

# ***Vacuum Thermo-sealing Machines with inert gas injection***

***Mod. BS 25 BASIC***



***INSTRUCTIONS FOR INSTALLATION,  
USE AND MAINTENANCE***



This instruction manual refers to the range of modified atmosphere, vacuum heat sealing machines and provides the installation instructions and operating guide.

The machines are used to vacuum seal food containers in a modified atmosphere which prevents the food from coming into contact with oxygen and chemical and biological contaminants in the air. These results are achieved thanks to the possibility of obtaining the required vacuum by almost completely extracting the air inside the package.

In this way the product retains its characteristics of colour, flavour, smell, etc., for an extended period.

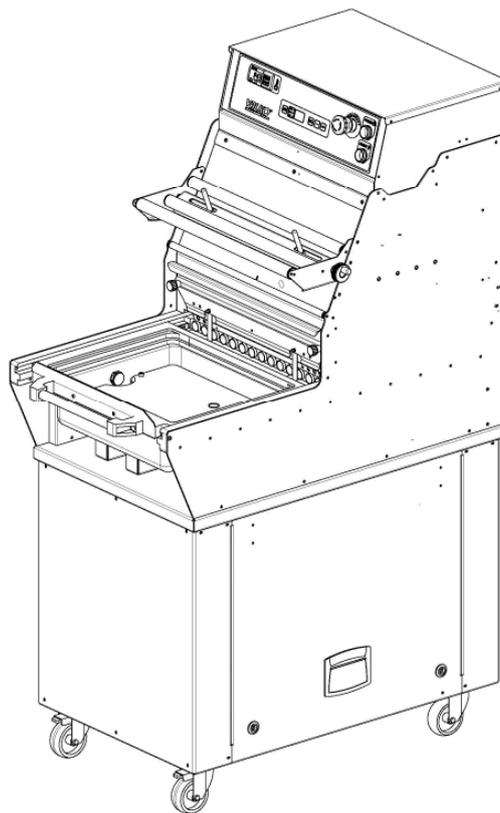
This packaging solution makes transport and preservation more practical; the packaging also protects the preserved foods against external contact and prevents liquids leaks.

Aluminium moulds are used and customised moulds are also available.

The machine's data plate is applied on the rear of the machine and details all the information required for installation, e.g.: model, consumption, power supply voltage, etc.

## INSTRUCTION FOR INSTALLATION

### ▪ DRAWING OF THE EQUIPMENT



**Fig. 1**

### ▪ TECHNICAL DATA

Model	Width	Depth	Height	Maximum mould dimensions	Vacuum pump	Voltage	Power
BS 25 BASIC	560 mm	970 mm	1470 mm	380X280 mm H max 115 mm	25 m <sup>3</sup> /h	230V~	2100 W
	560 mm	970 mm	1470 mm		40 m <sup>3</sup> /h	230V 3~ 400V 3N~	2800 W
	560 mm	970 mm	1470 mm		60 m <sup>3</sup> /h	230V 3~ 400V 3N~	2800 W

▪ **INSTALLATION**

Installation, assembly and troubleshooting must only be performed by skilled personnel strictly in accordance with the following instructions :

- Remove the machine from the packing and throw away the protection pieces.
- Remove the protection film from the equipment and the strap from the cover.
- Keep a minimum distance of 10 cm. all around the machine in order to allow adequate cooling of the pump during running (the machine could have difficulties to reach the desired vacuum).
- Set the machine perfectly straight by adjusting the supporting feet until the correct position has been reached. A wrong alignment of the machine could affect the performance during running.
- For the installation of the machine an omnipolar switch must be mounted between the power network and the equipment and it must have a minimum contact distance of at least 3mm per pole. Allow easy access to the switch.
- The rating plate is on the rear of the machine. From the plate can be checked if the equipment is set to run with the available line voltage. Check that the available power voltage matches the one printed on the rating plate.
- During running of the machine the voltage must be within +/- 10% of the correct rating.
- Earthing the equipment is mandatory in order to avoid damaging the electronic board.
- It is strictly mandatory to comply with the fire regulations!
- The compressed air network pressure must have a minimum value of 5 bar and a maximum value of 8 bar, with an air flow rate of at least 40 NI/min
- The inlet food-grade gas pressure from the gas cylinder must not exceed 3 bar and the pressure reducing valve fitted on the gas cylinder must have a minimum flow rate of 20 m<sup>3</sup>/h.
- In case the machine is supplied without internal compressor, it must be fed with dry compressed air or with compressed air devoid of condensation. An anticondensation filter to be mounted on the top of the machine is recommended.
- **In case of three-phase machines (230V 3~ and 400V 3N~): check the rotation direction of the pump: refer to the arrow on the cap of the electric motor; if necessary invert the 3 phases RST until the rotation is correct.**  
**Alternative method: if the pump is extremely noisy (at the beginning of the cycle) the phases must be surely inverted.**

▪ **LEGAL REGULATIONS, TECHNICAL RULES AND DIRECTIVES**

During the installation the following rules and regulations must to be observed :

- Legal regulations in force (to be defined Country by Country)
- Accident protection requirements and laws in force (to be defined Country by Country).

▪ **ELECTRICAL CONNECTION**

See enclosed wiring diagrams.

Check the power supply and voltage with the rating on the plate. The machine is supplied with cable and plug.

▪ **REPLACING OF THE CONNECTING CABLE**

In case of cable replacement check the electrical scheme.

The replaced cable must not be less than type H05 RN-F in quality and shall have a minimum wire section of :

Vacuum pump	230V~	230V 3~	400V 3N~
25 m <sup>3</sup> /h	3x1,5 mm <sup>2</sup>	/	/
40 m <sup>3</sup> /h	/	4x2,5 mm <sup>2</sup>	5x2,5 mm <sup>2</sup>
60 m <sup>3</sup> /h	/	4x2,5 mm <sup>2</sup>	5x2,5 mm <sup>2</sup>

During connection carefully make sure that the earth wire is longer than the others. In case of an unexpected strong pull on the cable or in case the cable clamp breaks the earth wire must be the last to disconnect from power.

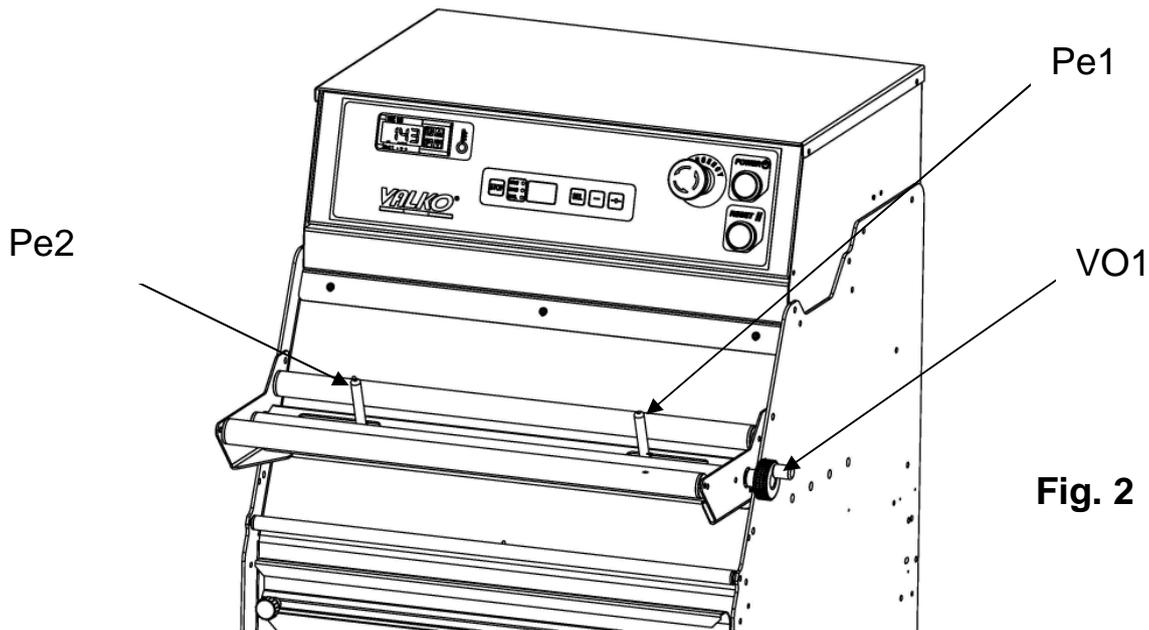
The machine can only be started after having checked that all these safety precautions have been carefully observed.

▪ **OPERATOR INFORMATION**

Train the operator on the equipment with the help of the instruction book. Always hand over the instruction book to the operator.  
Suggest the operator contracts for the maintenance service.

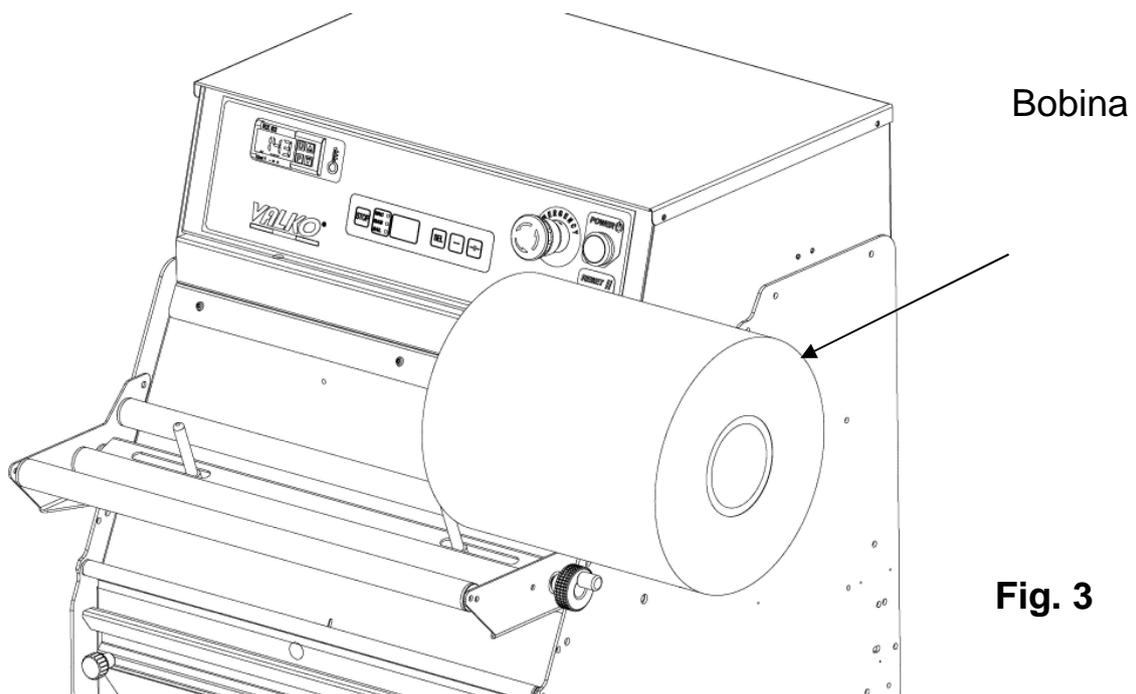
▪ **INSTALL THE FILM ROLL**

Turn the film centering knob VO1 to extend the reel centering pins P1 and P2.



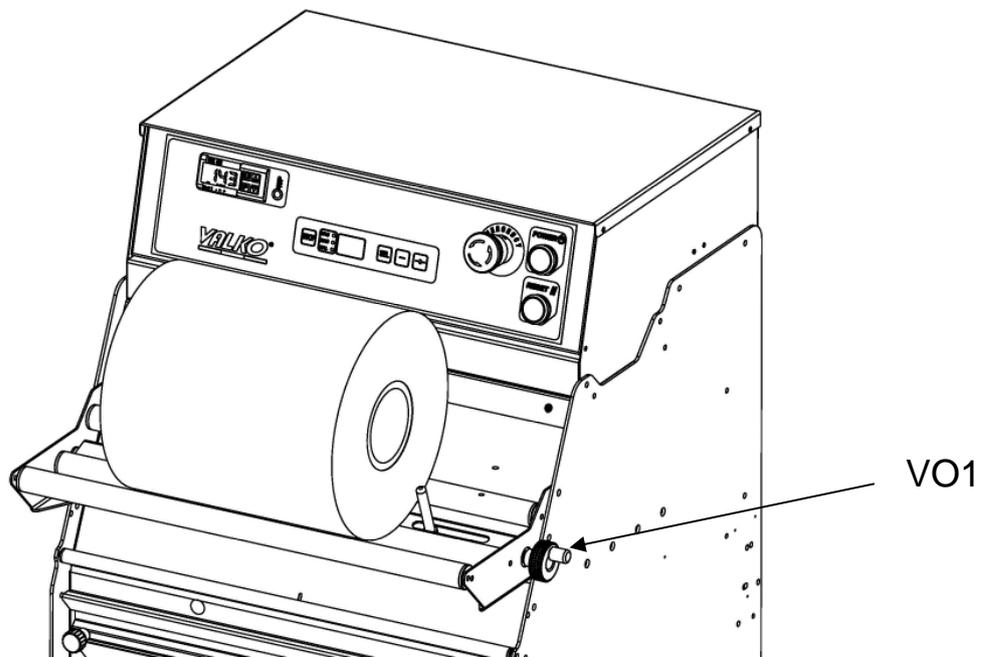
**Fig. 2**

Put the film reel on the 3 rolls centering it in between P1 and P2 pins.



**Fig. 3**

**Fig. 4**

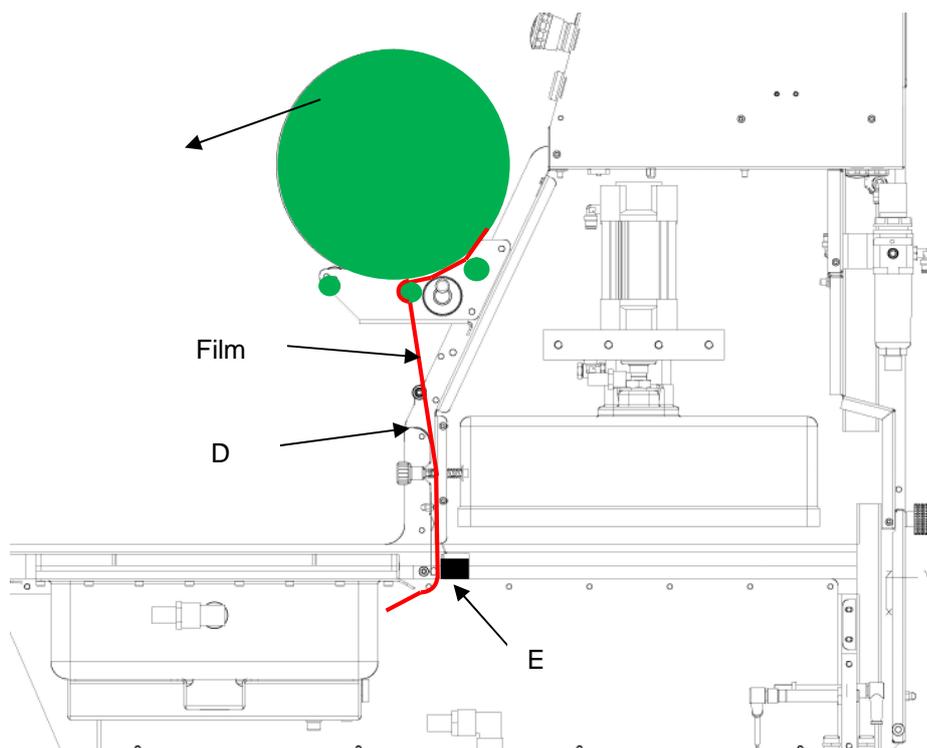


- Set the centering of the reel according to the mould using the film centering knob Vo1.
- The VO1 knob is also a brake for the reel.

▪ **FEEDING THE FILM**

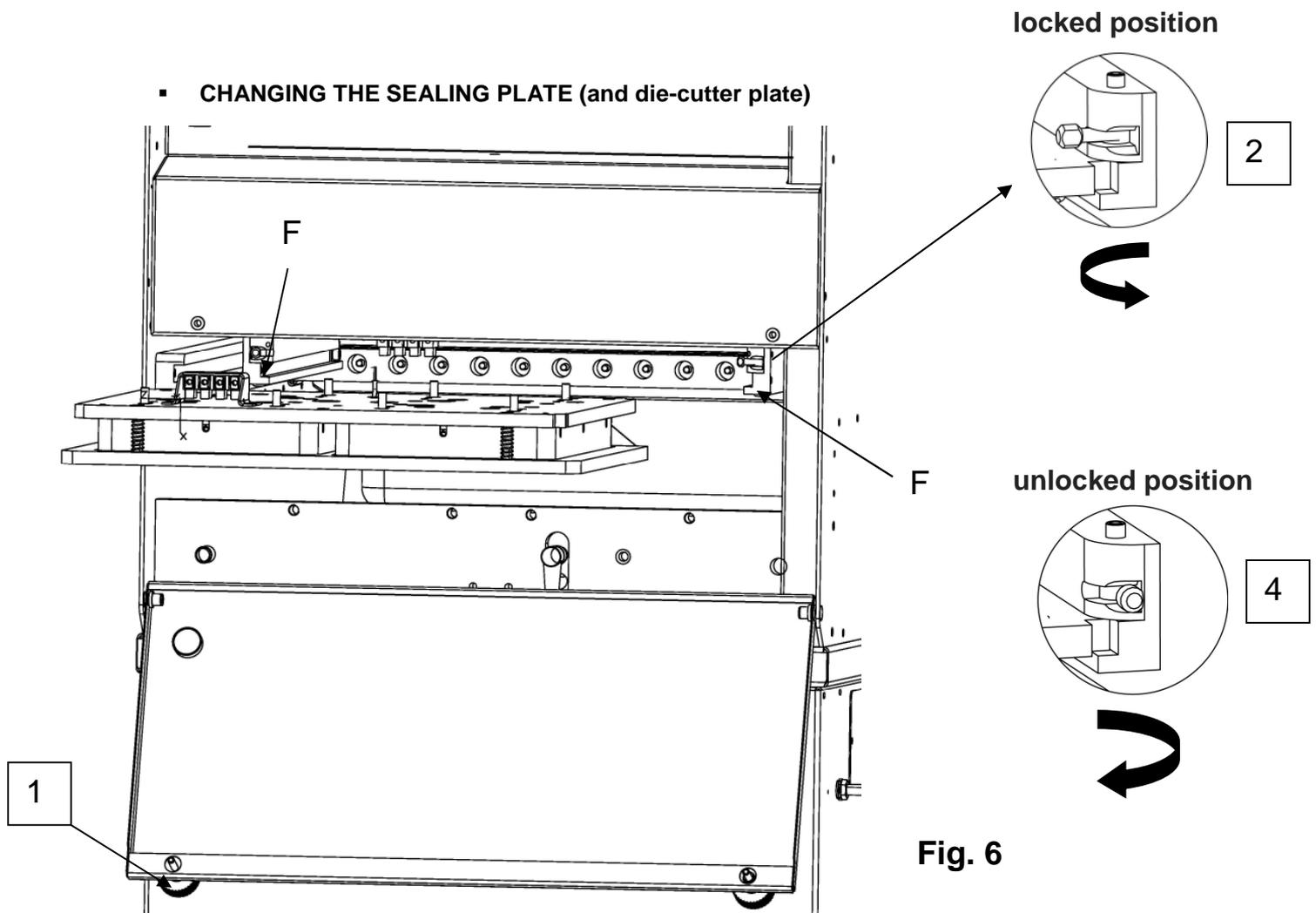
After inserting the roll on the roll holder, set the centering of the spool and tighten the film as shown below by.

Film has to go through the second and the third roll, just behind the film holder D and over the magnet bar



**Fig. 5**

▪ **CHANGING THE SEALING PLATE (and die-cutter plate)**



**Fig. 6**



Before changing the sealing plate, ensure that its temperature is less than 50°C (seen on the digital thermostat).



**Protect hands with gloves suitable for sharp cutting edges and high temperatures, before handling the sealing plate since the plate is fitted with sharp, cutting blades.**

**Check that the mould carrier drawer has been extracted fully and that the magnet support touches the front stops.**

Change the sealing plate by proceeding as follows (see figure 6):

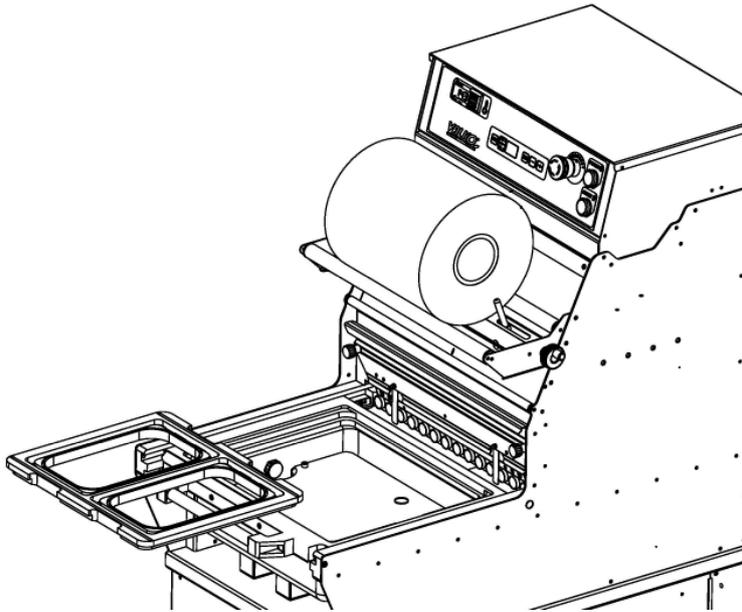
1. Loosen the two knobs on the machine's rear door and lower the door; this operation will automatically prepare the machine for the plate change stage.
2. Turn the safety pins to unlock them.
3. Remove the sealing plate by pulling it out of the machine.

The machine can now be prepared for another sealing plate by proceeding as follows:

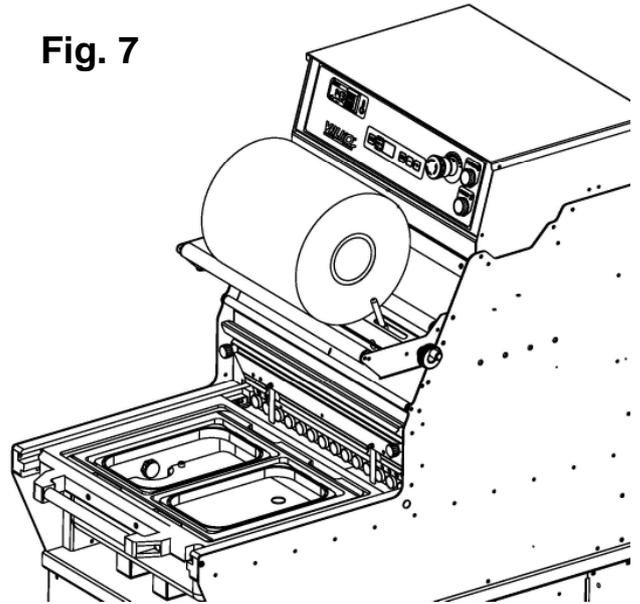
- Place the sealing plate on the specific sliding guides F until you reach the end. :
- 4. Now you can lock the safety pins by turning them again.
  - Close the back panel and tight the 2 knobs
  - Push the RESET button to reset the machine (see the green light).
  - Change the die (see die change) with the right one according to the sealing plate installed
  - Before using the machine again wait that the sealing plate reaches the working temperature set.

**CAUTION: Do not use the machine unless the sealing plate and mould are compatible, to prevent causing serious damage to the mould die-cutting (or cutter) blades and the mould itself.**

▪ **MOULD CHANGE**

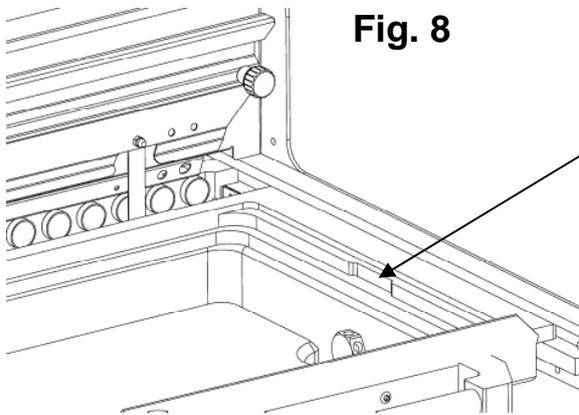


**Fig. 7**



Proceed as follows to change the mould (see figure 7):

- Pull out fully the drawer containing the mould to be changed.
- Lift the mould out of its recess and replace it with the new mould, ensuring that the new mould is compatible with the sealing plate installed on the machine.
- Check that the mould fits perfectly in its relative recess.



**Fig. 8**

**On some dies there is a reference mark to properly orient it. Align it to the mark on the die holder.  
If the die is not placed in the right way, it will be higher and this would undermine the right use of the machine**



**CAUTION: Do not use the machine unless the sealing plate and mould are compatible, to prevent causing serious damage to the mould die-cutting (or cutter) blades and the mould itself.**

**USE AND MAINTENANCE**

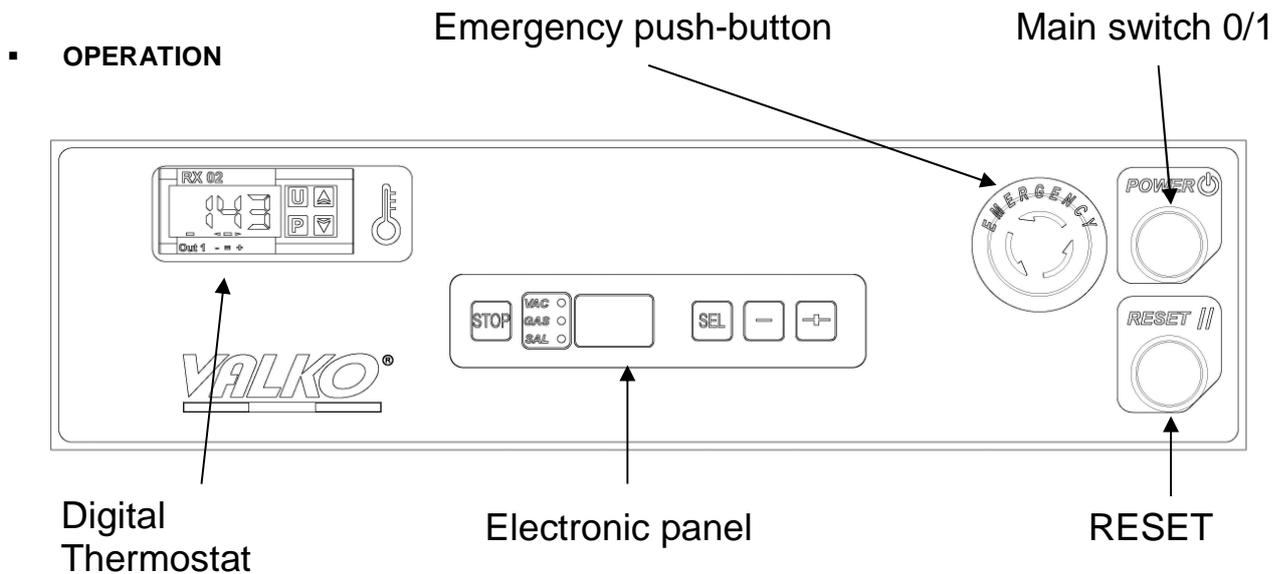
Heat sealers are machines designed for general use and therefore have to be used exclusively by qualified personnel.

All installation and connection operations must be performed by qualified personnel only, strictly complying with the instructions contained in this manual.

Always supervise the machine when in operation and when used.

Do not wash the machine with direct jets of water or pressurised water when cleaning.

Fig. 9



The packaging machine's electronic control panel is designed in accordance with the European electrical safety directives. The electronic panel is equipped with an integrated "E.V.C. VALKO" system which guarantees the correct vacuum percentage under any atmospheric pressure conditions.

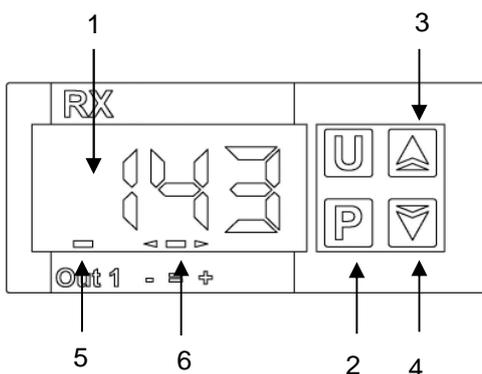
The electronic panel has 5 programmes, from P1 to P5, which can be stored and displayed on the monitor.

The display shows the vacuum percentage and gas values and the sealing times expressed in seconds.

The corresponding LED (VAC, GAS) will flash intermittently and an audible alarm is activated if an error occurs during one of the packaging phases: the tray will not be sealed at the end of the cycle.

Digital thermostat

The thermostat is used to set the sealing temperature.

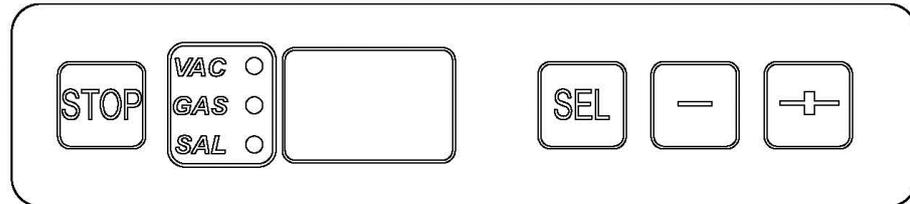


1. Display
2. Set up key
3. UP set up key
4. DOWN set up key
5. Set up luminous indicator light
6. Led set temperature is reached

- To change the value of the working temperature on the thermostat press the DOWN set up key (4): the display visualizes SP1.
- Press the UP or DOWN set up keys to increase or reduce this value.
- Wait for about 5 seconds to confirm the modification.
- The display will visualize the instantaneous temperature.
- The temperature visualized on the display is expressed in centigrade degrees (Celsius).
- The working led (5) will remain active until the set temperature is reached, after which activates the led 6.

### Electronic panel

- Check that the emergency push-button has not been pressed; unlock this push-button, by rotating anti-clockwise, if necessary.
- Press the main switch 0/1 to energise the machine and to activate the electronic panel.



- The display will be set to programme P1 when the card is activated. Select the programme required (+ and - keys) to change the programme parameters (P1 - P5) and adjust the machine using the selection key G :
- - o VACUUM ADJUSTMENT: Press the selection key G until the VAC LED lights up and adjust the required vacuum percentage using the + and - keys (the vacuum percentage is shown on the display).
  - o INERT GAS ADJUSTMENT: Press the selection key G until the GAS LED lights up and adjust the percentage of gas to be injected using the + and - keys (the gas percentage is shown on the display). The gas percentage can never be greater than the vacuum percentage setting.
  - o SEALING TIME ADJUSTMENT: Press the selection key G until the SAL LED lights up and adjust the sealing time using the + and - keys (the time is expressed in seconds and is shown on the display). The greater the film and tray edge thickness, the greater the sealing time required.
- To store the changed programme, press the selection key G until returning to the programme number that was being changed (P1 - P5).
- PROGRAMMES SET IN THIS WAY ARE STORED UNTIL THE NEXT CHANGE IS MADE.

## ▪ STARTING THE WORKING CYCLE

- Press the main switch 0/1 to energise the machine.
- Push the reset button to activate the electronic board.
- Set the working temperature on the digital thermostat.
- Wait until the machine reaches the set working temperature.
- Check that the compressed air network pressure is at least 5 bar (check it by looking at the dedicated manometer on the back of the machine, see fig. 11, pos. L)
- Check that the food-grade gas pressure is not greater than 3 bar.
- The display will be set to programme P1 when the card is activated.
- Select the appropriate mould for the tray to be sealed and load the correct reel once all the required adjustments have been made.



- **CAUTION: ensure that the sealing plate is also suitable for the type of mould inserted.**

- Extract the mould drawer fully and insert the tray containing the food to be packaged in the mould.



- **CAUTION: ensure that the product does not protrude from the tray; if necessary press the product down to the tray's edges or use a higher-sided tray.**

- Choose the program you want to use with the + and – buttons, and push the drawer in until it reaches the end, taking care that the film is properly unwound while pushing.

- The machine will perform the working cycle using the programme selected previously. 4 different phases can be identified when the machine is in operation, these phases are performed in succession when the cycle starts:
  1. Suction phase: the chamber lid closes when the machine's cycle is started, and the pump creates a vacuum by removing air from the chamber and the tray containing the food to be preserved.
  2. Gas injection phase: the inert gas is injected.
  3. Sealing phase: the tray containing the food to be packaged is sealed and the film around the tray's edges is cut, if this function is pre-selected.
  4. Air input phase: air enters the chamber, restoring the internal pressure to the same value as the external atmospheric pressure.

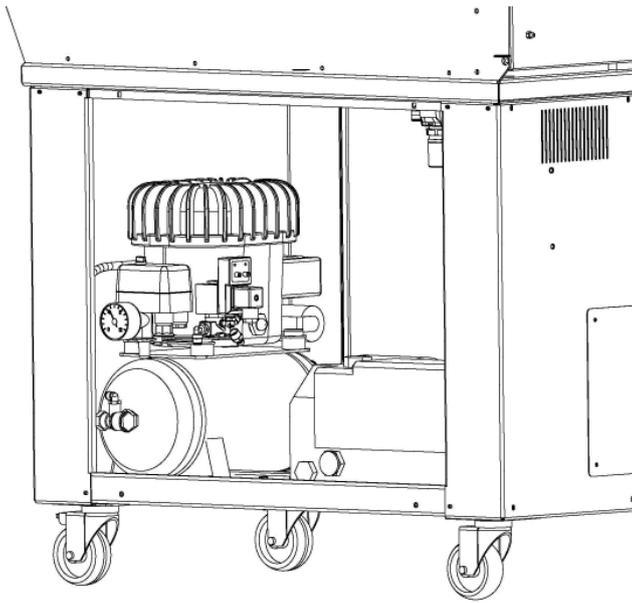
- An electronic alarm is activated at cycle end, signalling that the cycle has been completed; the CYCLE START push-button indicator light will switch off.
- Pull the mould drawer until it is fully extracted.
- The display on the electronic panel will be reset to P1 waiting for a new cycle.



### NOTES

- Pressing the STOP push-button on the electronic panel causes the cycle to stop immediately and proceed automatically to seal the tray.
- Pressing the emergency push-button causes all the machine's functions to stop immediately, stopping the working cycle at the point it has reached and also interrupts the electrical circuits (sealing plate heating, electronic panel, etc.) and the pneumatic parts (vacuum pump), only allowing the sealing plate temperature to be read (on the digital thermostat). Reset the machine by rotating the emergency push-button anti-clockwise.

▪ **COMPRESSOR (OPTIONAL)**

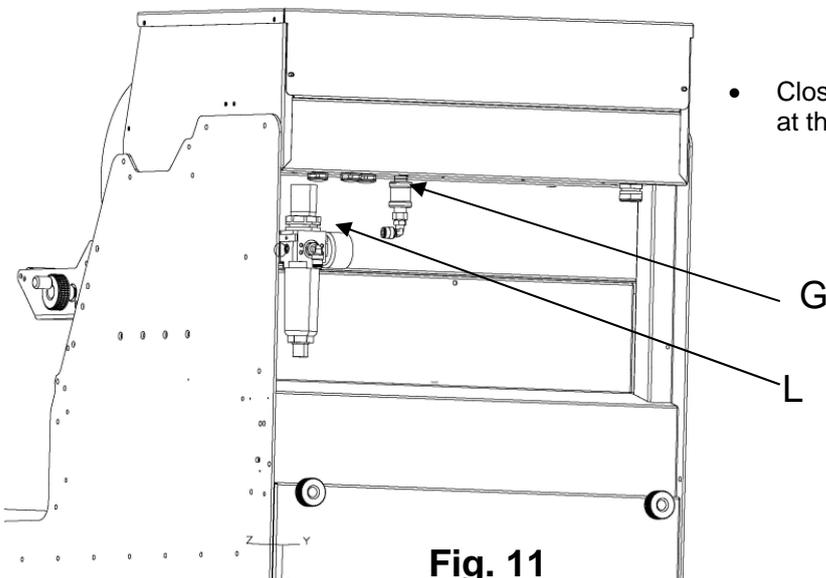


- The air compressor also starts to function when the machine is switched on main switch 0/1). The air compressor's operation is completely automatic and therefore no adjustment is required.
- The compressor is equipped with an automatic trip if a voltage or temperature overload occurs: switch off the machine if the compressor trips and wait half an hour until the compressor's temperature returns to normal values.
- **CAUTION:** the compressor is designed only and exclusively to meet the machine's requirements: therefore, no other external devices must be connected to the compressor.

**Fig. 10**



**The compressed air generator has an automatic moisture discharge. It starts working every time the machine is switched on and every 40 minutes of continuous working (for a second more or less).**



- Closing the compressed air valve is recommended at the end of every working day (pos. G fig. 11).

**Fig. 11**

**MAINTENANCE:** For the maintenance operations on the compressed air generator please follow the instruction of the specific user manual provided with the machine



**Before any maintenance disconnect the machine from the power source.**

▪ **GENERAL PRECAUTIONS**

- Keep this operating instructions and maintenance manual in a safe place but in a place that is known and accessible to the personnel assigned to the machine's operation and maintenance. Another copy of the manual can be requested from the manufacturer if the manual is lost or becomes damaged. The request for the replacement manual must indicate clearly all the machine's identification data.
- Ensure the manual is enclosed with the machine if the machine is sold or transferred.
- The mould carrier drawer must be extracted fully to avoid breaking the sealing plate and blades when the compressed air is disconnected from the machine, since the absence of compressed air causes the sealing plate to descend.
- However, it is advisable to shut off the compressed air supply when work has finished.
- The trays and reel film must be suitable for food contact if the machine is used to package food products, in accordance with the provisions established by current laws disciplining the subject.
- Do not use the machine with an incompatible sealing plate and mould to prevent serious damage to the die-cutting (or cutter) blades and the mould itself.
- The instructions affixed on the machine must be strictly followed since they represent an integral part of the machine's various safety arrangements: under no circumstances should the instructions be removed or covered. If the instructions become damaged, ensure they are replaced.
- Never leave the mould carrier drawer inside the machine when it is switched on or after the machine has just been switched off to prevent the sealing plate temperature damaging the gaskets (only for the semiautomatic version).
- Use only food-grade gas mixtures which are non-explosive, non-inflammable and suited to the product to be packaged. Failure to comply with this instruction could lead to a risk of explosion, fire or packaging that is unsuitable for the packaged products.
- Keep the machine out of the reach of children and minors if the machine is intended to be used in a domestic environment.
- All necessary precautions must be taken if one or several of the guards need to be removed to prevent other persons from being exposed to any subsequent risks. Replace the guards once the work has been completed and lock them into place using the appropriate fastening devices.
- Should any malfunction be noticed, shut down the equipment, disconnect the power and call the maintenance service.

▪ **PACKAGING IN MODIFIED ATMOSPHERE**

Machines provided with gas injection device normally use three types of pure food grade gases : NITROGEN (N<sub>2</sub>), CARBON DIOXIDE (CO<sub>2</sub>) and OXYGEN (O<sub>2</sub>) .

These gases have the following characteristics :

- nitrogen does not mix with the product retaining the original taste
- carbon dioxide mixes with the product improving the preservation process
- oxygen is used to preserve the natural colour of the product.

These gas can be mixed and used simultaneously depending on type of product to be preserved.

It is advisable to contact a company manufacturing these gases for better results.

It is not possible to open and than package again a product which has been previously packaged in modified atmosphere.

**ATTENTION: Do not use gas mixtures with an oxygen percentage higher than the atmospheric concentration (21%). RISK OF EXPLOSION OF THE PUMP.**

**Such gas mixtures can be used only if the machine is equipped with a special valve (optional) or oxygen pump.**

#### ▪ **PRESERVATION TIME**

It is not easy to define the precise preservation time because of the many different parameters that have to be considered, i.e. nature of the product, freshness of the product at the moment of packaging, temperature of the product, the environment and storage after packaging, real vacuum achieved in the bag, hygienic conditions of the tools used, etc. .

#### ▪ **LIMITATIONS AND CONDITIONS OF USE**

**ATTENTION** : It is absolutely forbidden to package the following products in order to avoid damaging the machine and risk accidents to the operator :

- flammable or explosive materials and gas pressure bottles
- loose powders and volatile products (flour, sugar, etc.)
- 

If liquid products are frequently packaged the oil must be checked frequently and replaced. In fact the vapors, produced by the liquids under vacuum conditions, mix with the oil reducing its lubricating characteristics.

#### ▪ **CLEANING AND MAINTENANCE**

**ATTENTION** : never use direct pressure water jet for cleaning.

Before any maintenance disconnect the machine from the power source.

- Cleaning can be started only when the equipment has cooled down. Cleaning the equipment is very important. Good cleaning ensures the smooth operation of the machine and gives a good impression to the customers.
- The stainless steel parts must be cleaned with water and appropriate detergent (do not use abrasive products). Do not use metal brushes, their use could rust the equipment. Do never and for no reason use acid containing detergents.
- Avoid the entry of dust, scale or liquids in the air inlet duct located inside the tray drawer.
- Before any long stand-by of the machine proceed carefully with the cleaning as described above.
- Regularly discharge the condensation from the tank of the compressor and/or from the anticondensation filter.

#### ▪ **VACUUM PUMP MAINTENANCE**

Check periodically the oil level indicator of the pump (on the rear of the equipment) : an oil level over the allowed maximum could cause clogging of the filter.

An oil level too low could cause a poor vacuum level and damage the pump.

Every 200 pump operating hours or at least every 6 months it is advisable to change the oil.

The pumping of pollutant compounds may require more frequent oil changes.

If the oil appears dark, turgid or thick, the oil has lost its lub properties and needs to be changed immediately.

**For oil replacing please follow the oil comparative table attached.**

**Replace the pump oil before a long machine stop. A watered oil could damage or rust the pump tank.**

▪ **SAFETY**

The risks analysis and the related considerations are based on a knowledge of the machine and its operation, on the assumption that the machine is intended to be used in a domestic or non-domestic environment and on the assumption that whoever uses the machine has been suitably trained and understands the specific risks existing in the work place and therefore that unauthorised or untrained persons, minors and children are not permitted to gain access to the work place and to the machine.

**RESIDUAL RISKS in accordance with Directive 98/37/EEC and Presidential Decree No. 495 of 24th July 1996**

- THERMAL TYPE RESIDUAL RISKS: even though the temperature of the sealing plate can reach a temperature of 200°C, the operator is in no danger since there is no possibility of contact during the packaging operation.
- RESIDUAL ELECTRICAL RISKS: there are no significant electrical risks.
- MECHANICAL RISKS: there are no mechanical risks since the mechanical moving parts never come into contact with the operator.
- SAFETY SIGNS: various safety warning labels are affixed to the machine:
  - HAZARDOUS TEMPERATURE
  - ELECTRIC VOLTAGE
  - AVOID INJURY TO HANDS
  - BEWARE OF BLADES
  - DO NOT REMOVE PROTECTIVE GUARDS
  - USE HEAT RESISTANT GLOVES
  - READ THE MANUAL CAREFULLY
- NOISE EMITTED BY THE MACHINE: the noise emitted by the machine is less than 70 dB.

▪ **WARNING**

- Get rid of the machine in a proper way following the national disposal rules.
- Always protect the machine from the intervention of not authorized persons.



### **VACUUM PACKAGING IN THE FOOD SECTOR**

With the vacuum packaging two main results for better preservation are achieved :

- no air in the packaging bag
- reduction of air in the product to be preserved

Thanks to vacuum packaging the product does not oxidize and does not decompose and can be preserved longer.

The preservation time can be enhanced by combining a freezing process with the vacuum process.

In this case the results are exceptional.

### **USING IN CATERING AND RESTAURANTS**

Preparation of dishes in restaurants during peak hours is critical. During these hours all working plans of the restaurant have to be overruled. In these circumstances the prepared dishes normally suffer poor quality.

Vacuum packaging represent an important aid for the restaurants and the chef. In fact the preparation of juices, sauces and other products frequently used in kitchens can be done in advance and the products can be stored "ready to use".

### **VACUUM PACKAGING AND PRE-COOKED FOOD**

During the cooking process the food gets in contact with the air and partially oxidizes, thus losing taste and part of the nutrient properties.

Cooking the food in vacuum packaging eliminates this trouble because the product is protected in a heat-resistant bag and therefore maintains its organoleptic properties.

### **VACUUM COOKING**

In Italy as well as in France and in Germany the vacuum packaging of previously cooked food is becoming more and more normal practice.

In this way the taste and the nutrient characteristics of the food can be preserved satisfying every requirements (also during peak hours in restaurants).

Heating up the vacuum packaged product at the desired temperature is all that is required.

### **VACUUM PACKAGING AND SLAUGHTERING**

One of the major problems of the slaughtering process is the maturing (seasoning) of the meat that normally takes place in refrigerated rooms. This operation involves loss of weight due to the oxidation process and superficial drying of the meat.

With the vacuum packaging the maturing process of the fresh meat becomes longer, the meat remains tender and taste is better. Thanks to the absence of air in the bag, vacuum packaged meat looks better and does not decompose.

### **VACUUM PACKAGING AND RETAIL STORES**

Thanks to the type of package, the extended preservation time and the perfectly hygienic conditions, the vacuum packaged products are very well seen and accepted by the consumers.

**THE MANUFACTURER DECLINES TO TAKE ANY RESPONSIBILITY IF  
THE RULES WRITTEN IN THIS INSTRUCTION BOOK HAVE NOT BEEN  
STRICTLY OBSERVED.**