



E-DISPENSER



USER MANUAL

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Important Safety Instructions

General Safety Precautions

- Keep this instruction manual always at hand. It should remain with the unit if moved to a different place or operated by another user.
- This device is designed for dosing non-dangerous fluids and only for professional use in laboratories. It should only be operated following these instructions and never have its design adapted or transformed for other applications, such as dosing combustible, corrosive liquids or potentially explosive fluids.
- The device should only be repaired by staff authorized by the manufacturer. Any part or accessory occasionally supplied by the manufacturer should only be used for repair. Otherwise, the equipment may be damaged or cause other damages or injuries.
- Use original components to replace wear and spare parts.
- The unit lacks electrical power only when disconnected from the socket. Unplug the equipment before any cleaning or maintenance work (never pull on the cord to unplug it). If access to the plug is difficult, disconnect electrical power from the control panel.
- Make sure the cord is not trapped, crushed or damaged by the back of the device, there is danger of electrocution. A damaged power cord should be immediately replaced by a new one, always by a qualified technician.
- Heavy equipment. The equipment should be handled by two people.
- Place the equipment on a firm table, in a well ventilated room.
- Make sure the unit is perfectly leveled and there is no risk of turning over or falling.

General Information

MAGAPOR offers the dosing equipment E-DISPENSER, designed for automating the dilution process of semen in high capacity production centers, which require fast processing, high accuracy and product traceability.

Your choice

The equipment you just chose has been conceived to facilitate the dilution process in centers with high productive needs.

Its compact design and low consumption make it suitable for any installation.

Its strong construction in stainless steel and anodized aluminum guarantees durability and satisfies the highest requirements in terms of cleaning.

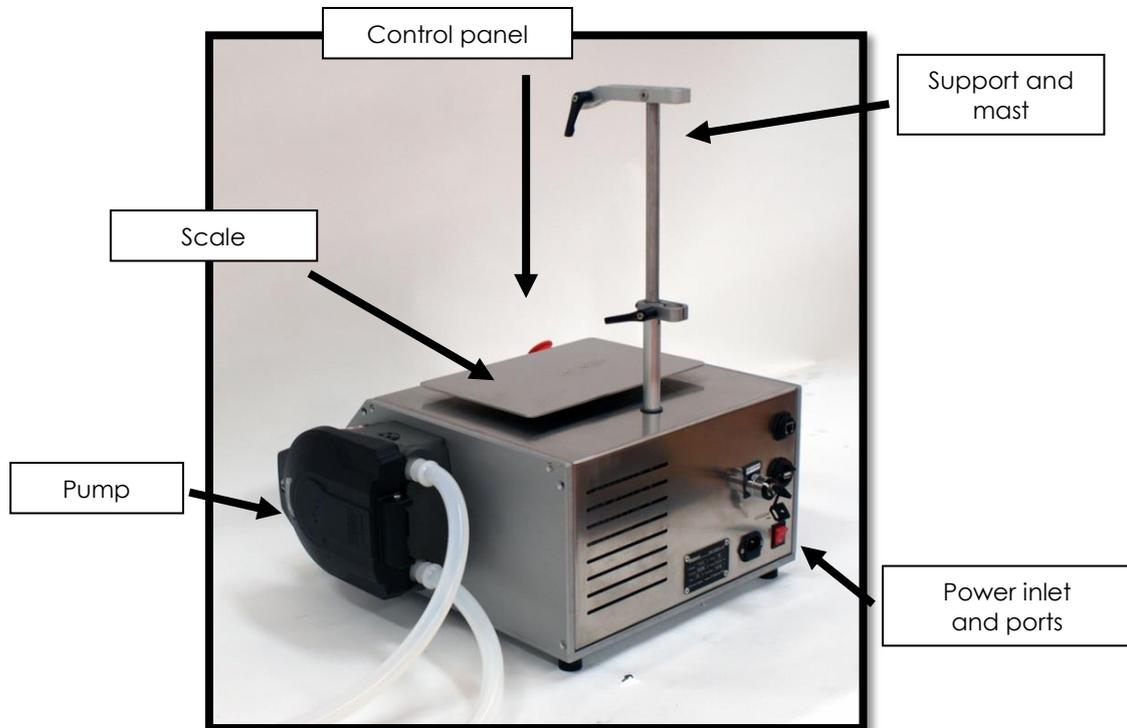
It features industrial control and drive devices from credited brands, which guarantee high reliability and quick availability of spare parts worldwide.

The use of mechanisms that do not need maintenance reduces preservation of the equipment to a simple cleaning routine.

The interactive screen enables the visual and intuitive control of the machine. Its multiple connectivity options include connection to PC via Ethernet and to other terminals as barcode readers.

The equipment can be easily adjusted to containers of different height.

Description of main parts



Installation and operation

Controls and display

The control and monitoring terminal is located on the front panel of the equipment.

The touch terminal enables the user to make adjustments and supervise the run easy and intuitively.

You can enter the fluid volume to be dosed, select an extender or fluid, choose work speed, adjust and calibrate the scale and change other parameters of interest.

The terminal also informs of failures or shortages.



The use of this terminal will be further explained in another section of the manual.

Next to the screen is the emergency stop button, which brings the machine to a controlled stop in the event of an emergency. Press the button to activate the emergency stop.

At the back lie the power inlet, the general switch, the 110/220 voltage selector with safety key, the Ethernet ports for connecting the equipment to the net and a USB Port for attaching a barcode reader.



Placement

Place the equipment on a perfectly-leveled robust work table, checking it supports approx. 37 Kg of weight. The location chosen should be large enough for, on the one hand, correct ventilation of the equipment, and, on the other, working freely and comfortably. Consider the necessary room around the machine to store the jugs and containers in use. To prevent vibrations and unpleasant noises, make sure the set is perfectly even on its support legs.

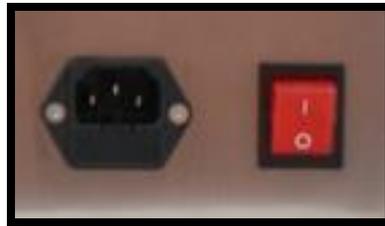
It is recommended to provide the work setting with enough light, from 300 to 500 lux. Prevent air currents from blowing directly on the scale, which could affect weighing accuracy.

Warning: Heavy machinery, handle with care and the assistance of another person.



Connection to power supply

The machine has a power inlet at the back, to which a suitable power cord should be attached. The inlet features a protection fuse against short-circuits right under the metallic clamps. Next to it is the general switch:



The equipment can be powered at 110V or 230V, choosing the correct value in the voltage selector provided with safety key.

It is extremely important to select a voltage matching the power supply. Otherwise, the equipment could suffer inner electrical damages.

If the equipment buzzes after connection to the main power supply, disconnect it immediately and check the voltage value selected.

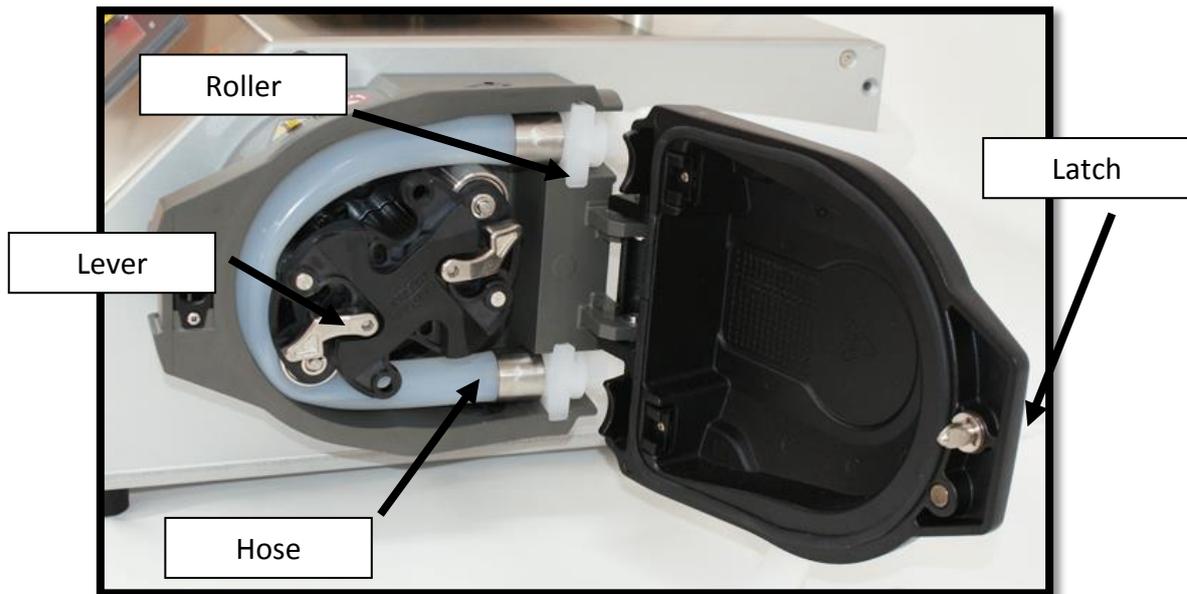
Important: The equipment has been designed for use in countries with 110V or 230V voltage. For the safety of users and the device itself, it is important to, select the correct work voltage and make sure there is an efficient ground wire according to Low Voltage Electro Technical Regulations and a protection mechanism as a residual-current circuit breaker.



The manufacturer declines all responsibility in the event that such security measures are not adopted.

Pumping system

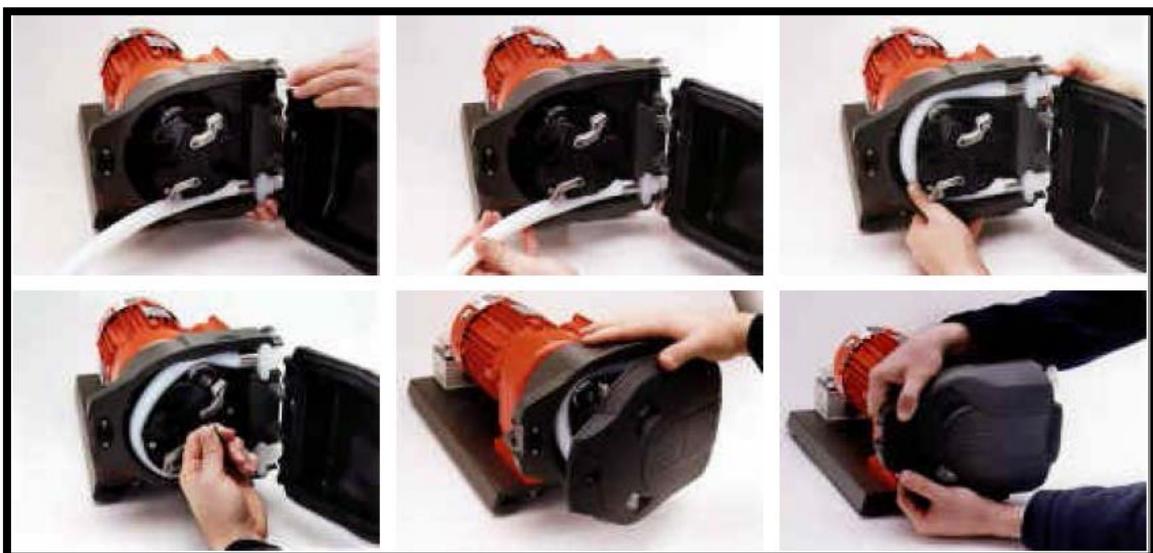
The in-built pumping system of E-DISPENSER consists of a high-flow peristaltic pump attached to a variable speed geared motor, which adjusts its rate as the dosing finishes to achieve maximum accuracy while maintaining performance:



The peristaltic pump uses a removable silicone hose (included) to pump the fluid in the best sanitary conditions. Such piece can be extracted and cleaned (it is recommended to clean the hose before running the machine for the first time).

Removing the hose is very easy. Make sure the hose is empty of fluid and follow the steps described below:

1. Open the cover of the peristaltic pump, turning the closing latch.
2. Use the lever to take down the steel rollers of the impeller.
3. Remove the hose, turning the impeller manually.
4. Close the cover by pressure.



The procedure for inserting the hose is similar. Once placed the hose, make sure the two plastic ends fit in the slots of the headpiece and spread the steel rollers using the lever, enabling the pumping.

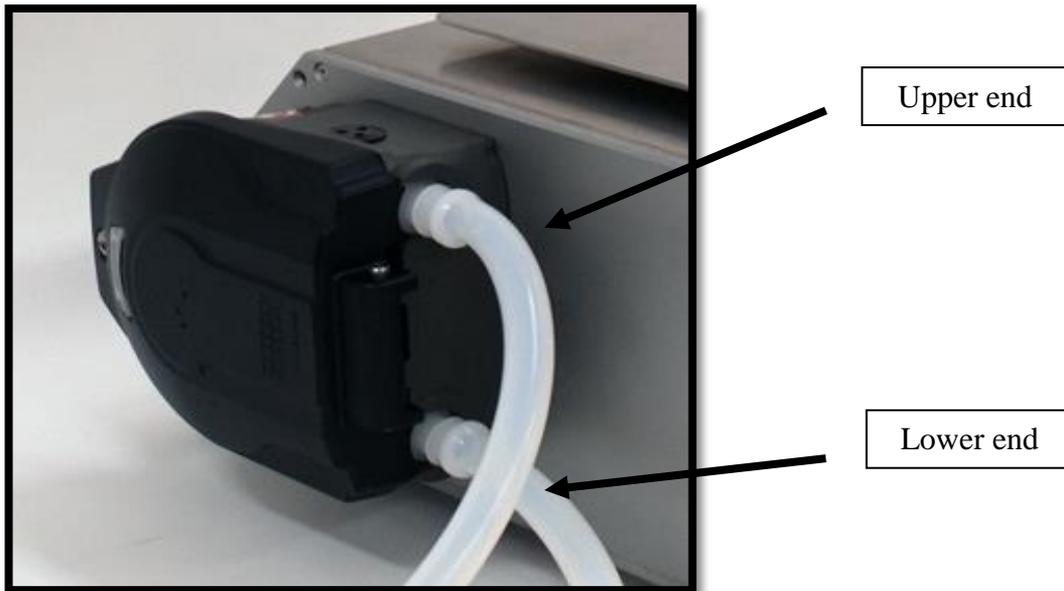
Warning: For safety reasons, never place or remove the hose while the machine is connected. Always turn off the equipment using the general switch.



Close and lock the pump cover before activating it, both for functional and safety reasons.



It is advisable to replace the hose yearly or every 50,000 liters pumped. The useful life of the hose depends on the run speed selected (nominal or quick), the cleaning method applied (alcohol, heat, autoclave) and the maintenance of the impeller (lubrication). If autoclave is applied, the hose only admits 3 cleaning cycles. The ends of the hose can be attached to a standard silicone piece of 16 mm of diameter by simple manual strapping:



Connect the upper end of the hose to a 100-cm-long silicone tube and extend the tube through the support mast to the clamp, as shown in the image below. Bend the tube correctly over the clamp to guarantee accuracy. A tube bent in excess or defect may affect dosing accuracy. You should adjust the length of the curve to the length of the clamp, as in the picture below:



Support detail



Clamp detail

The height of the mast can be adjusted to work with containers of various sizes.

Loosen the wing nut of the support to move up or down the mast within its trajectory. Once adjusted the height, tighten the wing nut firmly to lock it.

Use the wing nut of the clamp to fix the end of the tube, preventing it from releasing accidentally during pumping.

Connect the lower end of the hose to a silicone piece of the same diameter. Insert the opposite end of the silicone piece in the tank or container for the fluid. We recommend to attach a weight (included with the equipment) to the end of the tube. The weight prevents the tube from floating and the vacuum effect generated with suction.

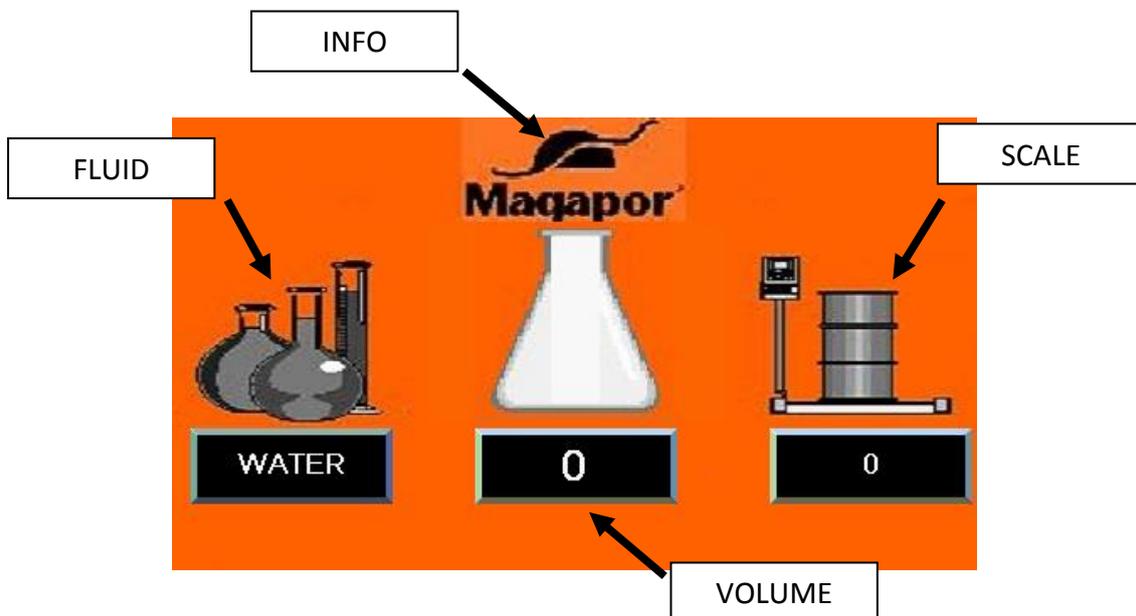
Do not place the tank or container higher than the pump. The equipment is not designed to run under pressure, which could cause leakages and affect dosing accuracy. It is advisable to locate the tank at the same level or up to 1 meter below the pump.

Warning: Never supply the dispenser from pressure vessels or containers placed over the level of the pump. The equipment is not prepared for working in pressurized networks.



Set up

Once the equipment is connected to the power supply and the hose and tubes are installed, you need to set up the machine. For that purpose, press the general switch at the back. The screen turns on and reaches the main menu after the initialization period:



The main menu contains:

- A numeric display at the bottom, for entering the volume of fluid to be dosed using a pop up keypad.
- On the right, a scale icon allows access to the menu corresponding to SCALE, to carry out the calibration using an external weight. Just below this, a numeric display reports the current weight placed on the platform, expressed in grams.
- On the left, a 3 flask icon allows access to the FLUID menu, where it is possible to select the working extender from the list of MAGAPOR and / or water as working fluid...)
- On the upper part, the MAGAPOR logo gives access to the contact details of the manufacturer, MAGAPOR S.L., as well as to other menus for parameter adjustment and visualization menus.

At the bottom of the screen, the F1, F2, F3 and F4 keys will allow starting, stopping and resetting errors that may occur. The operation of each will be detailed below.



Working fluid selection

The first step before starting work is to select the working fluid and pumping options. Click on the FLUID icon in the main menu and the corresponding menu will appear on the screen:



At the top there are the graphics of the 4 extenders of the Magapor range. To select one of them, simply click on the icon and it will automatically load the name and density value associated with it.

The icon on the right corresponds to an anonymous extender, from which it is possible to enter the value of its density (this can be any type of alternative fluid which must not present a risk of explosion, fire or splash).

If the drop icon is pressed, distilled water will be selected as the working diluent, with the corresponding unit value (1000 Gr / L) in the associated density.

When you return to the main screen, the name of the selected fluid will be displayed in the main menu, ensuring that the density value has been conveniently accepted as working value.

At the bottom there are the pump run and configuration buttons:



High speed button. By pressing this button the pump rotates at the maximum permissible speed for the rotor. It is only recommended when dosing distilled water or other non-foaming fluids.



Return button. It allows to return the fluid contained in the silicone hose back to the tank, after 5 minutes since the last dosing. This operation prevents the fluid contained in the hose from cooling.



Manual working button. It allows activating the pump in a manual way. In this way, the silicone hose can be purged or any cleaning protocol can be carried out.

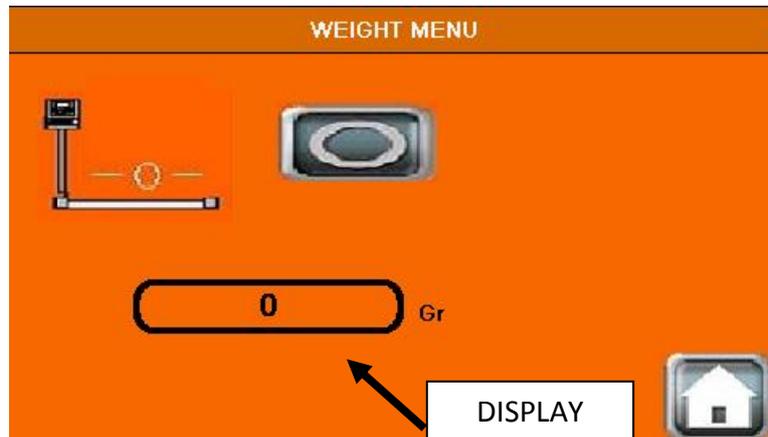


Pressing the "HOME" key  you go back to the main menu.

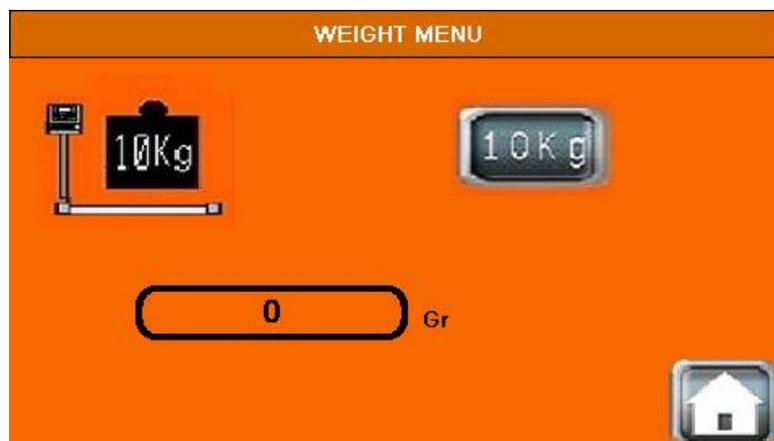
Scale calibration

The second step is the adjustment of the scale. Normally, the scale keeps the adjustment during several days of work, however, and given the simplicity, it is recommended to proceed to the calibration on a daily basis.

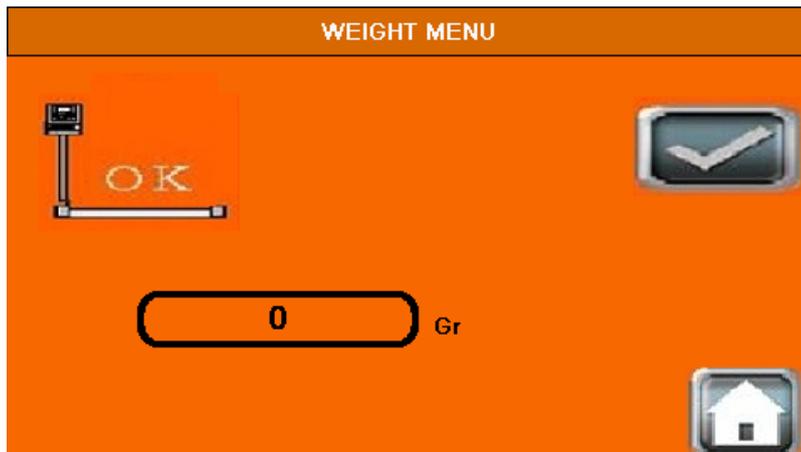
To do this, the SCALE icon will be pressed in the main menu and a new menu will appear on the screen. The procedure for calibrating the pump is very simple:



1. Firstly, it will be verified that there is no object, liquid or weight on the platform of the scale and will proceed to press the button  so that the control electronics accept the current weight as weight in empty. The system will take a few seconds to acknowledge it. At that moment, the value 0 will appear in the display.



2. Once the electronics has recognized the zero weight, the certified weight of 10 kg that accompanies the equipment will be carefully deposited on the platform of the scale. Once the weight has stabilized in the display, the button  will be pressed. The system will take a couple of seconds to recognize it, displaying 10000 Grs.



3. Finally, press the button  to indicate the system that the process has been completed. Once the calibration protocol is finished, it will be possible to return to the main menu by pressing the "HOME" button.

Dosing

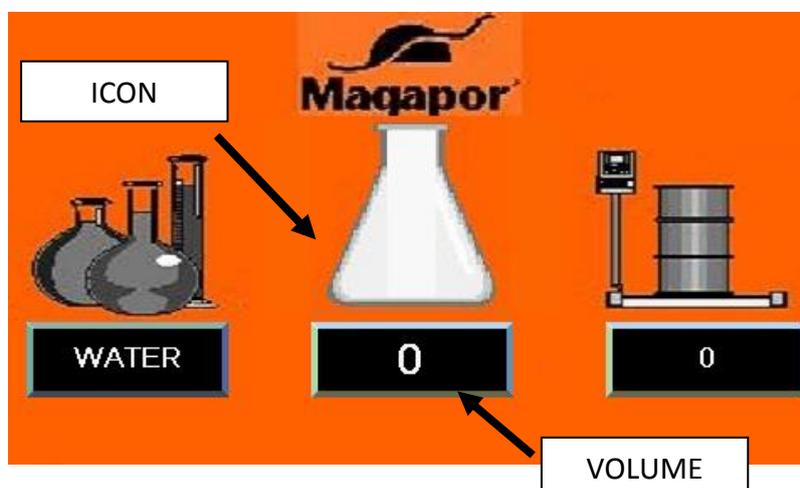
Once calibrated the scale and chosen the work fluid, you can start dosing.

First, place an empty container on the scale. The container should weigh from 150 gram (minimum) to 1000 gram (maximum) to be detected and accepted by the scale.

It is advisable to adjust the height of the tube support to the height of the container, preventing them from entering into contact. This way, the fluid runs the shortest possible distance during dosing, avoiding splashes and errors caused by drops left in the tube.

You can also place a sanitary bag in the container. Contact between the bag and the support does not alter weighing accuracy in the practical terms.

Once the container is on the scale tray, a lab-flask icon appears over the numerical volume display:



Enter the value of the volume to be measured in milliliters (eg 2500 ml) as pressing on the display itself a numeric keypad will appear. Then press F1 (RUN) for a couple of seconds. After them the machine will start the pump until the requested volume is dosed inside the container. A bar graphic will show the percentage of dosed fluid in relation to the total.

Note that pressing the RUN button implies the tare weight of the container placed, that is, its weight will be memorized and then the value 0 grams will be displayed in the weight display, just before starting to pump.

For functional reasons, volumes smaller than 250 ml or higher than 12000 ml are not acceptable.

In case of not placing the container, the equipment will not admit the running order. Likewise, the sudden removal of the container after the RUN order will automatically abort the process.

The speed of the pump will be the nominal one, 130 rpm, throughout the dosing process. It will drastically be reduced in the last 150 grams, and even more in the final 50 grams, so that the final precision is optimal.

Once the dosing process is complete, the word FINISH will appear at the bottom of the screen.

During the dosing run, no menu can be accessed.

The dosing process can be stopped at any time by pressing the F4 (STOP) button for a couple of seconds. Later, the dosing process can be continued by pressing the RUN button (F1). The process can be definitely aborted by removing the container from the scale.

In case the container is removed manually in full operation, without stopping, the equipment will immediately stop the peristaltic pump, so as to avoid further pumping without container. An error message "UNDESIREED ACTION" will appear on the screen. To return to the initial state, press the F2 (RESET) key for a couple of seconds.

If the fluid to be dispensed is exhausted, the system detects it and stops the peristaltic pump, displaying a message "RUN OUT OF WATER" on the screen. To return to the initial state, press the F2 (RESET) key for a couple of seconds.

An alarm message will appear each time the net weight placed on the scale exceeds 13 kg, leaving the equipment in a default stop state. To return to the initial state, press the F2 (RESET) key for a couple of seconds.

Note that the scale will be automatically protected in case the user intends to dose volumes weighing more than 12 kg, not admitting the running order in this case.

Warning: the manufacturer declines all responsibility regarding weighing accuracy and veracity in case the scale is overloaded. Maximum load to prevent irreversible damage is 15 Kg.



Emergency stop and pump/scale errors

You can immediately stop the dosing process by pressing the emergency stop if you observe any dangerous incidence (the container turns over, the pump tube is leaking, etc.)



After pressing, the warning icon flashes on the left upper part of the main menu.

To return the equipment to its initial status, turn the emergency knob a quarter to release it and then press the reset button F2 in the main menu.

In case of overload, block or control failure of the engine that actions the pump, the later disconnects automatically and an engine icon flashes on the right upper part of the screen.

For functional reasons, the only way to reestablish this type of defect involves turning off the equipment using the general switch for at least 10 seconds. Then turn the equipment on again. If the failure persists, contact the Technical Support Service of MAGAPOR S.L.

Screensaver

The terminal activates automatically the screensaver function after a long period of inactivity. Press any part of the screen to quit the screensaver.

Connection and remote control of the equipment with PC

The device may be connected to an Ethernet network and receive remote commands from the Gesipor 3.0 software. To do this, a compatible IP address must be configured in the range of the network in which it is connected, or compatible with the one assigned to the PC itself if it is a PC-computer direct connection.

The device is configured with a default IP address 192.168.4.1. If another IP address is required, you must notify the factory in advance.

Of course, the equipment can share network with other dosing equipment as well as packaging equipment of MAGAPOR S.L. provided that the IP addresses of each of them do not conflict with each other.

Obtaining data automatically with a Barcode Reader

The equipment can be connected to a barcode reader for transferring automatically the volume of extender to be prepared. Such information is provided by the software Gesipor (versions 2.0 and 3.0) on a barcode printed after the analysis is performed.

This way, preparation time and the possibility of human error are reduced, because information is not entered manually on the screen but automatically completed after reading the code, once you press on the numeric field and the popup keypad appears.

Connecting the barcode reader is very easy. Plug the USB terminal of the reader to the USB port at the back of the equipment, next to the Ethernet port. Once connected, the reader turns on and beeps to indicate it is ready to be used.

The reader is optional but can be supplied with the machine. Consult the Sales Department of Magapor S.L.

Preservation and Maintenance

Cleaning advice

Do not use strong detergents to clean the equipment; use a soft scouring pad and dishwasher. For total disinfection, apply ethyl alcohol 70°, not rubbing stickers too hard.

The silicone tubes and pump hose can be sterilized using heat up to 120°C. The quality of the silicone degrades as it is used and cleaned. The hose should be thus changed once a year, for safety reasons. The material only admits 3 autoclave cycles.

Empty the fluid left in the tube and the hose at the end of the workday.

The engine of the pump contains oil inside the reducer box. It is not necessary to change or check the oil level, except in case of accidental loss, which can be caused by deterioration of the seal.

It is recommended to keep the rollers of the impeller lubricated. Just apply a drop of light oil on the axis of each roller and the open/close levers, once every six months.

The rest of the components do not require maintenance.

If the equipment is not to be used for a long period of time, keep it clean and disconnect it from power. Remove the tube and the hose and store them dry, clean and away from sunlight.

Warning, danger: Before performing any authorized maintenance task, check the area or components to be manipulated are disconnected from electrical power. Check electrical components, as resistors, are not warm.



Preserving the load cell

The load cell installed in the equipment is a precision instrument. Avoid overloading the scale tray with items weighing over 15 Kg, hitting it or leaving objects on it for days.

The cell contains lubricant oil. It is not necessary to check or change the lubricant level, but some oil may spill accidentally if the equipment is not leveled or turns over, specially during transportation and storage. The equipment should always rest on its legs.

Warning: *The equipment has not been designed to be used as scale in commercial or tariff transactions, pharmaceutical or medical applications or, in general terms, any operation that requires legal confirmation of the weighing. The equipment has been designed for industrial and/or veterinary use.*



Technical Characteristics

Voltage and frequency:	110/230V (eligible) 50-60Hz
Nominal power:	450 W
Maximum start intensity:	8 A
Nominal/maximum volume:	10/15 L/min (distilled water)
Nominal/ maximum rate:	5L en 45/30 s (distilled water)
Maximum weight and resolution:	12 Kg +/- 1 gr
External dimensions:	52 x 72 x 50 cm
Approx empty weight.:	37 Kg
Working conditions:	Indoor use in laboratories Room temperature 5-40°C Maximum altitude 2000m Relative humidity from 80% at 31°C to 50% at 40°C Maximum power fluctuations +/- 10% Transient overpower category II.

Troubleshooting

Problem	Possible causes	Solution
The machine does not start (the screen does not turn on)	A. Wrong voltage B. Blown fuse C. Defective cord D. Inner failure	A. Select correct voltage B. Replace fuse C. Replace cord D. Contact the Technical Support Service
The weight measured by the scale is not the real weight	A. Not calibrated scale B. Failure in the weighing module C. Failure of the load cell	A. Calibrate following the instructions in this manual B-C. Contact the Technical Support Service
The pump works, but the fluid is not pumped or is pumped incorrectly	A. Hose incorrectly placed B. The rollers of the impeller are closed C. Worn out or deteriorated hose D. Excessive distance from the pump to the fluid container. Folded or pinched hose.	A. Place the hose correctly B. Open the rollers of the impeller following the indications in this instruction manual C. Check the state of the hose and replace yearly D. Check the length of the tube and its trajectory
The pump does not activate	A. Blocked impeller B. Failure in engine control C. Broken down reducer	A. Check the impeller turns manually and is not blocked B-C. Contact the Technical Support Service



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