ZODIAC®

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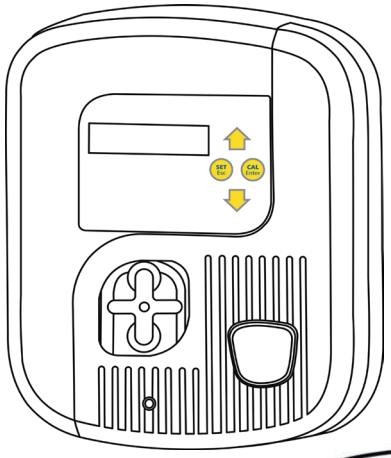
Instructions for installation and use - English
Redox regulation
Translation of the original instructions in french

EN



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H0435000.G - 2019/11

WARNINGS

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 (inflammable or non-inflammable) 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 of 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 handling the appliance, it is essential that you read this installation and user manual, as well as the "warnings and warranty" booklet delivered with the appliance. Failure to do so may result in material damage or serious or fatal injury and will void the warranty.**
- **Keep these instructions for future reference for operation and maintenance works.**
- **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. The information contained herein may therefore be modified without notice.**

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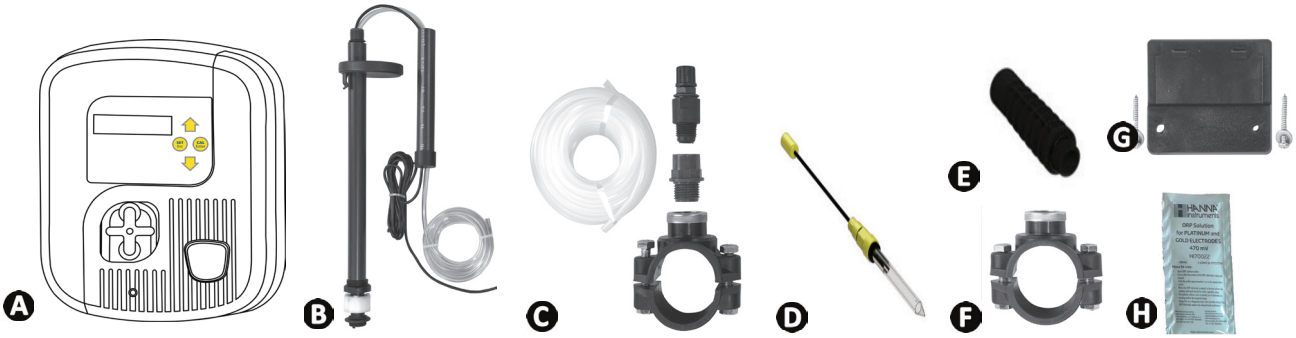
CONTENTS

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

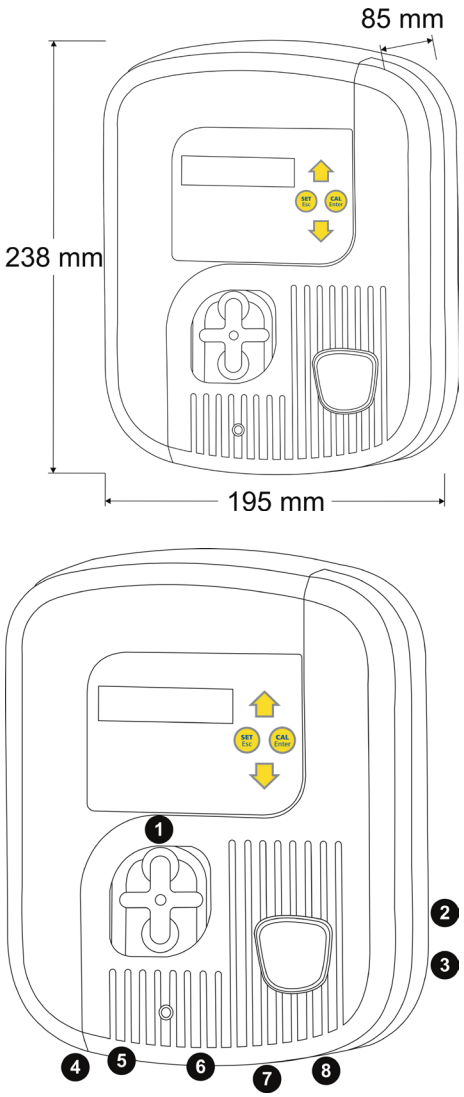


A	Control box
B	Suction cane
C	Pipework installation kit
D	ORP sensor
E	Threaded sensor holder
F	Fixture collar
G	Wall-mounting bracket kit
H	465 mV buffer solution

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
ORP sensor tolerance	5 bar / 60°C / maximum speed 2m/s
Measurement scale	0 - 1,000 mV (± mV)

1.3 I Dimensions and marking



1. Peristaltic pump
2. Master switch
3. BNC connector socket for ORP 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

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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.

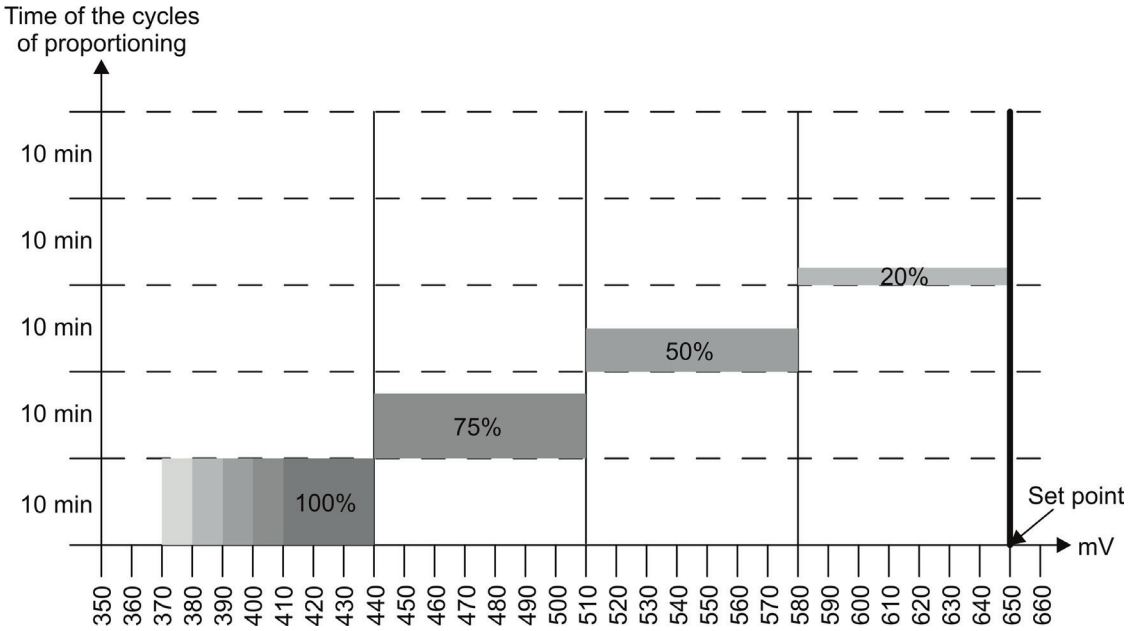
Even though it is an automatic regulation system, it is essential to carry out regular water analyses to check the water balance parameters.

	Unit	Recommended values	To increase	To decrease	Test frequency (during the season)
pH	/	7.2 – 7.4	Add pH+ or use pH regulation module	Add pH- or use pH regulation module	Weekly
Free chlorine	mg/L or ppm	0.5 – 2	Increase the ORP set point or use the "Boost" mode	Reduce the ORP set point	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 injection cycles with a set point at 650 mV:

- **ORP ≥ 580 mV**: 20% injection (2 min) & 80% pause (8 min)
- **ORP ≥ 510 mV**: 50% injection (5 min) & 50 % pause (5 min)
- **ORP ≥ 530 mV**: 75% injection (7 min 30 sec) & 25% pause (2 min 30 sec)
- **ORP < 530 mV**: 100% injection (10 min)

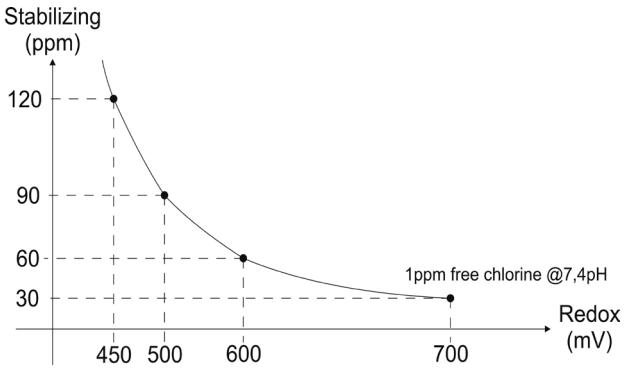


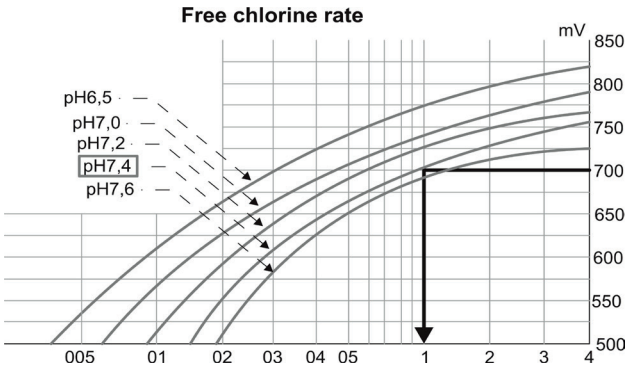
This proportional injection is cyclic and the cycle duration is 10 minutes. The dose will change according to the distribution of injection times and pauses. The proportionality adjusts automatically and the balancing between the different doses is made in 70 mV steps.

The appliance uses measurements of the disinfectant capacity of the water (= ORP potential) to determine whether chlorine should be injected or not. However, 2 parameters have a significant influence on the ORP potential:

- water pH: ideally it should be between 7.2 and 7.4.
- the level of chlorine stabiliser in the water (= cyanuric acid): do not exceed 30 mg/L, otherwise the ORP potential will be significantly reduced (and the set point will need adjusting accordingly).

Charts showing the influence of pH and stabiliser on the ORP potential (indicative values):



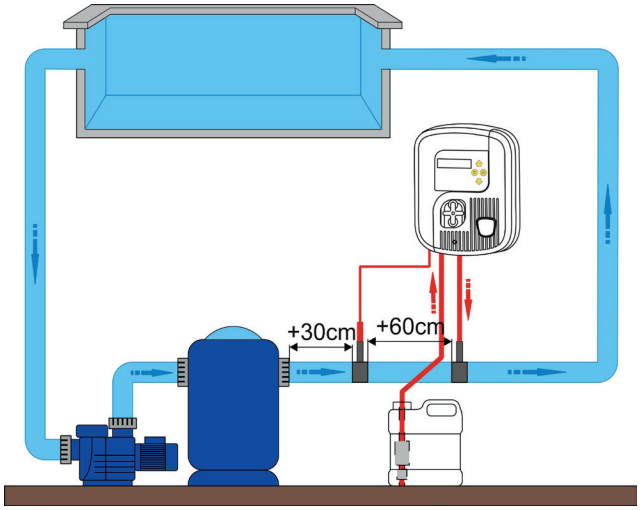


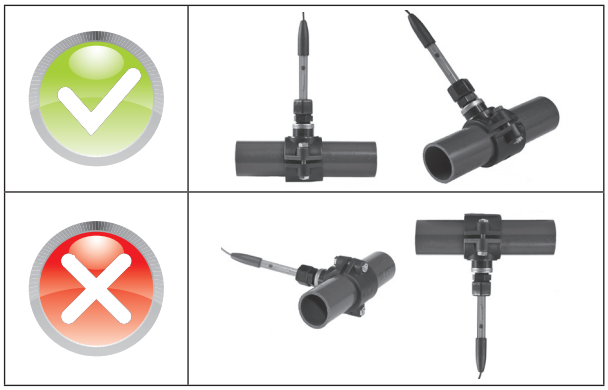
2.2 I Hydraulic connections

2.2.1 Sensor and injection point location

- The ORP 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 ORP sensor must not be in contact with the pipe.
- Never install a ORP sensor before the filtering pump or between the pump and the filter. This would cause random readings and a shortened service life.

- The ORP 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 liquid chlorine injection point must be positioned before a pH corrector injection point and after the heating system.

2.2. Sensor and injection point installation

- There must be at least 60 cm linear 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 Ø50 PVC pipes. A Ø63 adapter is available as an option.
- The POD kit is recommended if a pH 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 ORP 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 ❶.**
- Carefully unscrew the protection tube from the sensor, **see illustration ❷. 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 ❸.**

- **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 YELLOW connector in one hand and the black connector in the other to avoid tangling the cable, **see illustration ❹.**
- Once the sensor is installed, it can be connected to the BNC connector's control box, **see "1.3 I Dimensions and marking".**

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❸

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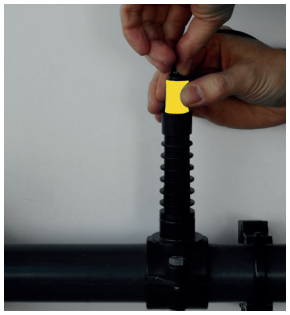
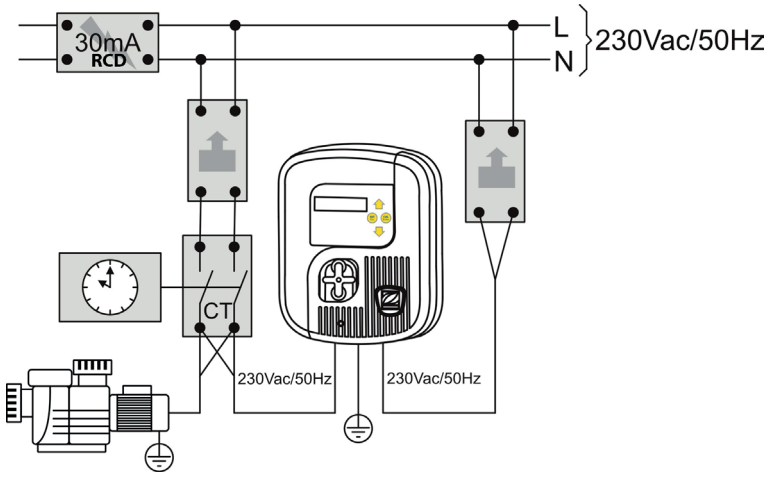


2.3 I Electrical connections

- **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

CAL Enter	- Activate sensor calibration mode (press and hold for 5 seconds) - Confirm a choice in the "Settings" menu - Cancel the "OFA" over feed alarm
SET Esc	- 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) - Activate "Boost" mode (press both buttons at the same 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 disinfectant capacity (ORP potential) 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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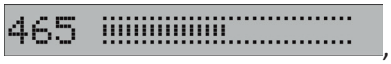
3.3 I Calibrating the sensor

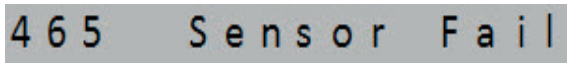
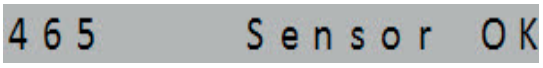
- **For the appliance to operate accurately and reliably, the ORP sensor must be calibrated regularly (on installation, on re-commissioning after wintering, and every 2 months when in use).**
- **Don't wipe the sensor or touch its tip!**

- Rinse the tip of the ORP sensor with tap water.
- Shake it to remove excess water.
- Immerse the sensor in the 465 mV buffer solution.
- Press and hold the CAL Enter button for 5 seconds until 

is displayed, then 

,
- Press CAL Enter, the progress bar is displayed: 

,
- After about 30 seconds the ORP sensor reliability measurement is displayed.
- Depending on the message displayed, perform the corresponding operations:

Message		
• Action(s)	• turn off the appliance using the master switch 0-1 • replace the buffer solution and/or the ORP sensor • restart calibration	press CAL Enter to complete calibration

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

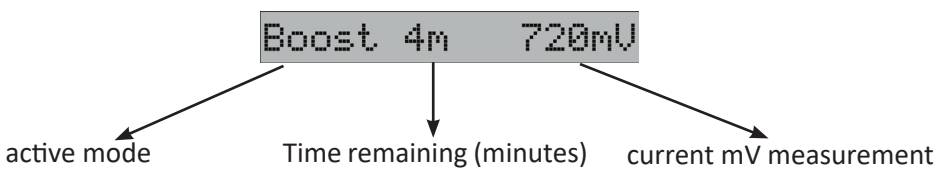
3.4 I Priming the peristaltic pump

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 "Boost" mode

This appliance is fitted with a function to quickly increase the pool's free chlorine level (in the event of stormy weather or a high number of bathers, etc.). The "Boost" mode duration is set to 10 minutes by default.

When the appliance is powered on, press ▲ and ▼ at the same time and hold for 5 seconds to activate "Boost" mode.
When "Boost" mode is active, the screen displays the following, for example:

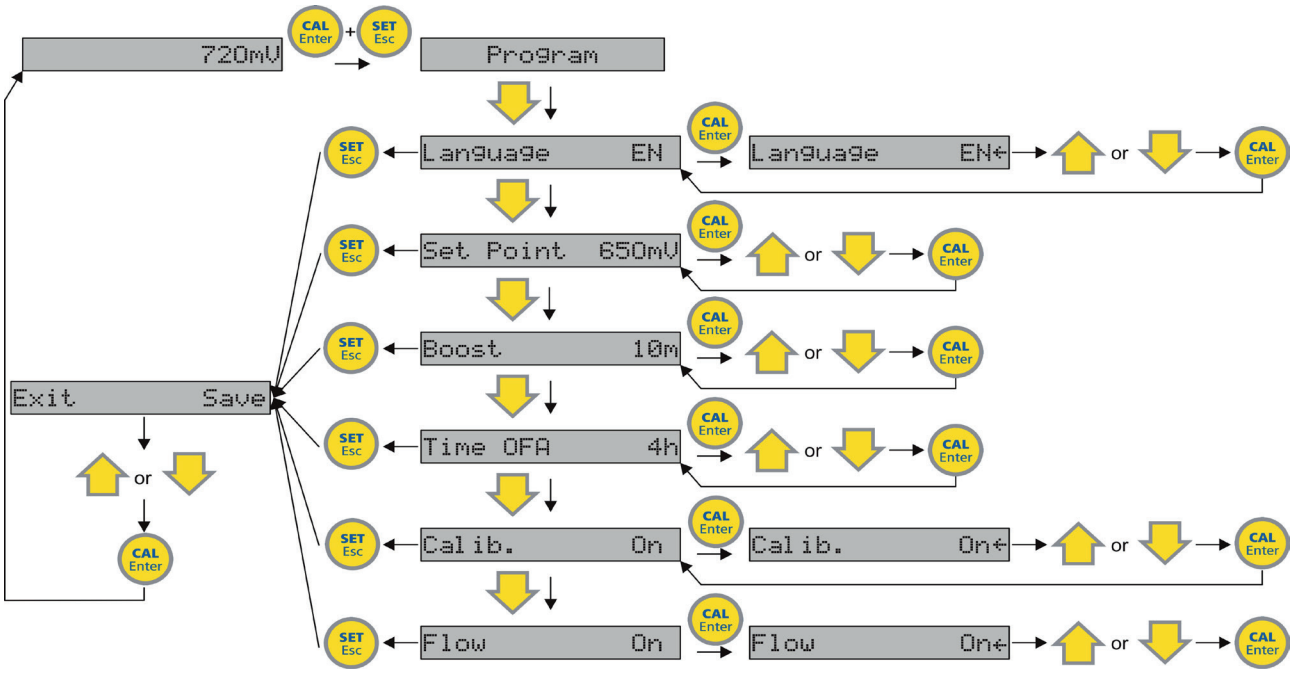


3.6 I Settings

3.6.1 "Settings" menu

Menu	Default settings
Language	French
Set point	650 mV
"Boost" mode duration	10 minutes
"OFA" over feed alarm	4 hours
Calibration	Activated "On"
Filtering operation detection	Activated "On"

- Press CAL Enter and SET Esc at the same time and hold for 5 seconds when the appliance is powered on: Program
- To exit this menu, press SET Esc : Exit Save
- Select "Yes" or "No" using the and keys,
- Confirm by pressing CAL Enter.



3.6.2 "Language" menu

The interface has six available languages:

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

3.6.3 "Set point" menu

2 methods for adjusting the set point:

- see § "3.6.1 "Settings" menu"

Or:

- Press SET Esc when the appliance is running: SP 650mV 640mV,
- Press and hold SET Esc and adjust the set point using the ▲ and ▼ keys.
- Release the SET Esc key to exit.

3.6.4 "Boost" menu

- **Do not set "Boost" mode to operate over a long period (> 10 minutes) if the volume of the pool is low (< 40 m³).**

This is used to set the "Boost" mode operating time.
By default, the "Boost" mode is set to 10 minutes (which corresponds to 250 mL of injected corrector product).

3.6.5 "OFA time" menu

The 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 value is strongly recommended to avoid any unplanned and/or unjustified triggering (a setting in excess of 4 hours is suitable for large pools and/or highly used pools).

The over feed safety mechanism operates in two main steps:

- OFA Alarm 720mV flashes after 75% of the programmed time has elapsed without having reached the set point
- OFA Stop 720mV is displayed when the time has elapsed. The appliance then switches to safety mode.

If filtering stops and restarts (=daily cycles) 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 with 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" safety mode and will remain in this state until manual intervention.

To reset this safety measure and restart the appliance, press the CAL Enter 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 CAL Enter, ▲ and ▼ at the same time to deactivate the safety mechanism for 24 hours
  OFA 24h 720mV
- Press SET Esc, ▲ and ▼ at the same time to deactivate the safety mechanism for 48 hours
  OFA 48h 720mV

3.6.6 "Calibration" menu

This function can be removed (we advise strongly against this, except in the case of pools under a maintenance contract).

3.6.7 "Filtering" menu

This appliance is fitted with a double electric power supply making it possible to keep the appliance switched on to carry out ORP 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.**

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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: 

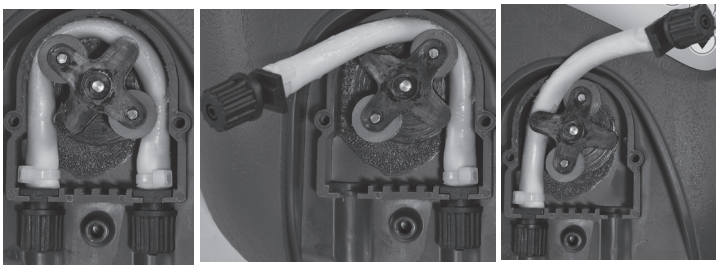
- Select "Yes" or "No" using the  and  keys, then confirm by pressing 

.

4 Maintenance

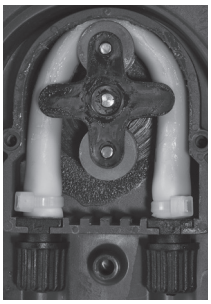
4.1 I Changing the peristaltic tube

- 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).
- Then place the roller holder at 6 o'clock to facilitate restarting.
- Remove the ORP 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

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Behaviour	Possible causes	Solutions
The value displayed on the appliance is frozen at about 0 mV.	Cable problem and/or BNC connector problem	• 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) • Check that there is no dampness and/or condensation on the BNC socket
The appliance always displays an unsuitable or constantly unstable value	• The ORP sensor connection cable is damaged	• Check the cable and/or the BNC connector
	• The ORP sensor is worn	• Replace the ORP sensor
	• The ORP sensor cable is too close to an electric cable causing interference	• Reduce the distance between the appliance and the sensor • Place the sensor in a more suitable location (see §"2.2. Sensor and injection point installation")
Slow response from the ORP sensor	The ORP sensor is electrostatically charged	The sensor must not be wiped with a cloth or paper, shake it gently
The free chlorine level is too low (murky water)	• The water balance is incorrect (high pH, etc.)	• Check and correct the water balance parameters (see §"2.1.1 Water balance")
	• The ORP set point is too low	• Use "Boost" mode • Make sure that the set point is above 650 mV
	• The daily filtering time is too short	• The daily filtering time must be at least 12 hours per day during the season
The free chlorine level is too high	• The water balance is incorrect (low pH, etc.)	• Check and correct the water balance parameters (see §"2.1.1 Water balance")
	• The ORP set point is too high	• Make sure that the set point is not too high • Power off the appliance

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%)	• Press CAL Enter to stop the alarm • Check the sensor and/or the pool chlorine level
"OFA Stop"	Second step of the activated over feed safety mechanism (time = 100%)	• Press CAL Enter to stop the alarm • Check the sensor and/or the pool chlorine level
"OFA Test"	ORP 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 chlorine level
"Filtering"	• Filtering stopped	• Start and/or check the filtering
	• Incorrect connection	• Check the electrical connections
"465 Sensor Fail"	• Buffer solution defective	• Check that the solution used is 465 mV • Use a new buffer solution
	• The sensor is dirty or defective	• Restart calibration • Check the condition of the sensor tip • Check the condition of the sensor's porous coating • Clean the sensor by dipping its tip into a 10 % hydrochloric acid solution
	• The sensor is worn	• Replace the ORP sensor
"Parameter Error"	Parameter error	• Press CAL Enter to cancel the error • Replace the printed circuit board

If the problem continues, contact your retailer.

ZODIAC®

Votre revendeur *Your retailer*	
Modèle appareil *Appliance model*	
Numéro de série *Serial number*	

Pour plus d'informations, enregistrement produit et support client :
For more information, product registration and customer support:

www.zodiac.com

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