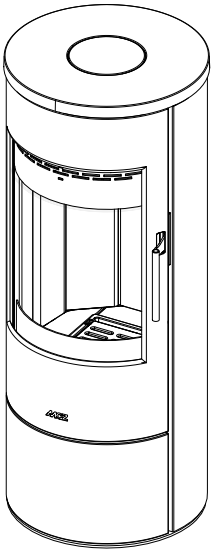
**INSTALLATION GUIDE** **EN**



WOOD STOVE

# RAYHA

**Translation of instructions drawn up in the original language**

MCZ

8902407200

# CONTENTS

# INTRODUCTION

Dear client,
Our products are designed and manufactured in compliance with current standards, using top-quality materials and in-depth experience of the transformation process.
To ensure that you get the best possible performance from your stove, we suggest that you read the instructions in the present manual carefully.
This installation and user manual is an integral part of the product: please ensure that it always accompanies the appliance, even if it is transferred to another owner. If lost, request a copy from your local technical support service or download it directly from the company's website.
All local regulations, including those relating to national and European standards, must be complied with when installing the appliance.
In Italy, for installations of biomass systems of less than 35 kW, the relevant ministerial decree is 37/08, and any qualified installer who meets the relevant requirements must issue a certificate of conformity for the system installed. (The system is the combination of stove + chimney + air intake).

## REVISIONS OF THE PUBLICATION

The content of this manual is strictly technical and belongs to MCZ Group Spa.
This manual cannot, even in part, be translated into another language and/or adapted and/or reproduced, even in part, in another mechanical, electronic form and/or support for photocopies, registrations or other purposes without the prior written authorisation from MCZ Group Spa.
The company reserves the right to make changes to the product at any time without prior notice. The owner company protects its rights under the law.

## RETENTION AND CONSULTATION PROCEDURES FOR THE MANUAL

- Take good care of this manual and keep it in an easily accessible place.
- If this manual is lost or destroyed, please request another copy from your dealer or directly from the authorised technical support service. It can also be downloaded directly from the company's website.
- «**Content in bold**» requires special attention on the part of the reader.
- «*Content in italics*» is used to draw your attention on other paragraphs in this manual or to provide any further additional explanations.
- The «Note» provides the reader with additional information on the topic.

## SYMBOLS IN THE MANUAL

| | |
|---|---|
|  | **WARNING:**<br>Read carefully and understand the message to which it refers, as **failure to comply with the instructions may cause serious damage to the product and endanger the safety of persons using it**. |
|  | **INFORMATION:**<br>any failure to comply with the instructions will compromise the use of the product. |
|  | **OPERATIONAL SEQUENCES:**<br>sequence of buttons to press to access menus or make settings. |
|  | **MANUEL**<br>consult this manual or the relevant instructions carefully. |

## ⚠ SAFETY WARNINGS

- **Installation, electrical connection, checking of operation and maintenance must only be carried out by an authorised operator.**
- **Install the product in compliance with current legislation and regulations.**
- Use only the fuel recommended by the manufacturer. The product must not be used as an incinerator.
- It is strictly forbidden to use alcohol, petrol, liquid fuels for lanterns, diesel, bioethanol, coal-ignition fluids or similar liquids to light or rekindle the flame of these appliances. Keep these flammable liquids away from the appliance when in use.
- Do not use any fuel other than wood in the fireplace.
- To ensure correct use of the product and the electronic devices connected to it, and to prevent accidents, always follow the instructions in this manual.
- **The appliance can be used by children under the age of 8 and by people with reduced physical, sensory or mental capacities or not having enough experience or the necessary knowledge, provided this takes place under the supervision or after receiving instructions relating to the safe use of the appliance and understanding the hazards inherent to it. Children must not play with the appliance. Cleaning and maintenance work that must be carried out by the user must not in any case be carried out by children without any supervision.**
- Before starting any operation, the user or anyone who is about to work on the product must have read and understood the entire contents of this installation and user manual.
- The user can only make a significant contribution to the environmentally-friendly operation of the heat generator if all the requirements in these operating instructions are complied with.
- Dispose of combustion ashes in accordance with current legislation.
- Do not use the product as a ladder or a supporting structure.
- Do not dry clothes on the product. Any clotheslines or similar products must be

placed at an appropriate distance from the product. **Fire hazard.**

- Maintenance operations on the product, to be carried out every year, must only be carried out by an authorised operator.
- Any improper or incorrect use and failure to maintain the product can lead to dangerous situations and/or irregular operation.
- The manufacturer accepts no civil or criminal liability for damage caused by incorrect use or fraudulent modification/alteration of the product and/or any of its accessories.
- It is recommended not to wait for components to wear out before replacing them.
- Only use original spare parts. Your dealer, technical service centre or qualified personnel can provide you with all the information you need on spare parts.
- Most of the product's surfaces are very hot (door, handle, glass, smoke outlet pipes, etc.). **You should therefore avoid coming into contact with these parts without wearing adequate protective clothing or appropriate equipment, such as thermal protection gloves or «cold hand»-type actuators.**
- **Do not operate the product with the door open or with the glass broken. During operation, all doors intended on the product must remain closed.**
- **If the appliance is not used for a long time, all the leaves/doors/covers must remain closed.**
- The product must be electrically connected to an installation with an effective earthing system.
- Turn off the product in the event of a failure or malfunction.
- Do not allow the product to come into contact with water, as there are live electrical parts inside.
- Do not wash the product with water (or other liquids) as this may penetrate the interior of the unit and damage the electrical insulation, with a risk of electrocution.
- Do not use detergents to wash the stove, as there is a risk of damaging the aesthetic parts of the product.

## 1-WARNINGS AND WARRANTY CONDITIONS

- Do not stand too long in front of the product while it is running. Do not overheat the room where you are staying and where the product is installed. This can be detrimental to physical conditions and cause health problems.
- Install the product in a room that does not present a fire hazard and is equipped with all services such as (air and electrical) supplies and smoke evacuation.
- In the event of a chimney fire, switch off the appliance, disconnect it from the mains and never open the door. Then call the appropriate authorities.
- The product and its coating must be stored in damp-free and weatherproof conditions.
- We recommend that you do not remove the feet used to support the body of the product on the floor, in order to ensure adequate insulation, especially if the floor is made of flammable materials.
- Assess the static conditions of the surface on which the weight of the product will rest, and provide adequate insulation if it is made of a flammable material (e.g. wood, carpet, plastic).
- If the ignition system fails, do not use flammable materials to force ignition.
- **Live electrical components: do not power the product until it has been fully assembled.**
- **Disconnect the product from the 230 V power supply before any maintenance operation. The plug must be removed in such a way that an operator can check from any accessible point that the plug remains disconnected.**

**INFORMATION:**

- For further information, in the event of a problem or malfunction, contact your dealer or qualified personnel.
- Only use the fuel declared by the Manufacturer.
- When first kindled, it is normal for the product to emit smoke due to the initial heating of the paint. The room where it is installed must therefore be well ventilated.
- Periodically check and empty the parts of the flue channel that can be inspected (e.g. T-piece plugs).
- Have the smoke outlet system checked and cleaned periodically.
- The product is not a cooking appliance.
- Always leave the fuel tank lid closed.
- Keep this installation and user manual carefully, as it must accompany the product throughout its life. In the event of sale or transfer to another user, always ensure that the manual accompanies the product.

# 1-WARNINGS AND WARRANTY CONDITIONS

## INTENDED USE

The product, which runs exclusively on wood pellets, must be installed indoors.

## WARRANTY CONDITIONS

For the duration, terms, conditions and limitations of the MCZ conventional warranty, please refer to the warranty card included with the product.

## Information on the management of waste electrical and electronic equipment containing batteries and accumulators

This symbol, which appears on the product, batteries, accumulators, their packaging or documentation, indicates that the product and the batteries or accumulators included, at the end of their life cycle, must not be collected, recovered or disposed of with household waste.
Improper management of waste electrical and electronic equipment, batteries or accumulators can lead to the release of hazardous substances contained in the products. To avoid any harm to the environment or health, the user is asked to separate this equipment, and/or the batteries or accumulators included, from other types of waste and to hand them in to the township collection centre. You can ask the distributor to collect the waste electrical and electronic equipment in accordance with the conditions and procedures set out in the WEEE Directive 2012/19/EU and its national transpositions.
The collection, selective sorting and correct treatment of electrical and electronic equipment, batteries and accumulators help to conserve natural resources, respect the environment and protect health.
For further information on collection centres for waste electrical and electronic equipment, batteries and accumulators, please contact the public authorities responsible for issuing permits.

# 1-WARNINGS AND WARRANTY CONDITIONS

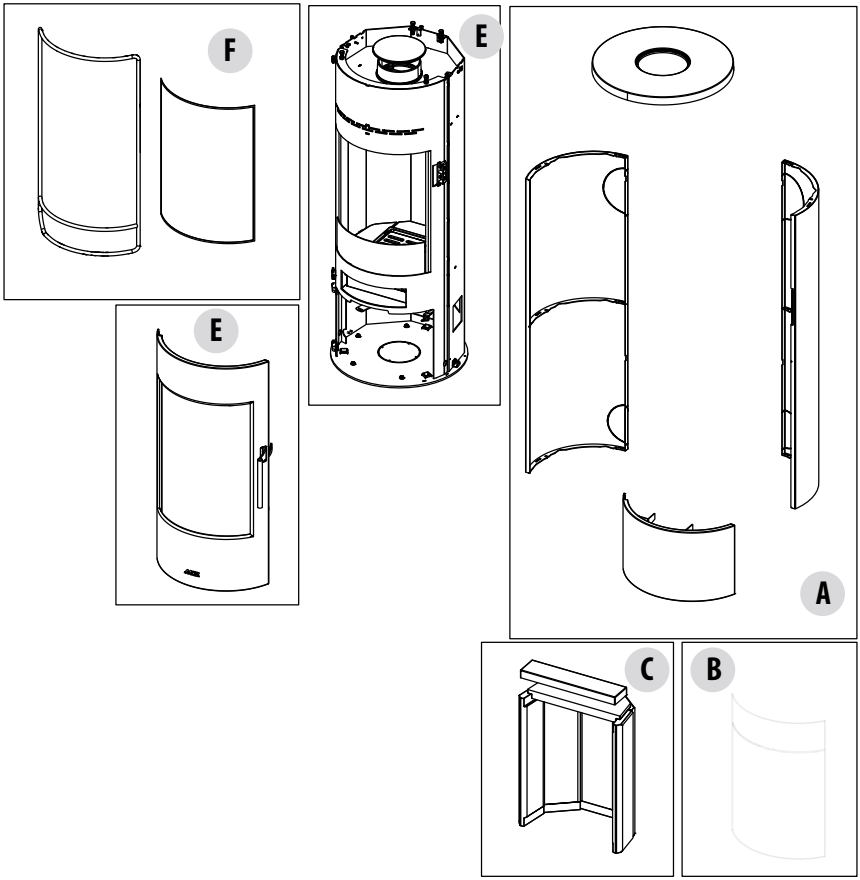
## WARNINGS FOR THE CORRECT DISPOSAL OF THE PRODUCT

The owner of the product is responsible and shall bear the charges for demolishing and eliminating the product in line with laws in force in his country relating to safety and environmental protection.

At the end of its working life, the product must not be disposed of with urban waste. It must be taken to a special recycling centre provided by local authorities or to retailers who provide this service. Disposing of the appliance separately prevents possible negative consequences for the environment and health deriving from incorrect disposal and allows its materials to be recovered, which means significant savings in terms of energy and resources.

The following table and the corresponding exploded view to which it refers highlight the main components that may be found in the appliance, together with instructions on how to separate and dispose of them correctly at the end of their useful life.

In particular, electrical and electronic components must be separated and disposed of at authorised centres, in accordance with the provisions of the WEEE Directive 2012/19/EU and its national transpositions.



## 1-WARNINGS AND WARRANTY CONDITIONS

| *LEGEND* | *O DISPOSE* | *MATERIALS* |
|---|---|---|
| **A** EXTERIOR CLADDING | If necessary, dispose of it separately according to the material from which it is made: | Metal |
| | | Glass |
| | | Terracotta or ceramic tiles |
| | | Stone |
| **B** DOOR WINDOWS | If necessary, dispose of it separately according to the material from which it is made: | Glass ceramics (fireplace door): dispose of in inert waste or mixed waste |
| | | Tempered glass (oven door): dispose of in glass waste |
| **C** INTERNAL COATING | If necessary, dispose of it separately according to the material from which it is made: | Metal |
| | | Refractory materials |
| | | Insulating panels |
| | | Vermiculite |
| | | Insulation, vermiculite and refractories that have come into contact with flames or exhaust gases (dispose of in mixed waste) |
| **D** ELECTRICAL AND ELECTRONIC COMPONENTS | Dispose of them separately at authorised centres, in accordance with the WEEE Directive 2012/19/EU and its national transposition. | Wiring, motors, fans, circulators, screens, sensors, spark plugs, electronic cards, batteries. |
| **E** STEEL STRUCTURE | Dispose of separately in metal waste | |
| **F** NON-RECYCLABLE COMPONENTS | Dispose of in mixed waste | Ex.: Seals, rubber, silicone or fibre hoses, plastic materials. |
| **G** HYDRAULIC COMPONENTS | Pipes, fittings, expansion vessel, valves. If necessary, dispose of them separately according to the material they are made of: | Copper |
| | | Brass |
| | | Steel |
| | | Other materials |

## 1-WARNINGS AND WARRANTY CONDITIONS

Our solid biofuel products (hereinafter referred to as «Products») are designed and built in accordance with one of the following European standards harmonised with Regulation (EU) № 305/2011 for construction products:

**EN 14785**: «Residential space heating appliances fired by wood pellets»
**EN 13240**: «Roomheaters fired by solid fuel»
**EN 13229**: «Inset appliances including open fires fired by solid fuels»
**EN 12815**: «Residential cookers fired by solid fuel»

The products also comply with the essential requirements of Directive **2009/125/EC (Eco Design)** and, where applicable, Directives :

**2014/35/EU** (LVD - Low Voltage Directive)
**2014/30/EU** (EMC - Electromagnetic Compatibility Directive)
**2014/53/EU** (RED - Radio Equipment Directive)
**2011/65/EU** (ROhS)

The EC Declaration of Conformity, the Declaration of Performance required by EU Regulation 305/2011 and the Product Data Sheet required by Regulations (EU) 2015/1185 and 2015/1186 can be downloaded by framing the QR code on this page (which can also be found on the product label) or by accessing the web page www.mczgroup.com/support/mcz and following the simple instructions.

That said, we would like to point out that :

- **This manual and the technical data sheet, which are also available on our website,**, provide all the specific indications and information that are necessary and fundamental for choosing the product, installing it correctly and sizing the smoke outlet system accordingly;
- the Products must be **installed, checked and maintained** by authorised personnel, according to the instructions in this manual and in compliance with local regulations and the installation and maintenance standards in force in the various countries, in order to have an efficient heating system that is correctly sized according to the requirements of the house,
- **if the Products are subjected to thermal stress**, with continuous operation for several hours at high power levels (e.g. 3, 4 hours a day at power levels P4 or P5), it is recommended that cleaning be carried out more often and that the interval between ordinary maintenance operations be reduced, depending on the operating condition of the Product. Please also note that in these working conditions, the risk of premature wear of the product increases, especially in the parts exposed to the direct heat of the flame (e.g. the combustion chamber), whose original condition could be altered and damaged, which could also cause noise during operation of the product due to mechanical expansion.

The manufacturer accepts no responsibility for any failure to comply with the above instructions.

# 2-INSTALLATION

## PREAMBLE

**The installation of the heating system (generator + combustion air supply + exhaust system + any hydraulic/aerodynamic system) must be carried out in compliance with the laws and regulations in force [1], by an authorised technician, who must provide the plant manager with a declaration of conformity of the system itself and who will assume full responsibility for the final installation and correct operation of the resulting product.**

The manufacturer declines all responsibility for installations that do not comply with the regulations and laws in force and for inappropriate use of the appliance.

In particular, it is important to ensure that :

- the environment is suitable for the installation of the appliance (load-bearing capacity of the floor, presence or possibility of installing a suitable electrical/hydraulic/air-conditioning system if necessary, volume compatible with the characteristics of the appliance, etc.);
- the appliance is connected to a smoke outlet system that is correctly dimensioned in accordance with standard EN 13384-1, is soot fire resistant and respects the prescribed distances from combustible materials indicated on the rating plate;
- there is an adequate flow of combustion air for the appliance;
- the other combustion appliances or extraction devices installed do not depressurise the room where the product is installed by more than 4 Pa in relation to the outside (for sealed installations only, a maximum of 15 Pa of negative pressure in the environment is permissible).

[1] The national regulations governing the installation of domestic appliances are UNI 10683 (IT) - DTU NF 24.1 (FR) - DIN 18896 (DE) - NBN B 61-002 (BE) - Real Decreto 1027/2007 (ES)

**In particular, it is recommended to scrupulously respect the safety distances from combustible materials to avoid serious damage to people's health and the integrity of the home.**

The appliance must be installed in such a way as to ensure easy access for maintenance of the appliance itself, the smoke outlet pipes and the flue pipe.

Always maintain an appropriate distance and protection to avoid the product coming into contact with water.

**The stove must not be installed in premises where there is a risk of fire.**

**With the exception of airtight installations, the coexistence in the same room or in adjoining rooms of continuous or discontinuous liquid fuel appliances that draw combustion air from the room in which they are installed, or of type B gas appliances intended for space heating, with or without production of domestic hot water, is also prohibited.**

***Leak-tight installation means that the product is certified leak-tight and that its installation (combustion air ducting and connection to the chimney) is hermetically sealed with respect to the installation environment.***

A sealed installation does not consume oxygen from the environment by taking all the air from the outside environment (provided the ductwork is correctly designed) and the products can therefore be placed inside all homes that require a high degree of insulation, such as «passive houses» or «energy-efficient houses». Thanks to this technology, there is no risk of smoke emissions into the environment, and there is no need for free air intakes in the installation room or for relative ventilation grilles.

As a result, there will be no more cold air flows in the environment, making it less comfortable and compromising the overall efficiency of the system. The sealed stove, which can also be installed in a watertight system, is compatible with the presence of forced ventilation or rooms that may be at low pressure relative to the outside.

# 2-INSTALLATION

## Air intake

An adequate external air intake must be provided to supply the combustion air required for the product to operate correctly. The air supply between the outside and the installation room can be via a free air intake or by channelling the air directly to the outside [3].
The free air intake must:

- be built close to ground level
- always be protected by an external grille so that it cannot be obstructed by any object
- have a total free area of at least 80 $cm^2$ (net of grille)

The presence in the same room of other extraction devices (for example: vmc, electric fan for extracting stale air, kitchen hood, other stoves, etc.) can create a negative pressure in the environment. In this case, with the exception of airtight installations, it is necessary to check that with all the equipment switched on, the installation room is not subjected to a negative pressure of more than 4 Pafrom the outside. If necessary, increase the air intake cross-section.
The air required for combustion can be ducted outside by connecting the outside air intake directly to the combustion air inlet, which is usually at the rear of the appliance.
The pipe must comply with the following dimensions (each 90° bend is equivalent to one linear metre):

[3] If the combustion air is ducted to leaky products, ensure that the installation room is not subjected to a negative pressure of more than 4 Pafrom the outside, otherwise provide an additional air intake in the room.

Less than 15 kW:

| Air duct diameter | Maximum length (smooth conduit) | Maximum length (corrugated conduit) |
|---|---|---|
| 50 mm | 2 m | 1 m |
| 60 mm | 3 m | 2 m |
| 80 mm | 7 m | 4 m |
| 100 mm | 12 m | 9 m |

More than 15 kW:

| Air duct diameter | Maximum length (smooth conduit) | Maximum length (corrugated conduit) |
|---|---|---|
| 50 mm | - | - |
| 60 mm | 1 m | - |
| 80 mm | 3 m | 1 m |
| 100 mm | 7 m | 4 m |

## 2-INSTALLATION

**Fittings for the smoke outlet system**

The flue system is particularly important for the correct operation of the appliance and must be correctly dimensioned in accordance with standard EN 13384-1.
It must always be carried out/adapted/checked by a legally authorised operator and must comply with the regulations in force in the country where the appliance is installed.
The Manufacturer declines all responsibility in the event of malfunctions attributable to a poorly dimensioned or non-compliant smoke outlet system.

**Flue pipes (flue connection)**

The flue is the pipe that connects the appliance to the flue.
In particular, this smoke connection must comply with the following requirements:

- comply with product standard EN 1856-2;
- its cross-section diameter must be constant and at least identical to that of the appliance outlet from the fireplace outlet to the flue connection;
- The length of the horizontal section must be as short as possible and its projection in plan must not exceed 4 metres;
- horizontal sections must have a minimum upward slope of 3%;
- changes of direction must be at an angle of no more than 90° and be easily inspected
- the number of changes of direction, including that for entry into the flue, and excluding the T in the case of side or rear exit, must not exceed 3;
- it must be insulated if it passes outside the installation room
- it must not pass through rooms where the installation of combustion appliances is prohibited.
- It is forbidden to use flexible metal tubes, fibre cement or aluminium pipes;

In all cases, the flues must be sealed against combustion products and any condensate. To achieve this, it is recommended to use tubes with a silicone gasket or similar sealing devices that can withstand the operating temperatures of the appliance (e.g. T200 P1) and which, when the gaskets are removed, are still certified T400 N1 G.

**Flue pipe (chimney or flue liner)**

When constructing the flue, the following requirements must be complied with:

- comply with the applicable product standard (EN 1856, EN 1857 EN 1457, EN 1806, EN 13063, etc.);
- be made of materials that are suitable for withstanding normal mechanical, chemical and thermal stresses, and have adequate thermal insulation to limit the formation of condensation;
- have a predominantly vertical course and be free of bottlenecks along its entire length;
- be correctly spaced, leaving an air gap, and insulated from combustible materials;
- the flue inside the home must be insulated and may be inserted into a skylight, provided it complies with intubation regulations;
- the flue channel must be connected to the flue pipe by means of a «T» fitting with an examinable collection chamber to collect any soot and potential condensate;
- when the sizing provides for operation in humid conditions, a suitable collection system and condensate drain must be installed.

***It is recommended to check, in the nominal data of the flue, the safety distances to be respected in the presence of combustible materials and, if necessary, the type of insulating material to be used.***
***It is forbidden to connect the stove to a collective flue or to a flue in common (*) with other combustion appliances or with hood evacuation systems.***
***It is forbidden to use the exhaust system directed towards the wall or towards enclosed spaces or any other form of exhaust that is not provided for by the regulations in force in the country of installation.***

## 2-INSTALLATION

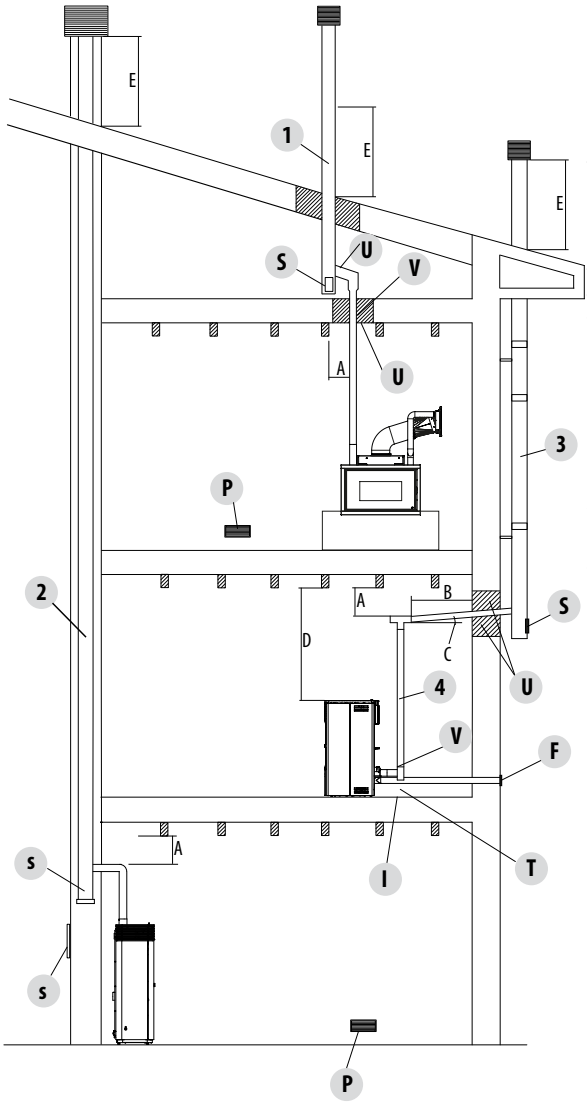
**Chimney terminal**

The ridge, i.e. the end of the flue, must meet the following requirements:

- the cross-sectional area of the flue outlet must be at least twice the internal cross-sectional area of the chimney;
- prevent rain or snow from penetrating;
- ensure that flue gases escape even in windy conditions (windproof ridge);
- the outlet height must be outside the backflow zone (*) (refer to national regulations to identify the backflow zone);
- it must always be built away from aerials or satellite dishes and must never be used as a support.

(*) unless there are specific national derogations (clearly specified in the relevant language instructions) which, under appropriate conditions, allow this; in this case, the product/system requirements laid down in the regulations/technical specifications/legislation in force in that country must be strictly complied with

## INSTALLATION EXAMPLES [4] (DIAMETERS AND LENGTHS TO BE SCALED)




1. Installation of the flue pipe with a hole for the passage of the pipe increased by:
- 100 mm minimum around the pipe if it communicates with non-flammable parts such as cement, bricks, etc. or
- 300 mm minimum around the pipe (or as specified in the nominal data) if it communicates with flammable parts such as wood, etc.

In both cases, suitable insulation must be inserted between the flue and the floor.
We recommend that you check and comply with the flue pipe ratings, particularly the safety distances from flammable materials.
The above rules also apply to holes in the wall.

2. Old flue, surrounded by an external door to allow the chimney to be cleaned.

3. External flue made exclusively from insulated stainless steel pipes, i.e. double-walled and firmly anchored to the wall. With a windproof chimney terminal.

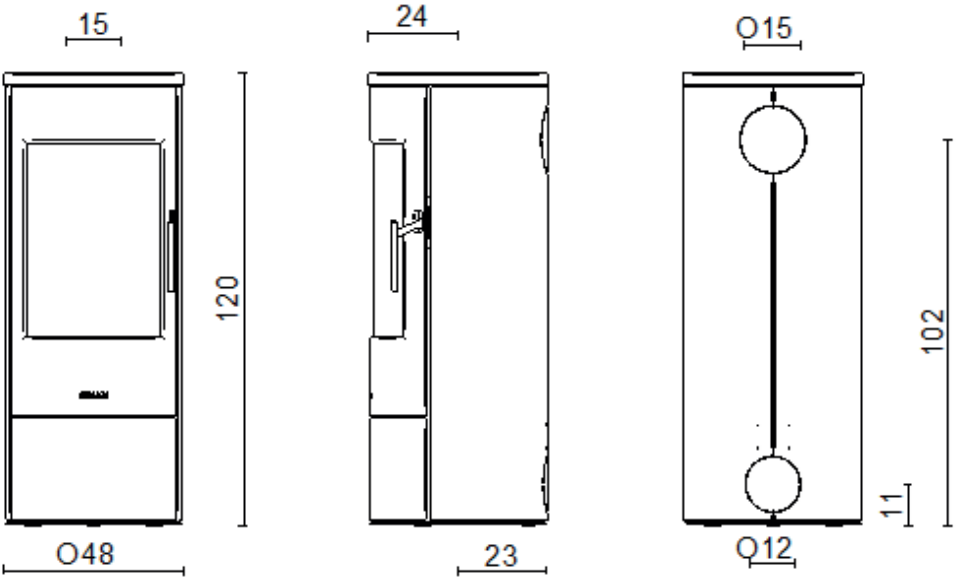
4. T-connector piping system for easy cleaning without dismantling the pipes

U = INSULATION
V = POSSIBLE INCREASE IN DIAMETER
I = INSPECTION PLUG
S = INSPECTION HATCH
P = AIR INTAKE
T = T-CONNECTOR WITH INSPECTION PLUG
A = DISTANCE FROM COMBUSTIBLE MATERIAL (FLUE PLATE)
B = MAXIMUM 4 M
C = MINIMUM 3° INCLINATION
D = DISTANCE FROM COMBUSTIBLE MATERIAL (APPLIANCE PLATE)
E = BACKFLOW ZONE
F = AIR DUCT

[4] The figure provides typical but not exhaustive examples of all the installation possibilities (which must always be approved by a qualified technician)

## DRAWINGS AND SPECIFICATIONS

**RAYHA DIMENSIONS (dimensions in mm)**



## 3-DRAWINGS AND TECHNICAL SPECIFICATIONS

| | **RAYHA** | | | |
|---|---|---|---|---|
| General data | Brand | | MCZ | |
| | Model | | RAYHA | |
| | EU Standard | | EN 16510-1:2023/EN 16510-2-1:2023 | |
| | Appliance Type (tightness) | Type | BE | |
| | Continuous (CON) or intermittent (INT) operation | CON / INT | INT | |
| | Fuel type | | Wood Logs (I) | |
| | Fuel dimensions | | L 250 ÷ 330mm | |
| | Energy class (scale A++/G) | | A | |
| | Energy efficiency index | EEI | 99 | |
| | Seasonal space heating efficiency | ηS | 66 | |
| Nominal performances | Nominal heat input | Pinputnom | 10,3 | kW |
| | Nominal heat output | Pnom | 7,8 | kW |
| | Fuel consumption at nominal heat output | kg/hnom | 1,7 | kg/h |
| | Cycle load at nominal heat output | Autnom | - | kg |
| | Cycle duration at nominal heat output | ηnom | - | min |
| | Efficiency at nominal heat output | ηnom | 75,5 | % |
| | CO2 at nominal heat output | CO2nom | 10,4 | % |
| | CO (%) at 13% O2 at nominal heat output | CO%nom (13% O2) | 0,03 | % (13% O2) |
| | CO at 13% O2 at nominal heat output | COnom (13% O2) | 373 | mg/m3 (13% O2) |
| | NOx at 13% O2 at nominal heat output | NOxnom (13% O2) | 140 | mg/m3 (13% O2) |
| | OGC at 13% O2 at nominal heat output | OGCnom (13% O2) | 23 | mg/m3 (13% O2) |
| | PM at 13% O2 at nominal heat output | PMnom (13% O2) | 34 | mg/m3 (13% O2) |
| | Flue gas outlet temperature at nominal heat output** | Tsnom | 349 | °C |
| | Minimum flue draught at nominal heat output*** | pnom | 13 | Pa |
| | Flue gas mass flow at nominal heat output | Φf,g nom | 7,1 | g/s |

## 3-DRAWINGS AND TECHNICAL SPECIFICATIONS

| | | | | |
|---|---|---|---|---|
| Installation | Ventilation air intake section (cm2) | | 100 | cm2 |
| | Combustion air inlet diameter (mm) | | 120 | mm |
| | Diameter of the flue gas outlet | dout | 150 | mm |
| | Chimney designation | Tclass | T400 | mm |
| | Air heating outlet diameter | | - | mm |
| | Heatable volume (with respective requirement of 20/35/55 W/m3) | | 390/223/142 | m3 |
| | Minimum distance to combustible materials (rear) | dR | 200 | mm |
| | Minimum distance to combustible materials (side) | dS | 200 | mm |
| | Minimum distance to combustible materials (bottom) | dB | 0 | mm |
| | Minimum distance to combustible materials (ceiling) | dC | 750 | mm |
| | Minimum distance to non-combustible walls | dnon | - | mm |
| | Added protective insulation | s | - | mm |
| | Minimum distance to combustible materials (radiant front) | dP | 1200 | mm |
| | Minimum distance to combustible materials (radiant bottom) | dF | - | mm |
| | Minimum distance to combustible materials (radiant side) | dL | - | mm |
| Product dimensions | Height/Width/Depth of the appliance | H | 1200/480/470 | mm |
| | Mass of the appliance | m | 180 | kg |
| | Maximum load of a chimney over the appliance | mchim | - | kg |
| | Standing air loss | Vh | N.A. | m3/h |
| | * Values that can vary due to the used combustible | | | |
| | ** Temperature at the certification measurement point. For chimney sizing calculations (according to EN 13384-1) consider this temperature increased by +20% (temperature at the product outlet). | | | |
| | ***Consider a minimum draught of 2 Pa in the EN 13384-1 chimney dimensioning calculations | | | |

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MCZ GROUP

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**INFORMATION REQUIREMENTS FOR SOLID FUEL LOCAL SPACE HEATERS**
**ACCORDING TO COMMISSION REGULATIONS (EU) 2015/1185 - (EU) 2015/1186 (PRODUCT FICHE)**

| | |
|---|---|
| Manufacturer: | **MCZ GROUP SpA** |
| Trademak: | **MCZ** |
| Model Identifier: | **RAYHA** |
| Indirect heating functionality: | **NO** |
| Direct heat output (space heat output): | **7,8** **kW** |
| Indirect heat output (water heat output): | **kW** |
| CPR harmonised standard: | **EN 13240:2001/A2:200/AC:2007** |
| Product description: | **Manually fed roomheater burning wood logs** |
| Notified Body: | **Strojírenský zkušební ústav, s.p. (N.B. 1015)** **Hudcova 424/56b, 621 00 Brno, Česká republika** |

| **Fuel** | **Preferred fuel:** | **Other suitable fuel(s):** | **ηs [%]** | **EEI [%]** |
|---|---|---|---|---|
| Log wood, moisture content ≤ 25 % | **YES** | **NO** | **66,0** | **99** |
| Compressed wood with moisture content < 12 % | **NO** | **NO** | | |
| Other woody biomass | **NO** | **NO** | | |

Observe the specific precautions for installation, assembly and maintenance indicated in the manual accompanying the product, and the national and local rules in force

**Energy Efficiency Class** **A** (A++ / G scale)

**Characteristics when operating with the preferred fuel:**

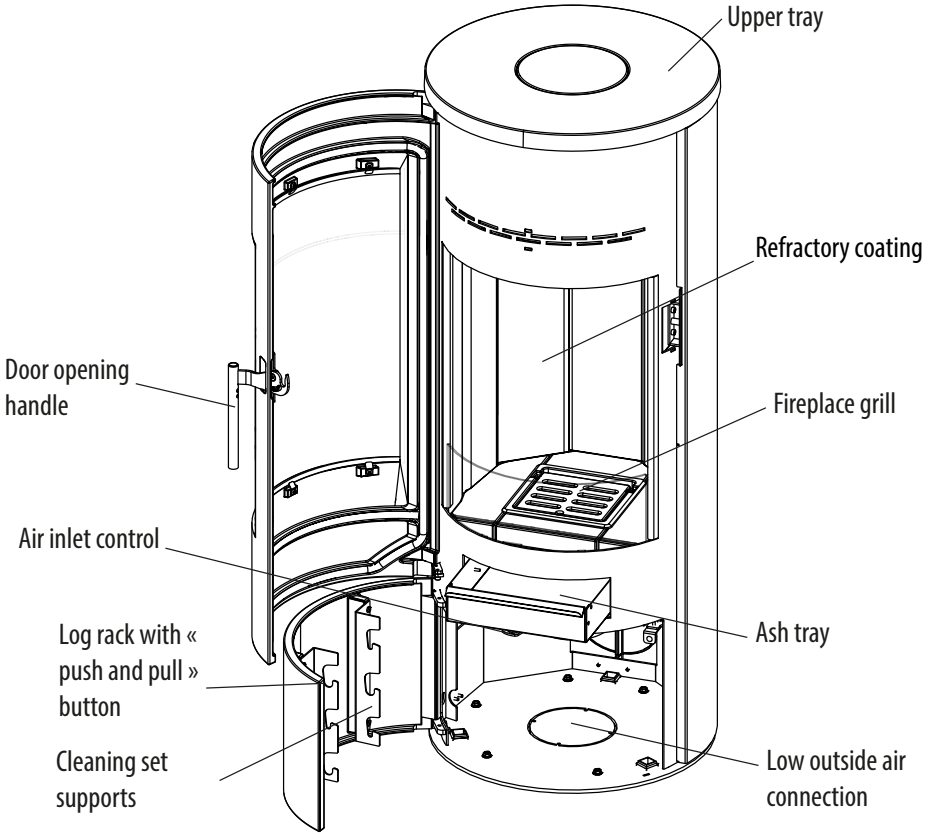
| **Space heating emissions (mg/Nm3 at 13% O2)** | **CO** | **$NO_x$** | **OGC** | **PM** |
|---|---|---|---|---|
| at Nominal heat output | **373** | **140** | **23** | **34** |
| at Minimum heat output | | | | |

| **Heat output** | | | |
|---|---|---|---|
| Item | Symbol | Value | Unit |
| Nominal heat output | $P_{nom}$ | **7,8** | kW |
| Minimum heat output (indicative) | $P_{min}$ | | kW |
| **Useful efficiency (NCV as received)** | | | |
| Useful efficiency at nominal heat output | $\eta_{th,nom}$ | **75,5** | % |
| Useful efficiency at minimum heat output (indicative) | $\eta_{th,min}$ | | % |
| **Auxiliary electricity consumption** | | | |
| At nominal heat output | $el_{max}$ | | kW |
| At minimum heat output | $el_{min}$ | | kW |
| In standby mode | $el_{sb}$ | | kW |

| **Type of heat output/room temperature control (select one)** | |
|---|---|
| single stage heat output, no room temperature control | YES |
| two or more manual stages, no room temperature control | NO |
| with mechanic thermostat room temperature control | NO |
| with electronic room temperature control | NO |
| with electronic room temperature control plus day timer | NO |
| with electronic room temperature control plus week timer | NO |
| **Other control options (multiple selections possible)** | |
| room temperature control, with presence detection | NO |
| room temperature control, with open window detection | NO |
| with distance control option | NO |

## 3-DRAWINGS AND TECHNICAL SPECIFICATIONS

RAYHA stoves are designed to heat living areas, and have been manufactured and tested in accordance with European standard EN 13240. Particular care has been taken with the finishing touches to these assemblies, to ensure that they meet the highest standards of comfort for final assembly.




List of present accessories

- Ash pan
- A refractory lining including 2 deflectors (already fitted)
- A grille support and a ventilation grille
- Notices
- A glove

## 4-UNPACKING

### INSTRUCTIONS FOR DISPOSAL OF PACKAGING

The material from which the appliance is packaged must be disposed of correctly, with the aim of facilitating its collection, reuse, recovery and recycling where possible.

The table below lists the components that may make up the packaging and the corresponding instructions for correct disposal.

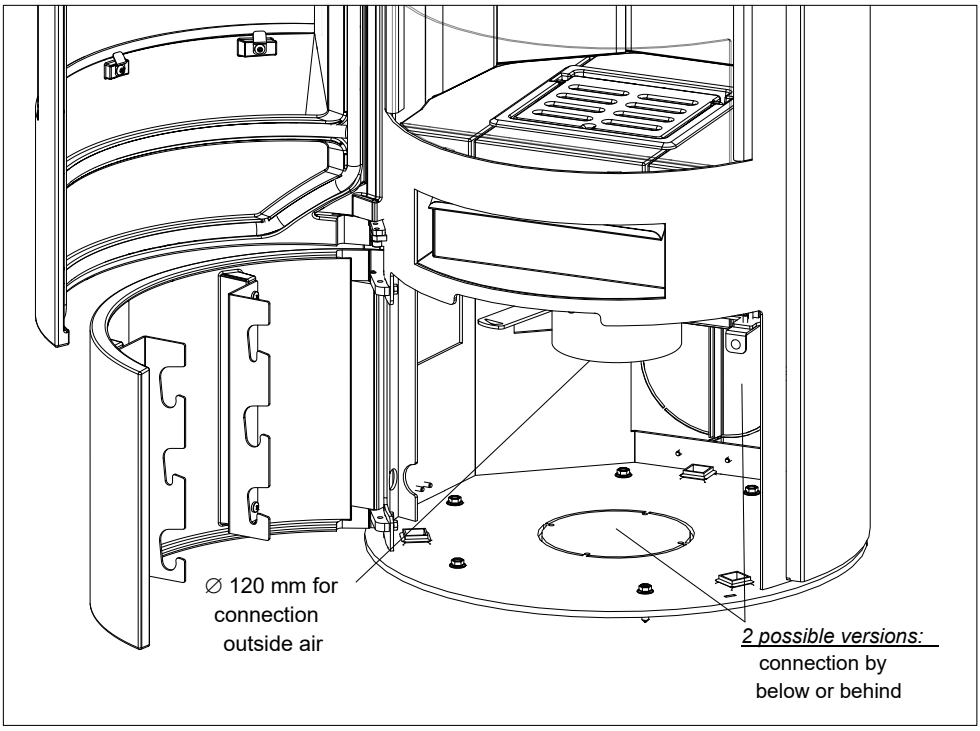
| DESCRIPTION | MATERIAL CODE | SYMBOL | SORTING INSTRUCTIONS |
|---|---|---|---|
| WOODEN PLATFORM | WOOD FOR 50 |  | SELECTIVE sorting |
| WOODEN CAGE | | | WOOD |
| WOODEN PALLET | | | Check the instructions provided by the competent agency on how to collect this packaging at the waste collection centre. |
| CARDBOARD BOX | CORRUGATED BOARD PAP 20 |  | SELECTIVE sorting |
| CARDBOARD ANGLE | | | PAPER |
| CARDBOARD SHEET | | | Check the instructions provided by the competent body |
| APPLIANCE BAG | POLYETHYLENE LD-PE 04 |  | SELECTIVE sorting |
| BAG OF ACCESSORIES | | | PLASTIC |
| BULLETED PAPER | | | Check the instructions provided by the competent body |
| PROTECTIVE SHEET | | | |
| LABELS | | | |
| POLYSTYRENE | POLYSTYRENE PS 06 |  | SELECTIVE sorting |
| CHIPS | | | PLASTIC |
| | | | Check the instructions provided by the competent body |
| STRIP | POLYPROPYLENE PP 05<br>POLYESTER PET 01 |  <br>  | SELECTIVE sorting |
| ADHESIVE RIBBON | | | PLASTIC |
| | | | Check the instructions provided by the competent agency. |
| SCREW | IRON<br>FE 40 |  | SELECTIVE sorting |
| STRIP STAPLES | | | METAL |
| FIXING BRACKET | | | Check the instructions provided by the competent agency on how to collect this packaging at the waste collection centre. |

## 5-AIR OXIDIZER

### Combustion air directly from outside

The RAYHA stove can be connected directly to the outside to supply combustion air or fresh air.
This connection is not compulsory for a ventilated room in accordance with D.T.U 24.1.
In the case of a watertight house, the direct connection to the outside with a 120 Ø duct can be made from below (crawl space for example) or from behind (pre-cut passage in the rear cladding sheet)

***NEVER BLOCK THE COMBUSTION AIR INLET.***



## 6-FLUE GAS

### FLUE CONNECTION

It is recommended to connect the product to the flue using aluminised steel pipes and elbows capable of withstanding the high temperatures reached in this area and the corrosion caused by the flue gases. These fittings are available in different sizes on request (see our catalogue) and simplify installation by simply fitting them together.

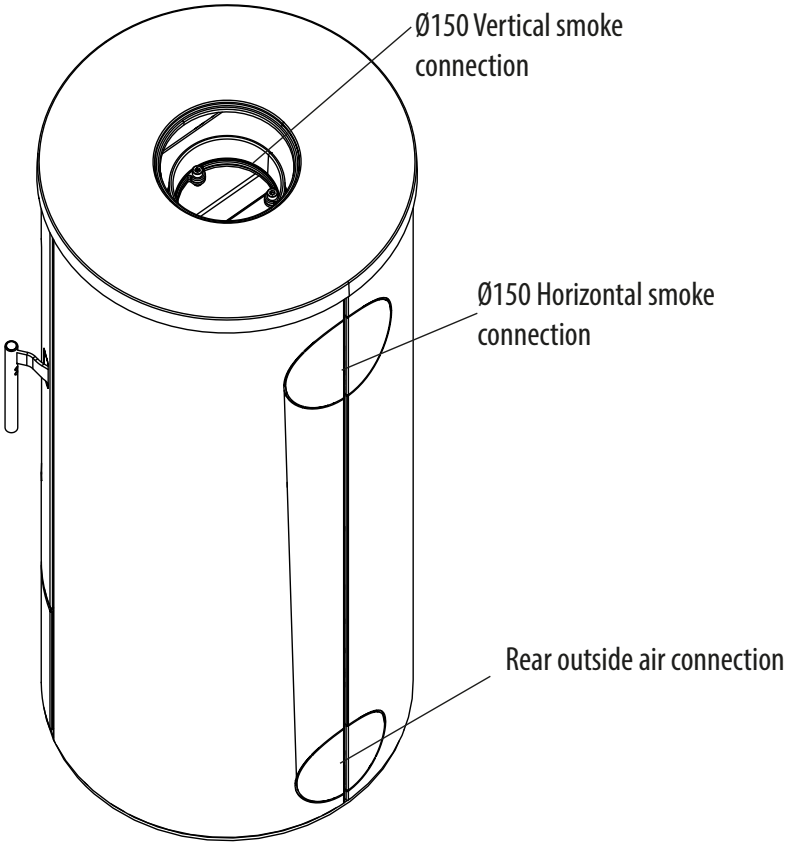
The flue connection can be top or rear.

To make the connection, proceed as follows:

- Unscrew the rear cover
- Swap the rear cover over the top hole
- proceed to connecting to the flue

***Any increase in the cross-section of the connection must be made directly above the product hood, and not along the flue.***

***Once the installation is complete, the flue connection must be insulated with a ceramic fibre insulation mat or a material that can withstand a temperature of at least 600°C.***



# 7-CHOICE OF FUEL

The information in this chapter refers explicitly to the Italian installation standard UNI 10683. In all cases, the standards in force in the country of installation must be complied with.

## THE FUEL

Here are a few useful tips on how to use the product correctly

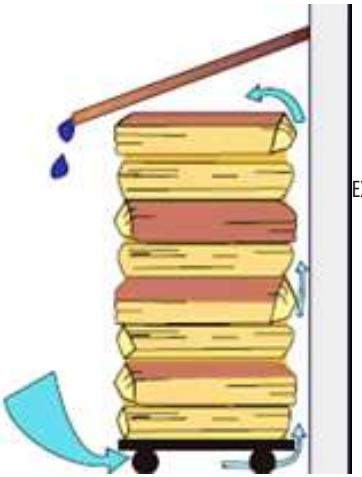
- Burn only natural, untreated wood with a maximum moisture content of 20%, which corresponds to wood that has been cut and properly dried for 2 years.
- All types of wood are suitable, both hard and soft: beech, maple, oak, birch, acacia, fir, pine, larch, etc.
- Always use wood of the right calibre and in pieces, as the whole trunk prevents air from getting inside.
- Always burn wood horizontally, not upright.
- When reloading, use the quantity of wood indicated by the manufacturer and do not reload one piece after another, as the flame will never reach the temperature required for proper combustion.
- Do not insert a larger quantity than indicated to avoid excessive flames and high smoke and wall temperatures.
- The thickness and length of the wood must always comply with the manufacturer's instructions: the length (25 or 30 cm) depends on the dimensions of the hearth plate in the combustion chamber.

Here are some useful tips on storing wood correctly:

- stored wood must already be cut for use.
- optimum drying requires a minimum of 2 years (longer drying times would not result in higher drying).
- Wood must be cut in winter and stored outside in summer.

Storage must be carried out :

- in a well ventilated and aerated place
- in a covered area away from rain and sunlight, as the wood will lose its quality**(DO NOT** cover the wood with tarpaulins that touch the ground, as they will have the effect of a tightly closed lid and the wood will become even wetter).
- so that the wood is not laid directly on the ground but at a distance of around 20-30 cm to prevent it rotting.
- outdoors if possible, otherwise in well-ventilated rooms or cellars to avoid mould formation (always leave the window open!).
- Wood must always be stored at a safe distance from the combustion appliance - fire and safety regulations must always be complied with.



EXAMPLE OF WOOD STORAGE

# 7-CHOICE OF FUEL

## FUEL: Wood

To get the maximum performance from your product, it's essential to **use wood with the right characteristics**.
We **recommend using oak-beech-oak-robin-oak** firewood or compressed non-coniferous logs. **These have a high calorific value and must be used with care to avoid overheating, which can damage the product.** Fuels such as poplar-pine-lime-chestnut-eucalyptus-myth are soft woods: they have a low calorific value. For all the types of wood listed, the moisture they contain is fundamental.
By lighting a fire with a higher humidity level, most of its energy content will be used to dry out the water. Using damp wood also leads to poor combustion and deposits of soot and tar in the flue, which in the worst case can cause fires. This will also have the disadvantage of causing soot deposits on the product's glass and disturbing neighbours.

***Warning!***
***It is strictly forbidden to use fossil fuels, impregnated, painted or glued wood, chipboard, plastic or coloured printed documents as fuel. All the above products generate hydrochloric acid or heavy metals during combustion, which are harmful to the environment and the home.***
***Hydrochloric acid can also corrode the steel or masonry of the flue.***

The table below shows the moisture content and calorific value of a burnt 1 kg log.
The optimum condition of use with a drying time of 24 months will correspond to a humidity of 16% and a corresponding energy of 15,350 kJ/kg.
A significant loss of 25% is obtained when the wood has a moisture content of 29% and an energy of 12,200 kJ/kg.

| Average wood moisture content (%) | | |
|---|---|---|
| | Wood stored under cover for 3 months after felling | |
| Drying time | Wood | Calorific value (kJ/kg) |
| 0 (green wood) | 75% | |
| 3 months | 44% | |
| 6 months | 29% | 12,200 |
| 9 months | 26% | |
| 12 months | 25% | 13,250 |
| 18 months | 17% | |
| 24 months | 16% OPTIMAL | 15,350 |
| 30 months | 15% | |

+25%

- The type of wood: it is recommended to use only virgin, uncontaminated wood, and to find out about the properties of the wood and how to dry it properly;
- Moisture: only dry wood should be used, as damp wood does not heat up well, reduces the efficiency of the appliance and produces polluting emissions;
- Dimensions: split wood is preferable to round wood, and logs of uniform dimensions, ideally medium or small (25-33 cm in length, 5-15 cm in diameter).

**CONCLUSION**
**The table determines the energy loss of wood and can be summarised as follows:**
**Losing 25% of energy is equivalent to losing 1 log (1 kg) out of every 4.**

## 8-OPERATION

### WARNINGS BEFORE LIGHTING

Make sure you have fully read and understood the contents of this manual.
Remove components that could burn (instructions and various adhesive labels) from the product firebox and door.
Remove the adhesives from the glass ceramic, otherwise the high temperature may melt them and cause irreparable damage to the glass.
The product can be placed in a corner or against a wall and can be installed at any height by building a suitable support.

***Avoid touching the product during the initial ignition, as the paint will finish drying and harden during this phase. It is recommended to ensure that the room is well ventilated during the initial lighting, as the product will give off a little smoke and varnish smell, which is perfectly normal!***
***If necessary, refresh the paint with a spray can of the corresponding colour.***

Do not stand near the product and, as already mentioned, ventilate the room well. Smoke and the smell of paint will disappear after about an hour's operation, but they are not harmful to health.

***The product will tend to expand or contract during the ignition and cooling phases, and may therefore make a slight squeaking noise.***
***This phenomenon, which is completely normal given that the structure is made from rolled steel, should not be considered a defect.***

***ONLY FOR THE FIRST IGNITION***
***It is extremely important not to overheat the product immediately, but to bring it up to the right temperature gradually.***
***This prevents damage to the welds and the steel structure.***

### FUNCTION TEST

***WARNING!!***
***BEFORE CARRYING OUT ANY OTHER ASSEMBLY OPERATION ON THE CLADDING, CARRY OUT A GENERAL INSPECTION OF THE PRODUCT IN ACCORDANCE WITH THE FOLLOWING INSTRUCTIONS:***

- Light a moderate fire to check that there are no smoke/soot leaks from the flue connection.

***THE MANUFACTURER DECLINES ALLRESPONSIBILITY FOR DAMAGE TO THE CLADDING IF THE ABOVE PREVENTIVE CHECKS ARE NOT CARRIED OUT AND IF IT IS NECESSARY TO DEMOLISH THE CLADDING IN ORDER TO CARRY OUT REPAIRS OR ADJUSTMENTS.***

### STEPS FOR THE FIRST TEST IGNITION

- Make sure you have fully read and understood the contents of this manual.
- Remove components that could burn (instructions and various adhesive labels) from the product firebox and door.
- Remove the adhesives from the glass ceramic, otherwise the high temperature may melt them and cause irreparable damage to the glass. In this case, the manufacturer will not recognise the guarantee on the glass.
- Open the combustion air regulator as far as it will go (lever fully to the left).
- Place small pieces of very dry wood (15/20% humidity).
- Light a moderate fire, without overheating the structure. If the fireplace is new, it may emit an odour due to the presence of an oily patina and excess paint, which disappears after it has been lit a few times.
- If necessary, leave the door slightly open so that the wood can burn better and any internal moisture can dry out. When the flame is stable, close the door completely.

## 8-OPERATION

A high percentage of humidity causes condensation in the product, impairing the draught and generating smoke and a considerable deposit of soot in the firebox, on the glass of the firebox door and on the flue, with a possible risk of the glass catching fire; a high percentage of humidity also results in a much lower overall efficiency.

Using damp or treated wood gives off more smoke than normal, which can dirty the glass more quickly. The low performance of the chimney can also affect the cleanliness of the glass, as the smoke remains in the combustion chamber for longer than normal.

***Do not use treated (painted or lacquered wood) or non-compliant (plastic or derived products) fuels, which may emit toxic or polluting substances.***
***Do not burn waste.***
***The gases produced by combustion resulting from the use of unsuitable fuel can cause damage to the product, the flue, pollution and harm to your health.***

## 8-OPERATION

The photo opposite shows a battery lit from above with dry twigs.
The best and cleanest way to light wood.

opposite, bottom-lit logs with dry twigs. This is the most commonly used method, but not the most recommended, because of the particulate emissions it produces.

Opposite is a powered battery without an ignition module.
Avoid this method.

Opposite, vertical logs with ignition from below. Avoid this method.

The quality of the flame and the cleanliness of the internal surfaces of the product (white Alutec and clean glass) are an excellent indicator of the internal temperature of the appliance (*). In fact, the higher the internal temperature, the better the performance and cleanliness of operation; the best operating performance is achieved when a sufficient bed of glowing embers accumulates at the base of the firebox to maintain an even, high internal temperature.
Once the ignition and chamber overheating phase is over, the flame can be lowered by turning the flame control knob to the «CLOSED» position. The following loads must be loaded with the SPECIFIED quantity of wood specified in the product's TECHNICAL characteristics.

(*) The performance and achievement of internal temperatures and the resulting cleanliness are strongly influenced by the quality and humidity of the wood (<20%) and by the quality and draught of the flue (>12 Pa when hot)

### FUEL LOADING

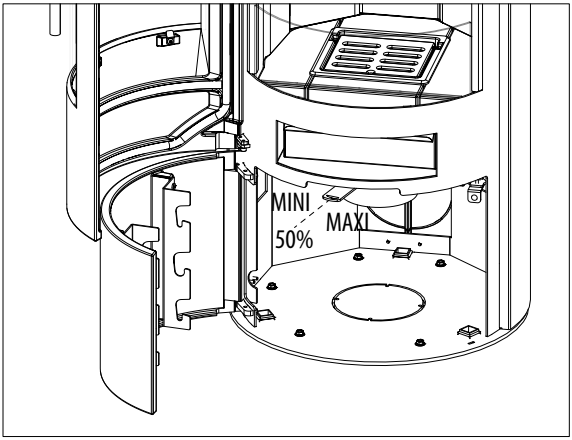
To load the fuel as usual, simply open the firebox door using the cold hand provided. **During use, the metal structure and glass reach high temperatures, suitable thermal protection should therefore be used (e.g. gloves). During normal use, always keep the firebox door fully closed**, as intermediate positions cause abnormal combustion (forging effect), rapid consumption of wood and may also cause smoke to escape due to the high firebox temperature.
Only open the door for fuel loading operations, and only for short periods.
Maximum efficiency and optimum product performance are achieved with the door closed, because the airtightness of the combustion chamber and the calibrated oxygen inlet allow efficiency levels to be increased.

***To obtain the rated output and optimum combustion conditions, insert the load of wood and observe the refuelling interval indicated in the technical data table.***

## 9-COMBUSTION CONTROL

### Air inlet control lever

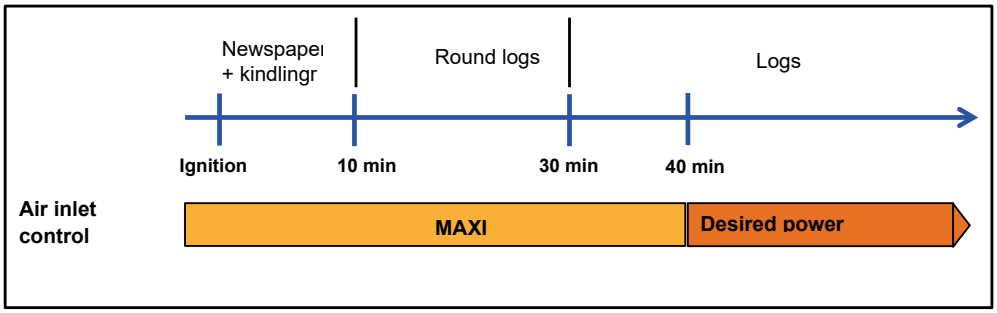
The stove is equipped with an air inlet control that regulates the combustion of the wood and thus influences the output of the stove.




The stove is set to its maximum output when the air inlet control is turned all the way to the right (MAXI position).

### Ignition procedure

- Set the air inlet control to the MAXI position;
- Open the ash grate as far as it will go;
- Place 4 to 5 crumpled sheets of newspaper on the bottom of the heater;
- Place several pieces of small wood such as fir or wood from a crate, etc. on the paper;
- Set fire to the paper in several well-spaced areas around the bottom of the heater and close the door;
- Wait a few minutes for embers to form, group them towards the centre and place several small, dry logs;
- When the logs are sufficiently burnt (about ½ hour after lighting), group the embers towards the centre and load with logs;
- Wait another 5 to 10 minutes until the logs are well ignited, then proceed with the adjustment of your stove to your preference.



## 9-COMBUSTION CONTROL

***WARNING: Failure to follow this procedure could result in the glass becoming clogged or your stove going out.***
***When the stove is in the MINI position, the amount of air inside is very limited (idle position). As the secondary air supply is the key to keeping the glass clean, we strongly recommend that you never set the air inlet control to the MINI position (far left position) for more than 20 minutes, to avoid clogging the stove or the glass. On the other hand, if the glass starts to get dirty, we recommend that you restart the fire and set the control to MAXI, which will automatically clean the glass using the pyrolysis effect.***

### Reloading procedure

- Open the stove door and reload with wood;
- Close the door and set the air inlet control to MAXI position;
- Wait a few minutes for the logs to ignite sufficiently, then reposition the air inlet control to obtain the desired output.

***Adjusting the air inlet control according to the desired output or tempo:***

| Tempo | | air inlet control |
|---|---|---|
| Ignition | | MAXI |
| Nominal speed | | 50% |
| Reloading wood | for 5 to 10 minutes | MAXI |
| | beyond | depending on power required |
| Maximum speed (*) | | MAXI |
| Allure mini | | half distance between MINI and 50% |

(*): The maximum speed is recommended for a few minutes after reloading the wood or for a few hours a day in very cold weather, although you should be aware that this setting will lead to your wood being over-consumed.

## 10-FIREPLACE DOOR

### DOOR OPENING

**Handling the stove door:**

The stove door handle can be handled with or without a protective glove (supplied with your appliance), but always with care. We advise you to hold the door open by the handle with your left hand and to reload your stove using your right hand fitted with the protective glove.

**Handling the firewood door:**

This model is equipped with a log door that opens by means of a magnet. To open the door, simply pull on the right-hand side of the door. To close it again, simply push the door as far as it will go, meaning that you can release the door because it is closed.

***WARNING: It is strictly forbidden to store anything easily flammable in the lower part of the stove (newspaper, crates, firelighters, etc.).***

## 11-CLEANING

***WARNING!***
***All cleaning operations on all components must be carried out with the product completely cool; ensure that the ashes are extinguished, use personal protection safety devices and use appropriate equipment for maintenance.***

## CLEANING BY THE USER

### ASH CLEANING

It is recommended to clean the hearth plate thoroughly to ensure correct combustion. To remove the ashes from the fireback, use a metal shovel and, if necessary, a brush to place the ashes in non-flammable containers for transport.

### GLASS CLEANING

To clean the glass, you can use special products (see our catalogue), a cloth soaked in a solution of water and ammonia or a little white ash and a sheet of newspaper.

***WARNING!***
***Do not spray on painted parts or door seals (ceramic fibre cord)***

**Never apply the cleaner directly to the glass, and above all never leave the product to act.** This type of application will systematically lead to damage to elements (paint, screen printing) not covered by the warranty.

Step 1: Soak a soft cloth and spray your product (liquid or foam) directly onto it.

Step 2: Scrub the glass thoroughly to remove all the dirt. Repeat steps 1 and 2 if necessary.

Step 3: Soak a second clean cloth or paper towel in water.

Step 4: Rinse the glass, taking care to wipe the entire surface with a cloth soaked in water.

Step 5: Dry your glass to avoid streaks and premature soiling the next time you light it.

### CLEANING REFRACTORY WALLS

They do not require cleaning, as this material does not absorb soot but repels it when the fire is hot. After the ignition phase, during which the fire tends to blacken, the refractories tend to turn white again, from the base of the flame, when the combustion chamber is at the right temperature (~ 400°C).
If this phenomenon does not occur, it may be caused by:

- Damp or resinous wood that does not release enough heat or that dirties the combustion chamber
- Poor performance of the chimney, causing the smoke to linger too long in the combustion chamber, fouling the firebox
- Poor chimney performance, which prevents the product from achieving high yields and, consequently, the refractories from reaching the appropriate temperatures.

***Never clean the refractory with a damp cloth or anything else, as it could become stained.***
***At most, use a dry brush to remove large deposits of soot.***

***In view of the aforementioned warnings and indications, the absence of «whitening» should not be considered a defect.***

## CLEANING BY A SPECIALIST TECHNICIAN

### FLUE CLEANING

It is recommended to clean the flue pipe mechanically **at least once a year**. Excessive deposits of unburnt slag can cause problems with flue smoke outlet and flue fires. To clean the appliance flue, remove the smoke deflector: to remove it correctly, lift it at the front while simultaneously moving it forward to release it from the rear support brackets.

### CLEANING THE FLUE

The flue pipe must **always** be kept clean, as deposits of unburnt soot or oil reduce the cross-section and block the draught, compromising the correct operation of the product and, if present in large quantities, can catch fire.
The flue and chimney terminal **must** be cleaned and inspected by a qualified chimney sweep **at least once a year**. After the inspection/maintenance, obtain a written declaration confirming that the system is operating safely. Failure to clean compromises safety.

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