



# **≡ *ph perfect***

## **Owners Manual and Warranty Information**

Please read thoroughly before starting device



# Contents


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Your pH Perfect has been designed to maintain your pools pH at an ideal balance. Your pools pH balance is the most important component for water chemistry for your skin, eyes hair etc plus it also keeps your sanitiser working at its most efficient. (consider using a Zodiac Chlor Perfect to work alongside your pH perfect for optimal efficiency)

The pH level is detected by the sensor and then as required corrective solution is injected into the pool water keeping it safe and healthy

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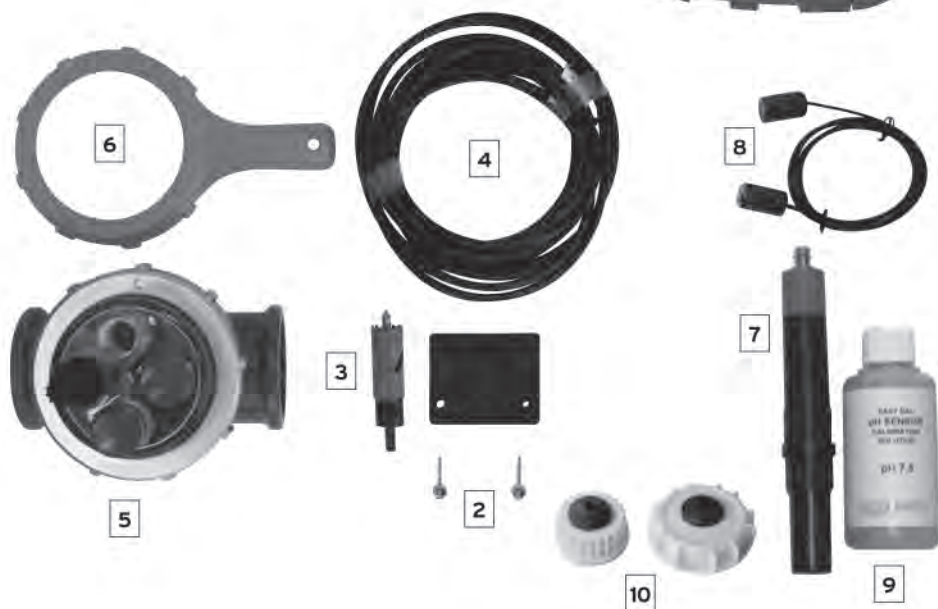
# 1. Contents of this Package

The  symbol indicates important information that must imperatively be taken into account in order to avoid risk of injury to persons or damage to the appliance.

The  symbol indicates useful information.

## 1.1 Identification of parts

1. Control box
2. Mounting bracket and screws
3. Hole saw
4. Tubing
5. POD assembly
6. POD locking ring
7. pH sensor
8. pH sensor cable
9. Sensor calibration fluid
10. Anti Fume Cap 5lt and 15/20lt



## 1.2 The Control Panel



- ① Blue Backlighted LCD 1 line 16 white character screen.  
Left side warning zone (alarms) / Right side pH display
- ② Peristaltic pump
- ③ Connection for injection tube.
- ④ Connection for suction tube
- ⑤ BNC socket for connecting the pH sensor:  
The sensor cable is connected to the regulator unit with this connector
- ⑥ Master switch: for powering the control unit
- ⑦ Navigation button "▼" for navigating in the menu
- ⑧ SET/ESC" button: button for exiting from the menu;  
also for displaying the pH set point when pressed continuously
- ⑨ Navigation button "▲" for navigating in the menu
- ⑩ "CAL/Enter" button: button for enabling the sensor calibration mode  
(the button must be pressed for 5 seconds).  
This is also used for accepting changes in the menu



# 2. Installation

## 2.1 Recommendations



**Warning: pH Perfect must be installed by an experienced pool professional.**

- ▶ Before carrying out any installation or maintenance of the pH Perfect control centre, disconnect it from the mains power supplies.
- ▶ Before starting to install the pH Perfect, check that you have all the components listed above and ensure you read this instruction manual carefully.
- ▶ This appliance is not intended for use by persons (including children) that lack experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a responsible person.
- ▶ Children should be supervised to ensure that they do not play with the device.
- ▶ The installation of this device should be carried out by a qualified person in accordance with the Australian wiring rules AS/NZS 3000.
- ▶ The control centre should be located in the correct pool zone and connected to supply via a power outlet that is protected by a residual current device (RCD) having a rated residual operating current not exceeding 30mA.
- ▶ The power outlet should have a degree of protection suitable for the pool zone
- ▶ Ensure that equipotential bonding of all parts of the pool installation is carried out.
- ▶ During the installation phase of the pH Perfect, check the following:
  - that the voltage of the power supply corresponds to the voltage indicated on the side of the appliance
  - that the injection point pressure is lower than 1.5 Bar
  - that the peristaltic pump's protection cover is correctly fitted
  - that the suction tube is immersed in the corrective solution (pH up or down) container with the suction tube also connected to the peristaltic pump (left side).
  - that the injection tube is connected on one side to the peristaltic pump (right side) and on the other side to the pool return pipe via the injection valve.
- ▶ Zodiac Group Australia Pty Ltd will not be held liable for the use of this device with inappropriate products.
- ▶ The pH sensor is fragile, it must be handled with care. Try to avoid touching the tip with your fingers.



**Warning: If the supply cord is damaged it should be replaced by the manufacturer, authorised service agent or an electrician**

## 2.2 Technical details

Dimension (L - W - H)	240 x 200 x 90mm
Weight (appliance, sensor, tube and pipes)	1.7 kg
Power feed 50Hz	220-240 V AC/50 Hz
Consumption	12W
Pump flow rate	1.5 l/hr
Maximum back pressure	1.5 bar
pH control range	0.0 pH-14.0 pH
Appliance accuracy	+/- 0.1 pH
Calibration of the sensor	7.5 pH

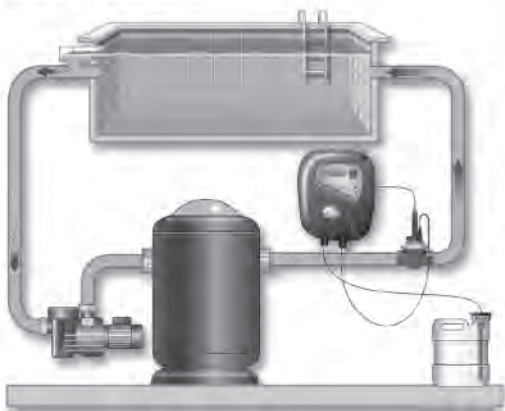
## 2.3 Installation Diagram

Installation of the pH Perfect on the filtration system:



**Place the sensor POD as the last device on the return line to the pool**

### Hydraulic Diagram



Your pH sensor is a very delicate product and can be affected by external forces such as stray electrical current from other devices.

When connecting the sensor into position try to keep the cable away from other power leads

The maximum pressure in the pipes must not be greater than 1.5 Bar. In order to extend the life of the peristaltic tube, the pressure should not exceed 1 bar

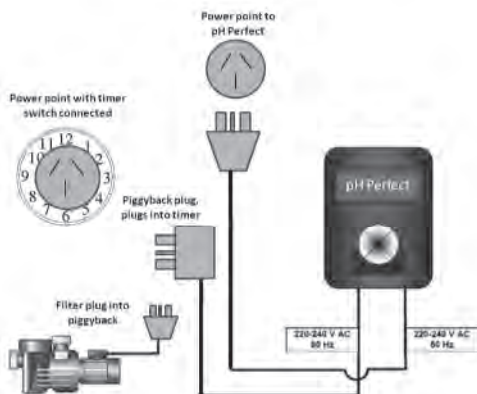
Install the pH Perfect control centre using the supplied fixing kit on a rigid support (a vertical wall) in an easy to access location.

### Electrical connection

If you are using an external timer to control your filter pump please plug the 'piggyback' plug located on the pH Perfect into the timer and then plug the filter pump into the piggyback plug. This will create a controlled time circuit for pH Perfect with the filter pump.

Now connect the pH Perfect power plug into a power point to power the unit up.

### Electrical Diagram

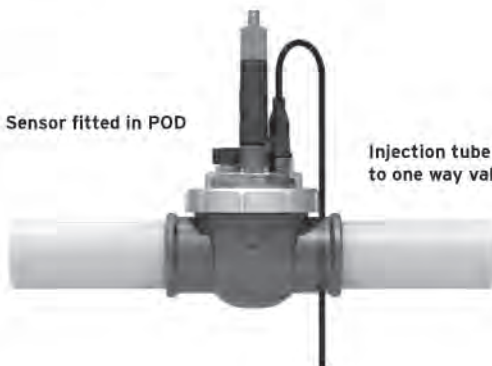


### Warning:

- Acid fumes are highly corrosive
- Do not store acid directly underneath the control unit
- It is preferable to store acid in a safe place outside the filter shed
- If storing inside ensure adequate ventilation is provided

## 2.4 Installation of the Sensor POD

1. Use a straight section of horizontal pipe located past all other equipment including pump, filter, heater etc (30 cm long is best).
2. POD should be installed so that once the sensor is fitted it is in an upright position
3. Disassemble sensor POD to lower part of POD clamp with 2 holes (picture 1).
4. Place the lower part of POD clamp upside down into position on the selected length of piping.
5. Now mark the location of the 2 holes to be made into piping using a pencil or marker (picture 2).
6. Drill the 2 holes using the provided hole saw. Ensure that holes are perfectly smooth around the edges (picture 3).
7. Position the upper part of POD clamp by sliding it into the 2 previously drilled holes  
**➤ NOTE: arrows on upper part of POD clamp indicate direction of water flow**
8. Interlock the lower part of POD clamp onto the upper part already in place on piping. (picture 4).
9. Fit the POD cap on top of upper POD clamp, re-fit locking ring and tighten firmly using provided tool ensuring the locking ring thread is seated properly before tightening.
10. Install sensor into position by firmly screwing into the POD cap in the space allocated. (use Teflon tape on thread)
11. Connect the sensor with the provided cable to the control box.



Sensor fitted in POD

Injection tube fitted to one way valve

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**Now the POD is in place and the sensor is connected it is time to connect the suction and injection tubes**

1. To connect the suction and injection tubes please 'soften' the ends of the tubing by immersing in warm water for a few minutes.
2. Remove the small face panel that covers the peristaltic pump to reveal the screw fittings underneath (see picture A)
3. The suction tube is connected to the left hand side of the peristaltic pump fittings.
4. Use a length of tube long enough to reach from the liquid container to the control box and feed the tube through the black rubber grommet in the 'anti-fume' cap (2 sizes are included 5lt and 15/20lt).
5. Once the cap is on the tube, now fit the small ceramic weight on the suction tube and then fit the small blue barb fitting to the end of the tube to prevent the weight from falling off. (see picture B)
6. Now connect the injection tubing to the injection side (right hand) of the peristaltic pump
7. Then fit the other end of the injection tube to the one way valve located in the sensor POD (this is the injection point for the solution being delivered) (see picture C)
8. Once all connections are made place the suction line into the container and screw the anti fume cap down into position. (see picture D)



**Please note: When installing pH Perfect ensure your acid is diluted to a 50/50 mix of acid/water before screwing the cap down**



# 3. Starting up and operating

## 3.1 Calibration procedure



The sensor must be calibrated when your pH Perfect is first installed and ideally every two months thereafter to obtain the best operating conditions.

- Calibration must be done each time your pool is restarted at the beginning of the season.
- The calibration procedure is carried out when filtration is stopped thanks to its double supply (the appliance remains powered on). Before calibrating, stop filtration and close the valves so as to isolate the pH sensor holder from flowing water.

### Procedure

1. Fill a bottle with clean water (tap water).
2. Undo the sensor holder and remove the sensor from the pipe.
3. Rinse the sensor in the bottle. Then shake gently to remove excess water.
4. Pour a small amount of pH 7.5 calibration fluid into a small bottle (enough to cover the end of the sensor tip). Then immerse the sensor into the fluid. Discard the used calibration fluid after use so as not to contaminate the rest of the bottle.



5. 

Keep the "CAL/Enter" button pressed for more than 5 seconds until "Calibration" appears on the LCD screen (5a). Press the "CAL/Enter" button again as indicated on the screen for calibration on pH7 (5b). An automatic progression bar then appears (5c). Keep the sensor immersed in the buffer solution for 30 seconds.



6. 

After 30 seconds, the appliance indicates the measurement reliability of the sensor expressed as a percentage.
7. 

To finish calibration, press the "CAL" button. The instrument will return to measuring mode. Once the calibration is complete install the sensor in the location provided in the POD



- Once the calibration is complete, your pH Perfect is ready to regulate your pool automatically.
- If your water chemistry is badly out of balance please bring your pool pH within balance before activating the pH Perfect.

Priming 7.4pH

- The pH Perfect peristaltic pump is self-starting. However, it is possible to operate it manually by keeping the "▲" Navigation button pressed. The peristaltic pump will then inject corrective solution as long as the button is pressed.

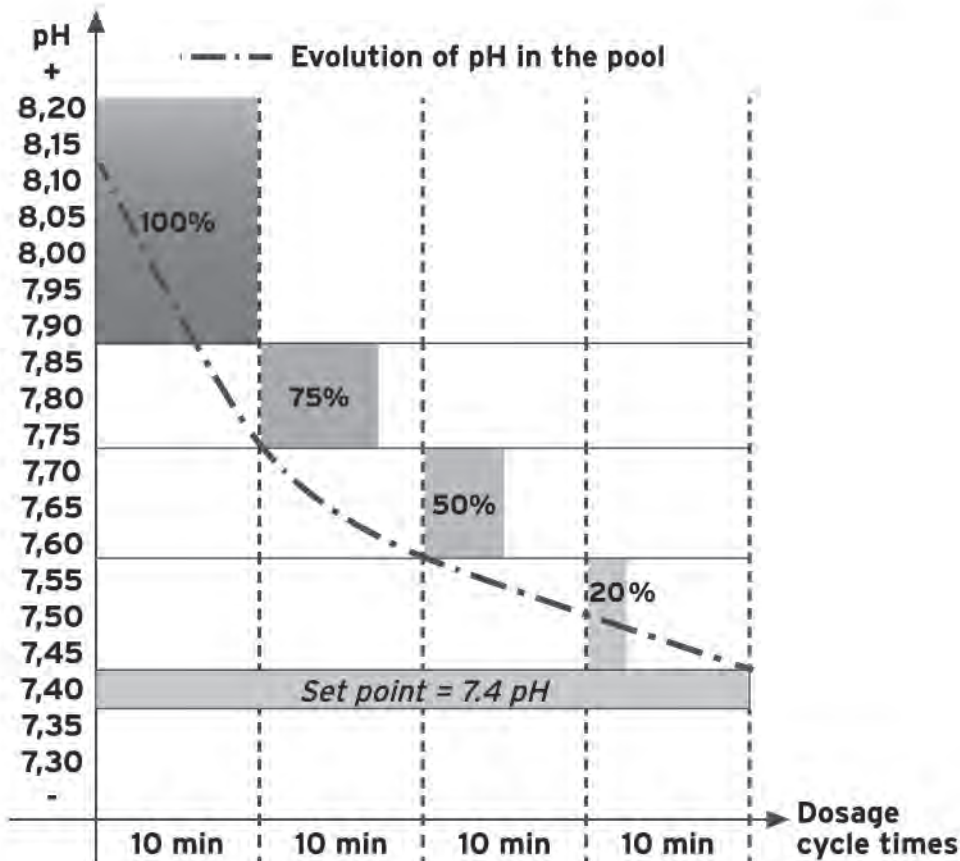
### 3.2 Rule for injecting pH Perfect

#### *Proportional cyclic dosing - exclusive to Zodiac*

- To reach the set point in the best possible conditions (the quickest, but with the least possible corrective solution), your pH Perfect automatically detects the difference of the pH value measured in the pool compared with the desired set point (default value = 7.4 pH).
- This proportional injection is cyclic and the cycle time is 10 minutes. What will change in dosing is the different times of injection and pause. The proportions are adjusted automatically and the different dosages are distributed in steps of 0.15 pH.

→ *E.g.: For 4 cycles with a set point of 7.4 pH and acid regulation (standard alkalinity levels).*

- **pH ≥ 7,55:** 20% injection (2 minutes) & 80% pause (8 minutes)
- **pH ≥ 7,70:** 50% injection (5 minutes) & 50% pause (5 minutes)
- **pH ≥ 7,85:** 75% injection (7 minutes 30 seconds) & 25% pause (2 minutes 30 seconds)
- **pH < 7,90:** 100% injection (10 minutes, continuous)



The injection rule is, of course, inversed if alkaline dosing is chosen.

### 3.3 Adjusting the dosage depending on alkalinity

Water's pH is potentially unstable. Its stability depends on the alkalinity of the water (also called total alkalinity). If the total water hardness is low (<100 ppm), the pH will be potentially unstable and it will be the opposite if the total water hardness is high (> 150 ppm).

In order to always have an optimal balance, the pH Perfect has a function making it possible to adjust the quantities of potentially injected corrector product depending on the total water hardness (see paragraph 4.5).

# 4. Adjustments: "Settings" menu

## 4.1 "Settings" menu - Default parameters

The pH Perfect is factory preset with the following settings (suitable for most cases);

- Set point: **pH = 7.4**
- Dosage = acid (injection when the pH is higher than the set point)
- Alkalinity level = **standard**
- "OFA" over-feed protection: **4 hours**
- Calibration
- Detection that filtration is in progress: **enabled**



→ To access the "Settings" menu, the appliance must be ON. Simultaneously press the "CAL/Enter" and "SET/Esc" buttons for about 5 seconds until the LCD screen displays "Settings" (A).

This "settings" menu gives access to the following adjustments:

- **Language**
- **Set point**
- **Type of dosage**
- **Alkalinity level**
- **Time before triggering the "OFA" over-feed protection**
- **Type of calibration**
- **Detection that filtration is in progress**



→ To exit the "Settings" menu, press the "SET/Esc" button and select "Yes" or "No", using the "▲" and "▼" navigation buttons to save the new settings or not. Accept the choice by pressing the "CAL/Enter" button (B).

## 4.2 Language



You can choose between 6 languages for the LCD display: French, English, German, Spanish, Italian and Dutch.

To change language when in the "Settings" menu, enable the option list by pressing the "CAL/Enter" button (a small arrow appears on the right of the screen and the language message flashes).

Then select the language using the "▲" and "▼" navigation buttons. Accept the choice by pressing the "CAL/Enter" button.



## 4.3 Set point

The default set point on the pH Perfect is 7.4 pH (D) To change it when in the "Settings" menu, enable the option list by pressing the "CAL/Enter" button (the pH value flashes). Then select the value chosen using the "▲" and "▼" navigation buttons. The adjustment is made in increments of 10 mV. Accept the choice by pressing the "CAL/Enter" button.



**It is also possible to directly access the set point by holding down the "SET/Esc" button (keep pressing while changing the setting using the "▲" and "▼" navigation buttons).**



## 4.4 Type of dosage



The default dosage on the pH Perfect is acid (injection of pH minus) (E).

To change it when in the "Settings" menu, enable the option list by pressing the "CAL/Enter" button (a small arrow appears on the right of the screen and the type of dosage flashes). Then select the dosage using the "▲" and "▼" navigation buttons.

Accept the choice by pressing the "CAL/Enter" button.

## 4.5 Alkalinity level

The quantity of corrective fluid potentially injected can be modified to take into account the alkalinity of the water (total water hardness).

To change the value of total water hardness, from the « Settings » menu, activate the choice list by pressing the "CAL/Enter" key (a small arrow appears on the right of the screen) then select the level using the "▲" and "▼" navigation keys.

Validate by pressing the "CAL/Enter" key.

→ **Indication of the choice of alkalinity level:**

- **TAC < 100 ppm** = Low
- **100 < TAC < 150 ppm** = Std (Standard = default setting)
- **TAC > 150 ppm** = High

## 4.6 "OFA" over-feed protection



Your pH Perfect is equipped with protection to prevent over-feeding in the event there is a problem with the pH sensor, for example. The purpose of this protection, called "OFA" (Over Feed Alarm), is to pause the appliance if it has not reached the set point at the end of the time; set by default at 4 hours (F).

**The "OFA" over-feed protection functions in 2 steps:**

#1: **"OFA alarm"** flashes on the LCD screen after 70% of the OFA programmed time has been used without reaching the set point. However, the appliance continues running.

#2: **"Stop OFA"** is displayed on the LCD screen after reaching 100% of the OFA programmed time (4 hours in the original setting). The appliance is then safe.

→ To cancel this protection and start your pH Perfect, press the "CAL/Enter" button (possible on the 2 steps of the OFA alarm).



**Make sure that the pH sensor is in good condition. If necessary, clean and/or recalibrate it.**

The over-feed protection is set by default for a maximum time of 4 hours. It is possible to adjust it from "OFF" (disabled) to "6 hours" by intervals of 1 hour.



**A fairly high setting is strongly recommended to avoid any inopportune and/or unjustified start.**

To regulate the OFA when in the "Settings" menu, enable the option list by pressing the "CAL/Enter" button (the value in hours flashes). Then select the value chosen using the "▲" and "▼" navigation buttons.

The adjustment is made by intervals of 1 hours.

Accept the choice by pressing the "CAL/Enter" button.

#### → Special functions of the OFA

To prevent "false" alarms just after installing a pH Perfect (if the pH is poorly balanced and the chlorine needed therefore high), the OFA may be temporarily disabled for 24 or 48 hours:

OFA 24h 8,2pH

- Presser Press "▲" & "▼" & "CAL": OFA disabled for 24 hours (automatically re-enabled).

OFA 48h 8,2pH

- Presser Press "▲" & "▼" & "SET": OFA disabled for 48 hours (automatically re-enabled).

## 4.7 Detection that filtration is in progress

Your pH Perfect is equipped by default with a double power feed for keeping the appliance live in order to calibrate the pH sensor when filtration is stopped.

However, it is possible to disable this function if the electrical connection is different (work done by a professional).



**The pH Perfect no longer takes into account whether filtration is in progress and is likely to inject corrective solution when there is no flow in the pipes. Disabling is only possible if the mains power cable is controlled by the filtration.**



To change this function when in the "Settings" menu, enable the option list by pressing the "CAL/Enter" button (a small arrow appears on the right of the screen and the status of detection of filtration flashes). Then select "ON" or "OFF" using the "▲" and "▼" navigation buttons (G). Accept the choice by pressing the "CAL/Enter" button.

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## 4.8 Resetting the appliance

In the event of incorrect manipulation, it is possible to restore all the original pH Perfect functional settings.

### ***Procedure for resetting the pH:***

- Switch OFF the appliance.
- Switch ON the appliance by pressing simultaneously on the two “▲” and “▼” navigation buttons (keep the buttons pressed until the message appears on the screen).
- Select “Yes” or “No” using the navigation buttons, then accept using the “CAL/Enter” button.
- All the factory settings will then be restored.

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## 5. Care and maintenance of your pH Perfect

### 5.1 Changing the peristaltic pump tube



1. Remove the protective cover carefully drawing it towards you.



2. Position the tablet holder on “10:20” turning clockwise.



3. Fully release the left-hand connection keeping it stretched outwards, then turn the tablet holder clockwise in order to free the tube up to the right-hand connection.



4. Position the tablet holder on “10:20” turning clockwise. Insert the left-hand connection in its housing, then pass the tube under the guide of the tablet holder. Turn the tablet holder clockwise and at the same time put the tube into the pump head up to the right-hand connection.



5. Replace the protective cover (place the pin in the attachment hole).

### 5.2 Winterizing the pH Perfect

- When pH Perfect has to be winterised, it is advisable to pump clean water through it in order to rinse the peristaltic pipe using the self-priming function and pressing the navigation button “▲” (see paragraph 3.1).  
Next turn the tablet holder to “6:00”.  
These two precautions will make it easier to restart the appliance.
- Remove the pH sensor from its holder. Store it in its original cap or a cup filled with tap water. If necessary plug sensor holder.



**Never leave the end of the sensor out of water!**



## 6. Water quality



Even though pH Perfect is an automated delivery device it is still a requirement to have the pool water regularly checked for balance and chemistry.

See the table below for recommendations of frequency

Zodiac Group Australia cannot be held liable if these rules are not followed.

	<b>pH</b>	<b>Free Chlorine</b> <i>mg/L or ppm</i>	<b>TA</b> <i>(alkalinity or buffer effect)<sup>†</sup> (ppm)</i>	<b>CH</b> <i>(level of calcium carbonate)<sup>†</sup> (ppm)</i>	<b>Cyanuric Acid</b> <i>(stabiliser) mg/L or ppm</i>
Recommended Values	7.2 - 7.8	0.5 - 2.0	(80 - 300)	(90 - 300)	30 - 50
To increase	Use pH Perfect in "alkaline" dosage and/or increase setpoint	Add chlorine (manually or with an ORP regulation)	Add sodium bicarbonate	Add calcium chloride	Add cyanuric acid (only if necessary)
To reduce	Use pH perfect in "acid" dosage and/or decrease setpoint	Stop adding chlorine	Add diluted hydrochloric acid	Add a scale fixer or carry out decarbonation	Partially empty the pool and refill it again
Test Frequency	Weekly	Weekly	Monthly	Monthly	Quarterly

## 7. Alarms

<b>Alarm</b>	<b>Cause(s)</b>	<b>Solutions</b>
Level 7.4pH	The container of corrective solution is empty	→ Replace the container
OFA Alarm 8.2pH	First OFA step enabled (time > 70%)	→ Check pH value → Press "CAL/Enter" to stop the alarm
OFA Stop 8.2pH	Second OFA step enabled (time = 100%)	→ Check pH value → Press "CAL/Enter" to stop the alarm
Flow 7.4pH	Filtration stopped	→ Start filtration pump → Check the connection
7.5pH Error	Buffer solution ineffective pH sensor defective	→ Replace the buffer solutions
4pH Error		→ Clean and/or replace the pH sensor
Error Parameter	Parameter error	→ Press "CAL/Enter" to cancel the fault → Call your local pool professional



## 8. Problem solving

Problem	Cause	Remedy
Displayed pH level doesn't seem to change	Problem with cable and/or connector	<ul style="list-style-type: none"> <li>→ Make sure that the sensor-pH Perfect connection is not short-circuited (between the central core of the cable and the exterior sheathing)</li> <li>→ Make sure that there is no moisture and/or condensation around the BNC socket</li> </ul>
The appliance always displays a high value or the measurement is constantly unstable	The electrode connection cable is damaged	→ Check the cable and/or the BNC socket
	The pH sensor has an air bubble in the bulb	→ Put the sensor into upright position and shake gently so that the air bubble rises back up to the top <i>Note:</i> The sensor should be fitted in a vertical position or at an angle no greater than 45°
	The pH sensor is worn	→ Replace the pH sensor
	The sensor cable is too close to a power cable causing interference	→ Reduce the distance between the appliance and the sensor and/or place the cable elsewhere
Impossible to calibrate (error message) Quality of calibration of the pH sensor < 25%	Buffer solution is ineffective	→ Make sure that the solution hasn't expired
		→ Check the pH buffer solution with a pH electronic meter
		→ Check the pH buffer solution with a pH electronic meter
Quality of calibration of the pH sensor < 25%	Problem with the sensor's porous element, dirt deposits	<ul style="list-style-type: none"> <li>→ Make sure that the electrode bulb is in good condition, that it has not been allowed to dry out of the water. As a last resort, clean by soaking the electrode in a 10% hydrochloric acid solution</li> <li>→ Check that the porosity of the sensor is in good condition (wash the sensor in an acid solution).</li> </ul>
	The pH sensor is worn	→ Replace the pH sensor
Slow response from the pH sensor	Static electricity on the pH sensor	→ During the calibration phase DO NOT WIPE the pH sensor with a cloth or paper, but after rinsing, shake it gently



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