# Service Manual

## Chamber vacuum packaging machines

**EVP08D EVP12D EVP16D EVP20T EVP 25A EVP60A**

**DVP08D DVP12D DVP16D DVP20T DVP25A DVP60A**




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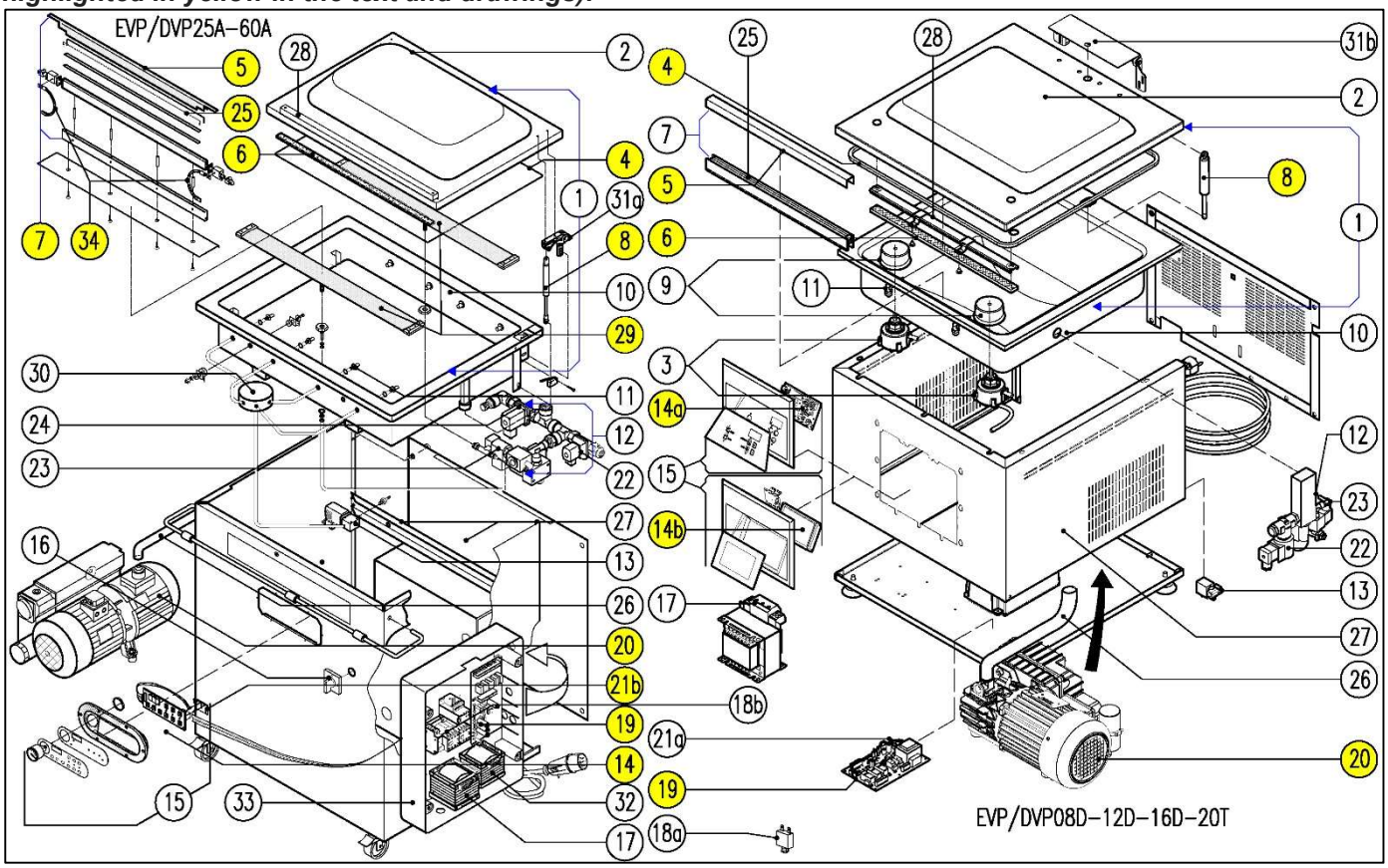
# 1. Definitions, operating principles and general characteristics of the product

## 1.1 General definitions: technical glossary.

In this course we deal with appliances for the vacuum packaging of food and non-food products inside bags or other containers suitable for this purpose.

In this case, the models of the **Electrolux/Dito Sama EVP/DVP08-12-16D/20T** line are classified as ***"chamber vacuum packaging machines",*** of the table top type, while the **EVP/DVP25-60A** models are larger wheeled models. These essentially consist of the following parts ***(note: the components most subject to wear and replacement are highlighted in yellow in the text and drawings):***




- ***Vacuum chamber*** **(1)**: hermetically sealed volume, defined by rigid and non-deformable surfaces, within which the packaging process takes place. It is composed of a fixed part, called the ***tray*** **(10)** and a mobile part, called the ***lid*** **(2)**, in a transparent material to allow all stages of the packaging process to be monitored. The shape of the chamber is similar to that of a parallelepiped. Fixed and movable parts are hermetically sealed through a ***LIP SEAL*** **(4),** associated **with the cover**. The lid is hinged on the tank and opening takes place automatically when the atmospheric pressure inside the vacuum chamber is restored, by means of ***gas springs*** **(8),** which act on the chromed die-cast zamak hinges (31a) in the EVP/DVP25-60A versions, or individually on the central stainless steel hinge (31b) in the EVP/DVP08-12-16D/20T models .

- ***Vacuum pump*** **(20):** mechanical component driven by a single-phase asynchronous electric motor that generates the vacuum inside the chamber by sucking air from the vacuum chamber. They feature a rotor and radial blades, are lubricated with oil recirculation, and allow reaching final pressures (in ideal laboratory conditions) between 0.5 and 2 millibar. The flow rates vary from 8 to 60 m3/h. They are connected to the vacuum chamber by way of a ***tube*** **(26)** resistant to the force induced by the negative pressure generated by the vacuum, with steel wire reinforced spiral for tubes with diameters greater than 10mm.

- ***Sealing device*****:** it consists of the ***sealing bar*** **(7)**, which supports a single ***electrical heating element in Nickel-Chrome*** **(25)** (interchangeable in the EVP/DVP25-60A models, fixed and not interchangeable in the EVP/DVP08-12-16D/20T models covered by a ***Teflon tape*** **(5)**; by a counterpressure bar in stainless steel (EVP/DVP08-12-16D/20T) or drawn and anodised aluminium (EVP/DVP25-60A), defined as a **"*silicone holder*" (28)**, which acts as a seat for a ***silicone rubber profile*** **(6)** and finally, by a mechanical lifting device of the sealing bar itself. The sealing bar, associated with the tray, extends into the vacuum chamber and can be operated vertically towards the ***counter-pressure bar*** **(28),** fixed to the Plexiglas lid.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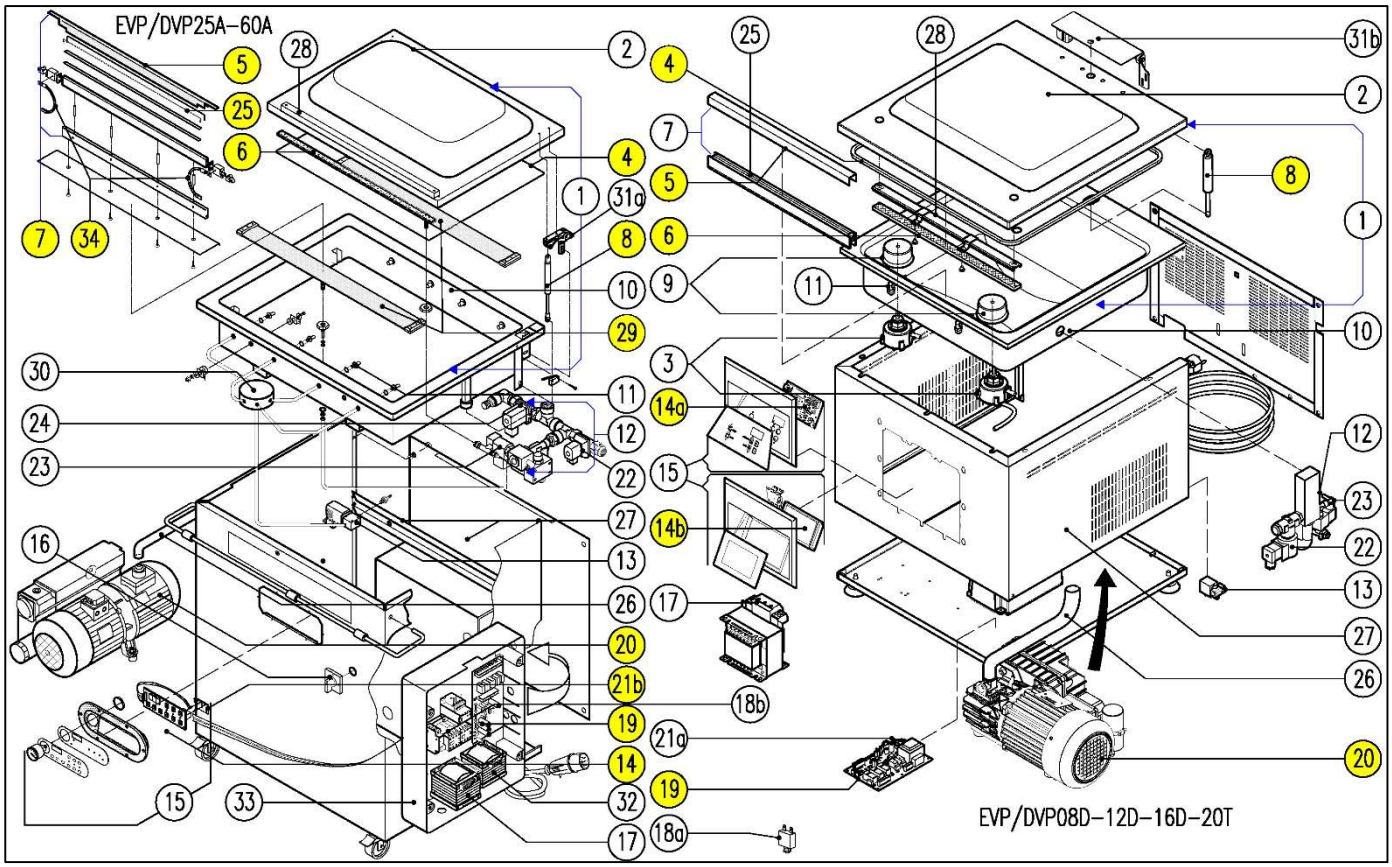


The sealing bar is operated vertically by means of a pair of ***air pistons* (3),** whose rods are protected from dirt by means of ***rubber caps* (9)** (EVP/DVP08-12-16D/20T) or by means of *an* ***inflatable under-bar bearing* (29)** (EVP/DVP25-60A), removable to allow the tank to be cleaned, operated by means of a pressure difference that is generated between the vacuum chamber and the external atmospheric pressure. In the C-Series models, the piston rods are at the same time the conductors of the sealing bar supply current, while in the EVP/DVP25-60A models the current is conducted by the ***sealing bar contact cables* (34)**. Lifting occurs almost simultaneously with the heating stage of the heating element, which generates the hermetic fusion of the two sheets constituting the vacuum bag along its opening.

- ***Solenoid valve unit* (12):** it consists of a series of two, three or four solenoid valves. A ***three-way solenoid valve with direct actuation* (23)**, also known as *"sealing solenoid valve"* (Ø2.0-2.5 mm orifice) connects the lifting device (pistons or sealbag for sealing bar elevation) with the external environment while the vacuum bag is being sealed. The almost instantaneous lifting of the sealing bar is achieved thanks to the pressure variance that is generated between the vacuum circuit and the environment at atmospheric pressure. The greater the pressure variance (depending on the level of vacuum set, the possible percentage of inert gas injected and the elevation at which the machine has been installed), the higher the sealing pressure, which is an important factor for the purposes of sealing effectiveness. In the EVP/DVP08-12-16D/20T models, a check valve is used to exploit the maximum pressure difference even with gas values equal to 90%.
  At the end of the packaging cycle, the air returns through a ***two-way solenoid valve with direct drive* (22)**, also called the *"discharge solenoid valve"* (opening Ø4.0-13 mm), thus restoring the atmospheric pressure in the vacuum chamber and allowing opening of the lid and extraction of the vacuum packaged product. In the three-phase trolley model EVP/DV60A, between the vacuum chamber and the pump there is also a ***two-way solenoid valve with direct drive* (24)** (opening Ø 13-25mm), therefore also called *suction solenoid valve*. Its function is to intercept the flow of air sucked in by the pump when the "pump always on" function is activated, thus avoiding continuous restarts, which may damage the joints between the motor and pump body of the 60 m³/h pumps.

  ***Inert gas injection system***: this is a standard device on all table top models with the exception of the EVP/DVP08D model, available as an option in the EVP/DVP25-60A wheeled models, whose function is to allow modified atmosphere packaging of products sensitive to crushing, consisting of a ***two-way shut-off solenoid valve with direct drive* (13)** of the gas supply line, (opening Ø 2mm) also known as "*gas solenoid valve*", by two ***injection nozzles* (11)** of the inert gas in the EVP/DVP08-12-16D/20T models and two or more nozzles in the EVP/DVP25-60A models, positioned near the sealing bar and one or more one connection pipes between the solenoid valve and the nozzle. In the EVP / DVP25-60A models with 3+3 nozzles, there is a ***distributor* (30)** whose function it is to distribute the gas uniformly and equally to the various nozzles.


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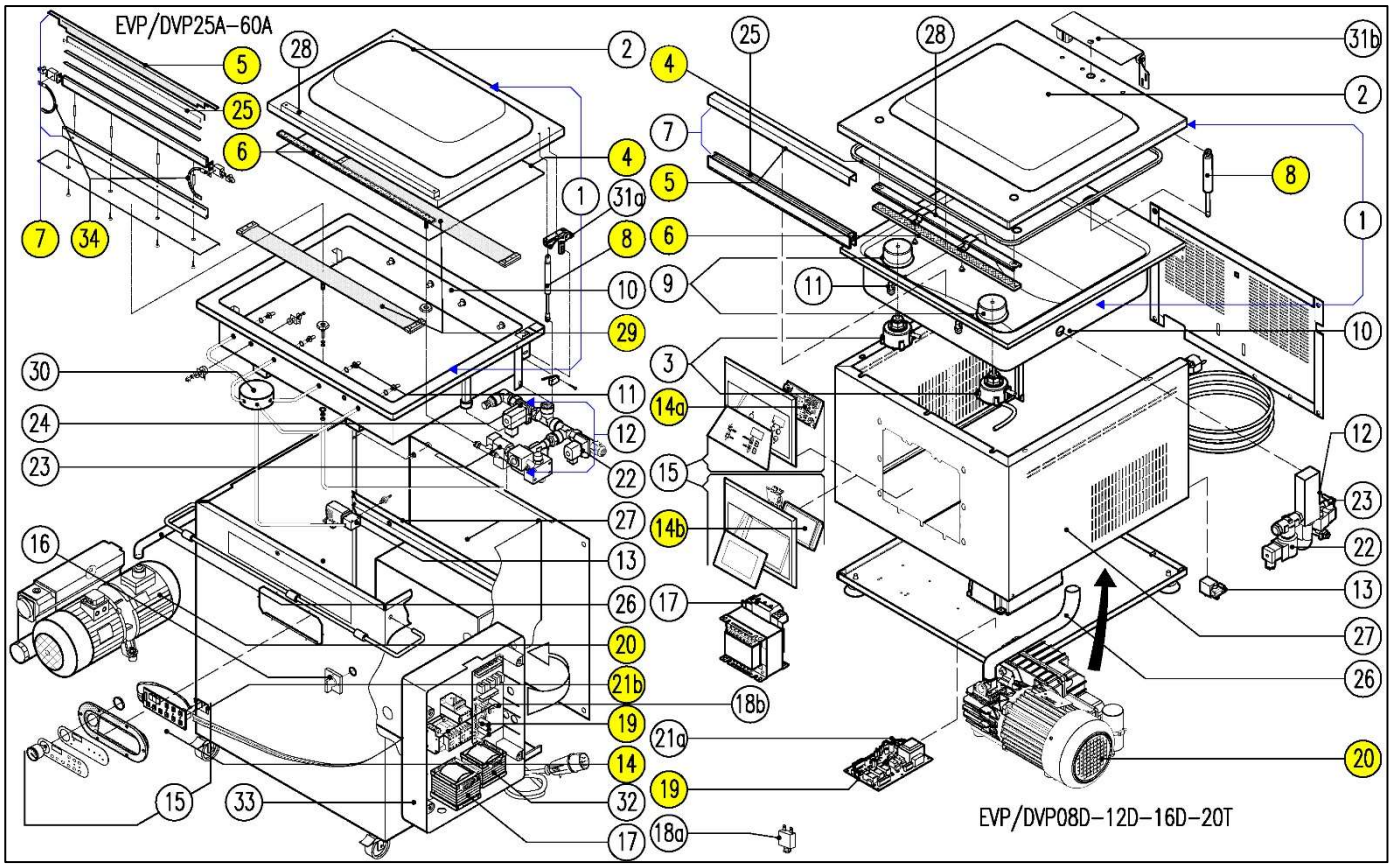


**Fig.1-3: Main components of chamber vacuum packaging machines EVP/DVP25-60A (left) and EVP/DVP08-12-16D/20T (right).**

- ***Electrical system*:** it consists of the wiring, ***a welding transformer* (17),** the ***power transformer* (16)** present in the three-phase EVP / DVP25-60A wheeled versions, ***the electronic power board* (19)** (which can be a "master" - or controller of the control board, or "slave" - i.e. controlled by the control board), ***the 6-key digital command board* (14)** type N059 (EVP/DVP08-12-16D), TFT "Touch screen (EVP / DVP20T) or finally B012 (EVP / DVP25-60A), **assembled in the *dashboard unit* (15).** The ***absolute pressure transducer*(21a)** also known as "*absolute vacuum sensor"*, is mounted on the power boards of the EVP/DVP08-12-16D/20T models. In free-standing models, this sensor is of the *relative* type and is mounted on a separate module, called ***pressure transducer module* (21b).** In the counter-top models, a ***current circuit breaker* (18a)** guarantees safety against overheating of the sealing bar, which is guaranteed by a ***contactor* (18b) in the free-standing models.** The electrical system in the EVP / DVP60A three-phase wheeled version is mounted inside a ***Gewiss watertight box* (33).** The ***main switch*** is mounted frontally on the machine body in the EVP / DVP25-60A wheeled models.
- ***Absolute pressure transducer* (21a, 21b)** or *absolute vacuum sensor*: it is connected to the vacuum system and translates the pressure level measured in the sealer circuit into electrical measurement. In the EVP/DVP08-12-16D/20T table top models it is of the *absolute type*, which therefore does not require calibration as it is independent of atmospheric pressure. It is fitted on the L084 power board. In the EVP / DVP25-60A models, it is instead integrated in a dedicated ***pressure transducer module B063* (21b),** which is mounted on the protective case of the dashboard. It allows the precise regulation of the different stages and levels of vacuum, of discharge and of inert gas injection. In the EVP/DVP08-12-16D/20T models, being of the absolute type, this occurs regardless of the atmospheric pressure (weather and altitude).
- ***Metal enclosure* (27)**: constituted by the base, plating (also called the "*carcase*") that envelops the vacuum chamber and by a rear closing panel. The material used for the enclosure is normally stainless steel sheet metal, with a satin finish for visible parts. All models can be accessed internally by opening the enclosure- tank assembly.


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## 1.2 Functional advantages of vacuum chamber packaging machines: general principles.

In the vacuum chamber packaging machines the ***vacuum is generated inside a rigid and non-deformable chamber***. Since the enclosure fully contains the product and the chamber is hermetically sealed against atmospheric pressure, during air intake the package is not subjected to the progressive crushing caused by the weight of the atmospheric air. It follows that ***one of the two main advantages is the possibility to package liquid products, partially liquid products, or in any case products with a high moisture content***, without these being directly withdrawn by the pump, within specific limits that will be explained below. ***The second significant advantage lies in the possibility of packaging products sensitive to crushing***, replacing the air containing oxygen with a sufficient quantity of inert gas to counteract the atmospheric pressure that presses on the product, once the cycle is completed. ***This is the so-called packaging in a MODIFIED ATMOSPHERE.***
Unlike the so-called ***vacuum packaging machines with external extraction (MAE)***, in which the air is suctioned directly through the mouth of the bag and most of the surface of the latter is exposed to atmospheric pressure, the ***weight of the air, which we remember is equal to 1.033 kg/cm² at sea level***, does not weigh on the bag that surrounds the product and as a result, the liquids and moisture are not pushed towards the pump's suction point. The limit of application lies in the physical principle linking the boiling point of liquids to their temperature and the pressure to which they are subjected. This principle must be taken into account to avoid potential problems subsequently addressed in chapter 2.

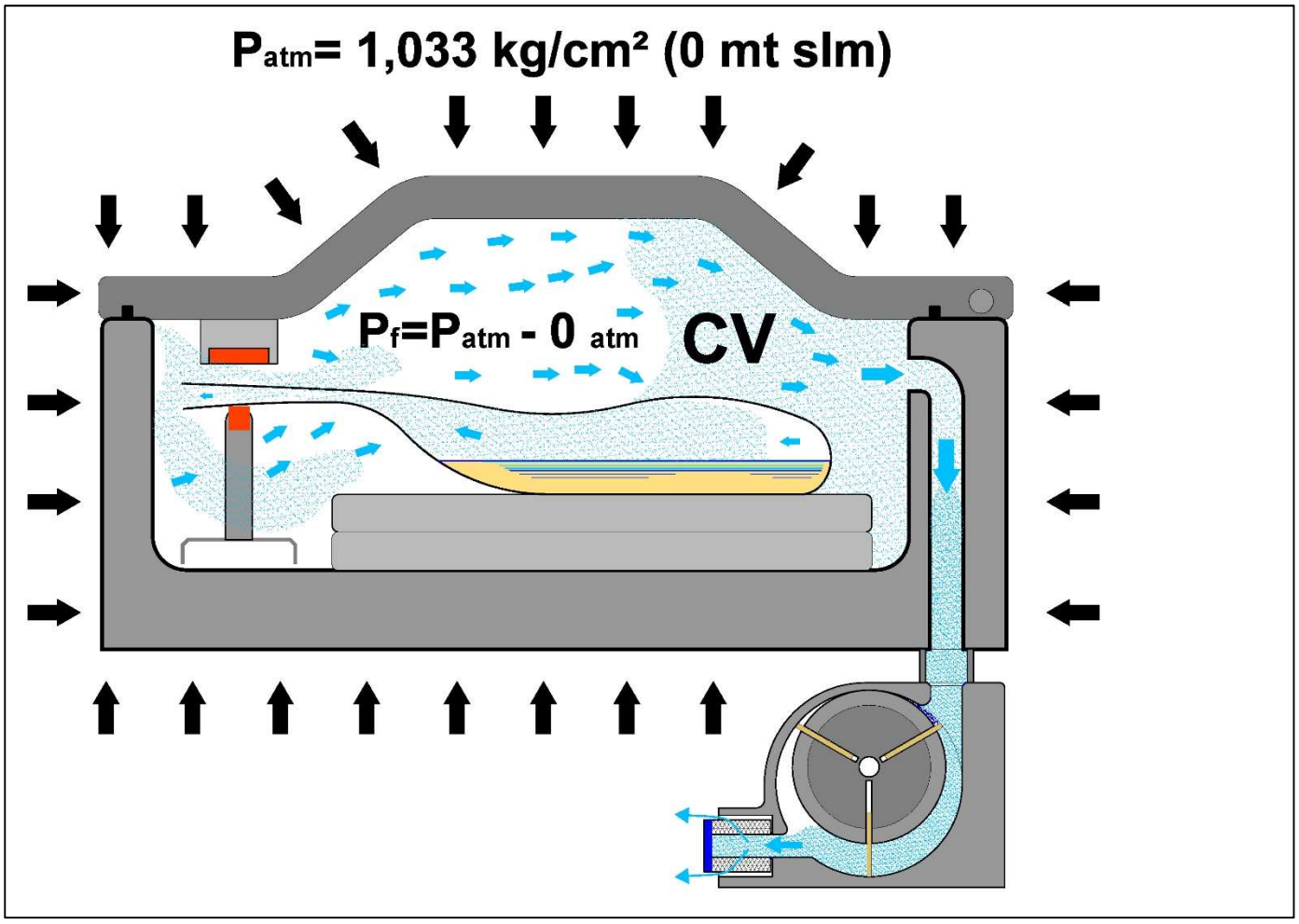


**Fig.4. Principle of atmospheric pressure acting on a non-deformable enclosure: Chamber vacuum sealer**

The primary condition of working inside a rigid chamber, not subject to atmospheric pressure and being able to work with liquid products, has resulted in the achieving of a third, important objective: ***the creation of pulsating cycles***, in which vacuum phases alternate with discharge and pause phases, with the effect of giving the packaged product a certain characteristic or simply, allowing the deaeration of different types of products. ***These cycles, called "Chefs", are critical in cycles such as "Marinade", "Infusion / Flavouring", deaeration of sauces etc.***


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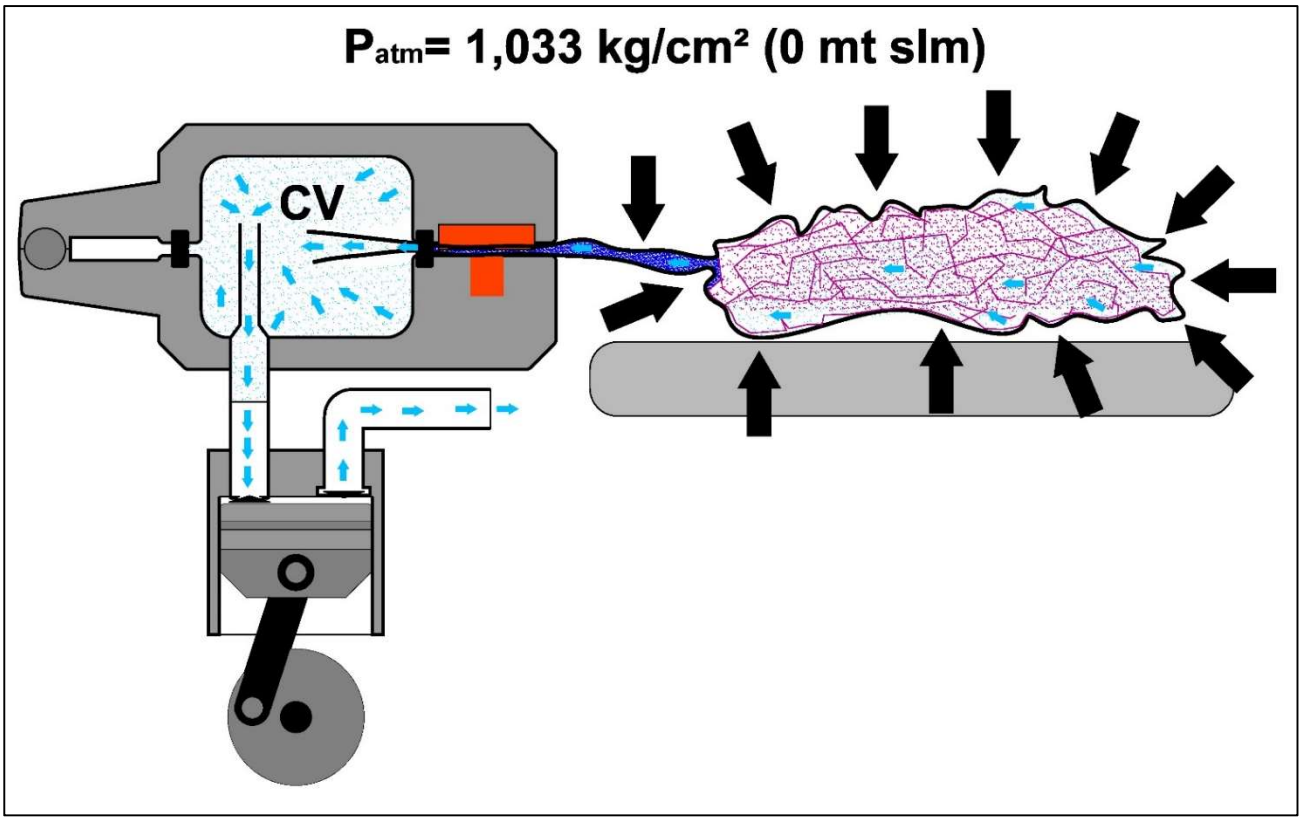


**Fig.5. Principle of atmospheric pressure acting on the product container: External suction sealer**

To the three advantages mentioned above it should be added that the MAE *need* ***bags of the embossed type***, which have a higher cost due to the additional processing of the embossing.

**In summary, the three reasons that justify the use of vacuum chamber packaging machines are:**

1) **Vacuum packaging of liquid products or products characterised by high humidity;**
2) **Vacuum packaging in a modified atmosphere of products sensitive to crushing;**
3) **The performing of special "chef" cycles to give the food particular characteristics (food processing)**




**External suction sealer, with product packaged in an embossed vacuum bag**



**Chamber vacuum sealer, with liquid vacuum packaged on a tilted tray**


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## 1.3 Operating principle of chamber vacuum packaging machines

**Key Figures 6 – 11**

| No. | Description | No. | Description |
|---|---|---|---|
| 1 | Perimeter seal of the vacuum chamber | 2 | Vacuum chamber suction socket |
| 3 | PMMA (Plexiglass) lid. | 4 | tank with product to be vacuum packed. |
| 5 | Counter-pressure profile of the sealing bar in red silicone rubber | 6 | Sealing bar with NiCr resistor |
| 7a | Sealing bar vertical lifting piston (EVP/DVP08-12-16D/20T) | 8 | Cycle start micro-switch |
| 7b | Sub-bar bearing (EVP/DVP25-60A) | | |
| 9 | Oil separator filter fitted on the vacuum pump outlet (it filters and holds in the oil mist) | 10 | Vacuum pump of the rotary blade type, lubricated with oil circulation. |
| 11 | 2-way NC solenoid valve for pump suction shut-off (EVP/DVP20T). | 12 | Inert gas shut-off solenoid valve. |
| 13 | NC three-way solenoid valve for actuating pistons (sealing solenoid valve) | 14 | Solenoid valve unit |
| 15 | NC two-way solenoid valve for the return of air at the end of the cycle (discharge solenoid valve) | 16 | "Gasplus" check valve (increases the percentage of injectable gas) |

**Stage 1: Air evacuation from the vacuum chamber**

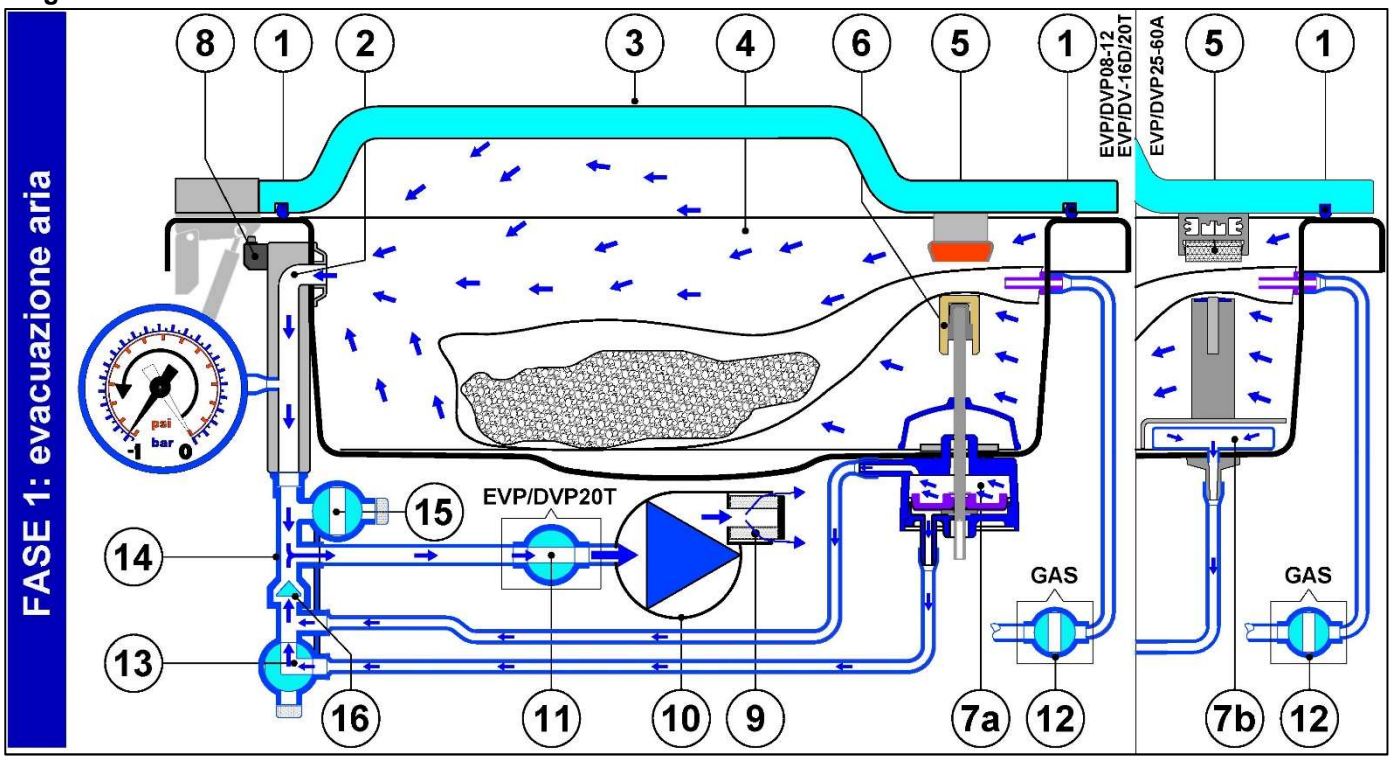


**Fig.6. Stage 1 of the operating cycle**

When the lid is lowered, the microswitch **(8)** activates the cycle and the vacuum pump; **(10)** in the three-phase free-standing Levac models it also activates the suction solenoid valve **(11)**, which will remain open as long as the pump is active. The air is sucked from the vacuum chamber **(4)** through the air intake **(2).** The air flow passes through the collector to which the solenoid valve group is associated **(14).** In this phase, in the EVP/DVP08-12-16D/20T models, the three-way solenoid valve **(13)** of the solenoid valve assembly connects the lower volume of the lifting piston **(7)** to the vacuum circuit, while the upper section is connected downstream of the solenoid valve **(13)**, before the "Gasplus" check valve **(16)**. In the EVP/DVP25-60Amodels, it connects the inflatable under-bar bearing **(7b)** with the vacuum circuit. The drain solenoid valve **(15)** is disabled and closed, like the gas inlet solenoid valve **(12)**.


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**Stage 2: Injection of inert gas**

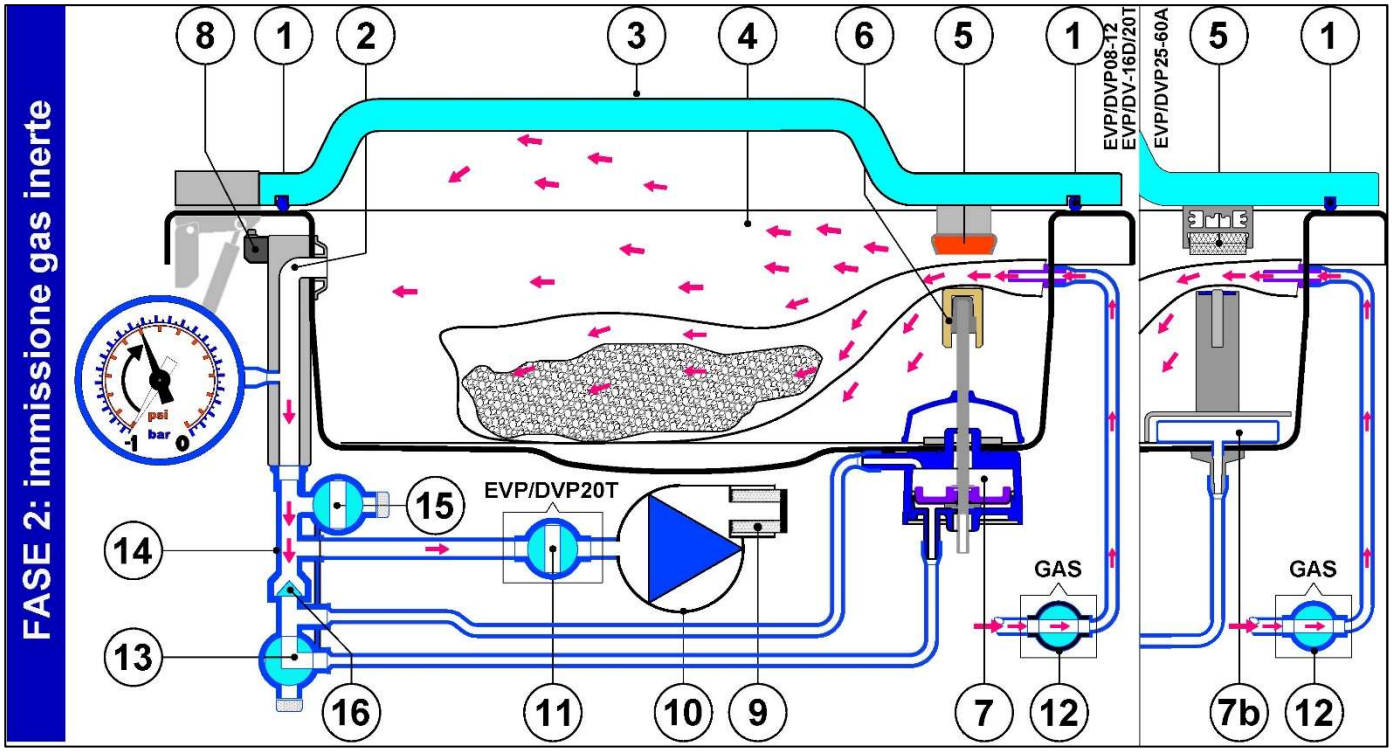


**Fig.7. Stage 2 of the operating cycle**

The injection of inert gas, which is equipped with all models (except the EVP/DVP08 model), if activated is introduced by means of two nozzles, once the vacuum phase has ended with the maximum value being reached. The vacuum pump **(10)** and the suction solenoid valve **(11)** in the EVP/DVP60A model**,** in the gas inlet phase are deactivated. The 3-way sealing solenoid valve **(13)** remains off. When the pump is turned off and the suction solenoid valve is closed, the gas inlet 2-way solenoid valve **(12)** is activated. The quantity of gas injected depends on the percentage of gas programmed and is determined by the absolute type vacuum sensor, which detects the absolute pressure in the vacuum chamber by acting on the solenoid valve management electronics. Pushed to a pressure between 0.5 and 1 bar of the cylinder, the inert gas flows to the vacuum chamber passing through the nozzle, which is positioned inside the mouth of the bag. The peculiarity of the system in the EVP/DVP08-12-16D/20T models lies in the positioning of the check valve **(16)**, which prevents the return of gas into the pistons, which would reduce the pressure variance and consequently the sealing pressure. This device, called "Gasplus", allows regulating the gas up to 90%, a percentage that is much higher than any other model on the market, since it guarantees the maximum pressure variance between the atmospheric pressure and the pressure present in the piston volumes, with the check valve **(16)** which allows the two pistons to serve as "vacuum tanks" **(7),** external and separate from the vacuum chamber and therefore independent of the final pressure (that may be low or high) that will be generated at the end of the inert gas injection phase. For this intrinsic reason, the "Gasplus" device cannot be used in the EVP/DVP25-60A versions which are equipped with a under-bar bearing **(7b)**, since the "vacuum tank", or rather the inflatable sealbag, is positioned inside the vacuum chamber: the sealing pressure is therefore influenced by the higher final pressure, which occurs at the end of the gas injection. If, for example, the gas is regulated at 60% (of the volume of the vacuum chamber), there will be an absolute pressure in the vacuum chamber of 0.4 bar against the 0.9 bar maintained in the pistons equipped with Gasplus. However, the lower sealing pressure is compensated by the larger surface of the under-bar bearing, which in the smaller EVP/DVP25-60A model is about 200 cm². Returning to the example, with an absolute pressure of 0.4 bar (equal to approximately 0.4 atm), we obtain a pressing force of ≈ 0.4 x 200 = 80 kgf, against 20 cm² (diameter of 1 piston) x 2 x ≈ 0.9 = 36 kgf.

To make sure that the bag is not displaced by the gas pressure during the entry phase, the nozzle is fitted with a rubber part applied to the counter-pressure bar, which is fastened to the cover and locks the upper sheet of the bag, keeping it in place. After injection, the gas solenoid valve **(12)** is once again deactivated.


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**Stage 3: Sealing of bag containing product**

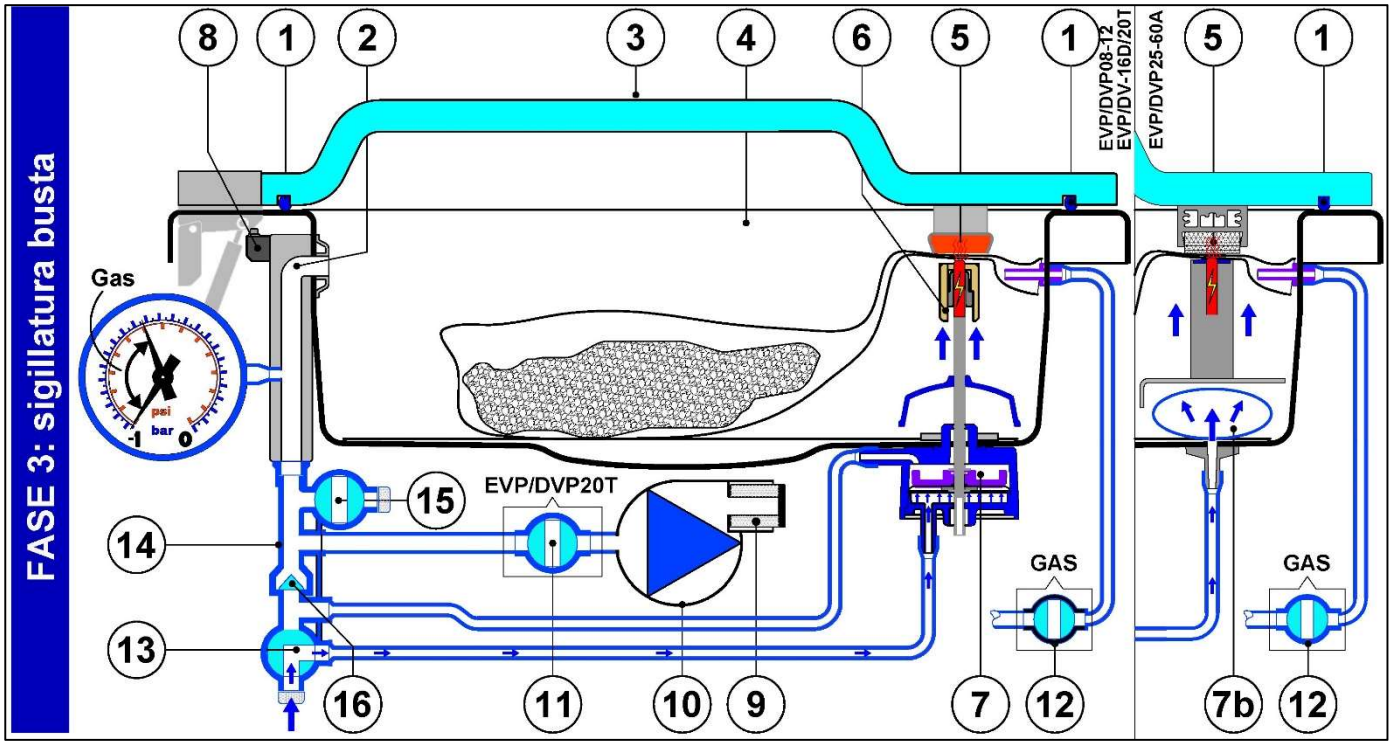


**Fig.8. Stage 3 of the operating cycle**

In a bag vacuum cycle, the vacuum cycle is followed by the sealing of the bag. This phase is skipped in container vacuum cycles. Bag sealing occurs when the pressure sensor detects the vacuum level set for the active cycle. The vacuum pump **(10)** and the suction solenoid valve **(11)** in the three-phase wheeled EVP/DVP60A model are deactivated. In this phase, in the EVP/DVP08-12-16D/20T models, the three-way solenoid valve **(13)** of the solenoid valve assembly **(14),** puts in communication the lower volumes of the two pistons **(7)** with the external environment, which is at atmospheric pressure, causing the sudden lifting of the cylinders inside the piston. The two rods act on the sealing bar, pushing it upwards. The same rods act as conductors and electrical contacts with the sealing bar. In the three-phase EVP/DVP25-60A models the 3-way solenoid valve **(13)** puts in communication the volume of the under-bar bearing **(7b)** with the external environment, which is at atmospheric pressure, causing the sudden swelling of the sealbag itself (consisting of a reinforced flexible membrane). It presses the plate under the bar upwards for its entire length, generating the resulting vertical movement of the sealing bar **(6)**. While the sealing bar is in contact with the silicone rubber counter-pressure profile **(5)**, the Nickel-Chrome resistor that lies on the sealing bar itself, is electrically powered at low voltage (generally 12V) that heats the alloy up to a temperature of about 130 °C, which allows the fusion of the two leaves forming the bag subjected to the pressure exerted by the bearing under the bar **(7).** The discharge solenoid valve **(16)** remains deactivated and therefore closed.


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**Stage 4: Return to the lowered position of the sealing bar after the bag has been sealed**

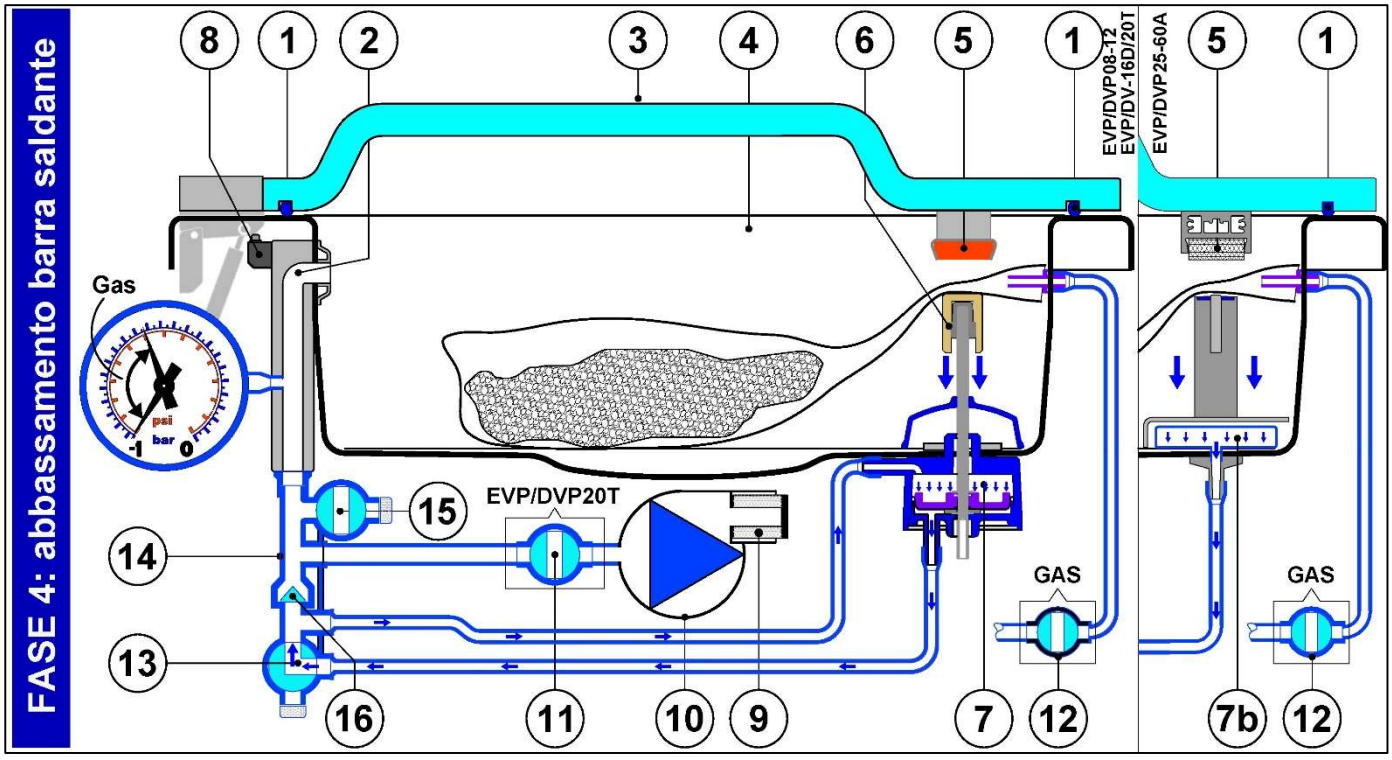


**Fig.9. Stage 4 of the operating cycle**

Once the bag sealing phase has been completed and the nickel-chromium sealing wire has cooled down for a few seconds, the 3-way solenoid valve **(13) ,** in the EVP/DVP08-12-16D/20T models, reconnects the upper volume of the two pistons **(7)** with the vacuum circuit, allowing the lowering of the sealing bar, while in the free-standing models it reconnects the volume of the under-bar bearing **(7b)** with the vacuum circuit, also causing the sealing bar to lower.

**Stage 5: Re-entry of air into the vacuum chamber.**

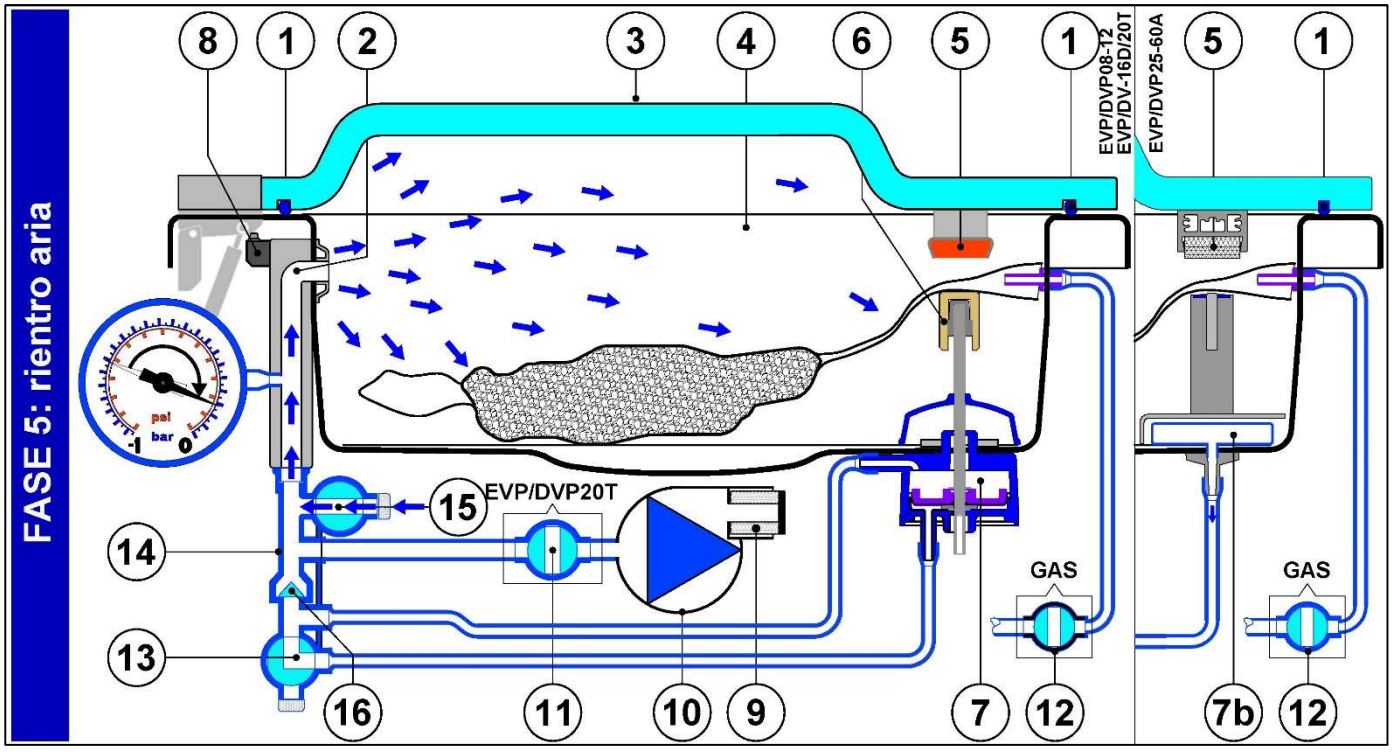


**Fig.10. Stage 5 of the operating cycle**


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Once the sealing bar has lowered, the discharge solenoid valve **(15)** is activated, which allows the return of the air and the restoration of the atmospheric pressure in the vacuum chamber. The two-way solenoid valve **(15)** of the solenoid valve block **(14)** stays open until the pressure inside the vacuum chamber, measured by the sensor, is equal to the atmospheric pressure.

**Stage 6: Lid automatic opening**

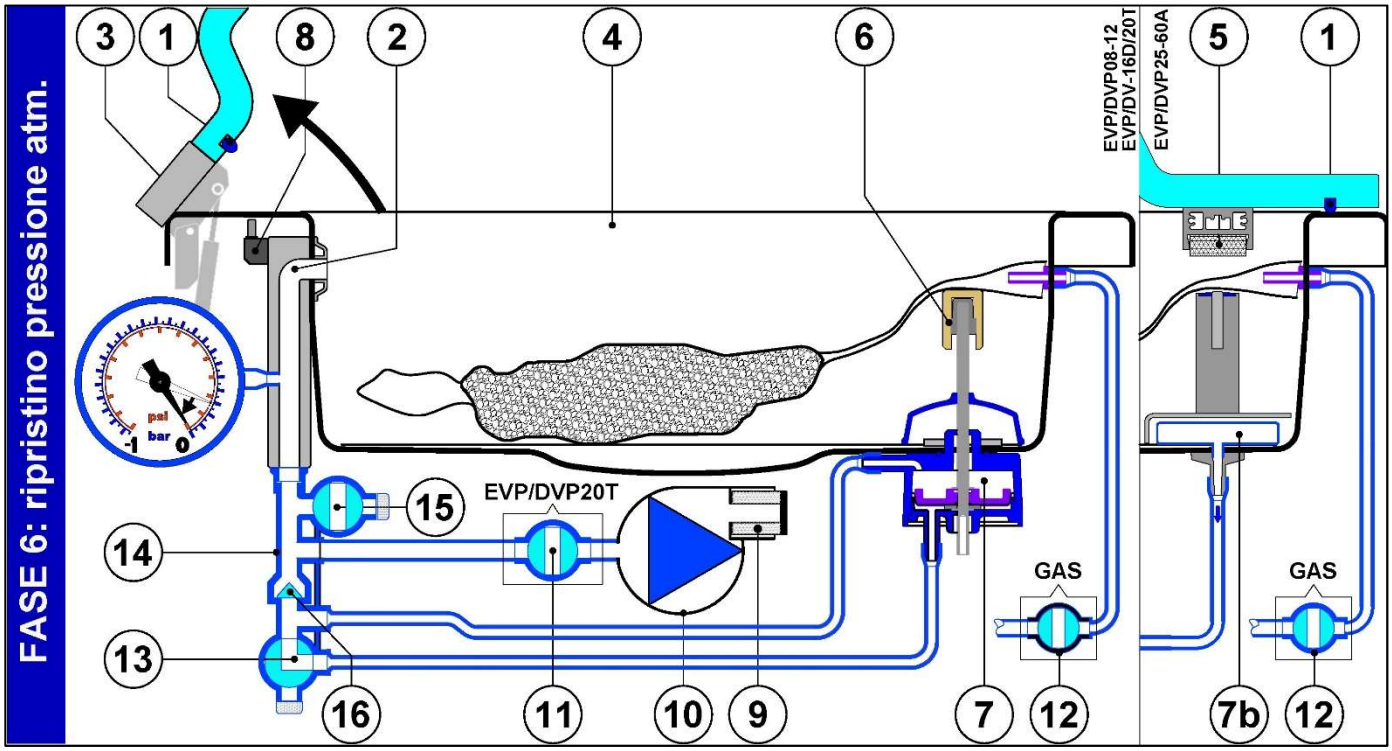


**Fig.11. Stage 6 of the operating cycle**

When the pressures inside and outside the vacuum chamber are equivalent, the lid opens automatically, pushed by the central gas spring in the EVP/DVP08-12-16D/20T models, or by the pair of gas springs in the EVP/DVP25-60A models.


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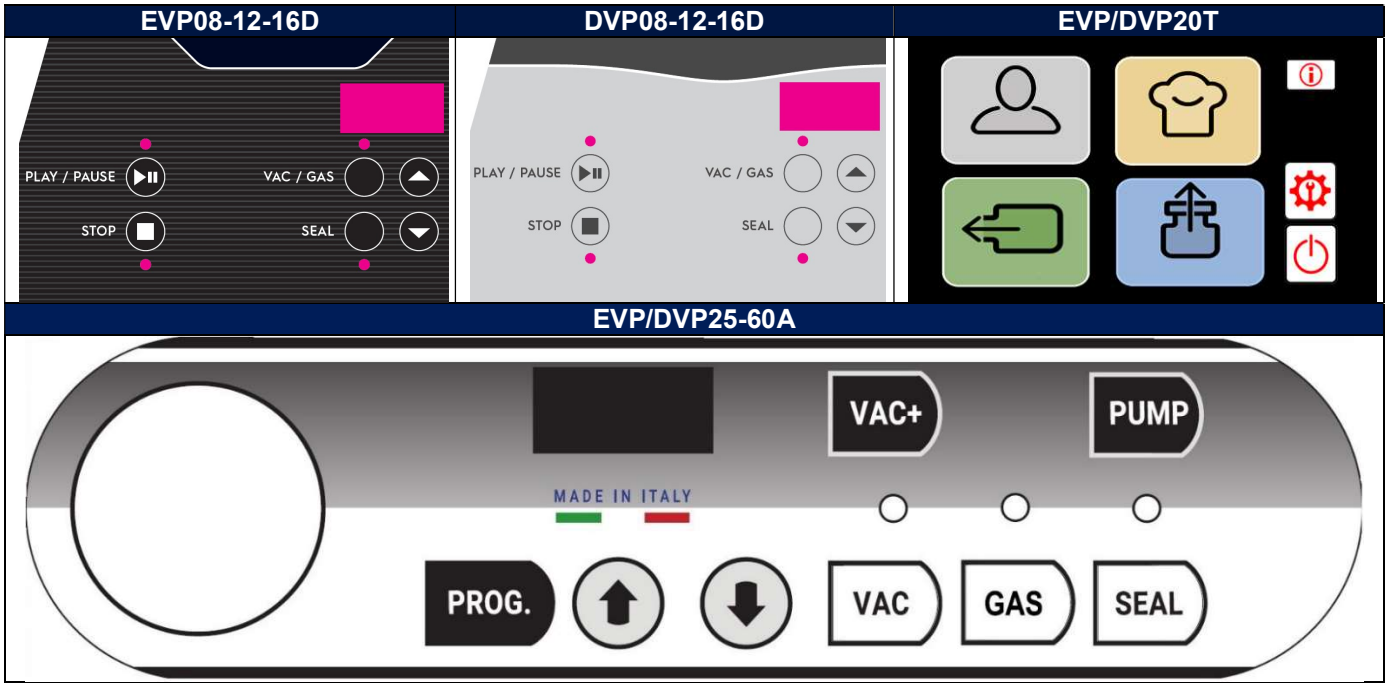
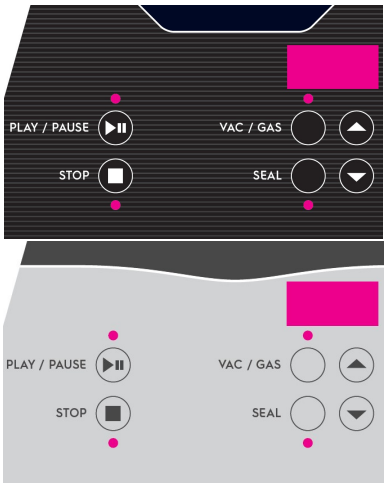
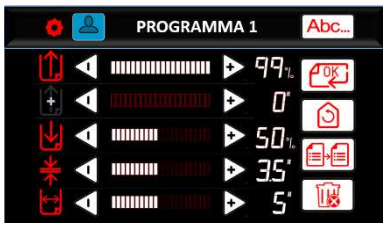
## 1.4 Specific definitions: Technical glossary of the EVP/DVP08-12-16D/20T line functions

The EVP/DVP08-12-16D/20T models are supplied with two types of control panel: 6-button digital and three-digit display and 5" touch screen ("TFT"). The following terms refer to both control panels.




| Term | Meaning |
|---|---|
| **VACUUM FUNCTION**<br>**EVP/DVP08-12-16D**<br><br>**EVP/DVP20T**<br> | All the models are equipped with a thermoplastic dashboard, trapezoidal shape, which contains the N059 6-button control board for the EVP/DVP08-12-16D versions or the 5" TFT Smart display. The N059 board is combined with the L084 power board of the "master" type (here the Firmware resides), while the TFT Smart display is combined with the U084_1 power board, through the display-power communication interface U019. In the TFT version, the software is loaded via the SD card on the TFT itself, while the operating firmware is loaded on the U084 power board. **All versions work with absolute vacuum sensor.**<br><br>**EVP/DVP08-12-16D (digital keyboard, tabletop)**<br>After selecting a program using the UP / DOWN keys, the **VACUUM** parameter is selected using the SEL / OK key and changed with the UP / DOWN keys, with values between 10 and 99%. Once a 99% value has been reached, it is possible to add an additional vacuum time from 0 to 60 seconds.<br><br>**EVP/DVP20T (TFT, table top)**<br>Guided by the same screens that are proposed in sequence, the parameter setting screen is finally reached, within which it is possible to proceed with the variation of the additional vacuum and vacuum level.<br><br>As explained in Chapter 2, the cycle can be considered efficiently concluded if before sealing the final pressure in the chamber has reached a value less than or equal to 10 millibars. This value can be detected by accessing the technical menu and setting the display to millibar.<br>Higher values depend on the decay factors shown in table 3, which in most cases are caused by the presence of moisture in the product that generates water vapour thus creating a barrier that is physically not circumvented when lower pressures are reached (the higher the temperature of the product, the greater the amount of water vapour that forms in the chamber and the lower the final achievable pressure will be). |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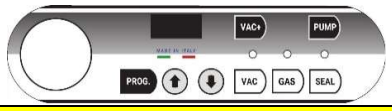
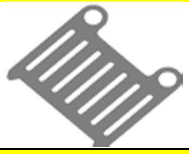
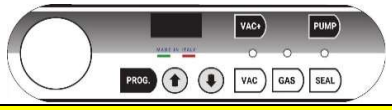
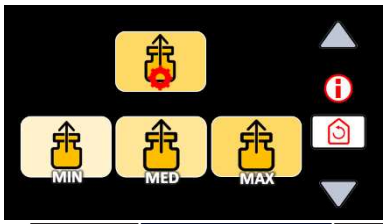
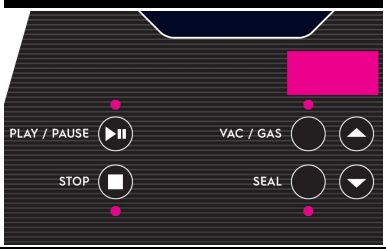
| Term | Meaning |
|---|---|
| <br>**EVP/DVP25-60A**<br> | **EVP/DVP25-60A (wheeled)**<br>The B012 digital control board is assembled inside an oval dashboard and combined with a **relative type pressure transducer (vacuum sensor)**, fitted on a separate electronic module (B063) and connected to the power board. The display is of the three-digit type.<br>As with table models, the vacuum level is expressed as a percentage.<br>When the vacuum is programmed at the maximum (99%) an additional vacuum time expressed in seconds can be programmed by pressing the VAC+ key. |
| **"VACUUM-PACKAGING OF EXTERNAL EMBOSSED BAGS" CYCLE**<br> | For particularly bulky products that can't fit in the vacuum chamber, but which can be contained in a bag whose width is compatible with the length of the sealing bar, using a special accessory ("Easy") supplied with the machine and using embossed type bags, packaging is possible outside the vacuum chamber for dry products, similarly to that which occurs with an external suction sealer (cf. § 1.3). |
| **INERT GAS (GAS) INJECTION CYCLE**<br><br> | A quantity of inert gas is injected for products sensitive to crushing, once the air has been evacuated from the vacuum chamber. The gas is food-grade (usually a mixture of nitrogen and carbon dioxide) which at the end of the cycle occupies a part of the bag volume, thus preventing the bag contents from being crushed. In the table top models, the "Gasplus" system (see §1.3 phase 2) is used to obtain a percentage of gas input up to a maximum of 90%.<br>**EVP/DVP20T** have three pre-set **MIN / MED / MAX gas inlet programs**, with gas pre-set to 30, 40 and 50% respectively.<br><br>The **EVP/DVP25-60A** wheeled models allow a maximum gas percentage of 69% to be reached. |
| **VACUUM CYCLE FOR CONTAINERS (JARS)**<br><br> | These are vacuum cycles in which the sealing phase is excluded, as the vacuum is generated inside special containers fitted with covers with valves, which prevent the return of air inside them. They are used to package products that are sensitive to crushing (fresh pasta, leafy products, soft fruit, soft cheese, etc.) or liquid products (sauces, salsas, soups, etc.).<br><br>The **EVP/DVP20T models** have **three pre-set "Jar" programs,** which can be accessed from the main menu.<br><br>In the **EVP/DVP08-12-16D models** with digital key controls, the Jar program is accessible by selecting it with the UP and DOWN keys. The value of the vacuum to be reached can be programmed using the VAC / GAS key.<br><br>The "PUMP" key in the **EVP/DVP25A** model activates the vacuum phase to vacuum containers inside the vacuum chamber, while in the **EVP/DVP60A model it** activates the "Pump always on" function. |
| **PRE-SET CYCLES ("GOURMET" CYCLES)** | The**EVP/DVP20T** models are **equipped with four specific *food processing*** cycles, in addition to the usual pre-set programs "Preservation" and "Cooking".<br><br>The following are named according to the product family to be packaged: **Powders and spices, Marinade in bags, Marinade in container, meat sauces and sauces.** The succession of vacuum, gas inlet and sealing phases |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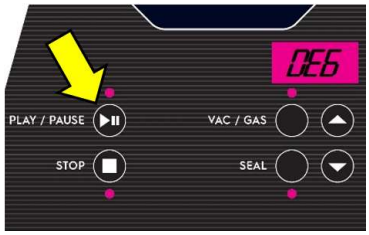
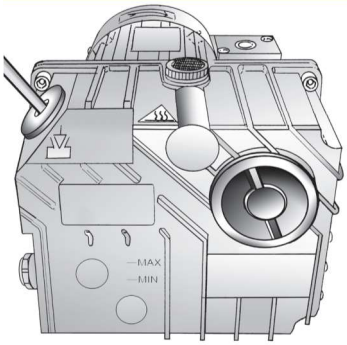
| Term | Meaning |
|---|---|
|  | take into account the generic characteristics of these types of products and the packaging at the correct core temperature of the product, equal to 3°C. |
| **DE-AERATION (DEGAS)**<br><br><br> | Function aimed at maximizing the suction of air from the core of the product, mainly intended for vacuum cooking: it alternates vacuum and pause phases, to allow the total discharge of air from the inner layers of the product.<br><br>This function, called ***"Deaeration"*** is defined in the **EVP/DVP08-12-16D/20T control panels** with the term ***"Degas".***<br><br>The **EVP/DVP08-12-16D** models are equipped with a single Degas cycle, in which the vacuum ramp and the engaged pause are decided by the user, by pressing the "Play/Pause" button. The final vacuum level to be reached is programmable.<br><br>The **EVP/DVP20T** is equipped with **five specific Degas / Deaeration cycles** programmable in 8 ramps, for each of which the vacuum level to be reached and the pause time to be inserted between one ramp and the next is programmable.<br><br>Suitable for chefs who are familiar with this type of de-aerations and want to program their own automatic program.<br><br>In this case, monitoring of the process is necessary to prevent the leakage of product from the bag. |
| **SEALING STRENGTH (SEAL)**<br> | It allows adjusting the sealing strength (i.e. the duration of resistor ignition) to the bag thickness and material, as well as to the intensity of use of the machine (after many successive cycles, it may be necessary to reduce the strength to avoid burning of sealing cord). |
| **SOFTAIR (EVP/DVP20T)**<br> | The Airsoft function is activated by opening a solenoid valve with a smaller orifice than the normal discharge solenoid valve. The slow return of the air in the vacuum chamber after bag sealing allows packaging delicate products or products with sharp edges (e.g., hard cheeses, speck, ham, ribs, etc.), avoiding damage to the bag due to a rapid return to atmospheric pressure. |
| **VACUUM PUMP**<br> | It is the mechanical component that generates the vacuum. These are lubricated oil circulating pumps. The oil is necessary to obtain the hermetic seal between the rotor blades and the internal surfaces of the pump body during the vacuum process, while simultaneously reducing friction. |
| **SEALING BAR** | This device allows the hermetic sealing of the bag at the end of the cycle and consists of a supporting structure made of technopolymer, an insulating layer in vetronite and a NiCr resistor connected to the electrical contacts inserted in the two heads of the bar (B).<br>In the table top models, it is driven by two pistons, in the wheeled models by a under-bar bearing, as explained in detail in § 1.3. |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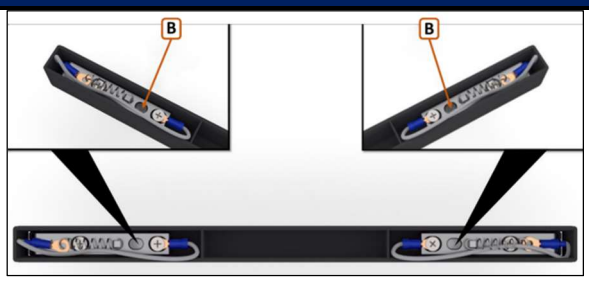
| Term | Meaning |
|---|---|
|  |   |
| **VACUUM CHAMBER**  | It is the closed and air-tight volume in which the vacuum packaging cycle takes place. It is accessible via a transparent removable lid. |
| **PUMP OIL DE-HUMIDIFICATION CYCLE**   | It is a maintenance cycle of the vacuum pump, to be carried out when the pump has a drop in performance (see §.2.2 and 2.3). This occurs due to the suction of water vapour and liquids of different kinds, which, by condensing inside the pump during idleness, can oxidise the internal parts. The cycle involves heating pump and oil, in order to let any aqueous part to evaporate. |
| **PUMP ON CONTINUOUSLY FUNCTION**   | The three-phase wheeled model **EVP/DVP60A is** equipped with the "Pump always inserted" function, which allows the pump oil to be kept empty always at full speed, reducing the risk of faults described in detail in chap. 2. |
| **PA/PE VACUUM BAGS** **(for preservation)** | Intended for food preservation, they feature an oxygen barrier comprising an outer polyamide (PA) layer and an internal polyethylene (PE) sealing layer. Commonly available bags have a thickness of 90 microns. If used for vacuum cooking, they resist at no more than 100°C for up to 15 minutes. |
| **OPA/PP VACUUM BAGS** **(for vacuum cooking)** | They are intended for vacuum cooking and preservation, and are not permeable to oxygen for long periods thanks to its polyamide (PA) layer. They feature a polypropylene (PP), rather than polyethylene (PE) sealing layer, which makes them more resistant to heat. Generally, they have a thickness of 75 microns.<br>They can withstand a temperature of no more than 121°C for 30 minutes or 100°C for 4 hours. |
| **VACUUM COOKING (SOUS-VIDE)** | Culinary technique that involves cooking vacuum-packed products, possibly prepared and / or seasoned beforehand, at low temperatures: for a wide range of food the temperature is between 55 and 65 °C. |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## 1.5 Technical data

### 1.5.1 Electrolux EVP08/12/16D

| Electrolux PROFESSIONAL | |  |  |  |
|---|---|---|---|---|
| **Factory description** | | **Vacuum packer 8m³/h table top** | **Vacuum packer 12m³/h table top** | **Vacuum packer 16m³/h table top** |
| **PNC** | | 602178 | 602179 | 602180 |
| **Factory model** | | **EVP08D** | **EVP12D** | **EVP16D** |
| **Brand** | | **Electrolux Professional** | **Electrolux Professional** | **Electrolux Professional** |
| **Power supply** | **V** | 220-240V / 50-60Hz / 1Ph+N+PE | 220-240V / 50-60Hz / 1Ph+N+PE | 220-240V / 50-60Hz / 1Ph+N+PE |
| **Power** | **Kw** | 0.6 | 0.7 | 0.8 |
| **Max current** | **A** | 2.6 | 3.04 | 3.47 |
| **Programs** | **#** | 10+2 | 10+3 | 10+2 |
| **editable user programs** | **#** | 10 | 10 | 10 |
| **cycle for vacuum containers** | **#** | 1 | 1 | 1 |
| **deaeration cycle** | **#** | / | 1 | / |
| **oil dehumidification cycle** | **#** | 1 | 1 | 1 |
| **Pump** | **m³** | 8 | 12 | 16 |
| **Pump denom.** | | DVP LB8 | DVP LC12 | DVP MD16 |
| **Pump oil** | **lt** | 0.2 | 0.35 | 0.4 |
| **Vacuum** | **%** | 99.8 | 99.8 | 99.8 |
| **UI** | | digital | Digital | Digital |
| **Sealing bar** | | frontal | frontal | Frontal |
| **Sealing bar length** | **mm** | 310 | 310 | 410 |
| **Cover** | | domed | domed | domed |
| **Cover material** | | PMMA (plexiglas) | PMMA (plexiglas) | PMMA (plexiglas) |
| **Soft-Air** | | NO | NO | NO |
| **real chamber size** | **mm** | 334x351xh170 | 434x343xh175 | 440x448xh170 |
| **chamber volumes** | **lt.** | 14.1 | 19 | 25.2 |
| **useful chamber size** | **mm** | 289x347xh130 | 382x343xh135 | 387x448x130 |
| **filling tables** | **No.** | 2 | 2 | 3 |
| **filling tables dimension** | **mm** | 280x250 | 420x310 | 420x310 |
| **gas nozzle for** | **nr** | / (no gas) | 2 | 2 |
| **Chamber depth** | **mm** | 130 | 130 | 130 |


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## 1.5.1 Electrolux EVP08/12/16D

| Electrolux PROFESSIONAL | |  |  |  |
|---|---|---|---|---|
| **Factory description** | | **Vacuum packer 8m³/h table top** | **Vacuum packer 12m³/h table top** | **Vacuum packer 16m³/h table top** |
| **PNC** | | 602178 | 602179 | 602180 |
| **Factory model** | | **EVP08D** | **EVP12D** | **EVP16D** |
| **Brand** | | **Electrolux Professional** | **Electrolux Professional** | **Electrolux Professional** |
| **Machine dimensions (open cover)** | **mm** | 425x479xh669 | 415x587xh798 | 531x594xh790 |
| **Machine dimensions (closed cover)** | **mm** | 425x479xh374 | 415x587xh437 | 531x594xh440 |
| **Weight (net/gross)** | **Kg** | 35.5 | 46.5 | 61 |
| **Noise** | **db** | 58 | 62 | 65 |
| **Plug type** | | SCHUKO (CEE 7/7) | SCHUKO (CEE 7/7) | SCHUKO (CEE 7/7) |
| **Power cord** | **mt.** | 2 | 2 | 2 |

## 1.5.2 Electrolux EVP20T / EVP25A / EVP60A

| Electrolux PROFESSIONAL | |  |  |  |
|---|---|---|---|---|
| **Factory description** | | **Vacuum packer 20m³/h table top** | **Vacuum packer 25m³/h on wheels** | **Vacuum packer 60m³/h on wheels** |
| **PNC** | | 602181 | 602182 | 602183 |
| **factory model** | | **EVP20T** | **EVP25A** | **EVP60A** |
| **Brand** | | **Electrolux Professional** | **Electrolux Professional** | **Electrolux Professional** |
| **Power supply** | **V** | 220-240V / 50-60Hz / 1Ph+N+PE | 220-240V/ 50-60Hz / 1Ph+N+PE | 400V / 50-60Hz / 3 Ph+N+PE |
| **Power** | **Kw** | 0.9 | 1.2 | 1.5 |
| **Max current** | **A** | 3.91 | 5.2 | 3.75 |
| **Programs** | **#** | 10+17 | 10+1 | 10+1 |
| **editable user programs** | **#** | 10 | 10 | 10 |
| **cycle for vacuum containers** | **#** | 3 | / | / |


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## 1.5.2 Electrolux EVP20T / EVP25A / EVP60A

| | |  |  |  |
|---|---|---|---|---|
| **Factory description** | | **Vacuum packer 20m³/h table top** | **Vacuum packer 25m³/h on wheels** | **Vacuum packer 60m³/h on wheels** |
| **PNC** | | 602181 | 602182 | 602183 |
| **factory model** | | **EVP20T** | **EVP25A** | **EVP60A** |
| **Brand** | | **Electrolux Professional** | **Electrolux Professional** | **Electrolux Professional** |
| **deaeration cycle** | **#** | 9 | / | / |
| **oil dehumidification cycle** | **#** | 1 | 1 | 1 |
| **Pump** | **m³** | 20 | 25 | 60 |
| **Pump denom.** | | DVP LC20 | DVP LC25 | DVP LC60 |
| **Pump oil** | **lt** | 0.45 ÷ 0.50 | 0.7 ÷ 1.0 | 1 ÷ 1.5 |
| **Vacuum** | **%** | 99.8 | 99.95 | 99.95 |
| **UI** | | Touch screen (TFT 5") | | |
| **Sealing bar** | | frontal | frontal | frontal |
| **Sealing bar length** | **mm** | 410 | 455 | 2x620 |
| **Cover** | | domed | domed | domed |
| **Cover material** | | pmma (plexiglas) | PMMA (plexiglas) | PMMA (plexiglas) |
| **Soft-Air** | | YES | NO | NO |
| **real chamber size** | **mm** | 440x448xh170 | 556X492Xh175 | 536x650xh200 |
| **chamber volumes** | **lt.** | 25.2 | 37.5 | 61 |
| **useful chamber size** | **mm** | 387x448x130 | 500x492x110 | 430x545xh130 |
| **filling tables** | **No.** | 3 | 3 | 3 |
| **filling tables dimension** | **mm** | 420x310 | 460x440 | 620x390 (1)<br>620x335 (2) |
| **gas nozzle for** | **nr** | 2 | 2 | 4+4 |
| **Chamber depth** | **mm** | 130 | 110 | 130 |
| **Machine dimensions (open cover)** | **mm** | 531x594xh790 | 607x692x1458 | 772x682x1455 |
| **Machine dimensions (closed cover)** | **mm** | 531x594xh440 | 607x692x1002 | 772x682x1034 |
| **Weight (net/gross)** | **Kg** | 62 | 115.5 | 168.5 |
| **Noise** | **db** | 65 | 57 | 66 |
| **Plug type** | | SCHUKO (CEE 7/7) | SCHUKO (CEE 7/7) | THREE-PHASE PLUG (IEC 60309) 3P+E |
| **Power cord** | **mt.** | 2 | 2 | 3 |


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## 1.5.3 Dito Sama DVP08/12/16D

| | |  |  |  |
|---|---|---|---|---|
| **Factory description** | | **Vacuum packer 8m³/h table top** | **Vacuum packer 12m³/h table top** | **Vacuum packer 16m³/h table top** |
| **PNC** | | 602184 | 602185 | 602186 |
| **factory model** | | **DVP08D** | **DVP12D** | **DVP16D** |
| **Brand** | | **Dito Sama** | **Dito Sama** | **Dito Sama** |
| **Power supply** | **V** | 220-240V / 50-60Hz / 1Ph+N+PE | 220-240V / 50-60Hz / 1Ph+N+PE | 220-240V / 50-60Hz / 1Ph+N+PE |
| **Power** | **Kw** | 0.6 | 0.7 | 0.8 |
| **Max current** | **A** | 2.6 | 3.04 | 3.47 |
| **Programs** | **#** | 10+2 | 10+3 | 10+2 |
| **editable user programs** | **#** | 10 | 10 | 10 |
| **cycle for vacuum containers** | **#** | 1 | 1 | 1 |
| **deaeration cycle** | **#** | / | 1 | / |
| **oil dehumidification cycle** | **#** | 1 | 1 | 1 |
| **Pump** | **m³** | 8 | 12 | 16 |
| **Pump denom.** | | DVP LB8 | DVP LC12 | DVP MD16 |
| **Pump oil** | **lt** | 0.2 | 0.35 | 0.4 |
| **Vacuum** | **%** | 99.8 | 99.8 | 99.8 |
| **UI** | | digital | Digital | Digital |
| **Sealing bar** | | frontal | frontal | Frontal |
| **Sealing bar length** | **mm** | 310 | 310 | 410 |
| **Cover** | | domed | domed | domed |
| **Cover material** | | PMMA (plexiglas) | PMMA (plexiglas) | PMMA (plexiglas) |
| **Soft-Air** | | NO | NO | NO |
| **real chamber size** | **mm** | 334x351xh170 | 434x343xh175 | 440x448xh170 |
| **chamber volumes** | **lt.** | 14.1 | 19 | 25.2 |
| **useful chamber size** | **mm** | 289x347xh130 | 382x343xh135 | 387x448x130 |
| **filling tables** | **No.** | 2 | 2 | 3 |
| **filling tables dimension** | **mm** | 280x250 | 420x310 | 420x310 |
| **gas nozzle for** | **nr** | / (no gas) | 2 | 2 |
| **Chamber depth** | **mm** | 130 | 130 | 130 |
| **Machine dimensions (open cover)** | **mm** | 425x479xh669 | 415x587xh798 | 531x594xh790 |


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## 1.5.3 Dito Sama DVP08/12/16D

| | | | | |
|---|---|---|---|---|
| | |  |  |  |
| **Factory description** | | **Vacuum packer 8m³/h table top** | **Vacuum packer 12m³/h table top** | **Vacuum packer 16m³/h table top** |
| **PNC** | | 602184 | 602185 | 602186 |
| **factory model** | | **DVP08D** | **DVP12D** | **DVP16D** |
| **Brand** | | **Dito Sama** | **Dito Sama** | **Dito Sama** |
| **Machine dimensions (closed cover)** | **mm** | 425x479xh374 | 415x587xh437 | 531x594xh440 |
| **Weight (net/gross)** | **Kg** | 35.5 | 46.5 | 61 |
| **Noise** | **db** | 58 | 62 | 65 |
| **Plug type** | | SCHUKO (CEE 7/7) | SCHUKO (CEE 7/7) | SCHUKO (CEE 7/7) |
| **Power cord** | **mt.** | 2 | 2 | 2 |

## 1.5.4 Dito Sama DVP20T / DVP25A / DVP60A

| | | | | |
|---|---|---|---|---|
| | |  |  |  |
| **Factory description** | | **Vacuum packer 20m³/h table top** | **Vacuum packer 25m³/h on wheels** | **Vacuum packer 60m³/h on wheels** |
| **PNC** | | 602187 | 602188 | 602189 |
| **factory model** | | **DVP20T** | **DVP25A** | **DVP60A** |
| **Brand** | | **Dito Sama** | **Dito Sama** | **Dito Sama** |
| **Power supply** | **V** | 220-240V / 50-60Hz / 1Ph+N+PE | 220-240V/ 50-60Hz / 1Ph+N+PE | 400V / 50-60Hz / 3 Ph+N+PE |
| **Power** | **Kw** | 0.9 | 1.2 | 1.5 |
| **Max current** | **A** | 3.91 | 5.2 | 3.75 |
| **Programs** | **#** | 10+17 | 10+1 | 10+1 |
| **editable user programs** | **#** | 10 | 10 | 10 |
| **cycle for vacuum containers** | **#** | 3 | / | / |
| **deaeration cycle** | **#** | 9 | / | / |


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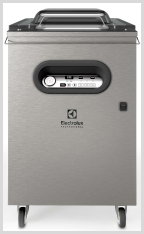
## 1.5.4 Dito Sama DVP20T / DVP25A / DVP60A

| | |  |  |  |
|---|---|---|---|---|
| **Factory description** | | **Vacuum packer 20m³/h table top** | **Vacuum packer 25m³/h on wheels** | **Vacuum packer 60m³/h on wheels** |
| **PNC** | | 602187 | 602188 | 602189 |
| **factory model** | | **DVP20T** | **DVP25A** | **DVP60A** |
| **Brand** | | **Dito Sama** | **Dito Sama** | **Dito Sama** |
| **oil dehumidification cycle** | **#** | 1 | 1 | 1 |
| **Pump** | **m³** | 20 | 25 | 60 |
| **Pump denom.** | | DVP LC20 | DVP LC25 | DVP LC60 |
| **Pump oil** | **lt** | 0.45 ÷ 0.50 | 0.7 ÷ 1.0 | 1 ÷ 1.5 |
| **Vacuum** | **%** | 99.8 | 99.95 | 99.95 |
| **UI** | | Touch screen (TFT 5") | | |
| **Sealing bar** | | frontal | frontal | frontal |
| **Sealing bar length** | **mm** | 410 | 455 | 2x620 |
| **Cover** | | domed | domed | domed |
| **Cover material** | | pmma (plexiglas) | PMMA (plexiglas) | PMMA (plexiglas) |
| **Soft-Air** | | YES | NO | NO |
| **real chamber size** | **mm** | 440x448xh170 | 556X492Xh175 | 536x650xh200 |
| **chamber volumes** | **lt.** | 25.2 | 37.5 | 61 |
| **useful chamber size** | **mm** | 387x448x130 | 500x492x110 | 430x545xh130 |
| **filling tables** | **No.** | 3 | 3 | 3 |
| **filling tables dimension** | **mm** | 420x310 | 460x440 | 620x390 (1)<br>620x335 (2) |
| **gas nozzle for** | **nr** | 2 | 2 | 4+4 |
| **Chamber depth** | **mm** | 130 | 110 | 130 |
| **Machine dimensions (open cover)** | **mm** | 531x594xh790 | 607x692x1458 | 772x682x1455 |
| **Machine dimensions (closed cover)** | **mm** | 531x594xh440 | 607x692x1002 | 772x682x1034 |
| **Weight (net/gross)** | **Kg** | 62 | 115.5 | 168.5 |
| **Noise** | **db** | 65 | 57 | 66 |
| **Plug type** | | SCHUKO (CEE 7/7) | SCHUKO (CEE 7/7) | THREE-PHASE PLUG (IEC 60309) 3P+E |
| **Power cord** | **mt.** | 2 | 2 | 3 |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# 2. The heart of the appliance: the vacuum pump

## 2.1 General concepts

The heart of the device **is the vacuum pump**.
This is the component in charge of removing the air and therefore **its efficiency plays an important role in the resulting preservation** on par with the initial product quality, the hygienic conditions in which processing and packaging occurs, the presence of light, etc.
In terms of after-sales service, **it is without a doubt the component requiring the most attention, expressed through proper use of the machine and accurate, regular maintenance**, particularly if we consider that, given the increasing popularity of the Sous Vide cooking culture, **this type of device has now become part of the basic equipment in restaurants and the HORECA sector in general, representing the most technically severe and testing environment for these types of machines.**

As explained in the first chapter, we are speaking about **rotary vane vacuum pumps with oil circulating lubrication**: European manufacturers of these types of vacuum pumps adhere to essentially equivalent levels of quality, and use generally similar constructive solutions.
No manufacturer – based on current technical knowledge - has yet been able to satisfactorily and definitively resolve the problem we will illustrate below, nor is it likely to ever be possible, **given the physical principles on which it is based are unchangeable and not even the use of highly expensive materials would completely resolve the issue**.

For this reason, starting from the installation stage, it is essential to provide correct and exhaustive information and customer training, in order to prevent operational faults due to misuse.

It is more or less common, during day-to-day use, for products to be vacuum packaged **at inappropriate temperatures, that is, higher than 3°C, or in any case at temperatures such that not only the air, but also a considerable part of the moisture contained therein is sucked out in the form of aqueous vapour.**

The diagram of the boiling temperature of water associated with pressure clearly shows how quickly aqueous vapour is formed:

**WATER AT A PRESSURE OF 23.4 MILLIBAR (ABSOLUTE) (CORRESPONDING TO A 97.66% VACUUM) BOILS AT 20°C!**

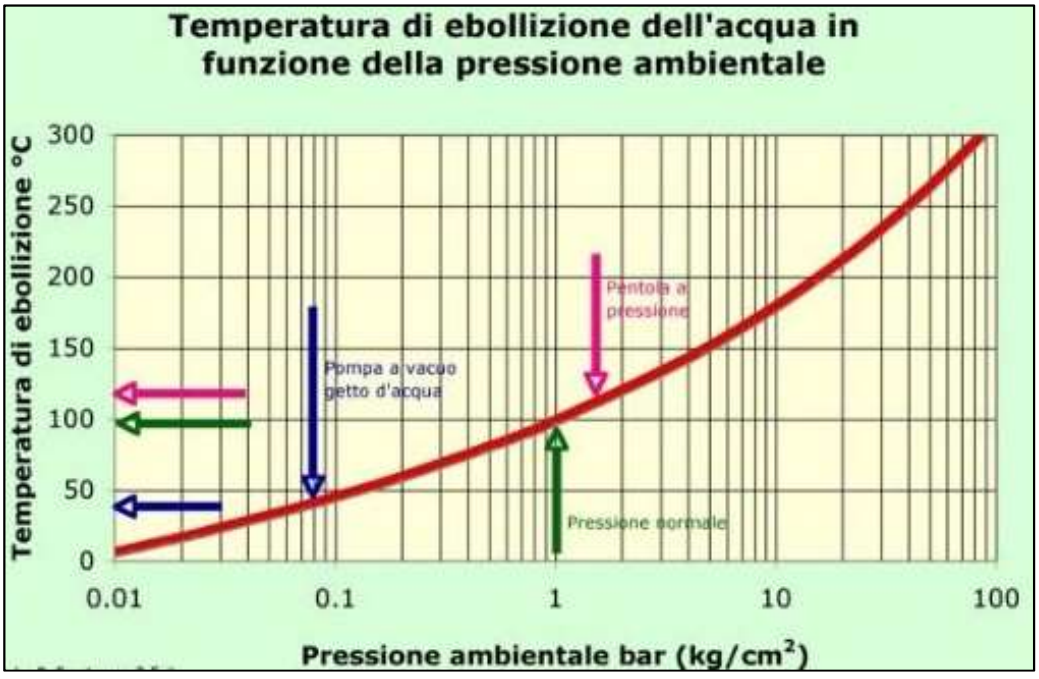


**Fig.13 H2O temperature/pressure diagram**


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In addition to reducing the efficiency of preservation due to the increased proliferation of many types of bacteria, the growth of which increases as the temperature rises, this misuse of the device ***generates aqueous vapour suction***, which condenses as soon as the internal surfaces of the pump body start to cool. Consequently, during the frequent periods of non-use, which may be more or less long, the internal surfaces of the pump are oxidised, in the most severe cases causing the blockage of the rotor and/or vanes.




**8m³/h pumps, 1 month of use**



**60m³ / h pump, 3 months of use**

**Oxidation usually causes the pumps to block: in this case, a complete overhaul or even replacement might be necessary that may be costly.**
First of all, it is necessary for the product distribution and sales network to be informed about the issue and to transfer the following recommendations and warnings to end users:

**1) ALWAYS PACK THE PRODUCT WHEN COLD, CHILLED TO A TEMPERATURE ≤ 3°C.**
**The hotter the product, the more its shelf life is reduced (due to the growth of bacteria) and condensation forms inside the pump, generated by the evaporation of the liquid/ wet portion of the product to be vacuum-packed.**

**2) PERFORM THE PUMP OIL DEHUMIDIFICATION CYCLE (H2OUT) at least once a day and always after one or more gourmet cycles or cycles with wet liquids/products.**

**3) IN THE TRIVASE EVP/DVP60A WHEELED MODEL it is advisable to work with the "pump inserted continuously" function.**

**4) CARRY OUT ROUTINE MAINTENANCE REGULARLY, INCLUDING CHANGING THE OIL AND THE OIL FILTER OF THE PUMP at least at intervals of 12 months or less, if the type of use (Ho.re.ca sector) requires it.**

**5) BAG VOLUME/PRODUCT VOLUME RATIO such as to prevent product leakage: 2/3 for solid products; 1/3 for liquid or solid-liquid products**


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## 2.2 Factors that define the drop in performance of the vacuum pump

The efficiency of the pump - and the consequent vacuum level that can be reached in the vacuum chamber - depends on the following factors, listed n the table below by degree of severity and frequency of occurrence:

| Degree | Performance worsening factor | Final pressure that may be reached | Event probability | Remedy |
|---|---|---|---|---|
| **1a** | **Moisture of food / liquids in a vacuum chamber** | 30-20 millibar | **Medium-high:** packaging of moist or liquid foods at Temperatures between 20 and 30°C inclusive. | **Perform a number of H2OUT cycles up to Fp ≤ 10 millibar** |
| **1b** | **Moisture of food / liquids in a vacuum chamber** | 50-30 millibar | **Medium-high:** packaging of moist or liquid foods at Temperatures between 30 and 40°C inclusive. | **Perform a number of H2OUT cycles up to Pf ≤ 10 millibar; if warranted, replace oil and exhaust filter (and oil filter for 60-106m³/h pumps)** |
| **2** | **Pump clogged with liquids and impurities** | ≥ 50 millibar | **Medium-high:** packaging of moist or liquid foods at Temperatures greater than 40°C | **Oil and exhaust filter replacement (and oil filter for 60-106m³/h pumps), or, if warranted, pump overhaul** |

**Table 3 Factors adversely affecting vacuum chamber performance**

**The vacuum chamber packaging machine can be considered efficient when the following parameters complied with at the ambient temperature of 15-25°C and atmospheric pressure P≥1000 millibar:**

1) **Final pressure reached in the vacuum chamber: Fp ≤ 10 millibar.**
2) **Maximum pressure variation in the vacuum chamber with the pump off (check for circuit leaks): maximum 5 millibar in 30 seconds or 10 millibar in 60 seconds.**

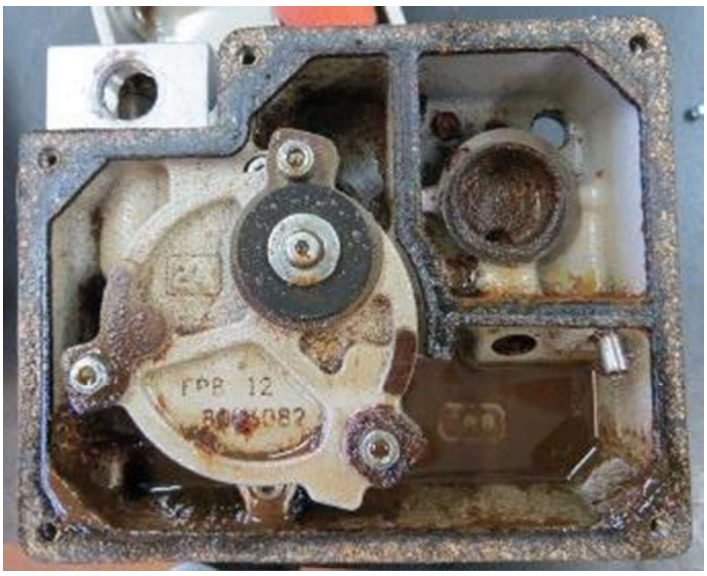



**Fig.14 8m³/h pump oil tank**


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# 3. Transportation and installation

## 3.1 Product acceptance, unpacking. Collection and shipment for repair

### 3.1.2 Acceptance and unpacking of vacuum sealer

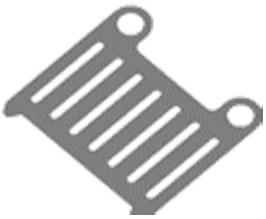
- Pay particular attention to staples, nails, rivets, sharp edges or anything else that may be potentially hazardous for the packaging.
- When the package is received, **check that it is intact, promptly informing the courier or transport operator of any anomalies, shortcomings or evident damage;** in any case, this notification must be made prior to performing any other handling or unpacking operations.
- **Check the contents:** the following accessories must be included in the packaging and/or in the vacuum chamber:



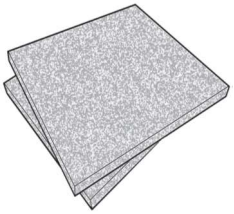

**Instructions for use and maintenance**



**Power cord**



**"Easy Flat " for vacuum in external embossed bags**



**PE shelves**



**Bag samples**

- The packaged device must be stored in a protected place suitable for such scope, **which is dry, sheltered and not exposed to atmospheric agents.** The intended storage place must have a temperature between 5°C and 40°C and a relative humidity value not exceeding 80%. Water and aqueous vapour must be kept at a due distance from the storage location.
- **If possible, store the packaging integral and in a dry place for future needs.**
- **Insofar as retailers, unpacking should be supervised at the user premises.** If the package has been sent directly to the end user, advise them not to open the package, to store it in accordance with the above instructions and wait for you for its installation. **DO NOT leave this to the initiative of the end customer!**

### 3.1.3 Collection and shipment for repair to the manufacturer: RMA form.

**Documentation:**

If the packaging machine is to be returned to the manufacturer Orved by the Electrolux Service Centres (for repair, warranty repair, replacement, etc.), the **Authorised Goods Return (RMA) form must be attached to the package,** which will be sent by email to the reference centre, subsequently completed by the latter and inserted into the machine.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**INSTALLATION AND WARRANTY ACTIVATION FORM (FOR VACUUM CHAMBER MACHINES)**

To obtain the right to the warranty, this report must be completed in its entirety and a copy emailed to ORVED SpA at the address assistenza@orved.it.
When completing the report, please refer to current legislation and the indications outlined in the instruction manual.

| Model | Serial number (see data plate on the rear): |
|---|---|
| | |

**Installed at** (fill in legibly or apply company stamp)
Name / Company / Business

Street name

City Postcode Province

| **Tested by:** (fill in legibly or apply company stamp) | **Installation date:** |
|---|---|
| Authorised technician's surname and name | |

**Authorised technical support centre:**
(Name and/or company stamp)

**As technician/Orved SpA authorised support centre, states that all the entries in this test and installation report have been checked, that the equipment has been installed according to the instructions provided by Orved SpA and that the staff, designated to use it, have been trained on the correct use and correct and routine maintenance of the equipment.**

**Before starting the installation and testing, please carefully read the use and maintenance manual and refer to the technical data and any indications given in the various sections.**

| | | |
|---|---|---|
| 1 | **Unpacking.** Does the material match the order, did it arrive intact and are all the accessories present? **Any notes:** | ☐ Yes ☐ No |
| 1.1 | The instruction manual and quick start guide have been given to the customer | ☐ Yes ☐ No |
| 2 | **Environmental conditions.** The minimum temperature in the place of installation is 10°C and there is adequate air exchange. | ☐ Yes ☐ No |
| 3 | **Electrical system check.** Does the electrical system meet the electrical specifications indicated on the data plate of the packaging machine and does it comply with current standards (circuit breaker, earthing)? | ☐ Yes ☐ No |
| 4 | **Ventilation.** Is machine ventilation guaranteed by a gap of at least 10 cm on all four sides and are all the ventilation holes free and unobstructed? | ☐ Yes ☐ No |
| 5 | **Initial machine check.** Is the pump oil level halfway up the inspection window, maximum 2/3 of its height? | ☐ Yes ☐ No |

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**INSTALLATION AND WARRANTY ACTIVATION FORM (FOR VACUUM CHAMBER MACHINES)**

| | | |
|---|---|---|
| 5.1 | Is the vacuum chamber clean and dry? | ☐ Yes ☐ No |
| 5.2 | If the gas option is available and the cylinder tube Ø10 has been connected, has the gas pressure has been adjusted on the cylinder pressure regulator to 0.5-1 bar? | ☐ Yes ☐ No |
| 5.3 | Before calibrating the vacuum sensor (if present), was the pump oil heated by running 2-3 empty cycles? Was the vacuum sensor calibrated with all the shelves in the chamber? | ☐ Yes ☐ No |
| 5.5 | Were at least five complete cycles with bags carried out successfully? | ☐ Yes ☐ No |
| 6 | **Fundamental principles to protect the machine's integrity.** Has the need to package only products cooled to 3°C been explained and never products which are at room temperature, except for dehydrated products that are totally dry? | ☐ Yes ☐ No |
| 6.1 | Has the need to carry out the dehumidification cycle of the H2OUT pump oil on a daily/weekly/monthly basis, depending on the work and the type of packaged product, or daily if the machine is used in the kitchen, been explained? | ☐ Yes ☐ No |
| 6.2 | Have the routine programmed maintenance interventions, i.e. replacing the pump oil, teflon and gaskets if worn, been explained? | ☐ Yes ☐ No |
| 7 | **Training. All the following functions and usage methods have been explained.** Pre-heating the pump oil before starting the service. Programming the vacuum cycle: vacuum/gas, pre-sealing and cycle interruption. | ☐ Yes ☐ No |
| 7.1 | Choice and use of chef cycles (where present). | ☐ Yes ☐ No |
| 7.2 | Vacuum with external channelled bags and vacuum in containers. | ☐ Yes ☐ No |
| 7.3 | Use of accessories and optional items, where present (date stamp, shelf for liquids, etc.). | ☐ Yes ☐ No |
| 7.4 | How and when to clean the tank and cover; maintaining good hygienic conditions. | ☐ Yes ☐ No |
| 8 | **The user has registered the machine on the website www.orvedservice.it** | ☐ Yes ☐ No |

**ACCEPTANCE OF EQUIPMENT:** (fill in legibly or apply company stamp)

The undersigned.....

In the role of.....

**takes delivery of the appliance and declares that he/she has received all the instructions necessary for its use and its routine maintenance, from the authorised Orved technician, in compliance with the product specifications and the use and maintenance manual. He/she also declares that the equipment is fully functional, at the time of signing this report.**

I also authorise the processing of personal data pursuant to Italian law 196/03.

**Place, date and signature**_____

**Fig.15. Front / back of the return form for goods authorised to the manufacturer (RMA)**

**Logistical issues:**

As shown above, we recommend re-using the original packaging, if it has been kept intact and in good condition. Instruct customers to pack the appliance in a sturdy triple wave cardboard box and to fix it by means of a stretch film or two strap turns to a pallet that is as big as or larger than the box. Affix a sheet on the box with the notice “arrows pointing upwards” and “DO NOT FLIP SEAL - MACHINE CONTAINS OIL”.

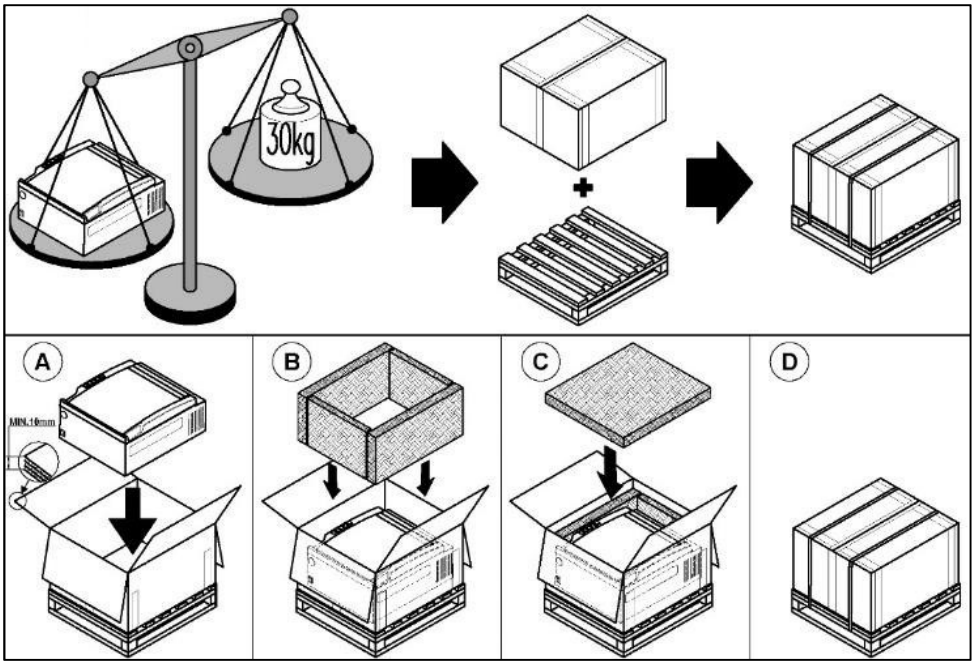


**Fig. 16 Proper packaging diagram**


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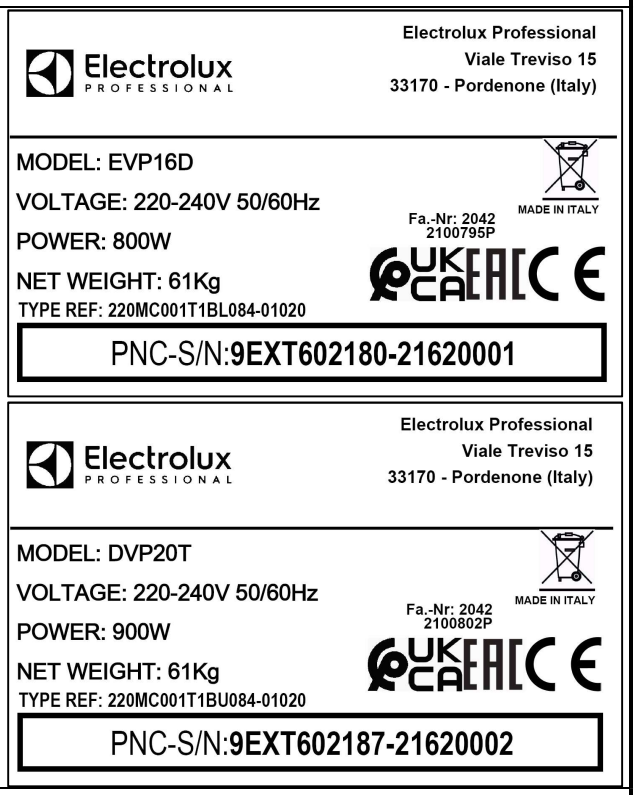
## 3.2 Installation

**Once the purchase contract is concluded, the installation allows establishing a direct rapport with the most important customer, because it is in this initial phase that most of the future customer-service relationship is defined!**

The installation must pass through the following 10 points, to be complied with as accurately as possible. It is the simplest and cheapest way to prevent possible breakdowns or defects that, as statistics indicate, result in more than 80% of cases to misuse (or lack of awareness of proper use by kitchen staff not present at the installation, but who will use the appliance on a daily basis).

| N. | Step |
|---|---|
| 1 | **Unpacking.** See 3.1.2. |
| 2 | **Check the environmental conditions: room temperature and ventilation.** The room temperature of the workplace **must be between 10°C and 35°C**. There must be a suitable air exchange in the place of installation. The air humidity should not exceed 80%. |
| 3 | **Inspection of the electrical system.** The customer's electrical system must be suitable for the electrical characteristics indicated on the vacuum sealer's data plate.<br>• Check for the presence of a differential switch (circuit breaker).<br>• Check for proper grounding and the quality of the electrical socket or electrical panel.<br>• Check absorption and voltage with an ammeter/voltmeter. The voltage should be stable at 230V throughout the country, except for some areas of the islands where voltage fluctuations are more frequent.<br>• Verify suitable distance from water (taps, etc.) and heat sources (plates, hobs and ovens).<br>• **EVP60A Model: Verify the motor rotation direction.** Make sure that the lid is and remains lowered at the start and during a cycle. |
| 4 | **Worktop stability and ventilation.**<br>• Place the machine on a horizontal and stable surface that is suitable for the load.<br>• The appliance must be positioned with 10 cm clearance on all four sides.<br>• The ventilation slots must be kept free and unobstructed in order to maintain the pump temperature at normal levels.<br>• The appliance must be positioned so that access is possible from all sides.<br>It should not obstruct passages, escape or service routes to and from the machine. Do not position the appliance in front of exits or emergency doors.<br>• The ventilation slots must be kept free and unobstructed in order to maintain the pump temperature at normal levels.<br>• For wheeled appliances, lock the front wheels with the brake. |





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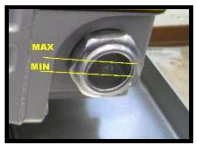
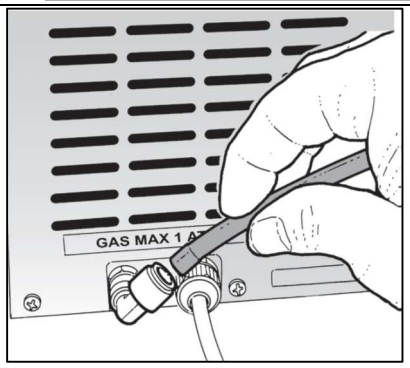
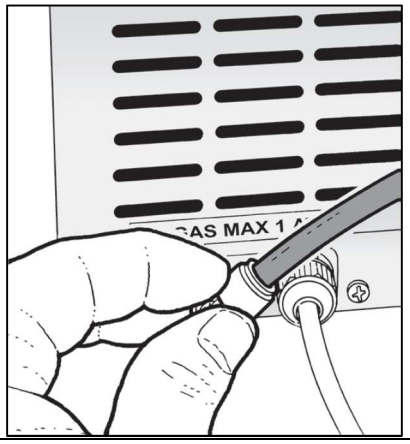
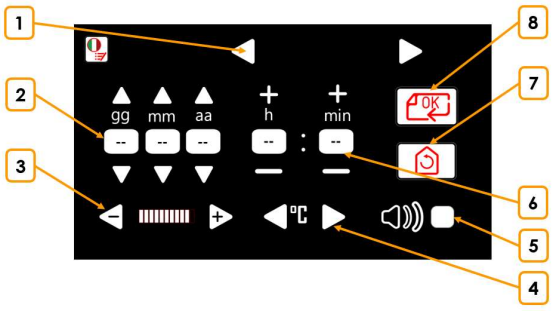
| N. | Step | |
|---|---|---|
| 5 | **Check the level of oil in the pump.**<br>• Check the correct level through the hole on the back or side, as indicated, or on the cover of the pump oil tank.<br>• The ideal level corresponds to the peep-hole centreline, at most 2/3 of the height.<br> |  |
| 6 | **Connect the inert gas injection system**<br>Connect the Ø10 tube of the cylinder to the coupling on the back of the packaging machine.<br>After completing the installation with the following items from 6) to 12), adjust the gas pressure: open the gas cylinder by means of the main valve and reset the pressure using the pressure reducer control valve, supplied with the gas cylinder. Set up a work cycle with active gas. During the gas injection phase, adjust the pressure between 0.5 and 1 bar through the pressure reducer control valve. After adjustment and after each work shift close the gas cylinder using the main valve, not the control valve.<br>  | <br> |
| 7 | **Cleaning the vacuum chamber.**<br>Clean vacuum chamber and lid using a soft cloth dampened with drinking water. Do not use aggressive detergents, scouring pads, scrapers or abrasive, acidic or aggressive substances.<br>• Remove shelves.<br>• Extract the sealing bar raising it at the same time at both ends.<br>• Clean tank and lid and dry thoroughly when finished. |  |
| 8 | **EVP/DVP20T: Set up the machine settings.**<br>The machines are normally supplied with the language in use in the destination country of the device. Should you wish to choose another language from those available (Italian, English, Spanish, French and German), in addition to setting the date, time and temperature units, proceed as follows:<br>• Turn on the machine and press the symbol:<br><br>• Access the technical menu → User Menu → Settings. |  |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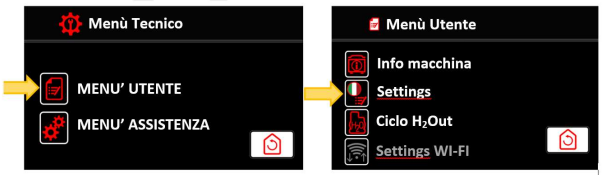
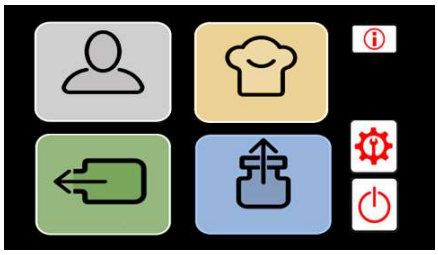
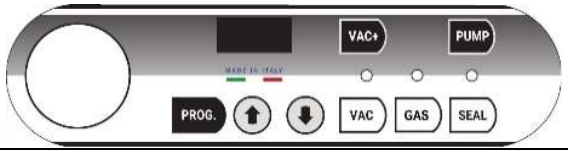
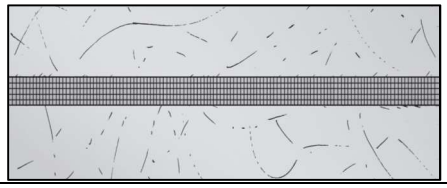
| N. | Step | |
|---|---|---|
| |  | <table><tr><th>No.</th><th>DESCRIPTION</th></tr><tr><td>1</td><td>Allows selecting the language</td></tr><tr><td>2</td><td>Allows setting the date (dd / mm / yyyy)</td></tr><tr><td>3</td><td>Allows setting the brightness of the display</td></tr><tr><td>4</td><td>Allows selecting the temperature unit</td></tr><tr><td>5</td><td>Allows activation of the buzzer</td></tr><tr><td>6</td><td>Allows setting the time (hh: mm)</td></tr><tr><td>7</td><td>Returns to the previous screen, without saving the modified value</td></tr><tr><td>8</td><td>Saves the set value and return to the previous screen</td></tr></table> |
| **9** | **Pump oil heating.**<br>In particular, if the environment is cold or the vacuum sealer has been idle for a long time at temperatures below 12°C, start it to heat the pump oil and keep the pump on for about three minutes.<br><br>**EVP/DVP08-12-16D:** turn on the machine. Select the H2OUT cycle. Lower the lid: the cycle is activated. Repeat the cycle twice.<br><br>**EVP/DVP20T:** turn on the machine. Select the H2OUT cycle. Lower the lid: the cycle is activated. Repeat the cycle twice.<br><br>**EVP/DVP25-60A:** turn on the machine. Select the H2OUT cycle. Lower the lid: the cycle is activated. Stop the cycle after 5 minutes. | <br><br> |
| **10** | **Perform a few complete vacuum packaging cycles for bags, with food or dry product.**<br>Leave the factory default (99% vacuum and 5" of additional vacuum). Check the quality of the seal (clean seal point, without burns or melting) and the degree of vacuum in the bag. |  |
| **11** | **Inform the client of the exact use of the appliance, with specific reference to the use and requirements of the client themselves.**<br>**Training should be offered to at least one manager (owner, chef, etc.) and of course, to the staff who will use the appliance the most.**<br>Illustrate all the functions, none excluded, and provide information on the most trivial or seemingly obvious procedures or functions.<br><br>**Take all the time necessary to underline the importance of breaking down the product at 3°C, to perform the H2OUT cycle on a daily basis, making it run if possible daily at the end of the work shift and in any case even after a series of Gourmet cycles, in particular if heavy use is suspected.** |  |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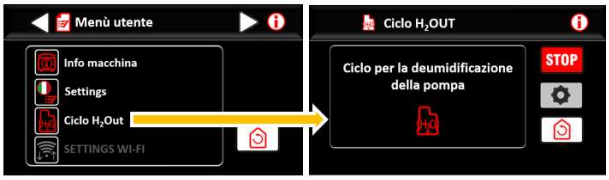
| N. | Step | |
|---|---|---|
| | **It is particularly important to illustrate the operation and start-up of the H2OUT pump drying cycle, which can be selected using the UP / DOWN cursor keys (Idea 30/40/31/41) or by accessing the user menu (EVP/DVP20T) and is stated when the cover is lowered.**   |  |

### 3.2.1 Installation and Warranty activation form

Ideally correct installation should be attested by a document that can be defined as a "Test Report", to be signed by the end customer and by the technician who carries out the installation. The report lists all the points required for correct installation: in this way, the technician can follow the individual points step by step, without neglecting anything.

REV.03
Page 1 of 2

**INSTALLATION AND WARRANTY ACTIVATION FORM (FOR VACUUM CHAMBER MACHINES)**

To obtain the right to the warranty, this report must be completed in its entirety and a copy emailed to ORVED SpA at the address assistenza@orved.it.
When completing the report, please refer to current legislation and the indications outlined in the instruction manual.

| **Model** | **Serial number** (see data plate on the rear): |
|---|---|
| | |

**Installed at** (fill in legibly or apply company stamp)
Name / Company / Business

Street name

City Postcode Province

| **Tested by:** (fill in legibly or apply company stamp) | **Installation date:** |
|---|---|
| Authorised technician's surname and name | |

**Authorised technical support centre:**
(Name and/or company stamp)

**As technician/Orved SpA authorised support centre, states that all the entries in this test and installation report have been checked, that the equipment has been installed according to the instructions provided by Orved SpA and that the staff, designated to use it, have been trained on the correct use and correct and routine maintenance of the equipment.**

**Before starting the installation and testing, please carefully read the use and maintenance manual and refer to the technical data and any indications given in the various sections.**

| | | |
|---|---|---|
| 1 | **Unpacking.** Does the material match the order, did it arrive intact and are all the accessories present? **Any notes:** | ☐ Yes ☐ No |
| 1.1 | The instruction manual and quick start guide have been given to the customer | ☐ Yes ☐ No |
| 2 | **Environmental conditions.** The minimum temperature in the place of installation is 10°C and there is adequate air exchange. | ☐ Yes ☐ No |
| 3 | **Electrical system check.** Does the electrical system meet the electrical specifications indicated on the data plate of the packaging machine and does it comply with current standards (circuit breaker, earthing)? | ☐ Yes ☐ No |
| 4 | **Ventilation.** Is machine ventilation guaranteed by a gap of at least 10 cm on all four sides and are all the ventilation holes free and unobstructed? | ☐ Yes ☐ No |
| 5 | **Initial machine check.** Is the pump oil level halfway up the inspection window, maximum 2/3 of its height? | ☐ Yes ☐ No |

REV.03
Page 2 of 2

**INSTALLATION AND WARRANTY ACTIVATION FORM (FOR VACUUM CHAMBER MACHINES)**

| | | |
|---|---|---|
| 5.1 | Is the vacuum chamber clean and dry? | ☐ Yes ☐ No |
| 5.2 | If the gas option is available and the cylinder tube Ø10 has been connected, has the gas pressure has been adjusted on the cylinder pressure regulator to 0.5-1 bar? | ☐ Yes ☐ No |
| 5.3 | Before calibrating the vacuum sensor (if present), was the pump oil heated by running 2-3 empty cycles? Was the vacuum sensor calibrated with all the shelves in the chamber? | ☐ Yes ☐ No |
| 5.5 | Were at least five complete cycles with bags carried out successfully? | ☐ Yes ☐ No |
| 6 | **Fundamental principles to protect the machine's integrity.** Has the need to package only products cooled to 3°C been explained and never products which are at room temperature, except for dehydrated products that are totally dry? | ☐ Yes ☐ No |
| 6.1 | Has the need to carry out the dehumidification cycle of the H2OUT pump oil on a daily/weekly/monthly basis, depending on the work and the type of packaged product, or daily if the machine is used in the kitchen, been explained? | ☐ Yes ☐ No |
| 6.2 | Have the routine programmed maintenance interventions, i.e. replacing the pump oil, teflon and gaskets if worn, been explained? | ☐ Yes ☐ No |
| 7 | **Training. All the following functions and usage methods have been explained.** Pre-heating the pump oil before starting the service. Programming the vacuum cycle: vacuum/gas, pre-sealing and cycle interruption. | ☐ Yes ☐ No |
| 7.1 | Choice and use of chef cycles (where present). | ☐ Yes ☐ No |
| 7.2 | Vacuum with external channelled bags and vacuum in containers. | ☐ Yes ☐ No |
| 7.3 | Use of accessories and optional items, where present (date stamp, shelf for liquids, etc.). | ☐ Yes ☐ No |
| 7.4 | How and when to clean the tank and cover; maintaining good hygienic conditions. | ☐ Yes ☐ No |
| 8 | **The user has registered the machine on the website www.orvedservice.it** | ☐ Yes ☐ No |

ACCEPTANCE OF EQUIPMENT: (fill in legibly or apply company stamp)

The undersigned.....

In the role of.....

**takes delivery of the appliance and declares that he/she has received all the instructions necessary for its use and its routine maintenance, from the authorised Orved technician, in compliance with the product specifications and the use and maintenance manual. He/she also declares that the equipment is fully functional, at the time of signing this report.**

I also authorise the processing of personal data pursuant to Italian law 196/03.

Place, date and
signature_____

**Fig. 17. Installation and Warranty activation form**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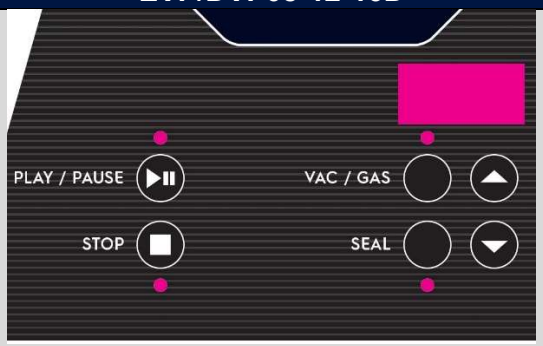
# 4. Programming and use

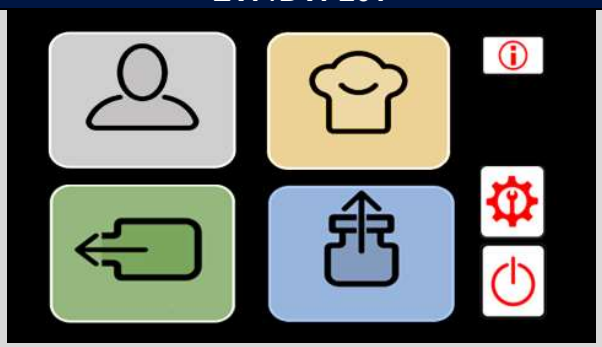
As described in § 4.1, there are three types of controls:

**EVP/DVP08-12-16D**



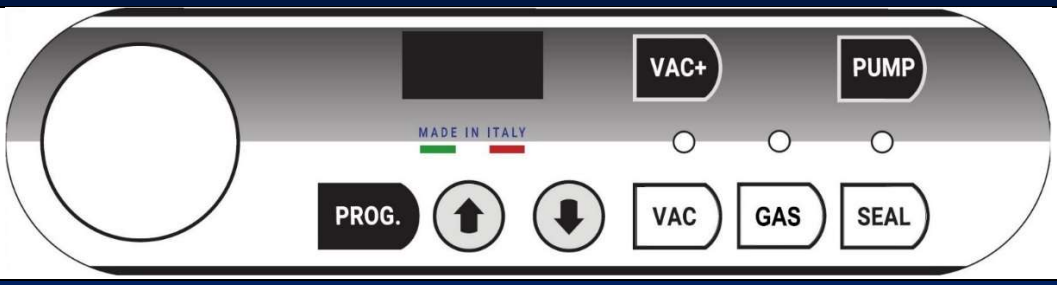

**N059 / DIGITAL WITH 6 KEYS**

**EVP/DVP20T**



**TFT 5" SMART DISPLAY**

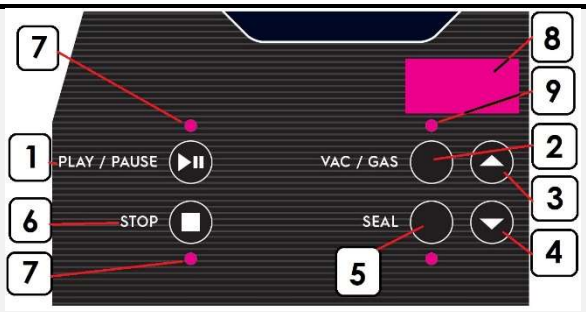
**EVP/DVP25-60A**




**B012 / 8 KEYS DIGITAL**

## 4.1 EVP/DVP08-12-16D programming and control panel

### 4.1.1 Description of the control panel




| No. | Description |
|---|---|
| 1 | • When pressed for 4" together with the STOP key, it allows displaying the number of cycles performed<br>• When pressed together with the STOP key, it allows activating or deactivating the acoustic signal |
| 2 | • It is used to adjust the vacuum, additional vacuum, GAS functions (EVP/DVP12-16D)<br>• When it is pressed after 90% if vacuum has been reached, it allows anticipating the injection of the GAS |
| 3 | • The programs scroll<br>• The values of the functions vary |
| 4 | • When pressed together for 4", they allow resetting the memorized programs thus restoring the factory values |
| 5 | • It allows adjusting the duration of the sealing operation<br>• When pressed during the work cycle, it allows anticipating the sealing operation |
| 6 | • Exit from stand-by / stand-by start (pressed for 5")<br>• When pressed for 4" together with the PLAY/PAUSE key, it allows displaying the number of cycles performed<br>• When pressed together with the PLAY/PAUSE key, it allows activating or deactivating the acoustic signal |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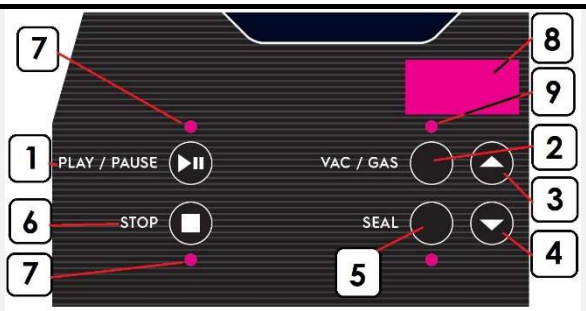


| No. | Description |
|---|---|
| | • Interrupts the cycle in progress |
| **7** | • They display the current function |
| **8** | • It displays the active program<br>• It displays the active function and its value<br>• It displays alarm events<br>• It displays the number of cycles performed before the oil change |
| **9** | • If ON is fixed, it indicates the active GAS function |

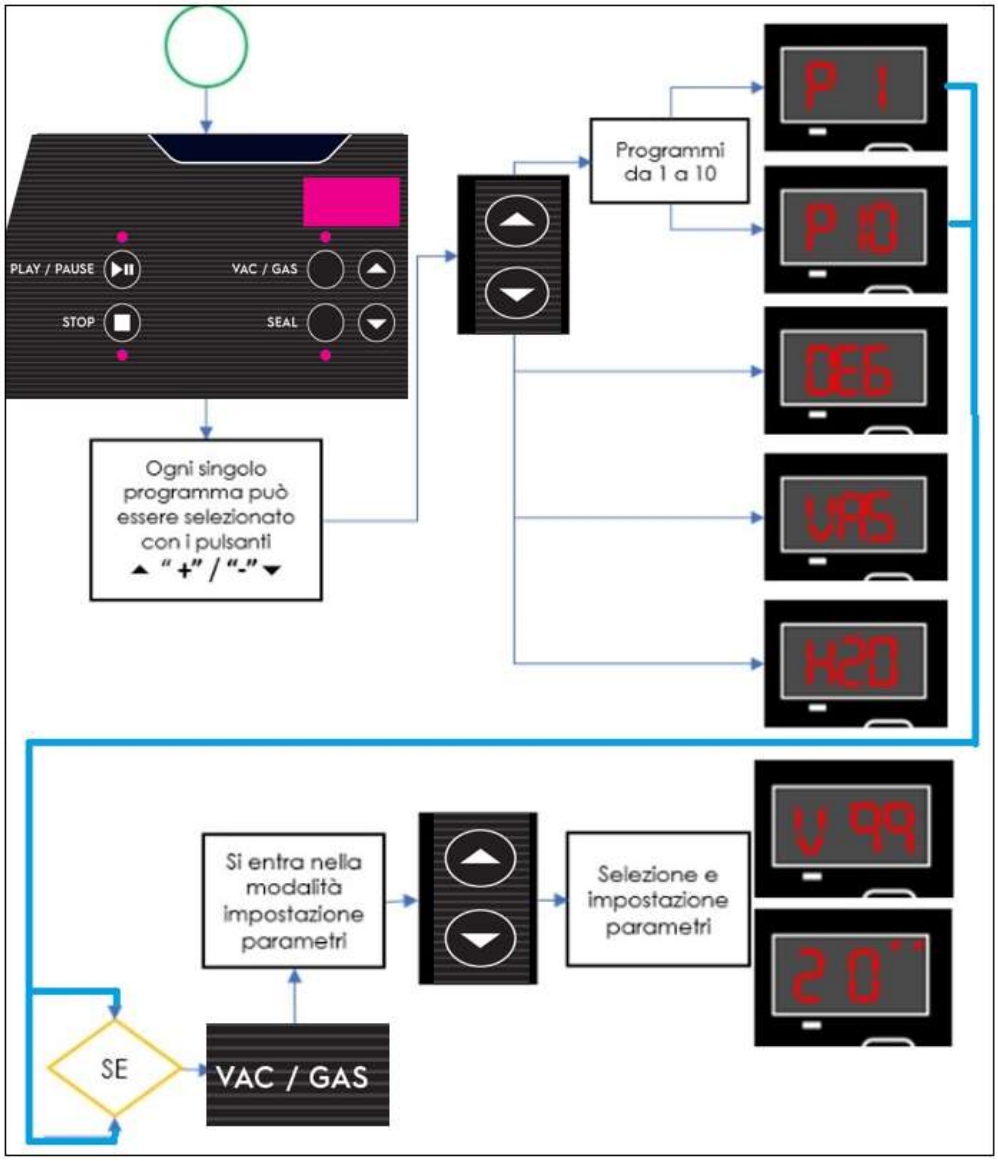


**Fig.18 Flowchart Firmware EVP/DVP08-12-16D**


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### 4.1.2 Settable values and factory settings

| Function | Value | Factory settings |
|---|---|---|
| VACUUM | 10% ÷ 99% | 99% |
| ADDITIONAL VACUUM | 1 ÷ 60 sec | 5 sec. |
| GAS INJECTION (Idea 31 / 41) | 1 ÷ 90% | OFF |
| SEALING | 0.1 ÷ 6 sec | 2.5 sec. |

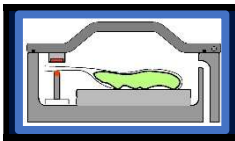
### 4.1.3 Enabling/ disabling the acoustic signal

To enable or disable the acoustic signal, switch on the machine by pressing the **STOP** and **PLAY / PAUSE** keys simultaneously.

### 4.1.4 Display of the number of cycles performed before the oil change

When all the LEDs and the signal **OIL** on the display are on, the maximum number of cycles before a change of the pump oil has been reached.
**Maximum number of cycles that can be performed before changing the oil**: 5000
To recall the exact number of cycles carried out by the machine, press the **STOP** and **PLAY/PAUSE**keys simultaneously for 4".

### 4.1.5 Vacuum packing in bag with EVP/DVP08-12-16D



**Vacuum packing in a bag with EVP/DVP08-12-16D**

| Step | Description | Image |
|---|---|---|
| 1 | Choose the **bag** depending on the use (preservation or cooking) best suited to the dimensions of the product: the product should not occupy more than 2/3 of the actual volume of the bag.<br>**For best results, the food should be taken to +3 °C before being put in the bag.**  |  |
| 2 | Lift the lid until it stops, and hook the piston by moving it forward. |  |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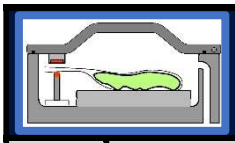
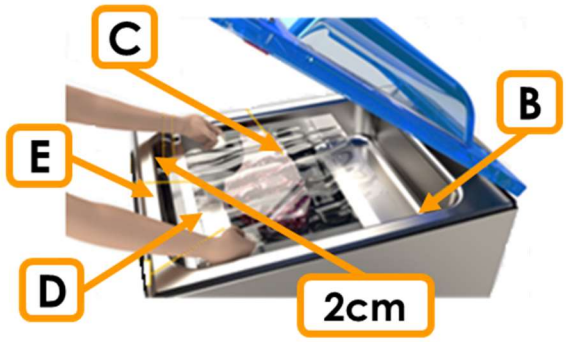


## Vacuum packing in a bag with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| 3 | Make sure the vacuum chamber and the product to be packed are dry. Be careful not to contaminate or wet the inner part near the opening of the bag.<br><br>Place the maximum number of shelves (**A**) that the chamber can contain in relation to the size of the product to be packed. |  |
| 4 | To turn on the packaging machine, press **STOP** for 5". |  |
| 5 | Insert the **bag** ( **C**) containing the product to be packed inside the vacuum chamber (**B**) and place it in the centre of the sealing bar (**D**) , so that the open flap - without wrinkles - protrudes by about 2 cm.<br>Do not bend downward the section of the bag that protrudes from the sealing bar.<br><br>When using gas injection, insert the nozzle inside the bag (**E**) . |  |
| 6 | Select one of the 10 available programs - P1 - P10 - using the **UP / DOWN** keys |  |
| 7 | Press **SEL / OK** key and set a vacuum value from 10% to 99%, using the **UP / DOWN** keys<br><br>**Vacuum values lower than the maximum reduce or nullify the preservation effect, since residual air remains in the package.** |  |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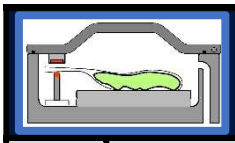
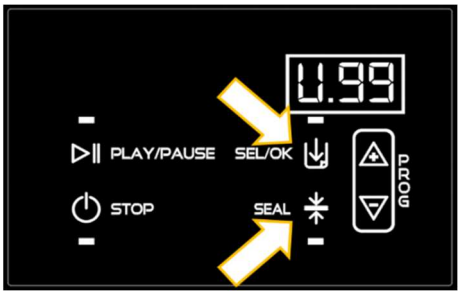


## Vacuum packing in a bag with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| 8 | Keep pressing the **UP/DOWN** keys to select an additional vacuum value from 1" to 60". |   |
| 9 | Press **SEL / OK** key and set the GAS value from 1% to 90%, using the **UP / DOWN** keys<br><br>When the GAS function is activated, make sure the vacuum value is set to 99% |   |
| 10 | Press the **SEAL** key to set the sealing duration between 0.1 "and 6.0", according to the type of bag used. |   |
| 11 | Lower the lid with both hands, pressing on the corners of the lid.<br><br>The cycle starts automatically. |  |
| 12 | To advance from the vacuum phase to the GAS phase, press the **SEL/OK** key.<br>Press **SEL / OK** to anticipate the GAS phase, making sure that the 90% vacuum threshold has been reached. If not, sealing will be activated.<br>To anticipate the sealing operation, press the corresponding **SEAL** key. |   |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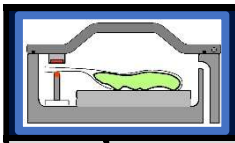
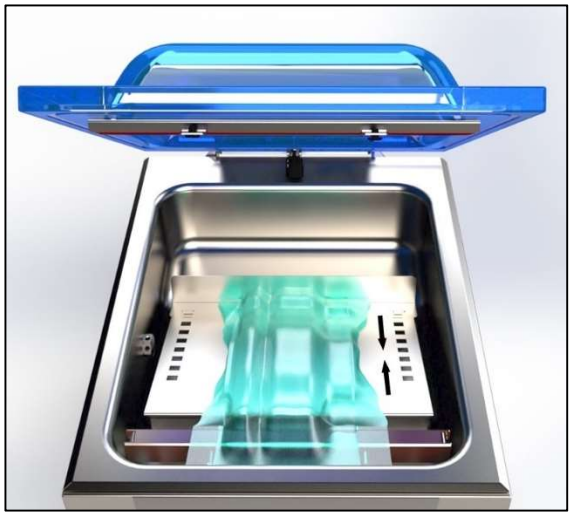
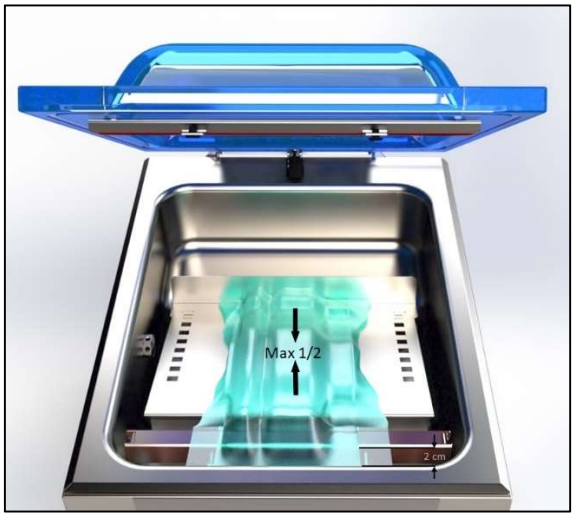


## Vacuum packing in a bag with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| 13 | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. |  |
| 14 | **End of cycle**. The lid opens automatically. Remove the packed product, being careful not to touch the sealing bar, which may still be hot | |
| 15 | When packaging **LIQUID PRODUCTS,** fill the bag to **no more than a third** of its volume; if you have the option "inclined support for liquids", adjust it according to the size of the bag.<br>Turn on the machine and program the parameters as indicated in the previous table, adjusting the vacuum function to a level that prevents the product from boiling and leaking.<br> <br>Lower the lid with both hands, pressing on the corners. The cycle starts automatically. | |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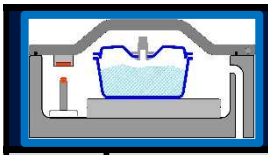
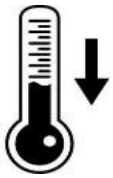
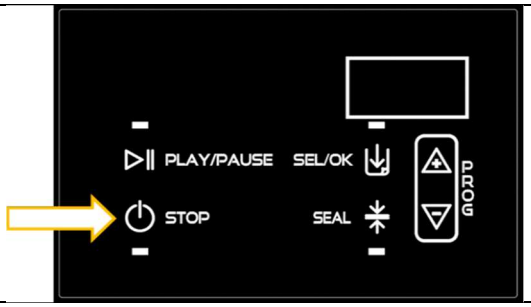
### 4.1.6 Packaging vacuum containers in tank with EVP/DVP08-12-16D



## Packaging Vacuum Containers in Tank with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| 0 | Choose a **container** that is suitable for vacuum packaging **(THE RESISTANCE TO VACUUM MUST ALWAYS BE VERIFIED!)**<br><br>Insert the product into the container and close it.<br>Filling limits:<br>• Solid products: 100% • Broths, brews: 1/2 • Sauces: 1/3 • Creams, sauces with cream: 1/4 • Egg or egg-white based products: 1/6<br><br>**Insert foods chilled at +3°C for best results.**<br><br>Lift the lid until it stops, and hook the piston by moving it forward. |     |
| 1 | Make sure the vacuum chamber and the product to be packed are dry.<br>Be careful not to contaminate or wet the inner part.<br><br>Place the maximum number of shelves (A) that the chamber can contain in relation to the size of the container to be used. |   |
| 2 | Choose a **container** that is suitable for the size of the vacuum chamber and which, once inserted, remains at least at **1 cm** from the closed lid. If necessary, the sealing bar can be removed.<br><br>Make sure the container air intake device is open. |  |
| 3 | To turn on the packaging machine, press **stop** for 5”. |   |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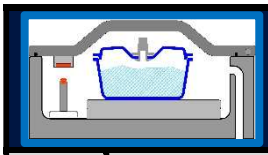

## Packaging Vacuum Containers in Tank with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| **4** | Select the container program (**JAR**) using the **UP / DOWN** keys. |   |
| **5** | Press **SEL / OK** key and set a vacuum value from 10% to 99%, using the **UP / DOWN** keys |   |
| **6** | Lower the lid and press the **PLAY/PAUSE** button to start the cycle |   |
| **7** | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. |   |
| **8** | **End of cycle**. The lid opens automatically. Take out the container. | |


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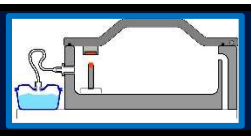
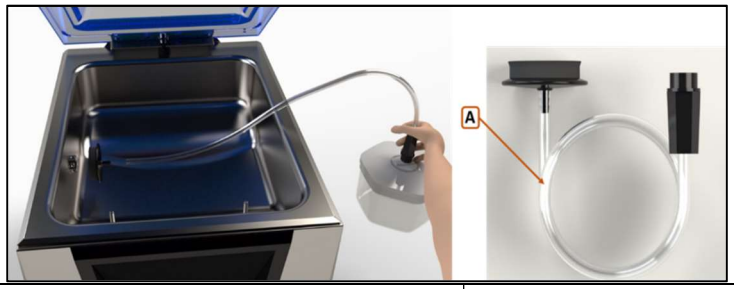
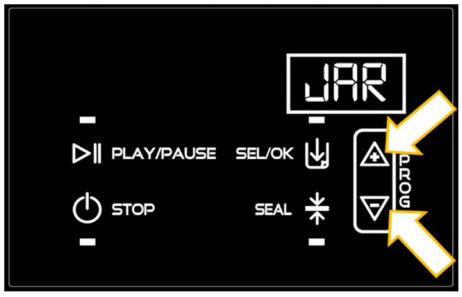
### 4.1.6 Packaging external vacuum containers with EVP/DVP08-12-16D

|  | **Packaging external vacuum containers with EVP/DVP08-12-16D** | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **1** | Couple the accessory **(A)** for the external containers to the tank and insert it or press it on the lid of the container. Make sure the container air intake device is open.<br>**ALWAYS CHECK THE RESISTANCE TO VACUUM OF CONTAINERS! TEMPERATURE OF THE PRODUCT ≤ 3 ° C!** |   |
| **2** | To turn on the packaging machine, press ⏻ 5 ". |  |
| **3** | Select the container program (**JAR**) using the **UP / DOWN** keys. |  |
| **4** | Press **SEL / OK** key and set a vacuum value from 10% to 99%, using the **UP / DOWN** keys |  |
| **5** | Press the **PLAY/PAUSE** button to start the cycle. |  |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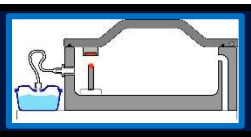
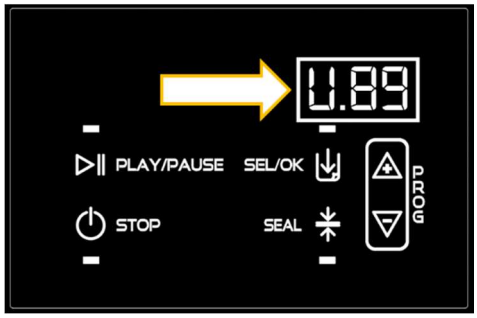
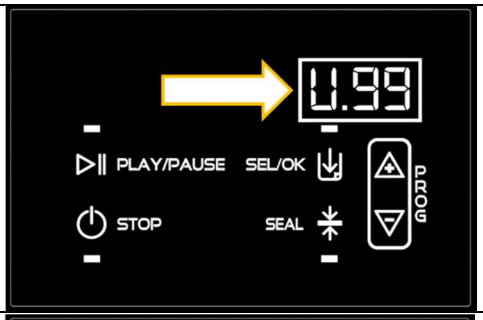
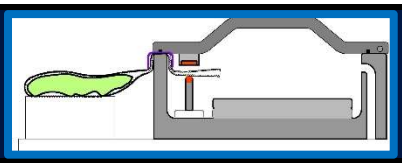
|  | **Packaging external vacuum containers with EVP/DVP08-12-16D** | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **6** | Place one end of the device on the suction point of the tank and press the other slightly on the lid of the container: this will trigger the vacuum. | |
| **7a** | If the set vacuum value is lower than 99%, the pump is turned off.<br>Remove the accessory, insert it on the lid of the next container and press **PLAY / PAUSE**. |  |
| **7b** | If the set vacuum value is equal to 99%, the pump remains on.<br>Remove the accessory and position it on the lid of the next container. |  |
| **8** | When **STOP** is pressed at any time the machine cycle is interrupted immediately. |  |
| **9** | At the end of the cycle, remove the accessory from the tank. | |

### 4.1.8 Vacuum packing in external embossed bags with EVP/DVP08-12-16D

**NOTES:** This cycle is suitable **only for packaging products that are dry and not sensitive to crushing!**
For this operation, it is necessary to use embossed vacuum bags for preservation (or cooking).
To do this, use the "EASY" accessory for external vacuum.

|  | **Vacuum packing in external bags embossed with EVP/DVP08-12-16D** | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **1** | Lift the lid until it stops, and hook the piston by moving it forward.<br>Make sure the vacuum chamber and the product to be packed are dry.<br>**Do not remove the shelves from the tank.**<br>Be careful not to contaminate or wet the inner part near the opening of the bag. |  |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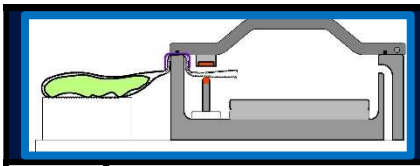
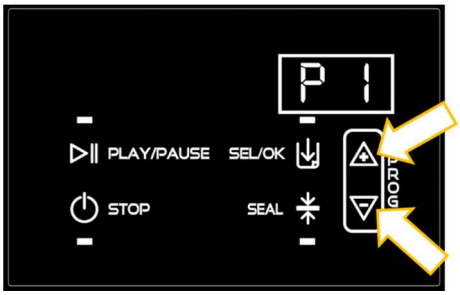
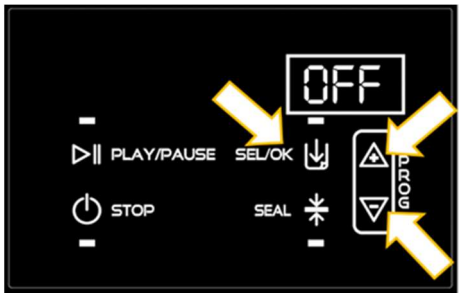


## Vacuum packing in external bags embossed with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| **2** | To turn on the packaging machine, press for 5". |   |
| **3** | Select one of the 10 available programs using the **UP / DOWN** keys |   |
| **4** | Press the **SEL / OK** key and set a vacuum value from 10% to 99%, using the **UP / DOWN** keys<br><br>Vacuum values lower than the maximum reduce or nullify the preservation effect, since residual air remains in the package. |   |
| **5** | Keep pressing the **UP/DOWN** keys to select an additional vacuum value from 1" to 60". |   |
| **6** | Press the **SEL / OK** key and set the GAS to OFF, using the **UP / DOWN** keys |   |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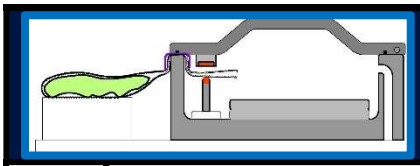
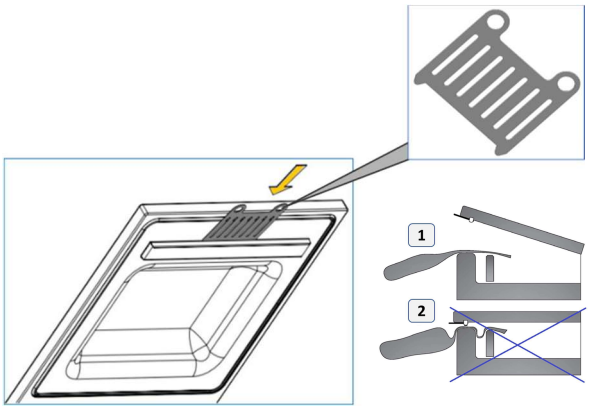


## Vacuum packing in external bags embossed with EVP/DVP08-12-16D

| Step | Description | Image |
|---|---|---|
| 7 | Press the **SEAL** key to set the sealing duration between 0.1 "and 6.0". |   |
| 8 | Select an embossed **bag** suitable for the size of the product to be packed: the product must not fill more than **2/3** of the useful volume of the bag. Place the embossed bag **(A)** in the centre of the sealing bar **(B)**, so that the open edge protrudes by about **2 cm**.<br>Position the EASY accessory as described in the Easy Kit instructions.<br><br>**Insert foods chilled at +3°C for best results.** |   |
| 9 | Lower the lid keeping the bag in the horizontal position: the cycle starts automatically.<br><br>Stop the cycle immediately if you notice liquid flowing towards the chamber through the embossing. |  |
| 10 | To switch from the vacuum phase to the sealing phase, press the **SEAL** key.<br>Inert gas injection cannot be used. | |
| 11 | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed. The lid opens automatically. The machine returns to the set program. | |
| 12 | Remove the packed product, being careful not to touch the sealing bar, which may still be hot | |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### 4.1.9 Deaerating the product in bag or container with the EVP/DVP12D Degas cycle

Vacuum cycle consisting of several phases, which allows to manually alternate vacuum and pause phases, so that all the air is sucked from inside the product. The final vacuum level is programmable.

| Cicli Degas | Deaerating the product with the degas cycles EVP/DVP12D | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **1a** | Choose the **bag** depending on the use (preservation or cooking) best suited to the dimensions of the product: the product should not occupy more than 2/3 of the actual volume of the bag. Be careful not to contaminate or wet the open part of the bag.<br><br>***Insert foods chilled at +3°C for best results.*** |  |
| **1b** | Choose a **container** that is suitable for vacuum packaging, which fits the tank and which, once inserted, remains at least at **1 cm** from the closed lid of the packaging machine.<br>Insert the product into the container and close it.<br><br>Filling limits:<br>• Solid products: 100% • Broths, brews: 1/2 • Sauces: 1/3 • Creams, sauces with cream: 1/4 • Egg or egg-white based products: 1/6<br><br>***Insert foods chilled at +3°C for best results.*** |  |
| **2** | Lift the lid until it stops, and hook the piston by moving it forward. | <br> |


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## Deaerating the product with the degas cycles EVP/DVP12D

| Step | Description | Image |
|---|---|---|
| **3** | Make sure the vacuum chamber and the product to be packed are dry.<br>Be careful not to contaminate or wet the inner part near the opening of the bag.<br><br>Place the maximum number of shelves (**A**) that the chamber can contain in relation to the size of the product or the container to be packed. |  |
| **4a** | Insert the **bag** (**C**) containing the product to be packed inside the vacuum chamber (**B**) and place it in the centre of the sealing bar (**D**), so that the open flap protrudes by about 2 cm. |  |
| **4b** | Choose a **container** that is suitable for the size of the vacuum chamber and which, once inserted, remains at least at **1 cm** from the closed lid. If necessary, the sealing bar can be removed.<br><br>Make sure the container air intake device is open. |  |
| **5** | To turn on the packaging machine, press for 5”. |  |
| **6** | Select the de-aerating program (**DEG**) with the **UP / DOWN** keys. |  |


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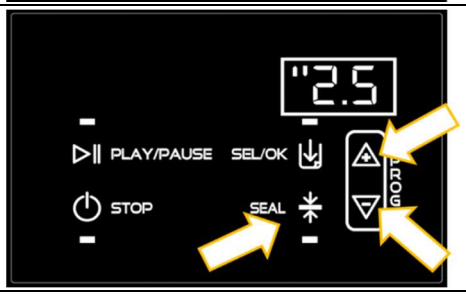
## Deaerating the product with the degas cycles EVP/DVP12D

| Step | Description | Image |
|---|---|---|
| 7 | Press **SEL / OK** key and set a vacuum value from 10% to 99%, using the **UP / DOWN** keys |   |
| 8a | Press the **SEAL** key to set the sealing duration between 0.1 "and 6.0", according to the type of **bag** used. |   |
| 8b | Using a container, press the **SEAL** key to set the sealing duration to 0" |   |
| 9 | Lower the lid with both hands.<br><br>The cycle starts automatically. |  |
| 11 | Press **PLAY / PAUSE** to interrupt the vacuum phase (to flatten the bubbles that form inside the bag and avoid product leakage) and press it again, to obtain a partial return of air into the chamber and resume the vacuum phase.<br>The operation can be repeated several times, to progressively obtain the set vacuum level. |   |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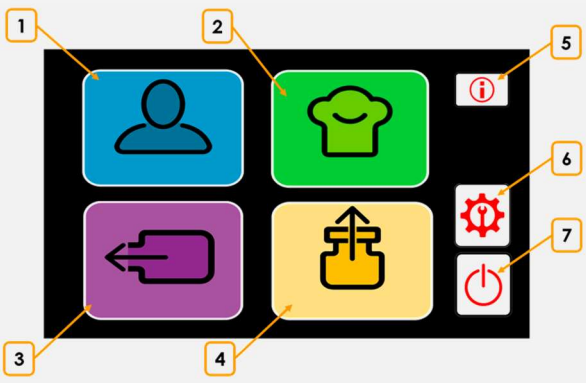
| Cicli Degas | Deaerating the product with the degas cycles EVP/DVP12D | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **12a** | **In-bag:** To switch from the vacuum phase to the sealing phase, press the **SEAL** key. |  |
| **13** | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. |  |
| **14a** | **End of cycle:** Take out the packed product, being careful not to touch the sealing bar, which may still be hot. | |
| **14b** | **End of cycle:** Take out the container. | |

## 4.2 EVP/DVP20T programming and control panel

### 4.2.1 Description of the control panel




| No. | Description |
|---|---|
| **1** | User cycles: fully editable cycles |
| **2** | Gourmet cycles: special cycles for special processing |
| **3** | Degas cycles |
| **4** | Jar cycles |
| **5** | Provides information about the displayed screen (if any) |
| **6** | Allows accessing the Technical menu |
| **7** | Allows stopping the machine |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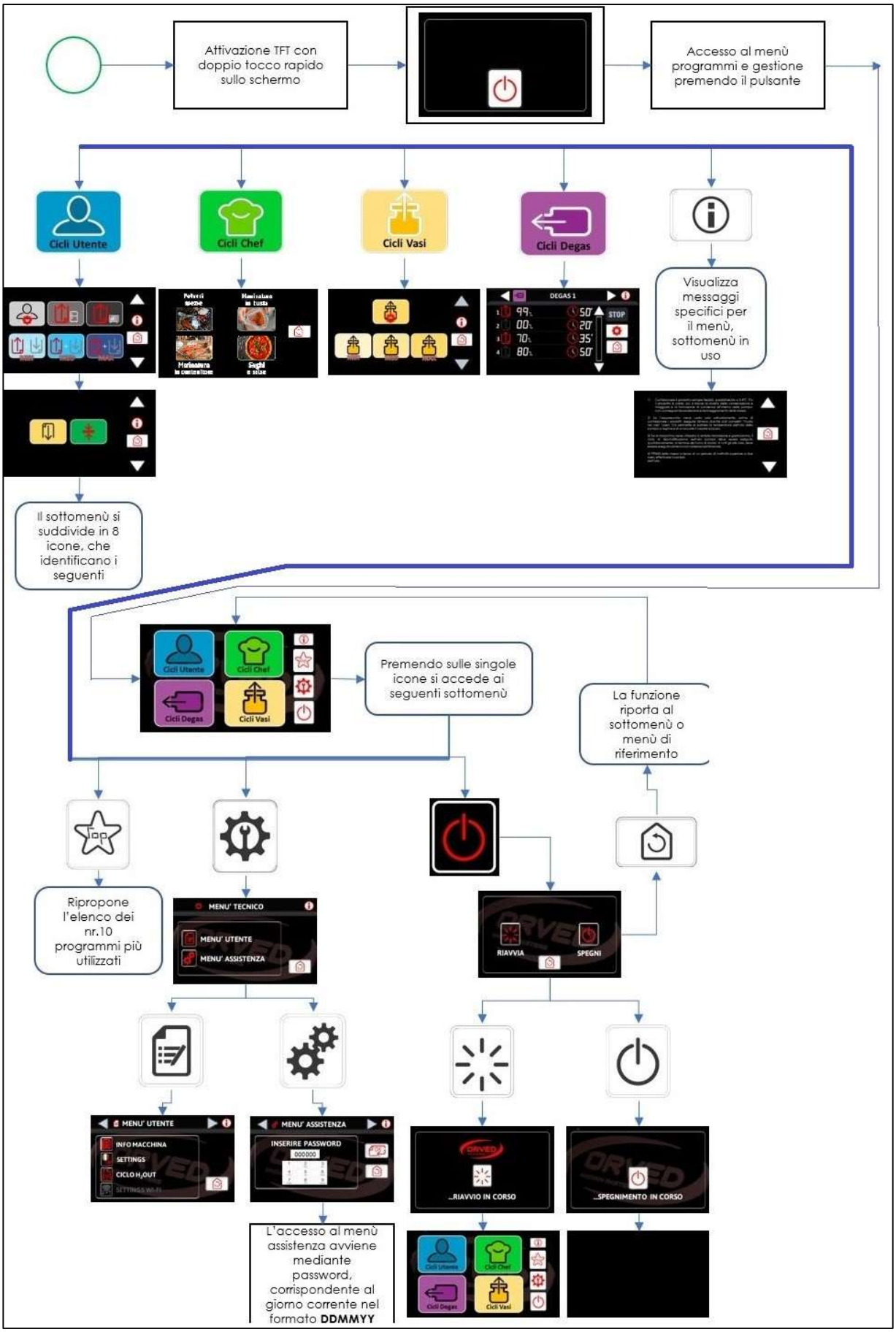


**Fig.19 Flowchart EVP/DVP20T**


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### 4.2.2 Settable values and factory settings

| Function | | Value | Factory settings |
|---|---|---|---|
|  | VACUUM | 10% ÷ 99% | 99% |
|  | ADDITIONAL VACUUM | 0 ÷ 60 sec | 0 sec. |
|  | GAS INJECTION | 0 ÷ 90% | 0% |
|  | SEALING | 0 ÷ 6 sec | 2.5 sec. |
|  | SOFTAIR | 0 ÷ 30 sec | 0 sec. |
|  | PAUSE TIME (DEGAS CYCLE) | 0 ÷ 60 sec | |

### 4.2.3 EVP/DVP20T icons and pictograms

| Icon or pictogram | Meaning |
|---|---|
|  | It allows exiting the stand-by condition and switching on the machine |
|  | It allows displaying the information concerning the screen, if any |
|  | It allows accessing the **Technical menu and the user menu** |
|  | **USER CYCLES:** Access to **editable programs**. The user can set the values for vacuum, additional vacuum, injected gas, sealing and softair |
|  | **USER CYCLES:** Access to **the pre-set cycle Preservation**. To be used for preserving raw or cooked, solid or liquid products that are not sensitive to crushing |
|  | **USER CYCLES:** Access to **the pre-set cycle Cooking**. For packaging in vacuum bags for cooking products to be cooked with the Sous-Vide technique |
|   | **USER CYCLES:** Access to the pre-set cycle **Vacuum + Min. Gas** To be used for products to be protected against crushing, with 30% GAS injection |
|   | **USER CYCLES:** Access to the pre-set cycle **Vacuum + Med. Gas** To be used for products to be protected against crushing, with 40% GAS injection |
|   | **USER CYCLES:** Access to the pre-set cycle **Vacuum + MAX Gas** To be used for products to be protected against crushing, with 50% GAS injection |
|  | **USER CYCLES:** Access to the pre-set cycle **Vacuum in external bags** To be used to pack - using embossed bags - solid products of dimensions that exceed the tray |


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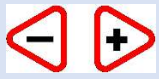
| Icon or pictogram | Meaning |
|---|---|
|  | **USER CYCLES:** Access to **the pre-set cycle Sealing only**. To be used to simply seal bags |
|  | It allows scrolling the list of cycles |
|  | Set the Vacuum parameter |
|  | Set the additional Vacuum parameter |
|  | Set the Gas Injection parameter |
|  | Setting the Sealing parameter |
|  | Set the Softair parameter |
|   | Allows the early termination of the cycle |
|  | Allows accessing the parameter setting menu |
|  | Allows returning to the previous screen |
|  | When pressed for 5", it allows activating the print function (optional) |
|  | Used to return to the previous screen without saving the set values |
|  | It allows increasing or reducing the values of the set parameters |
|   | It allows naming the program |
|   | It saves the set values and returns to the previous screen |
|  | It allows copying the program |
|  | It allows deleting the program |
|  | **JAR CYCLES:** Access to **editable programs**. The user can set the desired vacuum value |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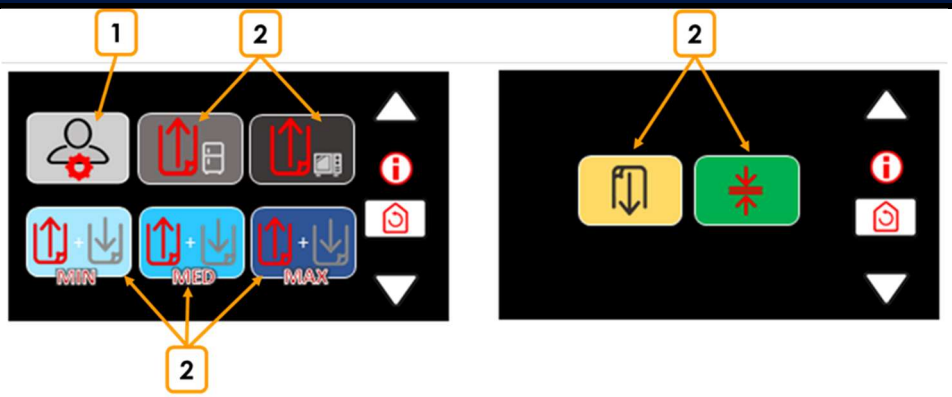
| Icon or pictogram | Meaning |
|---|---|
|  | **JAR CYCLES:** Pre-set cycle **Min. jars** To be used for re-packaging jars with screw covers. Cover sealing only |
|  | JAR CYCLES: Pre-set cycle **MED. jars** To be used to create a partial vacuum in implosion-resistant professional containers for products intended for subsequent pasteurization and / or sterilization |
|  | JAR CYCLES: Pre-set cycle **MAX. jars** To be used to achieve the maximum vacuum in professional containers |

### 4.2.4 EVP/DVP20T user cycles: editable and pre-set programs

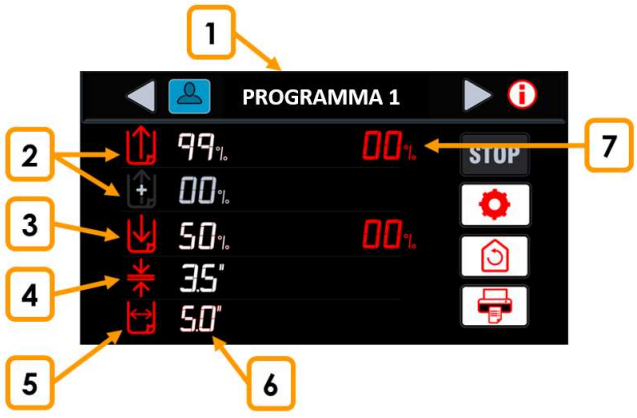
## User cycles: editable and pre-set programs EVP/DVP20T




| No. | Description |
|---|---|
| 1 | **Access to editable programs** |
| 2 | **Access to pre-set user cycles** |

## A) Editable programs-1: parameters menu

| No. | Description |
|---|---|
| 1 | Display program name |
| 2 | Access the Vacuum and additional Vacuum parameter setting menu |
| 3 | Access the parameter customization menu Anticipate Gas injection (when the minimum vacuum value equal to 90% has been reached) |
| 4 | Access the parameter customization menu Anticipate sealing |
| 5 | Access the parameter customization menu Anticipate Softair |
| 6 | Display of the set value |
| 7 | Instantaneous value reached during the phase |





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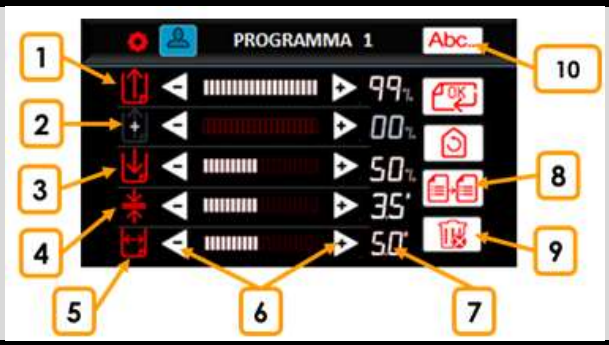
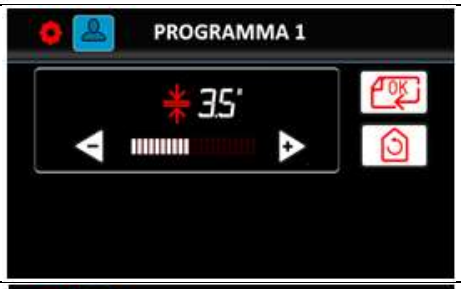
# A) Editable Programs-2: parameter editing menu




| Step | Description | Image |
|---|---|---|
| 1 | Vacuum percentage<br>Allows accessing the vacuum and additional vacuum setting menu |  |
| 2 | Additional vacuum duration<br>Allows accessing the vacuum and additional vacuum setting menus | |
| 3 | Percentage of injected Gas<br>Allows accessing the injected gas percentage setting menu |  |
| 4 | Sealing duration<br>Allows accessing the sealing duration setting menu |  |
| 5 | Softair duration (slow air return)<br>Allows accessing the softair duration setting menu |  |
| 6 | Increase or decrease the values of the parameters | |
| 7 | Set value | |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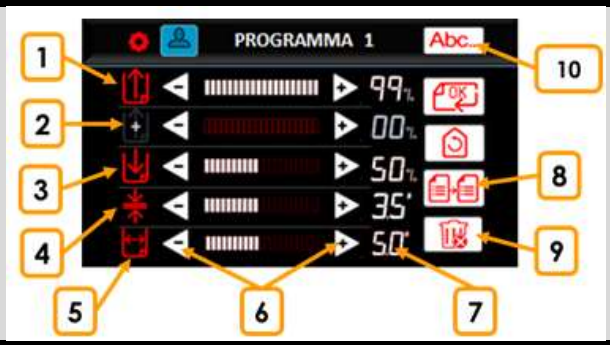
## A) Editable Programs-2: parameter editing menu




| Step | Description | Image |
|---|---|---|
| 8 | Copy the program |   |
| 9 | Delete the program |   |
| 10 | It allows renaming the program |  |

## B) Pre-set programs

| No. | Description |
|---|---|
| 1 | Name of pre-set program |
| 2 | Editable parameter - Set value |
| | Vacuum cycle for preservation |
| | Vacuum cycle for cooking |
| | Vacuum cycle and MIN gas (30% gas) |
| | Vacuum cycle and MED gas (40% gas) |
| | Vacuum cycle and MAX gas (50% gas) |





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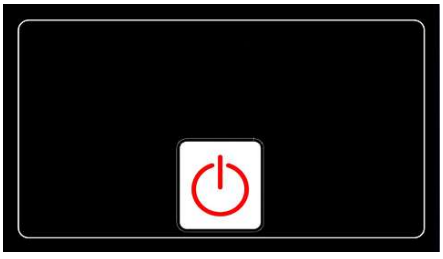
| B) Pre-set programs | |
|---|---|
| **No.** | **Description** |
| | Vacuum cycle in external bags |
| | Sealing only cycle |

### 4.2.5 Vacuum packing in bag with EVP/DVP20T

| Vacuum packing in a bag with EVP/DVP20T | | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **1** | Choose the **bag** depending on the use (preservation or cooking) best suited to the dimensions of the product: the product should not occupy more than 2/3 of the actual volume of the bag.<br><br>**For best results, the food should be taken to +3 °C before being put in the bag.** |  |
| **2** | Lift the lid until it stops, and hook the piston by moving it forward. |  |
| **3** | Make sure the vacuum chamber and the product to be packed are dry. Be careful not to contaminate or wet the inner part near the opening of the bag.<br><br>Place the maximum number of shelves (**A**) that the chamber can contain in relation to the size of the product to be packed. |  |
| **4** | Activate the control panel by **quickly double-clicking** on the screen.<br>Then press **STAND-BY** to turn on the machine. |  |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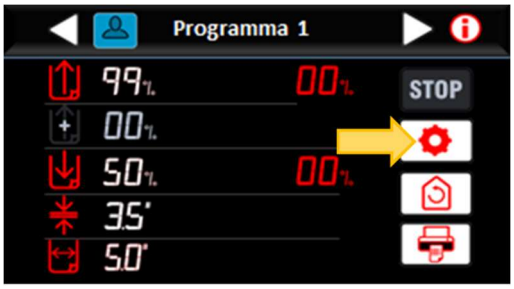
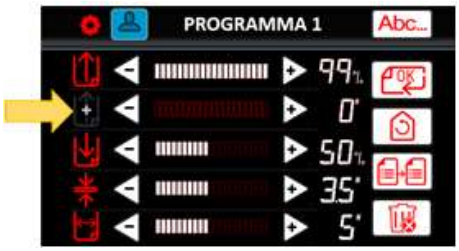
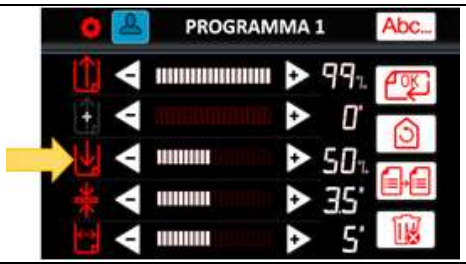
| | | |
|---|---|---|
| **5** | Insert the **bag** ( **C**) containing the product to be packed inside the vacuum chamber (**B**) and place it in the centre of the sealing bar (**D**) , so that the open flap - without wrinkles - protrudes by about 2 cm.<br>Do not bend downward the section of the bag that protrudes from the sealing bar.<br><br>When using **gas** injection, **insert the nozzle inside the bag** (**E**) . |  |
| **6** | Select **User Cycles** |  |
| **7** | Select the desired program from the available editable and pre-set programs | |
| **8a** | When using an **editable cycle**, press the **SETTINGS** button. |  |
| **8a.1** | Press the +/- keys and set a **vacuum** value from 10% to 99%.<br><br>Vacuum values lower than the maximum reduce or nullify the preservation effect, since residual air remains in the package. |  |
| **8a.2** | Press the +/- keys and set an **additional vacuum** value from 1" to 60". |  |
| **8a.3** | Press the +/- keys and set a **GAS** value from 1% to 90%.<br><br>When the GAS function is activated, make sure the vacuum value is set to 99% |  |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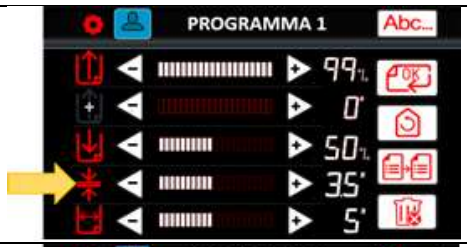
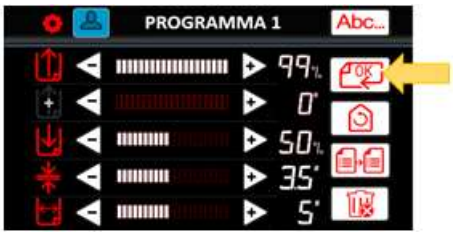
| | | |
|---|---|---|
| **8a.4** | Press the +/- keys and set a **sealing** duration value from 0" to 6". |  |
| **8a.5** | Press the +/- keys and set a **softair** duration value from 0" to 30" |  |
| **8a.6** | Rename the program |  |
| **8a.7** | **Press** OK to save the modified parameters and return to the previous screen |  |
| **8b** | When using one of the **pre-set cycles**<br>Vacuum in bags for preservation<br>Vacuum in bags for cooking<br>(Example: ***Vacuum storage bags***), only the sealing duration can be changed. |  |
| **8c** | When using one of the **pre-set cycles**<br>Vacuum + MIN GAS<br>Vacuum + MED GAS<br>Vacuum + MAX GAS<br>(Example: ***Vacuum+ MED GAS***), it is possible to modify all the parameters, but, to save the new settings, a copy of the program must be created. |  |
| **9** | Lower the lid with both hands.<br><br>The cycle starts automatically. |  |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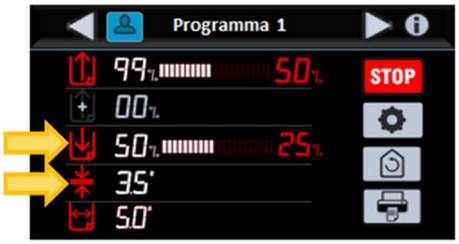
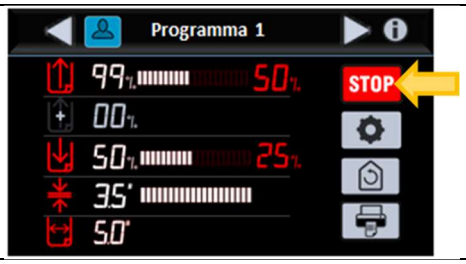
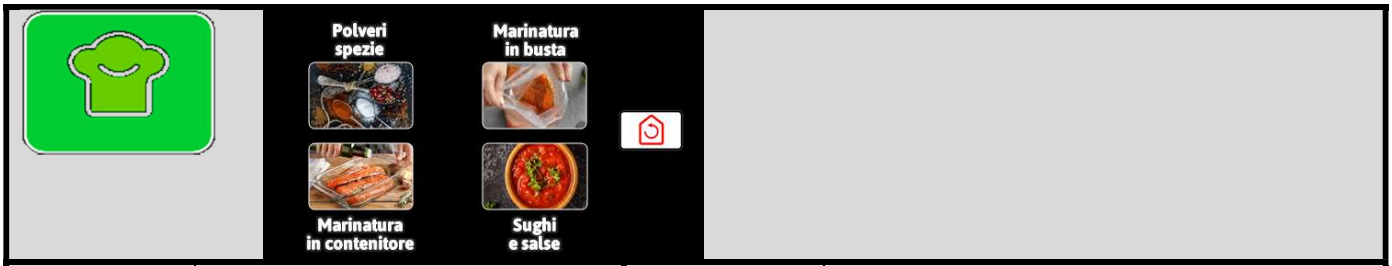
| | | |
|---|---|---|
| **10** | To switch from the vacuum phase to the GAS phase, or to anticipate sealing, press the corresponding key on the display.<br><br>To anticipate the GAS phase, make sure that the 90% vacuum threshold has been reached. If not, sealing will be activated. |  |
| **11** | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. |  |
| **12** | **End of cycle**. The lid opens automatically. Take out the packed product, being careful not to touch the sealing bar, which may still be hot. | |

### 4.2.6 "Gourmet" cycles (EVP/DVP20T)




| | Program name | | Program name |
|---|---|---|---|
|  | **Powders and spices** |  | **In-bag marinating** |
|  | **In-container marinating** |  | **Sauces** |

#### 4.2.6.1 Setting parameters in the "Gourmet" cycles

(Example Program: In-bag marinating)




| No. | Description |
|---|---|
| **1** | Access the sealing duration setting menu (if present) |
| **2** | Display the sealing duration (if present)<br>Access the sealing duration setting menu (if present)<br>Anticipate sealing (if present) |





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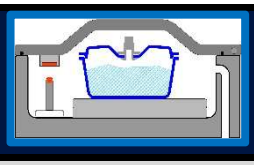
| | |
|---|---|
| **1** | Step progress display bar |
| **2** | Phase progress display bar |

### 4.2.7 Gourmet Programs operated in container (Marinades in containers)

**Gourmet programs in container with EVP/DVP20T**



| Step | Description | Image |
|---|---|---|
| **1** | Choose a **container** that is suitable for vacuum packaging, which fits the tank and which, once inserted, **remains at least at 1 cm from the closed lid of the packaging machine.**<br><br>**Place the product in the container without a lid.**<br><br>Filling limits:<br><br>• Solid products: 100% • Broths, brews: 1/2 • Sauces: 1/3<br>• Creams, sauces with cream: 1/4 • Egg or egg-white based products: 1/6 **For best results, the food should be taken to +3 °C before being put in the bag.** |  |
| **If product PRESERVATION and storage or COOKING are contemplated after the Gourmet Cycle, complete the processing with a vacuum packaging cycle.<br>The product must remain at +3 °C during all phases!** | | |
| **2** | Lift the lid until it stops, and hook the piston by moving it forward. |  |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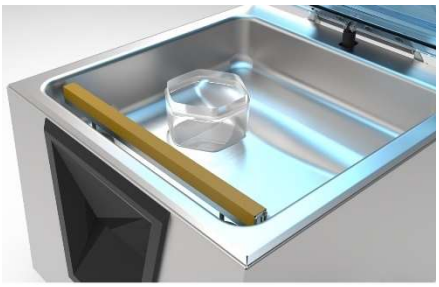
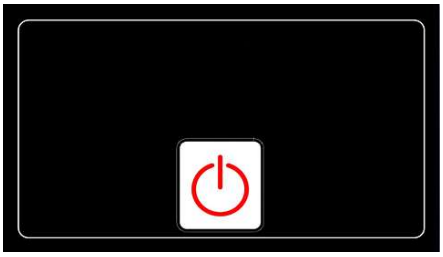
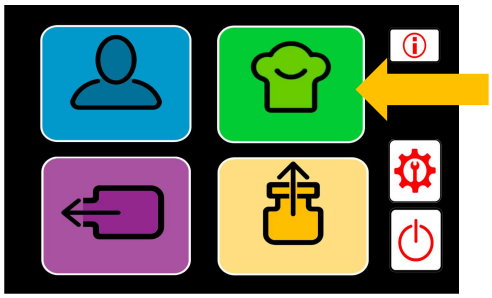
# Gourmet programs in container with EVP/DVP20T

| Step | Description | Image |
|---|---|---|
| 3 | Make sure the vacuum chamber and the product to be packed are dry.<br><br>Place the maximum number of shelves (A) that the chamber can contain in relation to the size of the container to be used. |  |
| 4 | Choose a **container** that is suitable for the size of the vacuum chamber and which, once inserted, remains at least at **1 cm** from the closed lid. If necessary, the sealing bar can be removed.<br><br>Make sure the container air intake device is open. |  |
| 5 | Activate the control panel by double-clicking on the screen.<br>Then press **STAND-BY** to turn on the machine. |  |
| 6 | Select **Gourmet Cycles** |  |
| 7 | Select the desired program (Ex: **Cleaning Mussels**) |  |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| | Gourmet programs in container with EVP/DVP20T | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **8** | Lower the lid with both hands.<br><br>The cycle starts automatically. |  |
| **9** | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. |  |
| **10** | **End of cycle**. The lid opens automatically. Take out the container. | |

### 4.2.8 Gourmet programs carried out in bags (Powders and spices, marinade in bags, meat sauces and sauces)

| | Gourmet programs in bags with EVP/DVP20T | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **1** | Choose the **bag** according to the next use (storage or cooking) and suitable for the size of the product: the product must not occupy more than 2/3 of the useful volume of the bag.<br><br>**Insert foods chilled at +3°C for best results.**  |  |
| **2** | Lift the lid until it stops, and hook the piston by moving it forward. |  |


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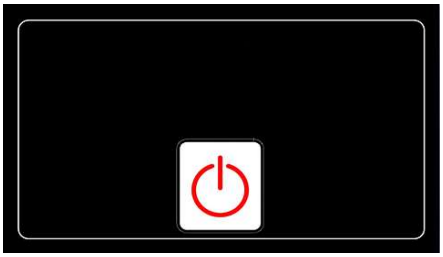
# Gourmet programs in bags with EVP/DVP20T

| Step | Description | Image |
|---|---|---|
| 3 | Make sure the vacuum chamber and the product to be packed are dry. Be careful not to contaminate or wet the inner part near the opening of the bag.<br><br>Place the maximum number of shelves (**A**) that the chamber can contain in relation to the size of the product to be packed. |  |
| 4 | Activate the control panel by double-clicking on the screen.<br>Then press **STAND-BY** to turn on the machine. |  |
| 5 | Insert the **bag** ( **C**) containing the product to be packed inside the vacuum chamber (**B**) and place it in the centre of the sealing bar (**D**) , so that the open flap - without wrinkles - protrudes by about 2 cm.<br>Do not bend downward the section of the **bag** that protrudes from the sealing bar. |  |
| 6 | Select **Gourmet Cycles** |  |
| 7 | Select the desired program (Example: **Marinade in bags**) |  |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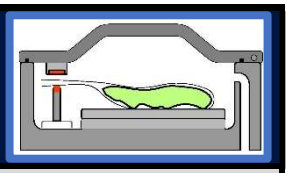
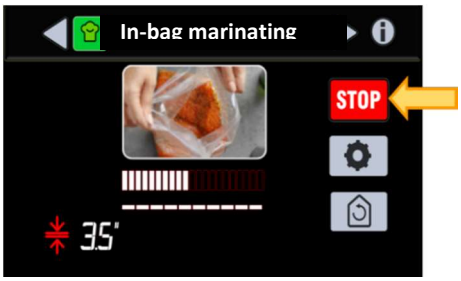
## Gourmet programs in bags with EVP/DVP20T



| Step | Description | Image |
|---|---|---|
| 8 | The sealing level can be changed by pressing the corresponding key on the display. |   |
| 9 | Lower the lid with both hands.<br><br>The cycle starts automatically. |  |
| 10 | To switch from the vacuum phase to the sealing phase, press the corresponding key on the display. |   |
| 11 | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program |   |
| 12 | **End of cycle**. The lid opens automatically. Take out the packed product, being careful not to touch the sealing bar, which may still be hot. | |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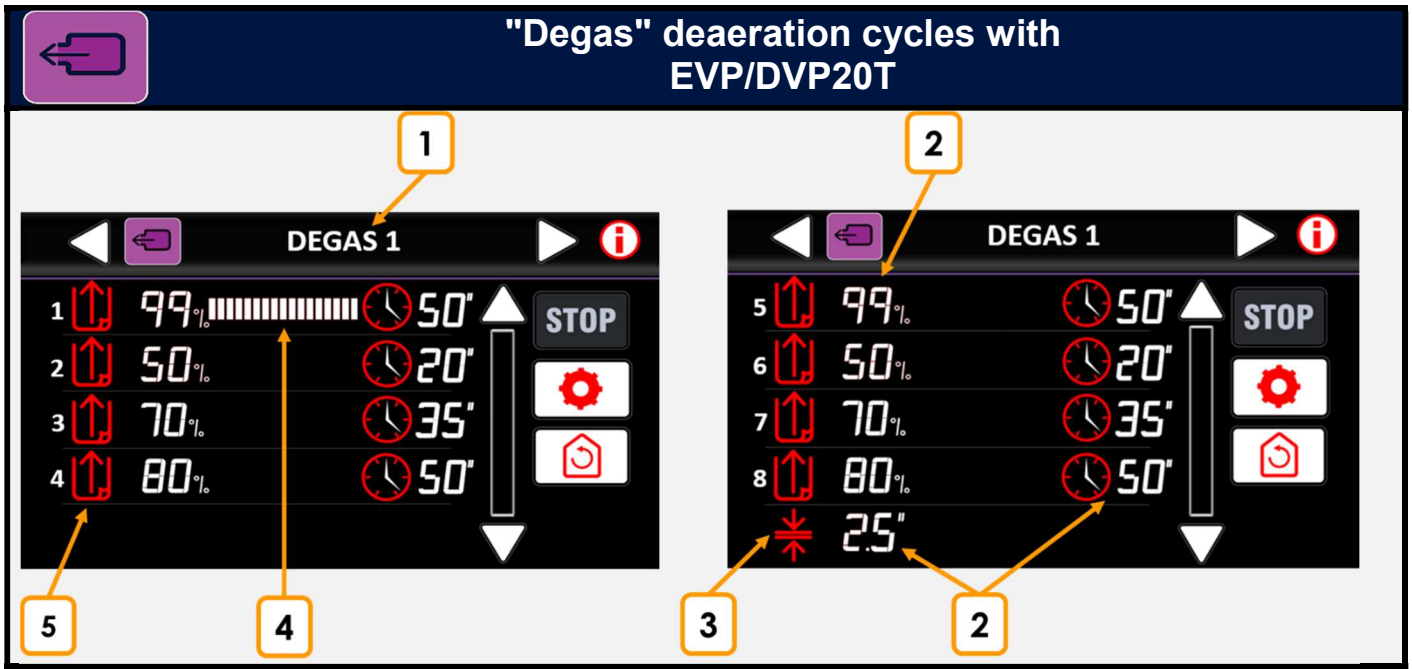
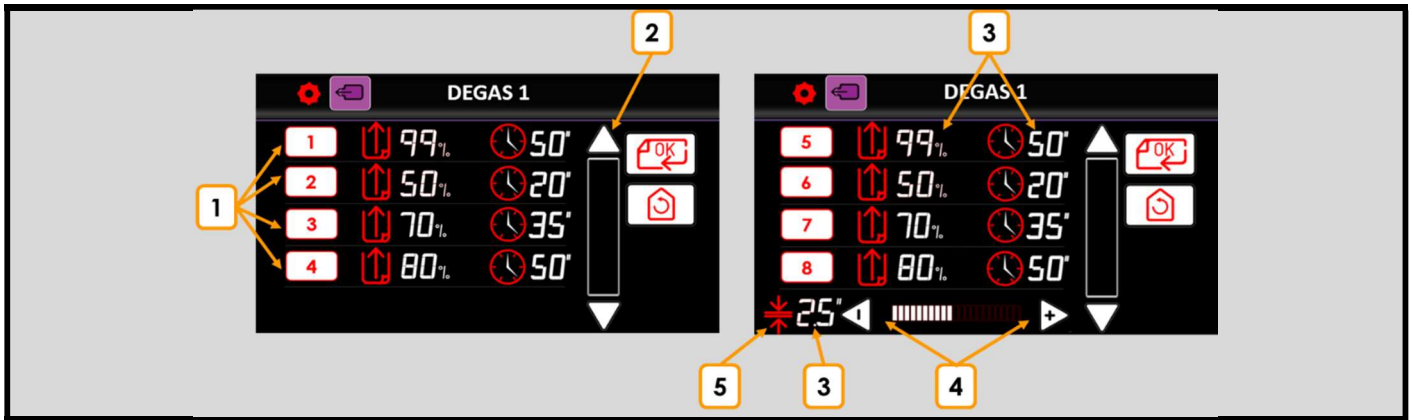
### 4.2.9 "Degas" deaeration cycles (EVP/DVP20T)




| No. | Description |
|---|---|
| 1 | Name of the cycle: from DEGAS 1 to DEGAS 5 |
| 2 | Set value |
| 3 | Access the sealing duration setting menu<br>Anticipate sealing |
| 4 | Phase progress display bar |
| 5 | Access the single step setting menu (vacuum and pause time) |

#### 4.2.9.1 Setting the parameters of the de-aeration (Degas) cycles




| No. | Description | |
|---|---|---|
| 1 | Allows activating the step (the key turns white) and entering the menu for setting the vacuum and the pause time for the step |   |
| 2 | Allows switching from ramp 1 to 8 and vice versa | |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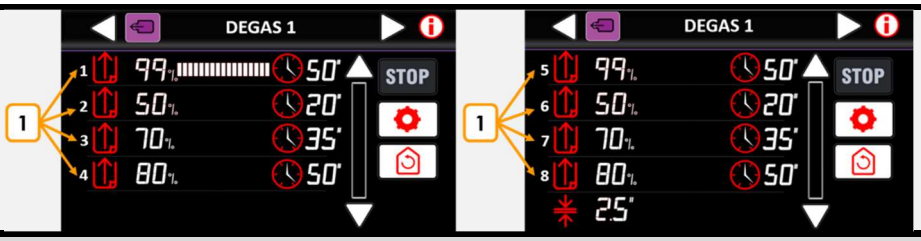
| | | |
|---|---|---|
| **3** | Set value | |
| **4** | Allows changing the duration of the sealing operation | |
| **5** | Allows accessing the sealing duration setting menu |   |

### 4.2.9.2 Setting the parameters of the single "Degas" phase




| No. | Description | |
|---|---|---|
| **1** | Allows accessing the menu for setting the vacuum and the pause time for the step |   |

### 4.2.10 Packaging with the "Degas" cycle with EVP/DVP20T

Vacuum cycle consisting of several phases, which allows to manually alternate vacuum and pause phases, so that all the air is sucked from inside the product. The final vacuum level is programmable.




**Packaging with the "Degas" cycle with EVP/DVP20T**

| Step | Description | Image |
|---|---|---|
| **1a** | Choose the **bag** depending on the use (preservation or cooking) best suited to the dimensions of the product: the product should not occupy more than 2/3 of the actual volume of the bag.<br><br>**Insert foods chilled at +3°C for best results.**  |  |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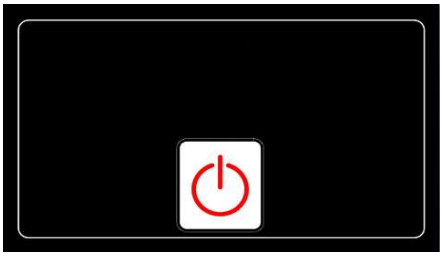
| | | |
|---|---|---|
| **1b** | Choose a **container** that is suitable for vacuum packaging, which fits the tank and which, once inserted, remains at least at **1 cm** from the closed lid of the packaging machine.<br>Insert the product into the container and close it.<br><br>Filling limits:<br>• Solid products: 100% • Broths, brews: 1/2 • Sauces: 1/3 • Creams, sauces with cream: 1/4 • Egg or egg-white based products: 1/6<br><br>***Insert foods chilled at +3°C for best results.*** |  |
| **2** | Lift the lid until it stops, and hook the piston by moving it forward. |  |
| **3** | Make sure the vacuum chamber and the product to be packed are dry.<br>Be careful not to contaminate or wet the inner part near the opening of the bag.<br><br>Place the maximum number of shelves (A) that the chamber can contain in relation to the size of the product or the container to be packed. |  |
| **4a** | Insert the **bag** (**C**) containing the product to be packed inside the vacuum chamber (**B**) and place it in the centre of the sealing bar (**D**), without wrinkles, so that the open flap protrudes by about 2 cm. |  |
| **4b** | Choose a **container** suitable for the size of the vacuum chamber; if necessary, the sealing bar can be removed.<br><br>Make sure the container air intake device is open. |  |
| **5** | Activate the control panel by double-clicking on the screen.<br>Then press **STAND-BY** to turn on the machine. |  |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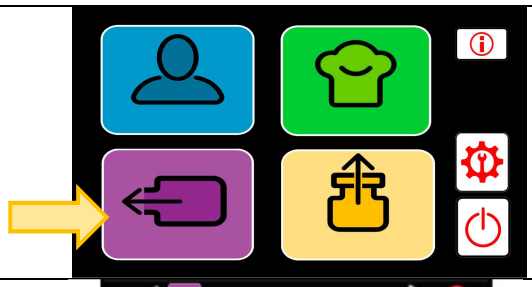
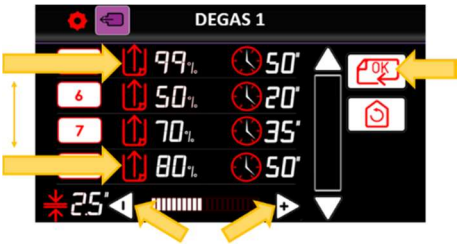
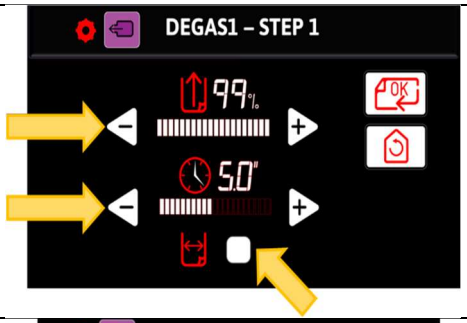
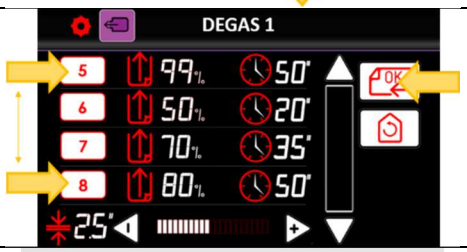
| | | |
|---|---|---|
| **6** | Select **Degas Cycles** |  |
| **7** | Press the **SETTINGS** key or one of the icons to edit the parameters of each step of the cycle.<br>Press the corresponding icon if it is necessary to change the sealing time. |  |
| **8** | Press the icon corresponding to the step to enter the editing screen and edit the values.<br>Press the +/- keys and set a **SEALING** duration time from 0" to 6.0".<br>Press **OK** to save the new set values and return to the previous screen |  |
| **9** | Press the +/- keys and set a **VACUUM** value from 10% to 99%.<br><br>Press the +/- keys and set a **PAUSE** value from 0" to 60".<br><br>Set the Softair air return time |  |
| **10** | To deactivate a step, press on the key with the number corresponding to the step to be deactivated (the key will turn from white to black) and press OK to save the changes and return to the previous screen. |  |
| **11** | Lower the lid with both hands.<br><br>The cycle starts automatically. |  |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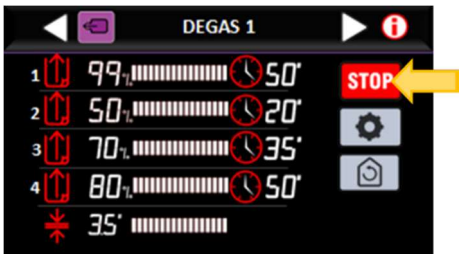
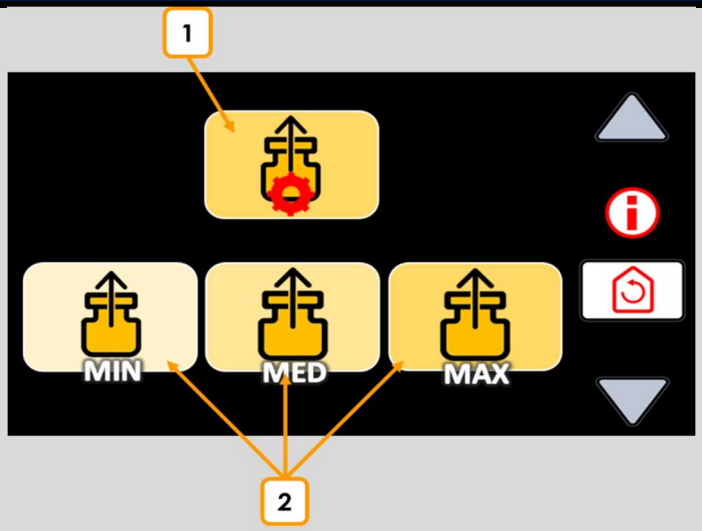
| | | |
|---|---|---|
| **12** | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. |  |
| **13a** | **End of cycle**. The lid opens automatically. Take out the packed product, being careful not to touch the sealing bar, which may still be hot. | |
| **13b** | **End of cycle**. The lid opens automatically. Take out the container. | |

### 4.2.11 Jar cycles EVP/DVP20T: editable and pre-set programs/parameters modification

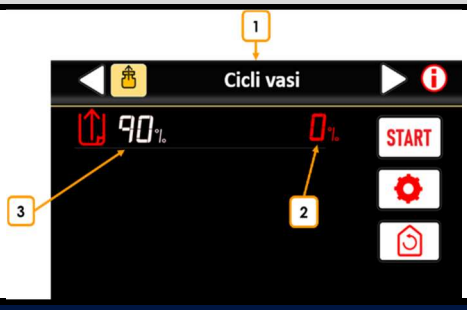
**Jar cycles: editable and pre-set programs EVP/DVP20T**




| No. | Description |
|---|---|
| 1 | **Access to editable programs for jars** |
| 2 | **Access to pre-set jar cycles** |

**A) Editable jar program-1: parameters menu**

| No. | Description |
|---|---|
| 1 | Name of the selected program |
| 2 | Instantaneous value reached during the cycle |
| 3 | Set value |




**B) Editable programs-2: edit parameters menu**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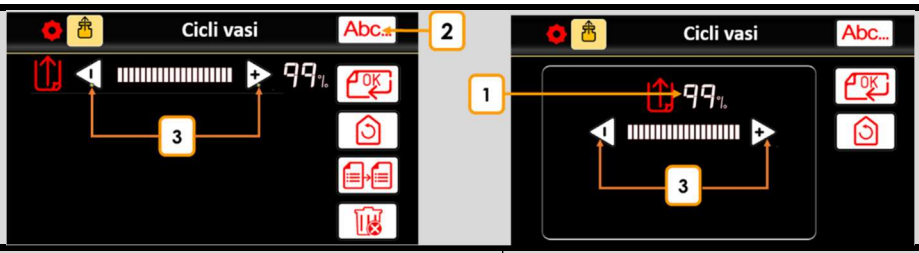
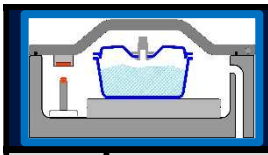
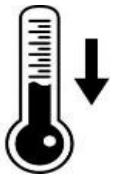



| Step | Description | Image |
|---|---|---|
| 1 | Vacuum percentage set | |
| 2 | It allows renaming the program | |
| 3 | It allows changing the vacuum percentage | |

### 4.2.12 Packaging vacuum containers in tank with EVP/DVP20T



**Packaging vacuum containers in tank EVP/DVP20T**

| Step | Description | Image |
|---|---|---|
| 0 | Choose a **container** that is suitable for vacuum packaging **(THE RESISTANCE TO VACUUM MUST ALWAYS BE VERIFIED!)**<br><br>Insert the product into the container and close it.<br>Filling limits:<br>• Solid products: 100% • Broths, brews: 1/2 • Sauces: 1/3 • Creams, sauces with cream: 1/4 • Egg or egg-white based products: 1/6<br><br>**Insert foods chilled at +3°C for best results.**<br><br>Lift the lid until it stops, and hook the piston by moving it forward. |     |
| 1 | Make sure the vacuum chamber and the product to be packed are dry.<br>Be careful not to contaminate or wet the inner part.<br><br>Place the maximum number of shelves (A) that the chamber can contain in relation to the size of the container to be used. |   |
| 2 | Choose a **container** that is suitable for the size of the vacuum chamber and which, once inserted, remains at least at **1 cm** from the closed lid. If necessary, the sealing bar can be removed.<br><br>Make sure the container air intake device is open. |  |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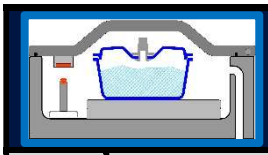
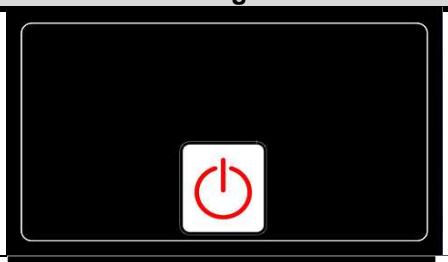


## Packaging vacuum containers in tank EVP/DVP20T

| Step | Description | Image |
|---|---|---|
| 3 | Activate the control panel by double-clicking on the screen.<br>Then press **STAND-BY** to turn on the machine. |  |
| 4 | Select **Jar Cycles** |  |
| | Select the desired program, choosing from: **Editable cycles**, **MIN. Level**, **MED. Level**, **MAX. Level** | |
| 6 | Lower the lid with both hands, pressing on the corners. |  |
| 7a | When using an **editable cycle**, set the desired vacuum value, then press **START** to launch it. |  |
| 7b | When using a **pre-set cycle**, set the desired vacuum value, then press **START** to launch it. |  |
| 8 | When **STOP** is pressed at any time, the machine cycle is immediately interrupted and the chamber is decompressed.<br>The lid opens automatically.<br>The machine returns to the set program. | |
| 9 | **End of cycle**. The lid opens automatically. Take out the container. | |
| 6 | Lower the lid with both hands, pressing on the corners. | |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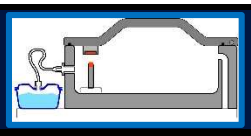
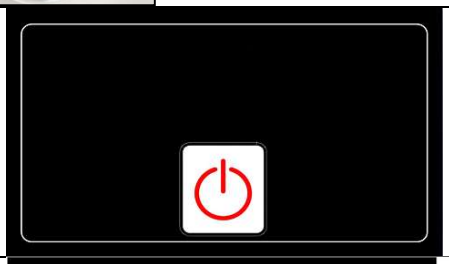
### 4.2.13 Packaging external vacuum containers with EVP/DVP20T

|  | **Packaging external vacuum containers EVP/DVP20T** | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **1** | Couple the accessory **(A)** for the external containers to the tank and insert it or press it on the lid of the container. Make sure the container air intake device is open.<br>**ALWAYS CHECK THE RESISTANCE TO VACUUM OF CONTAINERS! TEMPERATURE OF THE PRODUCT ≤ 3 ° C!** |   |
| **2** | Activate the TFT by double-clicking on the screen.<br>Then press **STAND-BY** to turn on the machine. |  |
| **3** | Select **Jar Cycles.** |  |
| **4** | Select the desired program, choosing from: **Editable cycles**, **MIN. Level, MED. Level**, **MAX. Level** | |
| **5a** | When using an **editable cycle**, set the desired vacuum value, then press **START** to launch it. |  |
| **5b** | When using a **pre-set cycle**, set the desired vacuum value, then press **START** to launch it. |  |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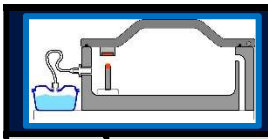
|  | **Packaging external vacuum containers EVP/DVP20T** | |
|---|---|---|
| **Step** | **Description** | **Image** |
| **6** | 1) If the set vacuum value is lower than 99%, the pump is turned off.<br>Remove the accessory, insert it on the lid of the next container and press **START** to launch a new cycle.<br>2) If the set vacuum value is equal to 99%, the pump remains on.<br>Remove the accessory, insert it on the lid of the next container. |  |
| **7** | When **STOP** is pressed at any time the machine cycle is interrupted immediately. |  |
| **8** | At the end of the cycle, remove the accessory from the tank. | |

### 4.3 After use

- Turn off the packaging machine:
  - pressing or 5" **( EVP/DVP08-12-16D Models)**
  - pressing and again , turn off **( EVP/DVP20T Models)**
- Clean and dry the packaging machine and the accessories used.
- When the tank is completely dry, release the piston (by pressing it backwards) and lower the lid to the rest position, in order to protect the vacuum chamber from dirt and dust.

### 4.4 Alarm management
### 4.4.1 EVP/DVP08-12-16D

| Display message | Meaning |
|---|---|
| CHANGE OIL | ***Change oil***: the alarm appears when 5,000 vacuum cycles have been carried out. |
| ALL GAS | ***No gas flow***: the alarm displays when the sensor does not detect increasing pressure variations during the gas injection phase. |
| TIM OUT | ***Phase timeout alarm (C-Chef):*** If the phase of a cycle does not complete within 4 mins. 30 secs. (e.g. degas cycle phase left paused), the machine seals and returns air and flashes TIM OUT. |
| ERR VAC | ***Vacuum not started:*** this alarm displays when the sensor does not detect a minimum level of vacuum after 15 secs. |
| HOT | ***Cool down the product:*** the alarm is triggered when the machine detects the presence of a product that is too hot inside the vacuum chamber and the maximum vacuum value cannot be reached. (It appears only if the programmed parameters are VAC99% and VAC + ≥ 0). |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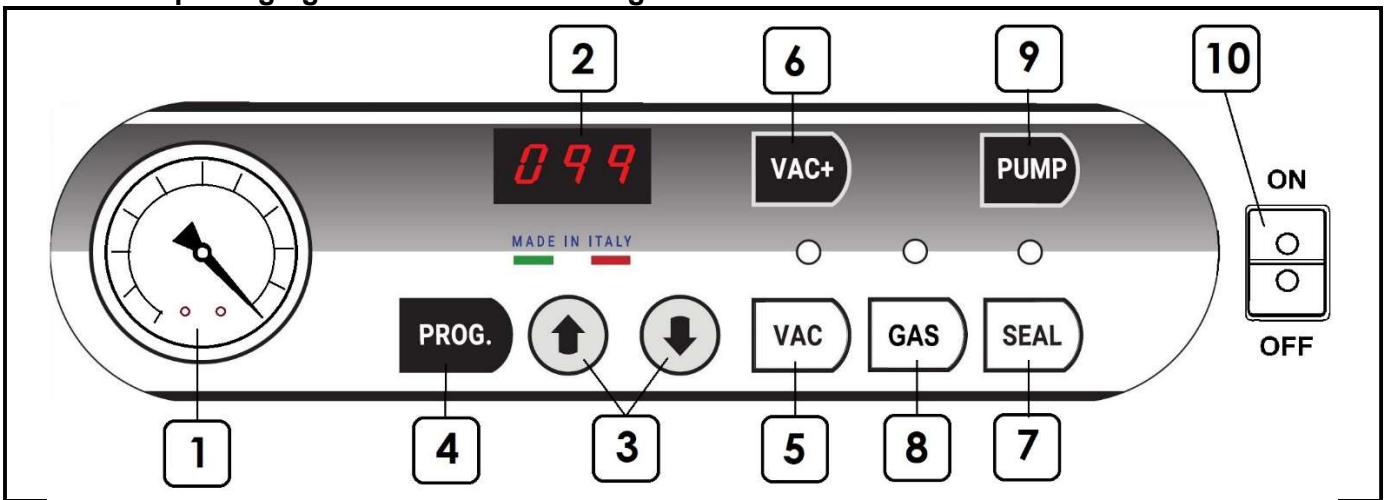
### 4.4.2 EVP/DVP20T

| Icon or pictogram | Meaning |
|---|---|
|  | ***Cool the product***: the alarm occurs when it is not possible to reach the programmed vacuum level because the temperature of the product to be packed is too high |
|  | ***Perform the H2OUT pump dehumidification cycle***: the alarm occurs when the machine detects a drop in efficiency, due to the humidity absorbed by the pump. |
|  | ***Gas flow failure***: the alarm occurs when the machine detects a fault when injecting the inert gas |
|  | ***Change the oils***: the alarm appears when 5,000 vacuum cycles have been reached |
|  | ***Overheating***: the alarm appears when the maximum temperature threshold inside the machine has been exceeded. |

## 4.5 Programming and functions of the EVP/DVP25-60A digital control panel
## 4.6 Vacuum packaging in EVP/DVP25-60A bags




| No. | | Val. | Function | Description of the function |
|---|---|---|---|---|
| **1** |  | **0/ -1bar** | **Vacuum gauge** It displays the analogue measurement of the pressure inside the vacuum chamber. | It provides an approximate indication of the vacuum value reached before sealing the bag, and a rough indication of the presence of (severe) leaks in the circuit. |
| **2** |  | **3 digit** | **DISPLAY** Display of values and parameters during programming and while the cycle is in progress. | **DISPLAY**<br>**1st digit on the left:** indicates the program number entered<br>**2nd and 3rd digits:** indicate the value relating to the activated function<br>- At power-up, they display the optional functions of the appliance. **g** = gas **s** = softair **j** = jars<br>- Display of programmed function: **VAC** =vacuum **SAL** = sealing **GAS** = gas injection **JAR** = jars function (jar or external embossed bag vacuum) |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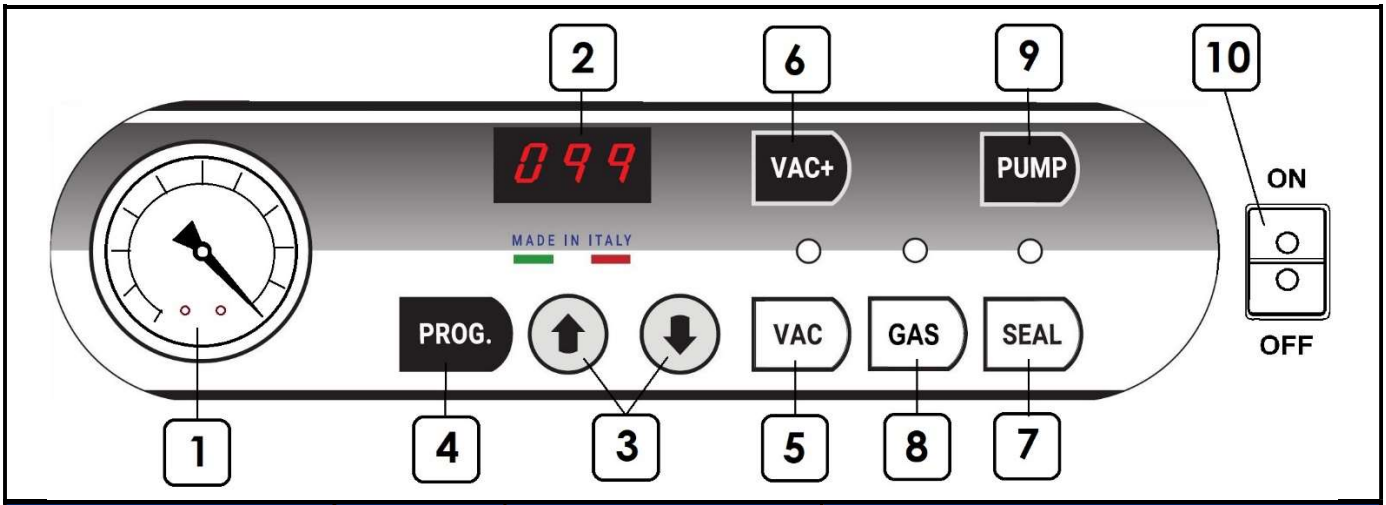


| No. | | Val. | Function | Description of the function |
|---|---|---|---|---|
| | | | | - indicates the number of cycles performed and the oil change notification. |
| 3 | ⬆ ⬇ | | **UP/DOWN**<br>Keys for adjusting values and selecting programmes. | **VALUE SETTING**<br>To increase or decrease values to be programmed, scroll programs from 0 to 9 + H2OUT.<br>By scrolling the programs, if the optional GAS is provided and set, the respective indicator LEDs light up. |
| 4 | PROG. | | **PROG**<br>Key to return to the programming mode. | **PROGRAMMING**<br>Press **PROG** to enter programming: the number of the program in progress starts flashing. The LED of the selected function will begin to flash when the corresponding function is programmed. Set the desired value using the **UP/DOWN** keys and confirm with the **PROG**key, or proceed with programming by pressing the required function key.<br>**Pressed and held when switched on, it allows the sensor to be calibrated.** |
| 5 | VAC | **0-99%** | **VAC**<br>Vacuum level programming button. It allows accessing the programming of the empty function or to display its value. | **VACUUM FUNCTION**<br>The LED flashes during the relevant programming.<br>The final pressure in the chamber is expressed as a percentage. |
| 6 | VAC+ | **0-250”** | **VAC+**<br>Additional vacuum programming button. It allows accessing the programming of the additional vacuum function or to display its value. | **ADDITIONAL VACUUM FUNCTION**<br>The LED flashes during the relevant programming.<br>Once the maximum vacuum is reached, it is possible to add an additional vacuum execution time using the **VAC+**key, expressed in seconds, useful to obtain the maximum vacuum possible. The parameter is only programmable if the **VAC** vacuum has been set to 99%. |


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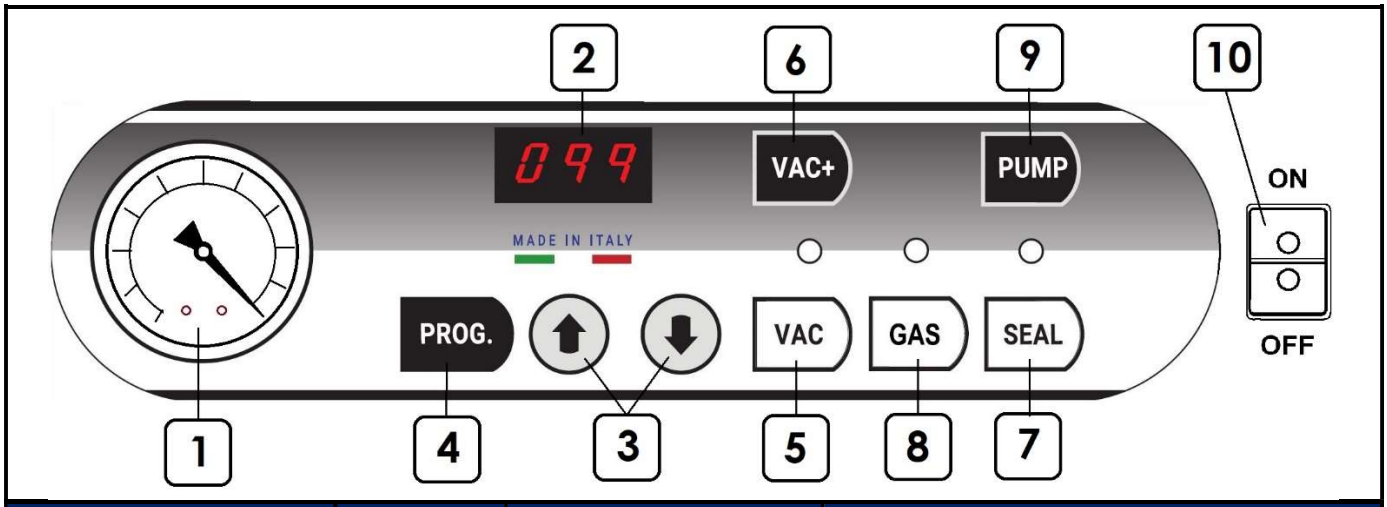


| No. | | Val. | Function | Description of the function |
|---|---|---|---|---|
| 7 A | SEAL | 1-6” | **SEAL** Sealing time programming button. It allows accessing the programming of the sealing function or to display its value. | **SEALING FUNCTION** The LED flashes during the relevant programming. The sealing time varies according to bag density, on the basis of ambient temperature and cycle repeat frequency. The bag sealing line must be uniform, well marked and without melting points. A sealing time appropriate to the bag thickness, normally between 2 and 4 seconds, must be programmed. |
| 7B | | STOP | **STOP** When pressed during a cycle (vacuum phase), it interrupts the cycle. | **STOP FUNCTION** The SEAL button interrupts the cycle. |
| 8 | GAS | 0-69% | **GAS** Gas injection percentage programming button. It allows access to the programming of the gas function or displaying of its value. | **INERT GAS INLET FUNCTION** The maximum admissible gas percentage is 60%. This percentage represents the chamber volume occupied by gas. Beyond 60%, the pressure exerted by the sealing bar on the bag may be insufficient and the sealing of the bags may be defective. Machines equipped with digital panel and gas option are normally equipped with a vacuum sensor, which allows setting the desired amount of vacuum and gas expressed as percentage. |
| 9 | PUMP | | **PUMP** Start button for the JARS (JARS/containers) or “PUMP” function: it allows starting of the vacuum pump function in jars/external bags or for continuous pump operation. | **VACUUM FUNCTION IN JARS CONTINUOUS VACUUM FUNCTION** In the EVP/DVP25A model it is possible to start the pump continuously, in order to vacuum in vacuum containers or to vacuum in external embossed bags. In EVP/DVP60A models, it starts the continuous operation of the vacuum pump, allowing maximum efficiency thanks to the correct oil temperature and continuous evaporation of inappropriately aspirated vapours. |


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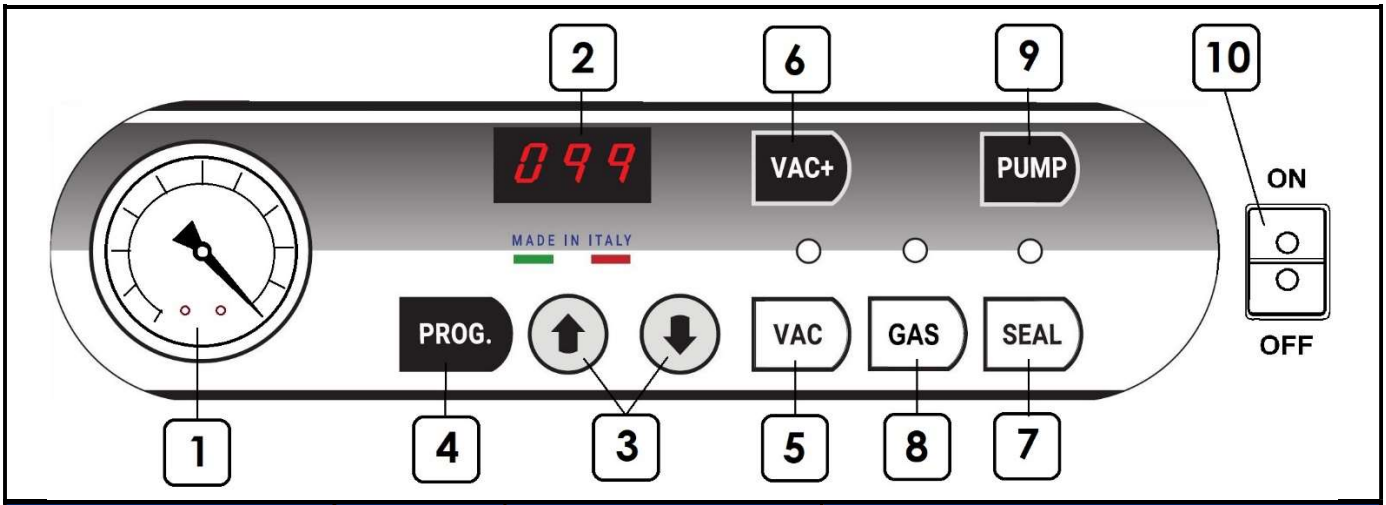
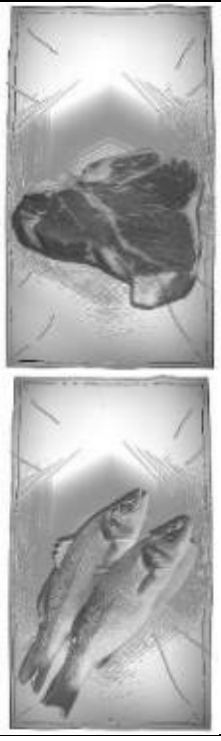



| No. | | Val. | Function | Description of the function |
|---|---|---|---|---|
| 10 | ON<br>OFF | ON<br>OFF | ON/OFF<br>Main switch: appliance on/off and cycle interruption. | **POWER ON**<br>Operate the main switch on the front of the appliance; a LED on the control panel lights up.<br>**Press and hold the PROG key when powering on to calibrate the sensor.** |
| 11 | | UP/DOWN | **H2OUT** | **PUMP OIL DEHUMIDIFICATION CYCLE**<br>Select the H2OUT program with the **UP/DOWN**keys; on the display the indication *"h2o out"*appears, start the cycle by lowering the cover. |

### 4.6 Vacuum packaging in EVP/DVP25-60A bags

| Step | Image / symbol | Vacuum in bags function (Without/with inert gas, liquids, external embossed bags) |
|---|---|---|
| 1 |  | **PREPARATION.**<br>**Prepare the product in the bag**<br>Select the bag based upon the method of use:<br>**Preservation: PA/PE**<br>**Cooking: OPA/PP**<br>It must be suitable for the product size, and compatible with the length of the sealing bar.<br>**Solid: the product must not occupy more than 2/3 of the useful volume of the bag.**<br>**If gas injection is foreseen: further reduce the volume of product to approximately 1/2 of the useful volume of the bag.**<br>**Liquid: the product must not occupy more than 1/3 of the useful volume of the bag.**<br>**THE PRODUCT MUST BE BLAST CHILLED AT 3°C!**<br>**PRODUCT TEMPERATURE: 0-5°C!** |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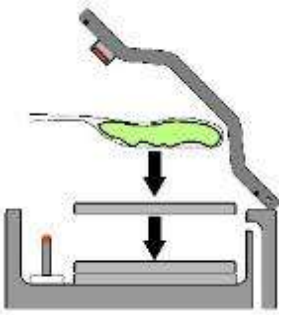
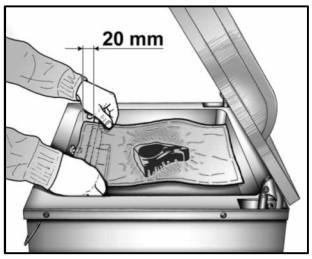
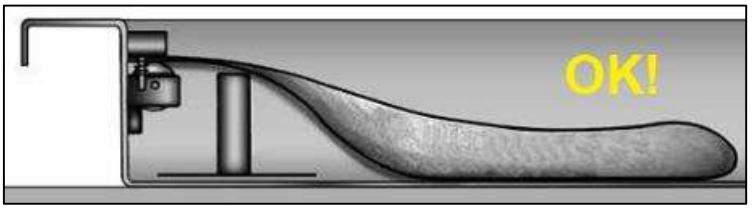
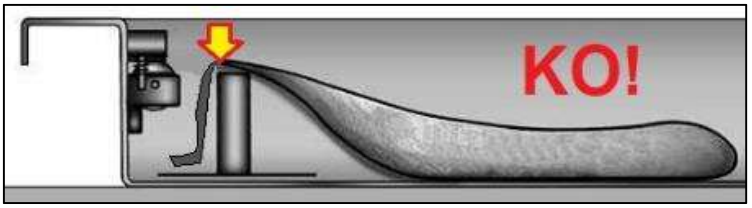
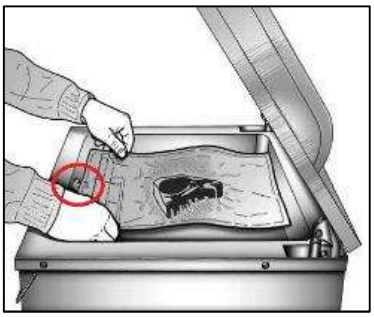
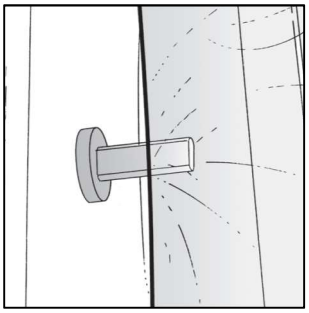
| Step | Image / symbol | Vacuum in bags function (Without/with inert gas, liquids, external embossed bags) |
|---|---|---|
| 1 A |  | **Place the bag inside the vacuum chamber**<br>Open the lid by lowering the lid retaining hook and make sure that vacuum chamber and lid **are dry and clean (free of dust and debris).**<br>Position the plastic shelves inside the tray according to the size of the product; inserting the **maximum number of shelves** in relation to the volume of the bag will save time during the air evacuation cycle.<br>When inserting the food inside the bag, take care **not to dirty or wet the internal part near the opening** so as not to compromise the efficiency of sealing.<br>Rest the bag on the shelves **in a centred position** with respect to the sealing bar **(A)**, so that the open flap protrudes by about **2 cm** with respect to the bar itself.<br><br>**Important note: DO NOT bend the open flap of the bag downwards at 90°** past the sealing bar, because this fold prevents complete air evacuation , thus causing the envelope to swell and shift.<br><br><br>**For models with activated gas and gas option:** insert the gas nozzle into the mouth of the bag.<br> <br>In machines equipped with long bars, distribute the bags evenly along the sealing bar. |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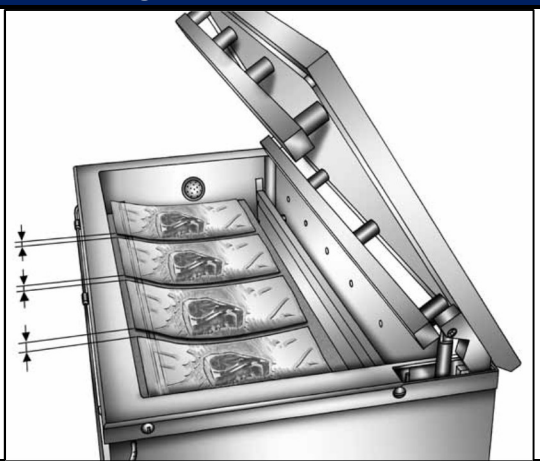
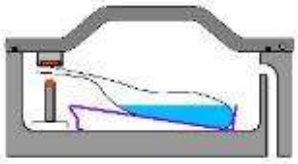
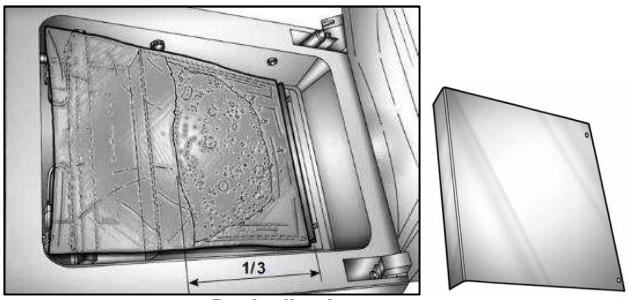
| Step | Image / symbol | Vacuum in bags function<br>(Without/with inert gas, liquids, external embossed bags) |
|---|---|---|
| | |  |
| **1B** |  | **Prepare the packaging of liquid products with the aid of the inclined support (optional)**<br><br>Before starting the packaging of liquid products, **heat the pump oil for 3-4 minutes** by pressing the PUMP button.<br>**Make sure that the liquid is at a temperature of between 0 and 5°C.** Fill the bag to **no more than one third** of its volume, position the bag as described above and if available, use the optional "inclined support for liquids", which must be adjusted in length according to the size of the bag.<br><br>**Dx: Inclined support**<br>Immediately stop the work cycle if any liquid leaks from the bag.<br>**It is advisable to perform a H2OUT cycle at the end of the work.**<br>**In the case of frequent packaging of liquid products, increase the frequency of replacing the pump oil (at least every 3-6 months and in any case whenever the oil is in sub-optimal conditions).** |
| **1.2** |  | **WORK CYCLE ACTIVATION**<br>Lower the lid with both hands, exerting slight pressure at the lid corners. The appliance starts the work cycle according to vacuum, gas and sealing values set.<br> |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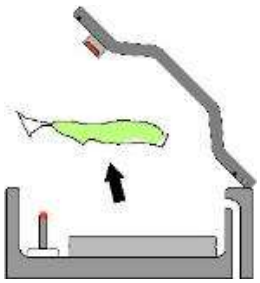
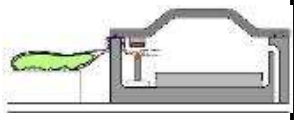
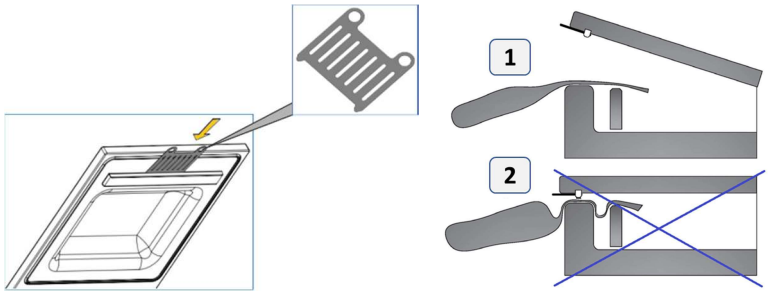
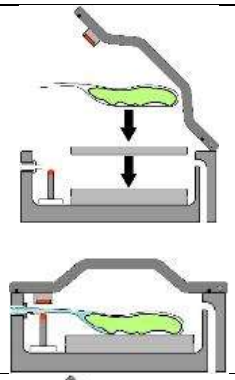
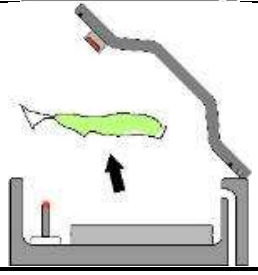
| Step | Image / symbol | Vacuum in bags function (Without/with inert gas, liquids, external embossed bags) |
|---|---|---|
| **1.3** |  | **End of cycle**<br>The appliance automatically ends the cycle after the sealing bar has cooled off and the lid reopens<br>Remove the packaged product and **check the sealing of the bag**: it must be well marked, without melting points and without interruptions.<br>Adjust the set values if warranted, then proceed with the second cycle.<br> |
| **2** |  | **Execution of vacuum in embossed outer envelopes of solid, dry and non-sensitive to crushing products**<br>**1)** Switch on the appliance and set the welding value with the **seal**button.<br>Press the **PUMP** <br>1) Place the envelope outside the machine with the edges of the embossed envelope placed **at least 2 cm beyond the sealing bar.** Place the "Easy" accessory between the silicone holder and the cover.<br><br>**5) Lower the lid to start the cycle.**<br>**6)** When the vacuum inside the envelope is complete, **i.e. with a vacuum gauge that detects -1.0 bar and in any case when the envelope to the touch appears well stretched and adhering to the product**, press the **seal**key.<br>The bag will then be sealed and the cycle is complete when air returns and the lid opens. |
| **3** |  | **Vacuuming in inert gas bags for crush sensitive products**<br>**Bag preparation: follow steps 1 – 1.3. Carefully place the gas nozzle inside the bag mouth!**<br>1) Program VAC to 99% and VAC+ 5".<br>2) Program the percentage of gas between 10 and 69%<br>3) Schedule the welding time.<br>4) Place the envelope without wrinkles by inserting the gas inlet nozzle into the mouth of the envelope and start the cycle. |
| **3.2** |  | **END OF CYCLE**<br>The appliance automatically ends the cycle after the sealing bar has cooled off and the lid reopens<br>Remove the packaged product, check the degree of crushing of the product and check the bag seal: it must be well marked, without melting points and interruptions.<br>Adjust the set values if warranted, then proceed with the second cycle. |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| Step | Image / symbol | Vacuum in bags function (Without/with inert gas, liquids, external embossed bags) |
|---|---|---|
| | |  |

## 5. Correct use: the "good rules"

These ***"good practices"*** summarize the correct behaviours to be observed when using or carrying out maintenance operations on vacuum chamber packaging machines. By complying with these rules, most of the problems reported by customers on the machine use can be avoided.
**The objective is for the entire supply chain, in particular those who deal directly with customers, to make these rules their own, in order to standardise the corporate language for outside users, thus avoiding possible contradictions.**

| | The ten rules on the proper use of vacuum chamber packaging machines |
|---|---|
| 1° | Before beginning operations, check the general condition of the machine (oil, Teflon, gaskets and silicone profile). |
| 2° | Heat the pump oil before starting to pack (2-3 vacuum cycles). |
| 3° | Only the maximum vacuum exists: except for individual and specific cases, for example products that "explode", such as tortellini, the partial vacuum annuls the effect of preservation. Partial vacuum does not proportionally reduce the shelf life ("extending the preservation by two times instead of three times"): it annuls the benefits related to the lengthening of the preservation times. |
| 4° | When vacuum/gas packaging, the vacuum level must always be set to the maximum value, possibly adjusting the gas percentage. The tank pressure must be adjusted to a maximum of 1 bar. Note: gas does not extend shelf-life: it only avoids crushing the product. |
| 5° | The product, unless completely dry, must be packaged cold, i.e. with a maximum temperature of 0-5°C (0.2 litres of water at 2-3°C allows to reach a final vacuum of 5-8 millibar, water at 14°C 15-20 millibar). |
| 6° | The product at room temperature (17-21 °C) is not "cold" ("cold" water from the vacuum tap is actually ... warm, as it is at 14 °C). |
| 7° | Comply with the proportion between bag volume and product volume (2/3 for solid products, 1/3 for liquid products). Note: for packaging in vacuum-gas, the bag must be slightly bigger than 2/3 or 1/3 proportions. |
| 8° | The mouth of the bag must be clean, the product at least 5 cm away from the sealing bar, the bag itself spread on the sealing bar without wrinkles and downward folds. If gas is injected, the nozzle must be placed inside the bag. |


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| The ten rules on the proper use of vacuum chamber packaging machines | |
|---|---|
| 9° | Remove all shelves when packaging liquid products; if available, use the “inclined support” accessory. |
| 10° | Never leave liquids or dust residues in the chamber: clean the chamber and cover thoroughly after work. Always work in a hygienic conditions! |

| Two Routine Maintenance Rules for Horeca Environment | |
|---|---|
| 1° | CARRY OUT THE DEHUMIDIFICATION CYCLE OF PUMP OIL (H2OUT) every day if the machine is installed in a kitchen, and liquid products (soups, sauces, creams) or very moist products (vegetables and meats) are frequently packed. At the end of the shift, while cleaning the kitchen, activate a H2OUT cycle! |
| 2° | CHANGE THE PUMP OIL based on how demanding the use is: it may need changing as often as three months, especially in the Horeca area, in which liquid products (soups, sauces, creams) or moist products (vegetables and meats), which are hardly ever sufficiently cooled down, are packed for long periods. EVERY TIME THE OIL IS CHANGED, replace the exhaust filter. |

| The rule for evaluating the efficiency of a vacuum chamber packer | |
|---|---|
| 1° | The vacuum chamber packaging machine can be considered efficient when the following parameters complied with at the ambient temperature of 15-25°C and atmospheric pressure P≥1000 millibar:<br>A - FINAL PRESSURE REACHED IN THE VACUUM CHAMBER: PF ≤ 10 MILLIBAR.<br>B - MAXIMUM PRESSURE VARIANCE IN THE VACUUM CHAMBER WHEN THE PUMP IS OFF (CIRCUIT LOSS CHECK): MAXIMUM 10 MILLIBAR IN 60 SECONDS OR 5 MILLIBAR IN 30 SECONDS. |

| Eight rules for the correct use of pre-set cycles and deaeration cycles ("Gourmet cycles") | |
|---|---|
| 1° | The product must NOT have been recently blended, chopped, whipped, homogenised or puréed. Otherwise leave the product in the refrigerator for at least 2 hours, in a sufficiently large container (filled to 3/5 of the volume). |
| 2° | In case the product from which air is to be removed is liquid, air bubbles may form, which significantly increase the volume of the product as the degree of vacuum progresses. The nine programs featured in the Cuisson line (five in the Bright line) are optimised and |


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| | Eight rules for the correct use of pre-set cycles and deaeration cycles ("Gourmet cycles") |
|---|---|
| | functional to avoid - based on their consistency and fluidity - excessive foam formation, in order to avoid the leakage of the product from jars or bags. However, given the variability of product conditions (quality, temperature, quantity of air incorporated), it is advisable to supervise the process at least at certain intervals, in order to avoid at all cost that any liquid escapes and may cause damage to pump and machine components; this is particularly true for the cycles of ice cream bases. |
| 3° | For the process in jars, use sufficiently tall and roomy jars in relation to the volume to be processed. |
| 4° | Immediately stop the cycle if you notice leakage of product from the bag or jar. |
| 5° | Bag size (cm x cm)/Maximum volume of liquid product (ml) ratio to comply with:<br>15×25 cm bags: maximum 500 ml content volume<br>20×30 cm bags: maximum 1000 ml content volume<br>25×35 cm bags: maximum 1500 ml content volume<br>30×40 cm bags: maximum 2000 ml content volume<br>40×50 cm bags: maximum 3000 ml content volume |
| 6° | When using the pre-set programs with the gas option activated, make sure that the food gas system is featured and connected as described in § 3.2 - point 6. |
| 7° | As with any other type of vacuum-packed product, it is necessary to reduce the core temperature of the product to 3°C (preferably between 0.5 and 2°C, for products with high air content such as ice cream bases). |
| 8° | If de-aerating in a container, use a sufficiently large container with high edges and fill it up to a maximum of 3/5. |

| | Three rules for the correct use of vacuum-packed jars |
|---|---|
| 1° | To vacuum package rigid jars, it is necessary to have jars suitable for professional use and, therefore, with adequate mechanical resistance to the vacuum to be achieved. |
| 2° | If liquid foods are stored, the jars can be filled up to a maximum of ¾ of their total volume. |
| 3° | If you intend to store the product in the refrigerator at 3°C, make sure that the jar is suitable to withstand this temperature in a vacuum. |

| | Three answers to provide customers concerning three recurring issues |
|---|---|
| 1° | "THE SEALING IS WRINKLED AND THAT'S WHY THE BAG LEAKS". |


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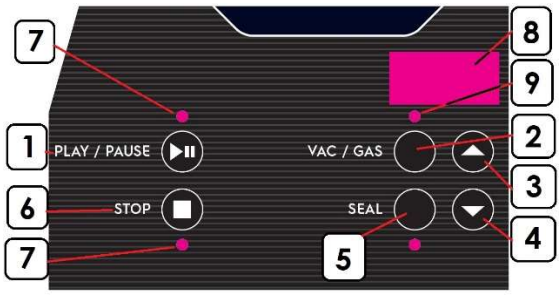
| | Three answers to provide customers concerning three recurring issues |
|---|---|
| | Reply: vacuum pack ten bags containing a modest amount of water (0.1 litres is enough) with the type of bags used by the customer. At the end of the cycle, turn the bags containing the water upside down: if no water leaks from the seal, the problem is not caused by the seal, but by something else (perforation due to angular product, incorrect handling, support on sharp objects, bag unsuitable thickness and/or quality, etc.). |
| 2° | "THERE IS A LOSS OF VACUUM IN THE BAG THAT SWELLS."<br>Reply: check the type of product. Many products contain gas, which is released over varying times, from a few minutes to several hours to several days. To eliminate doubts about the quality of the seal, perform the same test described above.<br>Also, check the efficiency of the packaging machine, according to the two rules in item |
| 3° | "THERE ARE AIR BUBBLES IN THE BAG WHEN LIQUIDS ARE PACKED."<br>Reply: the root cause is linked to both the type of product (the thicker the liquid, the greater the possibility of incorporating gas), and to its packaging temperature as well as to the bag volume / liquid volume ratio. In any case, the bubbles - if pushed in a single point, are normally so minimal that they have no impact on shelf life.<br>“With the competitor's machine, this problem didn't happen!” Sentences of this kind are never supported by proof: even using the same machine and the product of the same preparation back-to-back, the result will be the same. For example, a minimum variation in temperature or product volume/quantity is sufficient to product a different result. |

## 6. Control panel technical menu functions

### 6.1 EVP/DVP08-12-16D




**Program reset**

**The user programs are reset to factory values.**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→ When the machine is on, press simultaneously **the keys (3) and (4)** for 4". The LEDs will flash for a few seconds.
→ At the end, the machine goes into stand-by with the last program used **with default values on all programs**.

## Buzzer activation / deactivation

→ **Activation:** Turn on the machine by pressing the **STOP (6) and PLAY / PAUSE (1) keys simultaneously.**
→ At the end, the machine goes into stand-by mode with the last program used with default values on all programs.
→ **Deactivation:** Turn on the machine by pressing the **STOP (6) and PLAY / PAUSE (1) keys simultaneously.**
→ At the end, the machine goes into stand-by mode with the last program used with default values on all programs.

## Display of number of cycles before oil change

→**Machine in stand-by mode.** Display: shows the last program number used.
→ Simultaneously press **STOP (6)** and **PLAY/PAUSE (1) for 4 seconds. The cycles carried out (1/10) are displayed for 5 seconds in groups of ten. Example: 3785 cycles = 378; 3784 = 378; 3781 = 378; 3790 = 379 etc.**
→ Machine goes back in stand-by mode.

## Oil alarm display and reset

→ When 5000 cycles have been reached (for all models), when the machine is turned on, at the end of each program it will display: ***OIL*.**
→ **Zero setting:** Simultaneously press **STOP (6)** and **PLAY / PAUSE (1)** for 4" until the number of cycles performed is displayed; then press the **STOP (6)** key again until the number of cycles is reset.

## Vacuum sensor signal absent alarm

**Alarm due to lack of vacuum (lack of vacuum sensor consent):** if the sensor does not give consent for any reason, it turns off the pump and opens the drain solenoid valve.
**ERR** flashes and returns to stand-by mode.

## Alarm product too hot "HOT"

**Cool down the product:** the alarm is triggered when the machine detects the presence of a product that is too hot inside the vacuum chamber (> 10°C) and the maximum vacuum value cannot be reached. (It appears only if the programmed parameters are VAC99% and VAC + ≥ 0).

## Pressure test: machine efficiency verification cycle

**The pressure test measures the efficiency of the machine according to the rule described in chap. 5.**
The test cycle displays the pressure values in **millibar,** as detected by the board sensor.

1) Access the technical menu: turn on the machine by pressing the **STOP (6) and UP (3) and DOWN (4) keys simultaneously.** After the indications of the firmware name "**TEC"** will flash on the display.
2) Press the **SEL/OK (2),** button until the display alternates between ***GO*** and ***Tst*.**
3) Start of the pressure test by lowering the cover **within 10 secs, otherwise it will go back to the initial menu.**
4) Vacuum reached phase: the display shows the maximum vacuum value reached for about 90".
5) Vacuum reached display phase: after the vacuum reached phase of around 90 seconds, the pump switches off and the display shows the vacuum value for 30 seconds. In this phase the LEDs light up in carousel.
**In this phase, check if there are losses over 10 millibars!**

6) At the end of the cycle, the chamber is decompressed and the lid opens. The machine goes back to the last program used.

**Display:**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Technician menu | T | s | t | | | | | |
| Vacuum reached phase | 9 | 9 | 9 | → | 8 | 7 | → | 5 |
| Vacuum display phase | | | 5 | → | 1 | 1 | → | 1 2 |


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## Calibration of the absolute vacuum sensor EVP/DVP08-12-16D (operation to be carried out exclusively at the factory)

**The calibration may only be carried out by the manufacturer on the bench, on a new power board, using specific setting and calibration apparatus. With this operation, the sensor is calibrated to the maximum vacuum level that the test system can reach, thereby obtaining the maximum measurement precision taking into account the construction tolerances of the sensor itself and the related electronics.**

1) Access the technical menu: turn on the machine by pressing the **STOP (6) and UP (3) and DOWN (4) keys simultaneously.** After the indications of the firmware name "**TEC"** will flash on the display.
2) Press the **SEL/OK (2)** button until the display alternates between ***SEN*** and ***RES*** **(RES = SENSOR RESET).**
3) Press the "**+**" **(3)** button for 3 seconds until you hear a long beep.

**Display:**




4) Quit the "Technician reserved" function.
6) Start an H2OUT cycle within 20 seconds without product or shelves and with the vacuum chamber dry.
7) The power board is read to be installed in the packaging machine.

## Phase timeout alarm

| | | |
|---|---|---|
| ***t*** | ***I*** | ***M*** |
| ***O*** | ***u*** | ***t*** |

If a phase of a cycle does not end within approximately 4' 30" (Example: degas phase paused), the machine performs:
→ The sealing phase, if activated.
→ The air return phase. The display alternately shows **TIM OUT**.

## Millibar display (mbar)


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**The display in millibar:** displays the pressure values detected by the board sensor, in millibar (mbar) instead of as a percentage.
This enables an accurate display of the vacuum level attained by the machine. With “Vac=99% and Vac+=0”, the vacuum value must be ≤ 10 millibar. When checking is complete, reset the display to percentage by turning the machine off and on again.

1) Enter the technical menu: when switching on, press the **STOP key (6)** and the two **UP** and **DOWN keys (3 and 4)** at the same time until "**TEC" flashes on the display.**
2) Press the **SEL/OK key (2),** until ***MBR*appears on the display.**
3) Select the ***ON*** item using the **UP (3)** and **DOWN (4)** keys to activate the function.

**Display:**




4) If no key is pressed, after a timeout of 7 seconds the set program is displayed again.

NB: this function remains active until the machine is switched off. The next time the vacuum is restarted, the display in millibar (mbar) will be turned off.

## 6.2 Functional flowcharts of the EVP/DVP20T technical menu

To access the help menu, proceed as follows: ON → "wheel" symbol → Help menu → Enter password (dd mm yy visible at power up) → Help submenu, choose the desired field.




**Calibration of the absolute vacuum sensor EVP/DVP20T (operation to be carried out exclusively at the factory)**

**The calibration may only be carried out by the manufacturer on the bench, on a new power board, using specific setting and calibration apparatus. With this operation, the sensor is calibrated to the maximum vacuum level that the test system can reach, thereby obtaining the maximum measurement precision taking into account the construction tolerances of the sensor itself and the related electronics.**

1) Press , and then access the **HELP MENU.**
2) Enter the password, corresponding to the date visible in stand-by DD/MM/YY (for example 120620)
3) Select **“Factory settings”**
4) DO YOU WISH TO RESTORE? → confirm with **OK**
5) **Within 20”,** exit and enter the **User Menu**, select and start the **H2OUT cycle.**


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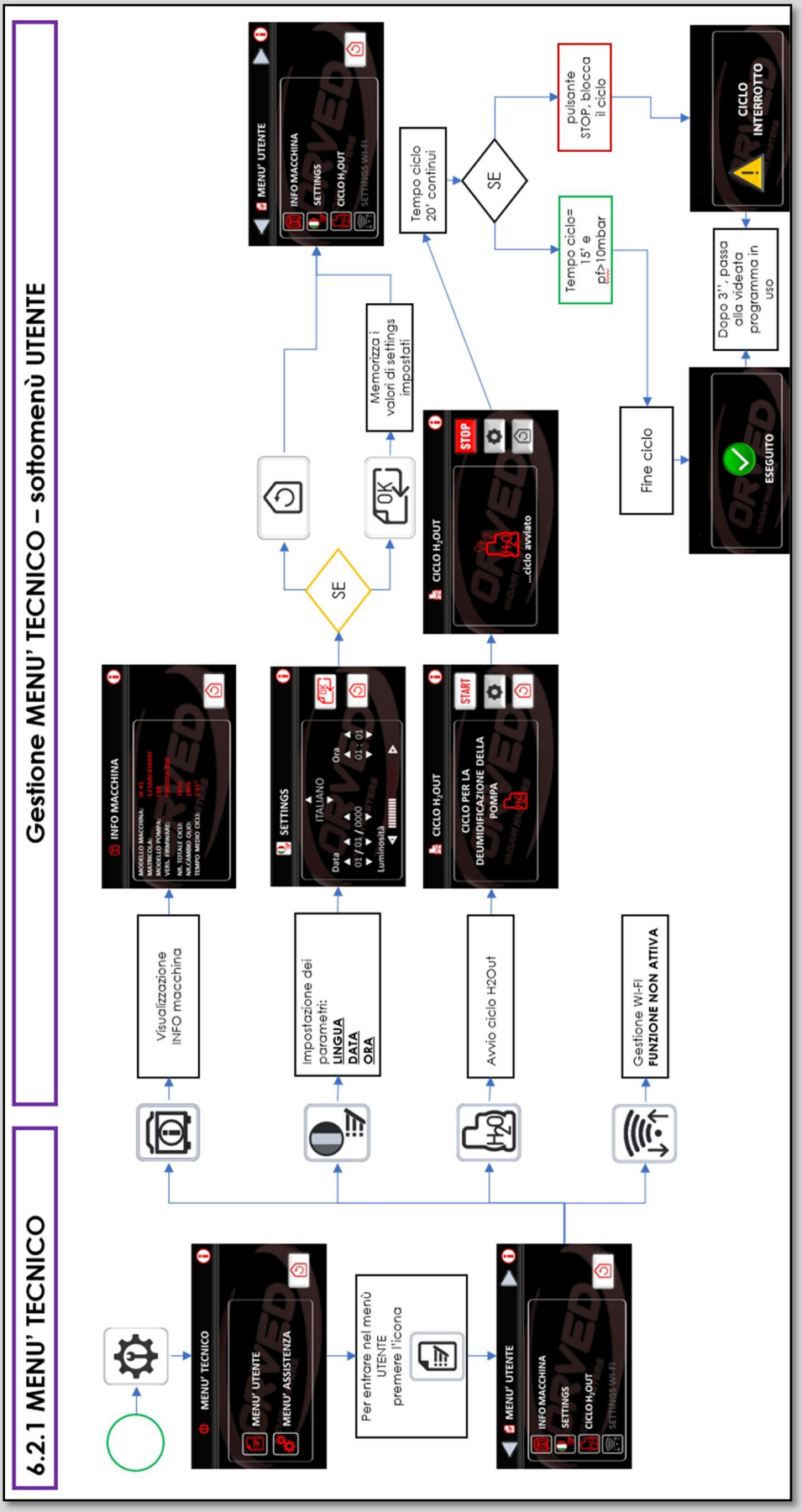


**Fig. 20 Flowchart of the technical menu: user submenu management**


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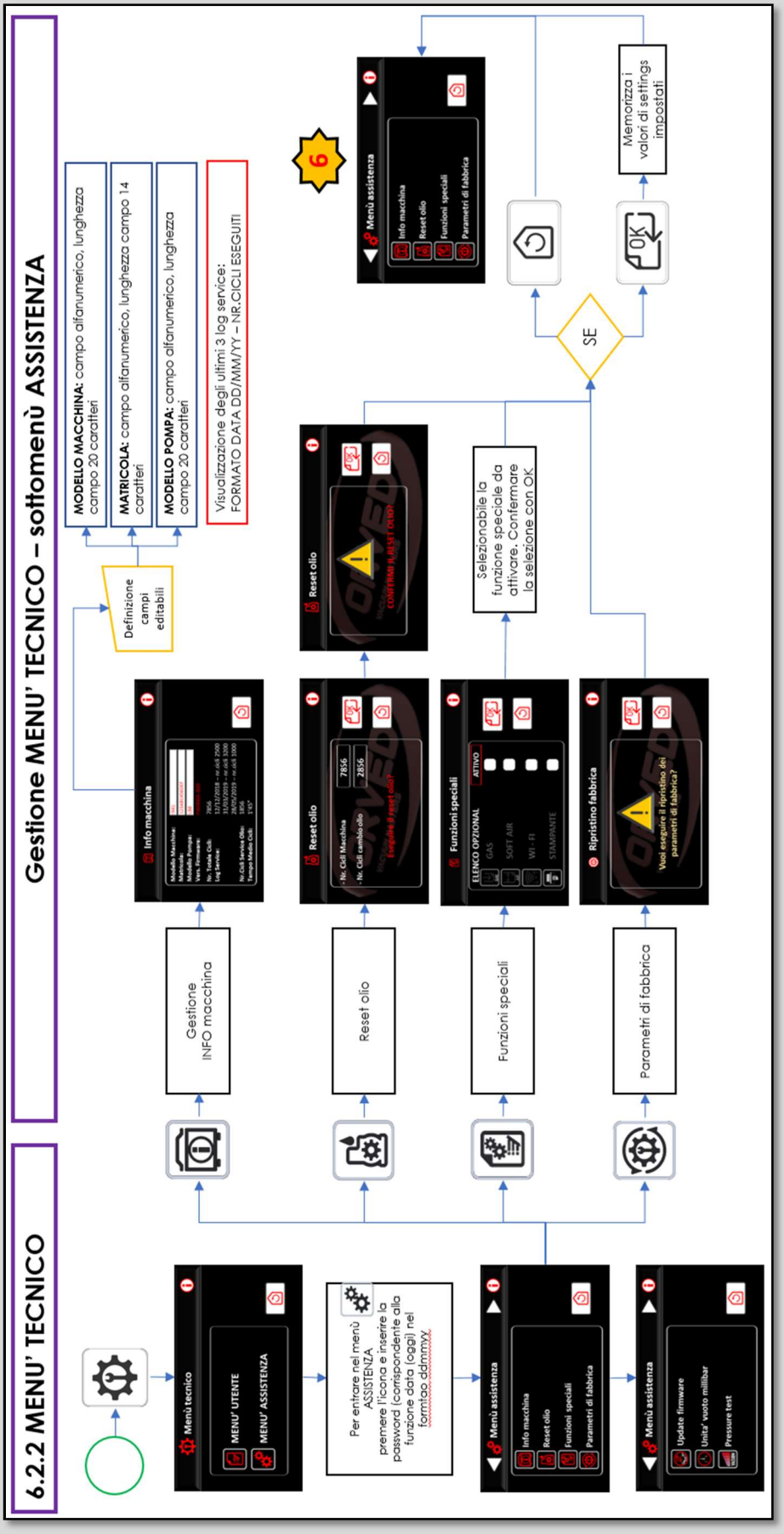


**Fig. 21 Flowchart of the technical menu: help submenu management /1**


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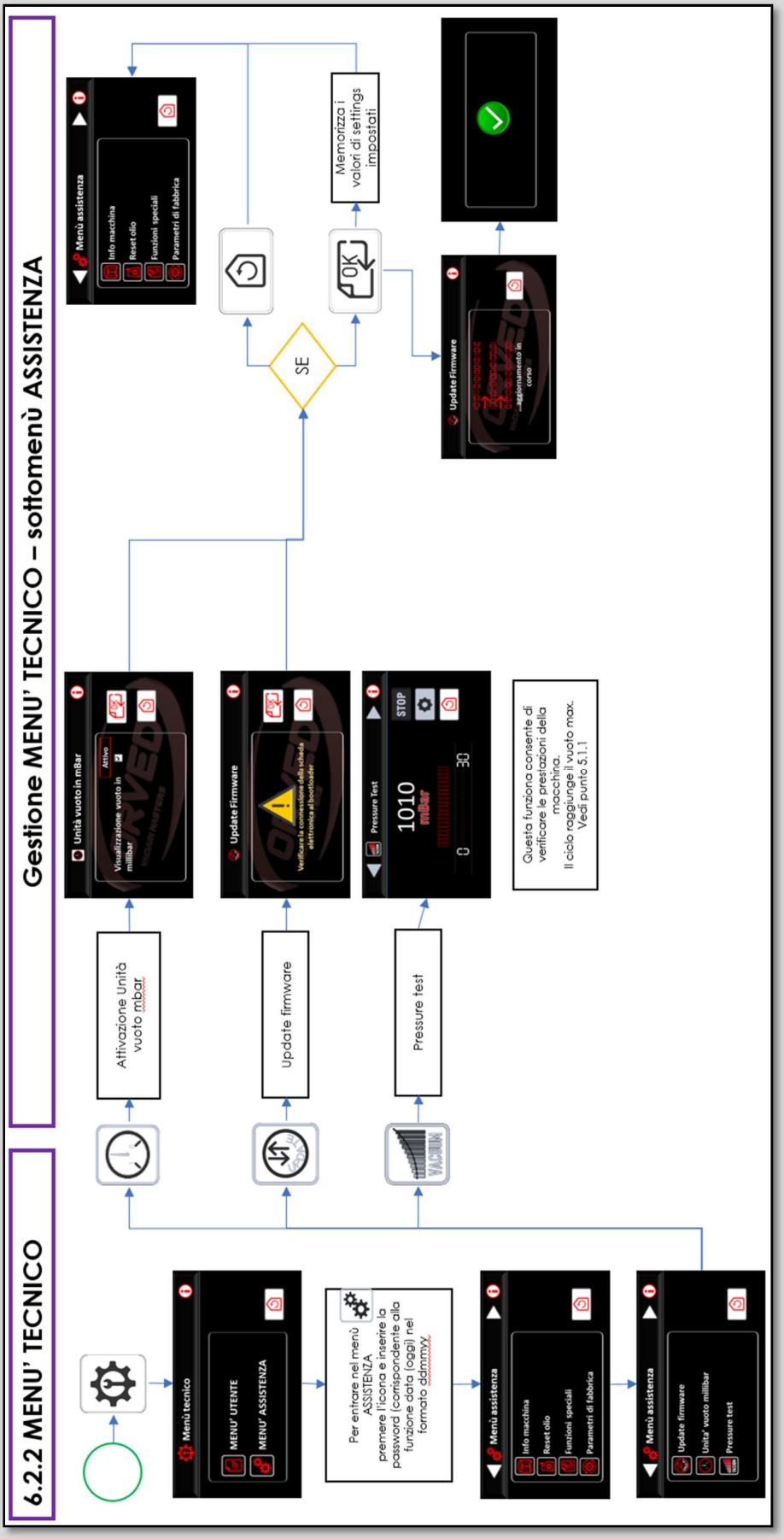


**Fig. 22 Flowchart of the technical menu: help submenu management /2**


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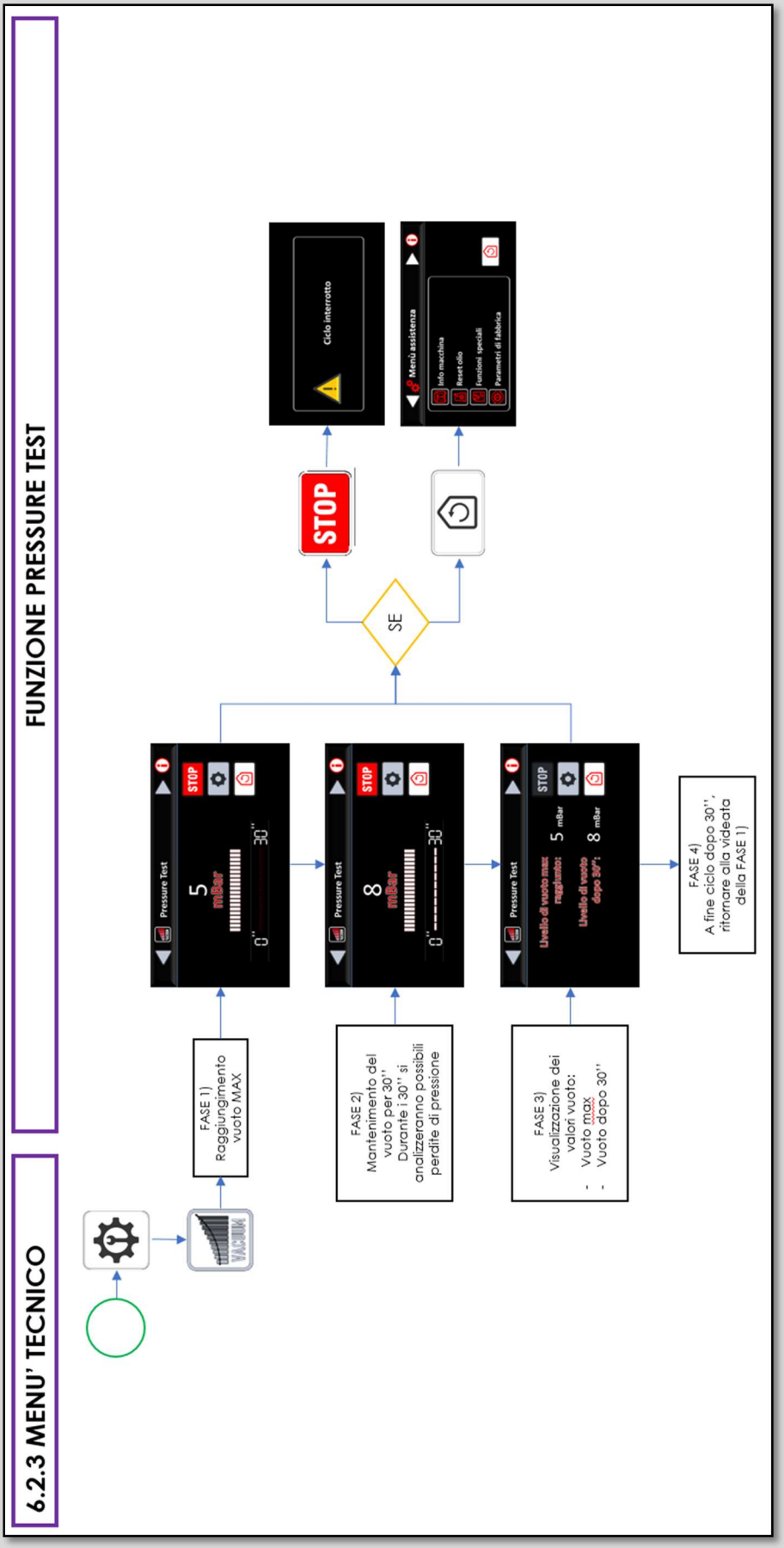


**Fig. 23 Flowchart of the technical menu: pressure test function**


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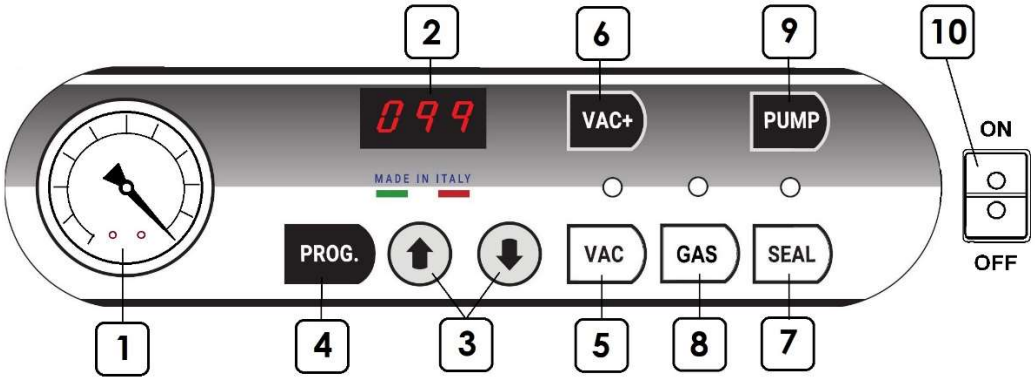
## 6.3 EVP/DVP25-60A




**Display of number of cycles completed.**
The cycles displayed correspond to one hundred (Ex: 007 = 700 cycles).
Turn on the machine. In sequence, press the **PROG** button, followed by the **PUMP** button.

**Programming of the maximum number of oil alarm activation cycles.**
Switch the machine on by simultaneously holding the two **cursor buttons.**
Press **VAC** and then, to set the number of cycles, the two **cursor keys** to bring the cycle counter to the desired value (default value: 5000 cycles).

**Alarm resetting.**
Turn on the machine; press the **PROG** key in sequence and then the **PUMP**key.
Press the two **cursor keys**at the same time.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# 7. Troubleshooting and diagnosis. preliminary check-up

## 7.1 Problems related to insufficient vacuum level

| Symptoms |
|---|
| • The vacuum level in the bag is unsatisfactory: air bubbles, non-stretch bag.<br>• The display stops at 95-96%. |
| **Possible causes** |
| • Very humid product or high liquid content, at a temperature of > 8-9 °C;<br>• Liquid product packaged at a temperature of 8-9°C;<br>• Worn, badly cut or too short lid gasket;<br>• Inefficient vacuum pump: clogged exhaust filter; lack of oil; presence of water in oil; tank and pump body clogged and dirty, vanes blocked, rotor blocked or partially blocked by oxide and impurities;<br>• Loss in the vacuum circuit (fittings, pipes, solenoid valves, pistons);<br>• 2-way solenoid valve for discharge or softair (EVP/DVP20T) remains open or partially open due to the presence of impurities;<br>• Sensor circuit bent, blocked or dirty;<br>• Vacuum sensor faulty or broken. |

## 7.2 Sealing problems

| Symptoms |
|---|
| • Sealing not carried out, or marked discontinuously, or not marked or burnt and with melting points. |
| **Possible causes** |
| • Sealing bar contacts (piston rods and metal insert of sealing bar) dirty or oxidised (uncertain sealing);<br>• Sealing time adjustment not suitable for the thickness and type of bag used;<br>• NiCr resistor interrupted (does not seal) or connection cables inside the sealing bar heads interrupted;<br>• Worn-out or burnt sealing bar Teflon (no seal);<br>• Silicone profile of the back-pressure bar is worn or burnt;<br>• Faulty power board (broken solder relay, burnt microprocessor) or defective control board (button does not respond);<br>• Faulty 3-way solenoid valve (does not switch);<br>• Seized piston or perforated membrane (rare); |

## 7.3 Preliminary checks and verifications

- **Check of level and transparency of the vacuum pump oil**

Check the oil level of the vacuum pump at each maintenance operation. It must be in the centre, maximum 2/3 of the pump peep-hole. In addition, it must be transparent and straw yellow.
If you do not see any sign or colour with the naked eye, do not be misled by complete transparency: it may be a tank full of water or a case of complete exhaustion of oil in the tank.

- **Check for the correct execution of a vacuum cycle for bags**

Start a vacuum cycle with a bag containing an object simulating the product to be packaged (for example, paper towels). Verify at the end of the cycle that the bag surfaces are well adhered to the contents and that the seal is well marked, homogeneous and without burns. This initial step verifies the overall good functioning of the appliance. By preparing a package with a small amount of water in the bag, placing it upside down at the end of the cycle, it is possible to check the seal tightness.

- **Verifying the efficiency of the machine**

Access the technical menus and select the "Pressure test". Start the cycle and wait and observe the vacuum value reached, which must be ≤ 10 millibars. During the 60-second pause to verify leaks, the pressure loss must be limited to ≤ 10 millibar. This test attests the good operation of the pump, of the entire pneumatic system as well as the good condition of the gasket of the lid.


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- **Visual inspection of the electrical system**

Access the internal part of the Packaging Machine. Visually check the good condition of all connected cables:
- Power board connections
- Solenoid valve connections
- Sensor connections and flat cable for connection to the power board
- Wiring to the electrical panel in three-phase versions

- **Visual inspection of the pneumatic system**

Access the internal part of the Packaging Machine. Visually check that the vacuum circuit tubes are all connected, not pinched or cut:

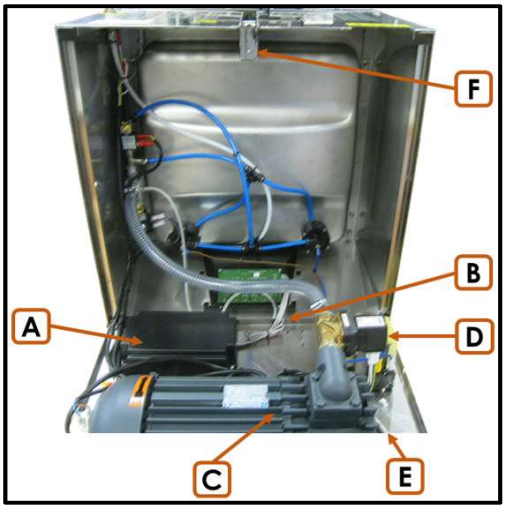
- Pump suction
- Intake valve (EVP/DVP20T)
- Solenoid valve block for sealing-discharge, gas solenoid valve and softair (EVP/DVP20T)
- Tank and filter suction;
- Tube for connection with the pressure transducer (vacuum sensor)

- **Lid gas spring status check**

The lid must open automatically at the end of the cycle. If this does not happen or if it occurs only partially, the gas springs are spent.

### 7.4 Arrangement of the main components inside the machine: EVP/DVP08-12-16D/20T

**A)** Power board protective cover
**B)** Flat cable - control board connection flat connection cable
**C)** Vacuum pump
**D)** Sealing transformer
**E)** Power cable
**F)** Gas spring




To **close**, release the **support lever** (**red square**) by pulling it towards the rear side, lower the casing onto the base taking care to check the correct positioning of the machine body, as well as the position of cables and pipes, which may be cut or damaged by the metal sheets of the machine (yellow arrows).

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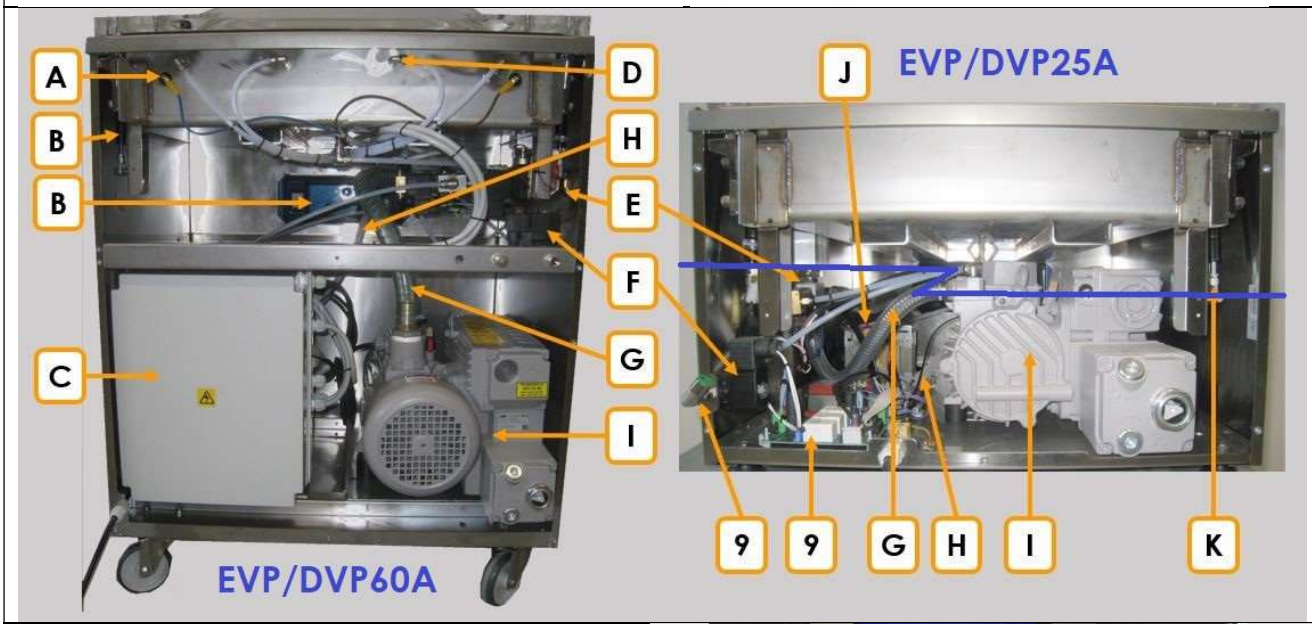
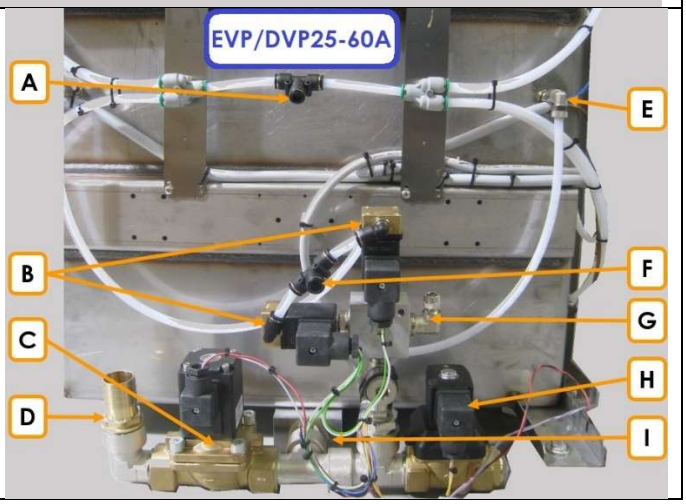
## 7.5 Arrangement of the main components inside the machine: EVP/DVP25-60A

**A)** Contatto vasca per alimentazione barra saldante
**B)** Cruscotto comandi con scheda B081 ed involucro di protezione
**C)** Quadro elettrico (modelli trifase carrellati C62 / C96)
**D)** Raccordo gas
**E)** Gruppo elettrovalvole
**F)** Elettrovalvola gas
**G)** Tubo di aspirazione
**H)** Cavo flat di connessione scheda di potenza – scheda di comando
**I)** Pompa vuoto
**J)** Trasformatore di saldatura
**K)** Molla a gas




**A)** Inert gas connection
**B)** 3-way solenoid valves for activating the sealbags for sealing bar elevation
**C)** 2-way suction solenoid valve
**D)** Pump suction connection
**E)** Sealbag for sealing bar elevation connection
**F)** Compressed air connection for sealing
**G)** Vacuum gauge connection (+sensor connection on dashboard)
**H)** 2-way drain solenoid valve
**I)** Aluminium suction manifold





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## 7.6 Scheduled maintenance

| Machine detail | Intervention | Frequency | | | | | Intervention performed | |
|---|---|---|---|---|---|---|---|---|
| | | 1-D | 1-W | 6-M | 1-A | 4-A | User | Assistance centre |
| Pump | Check the oil level and colour; top-up or change completely, if the colour is dark or whitish (call the specialized support service). | X | | | | | O | Top up or replacement |
| Pump | Perform a pump heating cycle of at least 5 minutes or a pump oil dehumidification cycle. | X | | | | | O | |
| Power cable | Check integrity; replace if faulty. | X | | | | | O | Replacement |
| Plexiglass lid | Check integrity; in the presence of cracks and streaks, call the help service for cover replacement. | X | | | | | O | Replacement |
| Silicone counterpart bar and Plexiglass cover gasket | Check that they are well inserted in their respective seats; replace if defective or worn out. | X | | | | | O | Replacement |
| Machine and vacuum chamber | Clean from impurities, oils and greases. | X | | | | | O | |
| Sealing bar connection | Check that it is well inserted on the two contact pins. EVP/DVP25-60A models: check the contact cables. | X | | | | | O | |
| Pump | Perform a pump oil dehumidification cycle | X | X | | | | O | |
| Sealing bar | Clean the top part with a damp cloth. Clean the two pins and contact holes | | X | | | | O | |
| Pump | Perform a pump oil dehumidification cycle | | X | | | | O | |
| Machine, vacuum chamber, lid and shelves | Disinfect | | X | | | | O | |
| Pump | Change the pump oil | | | X | | | | O |
| Pump | Change the exhaust filter of the pump | | | X | | | | O |
| Pump | Change the oil in the pump and the exhaust filter when the machine is put out of service (for a period of more than 2 months) | ***This intervention must be carried out before the machine is put out of service for a long period of time*** | | | | | | O |

## 7.7 Troubleshooting

| No. | Problem | Possible causes | Solution |
|---|---|---|---|
| 1 | **Machine does not work.** | Machine turned off | Start the machine by pressing the **STOP** button FOR 5" |
| | | No power supply | • Insert the plug into a socket (check voltage!).<br>• Check the condition of the power cable at regular intervals.<br>• Check that the PF1 fuse on the power board is intact and well inserted (contact the service centre). |
| | | Machine damage | Contact the help centre |
| 2 | **Insufficient vacuum in the bag/ there is a loss of vacuum in the bag** | Badly positioned bag | Position the bag centrally on the sealing bar with a 20 mm projection beyond the bar |
| | | Perforated bag | Choose a thicker bag and wrap the product with film or soft paper |
| | | Insufficient sealing | Increase sealing time |
| | | Faulty bag | Replace the bag |
| | | The opening of the bag is dirty | Use a new bag and be careful not to dirty the opening with oil, grease, etc. |


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| No. | Problem | Possible causes | Solution |
|---|---|---|---|
| | | Bag too large or too small compared to the size of the product | Choose a bag that is suitable for the size of the product to be packed. |
| 3 | **Bubbles or** burns on **the seal** | Sealing time too long | Reduce sealing time |
| | **Narrow and irregular sealing** | Sealing time too short | Increase sealing time |
| 4 | **Insufficient vacuum in the chamber.** | The set vacuum value is insufficient | Increase the value using the **UP** and **DOWN** keys |
| | | Insufficient vacuum pump performance | • Check the oil<br>• Check the exhaust filter of the pump |
| | | The gasket of the lid is worn out | Replace the gasket (contact the support centre) |
| 5 | **The machine does not generate the vacuum in the chamber.** | Insufficient pressure on the lid when starting the appliance | Lower the cover with both hands on both sides, exerting more pressure |
| | | For appliances with gas option: active gas function | Disable the gas function |
| | | The pump does not work | Contact the help centre |
| 6 | **Machine does not seal.** | Dirty sealing bar contacts | Clean the contacts |
| | | Interrupted sealing bar contacts | Restore the connection (contact the support centre) |
| | | Broken sealing bar resistor | Replace the resistor (contact the support centre) |
| | | Faulty bar lifting piston | Replace the bar lifting piston (contact the service centre) |
| 7 | **Poor sealing quality** | Dirty sealing bar | Clean the sealing bar |
| | | Insufficient sealing time with respect to the weight of the bag | Increase sealing time |
| | | Worn out covering Teflon | Change the covering Teflon |
| | | Excessive percentage of gas (close to 90%) in relation to the packaged product | Decrease the gas injection percentage |
| | | Worn-out counter silicone | Replace the counter silicone. |
| 8 | **Insufficient amount of gas in the bags.** | Insufficient gas injection time | Decrease the gas injection percentage |
| | | Insufficient gas cylinder pressure | Adjust the pressure on the cylinder reducer to 1 bar |
| | | Gas nozzle not inserted in the mouth of the bag | Reposition the bag by inserting the gas nozzle into the open flap of the bag itself |
| | | Closed cylinder or pressure regulator valves | Open the cylinder valves adjust the pressure reducer to 1.0 bar |
| 9 | **The lid opens during the GAS cycle.** | Gas volume too high | Decrease the gas injection percentage |
| 10 | **It is impossible to generate the vacuum in the containers.** | Poorly positioned container lid or open lid valve | Reposition the lid of the container, checking that the gasket is intact and inserted in its seat and that the lid intake valve is in the open position |
| 11 | **The Plexiglass lid does not close** | The gasket of the lid is worn out | Replace the gasket |
| | | Offset hinges | Adjust the hinges of the lid (contact the service centre) |
| | | Damaged gas spring | Replace the gas spring(contact the support centre) |


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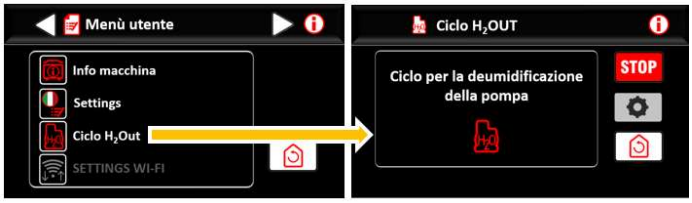
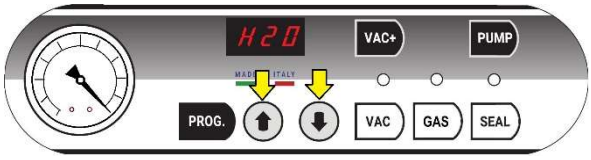
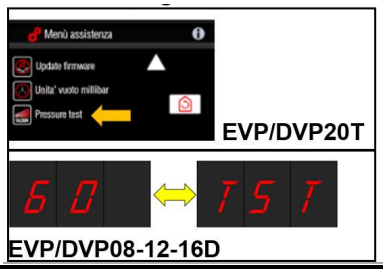
# 8. Maintenance

## 8.1 Routine maintenance

### 8.1.1 Pump oil change (together with the oil separator filter change!)

**Symptoms: insufficient vacuum, turbid, mushy, dense colour.**
**Frequency: to be scheduled at least every 5,000 cycles or 3-6 months; increase the frequency for particularly heavy use (understood as frequent packaging of liquids and / or probable packaging of products that are not blast chilled and / or packed at temperatures above 8-9 °C).**

| Step | Description of the intervention: pump oil change | |
|---|---|---|
| **NOTE: The oil change must be carried out together with the oil filter change!** | | |
| 1 | **Heat the pump oil.** Select the H2Out cycle and stop it after **about 3 minutes**.<br><br>**Warning: when finished, disconnect the power cord from the mains!**<br><br> | <br><br> |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br>**EVP/DVP25-60A: perform the pressure test with a digital vacuum switch and stopwatch.**<br><br> | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 2.1 | **Open the casing to access the internal components.**<br>**a)** Remove the shelves from the tank.<br>**b)** Close the lid by acting on the release device.<br>**c)** Place the machine with the back side directly in front of you and near the edge of the table. Remove the back panel screws with a screwdriver. Remove the panel.<br>**d)** Lift the enclosure with one hand,<br>**e)** With the other hand lift the lever that supports the enclosure and insert it into the guide hole | **a**<br> |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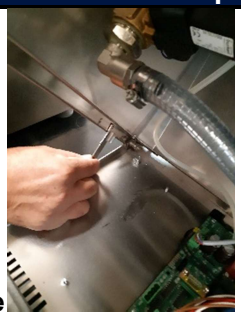
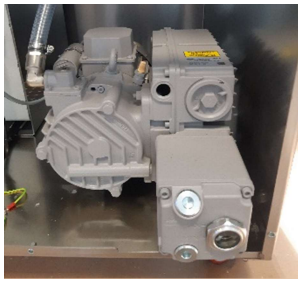
| Step | Description of the intervention: pump oil change | |
|---|---|---|
| |  d  e  e |  b  c |
| 2.2 | **EVP/DVP25-60A**<br>The draining **(2)** and filling **(1)** plugs are accessible from the outside. It is not necessary to remove the rear panel.<br><br>**EVP/DVP60A**<br><br>**EVP/DVP25A**<br>However, the operations to access the internal parts of the **EVP/DVP25-60A models are described below,** which will be recalled in the following chapters.<br>Unscrew the Ø10 fitting to insert the inert gas pipe **(a)**. Then unscrew the fixing screws **(b)** and remove the panel **(c).** |  a  b<br> c<br> c |
| 2.3 | **Oil drainage.**<br>a) Remove the rubber oil cap from the crankcase.<br>b) Unscrew the oil filler cap on the top of the pump with a hexagonal wrench.<br>c) With the same key, unscrew the drain plug. |  a |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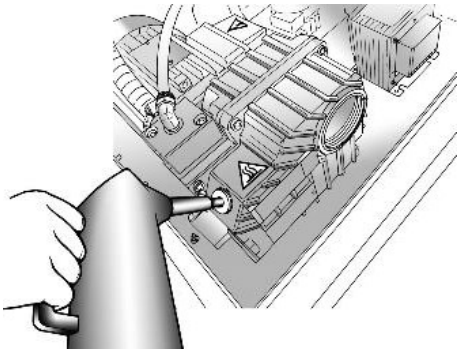
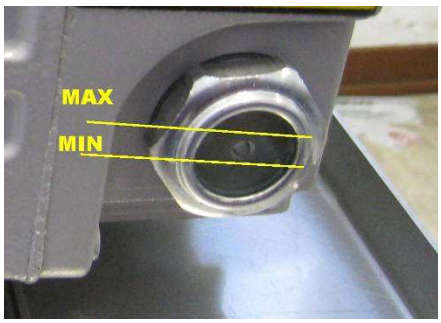
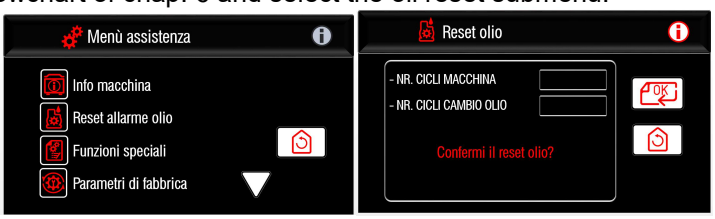
<table>
<tr><th>Step</th><th>Description of the intervention: pump oil change</th><th></th></tr>
<tr><td></td><td>

c
d) Place a tray under the crankcase, where the oil drain hole is, and allow the used oil to flow. Wait until oil and impurities have flushed out.
</td><td>

a

b
</td></tr>
<tr><td>2.4</td><td>
Oil filling.<br>
Place a sufficiently large container (0.5 l) near the drain plug.<br>
Fill with oil type ORV40 (specific for vacuum pump, food-grade certification by U.S. FDA).<br>
Quantity (litres):
<table>
<tr><th>Model Pump</th><th>Model</th><th>Qty.</th><th>Oil type</th></tr>
<tr><td>8 m³/h DVP</td><td>EVP08D<br>DVP08D</td><td>0.20</td><td rowspan="3">ORV40<br>(recommended)<br>or equivalent:<br>ISO VG 32<br>DIN 51524/3<br>(HVLP)<br>ISO 11158:1997<br>(HV)</td></tr>
<tr><td>12 m³/h DVP</td><td>EVP12D<br>DVP12D</td><td>0.40</td></tr>
<tr><td>20 m³/h DVP</td><td>EVP20D<br>DVP20D</td><td>0.50</td></tr>
<tr><td>25 m³/h DVP</td><td>EVP25A<br>DVP25A</td><td>1.00-1.2</td><td rowspan="2">ORV60</td></tr>
<tr><td>60 m³/h DVP</td><td>EVP60A<br>DVP60A</td><td>1.2-1.5</td></tr>
</table>
Check the correct oil level;<br>
the oil must reach the centreline, maximum 2/3, of the peep-hole.<br>
Screw the filler cap back on. Carefully clean any spilled oil.
</td><td>



</td></tr>
<tr><td>3</td><td>
Resetting the number of cycles after oil change<br>
EVP/DVP08-12-16D<br>
Simultaneously press STOP (6) and PLAY / PAUSE (1) for 4” until the number of cycles performed is displayed; then press the STOP (6) key again until the number of cycles is reset.<br>
EVP/DVP20T: enter the service menu as indicated in the flowchart of chap. 6 and select the oil reset submenu.


EVP/DVP25-60A – see §6.3
</td><td>EVP/DVP08-12-16D</td></tr>
</table>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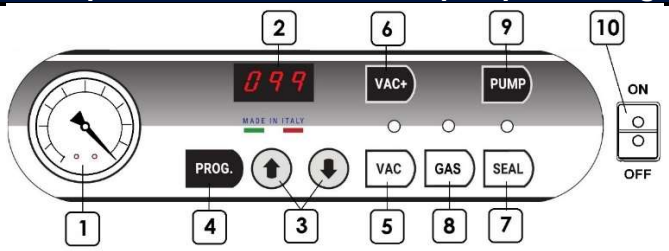
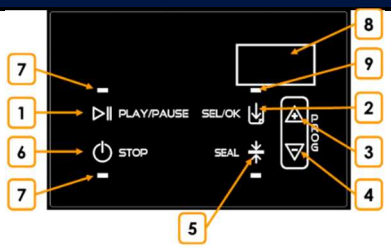
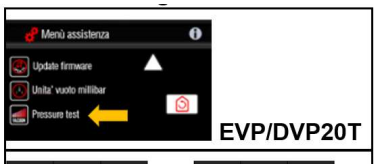
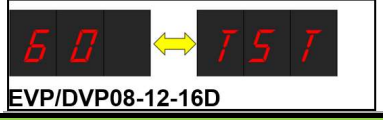
| Step | Description of the intervention: pump oil change | |
|---|---|---|
| |  |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to evaluate whether there has been an improvement in the performance of the packaging machine.<br><br>**EVP/DVP08-12-16D/20T: access the technical menus**<br>**EVP/DVP25-60A: perform the pressure test with a digital vacuum switch and stopwatch.**<br> EVP/DVP20T<br> EVP/DVP08-12-16D<br> EVP/DVP25-60A | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **4** | **Closing and final check**<br>Repeat the Check-up described in Chapter 7, before closing the machine, checking the electrical and vacuum circuit connections. Close the vacuum sealer following the procedure in reverse order with respect to **step** 2.<br><br>**Notes for closing the casing:**<br>1. Rotate the casing down on the base, taking care to check the correct positioning of cables, connectors and pipes to avoid crushing them.<br>2. Reposition the rear panel checking the alignment in the top part. Tighten the rear panel screws to complete the procedure.<br><br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** |  |

### 8.1.2 Replacing the oil separator filter (together with the oil change!)

**Symptoms: Poor vacuum, pump starts badly (start-up difficulty), oil smoke, bad smell.**
**Frequency: at each oil change.**

| Step | Description of intervention: replacement of the exhaust filter | |
|---|---|---|
| **NOTE: The oil separator filter must be changed together with the oil change!** | | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br>**EVP/DVP25-60A: perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |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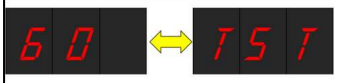
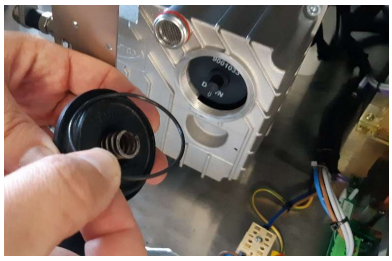
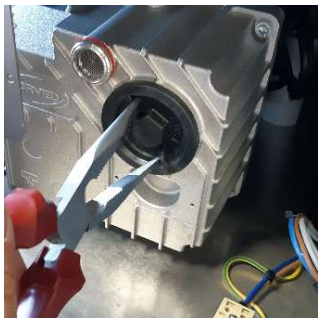
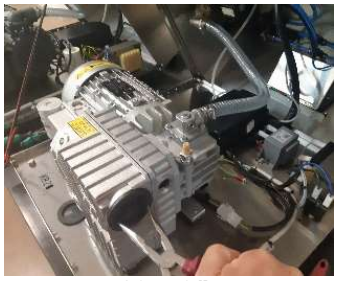
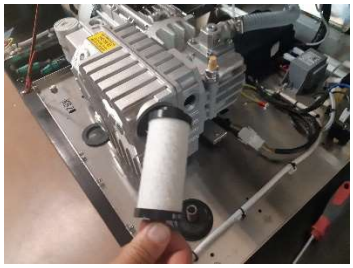
| Step | Description of intervention: replacement of the exhaust filter | |
|---|---|---|
| |  EVP/DVP20T<br> EVP/DVP08-12-16D<br> EVP/DVP25-60A | |
| 1 | **Open the casing to access the internal components.**<br>**Unplug the machine from the electrical outlet! Operate in compliance with safety regulations.**<br>Access the inside of the packaging machine as described in **§ 8.1.1 / phases 2.1/2.2.** | |
| 2 | **EVP/DVP08-12-16/20T:**<br>**Removal of oil separator caps.**<br>Locate the pump and proceed to unscrew the filter cover, unscrewing the cover anti-clockwise with box wrench or nose pliers.<br> <br>**Take great care not to drop the O-ring seal of the cover inside the oil tank!**<br>**EVP/DVP25-60A:** Unscrew the four TCCE screws securing the filter cover (located on the oil tank of the 25.60 and 106 m³/h pumps), using a hexagonal wrench and remove the lid.<br>  | <br>**8 m3/h**<br><br>**12 m3/h**<br><br>**20 m3/h** |
| 3 | **Removal of exhaust filters.**<br>Pull out the exhaust filter, paying attention to the O-ring positioned on the threaded connection.<br> <br>**8 and 12 m³/h** **20 m³/h** | <br>**60m³/h** |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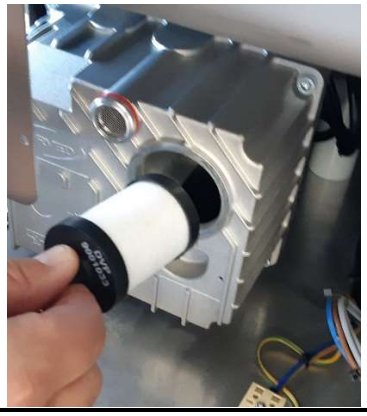
| Step | Description of intervention: replacement of the exhaust filter | |
|---|---|---|
| 4 | **Inserting the new exhaust filters.**<br><br>Carefully insert the exhaust filter into the tank seat, paying attention to the O-ring positioned on the threaded connection. |  |
| 5 | **Screwing the covers of the exhaust filters:** screw the cover of the exhaust filter on its seat in the tank, paying attention to the O-ring positioned on the threaded connection. Tighten manually or with nose pliers without applying excessive force during tightening.<br>**Busch:** tighten the four screws using a hexagon wrench. |   |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to evaluate whether there has been an improvement in the performance of the packaging machine.<br><br>**EVP/DVP08-12-16D/20T: access the technical menus**<br>**EVP/DVP25-60A: perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 6 | **Closing and final check**<br>Repeat the Check-up described in chap.7, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.1.2.1 Replacing the oil filter in the EVP/DVP60A model

**Symptoms: cannot be detected. The oil filter must be replaced at every oil change.**
**Cause: wear.**

| Step | Operation description: replacement Of under-bar bearing | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>**EVP/DVP25-60A** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |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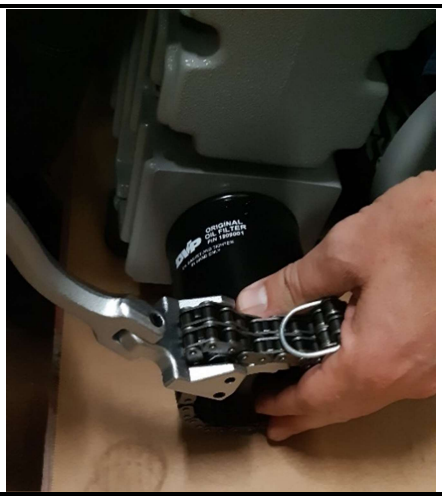
| Step | Operation description: replacement Of under-bar bearing | |
|---|---|---|
| 1 | **Open the casing to access the internal components.**<br>Access the inside of the vacuum packaging machine by removing the pump access panel and following the procedure described in **step 2.2 in § 8.1.1.** | |
| 2 | **Flush the pump oil.**<br>**Follow steps 2.2 in § 8.1.1** | |
| 3 | **Filter replacement**<br>Locate the oil filter on the top of the 60m3/h pump oil tank and replace it using a chain wrench.<br> |  |
| 4 | **Pour the pump oil.**<br>**Follow step 2.3 in § 8.1.1** | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to evaluate whether there has been an improvement in the performance of the packaging machine.<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 4 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **steps 2-2.1 in § 9.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.1.3 Replacing the EVP/DVP08-12-16D/20T cover gasket

**Symptoms: loss of vacuum due to worn seal.**
**Frequency: as needed.**

| Step | Operation description: lid gasket replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |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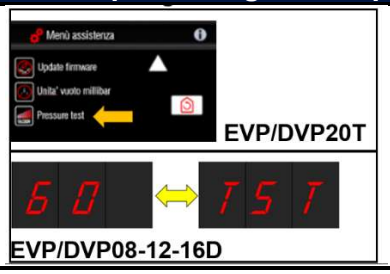
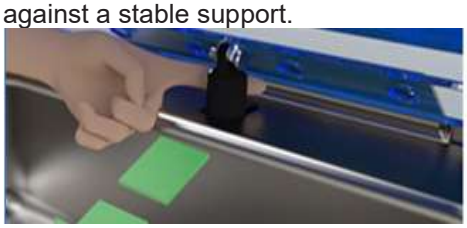
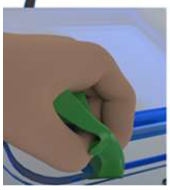
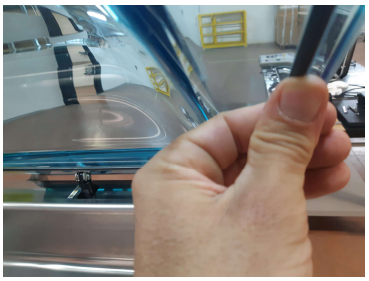
| Step | Operation description: lid gasket replacement | |
|---|---|---|
| |  | |
| 1 | **Opening the cover and accessing the gasket.**<br>**a)** Lift the lid. **b)** Remove the elastic ring from the fixing pin of the gas spring.<br>**3)** Slide out the pin and tilt the cover backwards, resting it against a stable support.<br>  |  |
| 1.1 | **Removing the gasket and cleaning its seat.**<br>Remove the perimeter gasket from the seat.<br>Clean the seat with alcohol using a soft, non-abrasive cloth. |  |
| 2 | **Inserting a new gasket.**<br>Distribute the piece of gasket along the entire perimeter, with the LIP SEAL of the seal facing the outside of the lid. The gasket is longer, therefore the excess part must be cut to size.<br>Start inserting the gasket from the rear side, locking it in the 4 corners and in the centre of each side.<br>**Attention: The gasket should not be stretched and pulled, but only laid down, inserting it in the four corners of the seat.**<br>It can now be fully inserted, by pushing it all the way in.<br> <br>Cut any excess gasket with cutting pliers. |   |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to evaluate whether there has been an improvement in the performance of the packaging machine.<br>**EVP/DVP08-12-16D/20T: access the technical menus** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 3 | **Final check.**<br>Perform a first cycle to check the correct positioning and adjustment of the gasket.<br>Perform a second cycle by carrying out a **pressure test** (pressure difference 10 millibars in 60 seconds).<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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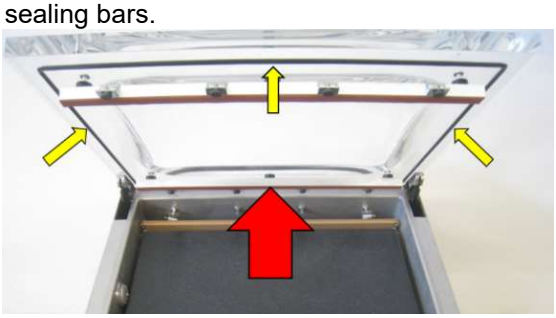
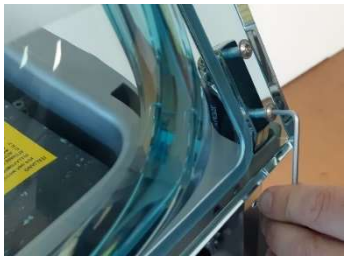
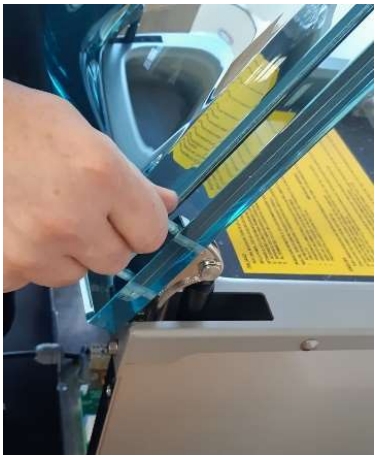
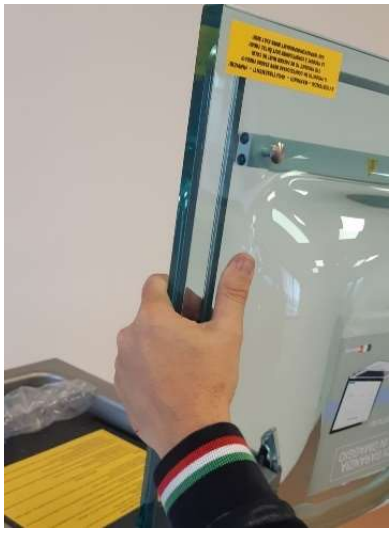
### 8.1.3.1 Replacing the EVP/DVP25-60A cover gasket

| Step | Operation description: lid gasket replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>**EVP/DVP25-60A** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **1** | **EVP/DVP25A**<br>**Lid disassembly**<br>To facilitate the replacement of the gasket, we recommend removing the lid. It need only be performed by one person, but it is facilitated and made more secure when performed by two.<br>Unscrew the two pairs of rear cover retaining screws from the hinge.<br>**EVP/DVP60A**<br>Also in this case, we recommend removing the lid as this facilitates the positioning of the gasket. However, given the heavy weight of these two lids, it is essential that the operation be carried out by two people.<br>If this is not possible, it shall be necessary to remove the rear silicone holder (indicated by the red arrow) in the version with the two long sealing bars.<br> | <br> |
| **1.1** | **Removing the gasket and cleaning its seat.**<br>Place the lid on a horizontal shelf or directly on the machine’s tank.<br>Remove the perimeter gasket from the seat.<br>Clean the seat with alcohol using a soft, non-abrasive cloth. |  |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| Step | Operation description: lid gasket replacement | |
|---|---|---|
| |  | |
| 2 | **Inserting a new gasket.**<br>Distribute the piece of gasket along the entire perimeter, with the LIP SEAL of the seal facing the outside of the lid. The gasket is longer, therefore the excess part must be cut to size.<br>**Attention: The gasket should not be stretched and pulled, but only supported, inserting it in the four corners of the tank.**<br>It can now be fully inserted, by pushing it all the way in.<br> <br> <br>Cut any excess gasket with cutting pliers. |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to evaluate whether there has been an improvement in the performance of the packaging machine.<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 3 | **Final check.**<br>Perform a first cycle to check the correct positioning and adjustment of the gasket.<br>Perform a second cycle checking the vacuum seal (pressure difference 10 millibars in 60 seconds) with a digital vacuum switch.<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |


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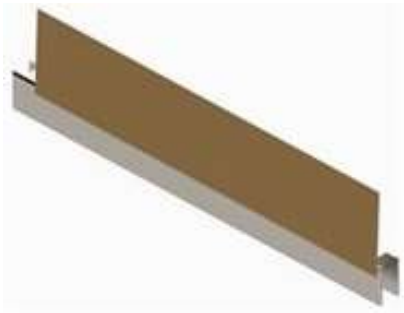
### 8.1.5 Replacement of the Teflon cover strip

**Symptoms: Dirt, wear, uneven, weak or insufficiently marked seal**
**Frequency: as needed.**

| Step | Description of the intervention: bar covering Teflon replacement | |
|---|---|---|
| 1 | **Removing the sealing bar from the tank.**<br>Remove the sealing bar from the tank.<br>In the EVP/DVP25-60A models, disconnect the electrical contacts.<br> |  |
| 2 | **Removing the Teflon covering strip.**<br>Grab the Teflon strip by a flap and remove it from the surface of the sealing bar. Remove any residual adhesive from the surface with a special glue or adhesive remover.<br> |  |
| 3 | **Applying a new Teflon strip**<br>Apply the new tape first on one side, then on the opposite side, cutting off any excess tape on both ends. Make sure that no air bubbles are formed. The non-adhesive part must be placed centrally above the resistance.<br> |  |
| 4 | **Reinsert the sealing bar in the tank.**<br>Insert the sealing bar into the tank, by inserting the contacts on the piston rods or by connecting the electrical cables (EVP/DVP25-60A).<br> | |
| 5 | **Final check.**<br>Perform some cycles for bags, checking the seal.<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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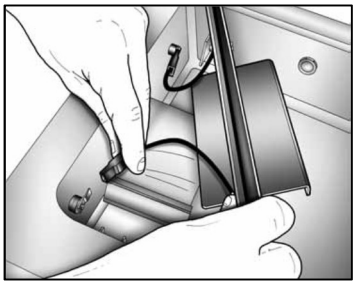
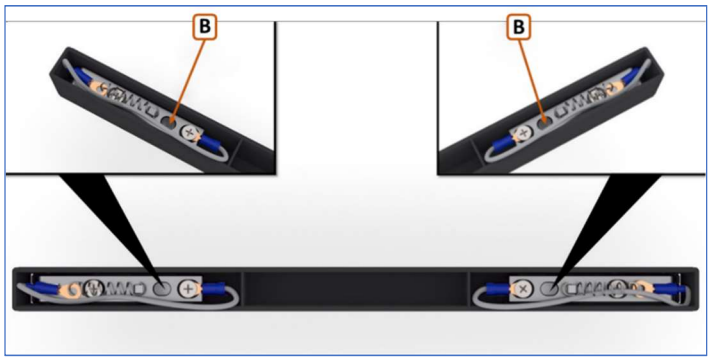
### 8.1.6 Cleaning the sealing bar contacts

**Symptoms: Weak seal.**
**Frequency: at least at each oil change; recommend the customer to change at greater frequency in the case of heavy use/environment with greasy vapours.**

| Step | Description of the intervention: cleaning the sealing bar contacts | |
|---|---|---|
| 1 | **Removing the sealing bar from the tank.**<br>Extract the sealing bar from the tank by lifting it horizontally at both ends. In the EVP/DVP25-60A models, disconnect the electrical contacts.<br> |  |
| 2.1 | **Cleaning of EVP/DVP08-12-16D/20T sealing bar contacts**<br>Carefully clean the pins (A) and the two pin housing holes (B) on the sealing bar.<br> |  |
| 2.2 | **Cleaning of EVP/DVP25-60A tank contacts**<br>Clean the surface of the two Faston contacts with a steel brush, eliminating traces of dirt and carbonization.<br> | <br> |
| 3 | **Reinsert the sealing bar in the tank.**<br>Insert the bar, making sure it correctly engages on the electrical contacts. | |
| 4 | **Final check.**<br>Perform some cycles for bags, checking the seal.<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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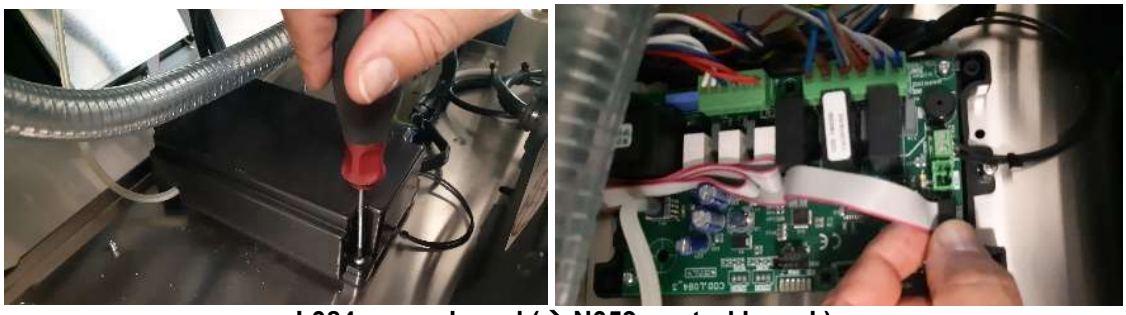
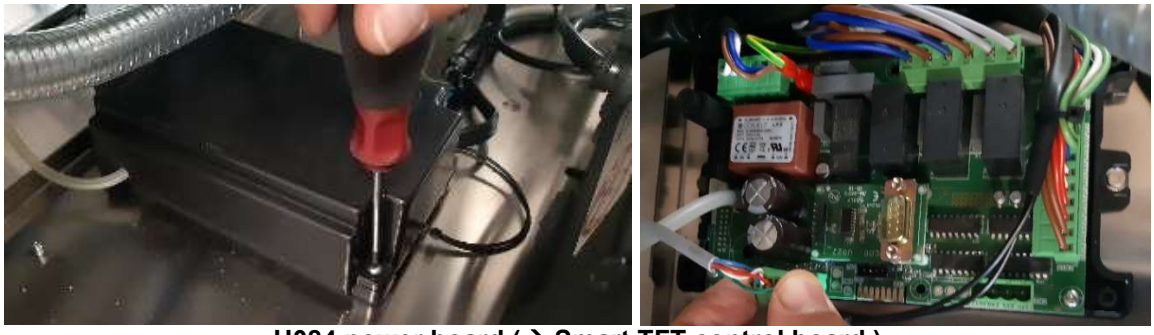
## 8.2 Extraordinary maintenance and repairs

### 8.2.1 Replacing the N059 / Smart TFT 5" EVP/DVP08-12-16D/20T digital control board and the B012 EVP/DVP25-60A digital control board

**Symptoms: control panel off (display does not light up, LEDs off, TFT does not light up); failure or uncertain operation of one or more functions (e.g. sealing); keys not working or broken.**
**Causes: overvoltage, damage due to overvoltage of the Eprom microprocessor, penetration of humidity, mechanical impact, exposure to heat, wear (keys), lack of cleaning and care.**

**NOTE: All the data of the TFT smart panel (EVP/DVP20T), in particular total cycles, cycles before oil change, programmed user parameters, remain in the memory in the microprocessor of the U084 power board. Replacing it only involves setting the date and time because the data are NOT lost.**

| Step | Description of the intervention: replacement of the N059 digital control board / Smart TFT |
|---|---|
| 1 | **Open the casing to access the internal components.**<br>**Unplug the machine from the electrical outlet! Operate in compliance with safety regulations.**<br>Access the inside of the vacuum packaging machine as described in **§ 8.1.1 / step 2.**<br>If possible, access the technical menu to find the total number of cycles performed and reprogram them on the new **tab (see chap. 6).** |
| 2 | **Control board N059 (EVP/DVP08-12-16D)**<br>Disconnect the flat cable from the L084 power board.<br><br>**L084 power board (→ N059 control board )**<br>**Smart TFT control board (EVP/DVP20T)**<br>The connection cable can be disconnected both from the interface and from the power board. It is easier to that from the latter: unscrew the 4 screws of the protective cover and remove it.<br>Disconnect the flat cable from the U084 power board.<br><br>**U084 power board (→ Smart TFT control board )**<br>**Control board B012 (EVP/DVP25-60A)**<br>**a)** Disconnect the flat cable from the H102 power board (**EVP/DVP25A)** or J029 power board (**EVP/DVP60A)**, mounted inside the electrical panel. |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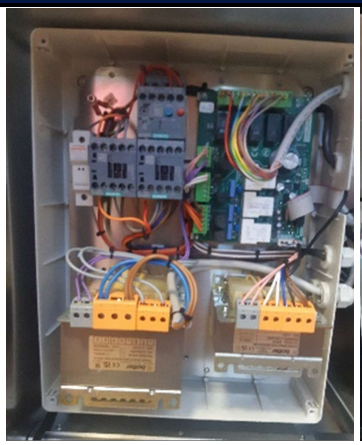
| Step | Description of the intervention: replacement of the N059 digital control board / Smart TFT |
|---|---|
| |   a  b<br>**Electrical panel EVP/DVP60A (left) and EVP/DVP25A (right). Power board H102 (b)**<br> c<br>**b)** Disconnect the connection cable of the relative vacuum sensor module B063 by means of a white snap connector. |
| **3.1** | <br>**Disassembling the EVP/DVP08-12-16D/20T control dashboard.**<br>a) From inside the casing, use a cross-head screwdriver to unscrew the three screws that fasten the control panel locking strip to the casing.<br>b) Position yourself in front of the machine and push the dashboard downward.<br>c) Remove the dashboard and place it on a clean and flat surface.<br> <br>**N059 (EVP/DVP08-12-16D-sx) and TFT (EVP/DVP20T-dx) control boards** |
| |  b<br>**Push downward**<br> b<br>**Remove the dashboard.**<br> c |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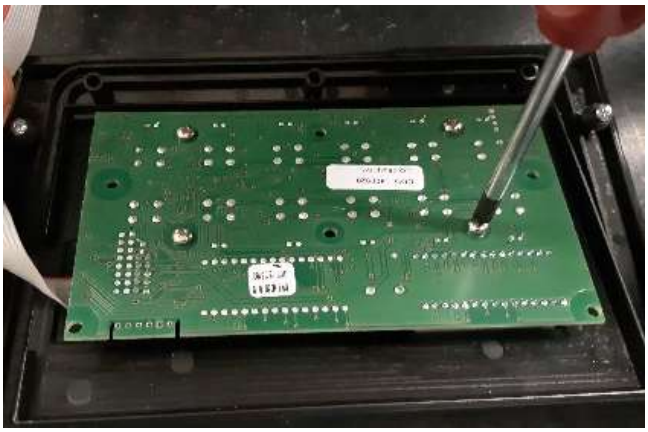
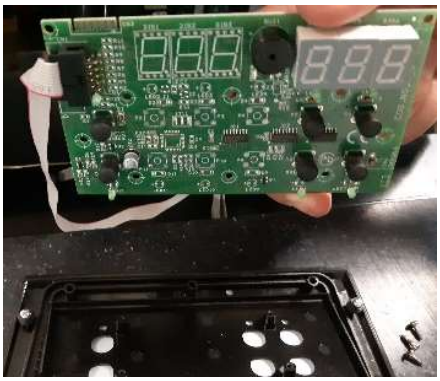
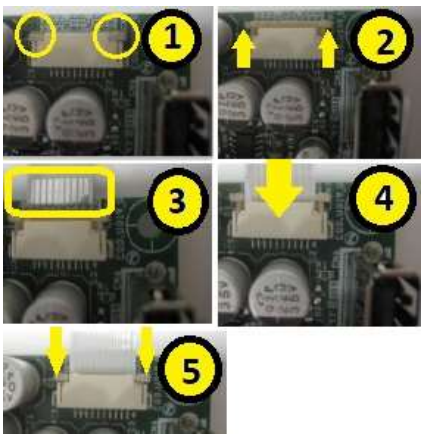
| Step | Description of the intervention: replacement of the N059 digital control board / Smart TFT | |
|---|---|---|
| 3.2 | **Disassembling the EVP/DVP25-60A control dashboard**<br>Remove the 6 plastic screw cover caps, using a small size screwdriver.<br>Unscrew the six front fixing screws of the dashboard.<br>Remove the oval dashboard on the front, cutting off with a small cutter the black silicone sealant along its perimeter, if warranted. Remove the silicone debris from the dashboard and the body and clean these surfaces. | <br> |
| 4.1 | **Replacing the N059 control board (EVP/DVP08-12-16D)**<br>b) Unscrew the four fixing screws of the board with a cross-head screwdriver and replace them.<br> |  |
| 4.2 | **Replacing the TFT smart control board (EVP/DVP20T)**<br>a) Disconnect the flat connection cable between the Smart TFT and the U019 interface board (see sequence 1-5): remove the two levers on the side of the female connector (1-2) and extract the flat cable.<br>b) Unscrew the four fixing rings of the board replace it.<br>c) Re-insert the flat connection cable between the Smart TFT and the U019 interface board as shown in the sequence on the right from 1 to 5: remove the two levers on the side of the female connector (1-2), insert the flat cable with the contacts facing upward (3) pushing it until it stops (4), reinsert the two side locking levers.<br>**Note:** Clean the protective glass with a soft cloth and alcohol before replacing it. | <br>**a - c** |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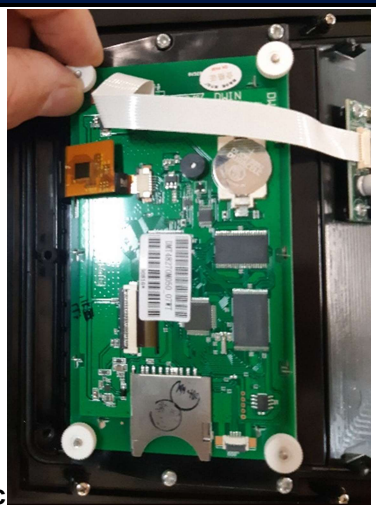
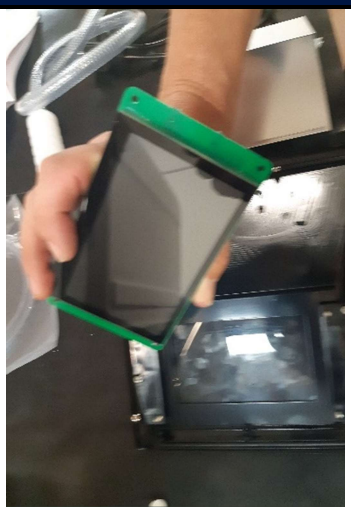
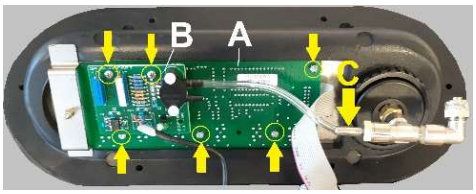
| Step | Description of the intervention: replacement of the N059 digital control board / Smart TFT | |
|---|---|---|
| | c   | |
| **4.3** | **Replacing the B012 control board (EVP/DVP25-60A)**<br>Unscrew the two fixing screws of the transducer module B063 **(B)** and, if necessary, if it must be replaced, remove the sensor tube from the hose connection of the vacuum gauge **(C).** Unscrew all the fixing nuts of the control board B012 **(A)** and replace it, performing the same operations in reverse order. |  |
| **5** | **Mounting the dashboard on the casing and restoring the EVP/DVP08-12-16D/20T connections.**<br>Proceed with assembly of the dashboard on the body, performing preliminary cleaning on the dashboard and steel.<br>a) Reinsert the dashboard frontally into the casing, centring the eight key holes and pushing it upward, until the top edge coincides with the steel edge of the tank.<br>b) To fasten the dashboard from inside, use a cross-head screwdriver to screw the three screws that fasten the control panel locking strip to the casing.<br>c) Guide the flat cable or the TFT cable to the power board and insert the connector into the socket.<br>**Assembling the dashboard on the EVP/DVP25-60A casing**<br>Proceed with assembly of the dashboard on the body, performing preliminary cleaning on the dashboard and steel.<br>d) Guide the flat cable up to the power board and insert the connector into the socket;<br>e) Fix the dashboard frontally with the six screws and close the holes with the screw caps.<br>**Note:** It is advisable to apply a black silicone sealant bead along the perimeter of the oval dashboard to avoid possible infiltration. |   |
| **6** | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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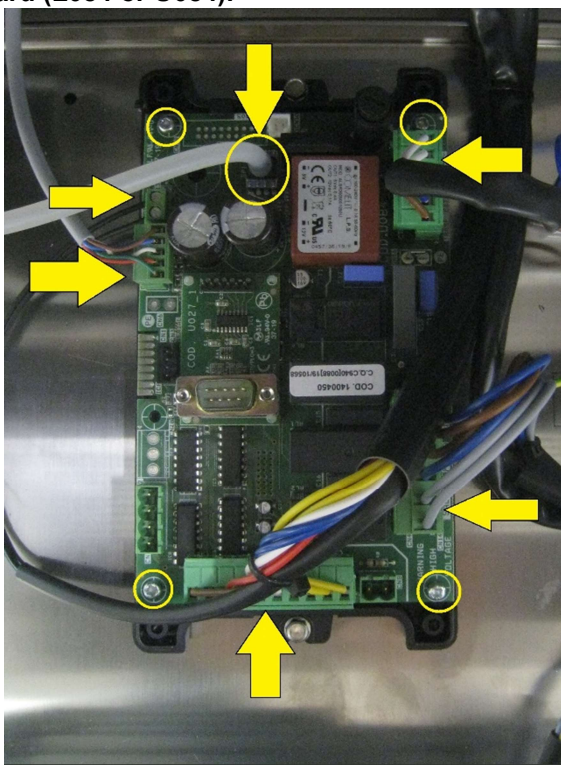
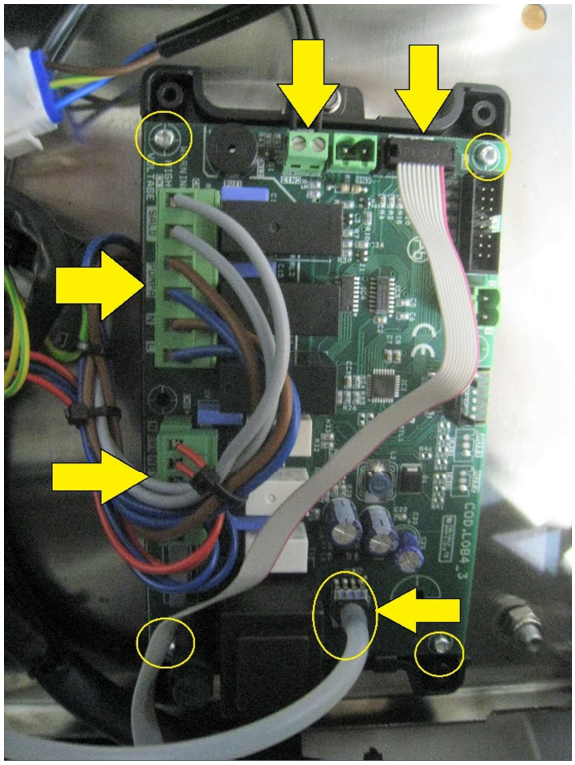
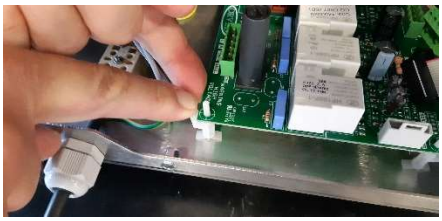
### 8.2.2 Power board replacement L084 / U084 table top models EVP/DVP08-12-16D/20T

**Symptoms: general malfunctions (sealing, pump), machine does not turn on.**
**Cause: overvoltage, damage due to microprocessor overvoltage, short circuit, moisture penetration, mechanical shock, component break (relay).**

| Step | Operation description: power board replacement |
|---|---|
| 1 | **Access the power board.**<br>**Open the casing to access the internal components.**<br>**Unplug the machine from the electrical outlet! Operate in compliance with safety regulations.**<br>Access the inside of the packaging machine as described in **§ 8.1.1 / phase 2** |
| 2 | **Remove all power and signalling connectors as well as the vacuum sensor connector on the power board (L084 or U084).**<br><br>**U084 (EVP/DVP20T)**<br><br>**L084 (EVP/DVP08-12-16D)** |
| 3 | **Disassembly and replacement of the power board.**<br>Unscrew the four fastening screws;<br>Mount the new board by inserting all the connectors and the sensor tube that were previously removed.<br> |
| 4 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** |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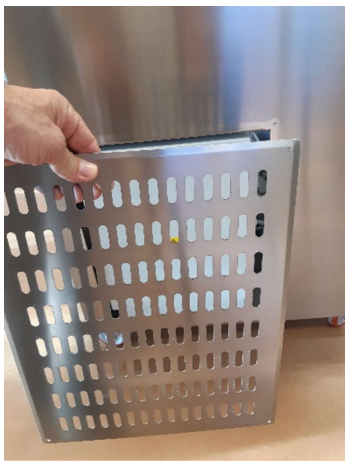
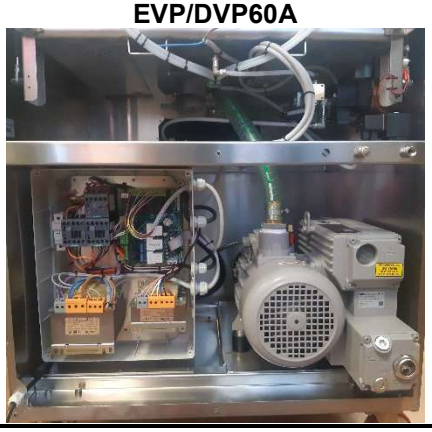
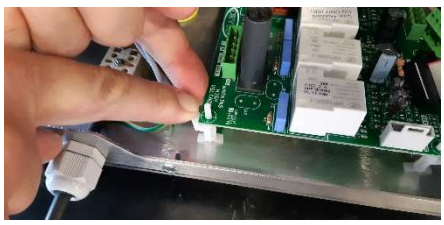
### 8.2.2.1 Replacement of power board H102 / J029 EVP/DVP25-60A wheeled models

| Step | Operation description: power board replacement | |
|---|---|---|
| 1 | **Access the power board.**<br>**EVP/DVP25A**<br>Unscrew the side stainless steel panel and then unscrew the cover of the electrical panel (below).<br>**EVP/DVP60A**<br>Remove the rear panel by unscrewing all the screws.<br>Access the power board located on the control panel.<br> <br>**EVP/DVP25A** | <br>**EVP/DVP60A**<br> |
| 2 | **Remove all the power or signal connectors on the power board (J029 on the EVP/DVP60A and H102 on the EVP/DVP25A).**<br>On the right: three-phase card J029. Below: single-phase card H102**.**<br> <br> |  |
| 3 | **Disassembly and replacement of the power board.**<br>Remove the board from the plastic supports.<br>Mount the new card by inserting all the connectors (power supply, sensor signal and control board flat cable) into the corresponding sockets. |  |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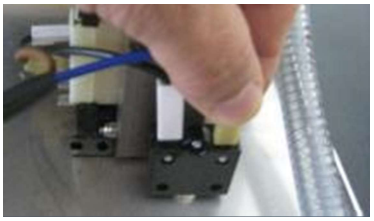
| Step | Operation description: power board replacement |
|---|---|
| 4 | **Closing and final check**<br>Repeat the Check-up described in **chap. 7**, before definitively closing the machine and the electrical panel in the three-phase versions, also inspecting the electrical and vacuum circuit connections.<br>Close the vacuum sealer following the procedure in reverse order with respect to **step 1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** |

### 8.2.3 Resetting and replacing the EVP/DVP08-12-16D/20T sealing current circuit breaker

**Symptoms: the machine does not seal, the machine seals but the bar produced smoke because it stayed on.**
**Cause: probable damage to the power board (sealing control relay stuck in closed position).**

| Step | Description of the intervention: resetting/ replacement of circuit breaker | |
|---|---|---|
| 1 | **Assessment of the cause**<br>• Circuit breaker to be reset, sealing bar neither blackened nor burned. Activate a cycle. If the circuit breaker trips immediately, making sealing impossible, it is defective and must be replaced. **Start from step 2.**<br>• Circuit breaker to reset, sealing bar and silicone profile of the counter-bar blackened and/or burned. Start a cycle and check if the circuit breaker trips. If the cycle is interrupted on a regular basis after at least 10 seconds, the sealing bar generates smoke by burning the Teflon covering strip. The power board is damaged.<br>In this case, replace the power board as described in **§ 8.2.2.** | |
| 2 | **Open the casing to access the internal components.**<br>Repeat the operations described in **§ 8.1.1 /step 2.** | |
| 3 | **Disassembling the circuit breaker.**<br>Unscrew the locking ring of the circuit breaker with pliers from the lower external side of the vacuum sealer base, or in some versions, from the support fixed to the sealing transformer.<br>Disconnect the two cables with Faston terminals. |  |
| 4 | **Assembling the new circuit breaker.**<br>Insert the threaded collar of the new circuit-breaker into the hole and screw the fixing ring nut with pliers from the lower external side of the vacuum sealer base, or in some versions, to the support fixed to the sealing transformer.<br>Reconnect the two cables with Faston terminals. |  |
| 5 | **Preliminary check.**<br>Connecting the machine to the mains. Lower the machine body and carry out an empty cycle for bags, checking the seal. | |
| 6 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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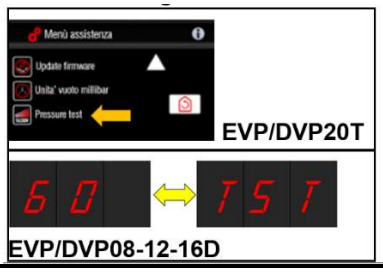
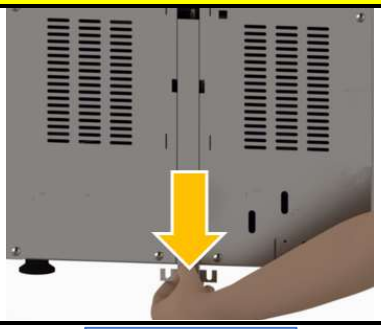
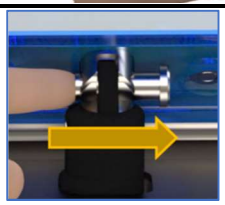
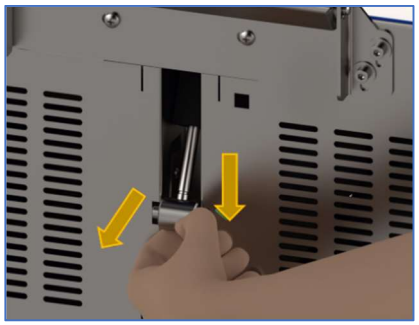
### 8.2.4 EVP/DVP08-12-16D/20T gas spring replacement

**Symptoms: cover does not remain in the maximum open position and tends to lower; at the end of the cycle do not reopen or reopen slowly.**
**Cause: gas spring discharged due to wear and / or in closed position for an extended period of time.**

| Step | Description of the intervention: gas spring replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br> | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **1** | **Access.**<br>Remove the rear cover by pushing it downwards. Open the ring.<br> |  |
| **2** | **Disassemble the gas springs.**<br>Remove the elastic ring from the fixing pin. Slide out the pin and tilt the cover backwards, resting it against a stable support. |  |
| **2.1** | Remove the gas spring from below.<br>Unscrew the gas spring **(A)** from the sliding pin **(B)**, turning it anti-clockwise. Screw the new gas spring onto the sliding pin.<br> |  |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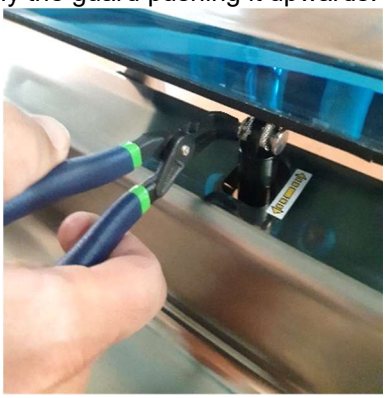
| Step | Description of the intervention: gas spring replacement | |
|---|---|---|
| 3 | **Gas spring assembly.**<br>Insert the gas spring from below. Fix the gas spring again, inserting the pin and locking it with the previously removed elastic ring. Apply the guard pushing it upwards.<br> |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test by accessing the technical menu.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 4 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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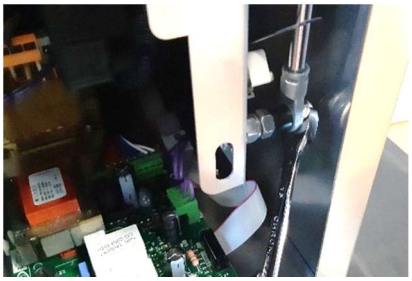
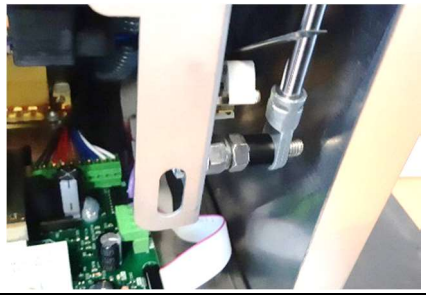
### 8.2.4.1 Replacing the EVP/DVP25-60A gas springs

| Step | Description of the intervention: gas spring replacement | |
|---|---|---|
| 1 | **Open the casing to access the internal components**<br>**Unplug the machine from the electrical outlet! Operate in compliance with safety regulations.**<br>Access the inside of the packaging machine as described in **§8.1.1 / phases 2-2.1** | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>EVP/DVP25-60A | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 2.1 | **Disassembly of the gas springs**<br>Unscrew the external self-locking nut. It is almost always necessary to force the body exterior sheet outwards to allow the gas spring eyelet to be pulled out of the screw.<br><br>The hose clamp fixed on the left side gas spring must also be mounted, at the same height, on the new gas spring: it is used to operate the lever of the cycle start microswitch. | <br> |
| 2.2 | Access the lid hinges, remove the Seeger stop ring and remove the pin.<br>**Important note:** check the state of wear of pin and hinge: if they are oval in shape, replace the entire hinge assembly (right and left, always in pairs) and the pins.<br> |  |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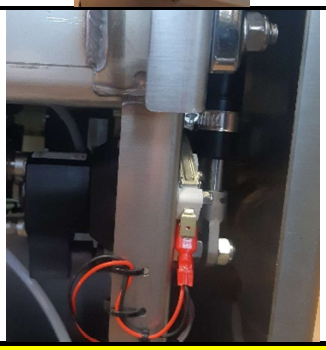
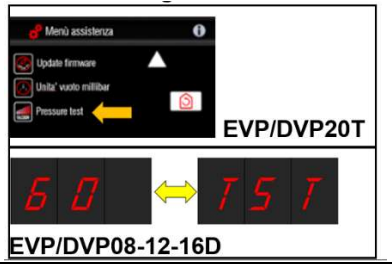
| Step | Description of the intervention: gas spring replacement | |
|---|---|---|
| **2.3** | Remove the gas spring from the top. |  |
| **3.1** | **Assembly of the gas springs**<br>Fit the new springs by following steps 2.2-2.3 in reverse order, inserting first the spring from above, hooking the lower eyelet to the lower pin.<br><br>**Attention:** check the correct operation of the microswitch on the gas spring fixing bracket. |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **4** | **Closing and final check**<br>Repeat the Check-up described in item 8.3 before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 of § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 0-5°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.5 Replacing the solenoid valve unit and the EVP/DVP08-12-16D/20T gas solenoid

**Symptoms: malfunction of certain phases of the cycles not related to power failure due to electrical problems (e.g. machine does not seal due to 3-way solenoid valve being blocked or dirty; lid does not open because the discharge valve is clogged or blocked; suction solenoid valve in the EVP/ DVP20T models remains closed and no vacuum is created in the chamber).**
**Cause: clogged or blocked solenoid valves cause suction of impurities.**

| Step | Operation description: solenoid valve unit replacement | |
|---|---|---|
| **1** | **Open the casing to access the internal components.**<br>Access the inside of the vacuum packaging machine following the procedure described in **step 2 in § 8.1.1.** | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br><br> | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |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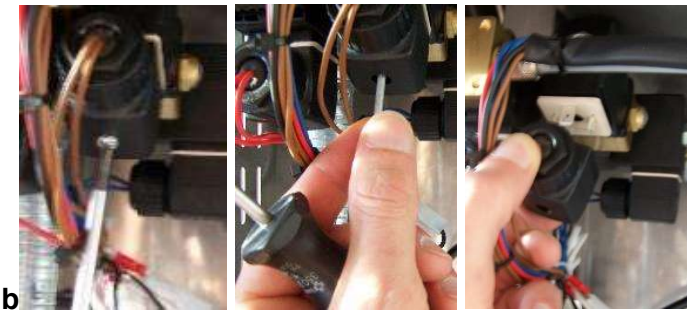
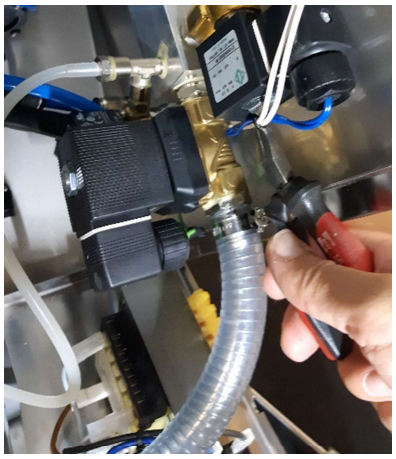
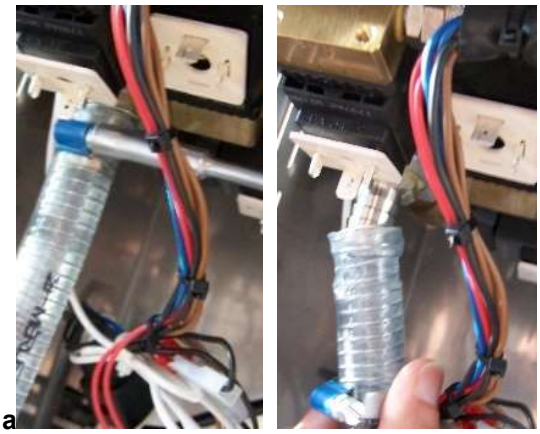
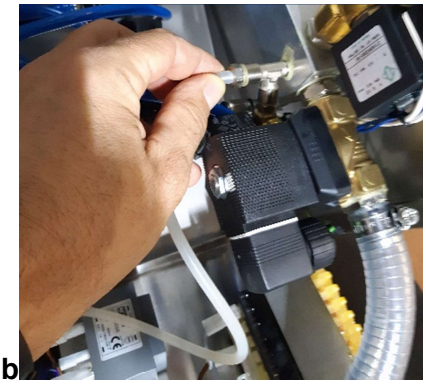
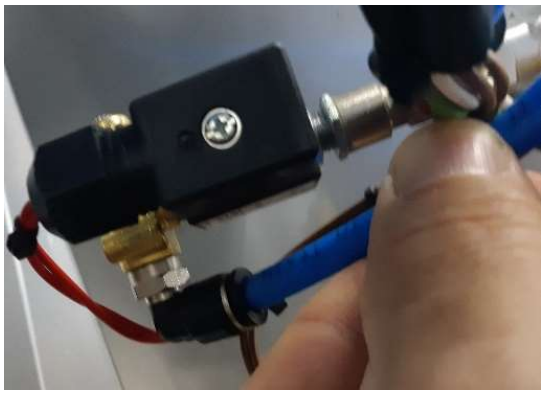
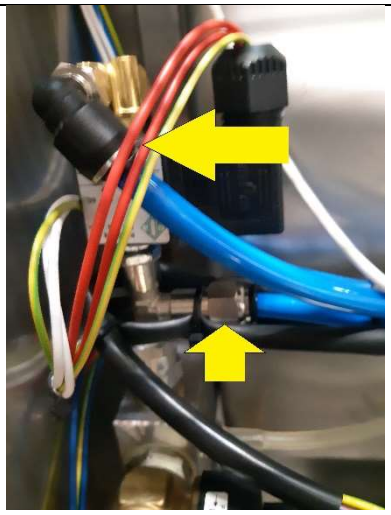
| Step | Operation description: solenoid valve unit replacement | |
|---|---|---|
| 2 | **Solenoid valve unit disassembly.**<br>a) Cut the plastic cable ties.<br>b) Unscrew the fixing screws of the solenoid valve connectors and remove them.<br>Unscrew the fastening screws of all the connectors of the existing solenoid valves (exhaust, welding, Softair, suction).<br>b  | a  |
| 2.1 | a) Using a hexagonal socket wrench, loosen the tub clamping tie of the pump's suction pipe and remove it from the hose connector.<br>b) Remove the sensor tube from the manifold connection.<br>a  | b  |
| 2.2 | Remove the two connection pipes of the three-way solenoid valve and of the check the "Gasplus" check valve with the lifting rod pistons.<br> |  |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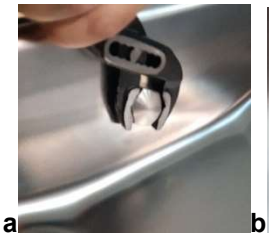
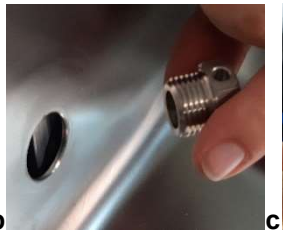
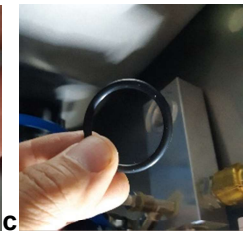
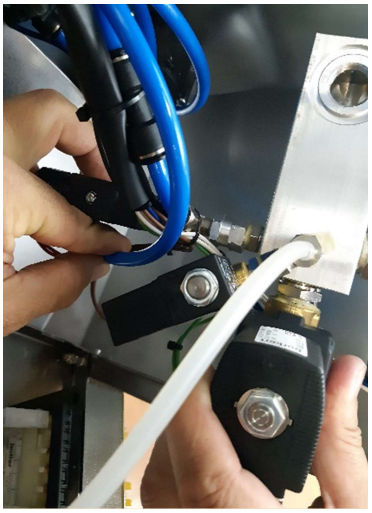
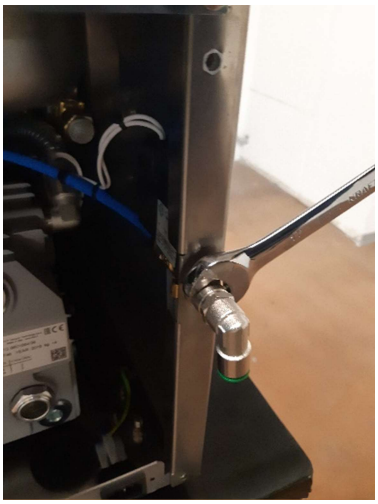
| Step | Operation description: solenoid valve unit replacement | |
|---|---|---|
| 2.3 | Unscrew the hexagonal stainless steel suction fitting inside the tank **(a)** and remove the entire unit from the tank while supporting the manifold with a hand **(d)**.<br>Check the suction fitting and, if necessary, clean thoroughly by immersing it in vinegar and cleaning the radial suction holes **(b)**.<br>Pay attention to the manifold-tank OR seal **(c)**.<br> a  b  c |  d |
| 3 | Mount the new unit in reverse order of steps 2-2.3:<br>• Fix the solenoid valve unit to the tank using the previously cleaned suction fitting;<br>• Re-establish the connection with the piston connection pipe - 3-way solenoid valve and with the suction spiral pipe of the pump;<br>• Insert the connectors of the solenoid valves checking the cleanness of the electrical contacts. |  |
| 4 | **Replacing the gas solenoid valve**<br>a) Remove the rear panel as described in **§ 8.2.4.**<br>b) Unscrew the L-shaped connection outside the casing with a hexagonal wrench.<br>c) Unscrew the solenoid valve connector and disconnect the hose from the fitting.<br>e) Carry out the replacement following the procedure in reverse order.<br>  |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test by accessing the technical menu.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |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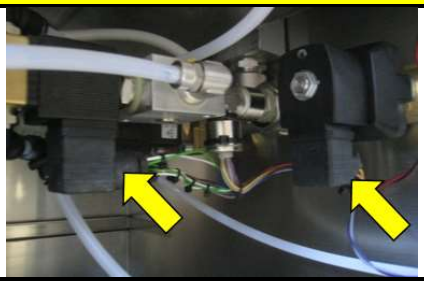
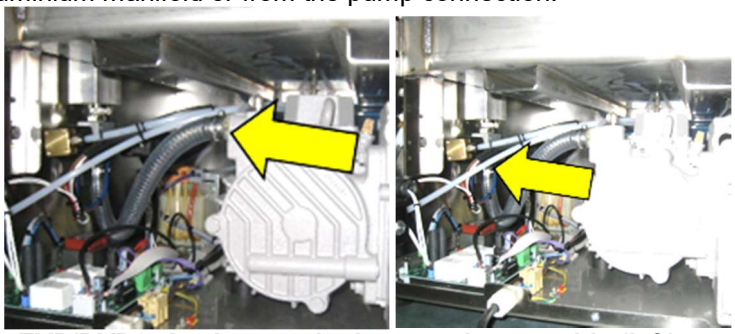
| Step | Operation description: solenoid valve unit replacement |
|---|---|
| 4 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections. In particular, carry out the **pressure test** to check the tightness of the fittings. Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** |

### 8.2.5.1 Replacing the solenoid valve unit and the EVP/DVP25-60A gas solenoid valve

| Step | Operation description: solenoid valve unit replacement | |
|---|---|---|
| 1 | **Open the casing to access the internal components.**<br>Access the inside of the vacuum packaging machine following the procedure described in **step 2 in § 9.1.1.** | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>**EVP/DVP25-60A** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 3 | **Solenoid valve unit disassembly**<br>Unscrew the fastening screws of all the connectors of the existing solenoid valves (exhaust, welding, Softair, suction). |  |
| 3.1 | Loosen the clamp of the pump suction hose located on the suction manifold or on the pump (work on the most easily accessible end) and remove the spiral hose from the hose connector of the aluminium manifold or from the pump connection.<br><br>**EVP/DVP25A: clamp to be loosened pump side (left) or manifold side (right)** | <br>**EVP/DVP60A: suction manifold side hose connection** |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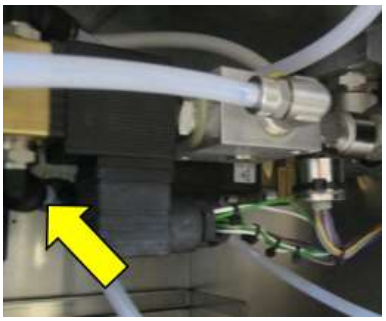
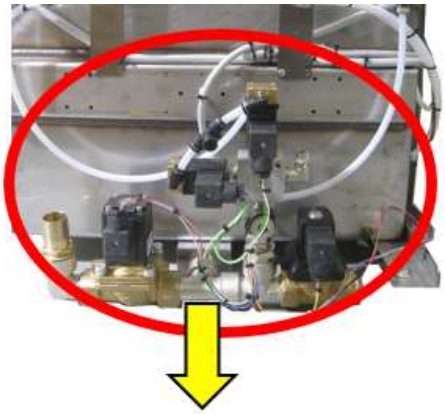
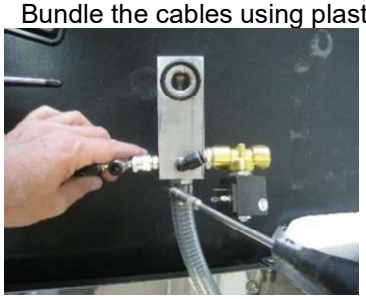
| Step | Operation description: solenoid valve unit replacement | |
|---|---|---|
| 3.2 | Disconnect the 3-way solenoid valve connection pipe with the under-bar bearing fitting. Cut the cable ties.<br> |  |
| 3.3 | Unscrew the central screw of the suction screen inside the tank to access the 4 screws that fasten the manifold. Unscrew the four screws and grasp the solenoid valve unit from the lower side.<br> |  |
| 4 | **Assembly of the new solenoid valve unit**<br><br>Mount the new unit in reverse order of steps 2-3.3:<br>• Secure the solenoid valve assembly to the tank using the previously cleaned suction coupling nozzle (C-Series) or using the four screws fastening the manifold (Levac). **Pay attention to the positioning of the O-Ring!**<br>• Re-establish the connection of the 3-way solenoid valve with the piston coupling hose (C-Series) or with the sealbag for sealing bar elevation coupling nozzle (Levac), as well as with the suction spiral hose of the pump;<br>• Insert the connectors of the solenoid valves checking the cleanness of the electrical contacts.<br>• Bundle the cables using plastic ties.<br>  | <br> |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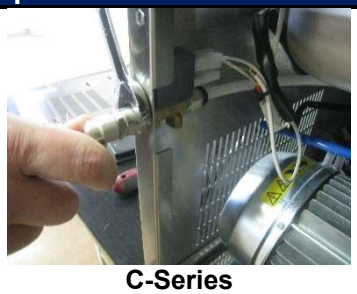
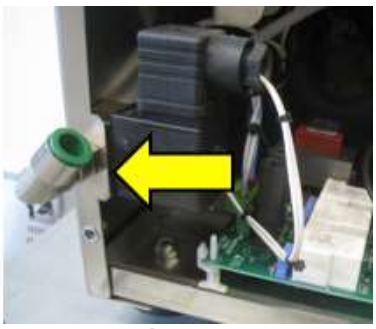
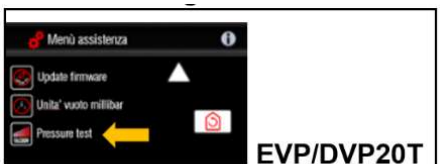
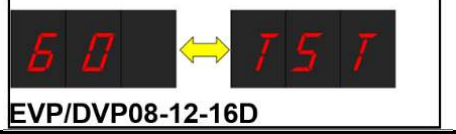
| Step | Operation description: solenoid valve unit replacement | |
|---|---|---|
| 4 | **Replacing the gas solenoid valve**<br>a) Remove the rear panel.<br>b) Unscrew the L-shaped connection outside the casing with a hexagonal wrench.<br>c) Unscrew the solenoid valve connector and disconnect the hose from the fitting.<br>e) Carry out the replacement following the procedure in reverse order.<br>  | <br>**C-Series**<br><br>**Levac** |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 4 | **Closing and final check**<br>Repeat the Check-up described in item 8.3 before closing the machine, checking the electrical and vacuum circuit connections. In particular, carry out the **pressure test** to check the tightness of the fittings. Close the packaging machine following the procedure in reverse order with respect to **steps 2-2.1 in § 9.1.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.6 Replacing the vacuum chamber cover in Plexiglas (PMMA) EVP/DVP08-12-16D/20T

**Symptoms: damaged lid with micro-cracks; chipped or cracked lid.**
**Cause: use of aggressive detergents (thinner or nitro thinner vapours), shock, wear, use of non-original gasket (too large or too high).**

| Step | Operation description: lid replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br> EVP/DVP20T<br> EVP/DVP08-12-16D | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |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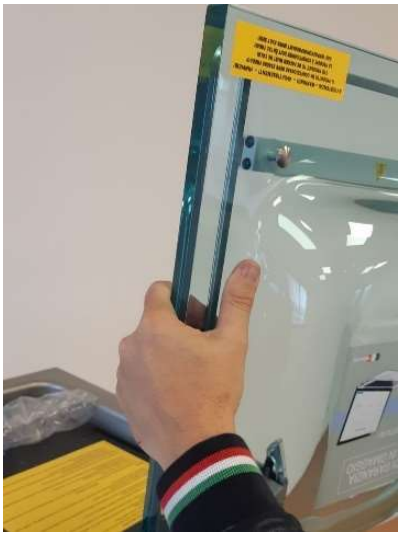
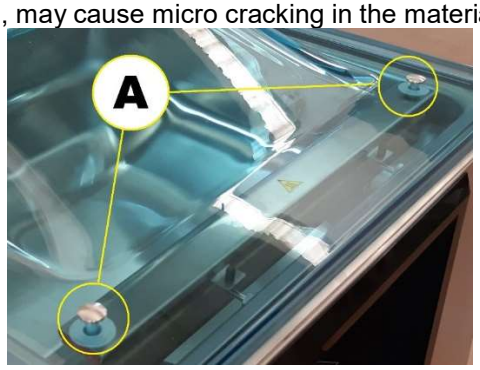
| Step | Operation description: lid replacement | |
|---|---|---|
| 1 | **Lid disassembly**<br>a) Release the gas spring as described in **§ 8.2.4 /step 2.1** and open it until it reaches 90 °<br>With the lid open, unscrew the four screws securing the lid to the hinge by supporting it with your hand. Remove the old lid and install a new one.<br> |  |
| 2 | **Recovery and assembly of the aluminium silicone holder profile.**<br>If necessary and / or contemplated, recover the old silicone lid, paying attention to the correct positioning of the O-rings of the fixing pins **(A)** of the silicone holder.<br><br>**Important note:** warn the customer to use only alcohol or water and soft cloths to clean the lid. The nitro thinner, or even just its vapours, may cause micro cracking in the material!<br> | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test by accessing the technical menu.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 3 | **Closing and final check**<br>Perform a few cycles to check the correct closure of the lid and a sealing cycle to check the correct alignment of the back pressure bar with the sealing bar. Carry out the **pressure test** to check the tightness of the gasket.<br><br>**Provide information to the customer on the correct cleaning of the lid (use only alcohol as thinners cause micro-cracks in the material!).**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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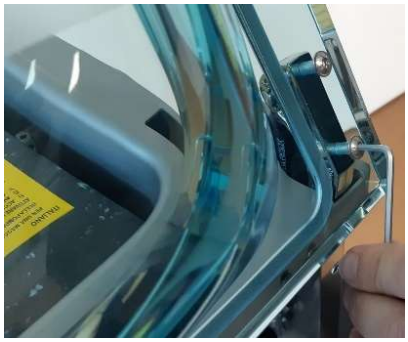
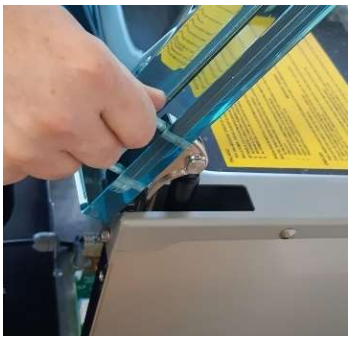
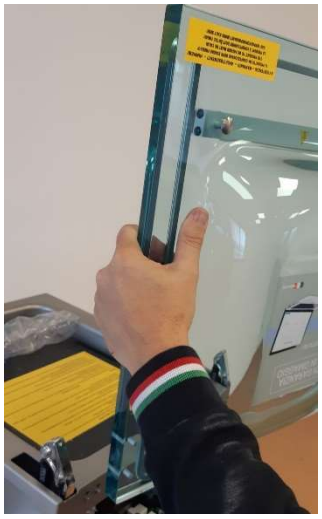
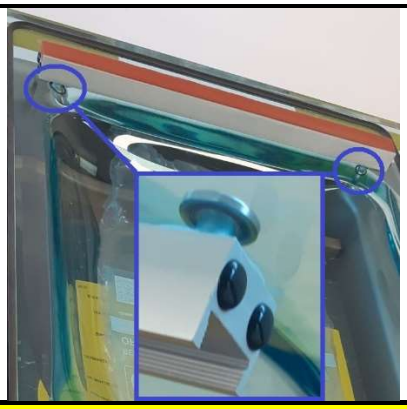
### 8.2.6.1 Replacing the vacuum chamber cover in Plexiglas (PMMA) EVP/DVP25-60A

| Step | Operation description: lid replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>**EVP/DVP25-60A** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **1** | **Lid disassembly**<br>With the lid open, unscrew the four screws securing the lid to the hinge by supporting it with your hand. Remove the old lid and install a new one.<br>  |  |
| **2** | **Recovery and assembly of the aluminium silicone holder profile.**<br>If necessary and/or expected, recover the silicone holder(s) of the old lid, taking care to correctly position the O-rings of the fixing pins of the silicone holder bar(s).<br><br>**Important note:** warn the customer to use only alcohol or water and soft cloths to clean the lid. The nitro thinner, or even just its vapours, may cause micro cracking in the material! |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **3** | **Closing and final check**<br>Perform a few cycles to check the correct closure of the lid, shut-down using the main switch in maximum vacuum to check the vacuum seal, sealing to check correct alignment of the back pressure bar with the sealing bar.<br>**Provide the customer with the correct lid cleaning instructions.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |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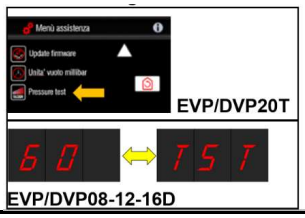
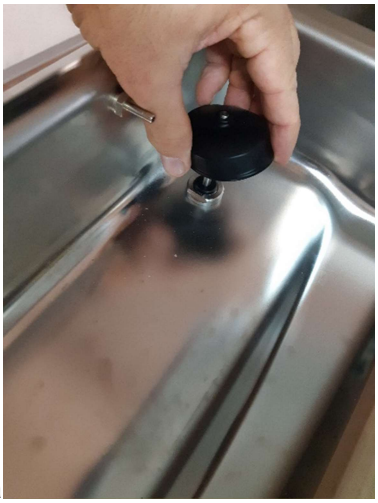
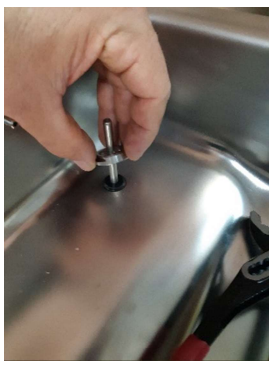
### 8.2.7 Replacing the EVP/DVP08-12-16D/20T sealing bar lifting pistons

**Symptoms: machine does not seal, inconsistent sealing, insufficient vacuum.**
**Cause: leakage and/or defective contact piston.**

| Step | Description of operation: replacement of sealing bar lifting pistons | |
|---|---|---|
| 1 | **Open the casing to access the internal components.**<br>Access the inside of the vacuum packaging machine following the procedure described in **step 2 in § 8.1.1.** | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br><br> | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 2 | **Piston disassembly.**<br>**Tank side:** remove the rubber protection caps **(a).**<br>**Machine inner side:**<br>Remove the L-shaped connection of the vacuum circuit from the coupling of the piston **(b)**<br>Unscrew **the power supply cables of the sealing bar** from the two pins, holding the pin with multi-grip pliers and unscrewing the screw at the head of the piston pin **(c).**<br> b  c<br>**Machine inner side** |  a<br>**Tank side: pin with removed cap.** |
| 2.1 | **Dismantling of pistons**<br>Unscrew the piston, holding the **inner steel tank fixing ring nut** with multi-grip pliers while turning the piston body.<br>  |  |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| Step | Description of operation: replacement of sealing bar lifting pistons | |
|---|---|---|
| 3 | **Assembly of the new contact unit.**<br>Clean holes and terminals housing from residues.<br>Fit the new pistons following the reverse procedure described in **steps 2 and 2.1**, **paying attention to the correct positioning of the O-Ring on the seat of the plastic body of the piston**.<br>**It is not necessary to tighten the unit with a tool:** just rotate the body from inside the machine, screwing it all the way in but without overdoing it.<br>Make sure that the power cable is correctly fastened. | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 4 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections. Carry out the **pressure test** to check the tightness of the piston.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.1.1.**<br>Perform a few cycles for bags, checking the seal.<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.8 Replacing the EVP/DVP25-60A under-bar bearing

**Symptoms: the vacuum sealer does not vacuum pack, or performs poorly; leakage in the circuit due to puncture of the bearing; bad and/or inconsistent sealing.**
**Cause: wear.**

| Step | Operation description: replacement Of under-bar bearing | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>**EVP/DVP25-60A** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 1 | **Remove the under-bar bearing.**<br>Remove the sealing bar and remove the bearing from the bar at the bottom of the tank, pulling it upwards. | <br> |


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| Step | Operation description: replacement Of under-bar bearing | |
|---|---|---|
| 2 | **Initial check**<br>The bearing can be punctured (rare event) or, more frequently, appear in such dirty conditions (image below) to stiffen the plastic fabric (blue) to such a point that it does not allow rapid inflating and return to a deflated position. **Instruct and advise the customer on proper routine maintenance and on cleaning procedures to be adopted!**<br> |  |
| 3 | **Insert a new under-bar bearing**<br>Check that the connection on the bottom of the tank is clean and free of scale, then insert the new bearing. |  |
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 4 | **Final check.**<br>Perform a few cycles for bags, checking the seal.<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.9 Replacing the EVP/DVP25-60A sealing bar container contacts

| Step | Operation description: tank terminals replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**Use a digital vacuum switch and a stopwatch.**<br><br>**EVP/DVP25-60A** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |


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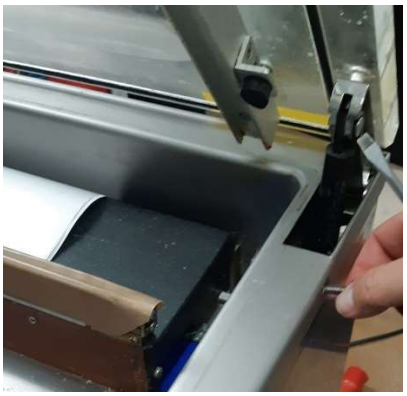
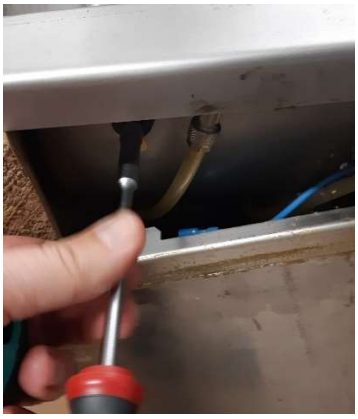
| Step | Operation description: tank terminals replacement | |
|---|---|---|
| 1 | **Access the terminals by raising the tank.**<br>Remove shelves and sealing bars from the tank.<br>Unscrew the four side fixing screws of the tank (on the right).<br>Lift the tank on the affected side (front, rear or side, depending on the position s) of the sealing bar(s)) by inserting support blocks to keep it raised (below).<br> | <br> |
| 2 | **Disassembly the terminals.**<br>Remove the Faston terminals installed on the external side.<br>Unscrew the self-locking nuts of the contacts and remove them from the tank.<br> | <br> |
| 3 | **Install the new terminals.**<br>Clean holes and terminals housing from residues.<br>Fit the new contacts following the reverse procedure described in **steps 1 and 2**. |  |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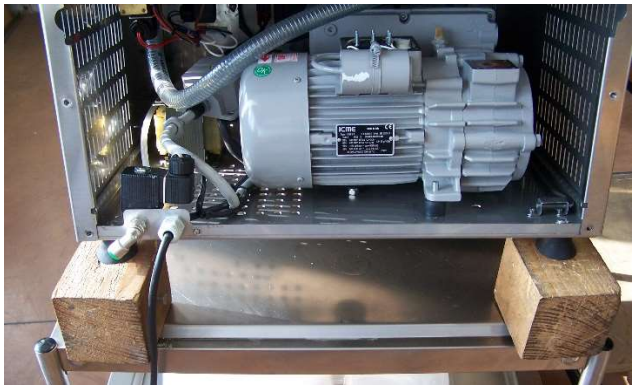
| Step | Operation description: tank terminals replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6) and evaluate if there are any variations in the performance of the packaging machine.**<br>**Perform the pressure test with a digital vacuum switch and stopwatch.** | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **4** | **Final check.**<br>Perform a few cycles for bags, checking the seal.<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.10 Pump replacement

**Symptoms: packaging machine doesn't generate a vacuum.**
**Cause: pump blocked due to oxidation or seizing due to accumulated dirt. Packaging of hot products, insufficient or no maintenance.**

| Step | Description of the intervention: pump replacement | |
|---|---|---|
| **1** | **Open the casing to access the internal components.**<br>Access the inside of the vacuum packaging machine by removing the rear panel and following the procedure described in **step 2 of § 8.1.1.** | |
| **2** | **Oil drainage**<br>Flush the oil as described **in § 8.1.1** to avoid accidental spills in the subsequent pump handling. | |
| **3** | **Disassembling the pump**<br>Locate the four fixing screws on the bottom of the base. Move the vacuum packaging machine away from the work surface, making the affected area protrude or place wooden blocks under the feet.<br><br> | <br> |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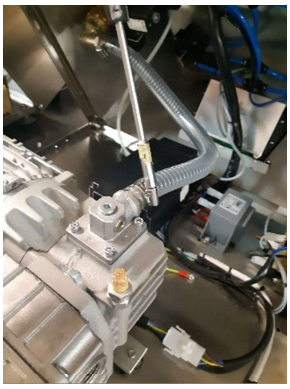
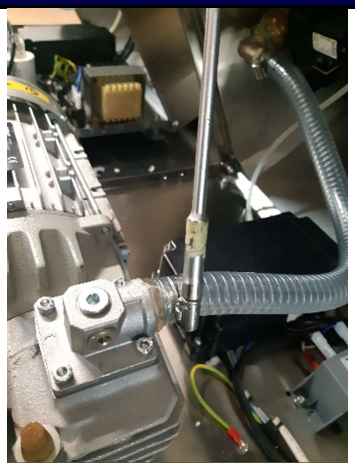
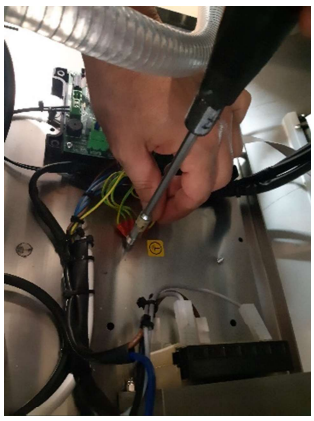
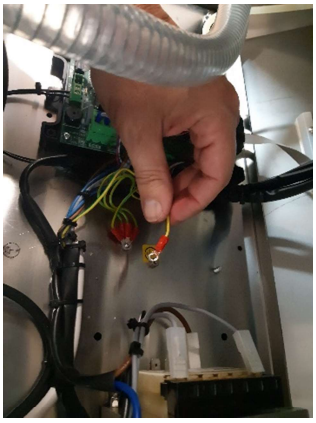
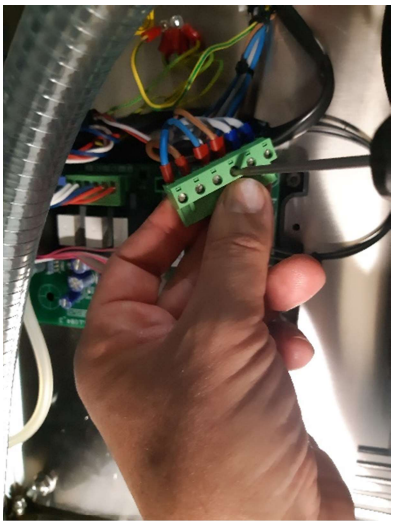
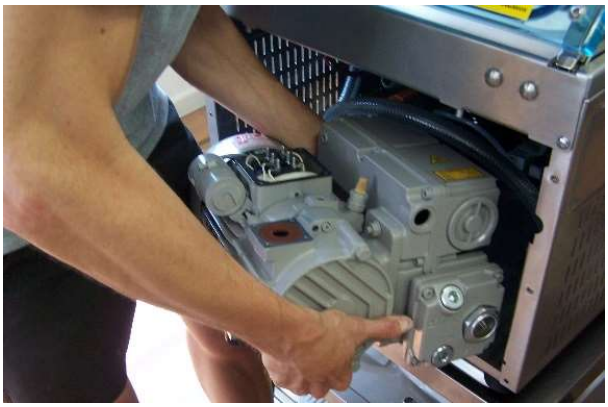
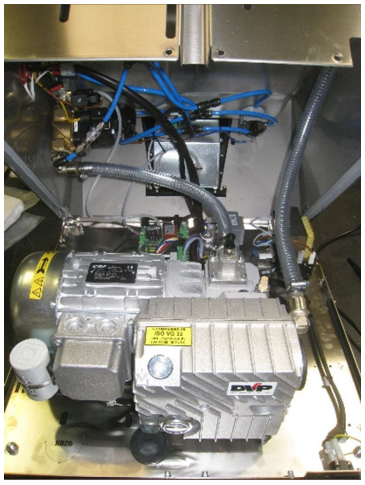
| Step | Description of the intervention: pump replacement | |
|---|---|---|
| **3.1** | Loosen the hose clamps and remove the suction tube.<br>If any, disconnect the vacuum gauge connection tube.<br> | <br>**Suction tube and vacuum gauge tube on DVP LC20.** |
| **3.2** | **Electric disconnection of the pump**<br>Access the power board as described in **§ 8.2.2.** Disconnect the 6-pole terminal and remove the two power cables that feed the pump.<br>Unscrew the pump grounding lock nut.<br>  |  |
| **3.3** | Remove the pump from the casing.<br> |  |
| **4** | **Installation of new or refurbished pump**<br>Check the correct oil level through the peep-hole (from ½ to 2/3 of the peep-hole.<br>Follow the reverse procedure described in points 3 - 3.3, fixing the pump to the base with the four screws, connecting the suction pipe and the drain pipe, if any, and restoring the electrical connection following the indications of point 3.2. | |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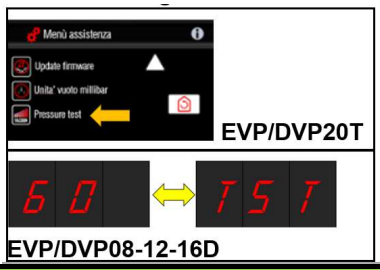
| Step | Description of the intervention: pump replacement | |
|---|---|---|
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br>**EVP/DVP25-60A: perform the pressure test with a digital vacuum switch and stopwatch.**<br><br>EVP/DVP20T<br><br>EVP/DVP08-12-16D<br><br>EVP/DVP25-60A | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| **6** | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections. **Perform the pressure test.**<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 of § 8.2.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.11 Opening and cleaning of the vacuum pump (possible use of the major kit)

**Symptoms: insufficient vacuum, cloudy, pasty and dense oil.**
**Cause: frequent packaging of liquids and/or probable packaging of products that have not been blast chilled and/or packaged at temperatures above 10°C. Wear and poor maintenance (oil change occasionally).**

| Step | Description of the intervention |
|---|---|
| **1** | **Open the casing to access the internal components.**<br>Access the inside of the packaging machine by removing the rear panel and/or opening the hood casing, following the procedure described in **step 2 of § 8.1.1.** |
| **2** | **Disassembling the pump**<br>Follow **steps 2 – 3.3 of § 8.2.14.** |
| **3** | **Pump tank opening for internal cleaning and replacement of the rotor blades with Major Kit.**<br>**Caution:** the pump should only be opened for internal cleaning and the eventual replacement of components of the Major Kit. **Do not dismantle the rotor!** |
| **3.1** | **LB8 8m³/h:** sequence for removing the exhaust filter (1-3), opening the oil tank lid (4-5), removing the pump body cover (6-7), removing the vanes from the rotor (8-11).<br>The internal components must be cleaned thoroughly before replacing the individual components and reassembling them.<br>The components replaced with the Major Kit shown here are: gasket, exhaust filter, and tank gasket.<br> 1  2  3 |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| Step | Description of the intervention |
|---|---|
| |  4  5  6<br> 7  8  9<br> 10  11 |
| 3.2 | **LC12 12m³/h:** sequence for removing the exhaust filter (1-3), opening the oil tank lid (4), removing the pump body cover (5-7), replacing the plane stopper of the pump body (8-11), oil recovery valve (12), primary plane stopper on suction(14-16).<br>The components replaced with the Major Kit shown here are: gasket, exhaust filter, and tank gasket. The internal components must be cleaned thoroughly before replacing the individual components and reassembling them.<br> 1  2  3<br> 4  5  6<br> 7  8  9 |


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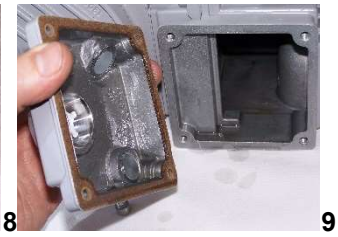
| Step | Description of the intervention |
|---|---|
| |  10  11  12  13  14  15  16 |
| 3.3 | **LC25 25m³/h:** replacing the pump body stopper (2-4), primary plane stopper on suction (5), sequence for removing the exhaust filter (6-7), opening the oil tank lid and cleaning the tank (8-10), removing the pump body lid (11),O-Ring and oil tank gasket (12-13), rotor vane extraction (14).  1  2  3  4  5  6  7  8  9  10  11  12  13  14 The components replaced with the Major Kit shown here are: gasket, exhaust filter, and tank gasket. |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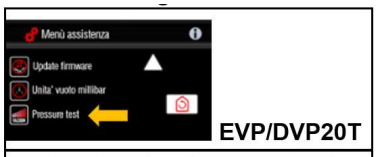
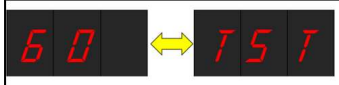
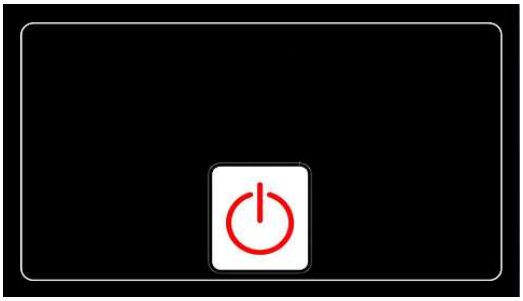
| Step | Description of the intervention | |
|---|---|---|
| | The internal components must be cleaned thoroughly before replacing the individual components and reassembling them. | |
| 4 | **Pump assembly**<br>Fill the tank with ORV40 (LB8/LC12) and ORV60 (LC25) oil. Check the correct oil level through the peep-hole (from ½ to 2/3 of the peep-hole.<br>**Quantity:**<br>0.2 l (8 m³/h)<br>0.35-0.4 lt (12 m³/h)<br>1.2 lt (25 m³ / h)<br>Follow the reverse procedure described in points 3 - 3.2 of § 8.2.13, fixing the pump to the base with the four screws, connecting the suction pipe and restoring the electrical connection following the indications in point 3.2 in § 8.2.13. | |
| **PT** | **Perform the PRESSURE TEST (see chap. 6)** to assess the efficiency status of the packaging machine (Pump status, presence of leaks).<br>**EVP/DVP08-12-16D/20T: access the technical menus**<br>**EVP/DVP25-60A: perform the pressure test with a digital vacuum switch and stopwatch.**<br><br>EVP/DVP20T<br><br>EVP/DVP08-12-16D<br><br>EVP/DVP25-60A | **OK IF:**<br>**Pf ≤ 10 mbar**<br>**ΔP / 30” ≤ 5 mbar** |
| 6 | **Closing and final check**<br>Repeat the Check-up described in **Chapter 7**, before closing the machine, checking the electrical and vacuum circuit connections.<br>Close the packaging machine following the procedure in reverse order with respect to **step 2 in § 8.2.1.**<br>**Provide the customer with information on the correct use of the machine (products cooled to 3°C, vacuum chamber cleaning, pump oil check and change).** | |

### 8.2.12 TFT EVP/DVP20T touch screen calibration (Models until 31.12.2021)

**Symptoms: inhibited touch screen, which does not react to the selections made by the operator.**
**Cause: Variation of the resistive surface due to environmental causes such as humidity, grease deposit or dirt.**

| Step | Description of the intervention |
|---|---|
| 1 | **Turning on the machine.**<br>Turn on the machine using the appropriate switch. |
| 2 | **Access to the touch screen calibration area.**<br>When the stand-by screen is reached, tap a non-graphical area of the screen (e.g. to the left or right of the Orved logo) quickly and continuously until a screen with a blue background appears, accompanied by an acoustic signal.<br> |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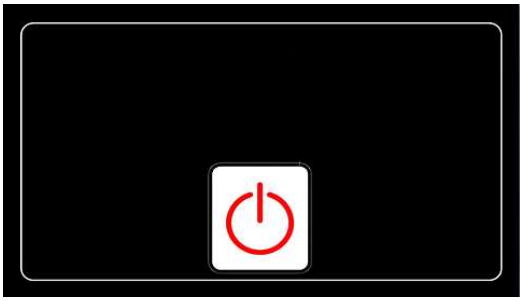
| Step | Description of the intervention |
|---|---|
| 3 | **Calibration procedure.**<br>Once entered, press with your finger the "+" icon that will move to three different corners of the screen once the selection has been validated.<br>Press several times if the “+” icon does not change position or, in the case of screen no. 3, if the stand-by screen does not reappear.<br> 1  2  3 |
| 4 | **End of the calibration procedure.**<br>At the end of the procedure, the machine will return to the stand-by screen.<br> |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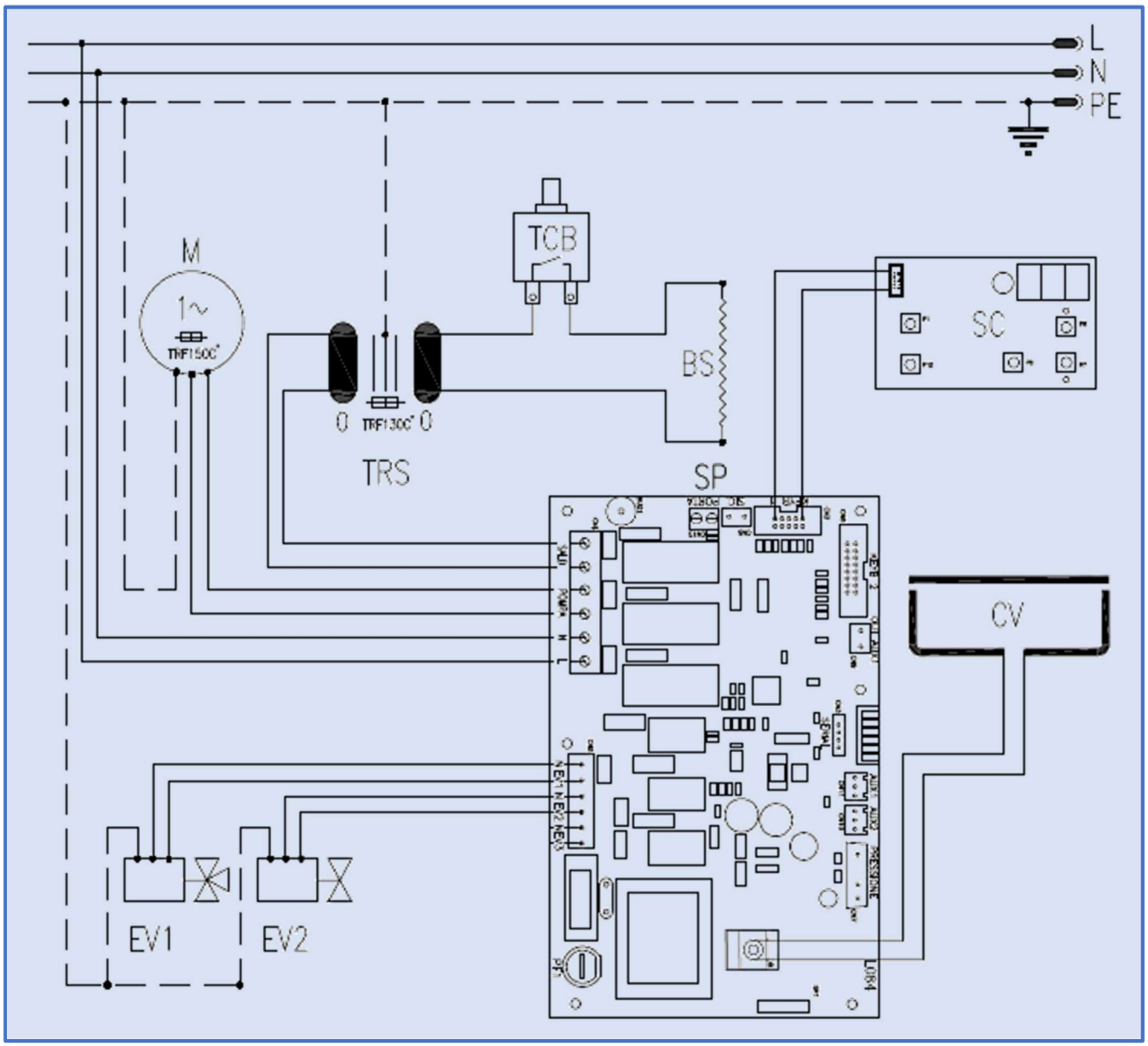
# 9. Wiring diagrams

## 9.1 EVP/DVP08D (Single Phase)




| Ref. | Description |
|---|---|
| TRS | SEALING TRANSFORMER |
| BS | SEALING BAR |
| M | 230V AC VACUUM PUMP |
| EV1 | 230V AC 3-WAY SOLENOID VALVE FOR SEALING BAR ACTIVATION |
| EV2 | 230V AC 2-WAY SOLENOID VALVE, AIR RETURN |
| SC | N059 CONTROL BOARD |
| VC | VACUUM CHAMBER |
| SP | L084 230V AC POWER BOARD |
| TCB | THERMAL CIRCUIT BREAKER |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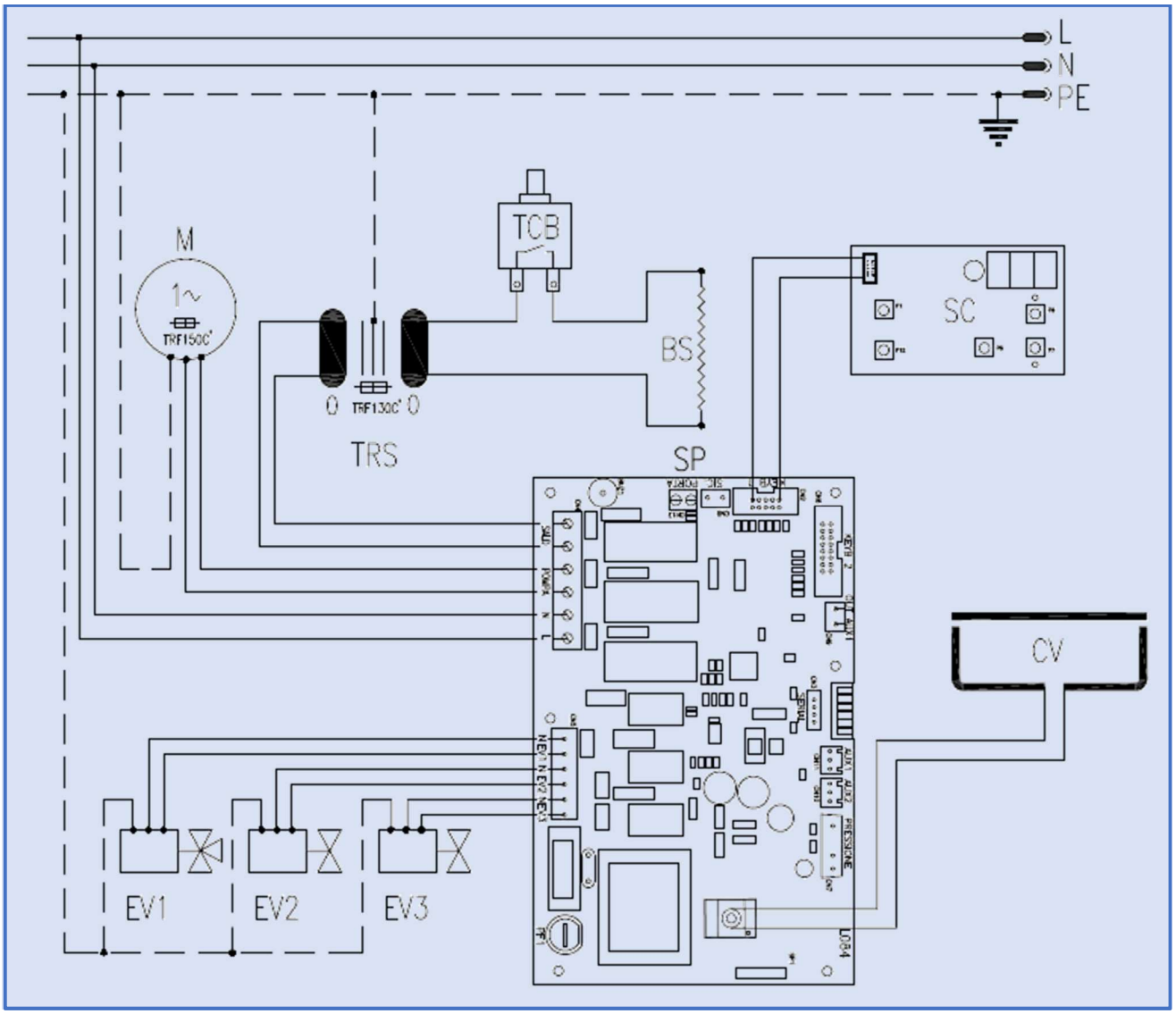
## 9.2 EVP/DVP12-16D (Single Phase)




| Ref. | Description |
|---|---|
| TRS | SEALING TRANSFORMER |
| BS | SEALING BAR |
| M | 230V AC VACUUM PUMP |
| EV1 | 230V AC 3-WAY SOLENOID VALVE FOR SEALING BAR ACTIVATION |
| EV2 | 230V AC 2-WAY SOLENOID VALVE, AIR RETURN |
| EV3 | 230V AC 2-WAY SOLENOID VALVE, GAS |
| SC | N059 CONTROL BOARD |
| VC | VACUUM CHAMBER |
| SP | L084 230V AC POWER BOARD |
| TCB | THERMAL CIRCUIT BREAKER |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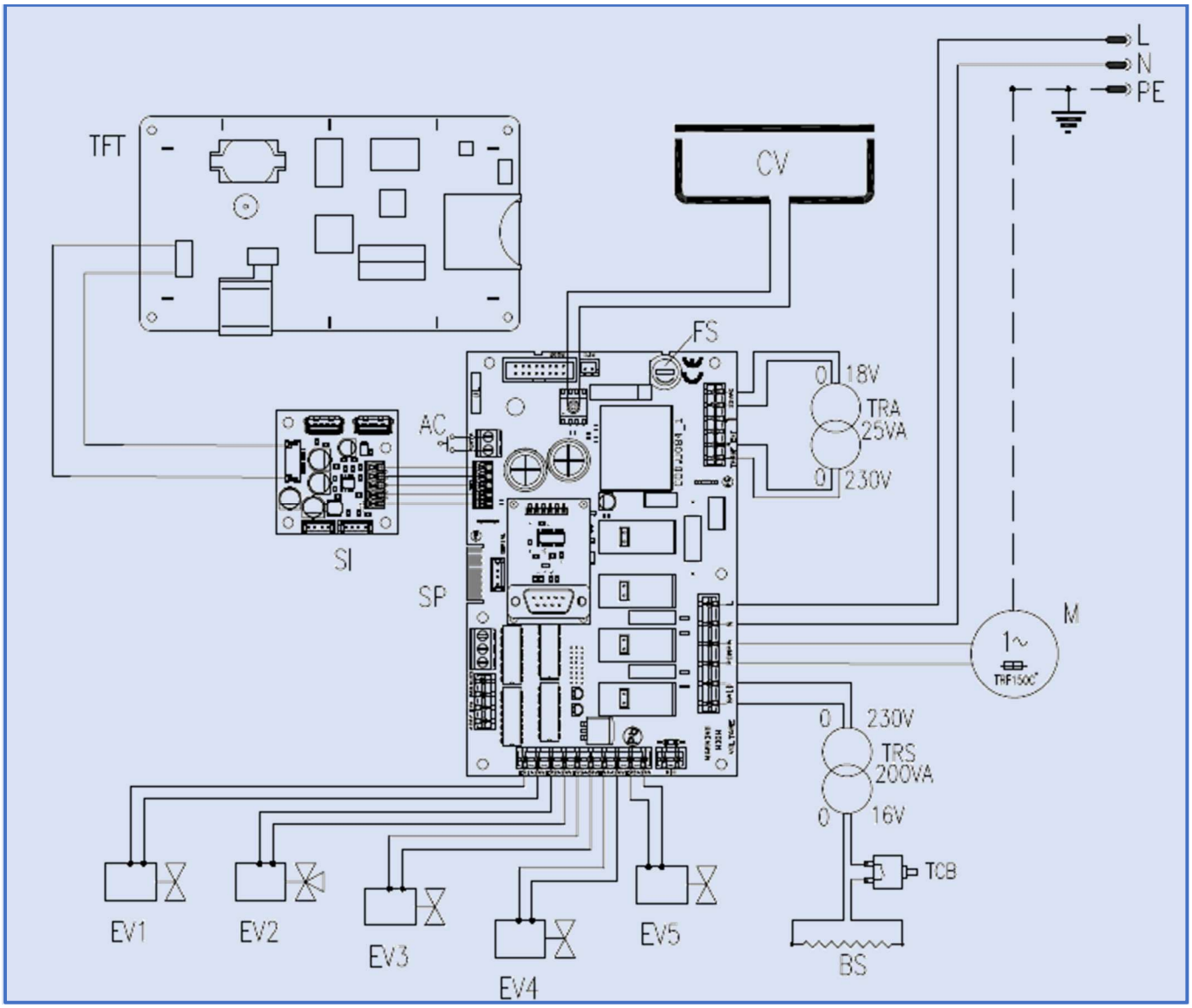
## 9.3 EVP/DVP25T (Single Phase)




| Ref. | Description |
|---|---|
| **TRA** | MAIN TRANSFORMER |
| **TRS** | SEALING TRANSFORMER |
| **BS** | SEALING BAR |
| **M** | VACUUM PUMP |
| **EV1** | 2-WAY SOLENOID VALVE, SOFTAIR |
| **EV2** | 3-WAY SOLENOID VALVE, SEALING BAR ACTIVATION |
| **EV3** | 2-WAY SOLENOID VALVE, GAS |
| **EV4** | 2-WAY SOLENOID VALVE, AIR RETURN IN VACUUM CHAMBER |
| **EV5** | 2-WAY SOLENOID VALVE, SUCTION VALVE |
| **TFT** | TFT DISPLAY |
| **YES** | U019 INTERFACE BOARD |
| **SP** | U084 POWER BOARD |
| **VC** | VACUUM CHAMBER |
| **TCB** | THERMAL CIRCUIT BREAKER |
| **AC** | CYCLE START |
| **FS** | T 6.3A FUSE |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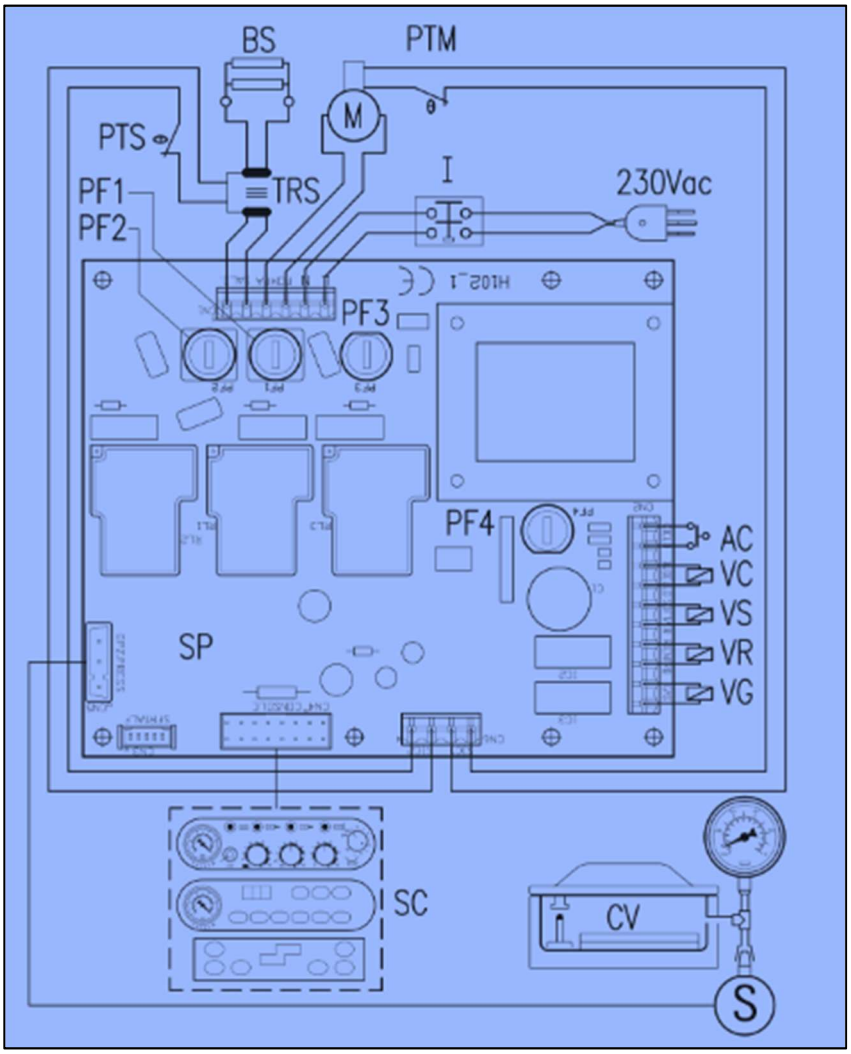
## 9.4 EVP/DVP25A (Single Phase)




| Ref. | Description |
|---|---|
| TRS | SEALING TRANSFORMER |
| BS | SEALING BAR |
| I | MAIN SWITCH |
| PF1 | FUSE HOLDER WITH VACUUM PUMP FUSE 6.3 / 8/10 ° |
| PF2 | FUSE HOLDER WITH SEALING FUSE 2.5-10° |
| PF3 | FUSE HOLDER WITH FUSE 1A |
| PF4 | FUSE HOLDER WITH FUSE 4A |
| AC | WORK CYCLE START |
| VC | SEALBAG FOR SEALING BAR ELEVATION SOLENOID VALVE (SEALING BAR ACTIVATION) |
| VS | SOFTAIR OPTIONAL FUNCTION SOLENOID VALVE (SLOW DRAIN) |
| VR | AIR RETURN IN VACUUM CHAMBER SOLENOID VALVE (DRAIN) |
| VG | INERT GAS INJECTION OPTIONAL FUNCTION SOLENOID VALVE |
| M | 230V AC VACUUM PUMP |
| SC | B081 CONTROL BOARD |
| VC | VACUUM CHAMBER |
| SP | H102 POWER BOARD |
| PTM | MOTOR THERMAL PROTECTION |
| PTS | NOT IN USE (THERMAL PROTECTION FOR SEALING TRANSFORMER) |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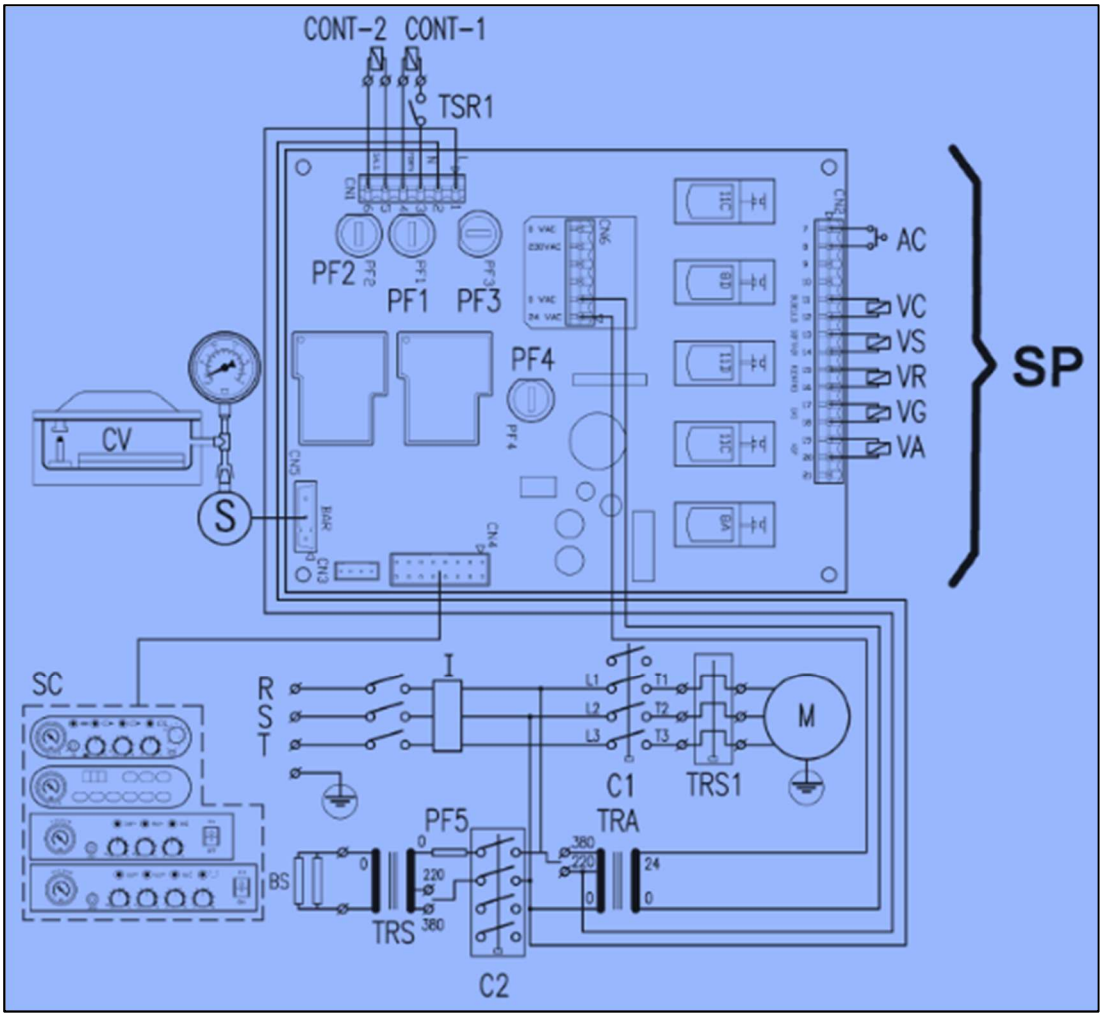
## 9.5 EVP/DVP60A (Three Phase)




| Ref. | Description |
|---|---|
| TRS | SEALING TRANSFORMER |
| BS | SEALING BAR |
| I | MAIN SWITCH |
| PF1 | VACUUM PUMP PROTECTION FUSE HOLDER |
| PF2 | SEALING PROTECTION FUSE HOLDER |
| PF3 | POWER BOARD PROTECTION FUSE HOLDER |
| PF4 | POWER BOARD PROTECTION FUSE HOLDER |
| PF5 | GENERAL PROTECTION FUSE HOLDER WITH CERAMIC FUSE |
| AC | WORK CYCLE START |
| VC | SEALBAG FOR SEALING BAR ELEVATION SOLENOID VALVE (SEALING BAR ACTIVATION) |
| VS | SOFTAIR OPTIONAL FUNCTION SOLENOID VALVE (SLOW DRAIN) |
| VR | AIR RETURN IN VACUUM CHAMBER SOLENOID VALVE (DRAIN) |
| VG | INERT GAS INJECTION OPTIONAL FUNCTION SOLENOID VALVE |
| M | THREE-PHASE VACUUM PUMP |
| SC | B081 CONTROL BOARD |
| VC | VACUUM CHAMBER |
| SP | J029 POWER BOARD |
| PTM | MOTOR THERMAL PROTECTION |
| PTS | NOT IN USE (THERMAL PROTECTION FOR SEALING TRANSFORMER) |
| CONT1 | PUMP REMOTE SWITCH |
| CONT2 | SEALING REMOTE SWITCH |





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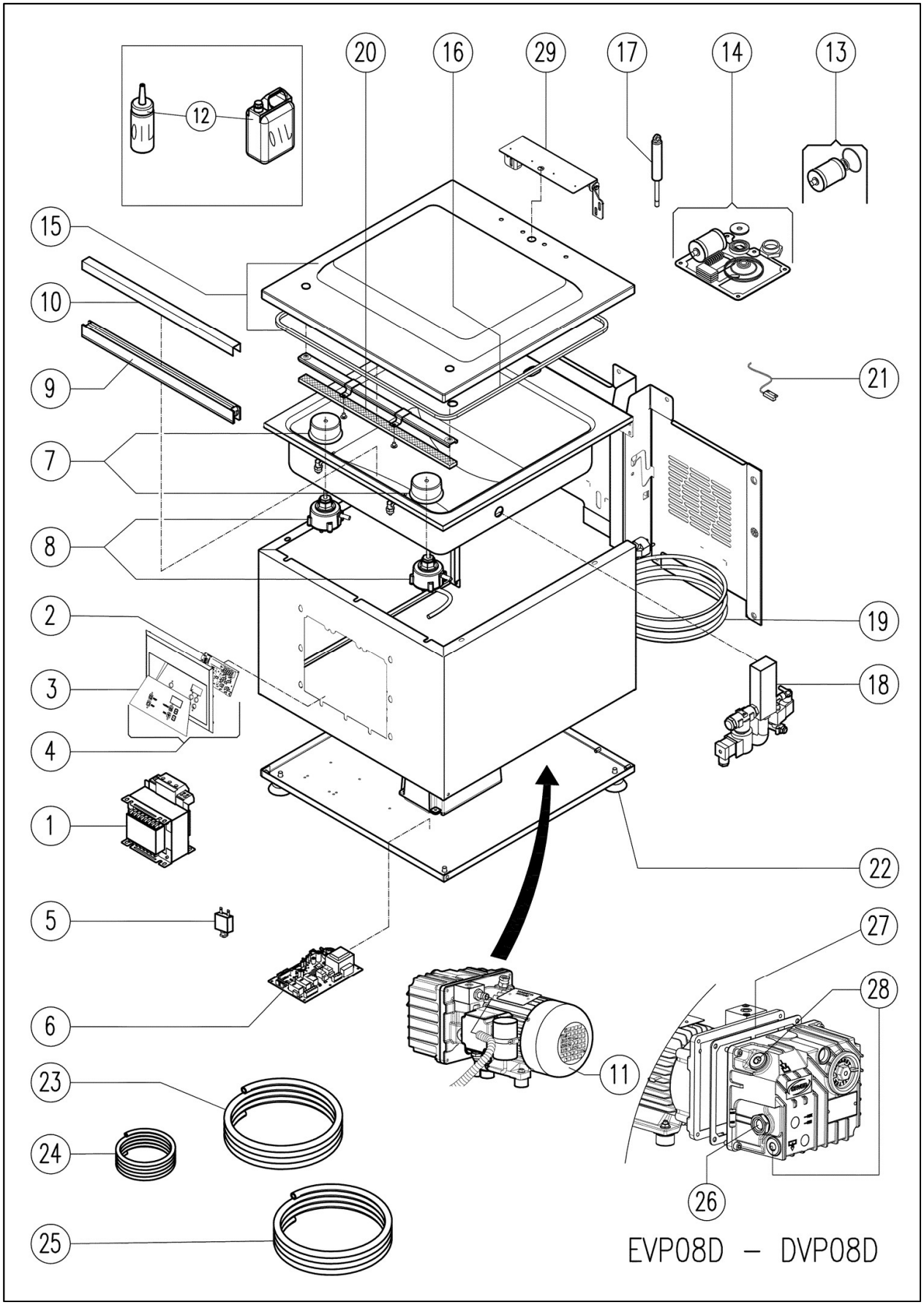
# 10. Explosions and spare parts

## 10.1 EVP/DVP08D





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| Num. Part | EVP/DVP08D Description | Notes |
|---|---|---|
| 1 | TRANSFORMER 200VA 230/10-12-16V | 230V |
| 2 | N059.0 CONTROL KEYBOARD | |
| 3 | STICKER CONTROLS PERS. ELECTROLUX "EVP08D - EVP12D - EVP16D" | |
| 3 | STICKER CONTROLS PERS. DITO SAMA "DVP08D - DVP12D - DVP16D" | |
| 4 | COMPLETE DASHBOARD N089 PERS. ELECTROLUX "EVP08D - EVP12D - EVP16D" | |
| 4 | COMPLETE DASHBOARD N089 PERS. DITO SAMA "DVP08D - DVP12D - DVP16D" | |
| 5 | THERMAL CIRCUIT BREAKER SM7160 16A | |
| 6 | POWER ELECTRONIC BOARD L084 230V IDEA-IDEA OEM 30/40 | 230V |
| 7 | PROTECTIVE GUARD (2 PCS) EVOX/C-SERIES/SPACE/IDEA/FC30-36-41 GOURMET VAC/IDEA OEM | |
| 8 | OEM IDEA-ASSEMBLED PISTON (2 PCS) | |
| 9 | SEALING BAR 319X30X20 C308/310/312 - IDEA-IDEA OEM 30/31/32 | |
| 10 | TEFLON AVANA L=65MM (1 MT) IDEA-IDEA OEM/ MC/NEW/V.2010/400G-DG/VM98/F420/C-SERIES/FC30-36-41 GOURMET VAC | |
| 11 | VACUUM PUMP LB 8 230V 50 / 60HZ | 230V |
| 12 | PUMP OIL ORV40 250ML | 1 OIL CHANGE |
| 12 | PUMP OIL ORV40 1L | |
| 12 | PUMP OIL ORV40 10L | |
| 13 | MINOR KIT FOR VACUUM PUMP LB8/LC12/LA12 (OIL SEPARATOR FILTER) | |
| 14 | MAJOR KIT LB8 (K1000036) | |
| 15 | PLEXIGLAS LID C308 / FC30 GOURMET VAC / IDEA 30OEM | |
| 16 | BLACK LID GASKET 2 M | |
| 17 | GAS SPRING (1 PC) 198.155.32 | |
| 18 | SOLENOID VALVE UNIT 1/4" IDEA-IDEA OEM 30 230V | 230V |
| 19 | POWER CABLE 3X1X2000 P660 CONN.F 90° PW80 SCK | 230V |
| 20 | SILICONE PROFILE 29X8X315 (1 PC) | |
| 21 | REED MC-N CONTACT | REED |
| 22 | SUCTION CUP FOOT (5 PCS) OEM IDEA / IDEA | |
| 23 | D8X6 (1 M) ELLASTOLAN BLUE TUBE | |
| 24 | WHITE SILICONE TUBE D2X6 FOR SENSOR (1 M) | |
| 25 | ARMORVIN TUBE D=16 (1 MT) | |
| 26 | BUSCH LB8/LC12/MD16/PB0008 OIL LEVEL LIGHT (1105009) | |
| 27 | PUMP TANK GASKET 160X130X2 LB8/LA6 (4901040) | |
| 28 | CAPS 1/4” G+OR DVP PUMP LB8 (1110002) (2 PCS) | |
| 29 | LERICA C-SERIES COVER SUPPORT BRACKET/OEM IDEA | |


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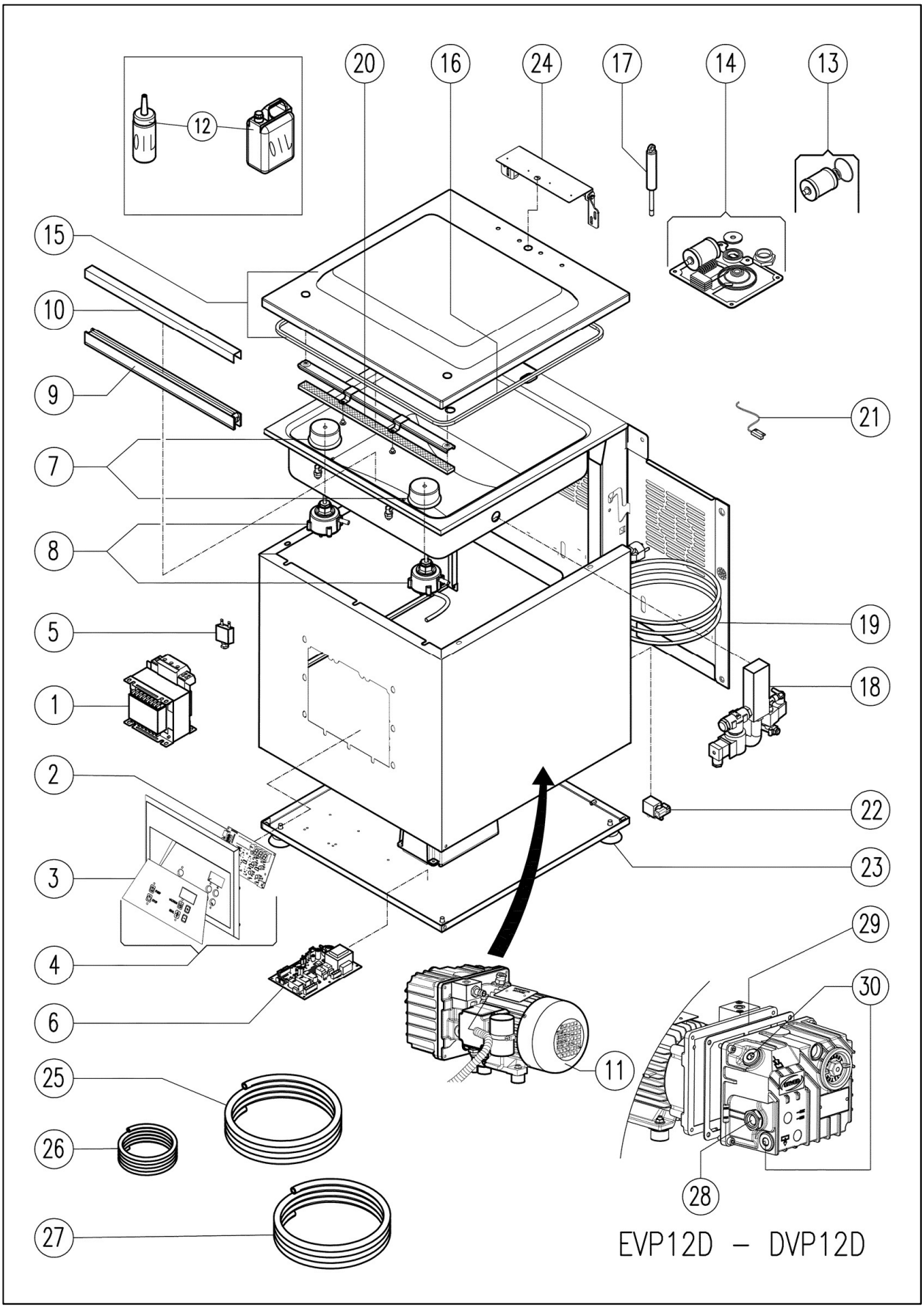
## 10.2 EVP/DVP12D





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| Num. Part | EVP/DVP12D Description | Notes |
|---|---|---|
| 1 | TRANSFORMER 200VA 230/10-12-16V | 230V |
| 2 | N059.0 CONTROL KEYBOARD | |
| 3 | STICKER CONTROLS PERS. ELECTROLUX "EVP08D - EVP12D - EVP16D" | |
| 3 | STICKER CONTROLS PERS. DITO SAMA "DVP08D - DVP12D - DVP16D" | |
| 4 | COMPLETE DASHBOARD N089 PERS. ELECTROLUX "EVP08D - EVP12D - EVP16D" | |
| 4 | COMPLETE DASHBOARD N089 PERS. DITO SAMA "DVP08D - DVP12D - DVP16D" | |
| 5 | THERMAL CIRCUIT BREAKER SM7160 16A | |
| 6 | POWER BOARD L084 230V IDEA-IDEA OEM 31/41 / C-GOURMET / FC 30-36-41 GOURMET VAC | 230V |
| 7 | PROTECTIVE GUARD (2 PCS) EVOX/C-SERIES/SPACE/IDEA/FC30-36-41 GOURMET VAC/IDEA OEM | |
| 8 | OEM IDEA-ASSEMBLED PISTON (2 PCS) | |
| 9 | SEALING BAR 319X30X20 C308/310/312 - IDEA-IDEA OEM 30/31/32 | |
| 10 | TEFLON AVANA L=65MM (1 MT) IDEA-IDEA OEM/ MC/NEW/V.2010/400G-DG/VM98/F420/C-SERIES/FC30-36-41 GOURMET VAC | |
| 11 | VACUUM PUMP LC 12 230V 50/60HZ | 230V |
| 12 | PUMP OIL ORV40 500ML | 1 OIL CHANGE |
| 12 | PUMP OIL ORV40 1L | |
| 12 | PUMP OIL ORV40 10L | |
| 13 | MINOR KIT FOR VACUUM PUMP LB8/LC12/LA12 (OIL SEPARATOR FILTER) | |
| 14 | MAJOR KIT FOR VACUUM PUMP LC12 (K1000037) | |
| 15 | PLEXIGLAS LID C310/C312/ FC36 GOURMET VAC / IDEA 31 OEM | |
| 16 | BLACK LID GASKET 2 M | |
| 17 | GAS SPRING (1 PC) 198.155.44 | |
| 18 | SOLENOID VALVE GROUP IDEA-IDEA OEM 31/41 230V | 230V |
| 19 | POWER CABLE 3X1X2000 P660 CONN.F 90° PW80 SCK | 230V |
| 20 | SILICONE PROFILE 29X8X315 (1 PC) | |
| 21 | REED MC-N CONTACT | REED |
| 22 | SOLENOID VALVE 1/8 "FF D2 NBR 230V | 230V |
| 23 | SUCTION CUP FOOT (5 PCS) OEM IDEA / IDEA | |
| 24 | LERICA C-SERIES COVER SUPPORT BRACKET/OEM IDEA | |
| 25 | D8X6 (1 M) ELLASTOLAN BLUE TUBE | |
| 26 | WHITE SILICONE TUBE D2X6 FOR SENSOR (1 M) | |
| 27 | ARMORVIN TUBE D=16 (1 MT) | |
| 28 | BUSCH LB8/LC12/MD16/PB0008 OIL LEVEL LIGHT (1105009) | |
| 29 | PUMP TANK GASKET LC12 | |
| 30 | HEXAGON SUNKEN CAP 1! 2 "(2 PCS) | |


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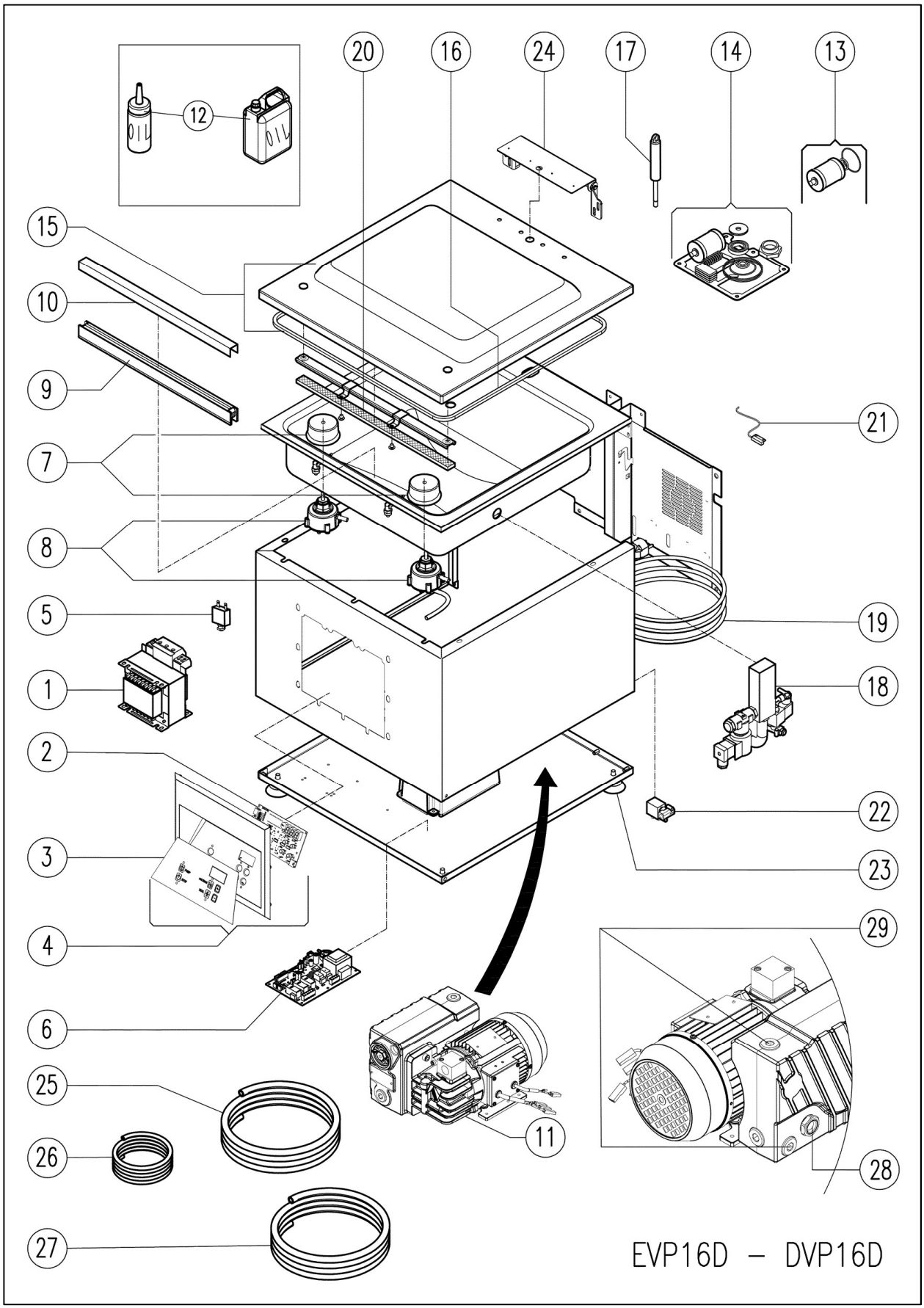
## 10.3 EVP/DVP16D





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| Num. Part | EVP/DVP16D Description | Notes |
|---|---|---|
| 1 | TRANSFORMER 200VA 230/10-12-16V | 230V |
| 2 | N059.0 CONTROL KEYBOARD | |
| 3 | STICKER CONTROLS PERS. ELECTROLUX "EVP08D - EVP12D - EVP16D" | |
| 3 | STICKER CONTROLS PERS. DITO SAMA "DVP08D - DVP12D - DVP16D" | |
| 4 | COMPLETE DASHBOARD N089 PERS. DITO SAMA "DVP08D - DVP12D - DVP16D" | |
| 4 | COMPLETE DASHBOARD N089 PERS. ELECTROLUX "EVP08D - EVP12D - EVP16D" | |
| 5 | THERMAL BREAKER EVOX 30 / EVOX31 HI-LINE/ IDEA | |
| 6 | POWER BOARD L084 230V IDEA-IDEA OEM 31/41 / C-GOURMET / FC 30-36-41 GOURMET VAC | 230V |
| 7 | PROTECTIVE GUARD (2 PCS) EVOX/C-SERIES/SPACE/IDEA/FC30-36-41 GOURMET VAC/IDEA OEM | |
| 8 | OEM IDEA-ASSEMBLED PISTON (2 PCS) | |
| 9 | SEALING BAR 421X30X20 C412/420-IDEA-IDEA OEM 40/41/42 | |
| 10 | TEFLON AVANA L=65MM (1 MT) IDEA-IDEA OEM/ MC/NEW/V.2010/400G-DG/VM98/F420/C-SERIES/FC30-36-41 GOURMET VAC | |
| 11 | VACUUM PUMP MD.16 230V 50/60HZ | 16 MC/H DVP |
| 12 | PUMP OIL ORV40 500ML | |
| 12 | PUMP OIL ORV40 1L | |
| 13 | MINOR KIT FOR VACUUM PUMP MD16/ LC25 (K1000040) (OIL SEPARATOR FILTER) | 16 MC/H DVP |
| 14 | MAJOR KIT FOR MD16 VACUUM PUMP (K9601072/1) | |
| 15 | PLEXIGLAS LID C412/420 1B IDROF. / IDEA OEM 41- 42 | |
| 16 | BLACK LID GASKET 2 M | |
| 17 | GAS SPRING (1 PC) 198.155.52 (IDROF) | |
| 18 | SOLENOID VALVE GROUP IDEA-IDEA OEM 31/41 230V | 230V |
| 19 | POWER CABLE 3X1X2000 P660 CONN.F 90° PW80 SCK | 230V |
| 20 | SILICONE PROFILE 29X8X415 | |
| 21 | REED MC-N CONTACT | |
| 22 | SOLENOID VALVE 1/8 "FF D2 NBR 230V | |
| 23 | SUCTION CUP FOOT (5 PCS) OEM IDEA / IDEA | |
| 24 | LERICA C-SERIES COVER SUPPORT BRACKET/OEM IDEA | |
| 25 | D8X6 (1 M) ELLASTOLAN BLUE TUBE | |
| 26 | ARMORVIN TUBE D=16 (1 MT) | |
| 27 | WHITE SILICONE TUBE D2X6 FOR SENSOR (1 M) | |
| 28 | BUSCH LB8/LC12/MD16/PB0008 OIL LEVEL LIGHT (1105009) | 16 MC/H DVP |
| 29 | HEXAGON SUNKEN CAP 1! 2 "(2 PCS) | 16 MC/H DVP |


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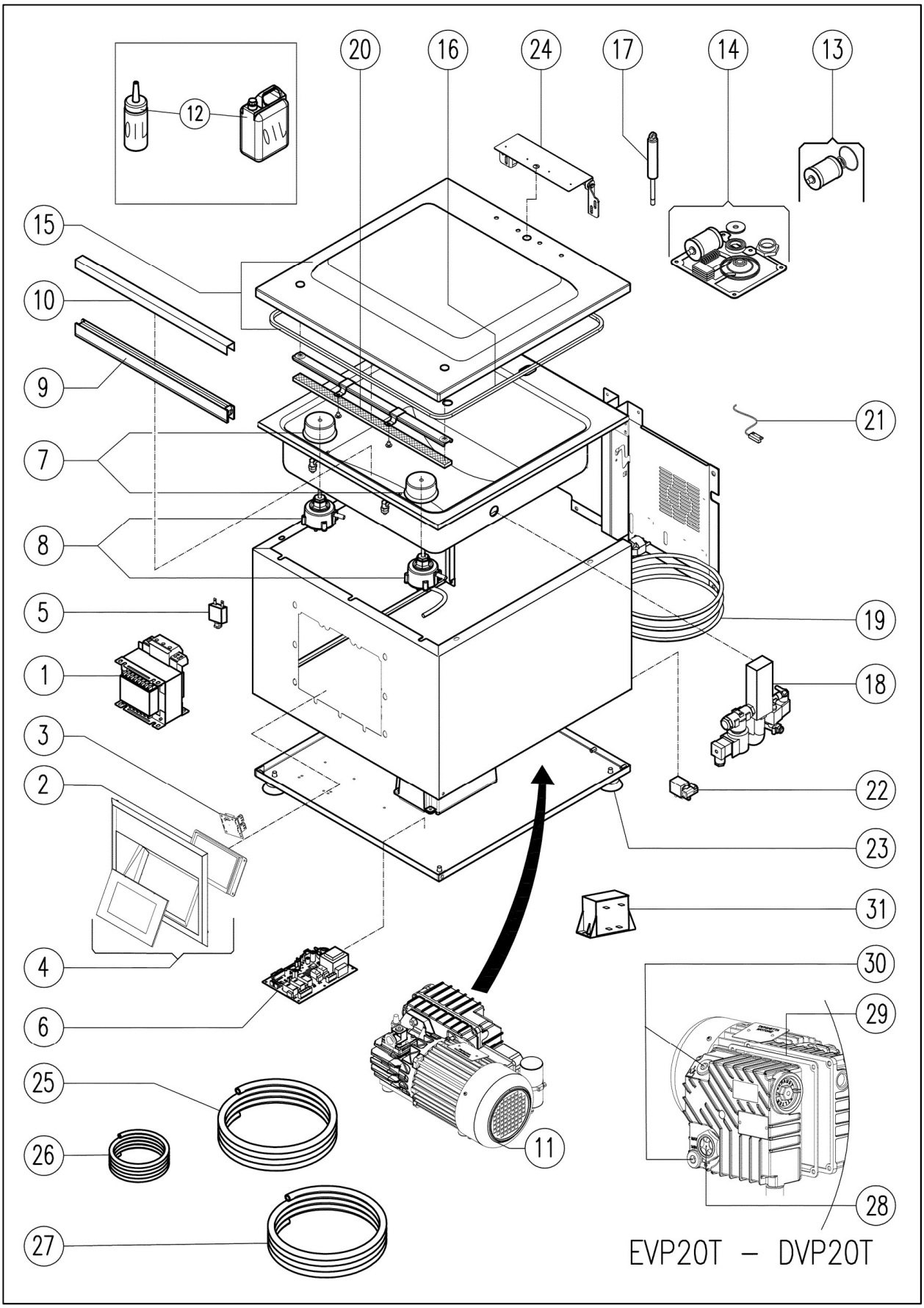
## 10.4 EVP/DVP20T





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| Num. Part | EVP/DVP20T Description | Notes |
|---|---|---|
| 1 | TRANSFORMER 200VA 230/10-12-16V | 230V |
| 2 | TFT 5" DISPLAY DGUS II IDEA OEM 32/42 | |
| 3 | INTERFACE BOARD DISPLAY U019_1 IDEA-IDEA OEM 32/42 | |
| 4 | COMPLETE DASHBOARD W/TFT PERS. ELECTROLUX "EVP20T" | |
| 4 | COMPLETE DASHBOARD W/TFT PERS. DITO SAMA"DVP20T" | |
| 5 | THERMAL BREAKER EVOX 30 / EVOX31 HI-LINE/ IDEA | |
| 6 | IDEA-IDEA OEM 32/42 POWER ELECTRONIC BOARD | 230V |
| 7 | PROTECTIVE GUARD (2 PCS) EVOX/C-SERIES/SPACE/IDEA/FC30-36-41 GOURMET VAC/IDEA OEM | |
| 8 | OEM IDEA-ASSEMBLED PISTON (2 PCS) | |
| 9 | SEALING BAR 421X30X20 C412/420-IDEA-IDEA OEM 40/41/42 | |
| 10 | TEFLON AVANA L=65MM (1 MT) IDEA-IDEA OEM/ MC/NEW/V.2010/400G-DG/VM98/F420/C-SERIES/FC30-36-41 GOURMET VAC | |
| 11 | VACUUM PUMP LC20 220-240V 50 / 60HZ | DVP |
| 12 | PUMP OIL ORV40 500ML | |
| 12 | PUMP OIL ORV40 1L | |
| 12 | PUMP OIL ORV40 10L | |
| 13 | MINOR KIT LB18/LC20- LB25/LA20 (K1000038) (OIL SEPARATOR FILTER) | DVP |
| 14 | MAJOR KIT FOR VACUUM PUMP LC20 (K1000039) | DVP |
| 15 | PLEXIGLAS LID C412/420 1B IDROF. / IDEA OEM 41- 42 | |
| 16 | BLACK LID GASKET 2 M | |
| 17 | GAS SPRING (1 PC) 198.155.52 (IDROF) | |
| 18 | SOLENOID VALVE UNIT IDEA 42 230V | 230V |
| 19 | POWER CABLE 3X1X2000 P660 CONN.F 90° PW80 SCK | |
| 20 | SILICONE PROFILE 29X8X415 | |
| 21 | REED MC-N CONTACT | |
| 22 | EVOX31 HI-LINE /IDEA-IDEA OEM 32-42 GAS SOLENOID VALVE | GAS |
| 23 | SUCTION CUP FOOT (5 PCS) OEM IDEA / IDEA | |
| 24 | LERICA C-SERIES COVER SUPPORT BRACKET/OEM IDEA | |
| 25 | D8X6 (1 M) ELLASTOLAN BLUE TUBE | |
| 26 | ARMORVIN TUBE D=16 (1 MT) | |
| 27 | WHITE SILICONE TUBE D2X6 FOR SENSOR (1 M) | |
| 28 | OIL LEVEL LIGHT (1105004) | DVP |
| 29 | LC20 PUMP TANK GASKET (4901071) | DVP |
| 30 | HEXAGON SUNKEN CAP 1! 2 "(2 PCS) | DVP |
| 31 | TRANSFORMER 30VA 0-230/0-18V 50/60Hz - EVOX 31/ IDEA - IDEA OEM 32-42 | 230V |


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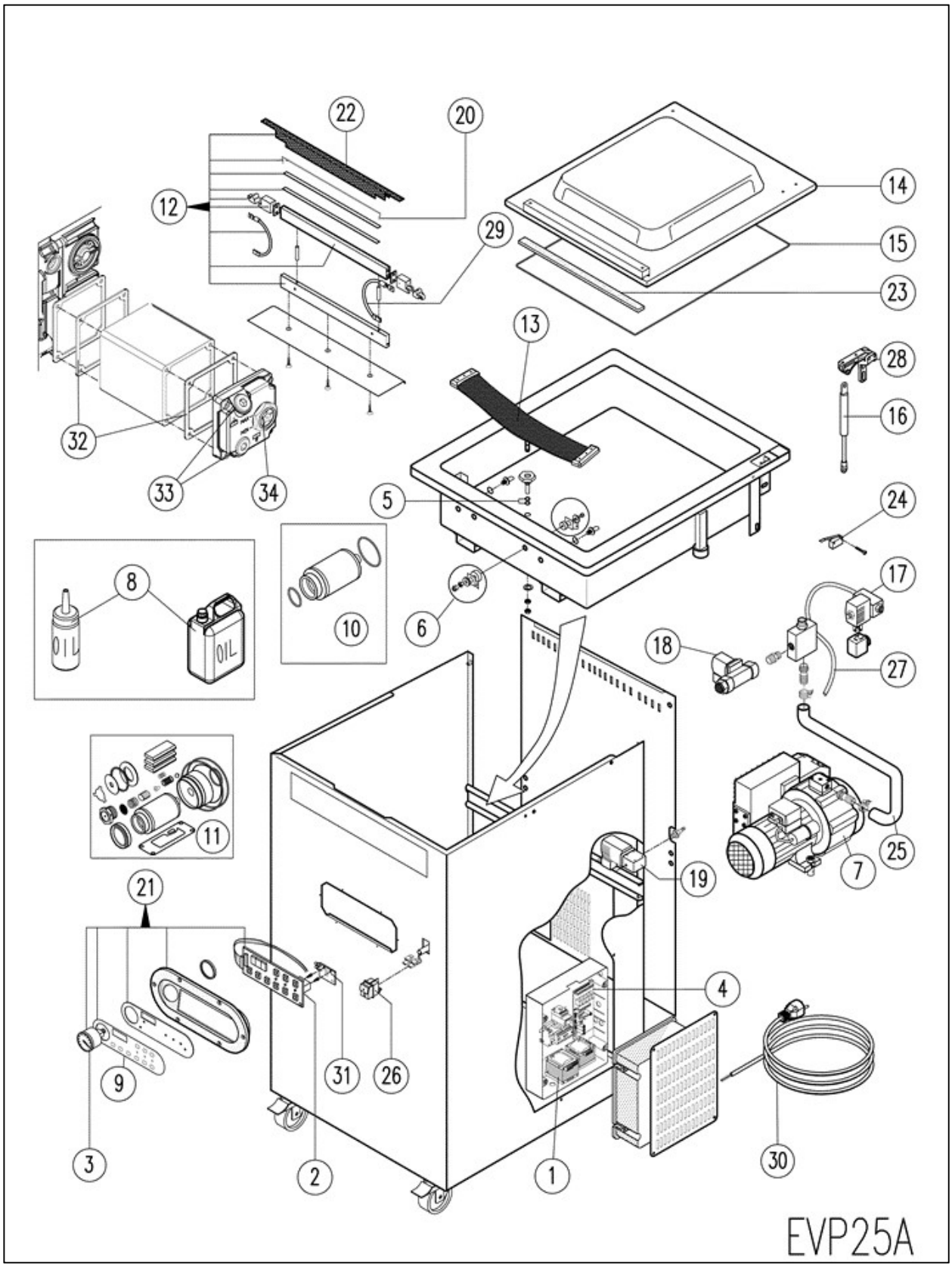
## 10.5 EVP/DVP25A





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| Num. Part | EVP/DVP25A Description | Notes |
|---|---|---|
| 1 | TRANSFORMER 400VA 220/12-18V | 230V 1BC |
| 2 | CONTROL KEYBOARD B012.1 - GG9.4+GG8 | |
| 3 | VACUUM GAUGE D=50MM | |
| 4 | POWER ELECTRONIC BOARD H102_2 - 230V MC | 230V |
| 5 | O-R RING FOR FITTING (10 PCS) | |
| 6 | MC TANK CONTACT | |
| 7 | VACUUM PUMP LC 25 230V 50/60HZ | LC 25 - 230V |
| 8 | OIL PUMP ORV60 1+1L | |
| 8 | OIL PUMP ORV60 1.5L | |
| 8 | PUMP OIL ORV60 10L | |
| 9 | OVAL CONTROL STICKER MC B012.1 PERS.ELECTROLUX | |
| 10 | MINOR KIT FOR VACUUM PUMP MD16/ LC25 (K1000040) (OIL SEPARATOR FILTER) | LC25 |
| 11 | MAJOR KIT FOR VACUUM PUMP LC25 (K1000041) | LC25 |
| 12 | COMPL.SEAL.BAR 475X32X15 | 1BC |
| 13 | SUB-BAR BEARING L=385mm | 1BC |
| 14 | PLEXIGLAS COVER (2 HOLES) VM53/FC460 1BC (STD) | |
| 15 | BLACK LID GASKET 2 M | |
| 16 | GAS SPRING (2 PC) 198.255.26 | |
| 17 | 3-WAY BEARING SOLENOID VALVE 1/8"FF D=2.5 FKM 24V-DC | |
| 18 | AIR RETURN SOLENOID VALVE 1/2"FF D=13 24V-DC VM18-18N-53-53N/SV41- | |
| 19 | GAS SOLENOID VALVE 2WAY 1/8"FF D3 FKM 24V-DCGAS/SOFTAIR | GAS |
| 20 | Convex SEALING HEATING ELEMENT 5x0.3 (1 MT) | |
| 21 | COMPLETE DASHBOARD B012 PERS. ELECTROLUX | |
| 22 | TEFLON AVANA L=65MM (1 MT) IDEA-IDEA OEM/ MC/NEW/V.2010/400G-DG/VM98/F420/C-SERIES/FC30-36-41 GOURMET VAC | |
| 23 | SILICONE PROFILE 22X8X480 (1 PC) | 1BC |
| 24 | MC SWITCH CONTACT | |
| 25 | ARMORVIN TUBE D=16 (1 MT) | |
| 26 | MAIN SWITCH 20A | |
| 27 | TUBE D=8X6 (2 MT) | |
| 28 | HINGES (LEFT+RIGHT) | |
| 29 | SEALING BAR CONNECTOR CABLE (2 PCS) ASF-4 | |
| 30 | SHUKO EUR 3X1.5X3000 POWER CORD | 230V |
| 31 | PRESSURE TRANSDUCER MODULE B063.0 | |
| 32 | PUMP TANK GASKET LB25/LC25/LC60/LB60/LC106 (1 PCS) | |
| 33 | HEXAGON SUNKEN CAP 1! 2 "(2 PCS) | |
| 34 | OIL LEVEL LIGHT (1105004) | |


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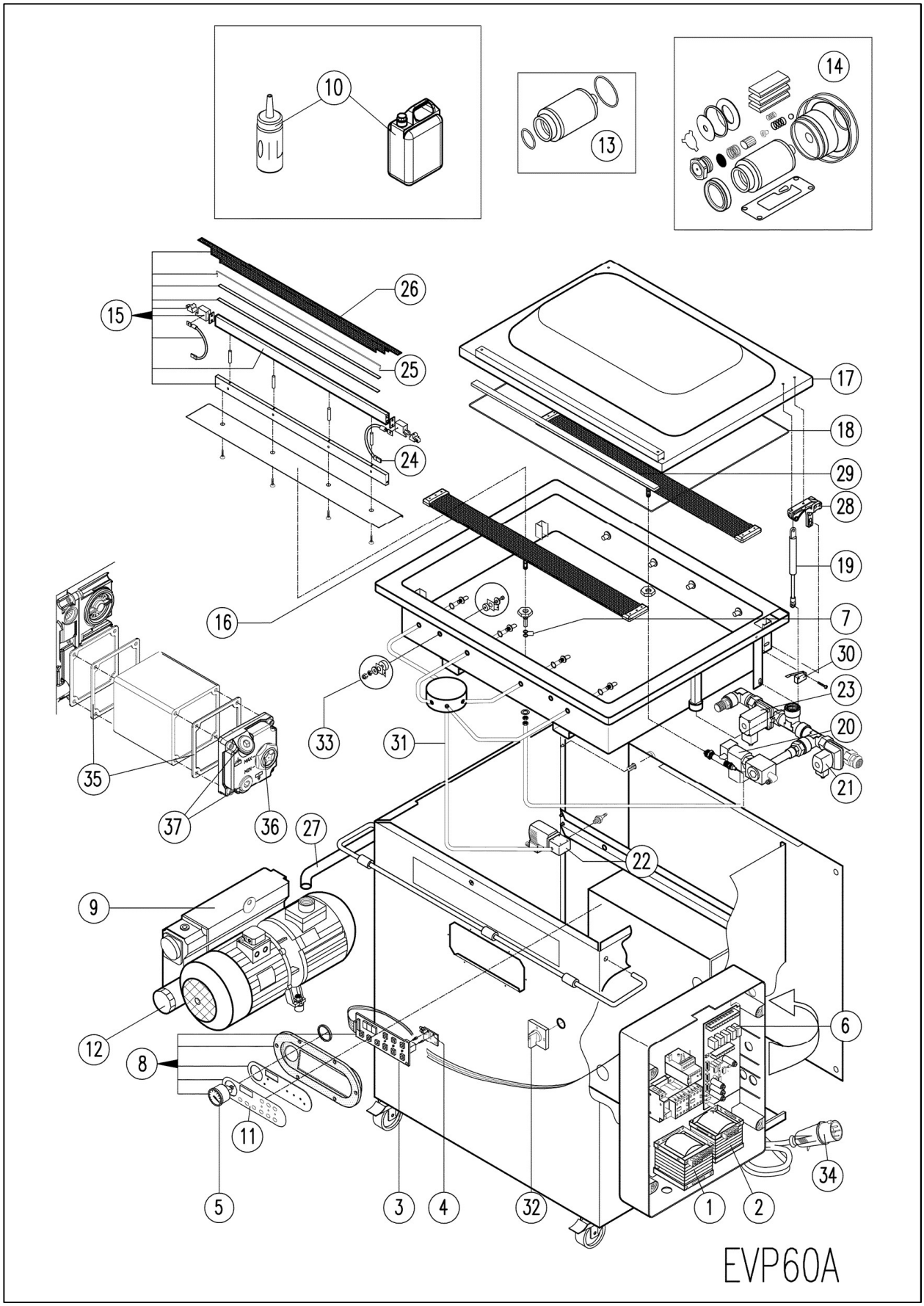
## 10.6 EVP/DVP60A





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| Num. Part | EVP/DVP60A Description | Notes |
|---|---|---|
| 1 | TRANSFORMER 500VA 220-380/12-18V | 2BL |
| 2 | TRANSFORMER 200VA 0-230-400/0-22V | |
| 3 | CONTROL KEYBOARD B012.1 - GG9.4+GG8 | B012 |
| 4 | PRESSURE TRANSDUCER MODULE B063.0 | SI SENSOR |
| 5 | VACUUM GAUGE D=50MM | |
| 6 | POWER ELECTRONIC BOARD PJ029 400V MC | |
| 7 | O-R RING FOR FITTING (10 PCS) | |
| 8 | COMPLETE DASHBOARD B012 PERS. ELECTROLUX | B012 |
| 9 | VACUUM PUMP LC 60 230-400V 50/60HZ | 60 MCH |
| 10 | OIL PUMP ORV60 1+1L | 60 MCH |
| 10 | PUMP OIL ORV60 10L | 60 MCH |
| 11 | OVAL CONTROL STICKER MC B012.1 PERS.ELECTROLUX | B012 |
| 12 | PUMP OIL FILTER 60/151 M³/H | |
| 13 | OIL SEPARATOR FILTER FOR VACUUM PUMP LB60/LC60 VM19/20/1800 | 60 MCH |
| 14 | MAJOR KIT FOR LC60 VACUUM PUMP (K9601068/1) | LC60 |
| 15 | SEALING BAR 640X43X15 | 2BL NORM. |
| 16 | SUB-BAR BEARING L=550mm | 2BL |
| 17 | PLEXIGLASS LID FOR VM20 | |
| 18 | BLACK COVER GASKET MC-STD (4 MT) | |
| 19 | GAS SPRING (2 PC) 198.255.36 | |
| 20 | 3-WAY BEARING SOLENOID VALVE 1/8"FF D=2.5 FKM 24V-DC | |
| 21 | AIR RETURN SOLENOID VALVE 2WAY 1"FF D20 NBR 24V-DC | |
| 22 | AIR RETURN SOLENOID VALVE 2WAY 1/2"FF D=10 24V-DC VM16-16N/SV31N - GAS VM20-30-1800 | GAS |
| 23 | SOLENOID VALVE SUCTION 2 WAY 1"FF D25 NBR 24V-DC | |
| 24 | SEALING BAR CONNECTOR CABLE (2 PCS) ASF-4 | |
| 25 | Convex SEALING HEATING ELEMENT 5x0.3 (1 MT) | NORM. |
| 26 | TEFLON AVANA L=65MM (1 MT) IDEA-IDEA OEM/ MC/NEW/V.2010/400G-DG/VM98/F420/C-SERIES/FC30-36-41 GOURMET VAC | |
| 27 | ARMORVIN TUBE D=30 (2 MT) | |
| 28 | HINGES (LEFT+RIGHT) | |
| 29 | SILICONE PROFILE 22X8X640 (1 PC) | 2BL |
| 30 | MC SWITCH CONTACT | |
| 31 | TUBE D=8X6 (2 MT) | |
| 32 | MAIN SWITCH 20A 3-PH | |
| 33 | MC TANK CONTACT | |
| 34 | POWER CABLE 3PH+PE 4X1.5 MM ² EEC | |
| 35 | PUMP TANK GASKET LB25/LC25/LC60/LB60/LC106 (1 PCS) | |
| 36 | OIL LEVEL LIGHT (1105004) | |
| 37 | HEXAGON SUNKEN CAP 1! 2 "(2 PCS) | |

| REV. | DESCRIPTION | DATE | SIGNATURE |
|---|---|---|---|
| 00 | FIRST ISSUE | 20/05/2022 | M.MAMAN |
| | | | |


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