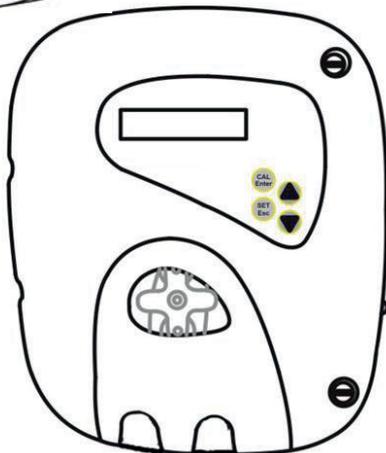
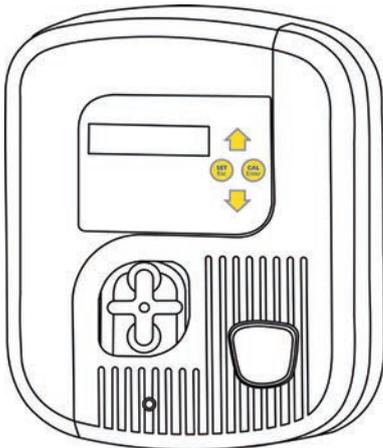


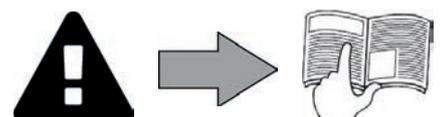
*ph expert*  
*ph perfect*  
*ph clever*  
*Genph*

Instructions for installation and use - English  
pH dosing system  
Translation of the original instructions in french

EN



More documents on:  
[www.zodiac.com](http://www.zodiac.com)



## WARNINGS

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### GENERAL WARNINGS

- Failure to respect the warnings may cause serious damage to the pool equipment or cause serious injury, even death.
- Only a person qualified in the technical fields concerned (electricity, hydraulics or refrigeration) is authorised to perform this procedure. The qualified technician working on the appliance must use/wear personal protective equipment (such as safety goggles and protective gloves, etc.) in order to reduce the risk of injury occurring when working on the appliance.
- Before servicing the appliance, ensure that it is switched off and isolated from the power supply circuit.
- The appliance is intended to be used only for swimming pools and spas; it must not be used for any purpose other than that for which it has been designed.
- This appliance is not intended for use by children.
- This appliance is not intended for use by persons (including children, aged 8 years and above) with reduced physical, sensory or mental capabilities or lack of experience and knowledge, unless:
  - they have been given supervision or instruction, by a person responsible for their safety, concerning use of the appliance in a safe way by a person responsible for their safety; and
  - they clearly understand the hazards involved.
- Children should be supervised to ensure that they do not play with the appliance.
- The appliance must be installed according to the manufacturer's instructions and in compliance with all applicable local and national standards. The installer is responsible for installing the appliance and for compliance with national installation regulations. Under no circumstances may the manufacturer be held liable in the event of failure to comply with applicable local installation standards.
- For any work other than the simple user maintenance described in this manual, the product should be referred to a qualified professional.
- Incorrect installation and/or use may cause serious damage to property or serious injuries (possibly causing death).
- All equipment, even postage and packing paid, travels at the risks and perils of the recipient. The latter shall issue reserves in writing on the carrier's delivery slip if damage is detected, caused during transport (confirmation to be sent to the carrier within 48 hours by registered letter). In the event that an appliance containing coolant has been turned on its side, mention your reservations in writing to the carrier.
- If the appliance suffers a malfunction, do not try to repair it yourself; instead contact a qualified technician.
- Refer to the warranty conditions for details of the permitted water balance values for operating the appliance.
- In addition to using spare parts manufactured by unauthorised third-party manufacturers, deactivating, eliminating or by-passing any of the safety mechanisms integral to the appliance, will automatically void the warranty.
- Do not spray insecticide or any other chemical (flammable or non-flammable) in the direction of the appliance, as this may damage the body and cause a fire.
- Do not touch the fan and/or any moving parts and do not insert anything, including your fingers in the vicinity of the moving parts while the appliance is in operation.

## WARNINGS ASSOCIATED WITH ELECTRICAL APPLIANCES

- The electrical supply to the appliance must be protected by a dedicated 30 mA differential residual current protection device (RCD), complying with the standards and regulations in force in the country where it is installed.
- Do not use an extension cord to plug in the appliance; connect the appliance directly to a suitable power supply circuit.
- Before carrying out any operations, check that:
  - The voltage indicated on the rating plate of the appliance corresponds to the mains voltage,
  - The power grid is adapted to the power requirements of the appliance, and is grounded.
  - The plug (where applicable) is suitable for the socket.
- In the event of abnormal function or signs of overheating such as a burning odour from the appliance, turn it off immediately, unplug / disconnect it from its power supply and contact a professional.
- Before accessing the enclosure for any reason, ensure that all power to the appliance and also power to any accessories or external devices which may be connected to the appliance, is disconnected from the mains power supply.
- Do not disconnect and reconnect the appliance to the power supply when in operation.
- Do not pull on the power cord to disconnect it from the power supply.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- Do not attempt to carry out any servicing or maintenance operations with wet hands or while the appliance is wet.
- Ensure that all terminals for mains power are free in good condition and free of corrosion and/or dirt/debris.
- For any component or sub-assembly containing a battery: do not recharge or dismantle the battery, or throw it into a fire. Do not expose it to high temperatures or direct sunlight.
- In stormy weather, disconnect the appliance from the power supply to prevent it from suffering lightning damage.
- Do not immerse the appliance in water (with the exception of cleaners) or mud.



### Recycling

This symbol means that your appliance must not be thrown into a normal bin. It will be selectively collected for the purpose of reuse, recycling or transformation. Any substances it may contain which are potentially dangerous to the environment shall be eliminated or neutralised.

Request information on recycling procedures from your retailer.



- Before you do anything with the device, it is vital that you read this installation and user manual, as well as the "warnings and warranty" booklet delivered with the device. Failure to do so may result in material damage or serious or fatal injury and will invalidate the warranty.
- Keep and pass on these documents for reference during the appliance's service life.
- The distribution or modification of this document in any way is prohibited, without prior authorisation from Zodiac®.
- Zodiac® is constantly developing its products to improve their quality. Information contained herein may therefore be modified without notice.

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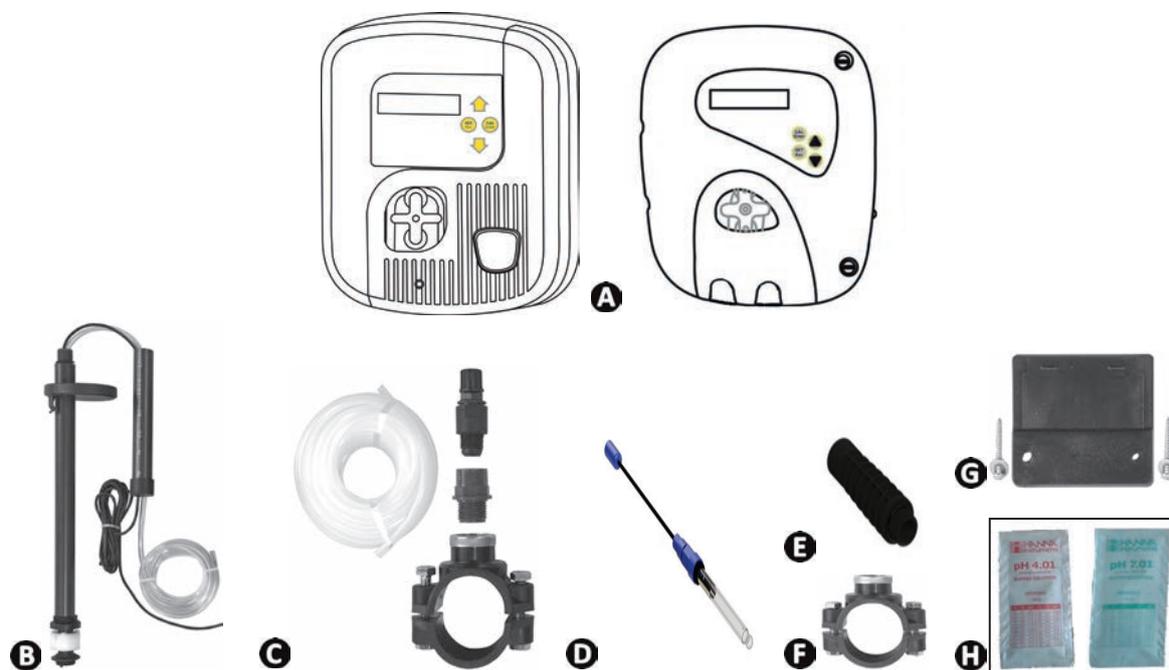
#### **Tip: to make it easier to contact your retailer**

- Write down your retailer's contact details to help you find them more easily and fill in the "product" information on the back of the manual; your retailer will ask you for this information.



# 1 Specifications

## 1.1 I Description

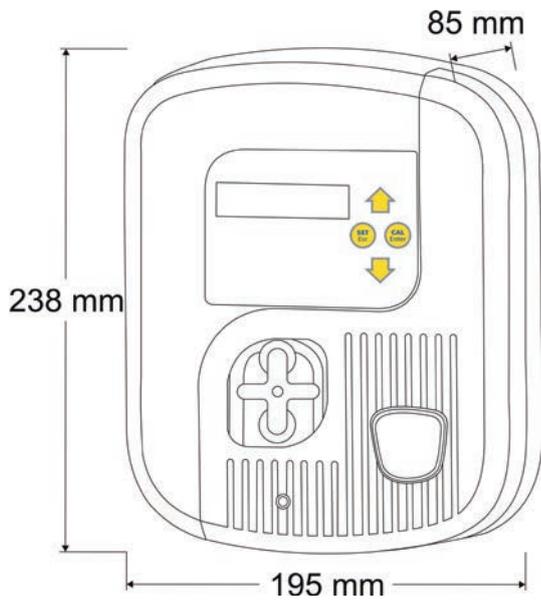


A	Control box
B	Suction cane
C	Pipework installation kit
D	pH sensor
E	Threaded sensor holder
F	Fixture collar
G	Wall-mounting bracket kit
H	Pack of pH4, pH7 buffer solutions

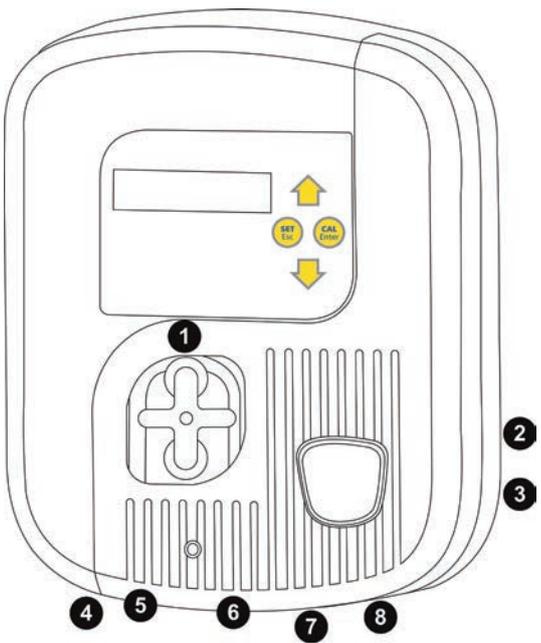
## 1.2 I Technical specifications

Power supply voltage	220-240 VAC-50 Hz - 1-phase
Electric output	9W
Protection index	IP65
Maximum peristaltic pump flow	1.5L/hr
Maximum counter pressure at the injection point	1.5 bar
Correction	acidic or basic
pH sensor tolerance	5 bar / 60°C / maximum speed 2m/s
Measurement scale	0.0 - 14.0 pH (± 0.1 pH)
pH sensor response time	15 seconds

### 1.3 I Dimensions and marking



- 1 Peristaltic pump
- 2 Master switch
- 3 BNC connector socket for pH sensor
- 4 Cable gland for direct coupling with the filtering system
- 5 Connector for suction tube
- 6 Connector for injection tube
- 7 Cable gland for suction cane cable
- 8 Cable gland for 230Vac/50Hz power cord





## 2 Installation

### 2.1 I Preparing the pool

#### 2.1.1 Water balance

It is essential that the pool water balance is controlled and adjusted before installing the appliance. Making sure that the pool water balance is correct from the very start will reduce the likelihood of encountering problems on the first days of operation or during the season the pool is in use.



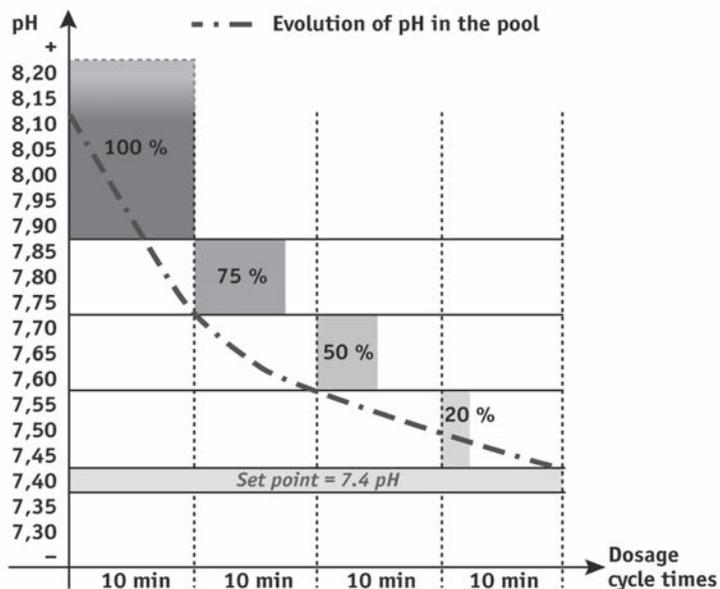
Even though it is an automatic regulation system, it is essential to carry out regular water analyses to check the water balance parameters.

	Unit	Recommended values	To increase	To decrease	Test frequency (during the season)
pH	/	7.2 – 7.4	Use the appliance in "alkaline" dosage mode and/or increase the set point.	Use the appliance in "acidic" dosage mode and/or decrease the set point.	Weekly
Free chlorine	mg/L or ppm	0.5 – 2	Add chlorine (manually or using an automated system)	Stop the release or production of chlorine	Weekly
TA (alkalinity or buffer capacity)	°f (ppm)	8 – 15 (80 – 150)	Add alkalinity corrector (Alca+ or TA+)	Add hydrochloric acid	Monthly
HL (hardness level)	°f (ppm)	10 – 30 (100 – 300)	Add calcium chloride	Add a scale sequestering agent or carry out decarbonation	Monthly
Cyanuric acid (stabiliser)	mg/L or ppm	< 30	/	Partially empty the pool and refill it	Quarterly
Metals (Cu, Fe, Mn...)	mg/L or ppm	± 0	/	Add a metal sequestering agent	Quarterly

### 2.1.2 Appliance injection programme

Example of 4 cycles with a set point at 7.4 pH and acid regulation (standard alkalinity):

- pH  $\geq$  7.55: 20% injection (2 min) & 80% pause (8 min)
- pH  $\geq$  7.7: 50% injection (5 min) & 50% pause (5 min)
- pH  $\geq$  7.85: 75% injection (7 min 30 sec) & 25% pause (2 min 30 sec)
- pH  $<$  7.9: 100% injection (10 min)



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**i**

- The injection programme is of course inverted when a basic dosage is selected.
- Active chlorine is more efficient with the correct pH level.
- Maximum release rate is 1.5 L/h. This dosage ensures that the set point is reached quickly and accurately.
- This proportional injection is cyclic and the cycle duration is 10 minutes. The dose will change according to the distribution of injection times and pauses. The proportionality adjusts automatically and the balancing between the different doses is made in 0.15 pH steps.

### 2.1.3 Adjusting dosage according to alkalinity

The pH level of water is potentially unstable. Its stability is governed by the level of water alkalinity (also called "TA" for "Total alkalinity"). If the TA is low (< 100 ppm), the pH will become potentially unstable and conversely if the TA is high (>150 ppm).

In order to always achieve optimal water balance, the appliance has a feature that allows users to adjust the quantity of corrector product potentially injected depending on the water TA (see §3.5.4 "Dosage" menu)

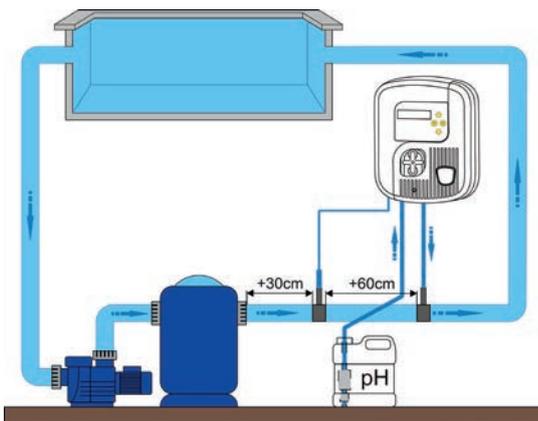
## 2.2 I Hydraulic connections

### 2.2.1 Sensor and injection point location



- The pH sensor must be installed more than 30 cm before or after a piping bend. Use the optional POD kit if necessary. Failing to follow this positioning can lead to incorrect or unstable measurements.
- The tip of the pH sensor must not be in contact with the pipe.
- Never install a pH sensor before the filtration pump or between the pump and the filter. This would cause random readings and a shortened service life.

- The pH sensor must be placed after the filter and before the heating system,
- It must be placed vertically or sloping at a maximum of 45°; it should never point downwards.



- The injection point must be the last element on the pool circuit, after any heating and water treatment systems.

## 2.2.2 Sensor and injection point installation

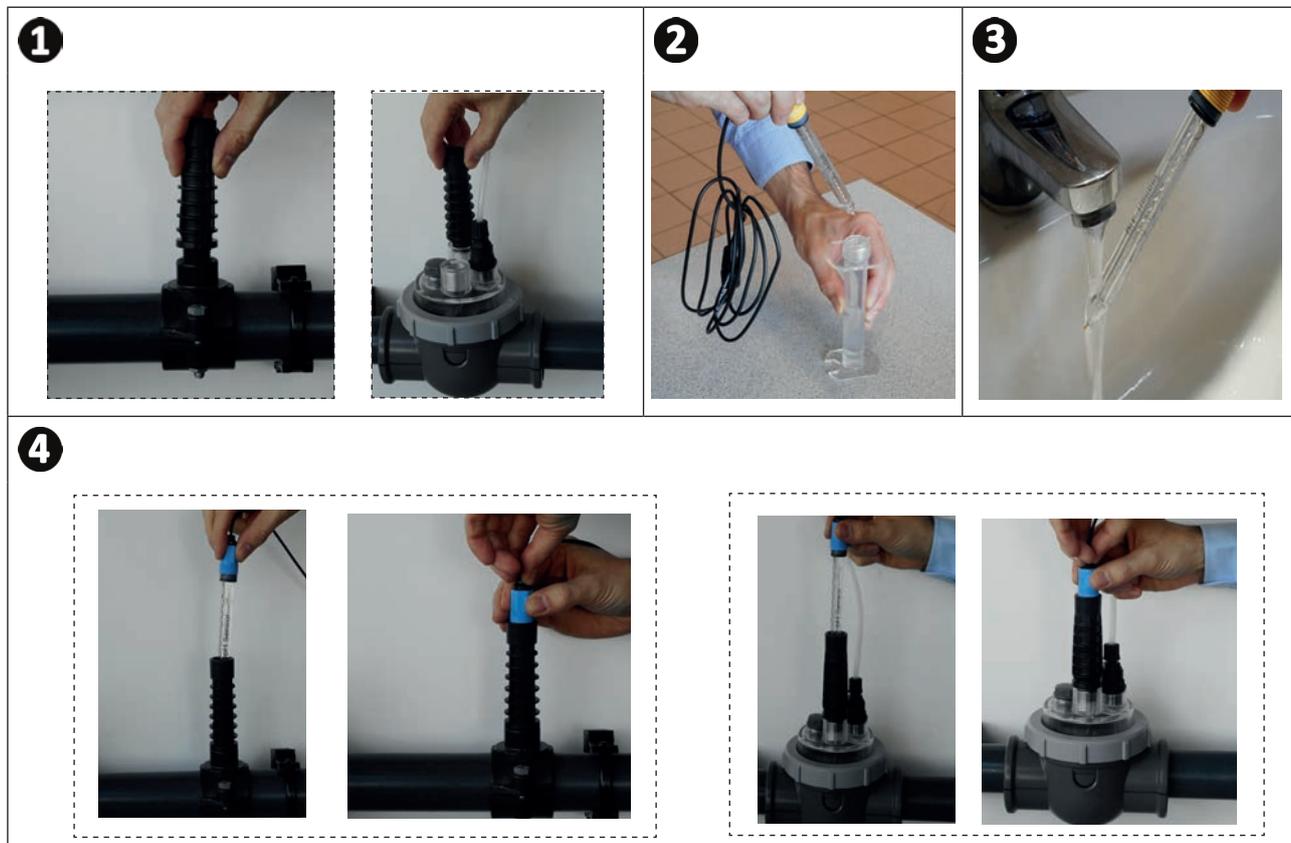
- There must be at least 60 linear cm between the sensor and the injection point. If this is not possible, use the POD kit available as an option or a check valve.
- Fixture collars (or the POD kit) must be installed on rigid  $\varnothing 50$  PVC pipes. A  $\varnothing 63$  adapter is available as an option.
- The POD kit is recommended if a Redox (chlorine) regulation module has also been installed.
- Maximum pressure must not exceed 1.5 bar.
- Drill a hole with a diameter between 16 and 22 mm on the pipe at the selected locations for the pH sensor and the injection point.
- Then install the fixture collars.
- Use Teflon tape to make sure the threads on the sensor holder, the injection valve and its adapter are watertight.
- Screw down the one or more sensor holders onto the fixture collar or a POD kit (optional), **see illustration 1**.
- Carefully unscrew the protection tube from the sensor, **see illustration 2**. **Retain the protection tube for use when the sensor is stored during the winter.**
- Rinse the end of the sensor with tap water and shake off excess water, **see illustration 3**.

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- **Never wipe the sensor using a cloth or paper tissue, as this may damage it!**
- **A badly-installed sensor may give false readings and cause inappropriate operation of the appliance. Neither the manufacturer nor the appliance shall be liable in this event.**

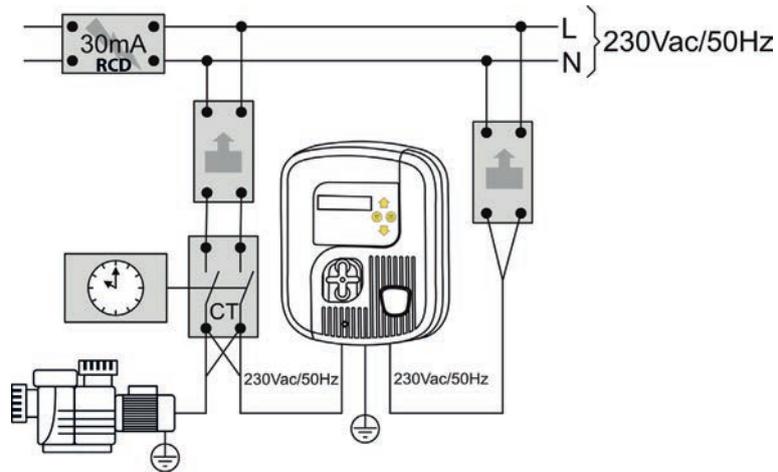
- Screw the sensor into the sensor holder, holding the BLUE connector in one hand and the black connector in the other to avoid tangling the cable, **see illustration 4**.
- Once the sensor is installed, it can be connected to the BNC connector's control box, **see "1.3 | Dimensions and marking"**.



## 2.3 | Electrical connections



- Only power on the appliance once all connections (electrical and hydraulic) are complete.



- Using the supplied fixture kit, install the control box on a rigid, vertical surface in an easy-access location.
- Connect the power cord to a 230Vac mains outlet.
- Connect the stripped wire to couple the filtration pump to the filtration pump's 230Vac contactor using a relay to avoid any voltage returns when the pump is stopped.



## 3 Use

### 3.1 I Control box presentation



- Activate sensor calibration mode (press and hold for 5 seconds)
- Confirm a choice in the "Settings" menu
- Cancel the "OFA" over feed alarm



- View the set point value (press and hold for 5 seconds)
- Exit the "Settings" menu



- Scroll up or down through the "Settings" menu
- Activate the "Priming" function (press and hold the up button for a long time)

0-1

- Master switch to power the appliance on and off



Thanks to its double electrical supply, the appliance is always powered on, even if filtering is stopped, making it possible to view the water pH level at all times. The sensor can also be calibrated when filtering is stopped.  
The appliance can be powered off at all times using the 0-1 switch on the side of the appliance.

### 3.2 I Checks before commissioning



- **In order for the suction cane to operate in an optimal manner, make sure that both parts of the suction cane are properly tightened before immersion in the container of pH corrector.**

- The suction tube must be immersed with the suction cane in the container of product to be injected, and is connected to the peristaltic pump (left side).
- The injection tube is connected on the one hand to the peristaltic pump (right side) and on the other hand to the pool discharge pipe via the injection valve.
- The peristaltic pump cover must be refitted using its fixing screw.

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### 3.3 I Calibrating the sensor



- For the appliance to operate accurately and reliably, the pH sensor must be calibrated regularly (on installation, on re-commissioning after wintering, and every 2 months when in use).
- Never wipe the sensor or touch its tip!

- Rinse the tip of the pH sensor with tap water.
- Shake it to remove excess water.

#### 3.3.1 Calibrating pH 7

- Immerse the sensor in pH 7 buffer solution.
- Press and hold the  button for 5 seconds until **Calibration** is displayed, then **7pH Sensor Fail**,
- Press , the progress bar is displayed: **7pH** 
- After about 60 seconds the pH sensor reliability measurement is displayed.
- Depending on the message displayed, perform the corresponding operations:

Message	<b>7pH Sensor Fail</b>	<b>7pH Sensor OK</b>
Action(s)	<ul style="list-style-type: none"> <li>• turn off the appliance using the master switch 0-1</li> <li>• replace the buffer solution and/or the pH sensor</li> <li>• restart calibration</li> </ul>	continue calibration

- Rinse the tip of the pH sensor with tap water.
- Shake it to remove excess water.

#### 3.3.2 Calibrating pH 4

- Immerse the sensor in pH 4 buffer solution.
- Press the  button to display **4pH Press CAL**,
- Press , the progress bar is displayed: **4pH** 
- After about 30 seconds the pH sensor reliability measurement is displayed.
- Depending on the message displayed, perform the corresponding operations:

Message	<b>4pH Sensor Fail</b>	<b>4pH Sensor OK</b>
Action(s)	<ul style="list-style-type: none"> <li>• turn off the appliance using the master switch 0-1</li> <li>• replace the buffer solution and/or the pH sensor</li> <li>• restart calibration</li> </ul>	<ul style="list-style-type: none"> <li>• press  to complete calibration</li> </ul>

- Rinse the tip of the pH sensor with tap water.
- Shake it to remove excess water.
- Fit the sensor back onto its holder.



- The sensor measurement is more accurate if the calibration is performed at 2 points (pH7 and pH4) rather than at a single point (pH7)

### 3.4 I Priming the peristaltic pump

The peristaltic pump is self-priming. However, it can be run manually by

pressing . The peristaltic pump will then run to inject corrector product as long as the key is kept pressed down.

### 3.5 I Settings

#### 3.5.1 "Settings" menu

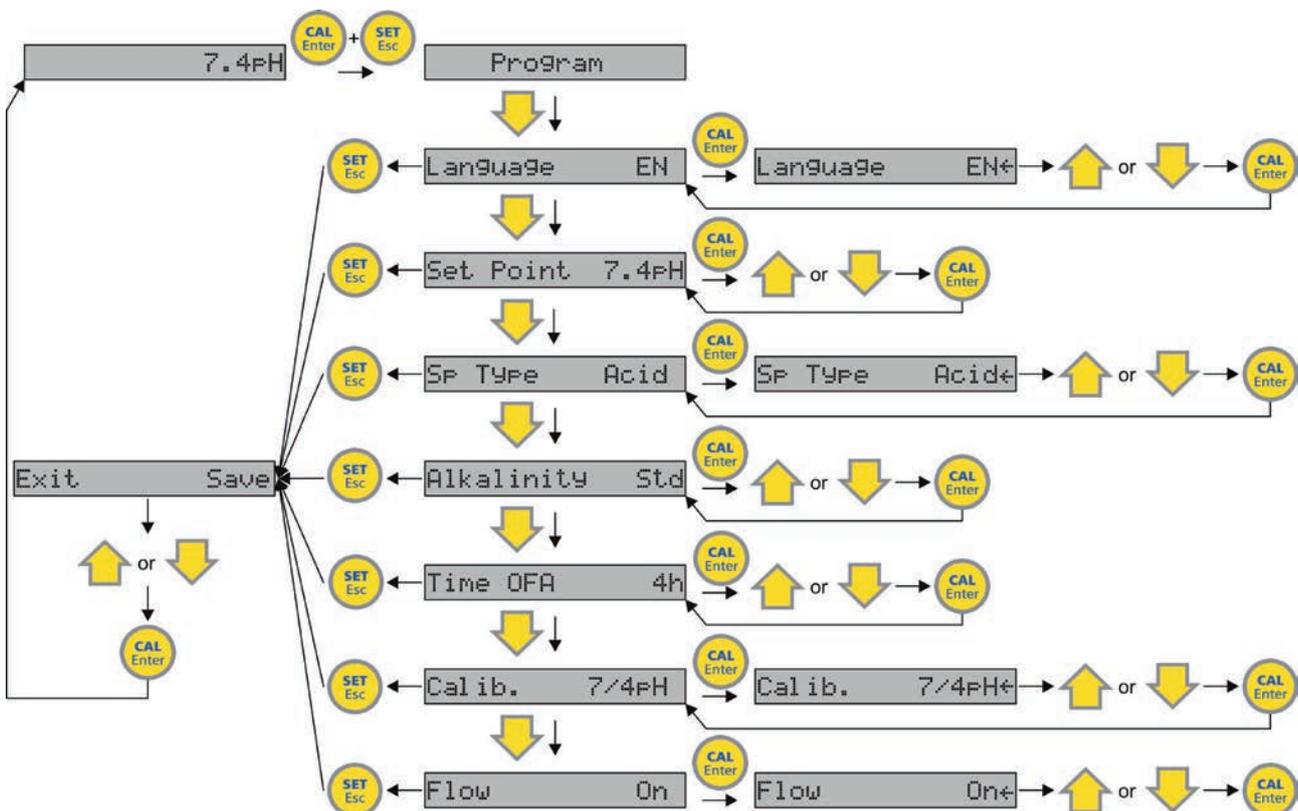
Menu	Default settings
Language	French
pH set point	7.4
Dosage	Acidic
Alkalinity level	Standard (100 < TA < 150 ppm)
"OFA" over feed alarm	4 hours
Calibration	Activated 2 points (pH7 and pH4)
Filtering operation detection	Activated "On"

EN

- Press  and  at the same time and hold for 5 seconds when the appliance is powered on:

Program

- To exit this menu, press : 
- Select "Yes" or "No" using the  and  keys,
- Confirm by pressing .



### 3.5.2 "Language" menu

The interface has six available languages:

- EN = English,
- FR = French,
- ES = Spanish,
- DE = German,
- IT = Italian,
- NL = Dutch.

### 3.5.3 "Set point" menu

2 methods for adjusting the set point:

- see §"3.5.1 "Settings" menu"

**Or:**

- Press  when the appliance is running: ,

- Press and hold  and adjust the set point using the  and  keys.

- Release the  key to exit.

### 3.5.4 "Dosage" menu

It is used to select the type of corrector product to be injected (acidic or basic dosage).

### 3.5.5 "Alkalinity" menu

It is used to select the level of alkalinity for the pool water: standard ( $100 < TA < 150$  ppm), high ( $TA > 150$  ppm) or low ( $TA < 100$  ppm).

### 3.5.6 "OFA time" menu

This appliance is fitted with a safety mechanism to avoid any risk of correction product overdose, for example in the event of a problem with the sensor. This safety mechanism, called the "OFA" (= Over Feed Alarm), pauses the appliance if it has not reached the set point within a given time limit. A high set point value is strongly recommended to avoid any unplanned and/or unjustified triggering (a time of filtration in excess of 4 hours is recommended for large pools and/or pools or with high alkalinity levels).

The over feed safety mechanism operates in two main steps:

- **OFA Alarm 7.4pH** flashes after 75% of the programmed time has elapsed without having reached the set point
- **OFA Stop 7.4pH** is displayed when the time has elapsed. The appliance then switches to safety mode.

If filtering stops and restarts while the appliance is in "OFA Stop" status, the appliance will activate an "OFA Test" mode for 1 hour to make sure that the measurement from the sensor is correct.

On completion of this "OFA Test" mode:

- if the set point has been reached = the appliance remains in normal mode
- if the set point has not been reached: the appliance switches to "OFA Alarm" mode and make an injection of corrector product
- if the set point has still not been reached after the "OFA Alarm" mode is complete (=25% of total OFA set time), the appliance switches to "OFA Stop" (thus stopping any product injection process) and safety mode and will remain in this state until manual intervention.

To reset this safety measure and restart the appliance, press the  key. First make sure that the sensor is in good condition and is calibrated.

#### Special over feed safety function:

In order to prevent false alarms just after the appliance is installed, the over feed safety can be deactivated for 24 or 48 hours:

- Press ,  and  at the same time to deactivate the safety mechanism for 24 hours  
**OFA 24h 7.4pH**
- Press ,  and  at the same time to deactivate the safety mechanism for 48 hours  
**OFA 48h 7.4pH**

### 3.6.7 "Calibration" menu

It is possible to perform calibration in a single step for pH7 (quicker but the measurements will be less reliable in time), or to remove this function (we advise strongly against this, except in the case of pools under a maintenance contract).

### 3.6.8 "Filtering" menu

This appliance is fitted with a double electric power supply making it possible to keep the appliance switched on to carry out pH sensor calibration when filtering is not operational. This function can however, be deactivated in the case of a different electrical connection (only carried out by a professional).

 • **The appliance will no longer take filtering status into consideration and may inject corrector product when there is no flow in the piping. This deactivation is only valid if the mains power cord is coupled to the filtering system.**

### 3.6.8 Resetting the appliance

All factory settings can be restored.

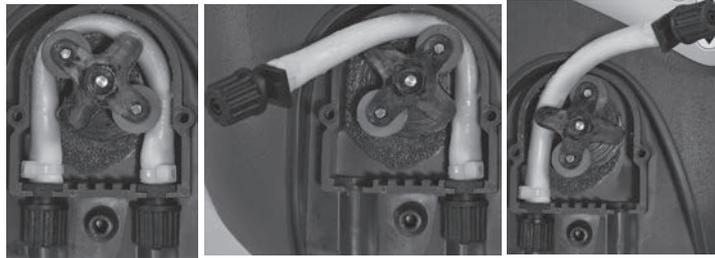
- Turn off the appliance
- Turn the appliance back on by pressing  and  at the same time: **Init.Default Yes**
- Select "Yes" or "No" using the  and  keys, then confirm by pressing .



## 4 Maintenance

### ➤ 4.1 I Changing the peristaltic tube

- Remove the peristaltic pump cover,
- Place the roller holder at "10:20" by turning it clockwise,
- Completely free the left fitting by keeping it stretched outwards,
- Then turn the roller holder clockwise to free up the tube as far as the right fitting
- Make sure that the roller holder is in the 10:20 position.
- Insert the left fitting of the new peristaltic tube into its housing.
- Then pass the tube into the roller holder guide.
- Turn the roller holder clockwise and accompany the tube as far as the right fitting.
- Refit the peristaltic pump cover.

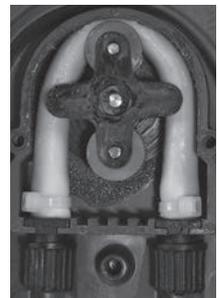


### ➤ 4.2 I Winterizing



- Always keep the sensor in water and frost-protected.

- During winterising, it is recommended to leave the pump in clean water in order to rinse the peristaltic tube by carrying out manual priming (see §"3.4 I Priming the peristaltic pump").
- Then place the roller holder at 6 o'clock to facilitate restarting.
- Remove the pH sensor from its holder and store it in its original bottle or in a container filled with tap water.
- Close off the sensor holder if necessary.





## 5 Troubleshooting



- If a problem occurs, before you contact your retailer, please carry out these few simple checks using the following tables.
- If the problem continues, contact your retailer.
-  : Actions to be performed by a qualified technician only

### 5.1 I Appliance behaviour

Behaviour	Possible causes	Solutions
<b>The value displayed on the appliance is frozen at about 7.0 pH</b>	<ul style="list-style-type: none"> <li>• Cable problem and/or BNC connector problem</li> </ul>	<ul style="list-style-type: none"> <li>• Check that the connection between the sensor and the control box has not short circuited (between the cable's central core and the external shielding)</li> <li>• Check that there is no dampness and/or condensation on the BNC socket</li> </ul>
<b>The appliance always displays an unsuitable or constantly unstable value</b>	<ul style="list-style-type: none"> <li>• The pH sensor connection cable is damaged</li> </ul>	<ul style="list-style-type: none"> <li>• Check the cable and/or the BNC connector</li> </ul>
	<ul style="list-style-type: none"> <li>• The pH sensor cable is too close to an electric cable leading to interference</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the distance between the appliance and the sensor</li> </ul>
	<ul style="list-style-type: none"> <li>• There is an air bubble in the pH sensor bulb</li> </ul>	<ul style="list-style-type: none"> <li>• Put the pH sensor in the vertical position and shake it gently so that the air bubble rises to the top (it must be mounted in the vertical position or tilted to 45° maximum, see §"2.2.1 Sensor and injection point location")</li> </ul>
	<ul style="list-style-type: none"> <li>• Problem on sensor's porous coating and/or dirt deposits</li> </ul>	<ul style="list-style-type: none"> <li>• Restart calibration</li> <li>• Check that the pH sensor bulb is not damaged and that it did not dry outside the water</li> <li>• As a last resort, clean it by dipping the sensor in a 10% hydrochloric acid solution for a few hours</li> </ul>
<b>Slow response from the pH sensor</b>	<ul style="list-style-type: none"> <li>• The sensor is not correctly fitted on the piping</li> </ul>	<ul style="list-style-type: none"> <li>• Place the sensor in a more suitable location (see §"2.2.1 Sensor and injection point location")</li> </ul>
	<ul style="list-style-type: none"> <li>• The pH sensor is electrostatically charged</li> </ul>	<ul style="list-style-type: none"> <li>• Rinse the sensor with clean water</li> <li>• Do not wipe the sensor with a cloth or paper, shake it gently</li> </ul>

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## 5.2 I Displays

Message	Possible causes	Solutions
"Level Low"	• Corrector product container empty	• Replace the corrector product container
	• Floater blocked	• Check that the white floater on the suction cane is in working order
	• Level sensor cut off	• Change the suction cane
"OFA Alarm"	First step of the activated over feed safety mechanism (time > 75%)	<ul style="list-style-type: none"> <li>• Press  to stop the alarm</li> <li>• Check the sensor and/or the pH in the pool</li> </ul>
"OFA Stop"	Second step of the activated over feed safety mechanism (time = 100%)	<ul style="list-style-type: none"> <li>• Press  to stop the alarm</li> <li>• Check the sensor and/or the pH in the pool</li> </ul>
"OFA Test"	pH sensor measurement test if the "OFA Stop" was activated during the previous filtering cycle	• Wait for the end of the procedure (1 hour) then check the sensor and/or the pool pH level
"Filtering"	• Filtering stopped	• Start and/or check the filtering
	• Incorrect connection	• Check the electrical connections
"4pH Sensor Fail" or "7pH Sensor Fail"	• Buffer solution defective	<ul style="list-style-type: none"> <li>• Check that the solution used is pH7 or pH4</li> <li>• Take a new pH7 and/or pH4 buffer solution</li> <li>• Check the pH of the buffer solution with an electronic pH meter</li> </ul>
	• Problem on sensor's porous coating and/or dirt deposits	<ul style="list-style-type: none"> <li>• Restart calibration</li> <li>• Check that the pH sensor bulb is not damaged and that it did not dry outside the water</li> <li>• As a last resort, clean it by dipping the sensor in a 10% hydrochloric acid solution for a few hours</li> <li>• Check that the sensor's porous coating is in good condition (wash the sensor with an acidic solution)</li> </ul>
	• The sensor is worn	• Replace the pH sensor
	• The sensor is electrically charged	<ul style="list-style-type: none"> <li>• Rinse the sensor with clean water</li> <li>• Do not wipe the sensor with a cloth or paper, shake it gently</li> <li>• If the problem persists, replace the pH sensor</li> </ul>
"Parameter Error"	Parameter error	<ul style="list-style-type: none"> <li>• Press  to cancel the error</li> <li>• Replace the printed circuit board</li> </ul>

If the problem continues, contact your retailer.

Votre revendeur  
*Your retailer*

Modèle appareil  
*Appliance model*

Numéro de série  
*Serial number*


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