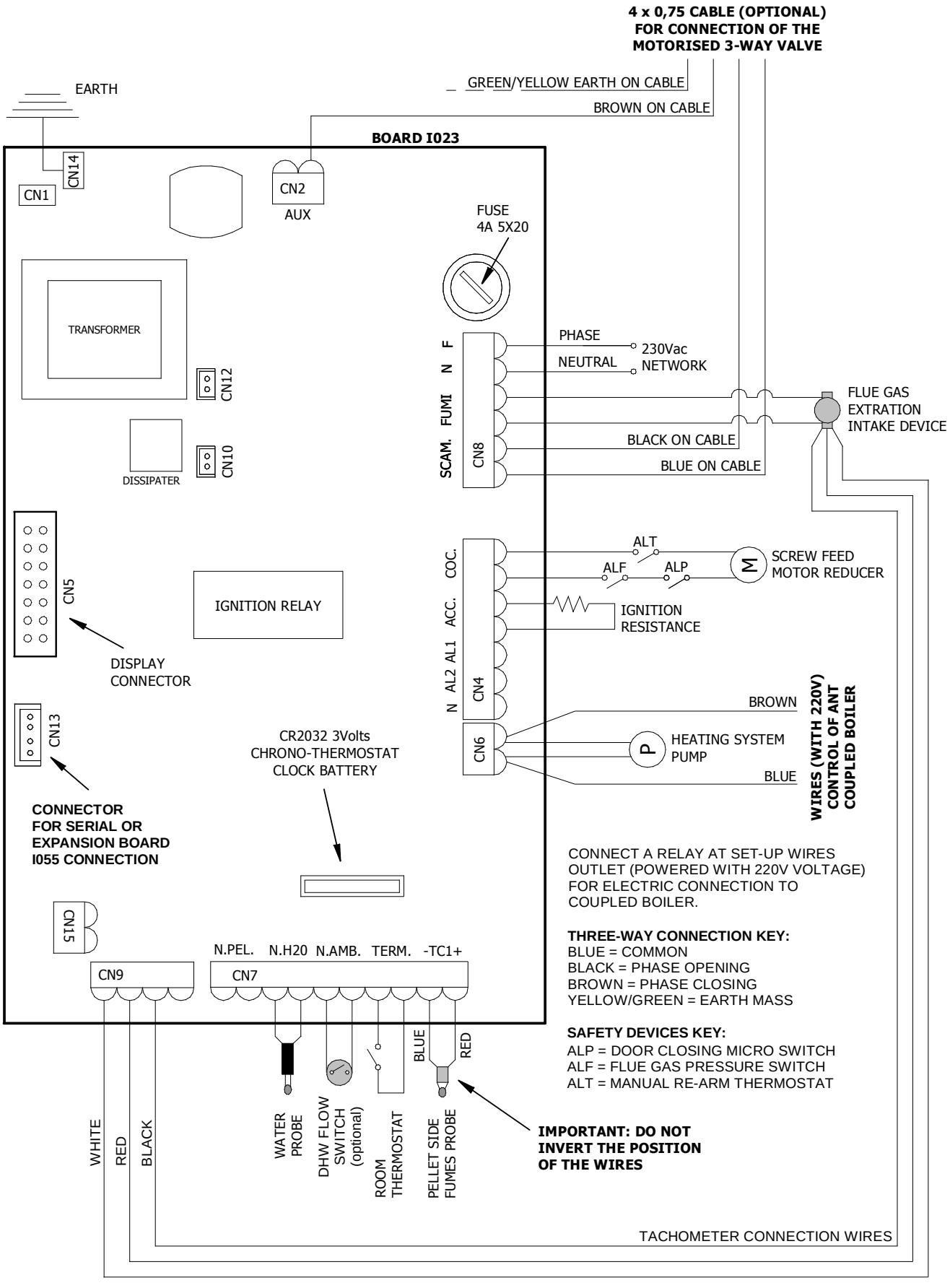
"Various calibrations" (Menu M – 9 – 4)

Parameter	Menu level	Description	Display writing	Measurement	Value field	Database o0
Pr38	M – 9 – 4 – 01	Re-ignition block	RE-IGNIT BLOCK	Minutes	0 – 10	**6**
Pr39	M – 9 – 4 – 02	Flue gas intake device switch-off time	MIN-INT OFF	Minutes	0 – 20	**10**
Pr40	M – 9 – 4 – 03	Ignition pre-load time	IGNIT- PRE-LOAD	Seconds	0 – 225	**85**
Pr41	M – 9 – 4 – 04	Stand-by time after pre-load	AFTER-PRE STAND-BY	Seconds	0 – 255	**210**
Pr42	M – 9 – 4 – 05	Intake device speed in pre-load phase	PRELOAD FLUE GAS-INTAKE DEVICE	Revs/min	350 – 2800	**2100**
Pr43	M – 9 – 4 – 06	ON/OFF Temperature hysteresis on *"SET H2O"* and *"SET DHW"*	DELTA ON OFF AUTO	°C	0 – 20	**5**
Pr44	M – 9 – 4 – 07	Delay at economy operation mode switch-off (timer after reaching *"SET H2O"*)	DELAY-OFF AUTO	Minutes	2 – 120	**30**
Pr45	M – 9 – 4 – 08	Power change delay	POWER CHANGE	Seconds	0 – 60	**20**
Pr46	M – 9 – 4 – 09	ON/OFF Temperature hysteresis on *"SET ROOM"*	DELTA ON AUTO	°C	0 – 15	**2**
Pr47	M – 9 – 4 – 10	Keypad block enabling	KEYS BLOCK-EN	On – off	On – off	**Off**
Pr48	M – 9 – 4 – 11	Automatic re-ignition after black-out	BLACK OUT RE-IGNITION	Seconds	0 – 60	**30**
Pr49	M – 9 – 4 – 12	Pellet level sensor enabling	PELLET RESERVE	On – off	On – off	**On**
Pr50	M – 9 – 4 – 13	Pump ignition for over-temperature safety	PUMP SAFETY	°C	60 - 90	**83**
Pr51	M – 9 – 4 – 14	*"SET OVEN"* Temperature	SET OVEN	°C	70 - 80	**75**

"Default settings" (Menu M – 9 – 6)

Parameter	Menu level	Description	Display writing	Measurement	Value field	Database o0
Pr01	M – 9 – 6 – 01	Ignition cycle maximum time	IGNIT- MINUTES	Minutes	5 – 25	**25**
Pr02	M – 9 – 6 – 02	Start time	START MINUTES	Minutes	2 – 12	**5**
Pr03	M – 9 – 6 – 03	Time interval between the two brazier cleaning operations	BRAZIER CLEANING	Minutes	3 – 240	**60**
Pr04	M – 9 – 6 – 04	Screw feed motor reducer ON time in ignition phase	IGNIT- SCREW FEED	Seconds	0.1 – 8.0	**2,2**
Pr05	M – 9 – 6 – 05	Screw feed motor reducer ON time in start phase	START SCREW FEED	Seconds	0.1 – 8.0	**2,0**
Pr06	M – 9 – 6 – 06	Screw feed motor reducer ON time in output 1 working mode	OUTPUT 1 SCREW FEED	Seconds	0.1 – 8.0	**1,8**
Pr07	M – 9 – 6 – 07	Screw feed motor reducer ON time in output 2 working mode	OUTPUT 2 SCREW FEED	Seconds	0.1 – 8.0	**2,8**
Pr08	M – 9 – 6 – 08	Screw feed motor reducer ON time in output 3 working mode – Oven output 1	OUTPUT 3 SCREW FEED	Seconds	0.1 – 8.0	**4,2**
Pr09	M – 9 – 6 – 09	Screw feed motor reducer ON time in output 4 working mode – Oven output 2	OUTPUT 4 SCREW FEED	Seconds	0.1 – 8.0	**5,4**
Pr10	M – 9 – 6 – 10	Screw feed motor reducer ON time in output 5 working mode – Oven output 3	OUTPUT 5 SCREW FEED	Seconds	0.1 – 8.0	**6,8**
Pr11	M – 9 – 6 – 11	Alarm delay	ALARM DELAY	Seconds	20 – 90	**30**
Pr12	M – 9 – 6 – 12	Brazier cleaning duration	BRAZIER CLEANING	Seconds	0 – 120	**40**
Pr13	M – 9 – 6 – 13	Flue gas minimum temperature to consider the boiler on	MINIMUM THRESHOLD	°C	40 – 180	**50**
Pr14	M – 9 – 6 – 14	Flue gas maximum temperature	MAXIMUM THRESHOLD	°C	110 – 250	**250**
Pr15	M – 9 – 6 – 15	Flue gas temperature threshold for the exchanger ignition (NOT USED)	FAN THRESHOLD	°C	50 – 210	**60**
Pr16	M – 9 – 6 – 16	Flue gas intake device speed in ignition phase	IGNIT FLUE GAS SPEED	Revs/min	500 – 2800	**2100**
Pr17	M – 9 – 6 – 17	Flue gas intake device speed in start phase	START FLUE GAS SPEED	Revs/min	500 – 2800	**2200**
Pr18	M – 9 – 6 – 18	Flue gas intake speed in output 1 working mode	P 1 FLUE GAS SPEED	Revs/min	500 – 2800	**1600**
Pr19	M – 9 – 6 – 19	Flue gas intake speed in output 2 working mode	P 2 FLUE GAS SPEED	Revs/min	500 – 2800	**1750**
Pr20	M – 9 – 6 – 20	Flue gas intake speed in output 3 working mode – Oven output 1	P 3 FLUE GAS SPEED	Revs/min	500 – 2800	**1900**
Pr21	M – 9 – 6 – 21	Flue gas intake speed in output 4 working mode – Oven output 2	P 4 FLUE GAS SPEED	Revs/min	500 – 2800	**2100**
Pr22	M – 9 – 6 – 22	Flue gas intake speed in output 5 working mode – Oven output 3	P 5 FLUE GAS SPEED	Revs/min	500 – 2800	**2250**
Pr23	M – 9 – 6 – 23	Exchanger 1 motor speed in output 1 working mode (NOT USED)	AIR 1 SPEED	Volt	65 – 225	**65**
Pr24	M – 9 – 6 – 24	Exchanger 1 motor speed in output 2 working mode (NOT USED)	AIR 2 SPEED	Volt	65 – 225	**65**
Pr25	M – 9 – 6 – 25	Exchanger 1 motor speed in output 3 working mode (NOT USED)	AIR 3 SPEED	Volt	65 – 225	**65**
Pr26	M – 9 – 6 – 26	Exchanger 1 motor speed in output 4 working mode (NOT USED)	AIR 4 SPEED	Volt	65 – 225	**65**
Pr27	M – 9 – 6 – 27	Exchanger 1 motor speed in output 5 working mode (NOT USED)	AIR 5 SPEED	Volt	65 – 225	**65**
Pr28	M – 9 – 6 – 28	Flue gas intake device switch-off threshold (in switch-off phase)	THRESHOLD OFF	°C	50 – 180	**70**
Pr29	M – 9 – 6 – 29	Flue gas intake device speed in brazier cleaning phase	FLUE GAS-INTAKE DEVICE CLEANING	Revs/min	500 – 2800	**2800**
Pr30	M – 9 – 6 – 30	Screw feed motor reducer ON time in cleaning phase	CLEANING SCREW FEED	Seconds	0.1 – 8.0	**1,5**
Pr31	M – 9 – 6 – 31	Flue gas intake device encoder enabling (NOT USED)	ENCODER	On – off	On – off	**On**
Pr32	M – 9 – 6 – 32	Screw feed brake time	BRAKE TIME	Seconds	0 – 0.5	**0,2**
Pr33	M – 9 – 6 – 33	Pump activation threshold	PUMP THRESHOLD	°C	20 – 70	**55**
Pr34	M – 9 – 6 – 34	Water pressure switch enabling (NOT USED)	WATER PRESSURESW.	On – off	On – off	**Off**
Pr35	M – 9 – 6 – 35	Water pressure threshold (NOT USED)	PRESSURE THRESHOLD	Bar	1.5 – 3.0	**2,5**
Pr36	M – 9 – 6 – 36	Screw feed motor reducer ON time in DHW output working mode	DHW SCREW FEED	Seconds	0.1 – 8.0	**6,8**
Pr37	M – 9 – 6 – 37	Flue gas intake speed in DHW output working mode	DHW FLUE GAS-INTAKE DEVICE	Revs/min	500 – 2800	**2250**

WIRING DIAGRAM



WARRANTY CERTIFICATE

- The warranty period starts from the date of purchase of the product, which must be proved by a delivery document or other document issued by the selling firm. The document must be submitted to the Technical Assistance Centre, if required.
- A copy of the warranty coupon (commissioning report) issued by the KLOVER Technical Assistance Centre must be preserved along with the proof of purchase receipt.
- KLOVER s.r.l. disclaims any liability for accidents resulting from failure to comply with the specifications contained the use and maintenance manual attached to the equipment.
- Furthermore, KLOVER s.r.l. declines any liability arising from misuse of the product by the user, unauthorized modifications and/or repairs, as well as use of non-original spare parts or not suitable parts for this type of product.

KLOVER s.r.l. guarantees the quality of materials, good construction, and functionality of the product for a period of 2 years, under the following conditions:

1. Any product which in its sole discretion, is deemed defective in materials or workmanship will be repaired or replaced; with the exclusion of all costs for transport, recovery (hydraulic, disassembly and assembly operations, building work, and any other required operation), and auxiliary materials;
2. The warranty does not cover:
   - Ceramic glass coatings and ceramic-tiled and/or painted steel coverings as they can be damaged accidentally being very vulnerable to impact;
   - any ceramic-tiled part showing colour shade variations, pin holing, cracks, shading and slight variations in size, because they cannot be considered product defects but rather characteristics craftsmanship characteristics.
   - the cast iron pellet burner, the cast iron grid and cooking plate, the smoke deflector, the flame arresters, gaskets, fuses or batteries making up the electronic equipment, and any other removable component, where it cannot be proved it is a manufacturing defect and not normal wear.
   - Electrical and electronic parts whose failure can be related to a non-standard electrical connection, natural disasters (lightning, electric discharges, etc.), and variation other than the rated voltage.
   - Any parameter calibration due to the fuel type or the type of installation of the equipment.
3. Replaced parts are warranted for the remaining warranty period from the date of purchase and/or for a period not exceeding 6 months;
4. The use of poor quality pellets, wood or other fuel could damage the equipment parts making the warranty void and exempting the manufacturer from any liability. Therefore, we recommend using fuel as per our specifications;
5. Improper installation by unqualified personnel, tampering with, and failure to comply with the rules contained in this "use and maintenance manual", and those regarding “workmanlike installation” will void any warranty claim; the same applies to any damage caused by external factors. In all cases, direct or indirect damage is not covered by the warranty, whatever the nature or the cause thereof;
6. Please note that the goods travel under the customer’s responsibility, even if delivered carriage free, therefore we are relieved of all liability for any damage caused by loading and unloading, accidental blows, storage in unsuitable places, etc;
7. The boiler unit of only water-based products connected to a heating and/or domestic hot water system is guaranteed for 5 years, at the above-mentioned conditions.
8. The warranty is accepted only if the warranty coupon (commissioning report) is completed and legible in all its parts by the authorized Technical Assistance Centre. For the validity of the warranty, equipment commissioning must only be carried out by the authorized Technical Assistance Centre within 3 months from date of purchase and no later than 30 days from date of installation.

For all disputes, Verona is deemed to be the exclusive competent court of law.

KLOVER S.R.L.

PELLET, WOOD and PELLET/WOOD FIRED
THERMAL FIREPLACES - CENTRAL HEATING COOKERS –
THERMAL STOVES - BOILERS

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