KLOVER®

FUOCO E PASSIONE

ASSEMBLY, USE AND MAINTENANCE MANUAL

PELLET SUCTION ENGINE

KLOVER
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CE

Klover line

PELLET SUCTION ENGINE

INSTRUCTION MANUAL

- Type: feeding system for solid fuel boilers
- Model: Pellet suction engine
- Revision 1.0.2

INDEX

1 INTRODUCTION

Dear customer,
the manufacturer would firstly like to thank you for the choice you made in buying an Klover product, whose technical features will certainly meet Your needs.
Our products have been designed and manufactured in total compliance with the current regulations, by choosing the best materials to obtain durability and ease of use of the product.
We ask you, therefore, to read this manual carefully and completely, following strictly the instructions contained herein.

1.1 Use of this manual

The instruction manual is a document drawn up by the manufacturer and is part of the product: it integrates the specific rules of application and general rules for people, animals and objects safety. In the event that the product is resold, handed over, rented or sold to others, it must always be accompanied by this manual; therefore, it is recommended to use and keep it with care for the entire operative life of the product.
The main objective of this manual is to make known the proper and safe way to use the equipment.
No part of this manual may be reproduced, copied, or shared in any way, without the written permission of the manufacturer.
The manufacturer reserves the right to make improvements or modifications to this manual and to the equipment at any time, without obligation to advise third parties.

2 SAFETY FEATURES

2006-42-CE
2014-35-UE (VLD)
2014-30-UE (EMC)

2.1 Warnings

- Do not use the machine for any improper use.
- Do not let children near the machine.
- This unit must not be used by people (including children) with reduced physical, sensory or mental capabilities, or with lack of experience and knowledge, unless they are supervised or instructed in the use of the unit by a person responsible for their safety.
- Use only original spare parts.
- Do not cover motor cooling ventilation inlets.
- Do not put parts of the body into contact with the machine before having removed the electrical power.
- Disconnect the power supply when a long period of inactivity is expected.

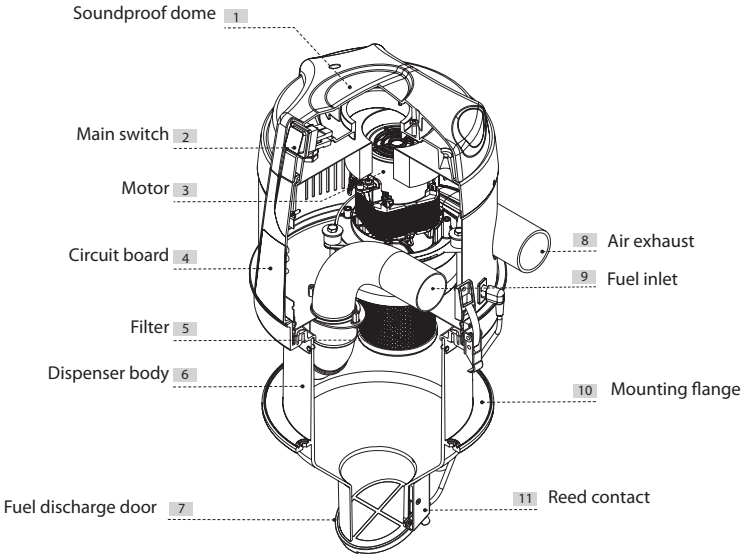
The manufacturer declines any liability or guarantee, if the buyer or anyone makes changes or even minor modifications to the purchased product.

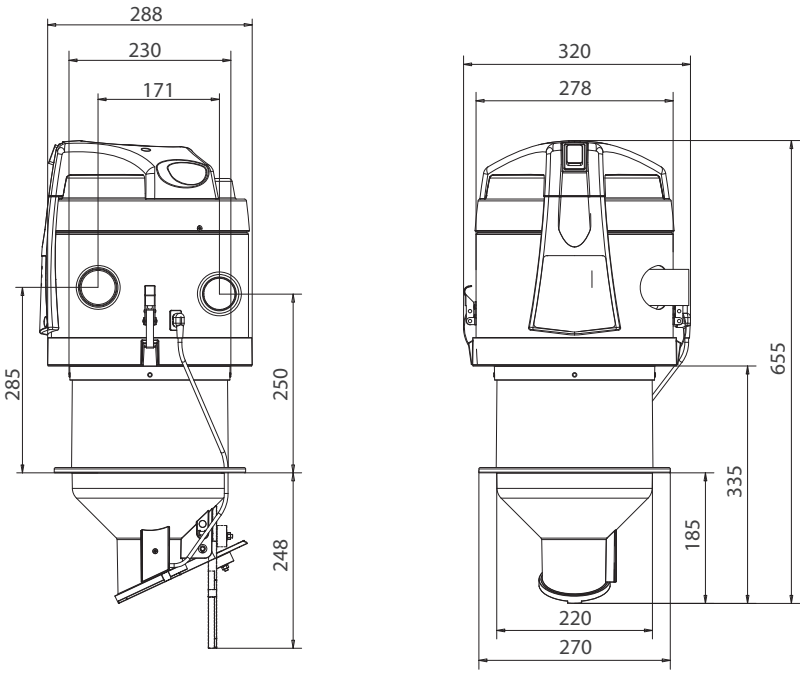
3 TECHNICAL DATA, EXPLODED VIEW DRAWINGS AND DIMENSIONS

English

Integrated engine		
Model		Pellet suction engine
Article		**PVS.PELLET. ENGINE**
Fuel inlet	Ø mm	50 M
Discharge pipe	Ø mm	50 F
IP protection degree	IP	20
Operating temperature min/max	°C	0 ÷ 40
Degree of humidity min/max	%	30 ÷ 95
Power supply	V ac	230
Frequency	Hz	50/60
Motor power	kW	1,35
Absorption	A	5,8
Fuse		5x20 T15A
AUX output max nominal load		1A 240 V ac
Insulation class		1
Maximum air flow	m^3/h	213
Dispenser MAX capacity	l	5,2
Weight	kg	8,4
Noise level	dB(A)	< 70

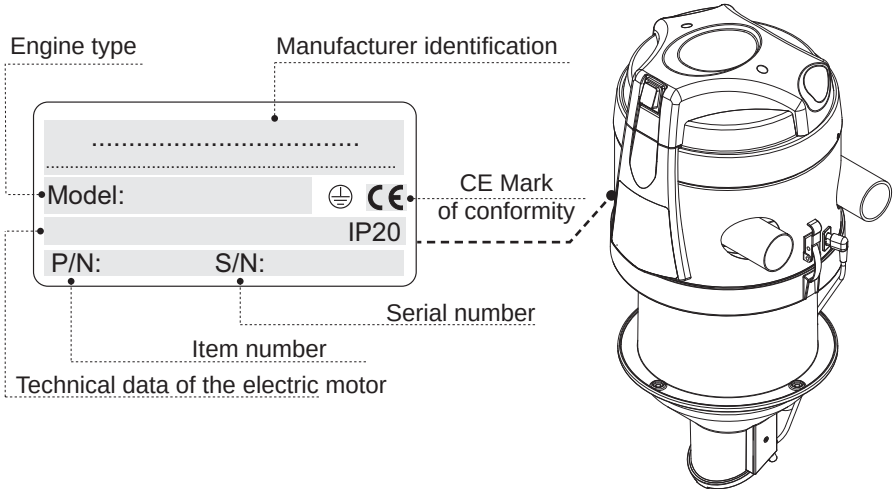
N. B: Nominal noise levels. The values may vary depending on the environment in which the system is installed and the type of positioning.





3.1 Identification plate

The CE identification plate is located to the piping network attachment side. Do not remove or damage the label.



3.2 Safety symbols

DANGER OF VOLTAGE OR ELECTRICAL CURRENT
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

DANGER OF CUTTING
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

DANGER OF AUTOMATIC STARTING
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

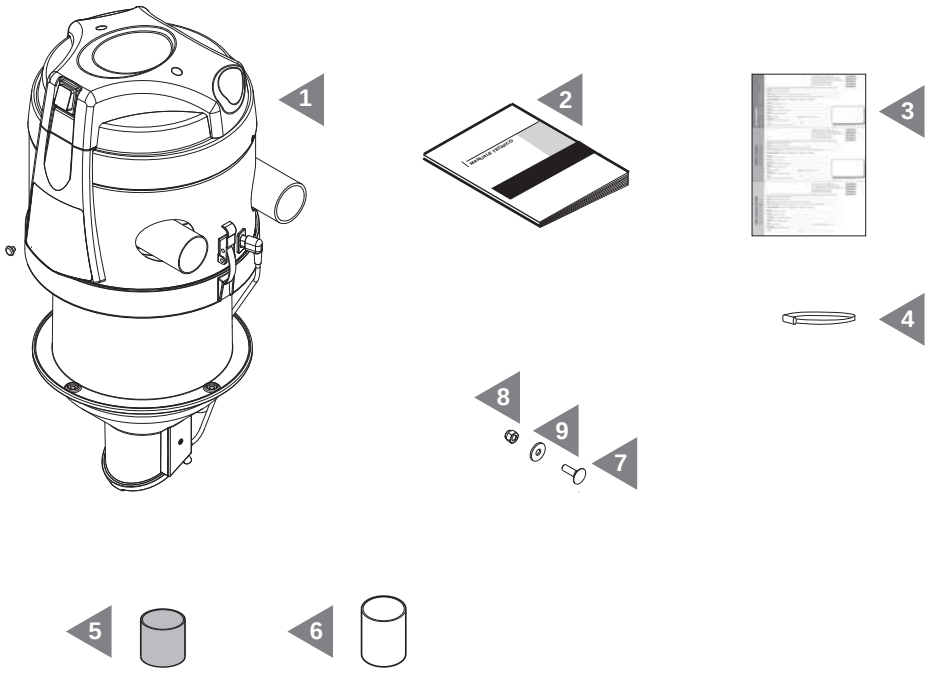
DANGER FOR THE HAND WHEN THE SCREW CONVEYOR IS IN OPERATION
Danger of serious personal injuries.
During maintenance operations, always disconnect the power supply and make sure that it cannot be restored.

It is recommended to pay full attention to pictograms and warnings of danger and prohibition in the present different parts of the equipment: if not respected, hazardous situations may occur.

4 PACKAGING CONTENT

The sales package of the pellet suction engine includes the following details:

1) N°1 Pellet suction engine
2) N°1 installation, use and maintenance manual
3) N°1 warranty form
4) N°3 hose clamps
5) N°1 gum sleeves
6) N°1 nipple in PVC
7) N°4 M5 screw
8) N°4 self-locking nuts M5
9) N°4 washers



Check that the engine, the installation kit and the accessories correspond to those ordered and that no transportation damage is evident.
Should this not be the case, please contact immediately the seller.

5 PROPER USE OF THE PRODUCT

The pellet suction engine has been designed to be installed for the pneumatic transport of pellets or other biomass fuels with a medium-fine size;
it can move a large amount of air into the pipes connected, allowing the solid fuel to be transported together with the air.
This product is suitable for working with biomass fuel such as pellets, olive pomace, M10 wood chips, crushed shells of dried fruit, corn, but it cannot work with fuels having a very fine size, or having excessive dimensions and, in any case, having lengths over 40 mm or diameter greater than 15 mm.

It is recommended to use only ENplus A1 certified pellet.

The pellet suction engine must be installed above the boiler tank (see figures in chapter 6.1). It is equipped with a panel for the regulation and the control of all the system functions of the fuel pneumatic transport: this panel can be controlled directly from the boiler, if the manufacturer has provided it (see boiler use manual).
The pellet suction engine moves the fuel from the main storage tank to the boiler tank on which it has been installed continuously and automatically; it is already equipped with a dispenser and all the systems for the adjustment and the operation safety.

The product is suitable to serve boilers with a maximum power of 100 Kw/h and with a fuel consumption lower than 25 kg/h.

6 INSTALLATION

It is the installer's responsibility to verify the presence of any risk of danger in the installation area and to determine the suitability in accordance with both the applicable laws and the product characteristics described in this manual.
The installer must also comply with the requirements of this manual as well as inform the user of the operation and maintenance of the installed products and report any dangers related to their use.
It is necessary to leave a free space of adequate size all around the product, in order to permit any repair, maintenance or inspection operation.
The product should not be exposed to atmospheric agents and should not be installed in areas subject to high humidity, possible flooding, high temperatures and dust presence.

6.1 INSTRUCTION FOR THE INSTALLATION OF KLOVER SYSTEMS

Consider that in the Klover plant exist two types of piping network divides in:

- Stretches where there is only air (with positive or negative pressure)
- Stretches where there are air plus fuel

It is intuitive to understood that the transport of the fuel requires more attention and the use of specific technical precautions.

Note that the length allowed and described on our manuals and catalogues are approximately, written considering straight stretches, with the minimum change of direction.

It is always recommended to take into account these notes:

- The maximum total length allowed for the pipe network is 25m
- In case of double pipes system, the maximum length of the pipe which returns to the storage tank is to be deducted to the total length (25 m) and in any case it must not exceed 10 m
- Please avoid tight curves and, in general, winding paths
- Avoid positive and negative siphons
- Avoid unlevelled horizontal paths
- Avoid verticals sections longer than 3,5m
- Every change of direction imply a decrease of the maximum available length of about 0,3 m
- Every meter of pipe placed vertically implies a reduction of 2 m of the maximum available length
- The gap between the storage tank and the boiler cannot exceed 7 m
- It is essential to make gentle elbows, especially at the base of the vertical lines

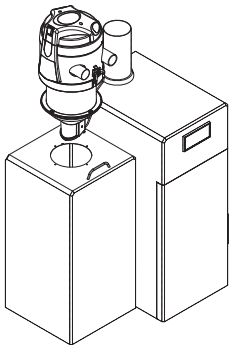
It is recommended to use only pipes, junctions and accessories present in the Klover catalogue, as they have been researched, designed and built expressly for this equipment.

Before installing and putting into service the Klover equipment, a careful reading of the supplied instructions is recommended. In any case of doubt, please refer to qualified personnel.

The installation of Klover systems must always comply with the safety standards corresponding to the type of premises in which they are installed.

6.2 Positioning

The pellet suction engine integrated engine must be fixed above the boiler fuel tank in a stable manner, ensuring that the fuel outlet door is in the middle of it.
After having fixed the central engine, check that the fuel discharge door under the dispenser is completely free to move and that it does not touch other objects in any way.



6.3 Connection to the piping network

Both the ø 50 mm pipes of the engine must be connected with at least one piece of antistatic flexible hose with equal diameter, secured with well-fixed hose clamps.
The other end of the antistatic pipe should be connected to the rest of the fuel transport system, which can still be made with flexible antistatic pipe or steel pipes, also present in the Klover catalogue.
To avoid static currents, the copper strand in the antistatic pipe must always be in contact with a grounding or other steel pipes belonging to the fuel transport system.
The OUT pipe exhausts dusty air from the central engine, while the IN pipe transports the fuel to the unit dispenser.
The air exhaust pipe can be connected with a fuel extraction accessory where provided; otherwise, it should be connected to the filter Trapdust dust collector present in the Klover catalogue (art. PVS.FILTER).

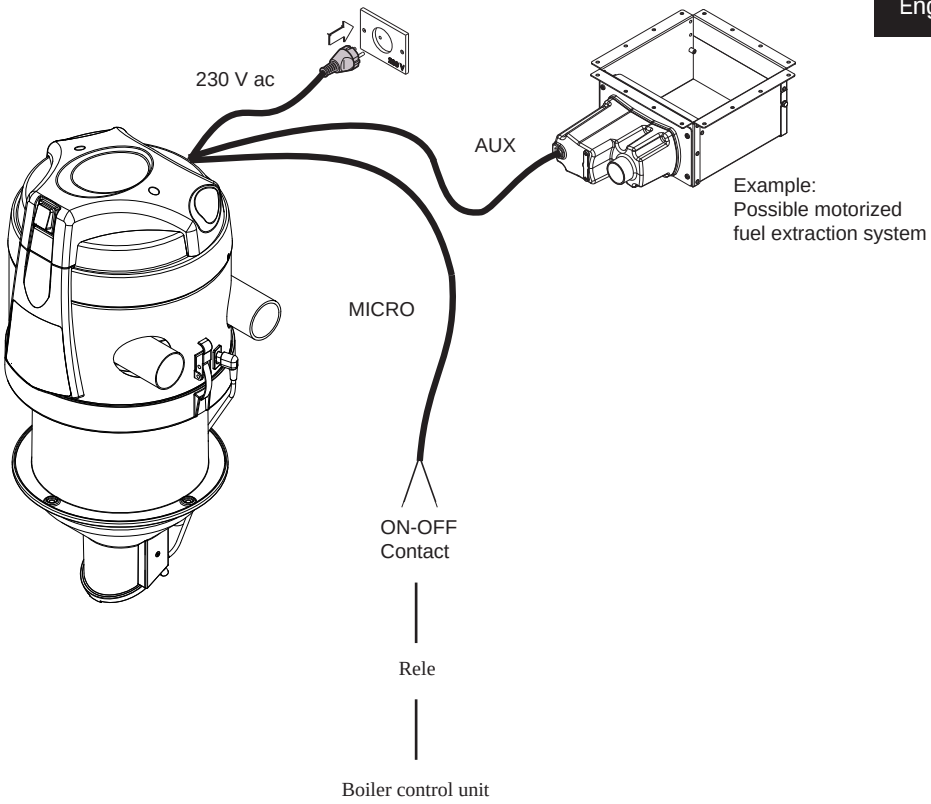
6.4 Electrical Connection

Before making the electrical connection, check that the supply voltage corresponds to the one required and that the electrical system to which the product is connected is done in compliance with current regulations.
Connect the two wires of the activation line called AUX to the motorized extraction system (if present).
It is also possible to connect the two wires called MICRO to the boiler control unit, or to a timer, or to an automatic activation system as condition that the signal closure take place low pressure (clean connection).
Connect the power cable to a 230 V ac power outlet.

Electric cabling legend:

Connection	Cable color	Function	Control
MICRO	Yellow (Blue)	On-off control	Input: - Timer - Boiler control
	Brown		
AUX	Green (Grey)	Normally open contact - max 1 A	Possible output: motorized fuel extraction system
	White (Black)		

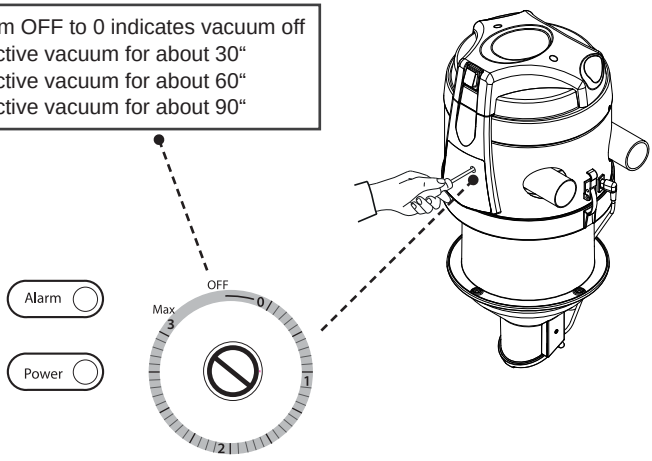
Example of electrical connections



7 START UP AND USE

Before proceeding to unit start up, it is opportune to check that the pipes are correctly and firmly fixed to it, and that electrical connections comply with the current law, as well as the electric system to which it is connected.
Prepare an empty run to verify the functionality and then, before filling with fuel the storage tank, check that there are no foreign bodies inside it.
Read all the manuals of the different components of the system before proceeding.
Remove the timer protective cap and turn the potentiometer anti-clockwise with a screwdriver, positioning it on OFF mode.
Place the main switch over the control panel to 1.
The green “POWER” led on the control panel lights up.
Turn the potentiometer slightly clockwise and wait for the central unit to begin operations and complete a brief operating cycle, the engine start up, if connected to the boiler control unit may be carry out from the menù.
Adjust the potentiometer at this point, so that the operation time of the central unit is sufficient to fill the transparent dispenser with fuel till the level indicated by the “MAX LEVEL” adhesive label.
After a few successful operating cycles, refit the protective cap.
In the case of fillings at a lower level there can be no consequences, but fillings far superior to the optimum level could cause defects and noise in engine functioning and occlusions in fuel transport pipes.
It is therefore advisable to adjust the operating times properly, taking care to check them at least at each refilling of the fuel storage tank.

The potentiometer from OFF to 0 indicates vacuum off
Position 1 indicates active vacuum for about 30“
Position 2 indicates active vacuum for about 60“
Position 3 indicates active vacuum for about 90“



Now the pellet suction engine is operational: an additional potentiometer adjustment may be necessary if you change, even a little bit, the specific weight or type of the fuel which has to be transported. In these cases, it is sufficient to readjust the operating time of the engine so that it is appropriate to fill the transparent fuel dispenser, at each cycle, to the level indicated by the “MAX LEVEL” adhesive.
If the pellet suction engine unit will remain inoperative for a long time, place the light switch on 0 and remove the power supply.

7.1 Alarm light

The control panel of pellet suction engine has a red led called “ALARM”: in the case it is illuminated, the unit and consequently the fuel transport system stop. This blockage may be due to various causes. The most frequent are:

A - Lack of fuel in the storage tank.
B - A blockage in the fuel transport pipe does not allow the fuel flow in the dispenser.
C - The fuel inlet pipe is not airtight, so the air suction does not allow the fuel flow into the dispenser.
D - The fuel discharge door of the dispenser does not close tightly, so there is an air suction which does not allow the correct flow of the fuel in the dispenser.

In all these cases, after the engine has run three cycles without fuel suction, the failure red led will turn on and the engine will no longer operate until manual reset.
Manual reset to eliminate the alarm should be done after solving the problem that produced the block: the necessary operation is made by turning the illuminated switch 0-1 off and, after 10 seconds, turning it newly on.

8 MAINTENANCE AND END-OF-LIFE

Before carrying out any maintenance operation, it is obligatory to disconnect the power supply cable from the main socket and to aerate the premises in which it is installed for at least 15 minutes. Complex or long maintenance operations must be done out of fuel storage and heating unit premises.
Any maintenance and repair operation must be carried out by experienced personnel and authorized by the manufacturer.
In the absence of a specific maintenance plan, a complete product inspection is recommended for each filling of the fuel storage tank.
The checks to be carried out at least monthly are:
- Check the electrical wiring condition
- Verify the motor brushes condition
- Eliminate dust traces from the mesh filter located inside the dispenser
- Clean the rubber interior part of the fuel discharge door

It is also advisable to thoroughly clean the fuel storage tank at least annually, in order to avoid dust accumulation and presence of foreign bodies.

8.1 Spare parts

To guarantee longevity and optimum performance of the engine, it is recommended to use only original spare parts.

DESCRIPTION	CODE
Mesh filter	AP9910.00.03
0-1 switch	9900.111
Circuit board	9910.602
Motor	9910.181
Motor Brushes	9910.022
Reed Microswitch	9900.240
Discharge door with magnet	9900.253

8.2 End-of-life

The disposal of packaging, accessories and machine must be executed in accordance with applicable laws, ensuring the recycling of any of the core components.

9 SAFETY REQUIREMENTS FOR FUEL STORAGE TANKS

SAFETY REQUIREMENTS for pellet storage tanks with capacity up to 10 t

Keep the doors closed. Access is permitted only to authorized personnel under the supervision of a person outside

Do not smoke and approach flames or other sources of ignition.

Danger of death due to high concentrations of carbon monoxide (CO) and lack of oxygen.

In the 4 weeks after the fuel filling, enter only with a CO detector.

Aerate the storage room for at least 15 minutes before entering and keep the door open during your permanence.

Ensure an adequate and permanent aeration of the storage room through vent covers, openings or fans.

Wounding risk for moving systems

Turn off the boiler at least one hour before the pellet is delivered.

Proceed to the filling according to the requirements of the boiler manufacturer and the pellet supplier.

Protect pellets from humidity

In case of fire suspect keep the front door and any other opening of the storage room close and call the firemen.

10 WARRANTY

PRODUCT LIMITED WARRANTY CONDITIONS

The Manufacturer guarantees to the original purchaser the absence of defects in material and workmanship of the product for the period stated, from the date of purchase. Except as prohibited by applicable law, this warranty is non transferable and it is limited to the
original purchaser. The present warranty gives the buyer specific legal rights and the possibility to claim rights which can vary under local laws.

Read all warnings and instructions before using the product purchased.

The entire liability of the manufacturer and your exclusive remedy for any breach of warranty will be at the discretion of the Manufacturer:
(1) To repair or replace the product, or (2) refund the purchase price, provided that the product has been returned to the point of purchase, or such other place as may be specified by the manufacturer, with a copy of the sales receipt or detailed and dated receipt. The shipping and handling are not free of charge, except in cases where this is prohibited by applicable law.
To repair and replace the product, the manufacturer may, at their own discretion, use new, refurbished or used parts in good working condition. Any replacement product will be warranted for the remaining time of the original warranty period, or for any period of time that complies with the provisions of the current law.

This warranty does not cover problems or damage resulting from (1) accident, abuse,
misapplication, repair, alteration or unauthorized disassembly; (2) maintenance operation, use which is not in accordance with the product instructions or connection to an improper voltage supply; or (3) use of consumables and spare parts which are not supplied by the manufacturer or authorized service center.

Valid warranty claims are generally processed through the point of purchase of the product.
Please agree this detail with the retailer where you purchased the product.
The Warranty claims that cannot be processed through the point of purchase, as well as any
other product related questions, should be addressed directly to the manufacturer. Addresses and contact information for customer support can be found at the internet address
www.klover.it

Except as stated by relevant laws in force, any implied warranty or condition of
merchantability or suitability for a particular purpose relating to this product is limited to the duration of the Limited Warranty period for the specific product purchased.

Some jurisdictions do not allow limitations on the duration of implied warranties or the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights and you may have other rights that vary from state to state, or from jurisdiction to jurisdiction.
Consumers have legal rights under applicable national legislation governing the sale of
consumer products. Such rights are not affected by the warranties in this Limited Warranty.

No dealer, agent, or employee of the manufacturer is authorized to make any modification, extension or addition to this warranty.

11 DECLARATION OF ABSENCE OF HARMFUL SUBSTANCES

The manufacturer declares that their products and equipment are made with materials compliant with the current regulations regarding protection of health and the environment and does not contain substances classified as SVHC (Substance of Very High Concern) in accordance with Regulation EC 1907/2006 (REACH, or registration, evaluation, authorization and restriction of chemical substances).
Although in the working cycles of raw materials and our products such substances are not used, their presence in the size of p.p.m. (parts per million) cannot be excluded due to micropollution of raw materials.

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