



Simpool

Modello pH



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1.0 INTRODUCTION

The range of “*Simpool*” programmable digital peristaltic pumps is designed to manage swimming pools and consists of the following models:

- *pH model: for dosage proportional to the pH value*
- *Rx model: for dosage proportional to the Redox value*

The pH model allows to adjust the either acid or alkaline ph of a swimming pool in an easy, flexible and accurate manner.

1.1 WARNINGS



Before starting assembly, carefully read these instructions and follow them during installation.



If the instructions reported in this manual are not followed or carried out correctly, this may result in personal injury or damage the device and/or systems.

We recommend reading the label reported on the pump and following the directions below:

- ✓ ***The pressure of the injection point must be lower or equal to the pump's rated value!***
- ✓ ***When you receive the product, check the integrity of the pump and all of its parts. Should there be any anomalies, promptly notify qualified personnel before performing any operations.***
- ✓ ***Keep this manual carefully for future reference.***
- ✓ ***Before installing the pump make sure that the details provided on the adhesive plate attached to the pump correspond to those of the electrical system.***
- ✓ ***Do not handle the equipment with wet hands or feet!***
- ✓ ***Do not leave the equipment exposed to the elements!***
- ✓ ***Make sure the peristaltic tube is compatible with the liquid to be dosed!***
- ✓ ***The equipment must be handled by qualified personnel!***
- ✓ ***If any irregularities are experienced during pump operation, cut off the power supply and contact one of our customer care centres for any repairs!***
- ✓ ***In order for the pump to operate correctly it is necessary to use original spare parts or accessories. The manufacturer is relieved of any responsibility in the case of any breakdowns due to tampering or use of non-conforming parts and accessories***
- ✓ ***The electrical system must comply with regulations in force in the country where the system is installed.***
- ✓ ***The operating ambient temperature must not exceed 40°C with a relative humidity of 90% at 90°C.***

1.2 NORMATIVE REFERENCES

Our pumps are manufactured according to General Standards in force and in compliance with the following European Directives:

- n° 2004/108/CE “ e s.m.i.
- n° 2006/95/CE “DBT Low Voltage Directive” e s.m.i.
- n° 2011/65/UE , 2012/19/UE “directive RoHs e WEEE” e s.m.i.

1.3 TECHNICAL FEATURES

1.3.1 ELECTRICAL FEATURES



For the power supply value we recommend reading the label on the pump!

1.3.2 PERFORMANCE

- Maximum height of the suction tube: 1.5 m
- Flow rate and backpressure: refer to the table below and read the label in the pump to identify the corresponding model.

Codes	Power supply	Motor Type	Flow rate (l/h)	Backpressure (bar)	Peristaltic Tube	PT100
ADD100G00201003A000	230 VAC	230 VAC	1.4	1	Santoprene	X
ADD100D00101003A000	230 VAC	230 VAC	3	1	Santoprene	X
ADD300G00201003A000	230 VAC	230 VAC	1.4	1	Santoprene	✓
ADD300D00101003A000	230 VAC	230 VAC	3	1	Santoprene	✓

- Operating ambient temperature: 0 ÷ 45°C
- Transport and Packaging Temperature: -10 ÷ 50°C
- Protection rating: IP65

2.0 INSTALLATION

2.1 GENERAL RULES

Pump installation must be carried out as follows:

- In vertical position with an uncertainty not greater than +/-15°.
- Away from sources of heat in dry locations, at a maximum temperature of 40°C and a minimum of 0°C.
- In a ventilated environment and easily accessible to an operator for periodic maintenance.
- Above the level of the liquid that needs to be dosed, at a height of 1.5 metres maximum.
- Do not install the pump above the tank when using liquids that emit fumes, unless it is sealed shut.

2.2 INSTALLATION KIT

When you purchase the pump, it includes everything required for correct installation, specifically:

- Bracket (code ADSP8000025);
- Plugs and screws (cod. ADSP6000041);
- pH 4.01 buffer solution (cod. ADSPH4);
- pH 7.00 buffer solution (code ADSPH7);
- Empty bottle to wash the pH probe (code ADSP4000020);
- PT100 temperature probe with 3 wires (optional, code ADSTS100N);
- Level Probe (optional, code ADSLG4);
- Foot strainer (*);
- 2-in-1 injection probe-holder (code ADSP6000880);
- PVC suction and delivery tubes (*);
- pH electrode with 5 m cable (code ADELTPH055);
- O-rings and spacers, ring nut for the pH electrode (*);
- Drill bit Ø 24 (*);

(*) Kit components included in the ADSP6000631 code

The full kit supplied is reported in Figure 1



Fig. 1- Installation kit

2.3 ASSEMBLY

⚠ We always recommend wearing protective masks, gloves, goggles and any other PPE during all installation steps and when handling chemical products.

WALL MOUNTING

Proceed as follows to secure the pump to the wall:

- Fix the bracket to the wall using the plugs and screws supplied.
- Place the pump on the bracket.
- Ensure the fixing is stable.

⚠ It is also recommended to install the pump in a dry environment, away from heat sources and exhaust vapour.

2.3.1 ASSEMBLY OF THE ACCESSORIES

- The probe-holder is installed on a D50 or D63 diameter tube on which a 24 mm diameter hole has been carried out;
- Check the direction of the flow in the tube to insert the injection tube correctly;
- The probe-holder must be positioned vertically $\pm 45^\circ$
-

Performing a D24 mm hole

- Conduct a 5 mm pre-hole at the centre of the upper part of the tube;
- Expand the hole with the 24mm drill bit supplied in the installation kit, until you introduce the whole drill bit in the tube;
- Deburr the hole by removing the PVC residues;

Installing the probe-holder:

- Insert the O-ring on the small injection tube;
- Insert the small injection tube on the tube by following the direction of the flow, as indicated by the arrow on the label;
- Position the O-ring in place and hold it there. Apply the upper part of the probe-holder on the pool tube;
- Insert the two screws (if it is a DN63 tube use the two spacers between the upper probe-holder and the lower collar). Apply the lower part of the probe-holder on the tube and tighten the nuts on the screws;



Screw the clamping screws evenly to achieve proper fastening. Do not tighten a screw fully home when the other one is still unscrewed.



Fig. 2- Probe-holder Assembly

Installing the short electrode

6. Remove the cap from the electrode. (**Carefully store away the cap**, you will need it during maintenance or when the equipment is not used during winter. In this case, it must be placed back on the electrode after filling it up to $\frac{3}{4}$ with water);
7. Insert the two O-rings and slide them until they reach the lower part of the electrode's head;
8. Pass the electrode's cable on the slot located on the ring nut;
9. Now go ahead with the calibration of the probe described in chapter 3.3.3 and then proceed with section 5;
10. Insert the electrode in the probe-holder without forcing it in until the O-ring positions itself between the lower part of the electrode head and the seat on the probe-holder. Then tighten the ring nut manually;

Refer to Fig. 3



Fig. 3- Mounting the probe in the probe-holder

Installing a long electrode (120 mm)

It is possible to use a standard electrode (12x120 mm). In this case it is necessary to use all the parts supplied; Insert the following in sequence on the body of the probe: the ring nut and then alternate a spacer and an O-ring as shown in Fig. 4

Gently insert the electrode on the probe-holder by carrying out small clockwise and anticlockwise rotations to make the O-rings move down. When all the components are in place, tighten the ring nut manually.



Never bend the electrode, which would otherwise be irreparably damaged. The internal part of the electrode is very fragile!



Fig. 4- Long pH Electrode

2.4 ELECTRICAL CONNECTIONS



Before performing any intervention on the pump, disconnect the power supply voltage of the machine!

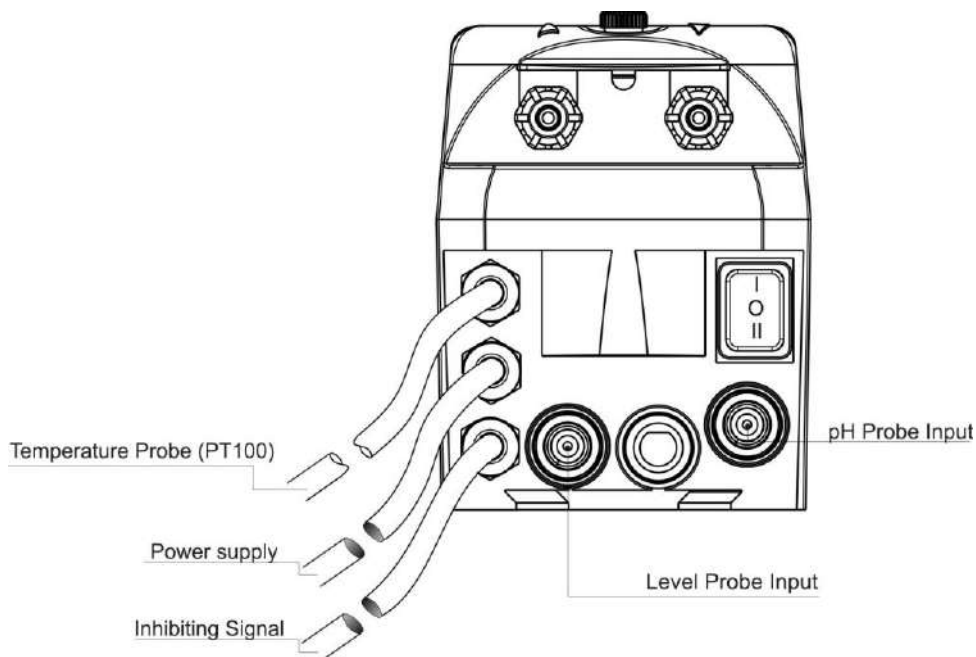


Fig. 5- View from below

Connect the pump cable to a voltage that is compatible with the one on the label.
For the connections refer to Fig. 5.

CAUTION !!!!!



Verify that the earth system is perfectly functional and complies with the applicable regulations. Ensure the unit is connected to a circuit protected by a highly sensitive (0.03A) RCCB circuit breaker. If unsure please consult a competent electrician. Verify that the rated values of the pump are compatible with those of the mains. Never install the pump directly in parallel with inductive loads (e.g. motors/solenoid valves) if necessary, use an isolating relay. There are 2 protection devices inside the pump: a varistor and a fuse.

2.4.1 PT100 TEMPERATURE READING PROBE

The PT100 temperature reading probe is an optional item when the product is purchased.

If you want to connect the temperature probe after you bought the pump – provided the pump model you purchased is designed to be fitted with one (pH model with PT100) – you will need to open the box and proceed with the connection on the pH card mounted on the main electronic board (see Fig. 6).

Fig.7 shows the connection of the PT100 temperature probe on the corresponding terminal on the card. Depending on the available probe model, perform one of the connections reported in Fig.7- b

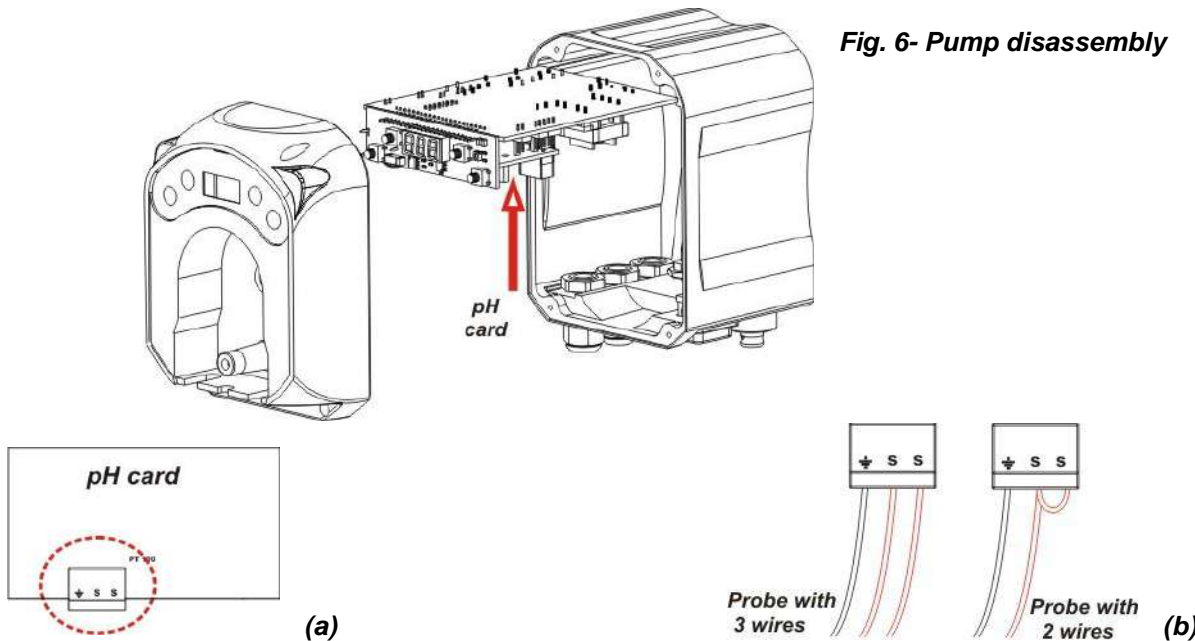


Fig.7- pH card and temperature probe connection

2.5 HYDRAULIC CONNECTIONS

- Make sure the suction tube is placed in the product's container and then connected to the pump's intake fitting (marked with the ▲ symbol on the cover) and tightened with the correct ring nut.
- Make sure the delivery tube is inserted in the pump's delivery fitting (marked with the ▼ symbol on the cover) and tightened with the correct ring nut. It must then be connected to the infeed fitting of the injection probe-holder.

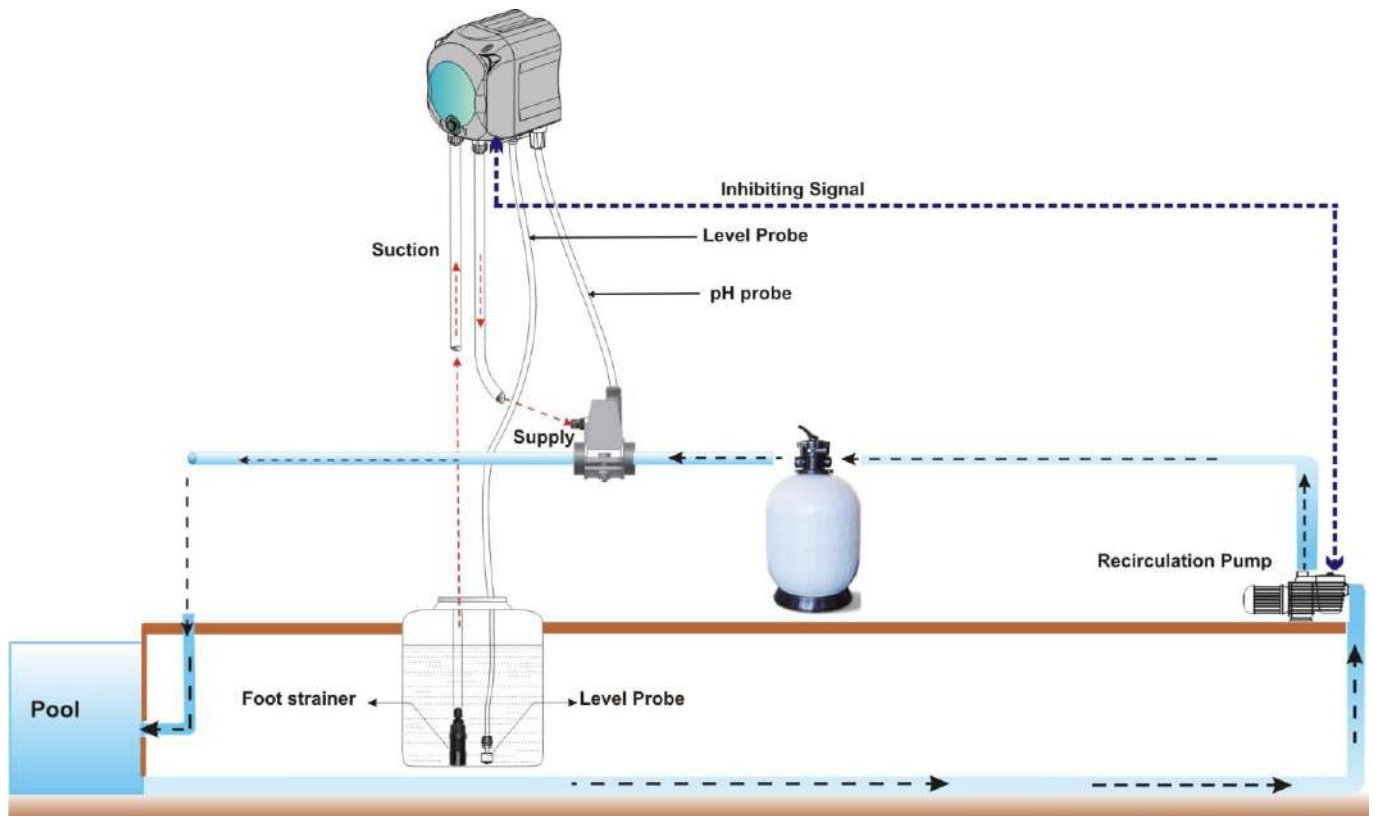


Fig. 8 Installation

3.0 PROGRAMMING

3.1 MAIN FEATURES

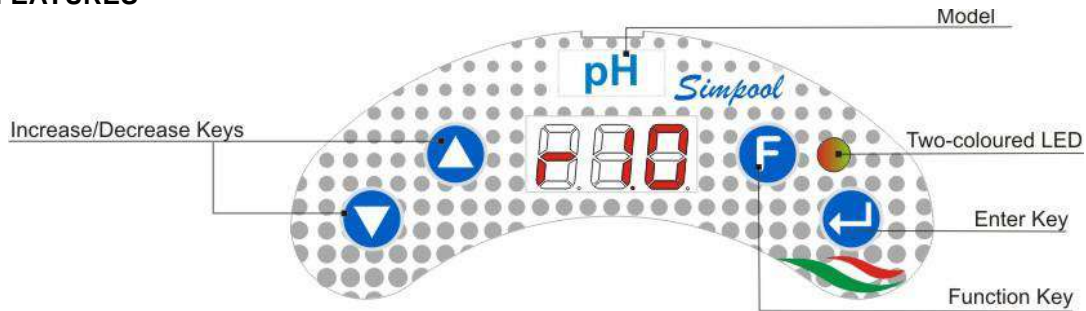


FIG. 9 - USER INTERFACE



The Increase/Decrease keys allow to change the numerical values and scroll through the lists of options for all the available menu entries.



The Enter key allows to access and exit from the various entries of the submenus. Pressing the key for 3 seconds allows, from the Initial Menu, to access the Programming Menu and to go back to the Menu one level up from the main entries on a Menu;



The Function key allows to browse through the Menu's entries. By pressing the key for 3 seconds from the initial page, you can access the User Menu;

TWO-COLOURED LED

The two-coloured LED displays the following conditions:

- **Steady green:** the pump is active;
- **Flashing green:** the pump is dosing;
- **Steady red:** the pump is off;
- **Flashing red:** there is an alarm;
- **Steady orange:** if you are browsing the Programming Menu;
- **Flashing orange:** Pump priming in progress;



The switch has three positions:

— : the pump is active (ON)

O : the pump is off (OFF)

≡ : the pump is priming (MOM)

The MOM position is monostable, therefore after setting the switch to MOM, when it is released the switch automatically goes back to OFF.

The pump doses for 60 seconds at the maximum speed; if the MOM key is pressed again before the 60 seconds elapse, the priming is interrupted.

OPERATION

The pump allows to dose a chemical product in a proportional manner to increase (**Alkaline** operation) or reduce (**Acid** operation) the pool's pH value. Dosage may be subject to the status of the recirculation pump (Inhibiting Signal).

The pH value is acquired by an electronic pH probe that needs to be calibrated and requires periodic maintenance.

Dosage is based on a cyclical pattern: at each cycle the pump is activated for a set time in relation to the difference between the pH value acquired and the set pH Setpoint (from 5.00 to 9.00 pH). The pump's dosing time (Ton) is calculated proportionally (see [3.1]) within the range of values indicated as "**Proportional Band**".

The following figure (Fig. 10) reports the operating diagrams for the acid and alkaline modes.

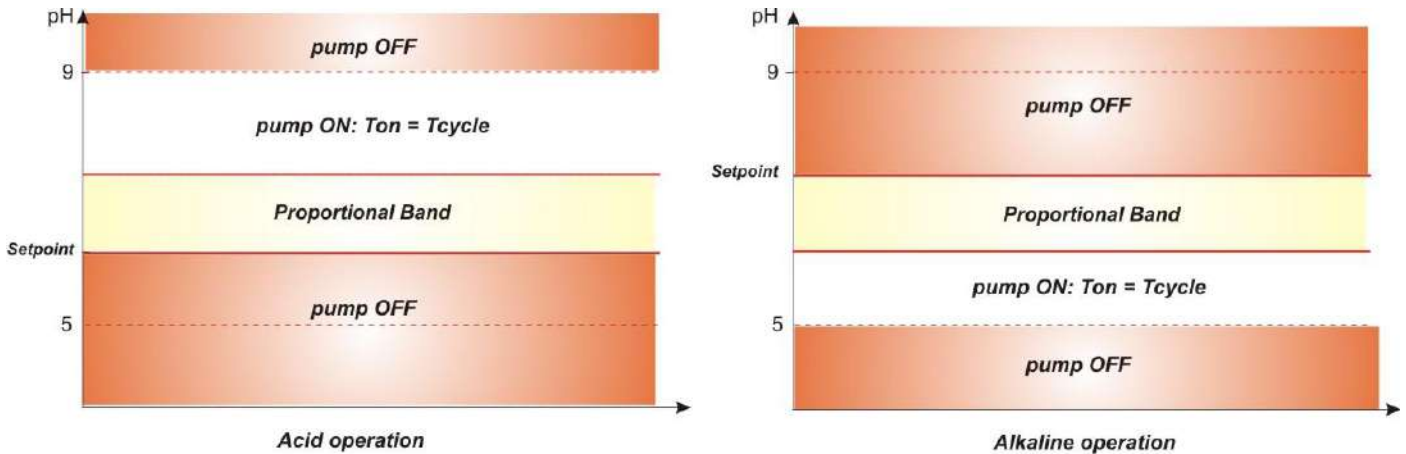


Fig. 10 - Acid and alkaline operating diagrams

The pH cycle period features a Ton time during which the pump is active and a Toff time during which the pump is stationary.

The Ton and Toff times are calculated at the beginning of a pH cycle based on the following formulas:

$$\mathbf{Ton} = \text{pH Cycle period} \times \frac{|\text{pH Value Read} - \text{SetPoint}|}{\text{Proportional Band}} \quad [3-1]$$

$$\mathbf{Toff} = \text{pH Cycle period} - \text{Ton} \quad [3-2]$$

The pH Proportional Band can be programmed with the following values: 0.5/ 1/ 1.5/ 3 pH.

Example:

- pH Setpoint = 7 pH
- pH Cycle Period = 500 sec
- Operating Mode = Acid
- pH proportional band = 1 pH
- Read value = 7.5 pH

$$\mathbf{Ton} = 500 \times \frac{|7,5 - 7|}{1} = 250 \text{ sec}$$

$$\mathbf{Toff} = 500 - \text{Ton} = 250 \text{ sec}$$

The calibration of the pH probe is conducted for the 7.00 and 4.01 pH sections, which correspond to the pH values of the buffer solutions provided in the installation kit. These values can be changed to adapt them to the available buffer solutions.

If the application allows to work around a 7.00 pH value, you will be able to calibrate the probe for a single point. In this case, the probe gain taken into account matches the theoretical one.

At the end of the calibration, the quality of the probe is displayed as a percentage. If the value is less than or equal to 25%, the probe must be replaced.

The pH of a solution is influenced by the temperature as well and to compensate for this influence you need to know its value. You can choose to offset the pH value automatically and with the temperature acquired by the PT100 probe or to set the value manually.

MENU

When the pump is turned on, regardless of the status of the switch, for a second the display shows the firmware version with the following format "*rx.y*". It then displays the first entry of the Initial Menu.

You can browse the whole Menu both when the switch is ON and when it is OFF.

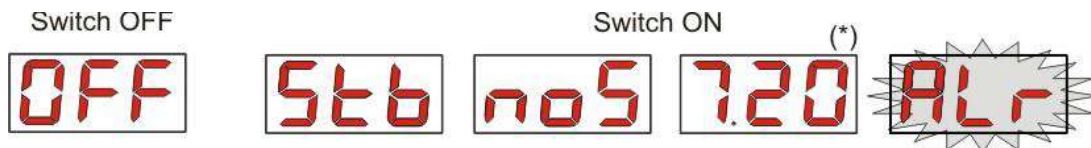
The Menu consists of the following submenus:

- **Initial Menu**, which allows to display the status of the pump;
- **User Menu**, which allows to change the main operating parameters;
- **Programming Menu**, which allows to set all the operating parameters and to display statistics: this menu can only be accessed by entering a password;

To browse through the Menus refer to Annex G - *Menu Layouts*.

Initial Menu

The first entry of the Initial menu displays one of the following pages, depending on the status of the switch and the pump:



(*) example of a pH value read;

noS (Signal not active): displayed if the inhibiting signal, which is linked to the pool's water recirculation pump, is not active;

Stb (Signal in Stabilization): displayed if the inhibiting signal, which is linked to the pool's water circulation pump, is active but waiting to be stabilized;

Read pH value: the reported value is the pH value read by the probe displayed with centesimal precision from 0.00 to 9.99 pH and with decimal precision from 10.0 to 14.0 pH. The value flashes, alternated with **noS** or **Stb**, if the signal is not active or active but not stabilized. The value is instead steady if the inhibiting value of the water recirculation pump is active and stabilized;

ALr (Alarm entry): if there is one or several active alarms, with the switch set to ON, every page of the Initial Menu will be alternated to the entry that reports the signal with the top priority. (see *Alarms* section).

 **If the inhibiting signal is disabled from the Settings Menu (see relative section), only the Redox potential value read will be displayed.**

From the home page, with the **F** key it is possible to scroll through the other entries of the Menu and display:

- the **SEt** setpoint value selected for the pH;
- the temperature value (**°C**) set manually or read by the PT100 temperature probe from 0.0 to 99.9°C: if the automatic temperature has been set and the temperature probe is not connected, the display will show "**t - -**".

If the temperature compensation option is disabled (**OFF**), this entry will not be displayed.

From the temperature value, again with the **F** key, you can go back to the first entry: if the pH value is shown on the display (enabling value stabilized or disabled from the Settings Menu), the reading of the pH value will come after the "**pH**" label.

From any entry of the Initial Menu you can go to the:

- **Programming Menu** by pressing **Enter** for 3 seconds;
- **User Menu** by pressing the **F** key for 3 seconds;

User Menu

The User Menu allows to set the main pump dosing parameters.

You can browse through the User Menu with the **F** key and display:

- **Pri**: allows to prime the pump without using the switch. You can start or stop the priming with the **Enter** key. The display shows a flashing "**Pri**" and the pump starts running run at top speed.
- **SEt**: allows to set the setpoint value from 5.00 to 9.00;
- **doS**: allows to select the pump's operating mode, Alkaline **AL.d** or Acid **ACI**;
- **CAL**: allows to access the Calibration Menu of the pH probe;
- **°C**: allows to set the temperature value, from 0.0°C to 99.9°C;
- **OFA**: allows to select the OFA alarms' control time frame within a range of 300 to 999 seconds or disable it (**OFF**);

The parameters can be changed and the pH probe can be calibrated only if they have been enabled from the Settings Menu, that is if:

- **OnS** (on-line Setpoint change) enabled
- **OnD** (on-line operating mode) enabled
- **OnC** (on-line probe calibration execution) enabled
- **Ont** (on-line manual temperature change) enabled
- **OnA** (on-line OFA alarm change) enabled

From the User Menu you can go back to the Initial Menu by pressing the **F** key for 3 seconds.

Programming Menu

The Programming Menu allows to set all of the pump's operating parameters and can be accessed only by entering the password.

You can enter the Programming Menu only from the Initial Menu: after pressing **Enter** for 3 seconds, the display shows "**PAS**", the LED turns orange and is steady. Then press **Enter** again and on the password selection menu the first digit of "**000**" starts flashing. With the **▲** and **▼** keys you can increase/decrease the value displayed, with **Enter** you can scroll and select the desired digit. After setting the correct password, press **Enter** again for 3 seconds.

From every menu you will go back to the first entry of the Initial Menu if no operation is carried out for more than 2 minutes.

3.2 QUICK START-UP

This section features the steps to carry out to use the pump straight away. For further details on operation, refer to section 3.3 "Advanced Programming".

Here below are the main parameters to set in order to operate the pump:

pH setpoint – pH Operating Mode – pH Proportional Band

From the User Menu you can proceed quickly with the steps below:

- Prime the pump;
- Select the Setpoint;
- Set the pH Operating Mode;
- Calibrate the pH measuring probe; (see *pH Probe Calibration Menu*)
- Set the temperature (if in manual mode);
- Select the time in seconds to control the PFA alarm;

Here below are the pump's default parameters:

- pH Proportional Band equal to 1.5;
- pH Cycle Period equal to 300 sec;
- On-line modification of the User Menu values and On-line execution of the probe calibration enabled;
- Stabilization Time: 10 sec;
- OFA alarm disabled (**OFF**);

- **A.PH** activation value and **r.PH** deactivation value of the OFA alarm, respectively equal to 0.05 pH and 0.2 pH (see *OFA alarm*);

USER MENU

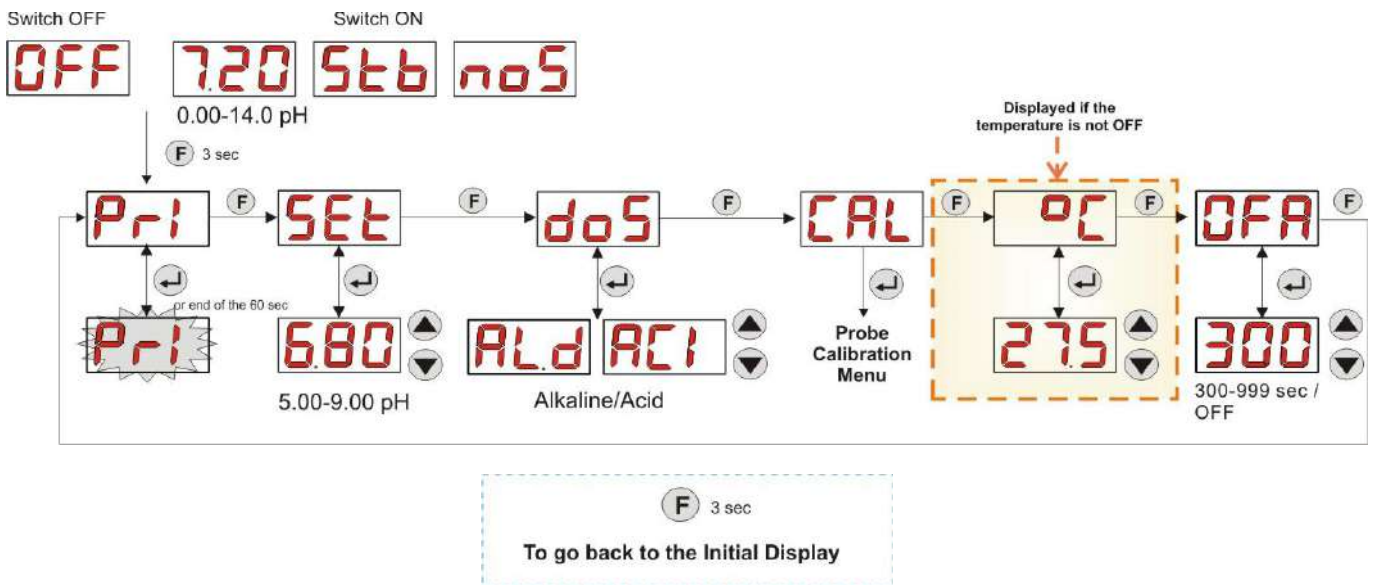




Fig. 11 - Standard programming from User Menu

 **The temperature value can be changed only if the Manual mode is set and the corresponding On-line change is enabled.**

3.3 ADVANCED PROGRAMMING

Here below are the various features of the **Programming Menu** in greater detail.

 **Every parameter that is changed in the pump's programming is saved when you go back to the initial display. If the pump's power supply is disconnected before going to the stand-by display, programmed data is lost.**

3.3.1 SETTING THE LANGUAGE

From the **LAN** entry you can choose between Italian **It** and English **En** via the ▲ ▼ keys. Use **Enter** to enter and exit. (Fig. 12)

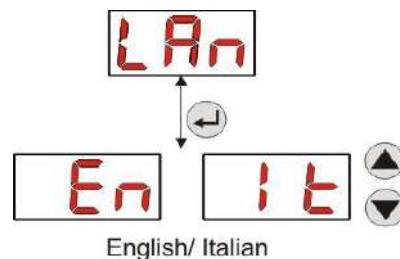


Fig. 12 - Programming the Language

3.3.2 SETTING THE SETPOINT AND THE OPERATING MODE

From the **PH** entry it is possible to access the following submenu: (Fig. 13)

- **SEt**: allows to display and if necessary change, via the ▲ and ▼ keys, the Setpoint value from 5.00 to 9.00 pH;
- **LEt**: allows to display the pH value read by the probe;
- **doS**: entry to select the pump's operating mode; via the ▲ and ▼ keys you can scroll through the **AL.d** (Alkaline) and **ACI** (Acid) entries;

To go back to the main **PH** entry of the Programming Menu, press **Enter** for 3 seconds.

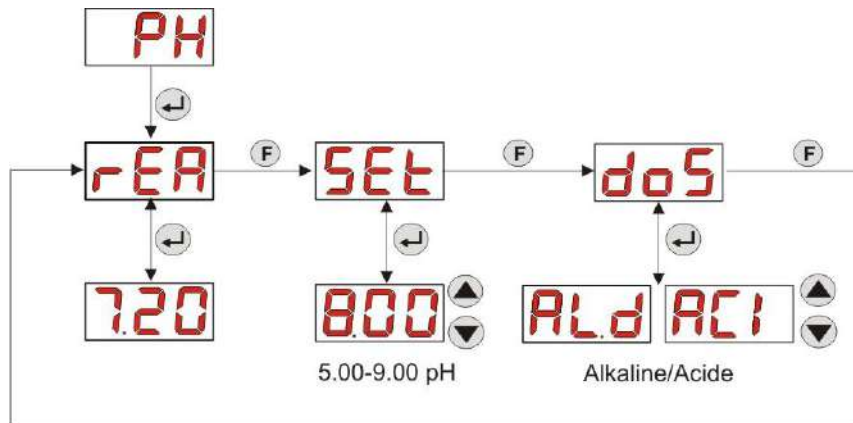


Fig. 13- Setting the dosage parameters from the Programming Menu

3.3.3 CALIBRATING THE PH PROBE

From the **CAL** entry you can calibrate the pH's electrode.

Before you start, first of all you must get the accessories required to calibrate the probe (Installation kit):

- Empty container that needs to be filled up with drinkable water;
- pH 7.00 buffer solution (or with another value);
- pH 4.01 buffer solution (or with another value);

The calibration can also be carried out with a pH 7.00 buffer solution (or with a solution with a valid pH value for the 1st calibration point), as the menu allows to calibrate the probe also for just a single point, considering the 2nd calibration point equal to the theoretical value of 4.01 pH.

After washing the probe in drinking water, immerse it in the first solution and select the correct pH value of the buffer solution used for the calibration (typically 7.00 pH). Then press **Enter**: the display will show a flashing 60-second countdown. When this ends, the display shows the value measured in **mV** and the count can be interrupted by pressing **Enter**.

Then, after about 10 seconds, the display shows the value of the 4.01 pH buffer solution to be used for the 2nd calibration point: if you intend to calibrate only one point of the probe, just go to the "**PEr**" page (Probe Quality Percentage) via the **F** key. Otherwise you need to rinse the probe in the drinking water again and immerse it in the second buffer solution by selecting the correct pH value used for the calibration on the display.

Press **Enter** to carry out the second acquisition: the display will show a flashing 60-second countdown again (this can be stopped by pressing **Enter**). When it ends, the display shows the measured value **mV**. After about 10 seconds, it displays the **PEr** page and with **Enter**, you can display the Quality of the probe expressed as a percentage.

A Quality percentage value of the probe less than or equal to 25% means the pH probe must be replaced.

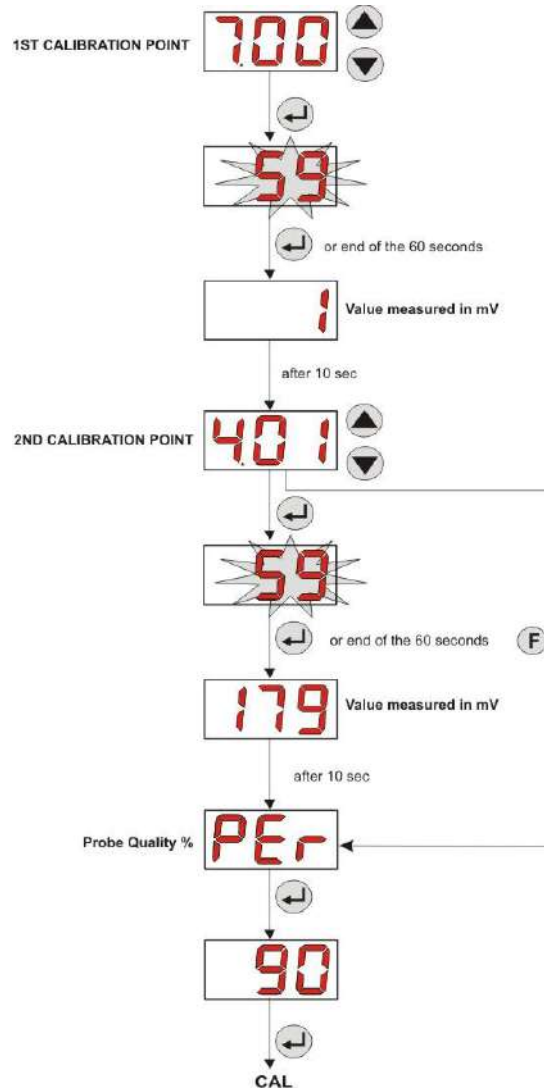


Fig. 14- pH Probe Calibration Menu

3.3.4 SETTING THE TEMPERATURE

The temperature setting allows to correct the pH value read.

From the Programming Menu, by accessing it from the °C entry you can choose between the "noA" manual setting and the "Aut" automatic temperature reading from the PT100 probe or OFF.

If you want to correct the pH value in relation to the thermal variation, in manual mode just set a temperature equal to 25°C or select OFF.

The default setting is the manual mode, with a temperature of 25°C (pH correction not enabled).

If you have not selected OFF among the options, the following will be displayed by pressing Enter:

- Temperature value measured from 0.0 to 99.9°C if the mode is Aut: if the probe is not connected, the display will show "t - -";
- Set temperature value, from 0 to 99.9 °C if the mode is noA;

To go back to the Programming Menu, press Enter again.

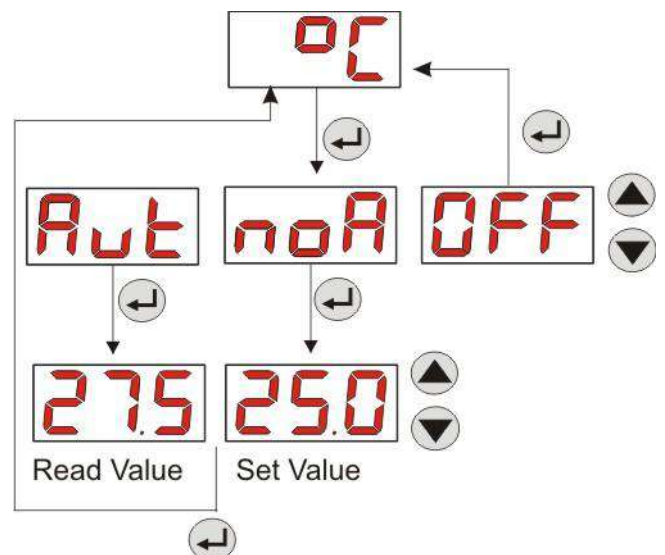


FIG. 15- TEMPERATURE

3.3.5 DISPLAYING AND RESETTING STATISTICS

From the **StA** entry on the Programming Menu you can access the Pump statistics submenu.

Here below are the parameters saved during the pump's operation:

- How many times the **OFA** overdose alarm has been activated (from 0 to 999);
- The maximum pH value **H.PH** measured from 0.00 to 14.0 pH;
- The average pH value **A.PH** measured from 0.00 to 14.0 pH;
- The maximum pH value **L.PH** measured from 0.00 to 14.0 pH;
- The maximum **H.°C** temperature value detected from 0.0 to 99.9°C or **t - - (*)**;
- The average **A.°C** temperature value detected from 0.0 to 99.9°C or **t - -**;
- The minimum **L.°C** temperature value detected from 0.0 to 99.9°C or **t - -**;
- The pump's overall operating time **P.d.t**, from 0 to 999 hours, with the following format:
 - **h.mm** up to 9 h and 59 m
 - **hh.m** up to 99 h and 59 m (minutes expressed in tens)
 - **hhh** up to 999 h

To reset each of the above-mentioned fields, just access from the numerical value to the **rSt** reset entry with the **F** key and from there select **YES**, confirming with **Enter**: the corresponding reset value is displayed.

The entries related to the temperature values are not displayed if the °C temperature is set to OFF.

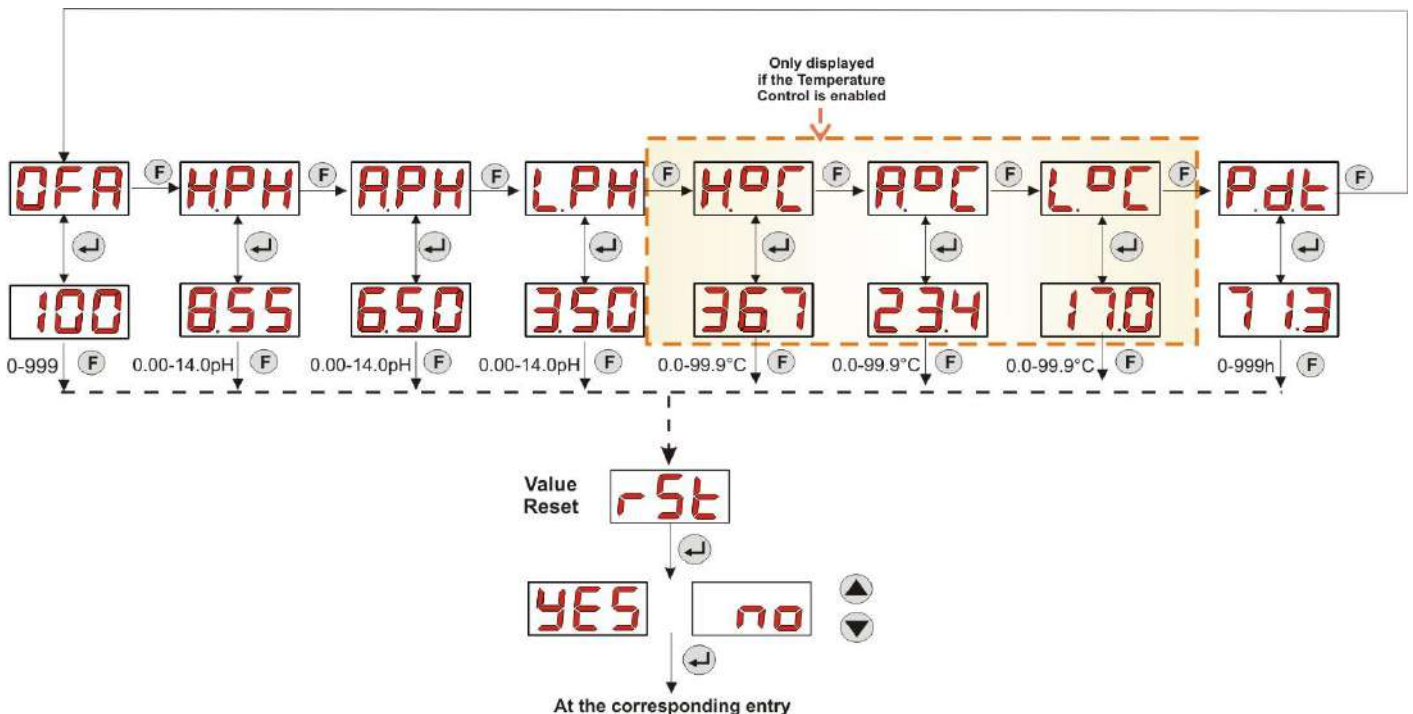


Fig. 16- Statistics Menu

To go back to the Programming Menu press **Enter** for 3 seconds.

3.3.6 CALIBRATING THE PUMP

The calibration of the pump allows to achieve more accurate dosing, as it allows to correct the dosing time **Ton** in relation to the actual flow rate of the pump. If the calibration is not carried out, dosing times are calculated based on the pump's rated flow rate value (read the value on the label).

The rated flow rate and the actual flow rate could differ for a number of reasons related to the use of the device (wear of the peristaltic tube, etc.).

From the **P.CA** entry, you will be able to calibrate the pump for a fixed time of 60 seconds, thereby measuring the amount of liquid dosed via a graduated container used as a reference: from the start label "**StA**", launch the count by pressing **Enter** and the pump will start dosing at top speed. Finally, just set the amount in ml (from 0 to 300).

(*) displayed if the temperature is in automatic mode and the PT100 probe is not connected;

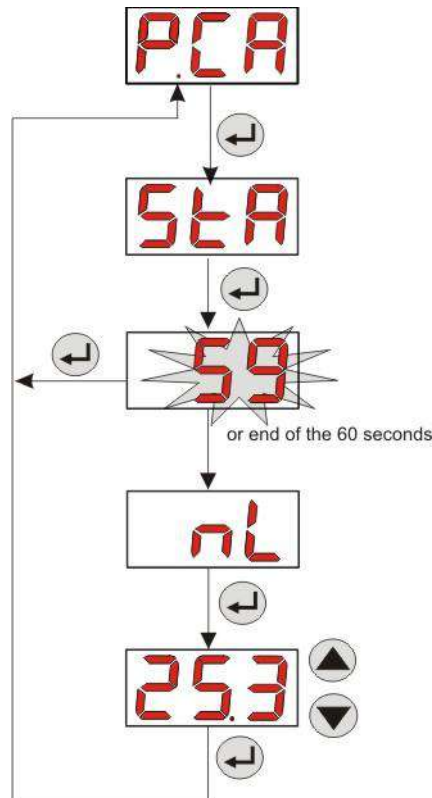


Fig. 17- pH Pump Calibration Menu

3.3.7 RESETTING DEFAULT PARAMETERS

From the **r.d.P** entry you will be able to reset the equipment's default parameters (refer to the **Default Parameters Table** in *Annex E*). If you chose to reset the initial values, you will go back to the initial display. See Fig. 18. Once you confirm with **YES**, you cannot go back.

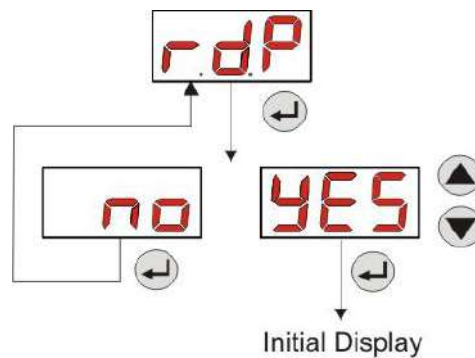


Fig. 18- Default parameters reset

3.3.8 SETTINGS MENU

From the **OPt** entry of the Programming Menu, via the **Enter** key, you can access the **Settings Menu**. From the Settings Menu you can carry out the following operations (refer to **Figure 19**):

- Set the password to access the Programming section, **PAS**: with **Enter** you can go to the "000" selection page, with the **▲** and **▼** keys you can increase/decrease the value displayed and with **Enter** you can scroll through the figure you intend to set. After choosing the new password, press **Enter** for 3 seconds to go back to the **PAS** entry;
- Enable the pump stop in the case of a **P.St** level alarm: to access and exit the submenu, use **Enter**, to scroll through "YES/no" use the **▲** and **▼** keys;

- Select the **P.P.b** value of the pH Proportional Band: to enter and exit the submenu use **Enter**, to scroll through the 0.5/ 1/ 1.5/ 3 values use the ▲ and ▼ keys;
- Set the **PHP** value in seconds of the duration of the pH Cycle Period: to enter and exit the submenu, use **Enter**, to scroll through the values from 300 to 999 seconds use the ▲ and ▼ keys;
- Set the minimum **A.PH** variation of the pH to activate the OFA alarm within a range of 0.05- 0.99 pH: to enter and edit the submenu use **Enter**, to scroll through the values use the ▲ and ▼ keys;
- Set the minimum variation of the pH to reset the OFA alarm, **r.PH** within a range of 0.99-90 mV: to enter and exit the submenu use **Enter**, to scroll through the values use the ▲ and ▼ keys;
- Select the time frame to control the OFA alarm, **OFA**, within a range of 300-999 seconds or disable it (**OFF**): to enter and exit the submenu use **Enter**, to scroll through the values use the ▲ and ▼ keys;
- Set the stabilization time of the inhibiting signal, **Stb**, coming from the pool's circulation pump in a range of 0- 999 seconds: to enter and exit the submenu use **Enter**, to scroll through the values use the ▲ and ▼ keys;
- Set the time of the pump's maintenance alarm, **O.F.d**, from 0 (disabled) to 999 hours, based on the following format:
 - **h.mm** up to 9 h and 59 m
 - **hh.m** up to 99 h and 59 m (minutes expressed in tens)
 - **hhh** up to 999 h
 To enter and exit the submenu use **Enter** and increase/decrease the value with the ▲ and ▼ keys;
- Access the window to identify the inhibiting signal, **S.In**: to enter and exit the submenu use **Enter**. The display will show the status identified by the pump for the input signal:
 - steady "HI"**: enabling signal identified as active;
 - steady "Lo"**: enabling signal identified as not active;
 - flashing "HI"**: enabling signal identified as active, but just above the identification voltage threshold;
 - flashing "Lo"**: enabling signal identified as not active, but just below the identification voltage threshold;
 If the status displayed does not correspond to the actual status of the signal or if the status displayed is flashing, just scroll with the ▲ and ▼ keys to change the threshold, namely:
 - Status of the non-active signal (recirculation pump OFF)
 - if the signal is identified as active (**HI** steady or flashing) or not active but near the threshold (flashing **Lo**), press ▼ to reduce the threshold voltage until a steady "**Lo**" is displayed;
 - if the signal is permanently identified as not active (steady **Lo**), conduct a check when the signal is activated;
 - Status of the non-active signal (recirculation pump ON)
 - if the signal is identified as not active (**Lo** steady or flashing), or active but near the threshold(**HI** flashing), press ▲ to increase the threshold voltage until a steady "**HI**" is displayed;
 - if the signal is permanently identified as not active (steady **HI**), conduct a check when the signal is disabled;
- Enable or do not enable the acquisition of the inhibiting signal to read and adjust the pH, **A.In**: to enter and exit the submenu use **Enter**, to scroll through "YES/no" use the ▲ and ▼ keys;
- Choose if you want to make the Setpoint, **OnS**, a value that can be changed from the User Menu: to enter and exit the submenu use **Enter**, to scroll through "YES/no" use the ▲ and ▼ keys;
- Choose if you want to make the pH operating mode, **OnD**, a value that can be changed from the User Menu: to enter and exit the submenu use **Enter**, to scroll through "YES/no" use the ▲ and ▼ keys;
- Choose if you want to calibrate the pH probe from the User Menu, **OnC**: to enter and exit the submenu use **Enter**, to scroll through "YES/no" use the ▲ and ▼ keys;
- Choose if you want to modify the temperature value from the User Menu, **Ont**: to enter and exit from the submenu use **Enter**, to scroll through "YES/no" use the ▲ and ▼ keys. This entry is displayed only if the temperature is set in manual mode from the Programming Menu;

- Choose if you want to modify the OFA alarm's time frame from the User Menu, **OnA**: to enter and exit the submenu use **Enter**, to scroll through “YES/no” use the ▲ and ▼ keys;
- Enable the **b.En** buzzer when an alarm is activated: to enter and exit the submenu use **Enter**, to scroll through “YES/no” use the ▲ and ▼ keys;

To go back to the Programming Menu, to the **Opt** entry, just press **Enter** for 3 seconds from any entry of the Menu.

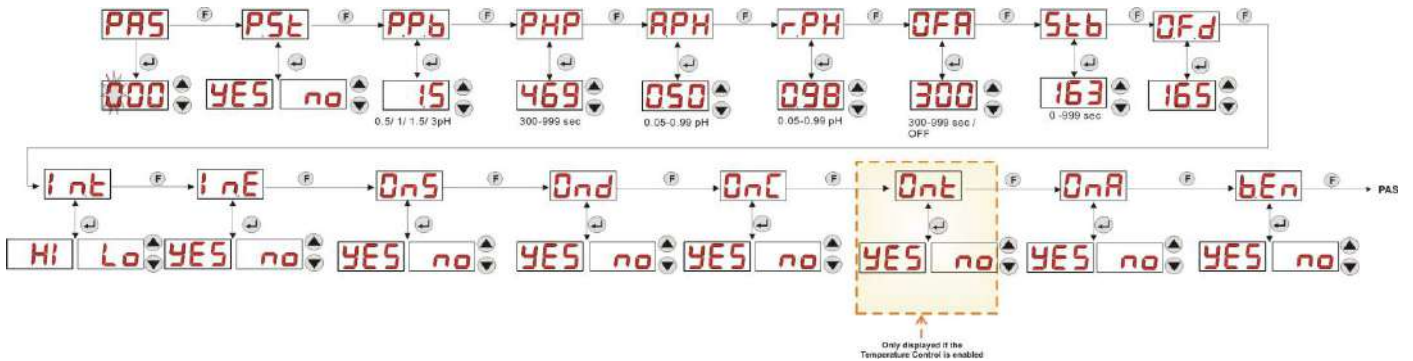


Fig. 19 - Settings Menu

4.0 ALARMS

The entry that reports the active alarm with the top priority is only displayed alternated with the entries of the Initial Menu, while there will be an audio signal (if the buzzer is enabled) and a flashing red LED associated with the status of the Alarm both on the Initial Menu and the User Menu.

4.1 MAINTENANCE ALARM

The maintenance alarm is activated when the pump has been running for longer than the time set in the relative **O.F.d** submenu (see *Settings Menu*).

If you set 0.00 (h.mm) as a time value for the maintenance alarm, it will be disabled.

This is reported by the pump as follows:

- Audio signal via the buzzer (if there is one on the pump) if enabled (see **b.En** on the “Settings Menu”) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “**OFd**” flashing on the display;

In this alarm status the motor is stationary. To disable the alarm, you need to go to the **P.d.t** entry (pump operating time) in the Statistics Menu and reset the value.

4.2 LEVEL ALARM (only for the model with the level probe)

A level probe can be connected to the pump to report the end of the product, which is indicated by the pump in the following way:

- Audio signal via the buzzer (if there is one on the pump) and if enabled (see **b.En** on the “Settings Menu”) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “**uLo**” flashing on the display;

The inlet has a 3-second recognition filter to identify false contacts and unwanted level alarm signals.

This alarm may or may not imply the pump will stop, depending on the option chosen in the “**P.St**” submenu (Settings Menu: **P.St**=YES→ the pump is stopped; **P.St**=no→ the pump keeps on dosing).

The alarm is automatically reset when the level of the chemical product to be dosed is restored.

i In priming mode, the level alarm is not indicated.

4.3 OFF STATUS ALARM

If the switch is left on the OFF position, after 20 minutes the switch alarm is activated and signalled by the pump in the following way:

- Audio signal via the buzzer (if there is one on the pump) and if enabled (see **b.En** on the “Settings Menu”) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “OFF” flashing on the display;

Just set the switch to ON to disable it.

4.4 OFA ALARM

The OFA alarm is a dosing alarm that is activated when there is no specific variation of the pH value read when the corrector is dosed during a set time frame (OFA time).

The observation time, **OFA**, can be set from 300 to 999 seconds or it can be disabled (OFF) from the Settings Menu and it is enabled when the pump starts dosing (Ton of the pH cycle period): the alarm is activated if the pH value read does not vary during the OFA time at least for the value set in **A.PH** (from 0.05 to 0.99 pH).

The OFA alarm is reported by the pump in the following way:

- Audio signal via the buzzer (if there is one on the pump) and if enabled (see **b.En** on the “Settings Menu”) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “OFA” flashing on the display;
- Dosage stop (the pump is stopped);

The alarm will be disabled if:

- The pH value is reported in the window featuring the **Setpoint ± r.PH** values, where r.PH ranges from 0.05 to 0.99 pH (Settings Menu);
- Use the switch or the power supply to turn it on or off;

4.5 POOL ALARM

If the pH value read is below pH 5.00 or above pH 9.00, the pump reports a Pool Alarm.

The Pool Alarm is reported in the following way:

- Audio signal via the buzzer (if there is one on the pump) and if enabled (see **b.En** on the “Settings Menu”) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “PEr” flashing on the display;
- Dosage stop (the pump is stopped);

You can automatically exit the alarm status of the pH value returns above pH 5.00 or below pH 9.00.

4.6 RANGE ALARM

If the pH value read is below pH 6.00 or above pH 8.00, the pump reports a Range Alarm.

The Range Alarm is reported in the following way:

- Audio signal via the buzzer (if there is one on the pump) and if enabled (see **b.En** on the “Settings Menu”) with a frequency of 1 second on and 1 second off;
- flashing red LED;
- “rER” flashing on the display;

When the Range alarm is reported, the pump keeps on operating as normal.

You can automatically exit the alarm status of the pH value returns above pH 6.00 or below pH 8.00.

Figure 20 briefly illustrates the pump activation in the Pool and Range Alarms in relation to the pH.

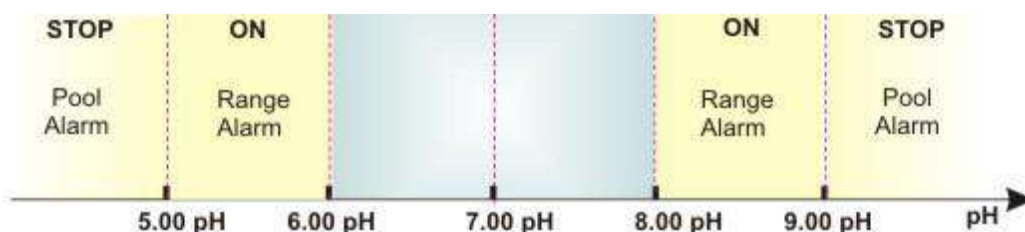


Fig. 20 - Range Alarm and Pool Alarm

4.7 TEMPERATURE ALARM

The Temperature Alarm is activated whenever the temperature mode (°C) in the Programming Menu is set to automatic "Aut", but the PT100 probe is not connected (temperature value reported as t - -).

The Temperature Alarm is reported in the following way:

- Audio signal via the buzzer (if there is one on the pump) and if enabled (see **b.En** on the "Settings Menu") with a frequency of 1 second on and 1 second off;
- flashing red LED;
- "n°C" flashing on the display;

When the alarm is reported, the pump keeps on operating as normal.

You will automatically exit the alarm status as soon as the probe is connected or by changing the temperature mode (manual or OFF).

5.0 MAINTENANCE

This section reports the general rules you need to follow to operate the pump correctly and the steps to carry out periodically to ensure optimal conditions are maintained over time.

5.1 GENERAL RULES

Maintenance operations must be conducted systematically and accurately by following the recommendations reported below to the letter.

It is difficult to define the standard times required for maintenance beforehand, as there are a number of factors that determine the wear of the pump and in particular the parts that are in contact with the liquid.

This also applies to the type of product used to clean the materials that are in contact with it (valves, etc.) as it depends on the compatibility of the material with the chemical product being dosed.

Having said this, we can take as an example a product, such as sodium hypochlorite, that develops crystals, which is often used with our pumps, and with which we have a great deal of experience, and trace an identity kit of the type of maintenance required.

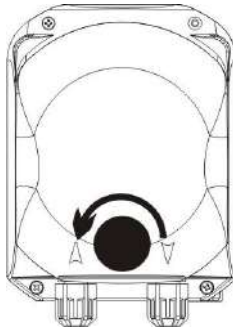
5.2 PERIODIC MAINTENANCE

- Check the foot strainer and clean it periodically from any residuals of crystallised product or dirt deposits.
- Ensure there are no impurities in the suction and delivery tubes, because they may damage the peristaltic tube and, at the same time, cause anomalies in the flow rate;
- **Pump materials in contact with the chemical product such as: foot strainer and injection valve must be checked and cleaned at least every three months.** If the products are particularly aggressive increase the frequency of cleaning;
- Calibrate the pump periodically;

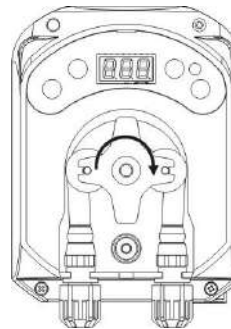
To remove and place back the peristaltic tube refer to the steps described respectively in 21 and 22.

Removing the peristaltic tube

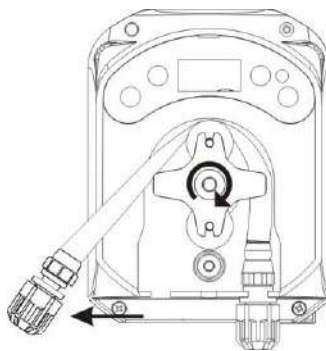
Step 1 - Open the front glass



Step 2- Turn the roller clockwise and release the (left) intake ring nut



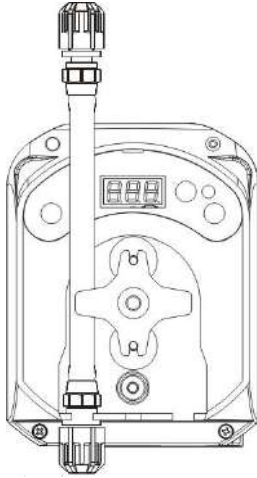
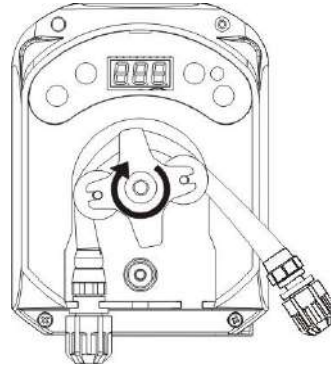
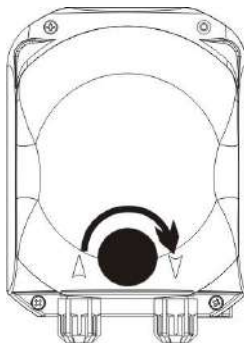
Step 3 - Removing the tube



Step 4 - Release t the (right) delivery ring nut and remove it completely



Fig. 21 - Removal of the peristaltic tube

Placing back the peristaltic tube**Step 1** - Position the tube and secure it on the left-hand side**Step 2** - Insert it in the bell by turning the roller**Step 3** - Close the front glass**Fig. 22- Placing back the peristaltic tube****5.3 TROUBLESHOOTING****Problem: the pump does not turn on, the LED and display remain off****Solution:**

3. Make sure the connection to the electrical network has been set up correctly in accordance with the information provided on the pump's identification plate.
4. The electronic board may be damaged as well: call the Support Service.

Problem: the pump is dosing, but there is no pH variation (OFA alarm)**Solution:**

6. Check the product's level.
7. Make sure the pH probe is not damaged.
8. Make sure the foot strainer is not clogged up.
9. Make sure the delivery tube is inserted in the probe-holder correctly.
10. Check the status of the peristaltic tube. If evident malformations are detected, make sure that the material is compatible with the product being dosed by consulting the chemical compatibility table (see ANNEX D), and then go ahead with the replacement.

Problem: liquid leaking from the peristaltic tube**Solution:**

3. Make sure the delivery and intake tubes are inserted properly and the ring nuts are well tightened.
4. Check the status of the peristaltic tube. If evident malformations are detected, make sure that the material is compatible with the product being dosed by consulting the chemical compatibility table (see ANNEX D), and then go ahead with the replacement.

Problem: the pump is not reporting an alarm, it has not reached the Setpoint, but it is not dosing**Solution:**

3. Make sure the switch is not set to OFF.
4. Check whether the enabling signal coming from the recirculation pump is active and stabilized;

Problem: the threshold of the inhibiting signal cannot be set correctly (from the *In.t* entry of the Settings Menu)**Solution:**

3. Check whether the Inhibiting signal is connected correctly.
4. Call the Support Service;

5.0 RETURNING MATERIAL TO THE AFTER-SALES SERVICE

The material must be sent back in its packaging with all its original protection devices before the end of the warranty period.

The system must be clean and the chemical product removed from the tubes.

The manufacturer declines any responsibility regarding damages caused by transportation, if the aforementioned conditions are not complied with.

6.0 WARRANTY CERTIFICATE

The manufacturer provides warranty covered for pumps made by them for a period of 12 months, starting from the delivery date to the first user ().*

Within the above terms the producer agrees to provide spare parts for any parts that they, or their authorised representative, believe present factory or material defects free of charge; or to carry out the repair directly or through authorised workshops.

The producer is nevertheless excluded from any other responsibility and obligation regarding other expenses, direct or indirect damage and losses deriving from the use or from the impossibility, either total or partial, to use the pumps.

Any repairs or replacing of parts will neither extend nor renew the duration of the warranty period.

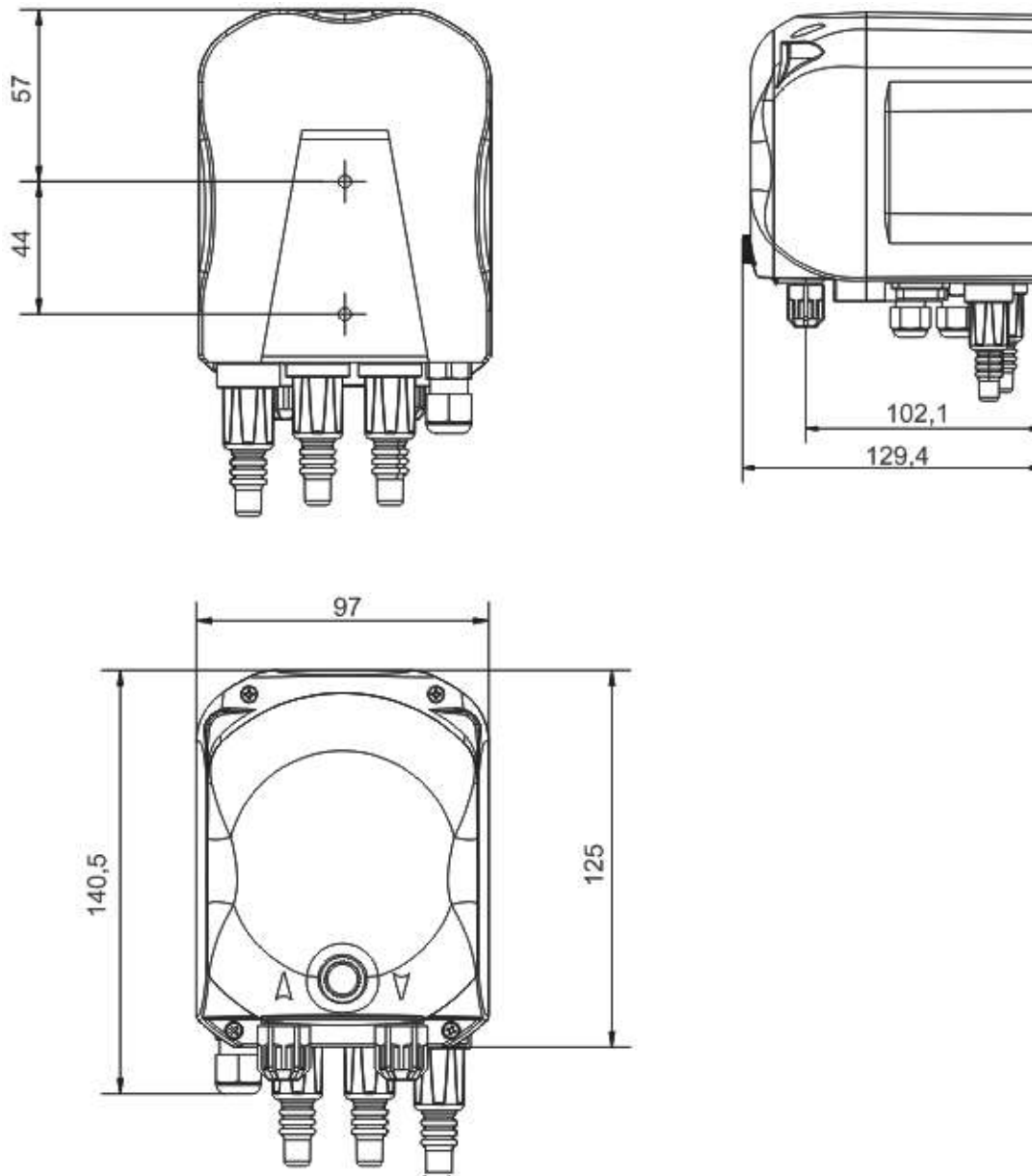
Costs to assemble and disassemble the pump from the system, shipping costs and consumables (filters, valves, etc.) are borne by the user.

The manufacturer's obligations, envisioned in the previous paragraphs, are not valid if:

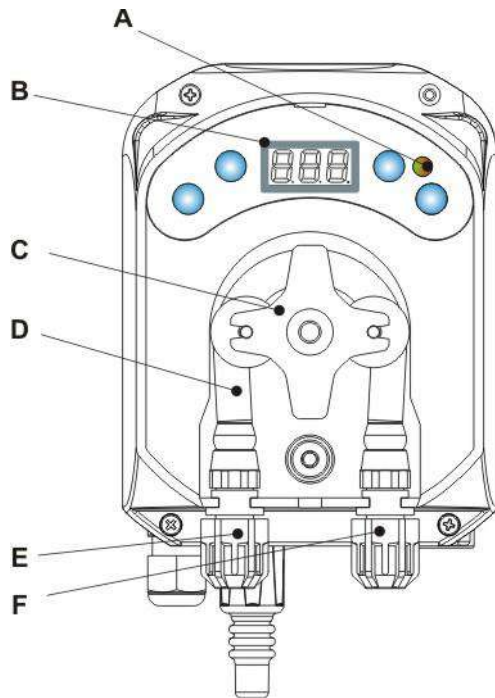
- *The pumps are not used in compliance with the instructions provided on the operating and maintenance booklet;*
- *The pumps are repaired, dismantled or modified by workshops that have not been authorised by the manufacturer;*
- *Non-original parts have been used;*
- *The injection systems have been damaged by non-compliant products;*
- *The electrical systems breakdown due to external factors such as surges, any kind of electrical discharges etc.;*

When the warranty period expires 12 months after delivery of the pump, the manufacturer is relieved of any responsibility and obligation described in the above paragraphs

(*) as attested by the serial code and the invoice's issue date

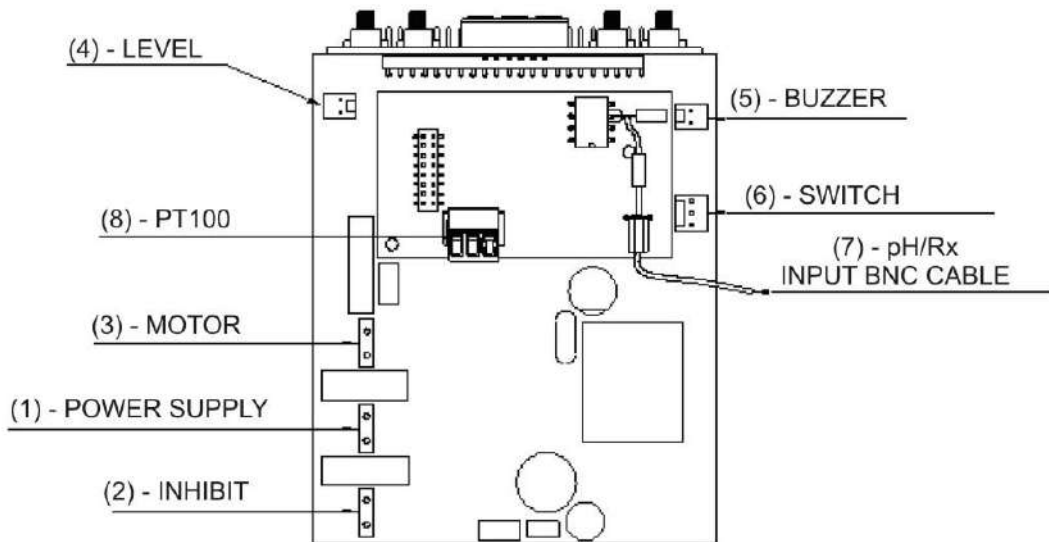
ANNEX A - Overall dimensions

ANNEX B - Reference Figures



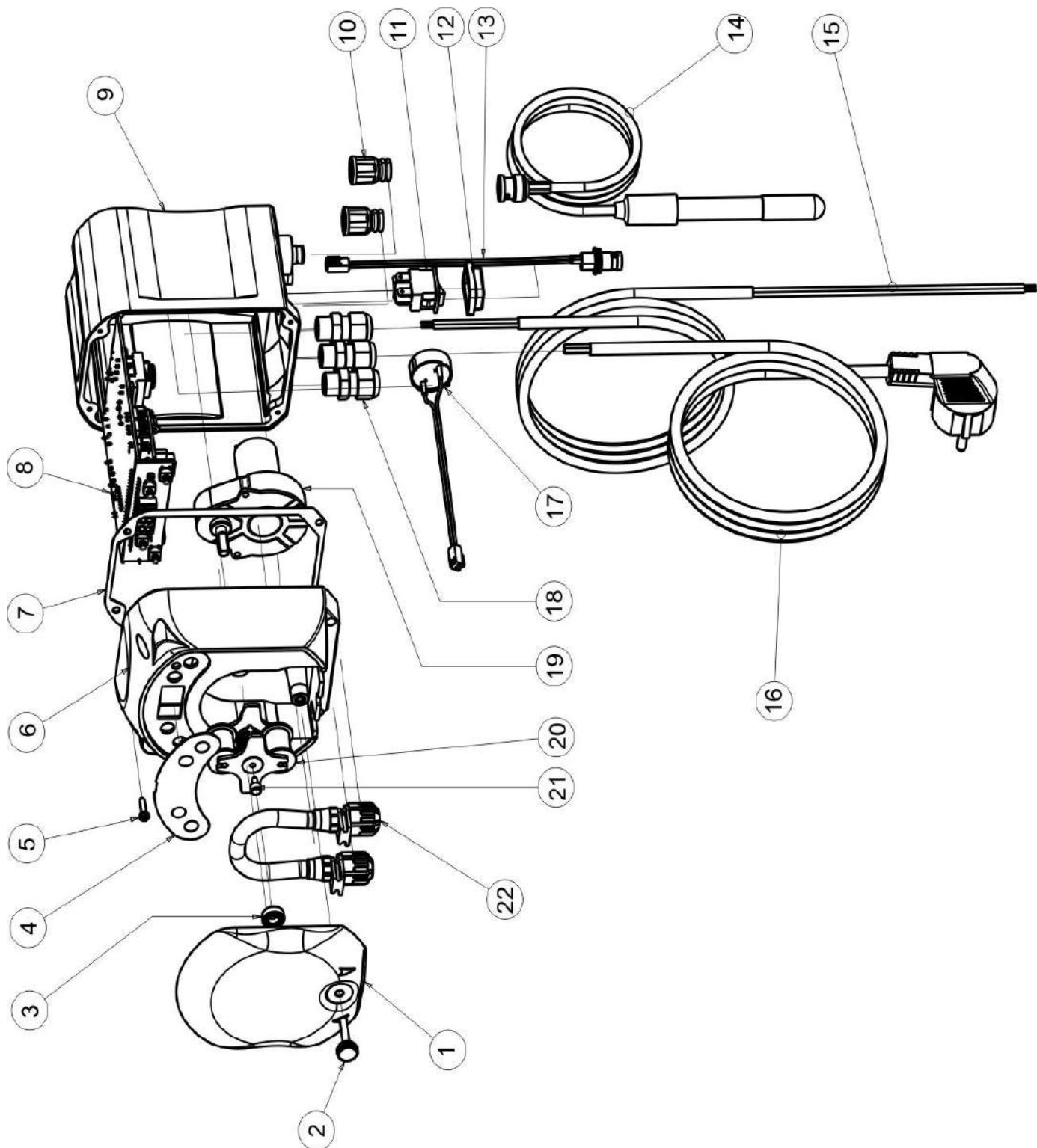
Ref.	Description
A	Two-coloured LED
B	3-digit display with 7 segments
C	Roll-holder
D	Peristaltic tube
E	Intake fitting
F	Delivery fitting

Electronic Board layout



Ref.	Description
1	Equipment Power Supply Connector
2	Inhibiting signal connector
3	Motor connector
4	Level Connector
5	Buzzer Connector
6	Switch Connector
7	pH/Rx Input BNC cable
8	PT100 input connector (only in the temperature compensated version)

ANNEX C - Exploded views



No.	CODE	DESCRIPTION	QTY
1	ADSP8000195	SIMPOOL PERISTALTIC NEUTRAL SMOKED FRONT COVER	1
2	ADSP8000029	KNOB TO SECURE CLEAR TEC COVER	1
3	ADSP4100207	SKF 618/6 100L ECOWASH PUMP	1
4	ADSP7000577 ADSP7000484	SIMPOOL – AQUA PERISTALSTIC POLYCARBONATE LABEL SIMPOOL pH PVC LABEL	1
5	ADSP6000714	STAINLESS STEEL A2 M 2.9 X 13 SCREW UNI 6954 (slotted pan head)	4
6	ADSP9600001	SIMPOOL PERISTALTIC FRONT FRAME	1
7	ADSP6000059	PAPER GASKET FOR SIMPOOL DIGITAL PERISTALTIC	1
8	ADSP6000960	SIMPOOL SKD ph WITH INHIBIT (85-265) VAC	1
	ADSP6000961	SIMPOOL SKD pH-TEMP WITH INHIBIT (85-265) VAC	
9	ADSP9600002	SIMPOOL PERISTALTIC REAR FRAME	1
10	ADSP6000948	FEMALE BNC PROTECTION FROM BLACK RUBBER PANEL	2
11	ADSP6000685	3A 250V ON/OFF/PAUSE FLIP SWITCH	1
12	ADSP6000686	CLEAR PROTECTIVE COVER FOR ON/OFF SWITCH	1
13	ADSP6000292	CRIMP.CONN. FEMALE BNC CONNECTOR 2.54 L160 R/N CABLED (Level Conn.)	1
14	ADELTPH05S	SHORT PLASTIC PH ELECTRODE A-PH5 5-METRE CABLE	1
15	ADSP6020051	BIPOLAR CABLE 2 X 0.75 3 METRES - H05VV-F 2X0.75 -	1
16	ADSP6000419	THREE-POLE CABLE 3X0.75 1.5 METRES WITH SCHUKO PLUG - - H05VV-F 3G0.75 -	1
17	ADSP6000627B	2-POLE FREE-HANGING CONN. PIEZO. BUZZER ASSEMBLY P2.54 WIRES AWG24 L=120	1
18	ADSP6000424	PG7 PITCH CABLE GLAND - 1900.07 - B	3
19	ADSP8000078	RPM 20 MOTOR - 230V - (V6084) - Flow rate 3 l/h	1
	ADSP8000041	RPM 9.6 MOTOR - 230V - (V6085) - Flow rate 1.4 l/h	
20	ADSP8000009A	COMPLETE PER-R 4/6-1 ROLLER-HOLDER	1
21	ADSP8000028	PER-R ROLLER-HOLDER GUIDE PIN	1
22	ADSP8000109	COMPLETE PER-R SANTOPRENE TUBE	1

ANNEX D - Chemical Compatibility Table**Key: 1: excellent/good resistance****2: moderate resistance****3: non-resistant**

Product	Formula	Ceram.	PVDF	PP	PVC	Hastel.	PTFE	FPM (Viton)	EPDM (Dutral)	NBR	PE
Acetic Acid, Max 75%	CH ₃ COOH	2	1	1	1	1	1	3	1	3	1
Concentrated Hydrochloric Acid	HCl	1	1	1	1	1	1	1	3	3	1
Hydrofluoric Acid, 40%	H ₂ F ₂	3	1	1	2	2	1	1	3	3	1
Phosphoric Acid, 50%	H ₃ PO ₄	1	1	1	1	1	1	1	1	3	1
Nitric Acid, 65%	HNO ₃	1	1	2	3	1	1	1	3	3	2
Sulphuric Acid, 85%	H ₂ SO ₄	1	1	1	1	1	1	1	3	3	1
Sulphuric Acid, 98.5%	H ₂ SO ₄	1	1	3	3	1	1	1	3	3	3
Amines	R-NH ₂	1	2	1	3	1	1	3	2	3	1
Sodium bisulphite	NaHSO ₃	1	1	1	1	1	1	1	1	1	1
Sodium Carbonate (soda)	Na ₂ CO ₃	2	1	1	1	1	1	2	1	1	1
Ferric chloride	FeCl ₃	1	1	1	1	1	1	1	1	1	1
Calcium Hydroxide	Ca(OH) ₂	1	1	1	1	1	1	1	1	1	1
Sodium Hydroxide (caustic soda)	NaOH	2	1	1	1	1	1	2	1	2	1
Calcium Hypochlorite	Ca(OH) ₂	1	1	1	1	1	1	1	1	3	1
Sodium Hypochlorite, 12.5%	NaOCl+NaCl	1	1	2	1	1	1	1	1	2	2
Potassium permanganate, 10%	KMnO ₄	1	1	1	1	1	1	1	1	3	1
Hydrogen Peroxide, 30%	H ₂ O ₂	1	1	1	1	1	1	1	2	3	1
Aluminium Sulphate	Al ₂ (SO ₄) ₃	1	1	1	1	1	1	1	1	1	1
Copper Sulphate	CuSO ₄	1	1	1	1	1	1	1	1	1	1

Key: 1: excellent/good resistance

2: moderate resistance

3: non-resistant

Product	Formula	PharMed	Tygon LFL	Santoprene
Acetic acid 50%- 60%	CH ₃ COOH	1	1	2
Hydrochloric acid 37%	HCl	1	1	2
Hydrofluoric Acid 40-48%	H ₂ F ₂	3	2	3
Phosphoric acid	H ₃ PO ₄	1	1	1
Nitric Acid 68%-71%	HNO ₃	3	3	3
Sulphuric Acid 30%	H ₂ SO ₄	1	1	1
Sulphuric Acid 95%-98%	H ₂ SO ₄	3	3	2
Amines	R-NH ₂	2	3	1
Sodium sulphates	NaHSO ₃	1	1	1
Sodium Carbonate (soda)	Na ₂ CO ₃	1	1	1
Ferric chloride 43%	FeCl ₃	1	1	1
Calcium Hydroxide	Ca(OH) ₂	1	1	1
Sodium Hydroxide (caustic soda) 30-40%	NaOH	1	2	1
Calcium Hypochlorite 20%	Ca(OH) ₂	1	1	1
Sodium Hypochlorite, 12.2%	NaOCl+NaCl	1	1	1
Potassium permanganate, 6%	KMnO ₄	1	1	1
Hydrogen Peroxide, 30%	H ₂ O ₂	1	1	1
Aluminium Sulphate 50%	Al ₂ (SO ₄) ₃	1	1	1
Copper Sulphate 13%	CuSO ₄	1	1	1

ANNEX E - Default Parameters**Default Parameters Table**

Parameter IT	Parameter EN	Meaning	Value
A.bu	b.En	Buzzer Enabling	YES
A.In	In.E	Inhibiting Signal enabling	YES
A.PH	A.PH	OFA Alarm Activation (minimum variation)	0.05 pH
B.P.P	P.P.b	pH Proportional Band	1.5 pH
doS	doS	Operating Mode (Alkaline/Acid)	ACI
LIn	LAn	Language	En
OFA	OFA	Overdosage Alarm time/OFA Alarm Activations	OFF (disabled)
O.F.d	O.F.d	Maintenance Time	0 sec (disabled)
OnA	OnA	On-line OFA Alarm	YES
OnC	OnC	On-line Calibration	YES
Ond	Ond	On-line Dosage	YES
OnS	OnS	On-line Setpoint	YES
Ont	Ont	On-line Temperature	YES
PAS	PAS	Password	000
P.PH	PHP	PH Cycle Period	300 sec
r.PH	r.PH	Return from OFA Alarm	0.2 pH
SEt	SEt	pH setpoint	7.2 pH
Stb	Stb	Stabilization Time	10 sec
St.P	P.St	Pump Stop (due to Level Alarm)	no (disabled)
°C	°C	Temperature	noA (25°C)

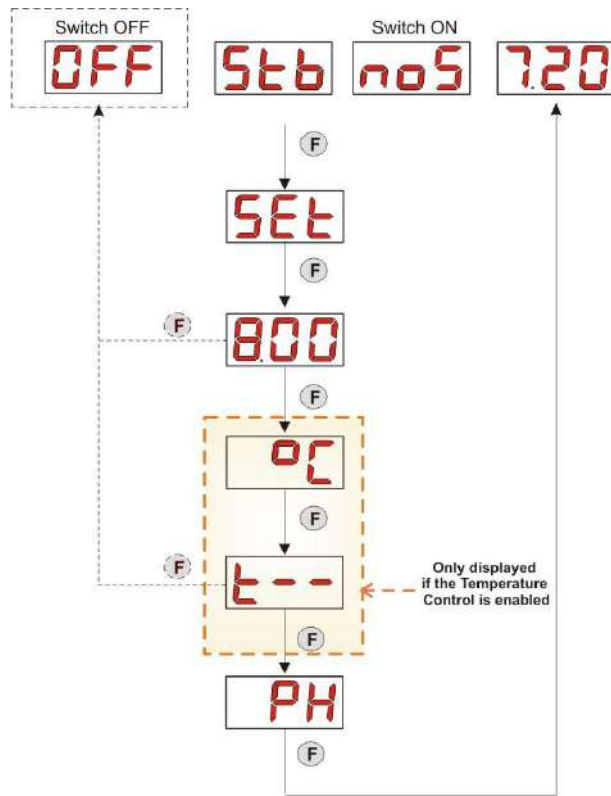
ANNEX F- Acronyms Table

Acronym IT	Acronym EN	Meaning
A.bu	b.En	Buzzer Enabling
A.In	In.E	Inhibiting Signal Enabling
ACI/ ALC	ACI/ AL.d	Acid/Alkaline
AdE	PrI	Priming
A.PH	A.PH	OFA Alarm Activation (minimum variation) in the Settings Menu Average PH value measured in the Statistics Menu
Aut/noA	Aut/noA	Automatic/Non-automatic (manual)
A.°C	A.°C	Average temperature measured
b.P.P	P.P.b	pH Proportional Band
CAL	CAL	Calibration (Probe)
doS	doS	Operating Mode (Alkaline/Acid)
Err	Err	Error
HI /LO	HI /LO	High / Low (Inhibiting Signal Level)
H.PH	H.PH	Maximum PH value measured
H.°C	H.°C	Maximum temperature measured
InP	Opt	Settings
LEt	rEA	Reading (pH value read)
LIn	Lan	Language
L.PH	L.PH	Minimum PH value measured
L.°C	L.°C	Minimum temperature measured
nL	nL	ml
OFA	OFA	Overdosage Alarm time/OFA Alarm Activations
O.F.d	O.F.d	Maintenance Time
OnA	OnA	On-line OFA Alarm
OnC	OnC	On-line Calibration
Ond	Ond	On-line Dosage
OnS	OnS	On-line Setpoint
Ont	Ont	On-line Temperature
PAS	PAS	Password
PEr	PEr	Probe Quality Percentage
P.PH	PHP	PH Cycle Period
r.P.d	r.d.P	Default Parameters Reset
r.PH	r.PH	Return from OFA Alarm
rSt	rSt	Reset
SEt	SEt	pH setpoint
SI/no	YES / no	SI/ NO
S.In	In.t	Inhibiting Signal Threshold
StA	StA	Statistics / Pump Calibration Start
Stb	Stb	Stabilization Time

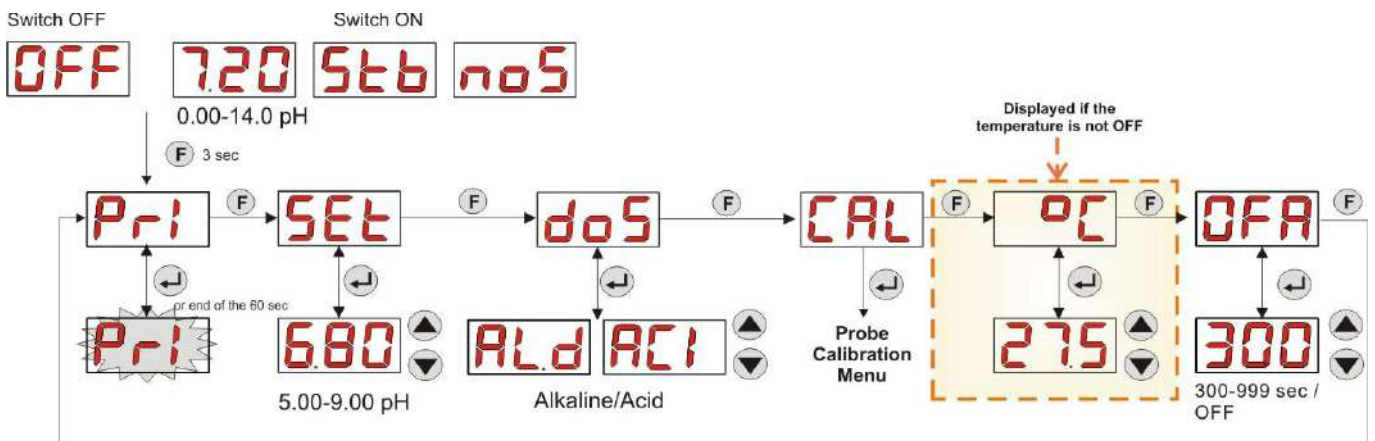
St.P	P.St	Pump Stop (due to Level Alarm)
t.F.P	P.d.t	Pump Operating Time
tr.P	P.CA	Pump Calibration
°C	°C	Temperature in °C

ANNEX G - Menu Layouts

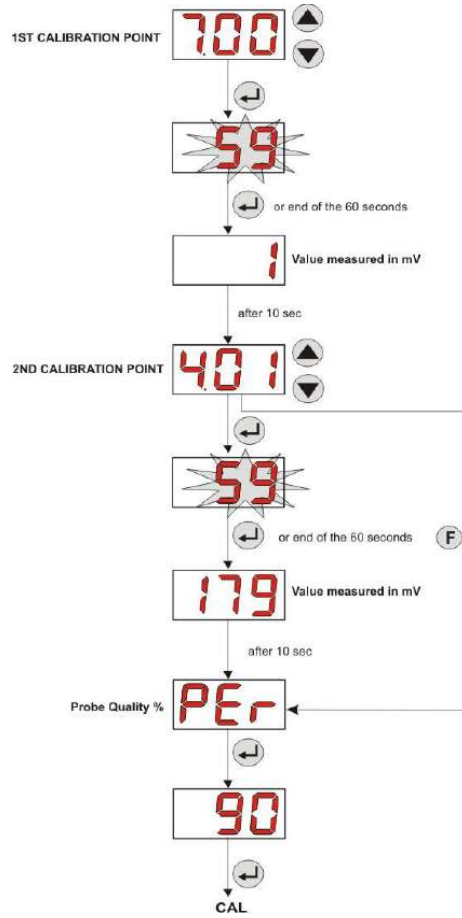
Initial Menu



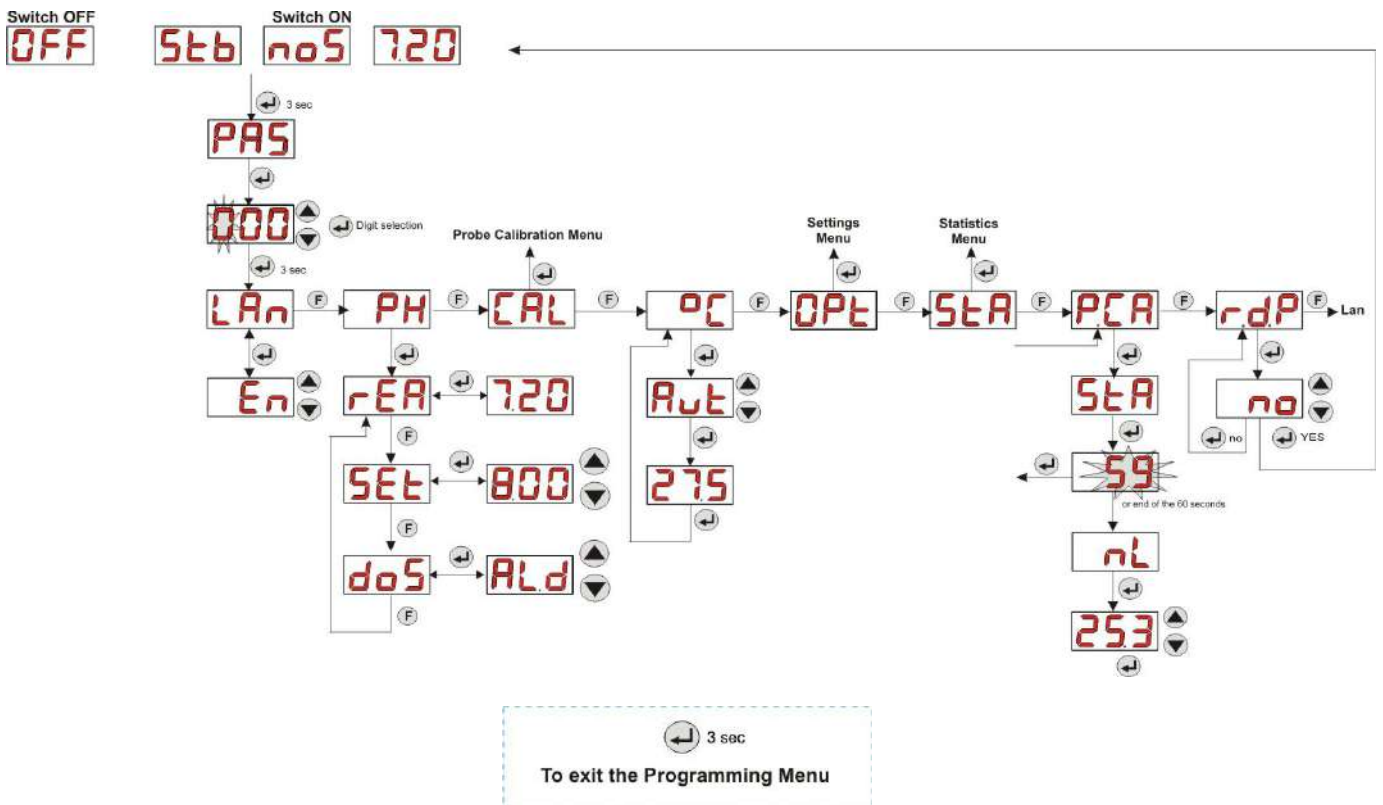
User Menu



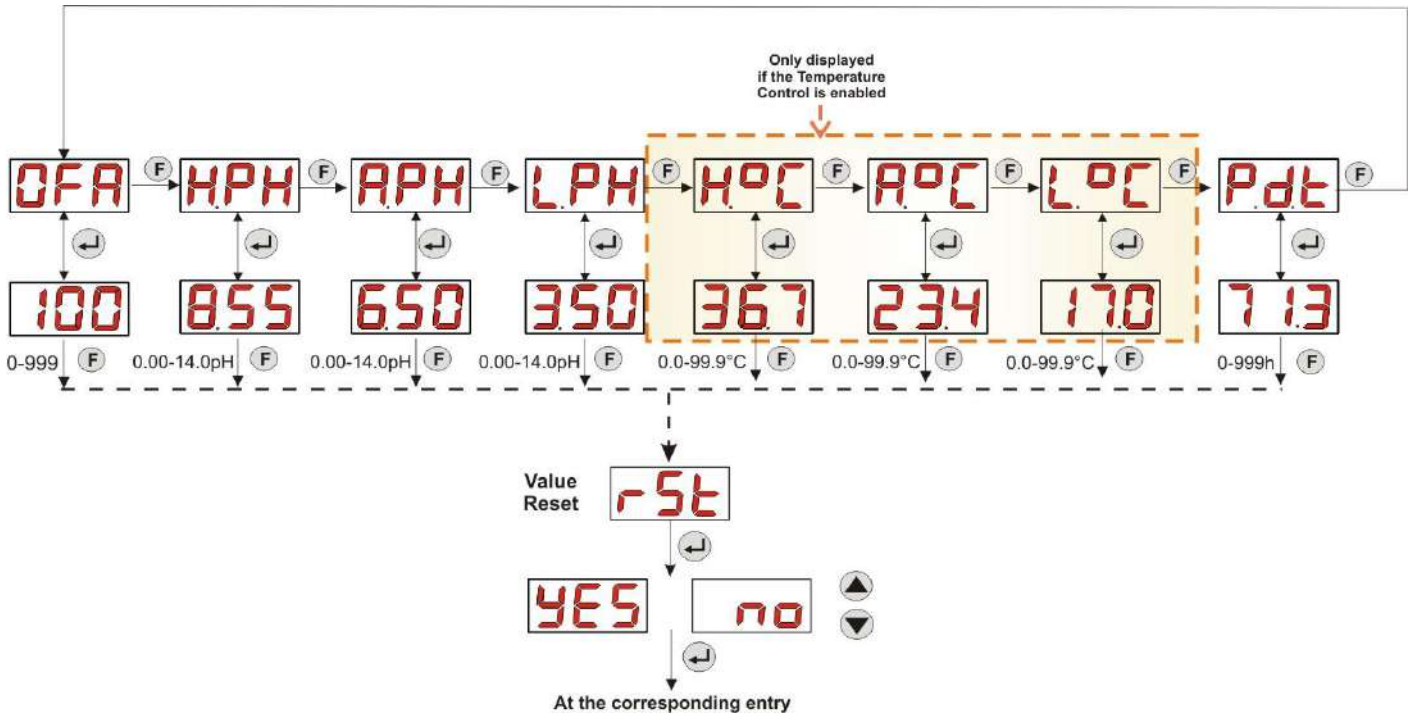
Probe Calibration Menu



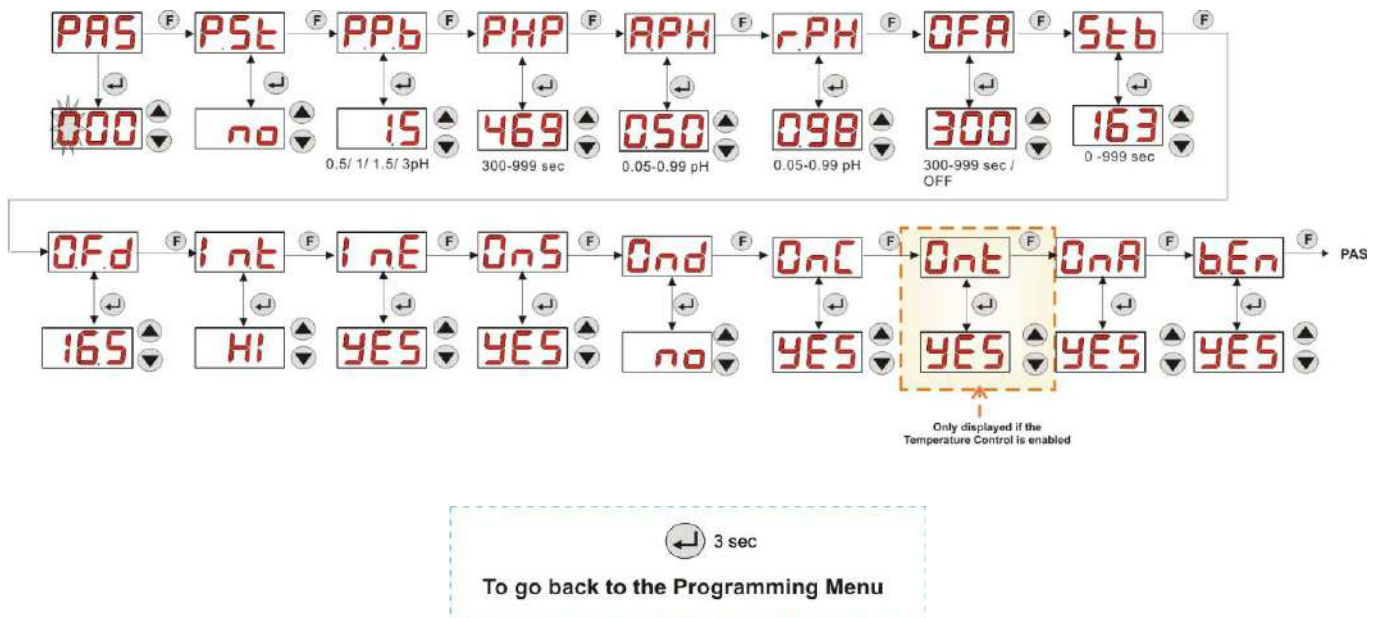
Programming Menu



Statistics Menu



Settings Menu



ANNEX H – POOL PARAMETERS BALANCE

The Taylor balance diagram is a practical tool to keep the pool's water well-balanced: you can control an outdoor residential pool by monitoring the pH, the TH (or Total Hardness) and the CAT (or Complete Alkalimetric Title).

The CAT, or Complete Alkalimetric Title, indicates the rate of bicarbonates and carbonates diluted in the water in French degrees, "F" (each degree corresponds to 10 mg/l).

For instance, water with CAT = 12°F corresponds to 120 mg/l of carbonate diluted in it.

Water with high CAT is called "buffered" water, as it reduces the effect of the acidity (pH) correctors. If the CAT is 0, the pH will never be stable.

When the pH reducer is added, the CAT tends to decrease.

The TH, or hydrotimetric title, expresses the sum of the calcium and magnesium salts, that is the water hardness, again indicated in French degrees, "F". Changing the water's total hardness is very difficult. This means that it is almost a fixed parameter in a pool, even if it can be increased by adding calcium and reduced with descaling treatments and water softeners.

To extend the life of parts used to collect and transport water, the TH should be between 8°F and 18°F and preferably never above 22°F-25°F.

The water supplied by the mains public network is generally well-balanced.

The water's pH must be measured the first time the pool is filled up and if this pH value is suitable, i.e. between 7 and 8, it must be considered as the "ideal pH" (setpoint) to go back to, if necessary, during the bathing season.

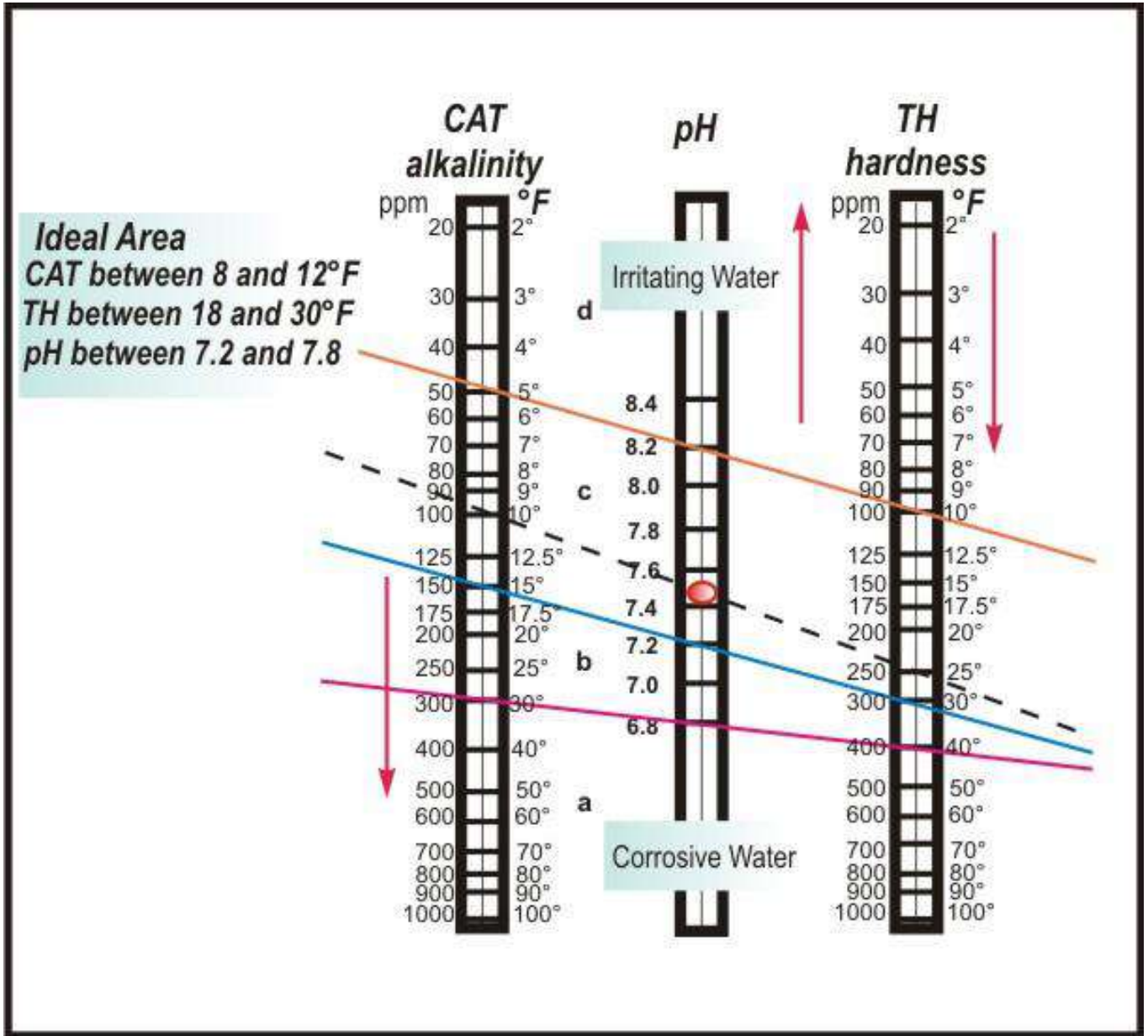
As a first approximation, for soft water set fairly high pH balance values (between 7.6 and 7.8), while for hard water, strongly mineralized, set low pH balance values (between 7.0 and 7.4).

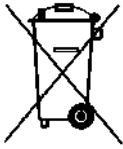
Taylor's Water Balance allows to immediately associate these 3 parameters to obtain well-balanced water with a diagram that connects them.

Just measure the pH, the alkalinity (CAT) and the hardness (TH) of the water. On Taylor's water diagram trace a straight line between the hardness and the alkalinity. Find the balance point for the pH (where the line meets the pH axis on the diagram) and, in relation to the balance area identified, examine which kind of products you need to use:

- Area **a** (below the fuchsia line): not acceptable, the water is too calcareous. Use descaling products to reduce the TH and the CAT.
- Area **b**: area with minimum tolerance for the pH value, between 6.8 and 7.2 (Hard Water with $30^{\circ}\text{F} < \text{TH} < 40^{\circ}\text{F}$)
- Area **c**: area where the balance needs to be maintained;
- Area **d** (above the Orange line): area with TH and CAT values that are too low: in this area it is necessary to maintain the hardness and alkalinity at the top limit (the CAT must be maintained at 5°F, the TH at 10°F).

Taylor's Water Diagram





Pursuant to art. 13 of Leg. Decree no. 151 dated 25/07/2005 (implementation of Directives 2011/65/UE , 2002/96/EC, 2003/108/EC) it is notified that:

The electric and electronic devices must not be considered as household waste.

Consumers must, by law, return the electric and electronic devices at the end of their useful life to adequate recycling centres. The crossed-out waste bin symbol on the product, on the instruction manual or on the packaging indicates that the product is subject to the disposal rules envisioned by the Standard. Illegal disposal of the product implies the application of the administrative fines provided for by Leg. Decree no. 151 dated 25/07/2005. By recycling, reusing the material or other forms of employing old devices, you are making an important contribution to protecting the environment.