

**HYDRO'pH[®] , HYDR'ORP[®]
and HYDRO'pH/ORP[®] :
pH and ORP analyzers/controllers for
private swimming pools**



**Installation, commissioning, maintenance and
programming instructions**

General information:

HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®] Record 23-2012-A

pH, ORP and pH/ORP controllers for private swimming pools with DULCOFLEX pumps.

Operating and programming instructions

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1. General information

HYDRO'pH®, HYDR'ORP®, HYDRO'pH/ORP® analyzers/controllers you have purchased are high-tech electronic devices. They were designed and created with care for your enjoyment and your peace of action.

Their remarkable adaptability to different private swimming pools structures allows their installation in any harsh environments where control of water treatment is most critical.

With 1 pH input or 1 ORP input or else 2 pH and ORP inputs and a remote control one, HYDRO'pH®, HYDR'ORP®, HYDRO'pH/ORP® are endowed with proportional control functions with cyclic orders transmitted through two metering pumps to control the pH- or pH+ and ORP.

Thanks to HYDRO'pH®, HYDR'ORP®, HYDRO'pH/ORP® ease of use, their user-friendliness and their remarkable technicality, you will fully enjoy their many possibilities and will be assured of a perfect control and perfect monitoring of your pool water quality.

You will find in the instructions that follow, all the information needed for the installation, use and maintenance of your new equipment.

- Packaging
- Installation
- Basic equipments
- Specifications
- Commissioning instructions
- Safety instructions

If you need more information or if you encounter problems that not have been specified in this guide, please quickly contact your retailer or SYCLOPE Electronique S.A. sales department, either at the agency or office in your area, or at technical/quality service at our head office. We will do our best to help you and make you enjoy our advice and our knowledge in the field of measurement and treatment of pools water.

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1.1. Using this document

- ✓ Descriptions are written in plain text
- ✓ Elements of lists are identified with commas (√) and the subcategories with dashes (-).
- ✓ The various stages of handling are identified by horizontal triangles (▶) and secondary stages by points (●).
- ✓ The references are identified by bold vertical arrows (▲).
- ✓ The highlighted areas **WARNING**, **CAUTION** and **NOTE** have the following meanings:



NOTE *Indicates a special or important information*



WARNING *Risk of injury or accident*



CAUTION *Risk of malfunction*



DANGER *Risk related to presence of power supply*



NOTE *Recyclable component*



RECYCLABLE *Under the WEEE (Waste Electrical and Electronic Equipment)*

1.2. Warranty

The device is guaranteed under the terms of our conditions of sale and delivery, provided that the following conditions are met:

- ✓ Use of equipment according to instructions in this manual,
- ✓ No change of the equipment able to alter its behaviour or non-compliant handling,
- ✓ Failure to meet electrical safety requirements.



NOTE: *The expendable material is no longer guaranteed since its commissioning.*

2. Safety Instructions



WARNING

Before commissioning or any change of operation, refer imperatively to corresponding chapters of this manual!

2.1. Controllers use

HYDRO'pH[®], **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** are used to measure and control the **pH and ORP potential** by using specific sensors and suitable metering pumps under the options of use described in this manual.



WARNING

Any other use is considered non-compliant and must be outlawed. SYCLOPE Electronique will not provide, in any way, the liability and damages that could result.

2.2. User's obligations

The user agrees to only let working with the equipment **HYDRO'pH[®]**, **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** described in this manual the staff who:

- ✓ is familiar with basic instructions on industrial safety and accident prevention,
- ✓ is trained to use the device,
- ✓ has read and understood these instructions, warnings and rules for handling.

The user is responsible for keeping this use and programming guide in a place close to the equipment, reachable by any person designated as responsible and competent to handle such equipments

2.3. Risk prevention



WARNING:

*Installation and connection of the **HYDRO'pH[®]**, **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers must only be performed by skilled staff!
The installation must comply with safety current standards.*



NOTE:

*The recyclable packaging of the **HYDRO'pH[®]**, **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** must be eliminated under the current rules!*



DANGER:

*Before connecting the power cable or manipulating metering pumps, always **CUT THE PRIMARY POWER SUPPLY!**
Do not open the device when power is on!
The maintenance and repair should be performed only by authorized and skilled staff!*



DANGER:

***HYDRO'pH[®]**, **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers must be protected by a fuse or external circuit breaker installed close to the unit.*

**CAUTION:**

*Carefully choose the installation site of equipments!
HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®] controllers should not be installed in a risky place, for instance close to water sprays or chemical products. They must be installed in a dry and well-ventilated place away from corrosive fumes.*

They should not be exposed to direct sunlight.

They should not be installed outside without being protected from bad weather. (Rain, hail, wind...)

They should not be installed under cover directly exposed to the sun's heat so as not to exceed the maximum service temperature.

They must be protected from freezing. (See section wintering)

If potential winter, these devices must be disassembled and placed in a dry place, protected from freezing.

Measurement sensors must be maintained and preserved with their conservation cap filled with preservation fluid. (See sensor instructions attached)

**CAUTION:**

Before the commissioning of the equipment, make sure that all electrical parameters are correct! Make sure the voltage of the device corresponds to that indicated on the descriptive plate located on the side of the controller.

**WARNING:**

The maximum allowable pressure at injection points of chemical products must not exceed 1.5 bar!

If these instructions are not complied, serious damage to persons and / or the device may occur. Our guarantee or our liability cannot therefore be committed.

3. Specifications

3-1 Execution of standard equipments HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®]



NOTE:

Different versions are available as standard. For special applications, see our sales department.

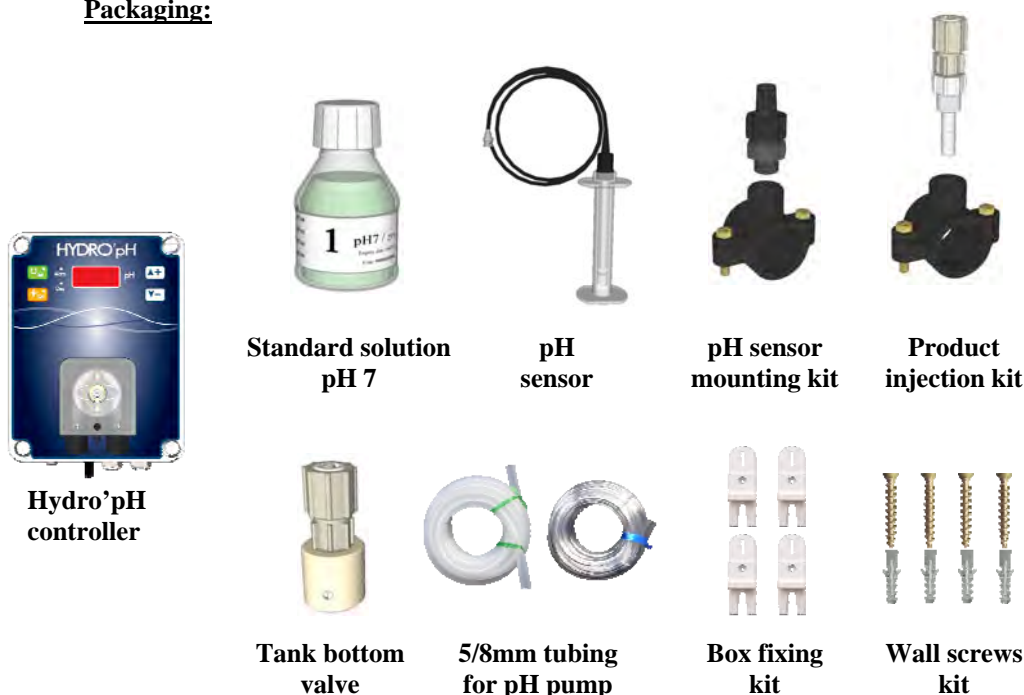
a) **HYDRO'pH[®]**

Execution: **HYDRO'pH[®]** wall mounted electronic box
 230v 50Hz power supply
 PH sensor resistant to pressure (6 bars) with the possibility of installing at 90° compared with the vertical position.
 Integrated metering pump of 0,4 or 0,8 or 1,6 or 2,4 liters/hour
 Hydraulic connections for pool hose in Ø 50mm or Ø 63mm

Options:

Level sensor for tank bottom
 Connections kit

Packaging:



Codifications: Hydro'pH standard controllers with clamp saddle for D=50mm

Code Reference	HYDRO'pH [®] electronic box	Power supply	Measuring sensor	Metering devices	Protection class
HYD 1120	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH avec cable 6m	Pump 0,4l/h	IP54
HYD 1121	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH avec cable 6m	Pump 0,8l/h	IP54
HYD 1122	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH avec cable 6m	Pump 1,6l/h	IP54
HYD 1123	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH avec cable 6m	Pump 2,4l/h	IP54

**NOTE:**

For equipment maintenance, spare parts are available in the « accessories » section.

▲ See section « accessories »

b) **HYDR'ORP®**

Execution: **HYDR'ORP®** wall mounted electronic box
 230v 50Hz power supply
 ORP sensor resistant to pressure (6 bars) with the possibility of installing at 90° compared with the vertical position..
 Integrated metering pump of 0,4 or 0,8 or 1,6 or 2,4 liters/hour.
 Hydraulic connections for pool hose in Ø 50mm or Ø 63mm

Options:

Level sensor for tank bottom
 Connections kit

Packaging:

**Hydr'ORP
controller**



**ORP
sensor**



**ORP sensor
mounting kit**



**Product
injection kit**



**Tank bottom
valve**



**Oxidizer pump
tubing**



**Box fixing
kit**



**Wall screws
kit**

Codifications: Hydr'ORP standard controllers

Code Reference	HYDR'ORP® electronic box	Power supply	Measuring sensor	Metering devices	Protection class
HYD 1520	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	ORP avec cable 6m	Pump 0,4l/h	IP54
HYD 1521	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	ORP avec cable 6m	Pump 0,8l/h	IP54
HYD 1522	Standard equipment Ø63 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	ORP avec cable 6m	Pump 1,6l/h	IP54
HYD 1523	Standard equipment Ø63 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	ORP avec cable 6m	Pump 2,4l/h	IP54

**NOTE:**

For equipment maintenance, spare parts are available in the « accessories » section.

▲ See section « accessories »

c) **HYDRO'pH/ORP®**

Execution: **HYDRO'pH/ORP®** wall mounted electronic box
 230v 50Hz power supply
 pH sensor resistant to pressure (6 bars) with the possibility of installing at 90° compared with the vertical position.
 ORP sensor resistant to pressure (6 bars) with the possibility of installing at 90° compared with the vertical position.
 Integrated metering pump of 0,4 or 0,8 or 1,6 or 2,4 liters/hour.
 Hydraulic connections for pool hose in Ø 50mm or Ø 63mm

Options :

Level sensor for tank bottom
 Connections kit

Packaging:

**Hydro'pH
controller**



**Standard solution
pH 7**



**pH and ORP
sensors**



**pH and ORP
sensors
mounting kit**



**Products
injection kit**



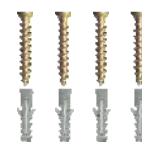
**Tanks bottom
valves**



**Oxidizer
pumps tubing**



**Box fixing
kit**



**Wall screws
kit**

Codifications: Hydro'pH/ORP standard controllers

Code Reference	HYDRO'pH/ORP® electronic box	Power supply	Measuring sensors	Metering devices	Protection class
HYD 1420	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH et ORP cable 6m	Pumps 2x 0,4 l/h	IP54
HYD 1421	Standard equipment Ø50 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH et ORP cable 6m	Pumps 2x 0,8 l/h	IP54
HYD 1422	Standard equipment Ø63 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH et ORP cable 6m	Pumps 2x 1,6 l/h	IP54
HYD 1423	Standard equipment Ø63 with cable 1m 3x 0,75 mm ²	230V 50/60Hz	pH et ORP cable 6m	Pumps 2x 2,4 l/h	IP54

**NOTE:**

For equipment maintenance, spare parts are available in the « accessories » section.

▲ *See section « accessories »*

3-2 General specifications of Hydro'...

Consumption: -----	3,2 Watts max. (plus 1 or 2x 8Watts for pumps)
Maximum temperatures:	
- Operation -----	0 to 45°C
- Storage -----	5 to 30°C
Humidity: -----	Max: 90% at 40°C
Box materials: -----	ABS
Weight: -----	1,2 Kg (Hydro'pH and Hydr'ORP) 1,8 Kg (Hydro'pH/ORP)

3-3 Electrical features and functions

a) Electronic part

Electronics: -----	Analogical and digital
Displays: -----	High brightness red LED
Relay outputs: -----	1 or 2 electronic relays (230v/1A outputs)
Signal inputs: -----	1 or 2 isolated inputs pH and / or ORP sensors
Remote control input: -----	1 low impedance input with free contact of potential

b) General functions

Display: -----	Displays measured on pH or ORP in mV in physical quantity.
Human/machine interface: -----	4 keys of functions identified
Calibrations: -----	By identifying a reference device or with specific liquids of calibration. (See accessories)

c) General functions of control

Types of control: -----	On-Off with proportional cycles
Setpoints: -----	pH: from 6,80 to 7,80 pH by step of 0,05pH (Changeable values of 6 to 9pH in hidden mode) ORP: from 350 to 950 mV by step of 5mV
Types of pumps: -----	Peristaltic pumps 4 different flows: <ul style="list-style-type: none"> ▪ 0,4 l/h, 0,8 l/h, 1,6 l/h and 2,4 l/h. ▪ Tubes resistant to acids and oxidizers
Sense of control: -----	Upward or downward for pH selectable by internal jumper. (pH- in factory)

d) Measurement scales of analyzers

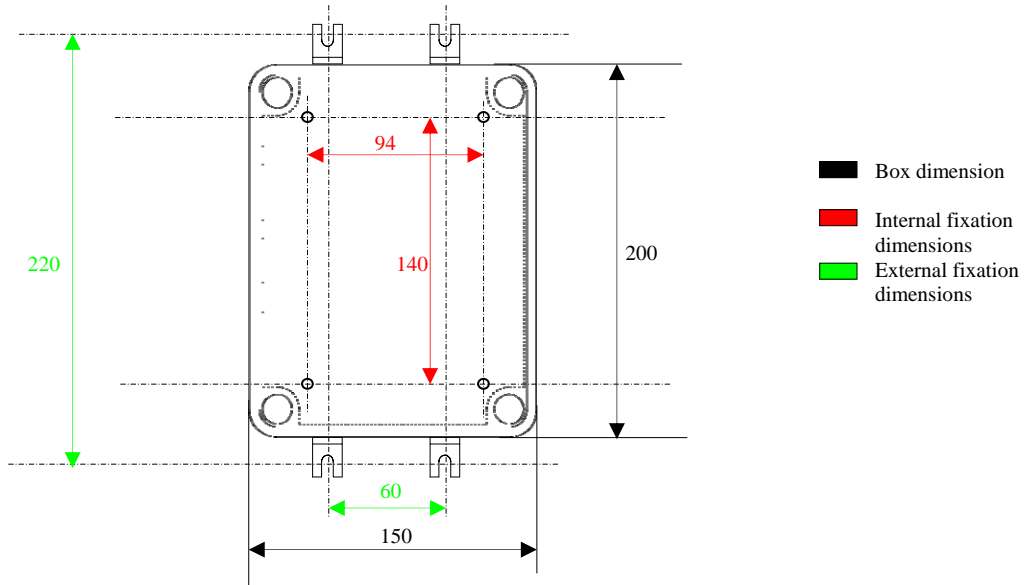
For pH function: -----	Measurement range: 4,00 to 14,0 pH Resolution: 0,01 pH if pH < 10 Accuracy: 0,5 %
For ORP function: -----	Measurement range: 0 to 999 mV Resolution: 1 mV Accuracy: 0,5 %

**NOTE:**

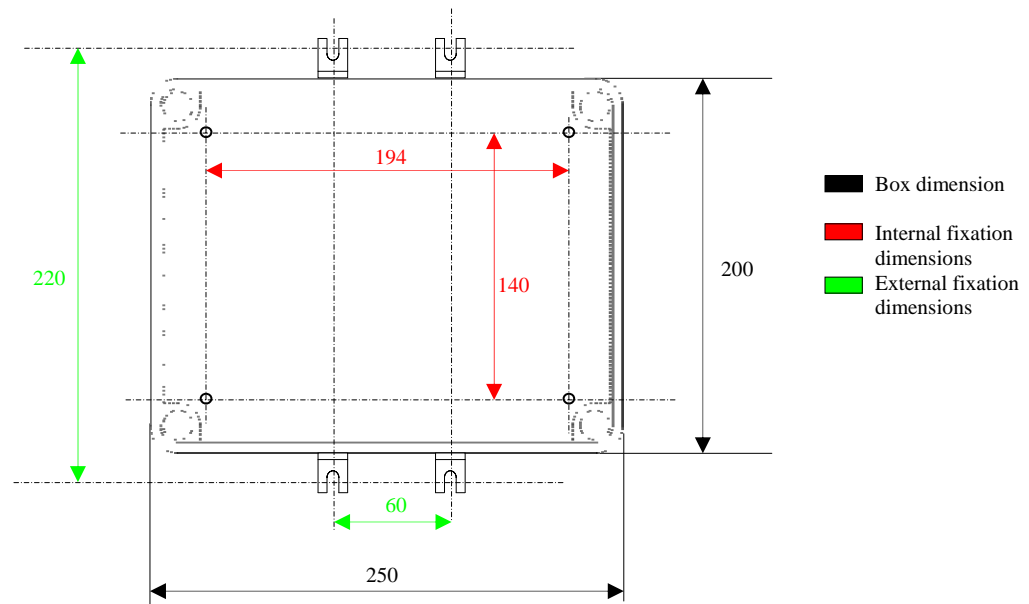
For different measurement scales, please contact us.

3-4 General dimensions of boxes and wall mounting dimensions

Dimensions and fixing ratings of Hydro’pH and Hydr’Orp controllers



Dimensions and fixing ratings of Hydro’pH/Orp controller



4 Installation and connections

4-1 Transport and storage of HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®]

HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®] controllers are high-tech electronic devices that use electronic components and sensitive electrochemical sensors.

Despite the care taken in the design on the strength and robustness of the components used, make all arrangements for transport and storage equipment.



NOTE: *Equipment storage in a dry place.
After unpacking, proceed to the assembly as quick as possible.*



CAUTION: *Transport equipment with caution!
Do not shock! Protect pH and ORP sensors from shocks, concentrated chemicals and ensure of permanent humidification of measurement tips.*



NOTE: *The recyclable packaging of HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®] devices must be eliminated according to the current rules!
Keep wintering packaging!*



RECYCLING: *Electronic equipments shall be brought back to your retailer so he can proceed to their elimination respecting the current rules!
Keep wintering packaging!*

4-2 Wall mounting terms

- ✓ Dry and dusted place
- ✓ Operating ambient temperature between 0°C and 45°C
- ✓ Installation location out of vibrations
- ✓ Clean, non-distorted support
- ✓ Correct wall fixing



CAUTION: *Respect mounting instructions. In case of non-compliance:*

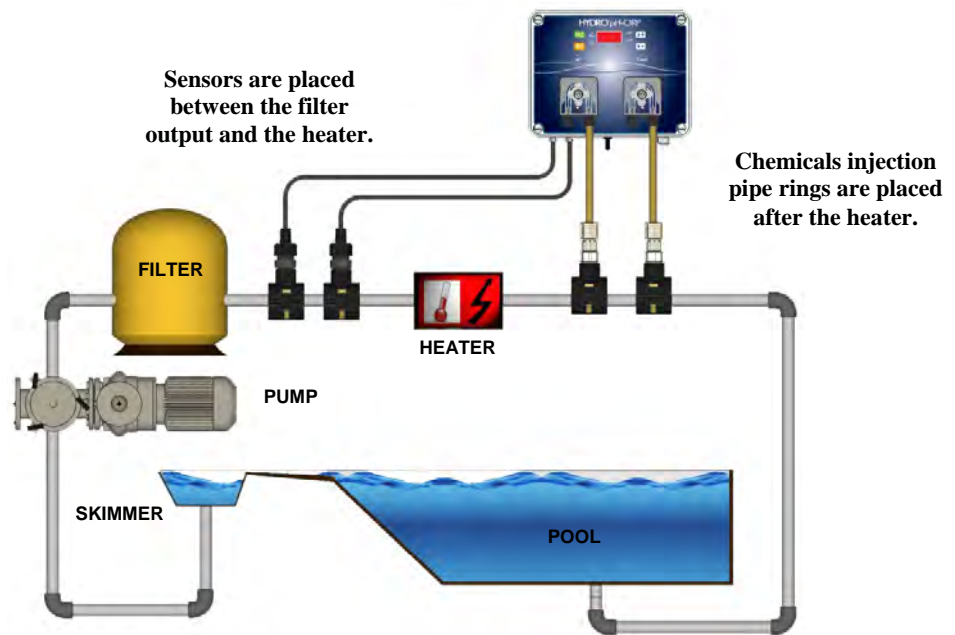
- *The unit may be damaged*
- *Measurements may be disturbed*
- *The warranty will not be insured!*

4-3 Wall installation of control device

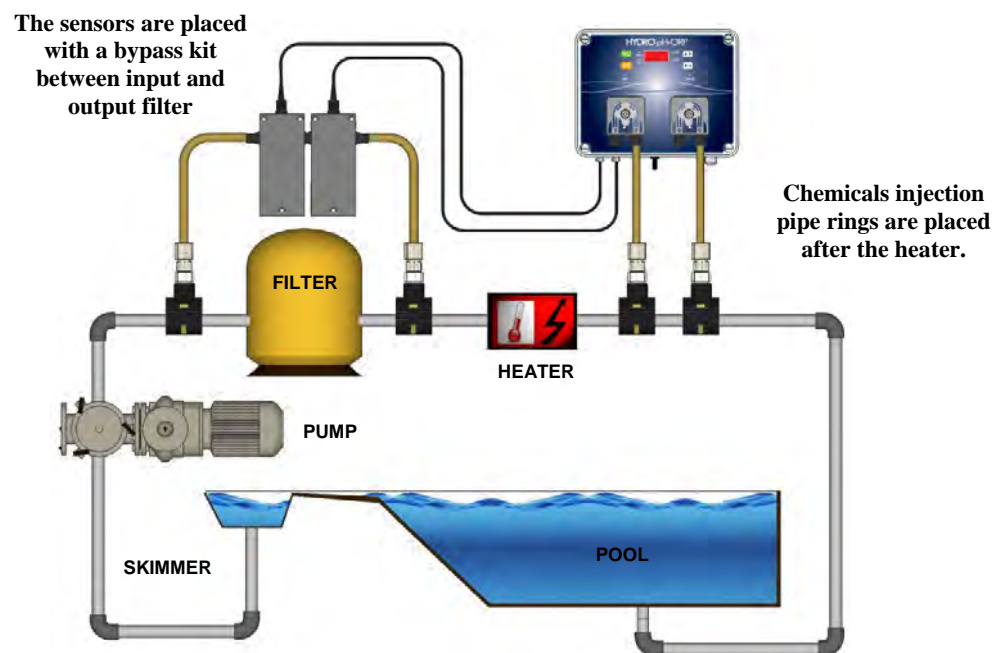


DANGER: *Prior to installing the devices and connections of cables, pipes and fittings, cut power supplies!
The IP65 protection class is guaranteed only if the closure caps of the Hydro'... electronic controllers are closed and the wires correspond to the diameter of the cable gland!*

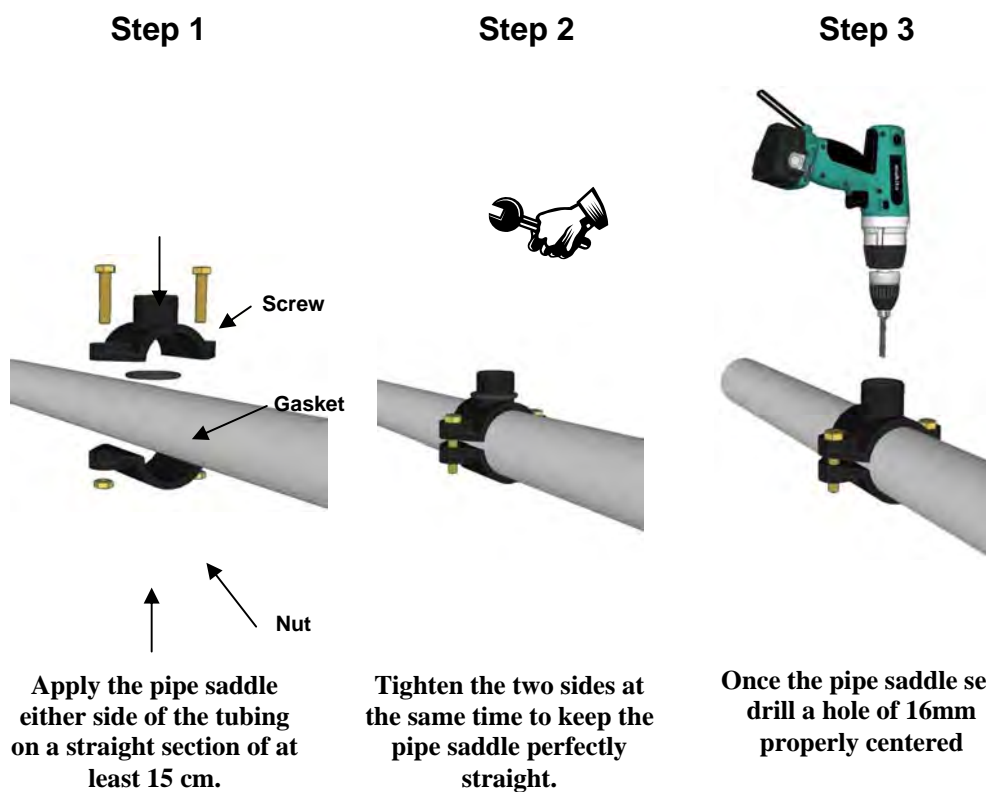
2nd case (Example with *HYDRO'pH/ORP*[®])



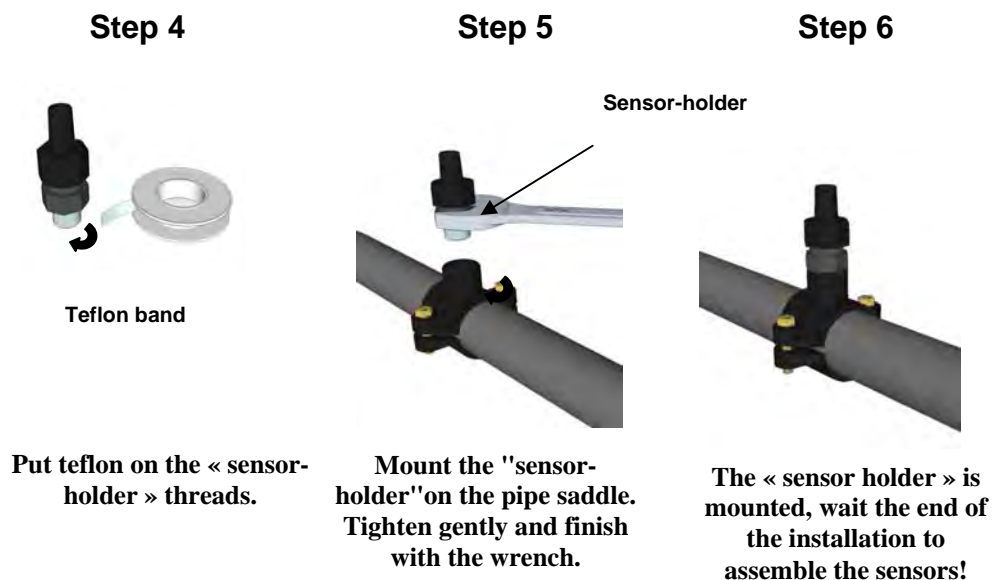
3rd case (Example with *HYDRO'pH/ORP*[®])



a) Mounting procedure of pipe saddles



b) Mounting procedure for the sensors connection kit

**NOTE:**

*pH or ORP sensors can be mounted to 360 °.
However, we recommend performing this assembly to the vertical:
maintenance is easier to achieve!*

c) Mounting procedure for pipes connection kit

Step 7



Teflon band

Put teflon on the threads of the fitting and injection valve.

Step 8



Screw the fitting on the pipe saddle

Step 9



Screw the injection valve on the fitting

Step 10



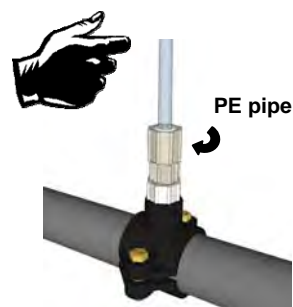
Unscrew the cap from the injection valve...

Step 11



Pass the PE pipe into the cap and fit it on the valve cone...

Step 12



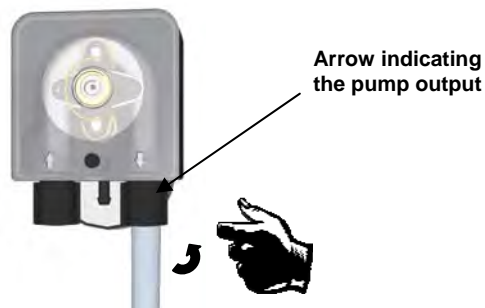
Screw the cap with the PE pipe on the valve.

Step 13



Same operation on the dosing pump side

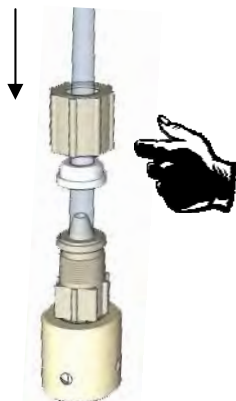
Step 14



Screw the cap with the PE pipe on the pump

d) Mounting procedure of flexible suction pipe

Step 15



Unscrew the cap and pass the clear pipe...

Step 16



Tighten the nut on the cone...

Step 17



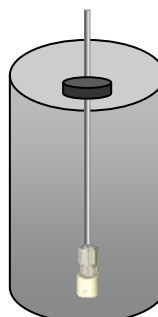
Screw the clear pipe on the metering pump...

Step 18



Tighten the nut on the metering pump.

Step 19



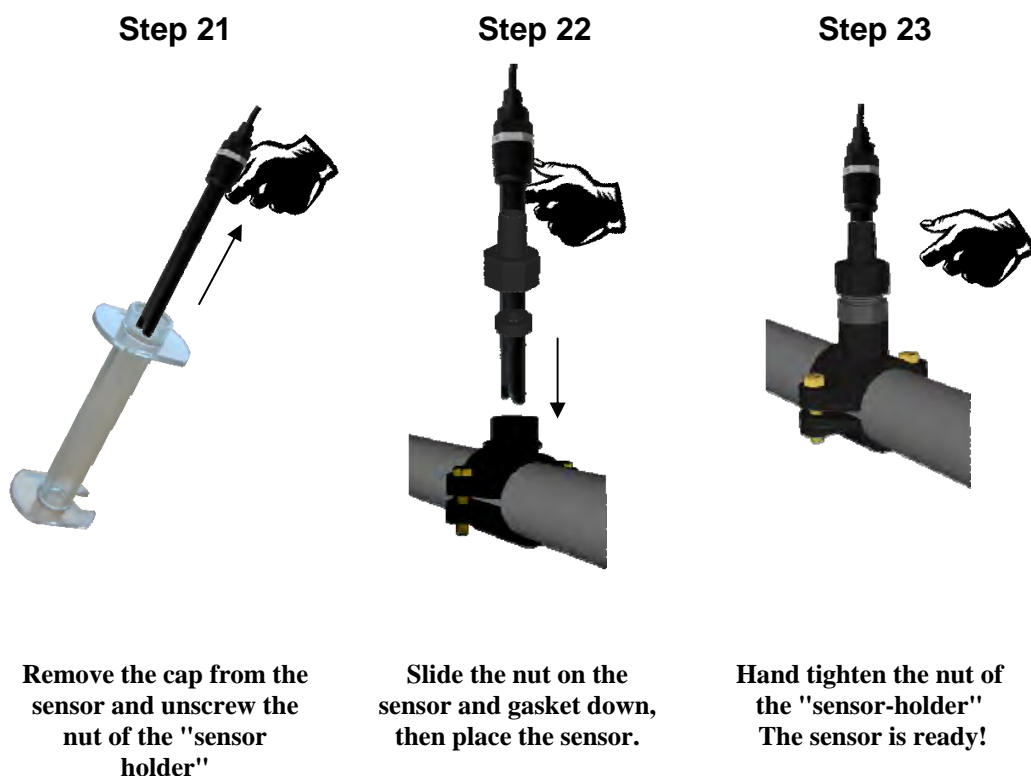
Place the bottom tray valve weighted and adjust the depth...

Step 20 (Option)



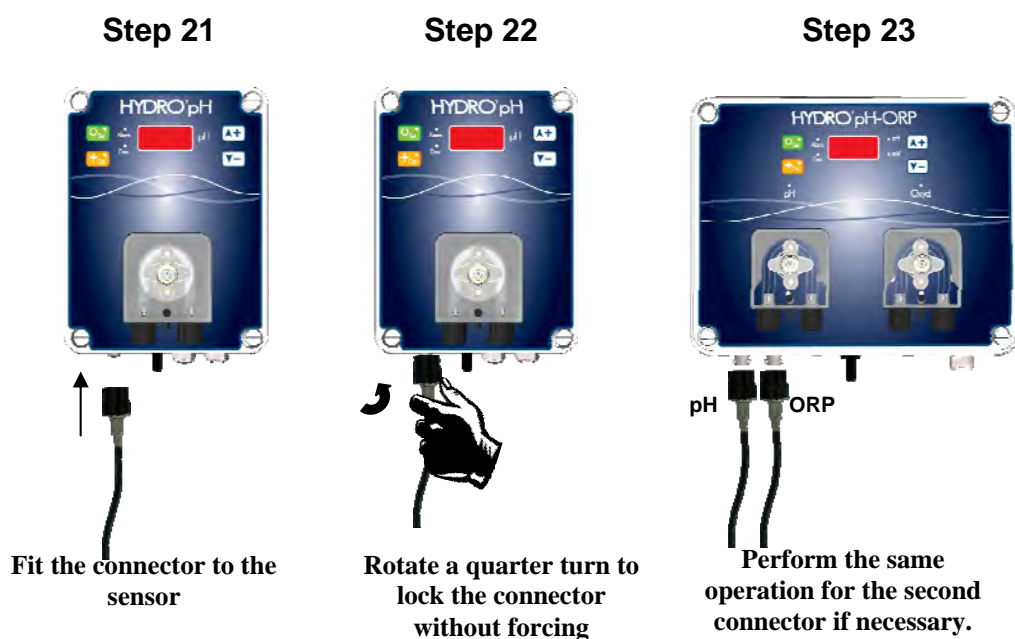
Place the sensor level and its weight and adjust.

e) Mounting procedure of the pH and/or ORP sensors



NOTE: *Proceed in the same way for the two sensors if necessary!*

f) Connecting the pH and/or ORP sensors on the Hydro' box



4-5 Commissioning /Electrical connections



DANGER:

*Facilities must be made according to rules in force!
A differential circuit breaker of 30mA must be present and a fuse or circuit breaker must be installed!*



DANGER:

Connections must be performed by a skilled technician!

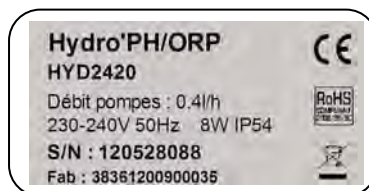


DANGER:

Before making connections, cut power supplies!

a) General connections

HYDRO'pH[®], **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers must be supplied with electric power protection using the nameplate located on the side of the device.
For safety, controllers supply must be cut when the filtration is off.



CAUTION:

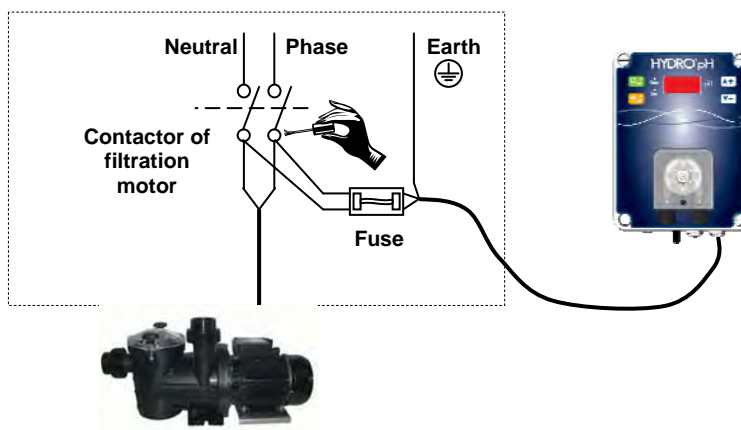
*The electrical connection of the box must necessarily be coupled with the operation of the pool filtration.
The CAD input, remote control, (Potential-free input, do not connect 220V power supply or other on this input) can be used to make this condition if no detector tank bottom is used.*



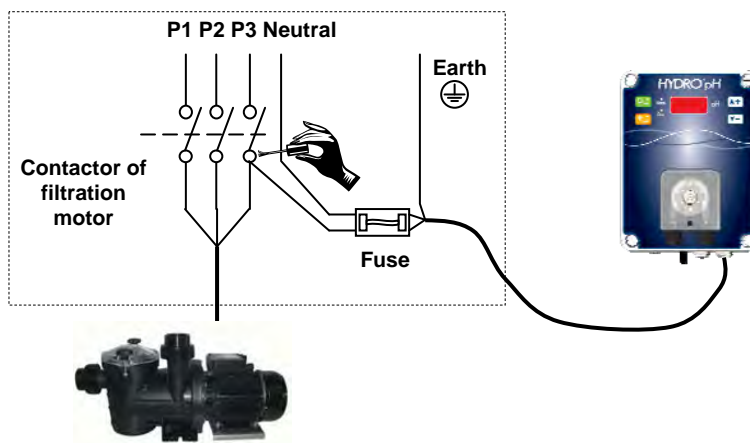
NOTE:

*Hydro' boxes are already provided with a suitable power cable!
If this cable is supplied with a plug, an identical base must be installed near the unit. Anyway, the wiring stays the same in the filtration case!*

1. Case of a single-phased filtration box in 230V 50Hz ...



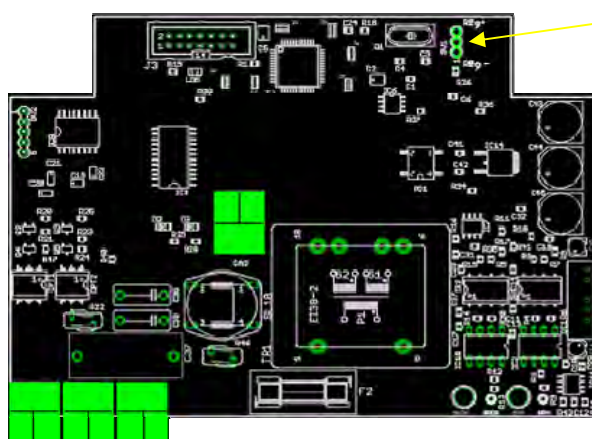
2. Case of a three-phased filtration box in 380V 50Hz ...



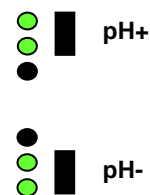
NOTE:

In both cases, connect « Neutral and a phase » and Earth!

b) Position of the pH control direction (HYDRO'pH[®] and HYDRO'pH/ORP[®])

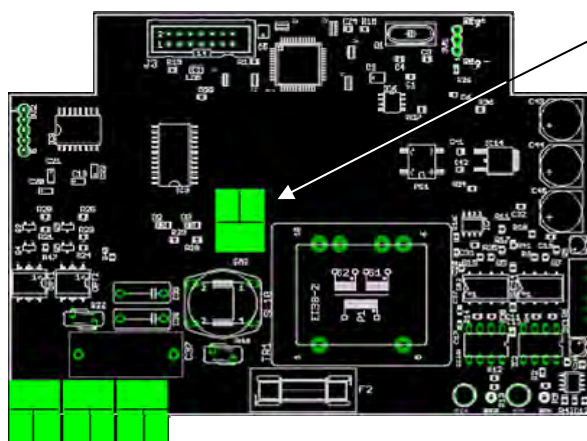


Jumper
pH+ / pH-



Before opening the box, cut the primary power supply!

c) Internal connections of the tank bottom detector



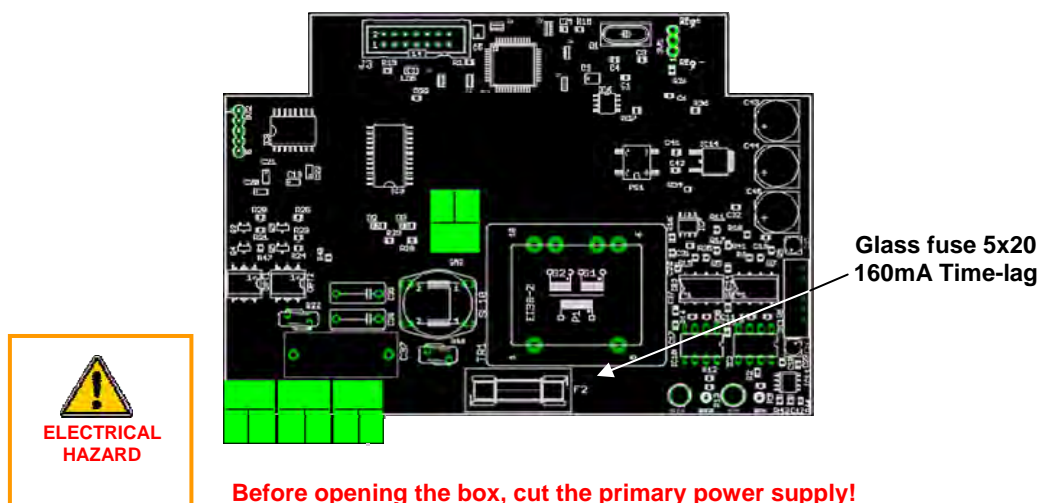
Connector for
remote control
(CAD)



**Do not connect
220V power
supply or
another on this
input**

Before opening the box, cut the primary power supply!

d) Changing the internal protection fuse

**DANGER:***Before changing the fuses, cut power supplies.***Procedure for changing fuses:**

1. Cut the primary power supply
2. Locate the fuse to change according to the diagram
3. Change the fuse with an identical fuse
4. Replace the front cover and fixation screws.
5. Commission the equipment.

**DANGER:***Fuse replacement must be performed by a qualified technician!***CAUTION:***Deteriorated fuses must imperatively be replaced by fuses of identical intensity and technology!***NOTE:***If a fuse is destroyed, it is imperative to identify the cause before replacing it!***4-6 Filling the tanks of chemicals****NOTE:***The chemicals used in pools can be dangerous and corrosive!
They can damage your health and cause environmental damages.
Any mixture of chemicals can be hazardous to health and should never be done!***NOTE:***The products can also be « ready-prepared ». In this case, right introduce directly the valve in the tank.*

5 HYDRO' controllers presentation

5-1 General operation

HYDRO'pH[®], **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** devices are used to measure and control the pH (potential of hydrogen), the ORP (oxidation-reduction potential) of private swimming pools using specific sensors and commands of actuators suitable in the context of the possibilities of use described in this manual.



WARNING:

Any other use is considered improper and should be outlawed. SYCLOPE Electronique S.A. will not take on the liability and damages that result.



NOTE:

Since their commissioning and after 3 minutes of security, HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®] controllers begin to control.



NOTE:

The chemicals used in pools can be dangerous and corrosive! They can damage your health and cause environmental damages. HYDRO'pH[®], HYDR'ORP[®] and HYDRO'pH/ORP[®] are devices of quantification of these products that meet the current standards! Any mixture of chemicals can be hazardous to health and should be forbidden!



NOTE:

Since their commissioning, and once a month, using a colorimetric analysis kit or standard samples, check the various settings displayed by the device. If necessary, make the correction of measure(s).

▲ See section « calibrations »



CAUTION:

The sensors are fragile! Make sure they operate. In case of major fault, immediately call the technical department of your retailer who will give you the instructions to follow!



WARNING:

Before performing operations on the devices, ensure that the circuit of the pool is in mode « filtration »! Measurements can be correct only if the sensors are irrigated by water from the pool.



NOTE:

Never inject chemicals into waterless piping or without circulation. The mixture of chemicals can be hazardous to health and may cause severe eye, skin or mucous membranes lesions!

5-2 Commands of keyboards and displays

1) Devices keyboard



Key « Set »: Allows validation of parameters



Key « Cal »: Allows the entry of calibration modes



Key « + »: Increases or selects the value of the parameter



Key « - »: Decreases or selects the value of the parameter



NOTE:

Compositions of keys can be performed to enter into specific operations.

2) Display and LED (Light Emitting Diode)

Depending on devices, 4 or 8 LEDs can be used:

- LED « Set »: (Yellow) Indicates an operation is being
- LED « Cal »: (Yellow) Indicates that a calibration procedure is being
- LED « Alarm »: (Red) Indicates any alarm
- LED « Dos »: (Yellow) Indicates a pump is activated

And for HYDRO'pH/ORP[®] version:

- LED « pH »: (Yellow) Indicates the value shown is the pH
- LED « mV »: (Yellow) Indicates the value shown is the ORP
- LED « pH pump »: (Yellow) Indicates the pH pump is activated
- LED « Oxyd. Pump »: (Yellow) Indicates the oxidizing pump is activated



NOTE:

When handling the key,  metering pumps are stopped!

▲ See sections « Operating mode »

5-3 On/Off switch

The « on/off » switch of **HYDRO'pH[®]**, **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers is necessary for the commissioning of the equipment.

It also allows cutting the supply of controllers to make the use programming during the commissioning (Hidden mode).

It is also used for technical set off during an operating fault to await the technical services intervention.



CAUTION:

*In any case, this switch can be used for working inside the controller!
Only the primary power failure allows this intervention!*



5-4 Sensor(s) input(s)

The BNC inputs of pH and ORP sensors of **HYDRO'pH[®]**, **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers are « high impedance » inputs. They must be kept clean and free of moisture or corrosion.

They are identified when they are both. (One for pH the other for ORP)



CAUTION:

The BNC connectors must be kept clean and free of moisture or corrosion!

6 Hydro' controllers programming

6-1 Opening remarks

HYDRO'pH[®], **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers are equipped with a manual control keyboard and a high brightness red LED display to control the operation of devices.

These manual commands are provided to change values or to control the dosing pumps to ensure starting of the chemical product.



WARNING:

*A bad set point can be dangerous for you and your pool.
It can cause corrosion and destruction of equipment.
In case of doubt about the determination to be made, contact our technical services who will be pleased to advise you.*



NOTE:

*Make sure of the correct programming of your controllers.
Excess product, or a mixture, may cause harmful actions on the environment.*



NOTE:

Since its commissioning, a safe period of 3 minutes halts the operation of metering pumps! (Except in manual mode). This security is necessary for stabilization of measures before proportioning.



CAUTION:

*In case of exceeding the operating range of the controller, the pump(s) is (are) stopped and the « warning » light turns on.
(For pH: 6.00 < pH > 9.00 / For ORP: > 100mV)*

6-2 Procedures

HYDRO'pH[®], **HYDR'ORP[®]** and **HYDRO'pH/ORP[®]** controllers are equipped with an operating program providing main controls «normal mode» and a program «hidden mode» to adapt the controller to the pool and user's characteristics

a) « Hidden mode » Only used by technicians

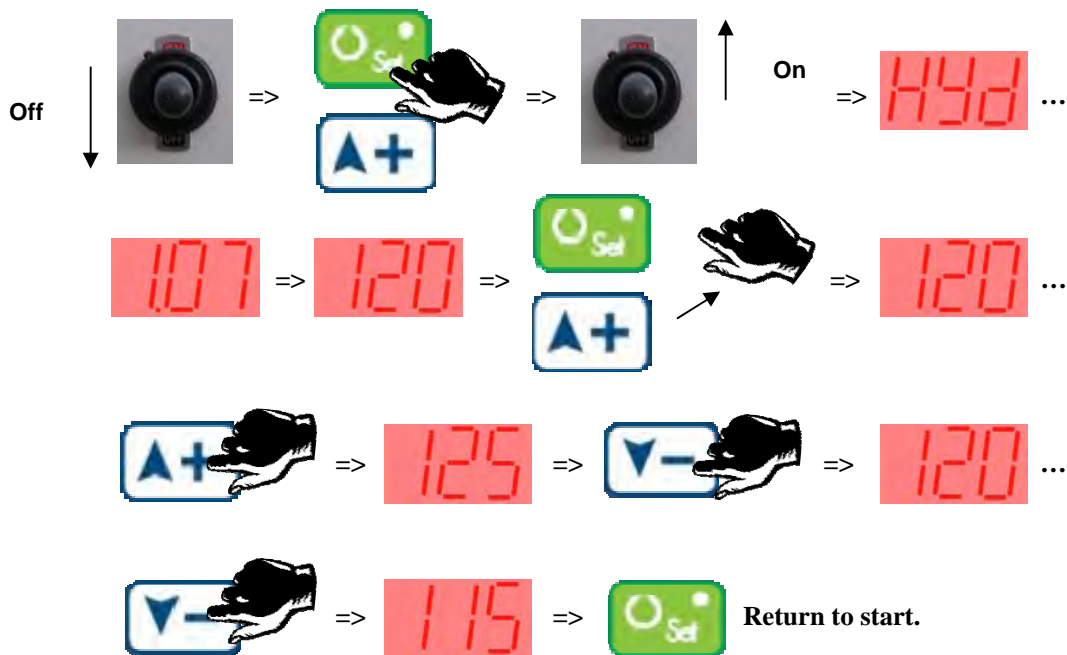
In any case, the «Hidden mode» is produced by combination of keys pressed before powering up the unit, maintained until the desired function is reached.

The « Hidden mode » is used to work out:

1. Operating time of pumps per filtration cycle or per day (On/Off)
2. Proportional band factor for controls computers
3. For pH, minimum and maximum terminals of the control set
4. Polarity of the remote control input
5. Recording or not of the last reported fault
6. The general reset (Return to factory settings)

A. Maximum operating time of the pH dosing pump per cycle

The hidden mode for setting the operating time of the pH pump is achieved by simultaneously pressing the keys « Set » and « + » when powering on.



The operating time of the pH pump can be adjusted from 5 to 600 minutes per filter cycle (or per day if the unit runs all day!)
 The "Factory" adjustment time is 120 minutes.

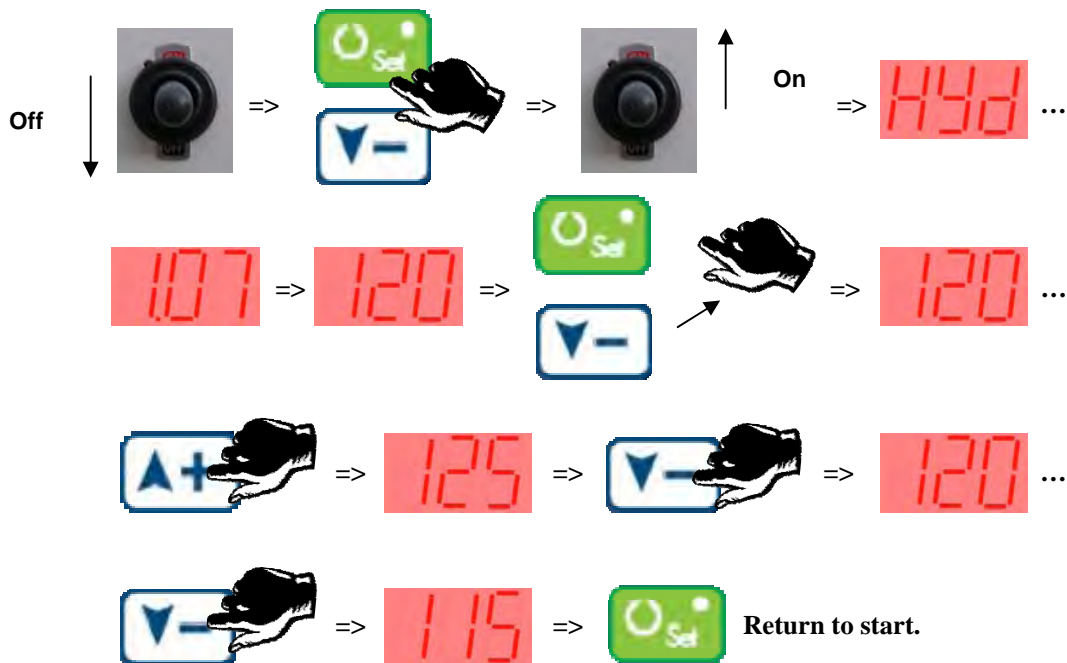


NOTE:

After the maximum time has elapsed, the pH dosing pump is stopped and the error « E01 » is displayed.

B. Maximum operating time of the ORP dosing pump per cycle

The hidden mode for setting the operating time of the ORP pump is achieved by simultaneously pressing the keys « Set » and « - » when powering on.



**The operating time of the oxidizer pump can be adjusted from 5 to 600 minutes per filter cycle (or per day if the unit runs all day!)
The "Factory" adjustment time is 120 minutes**

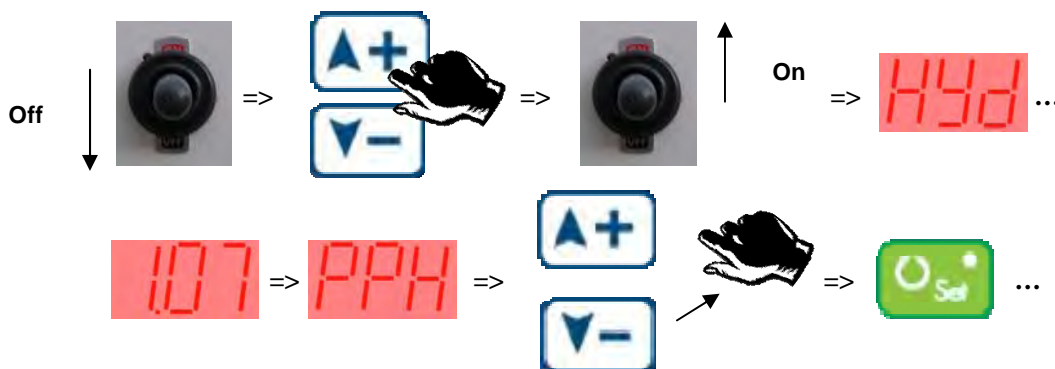


NOTE:

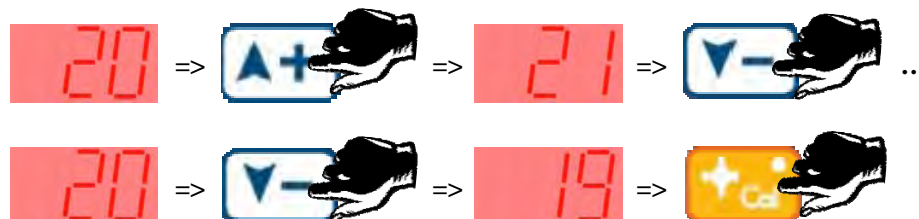
After the maximum time has elapsed, the oxidizer dosing pump is stopped and the error « E02 » is displayed

C. pH and/or ORP controllers proportional bands

The hidden mode to adjust the proportional band of pH and ORP controllers is achieved by simultaneously pressing the keys « + » and « - » when powering on.



Setting the proportional band of pH ...



Setting the proportional band of ORP...



Proportional bands factors of pH and / or ORP can be programmed between 5 and 300 times the minimum band (x1)

For pH « x1 » represents 0,04pH that is for a factor of 5, a band of 0,2pH

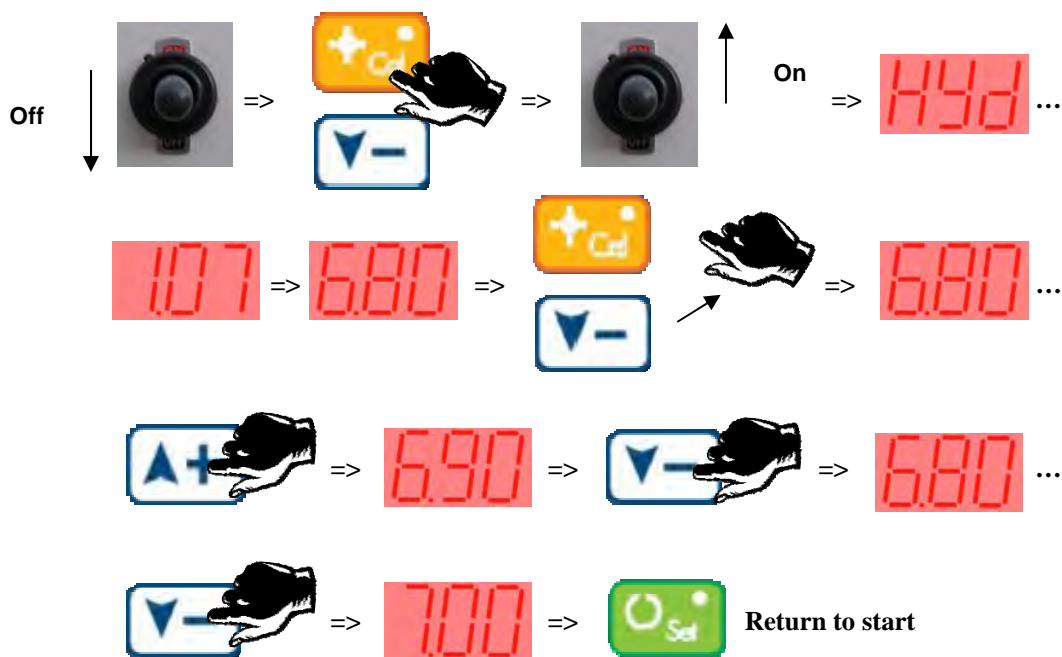
For ORP « x1 » represents 1,6mV that is for a factor of 5, a band of 8mV.

« Factory » values are: x20 for pH and x50 for ORP.

For instance, that means that for a differential value of pH of 0,2, the metering pump runs at 100% of its time; for a difference of 0,1 pH, it runs at 50% of its time.
The basic operating time of the pumps is 240 seconds or: 4 minutes!

D. Changing the minimum terminal of the pH control range

The hidden mode for changing the lower or minimum terminal of the pH control range is achieved by simultaneously pressing keys « Cal » and « - » when powering on.



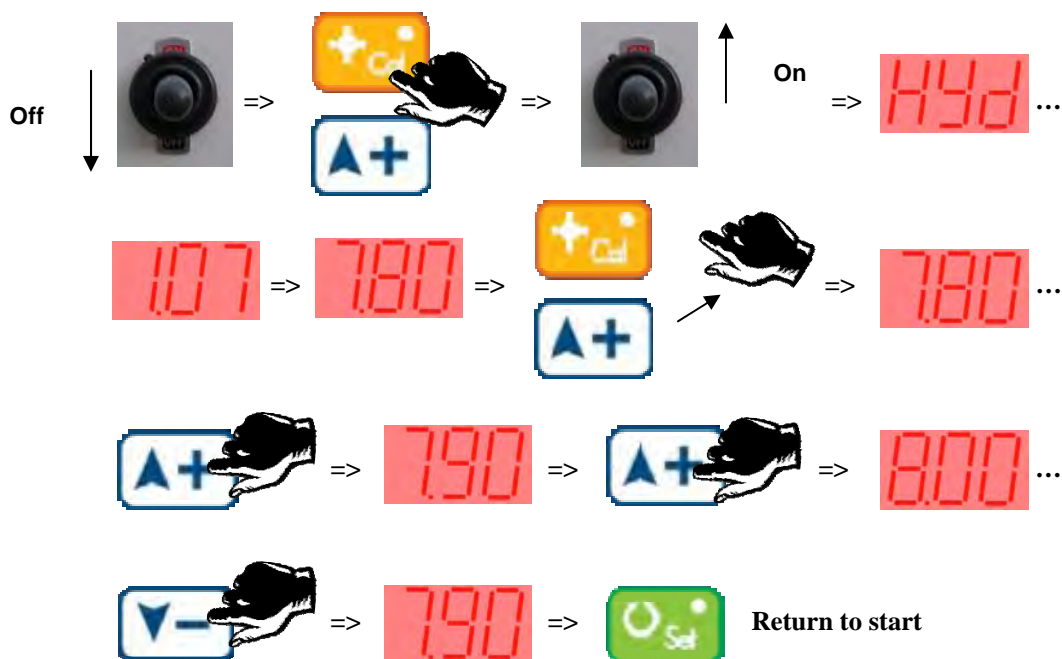
The lower or minimum terminal of the pH control can be adjusted between 6 and 8 or the maximum value if it is less than 8.

The setting is made in steps of 0,1pH.

« Factory » value is 6,8 pH.

E. Changing the maximum terminal of the pH control range

The hidden mode for changing the higher or minimum terminal of the pH control range is achieved by simultaneously pressing keys « Cal » and « + » when powering on.



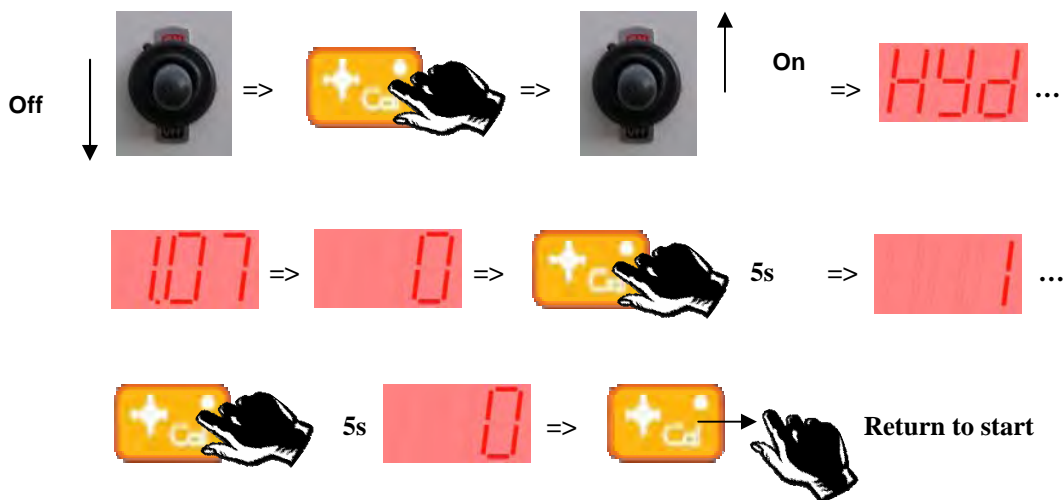
The higher or maximum terminal of the pH control can be adjusted between 7 (or the maximum terminal value if it is greater than 7) and 9.
 The setting is made in steps of 0,1pH.
 « Factory » value is 7,8pH.



NOTE: The standard « Factory » range is between 6,8pH and 7,8pH.

F. Polarity of the input « CAD »

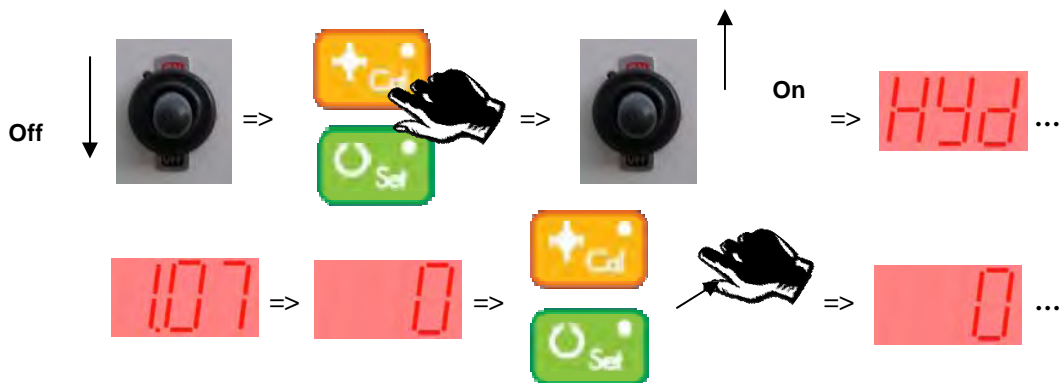
The hidden mode for changing the active polarity of the input « Remote Control » (CAD) is achieved by pressing key « Cal » during 5 seconds after powering on.

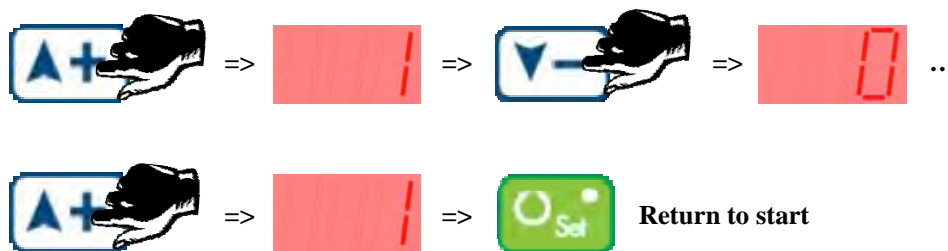


The polarity of « CAD » input can be adjusted to « 0 » active contact open or « 1 » active contact closed.
 «Factory» value is 0.

G. Record of the last reported error

The hidden mode for recording or not the last error reported is achieved by pressing key « Cal » during 5 seconds after powering on the device.
 This option saves the error reported and retained it for the reconnection of the device until its manual discharge.





**Record is granted when « 1 » was selected.
«Factory» value is 0.**

b) « Normal mode » Used by the customer

The « Normal mode » is used to work out:

1. Changing the display mode (only HYDRO'pH/ORP®)
2. Display and modify the controls set point(s)
3. Acquittal of displayed errors
4. Test metering pumps in manual for priming
5. Change the brightness of the display and LEDs
6. Calibrate the pH or ORP in automatic mode or by using standard reagents

A. Changing the display mode of pH and/or ORP controller

To view on the controller display the pH or ORP, simply press successively the keys « + » or « - ».

This function is also necessary to identify operations of visualization, modification of setpoints or calibration.

This function only concerns HYDRO'pH/ORP® controller.

Process:

Display the actual value of the pH of the pool:



Display the actual value of the ORP (in mV) of the pool:



NOTE:

The display mode is saved and will remain the same even after shutting off the controller power.

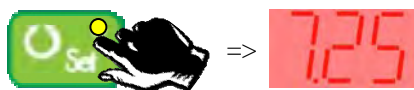
B. Displaying set points of pH and/or ORP controller

The display of set points is got by pressing the key « Set ».

First, for the HYDRO'pH/ORP® version, ensure the controller « Display mode ».

Example:

If the controller displays the pH, the set value matches the pH!



If the controller displays the ORP in mV, the value corresponds to the ORP!

**C. Changing set points of pH and/or ORP controller**

Changing points of the set point is obtained by pressing « Set » continuously, and then keys « + » or « - » to adjust the value.

First, for the HYDRO'pH/ORP® version, ensure the controller « Display mode ».

Process:**Changing the pH set point:**

or ...

**NOTE:**

The pH set point is adjustable in steps of 0.05 pH in the lower and upper limits set in the « hidden mode ».

As standard, the limit is between 6.80pH and 7.80pH.

Changing the ORP set point:

or ...

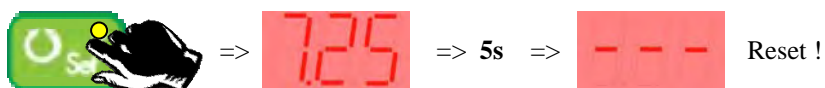


**NOTE:**

*The ORP set point is adjustable by step of 5mV.
As standard, the limit is between 350 and 950mV.*

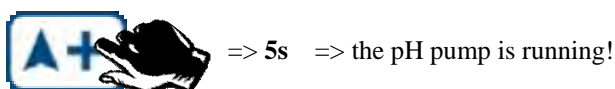
D. Faults reset

The faults reset is got by pressing on key « Set » continuously, until appear three small lines on the display.

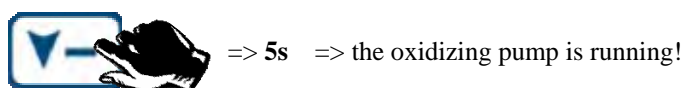
**E. Testing the metering pump(s)**

To manually trigger the operation of the metering pump in pH or ORP, just press more than 5 seconds keys « + » or « - ».

To test the pH dosing pump...



To test the oxidizing metering pump...



Immediately after releasing the key the pump stops!

F. Change the brightness of display and LEDs

To change the brightness of the display or indicators, simply press keys « Cal » and then « + » or « - ».



or...



Immediately after releasing the key and after a few seconds, the controller resumes normal operation!

G. Automatic calibration of pH and/or ORP (No reagents)



CAUTION: *Automatic calibration of pH or ORP does not use standard fluid! Prior to calibration, make the measurement of pH and / or ORP potential with reference equipment or chemical reagents!*



NOTE: *This operation does not require neither the shutdown of the filtration, nor the exit of the sensors from their holders!*



NOTE: *Chemical reagents for measurement of pH or ORP are not supplied with the controller. Usually, your pool specialist has provided you with a colorimetric reagent for measurement of pH of your pool water. Use it and raise the real value of the pool, and compare it to the value displayed. If the value is close to + / - 0.1 pH, do not perform calibration. The uncertainty of your reactive or of your eye is equal to the difference!*

To automatically calibrate the pH or ORP value, just press successively keys « CAL » then « Set » and adjust the value with « + » or « - » and confirm with « Set ». Before, for the HYDRO'pH/ORP® version, it is necessary to check the « Display mode » of the controller.

Automatic calibration of pH:



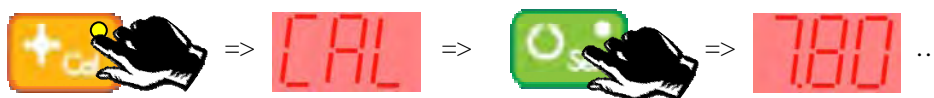
CAUTION: *To perform an automatic calibration of pH:*

- *filtration must operate for several minutes,*
- *the pH value displayed should be stable,*
- *metering pumps must be off,*
- *and the real pH value measured with your reagent or hand-held device must be recent.*

Conditions to perform automatic calibration of pH:

- **sensor must not be faulty or disconnected,**
- **The pH value displayed must be between pH 5.5 and pH 8.5**

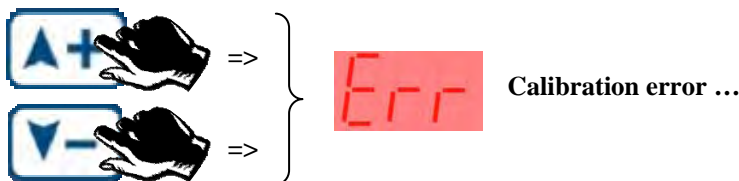
Process:



Adjust the display value to the value read with your standard reagent ...



If the pH value displayed is no longer between 5,5 and 8,5pH ...





Press « Set » to confirm calibration.

Once the calibration is complete, the controller resumes normal operation and displays the pH value changed!

If calibration error, the controller displays:



Automatic calibration of ORP:



CAUTION:

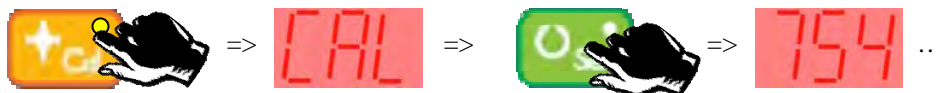
To perform an automatic calibration of ORP:

- filtration must operate for several minutes,
- ORP value displayed should be stable,
- metering pumps must be off,
- and the effective measured value of ORP with your hand-held device must be recent!

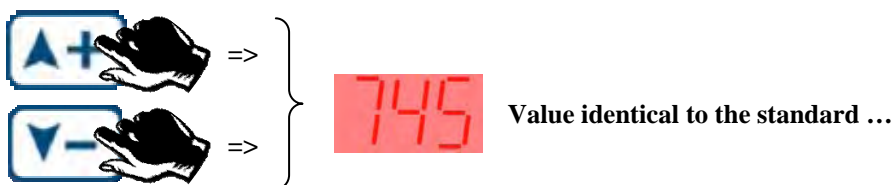
Conditions to perform automatic calibration of ORP:

- The sensor must not be faulty or disconnected,
- The displayed value of ORP must be between 200mV and 800mV

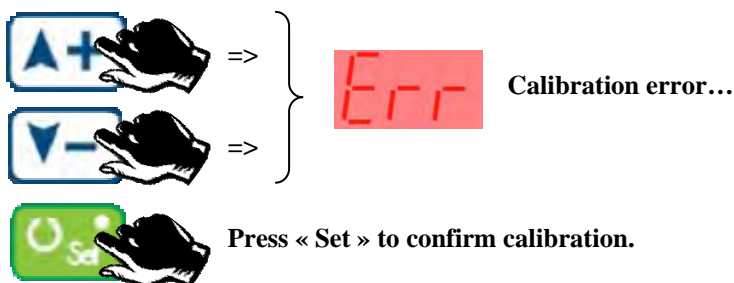
Process:



Adjust the display value to the value read with your standard reagent ...



If the displayed value of ORP is not between 200 and 800mV ...



Once the calibration is complete, the controller resumes normal operation and displays the ORP value changed!

If calibration error, the controller displays:



H. Calibration of pH and/or ORP with standard reagents



CAUTION:

The calibration of pH and ORP with standard liquids requires the exit of the sensor to be calibrated from its holder!



NOTE:

This operation requires the filtration stop and the setting of a cap to replace the sensor to be calibrated.



NOTE:

The standard chemical reagents for calibration of pH or ORP and the cap are not supplied with the controller!

Step 1: Stop filtration and close the isolation valves!

Step 2



Unscrew the «sensor-holder» nut by hand.

Step 3



Remove the sensor from its housing and remove the seal and the nut from the shaft.

Step 4



Put the rubber disk to replace the sensor and screw it all on the « sensor-holder »

Step 5: Open the valves and turn the filtration on!



Rinse the sensor with clean water without excessive pressure. Expel any dirt.

Take care not to break or damage the sensitive tip.

Lay it carefully before calibration.

Calibration of pH 7:



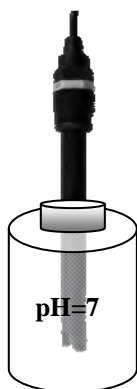
CAUTION:

To perform a calibration of the pH, it is imperative to start with the standard liquid pH = 7.00.



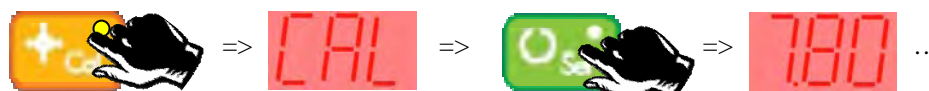
NOTE:

For pool, the calibration with pH = 7.00 may be sufficient. After operation, check the pH displayed by the controller is the actual pH of your pool. If it does not match perform the full calibration with pH = 4.00



Put the sensor in the standard reagent pH=7.00
 Wait for stabilization of the controller display.
 When the value is stabilized, perform the following operation ...

Process:



The value shown is the pH value to be corrected ...
 Press again on « Cal » during 5 seconds until you can see « PH7 ».



Upon completion of calibration, the controller resumes normal operation and displays pH = 7.00.

If calibration error, the controller displays:



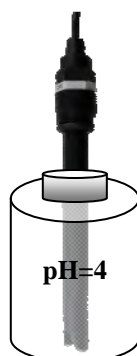
Rinse the sensor with clean water without excessive pressure before performing the calibration
 pH = 4.00

Calibration of pH 4:



CAUTION:

To perform a calibration of pH 4, it is imperative to start with the calibration of the standard liquid pH=7.00.



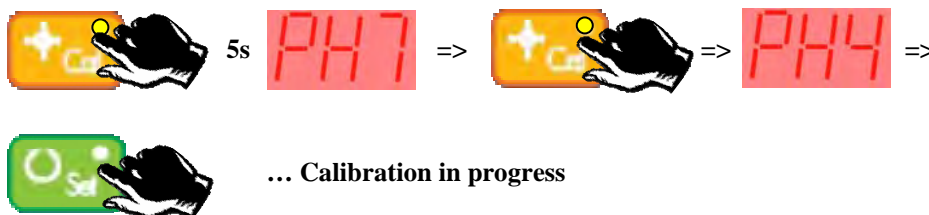
Put the sensor in the standard reagent pH=4.00
Wait for stabilization of the controller display.
When the value is stabilized, perform the following operation ...

Process:



The value shown is the pH value to correct ...

Press again on « Cal » during 5 seconds until you see on the display « PH7 »... then press again on « Cal » to display « PH4 »...



Upon completion of calibration, the controller resumes normal operation and displays pH = 4.00.

If calibration error, the controller displays:



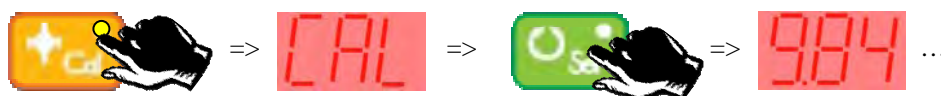
NOTE:

It is possible to calibrate the pH sensor with another reagent reference as the pH = 10 for example.

pH calibration with another reagent:

Example with pH=10

Process:



The value shown is the pH value to correct...

Press again on « Cal » during 5 seconds until you see on the display « pH7 »... then press again on « Cal » to display « pH4 »...



Adjust the display value to the standard value of your reactive ...



Upon completion of calibration, the controller resumes normal operation and displays the value of your standard!

If calibration error, the controller displays:



Step 6: Stop filtration and close the isolation gates!

Step 7: Replace the sensor in its sensor holder

Step 8: Open the gates and turn the filtration on!

Zero ORP Calibration:



CAUTION:

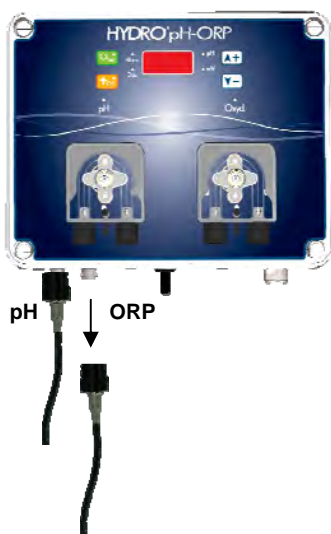
To perform a calibration of the « zero » ORP, it is imperative to know the functioning of the sensor.



NOTE:

This operation is performed at the factory and should not in principle be renewed! It must be made by an experienced technician.

Procedure:



Disconnect the ORP sensor of the controller.

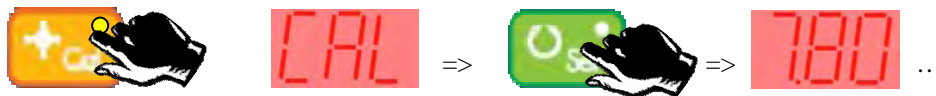


Short-circuit the input of ORP with a small copper wire.

Calibrate the "zero" ORP as follows:

First, for HYDRO'pH/ORP® version, it is imperative to check the « Display mode » of the controller.

Operation:



The indicated value is the value of zero ORP to correct ...
Press on « Cal » during 5 seconds until you see on the display « rd.0 »...



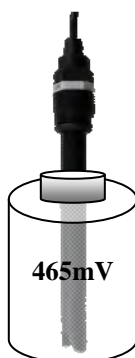
Upon completion of calibration, the controller resumes normal operation and displays 0!

If calibration error, the controller displays:



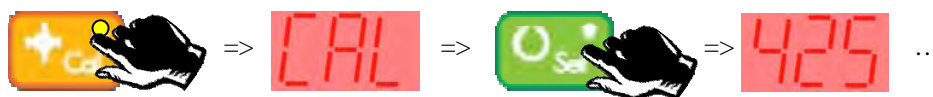
Remove the short circuit and reconnect the ORP sensor!

Calibration of ORP 465mV:

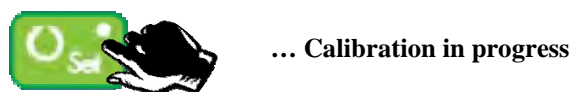
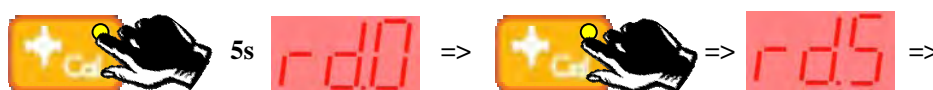


Put the sensor in the standard reagent 465 mV.
Wait for stabilization of the controller display.
When the value is stabilized, perform the following operation

Process:



The value shown is the pH value to correct ...
Press on « Cal » during 5 seconds until you see on the display « rd.0 »... then press again on « Cal » to display « rd.5 »...



Upon completion of calibration, the controller resumes normal operation and displays 465mV!

If calibration error, the controller displays:



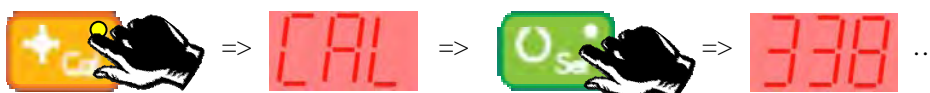
NOTE:

It is possible to calibrate the ORP sensor with another reagent such as 325mV reference for instance.

ORP calibration with another reagent:

Example with 325mV

Process:



The value shown is the ORP value to correct ...

Press on « Cal » during 5 seconds until you see on the display « rd.0 »... then press again on « Cal » to display « rd.5 »...



Adjust the value of the display to the standard value of your reactive ...



Upon completion of calibration, the controller resumes normal operation and displays the value of your standard.

If calibration error, the controller displays:

Step 6: Stop filtration and close the isolation gates!

Step 7: Replace the sensor in its sensor holder

Step 8: Open the gates and turn the filtration on!

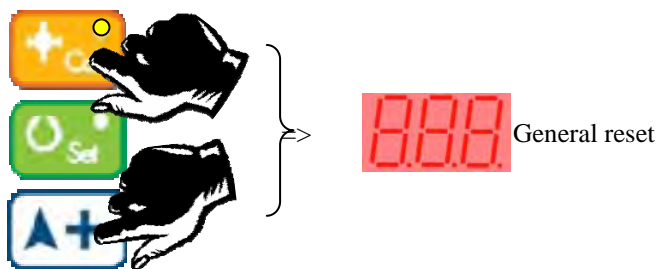
H. General reset of the controller (Back to « factory » parameters)

The general reset is achieved by **simultaneously pressing** the keys « CAL», « Set » and « + ».



CAUTION:

This procedure cancels both the settings of « User » and « Hidden » modes!

Procedure:

Reminder of « Factory » settings:

- Cancellation of pH4 and pH7 calibrations
- Cancellation of Zero ORP and 465mV calibrations
- Setting to 120 minutes for the pH pump running time
- Setting to 120 minutes for the oxidizing pump running time
- Setting of pH set point to 7,40
- Setting of ORP set point to 750mV
- Setting of the operating band of the pH controller between 6,8 and 7,8pH
- Setting to x20 for the pH proportional band
- Setting to x50 for the ORP proportional band
- Errors reset
- Cancellation of errors memorization
- Selecting the display mode of pH
- Setting the display brightness to the maximum

**CAUTION:**

*This procedure must be performed by a qualified technician.
All calibration operations must be resumed.
The settings in hidden mode must also be reconfigured according to the pool if necessary.*

7 Maintenance

7-1 Maintenance of PH and ORP sensors

Sensors for pH and ORP are maintenance free (to change). However, the good physical condition of sensors should be checked regularly.

- Check there is no dirt or leaves on the heads of the sensors
- Carry out their checks by performing calibrations of control
- Remove them during winter and keep them in original packaging. Do not forget to put water or (better) retention liquid in the sensor cover.



CAUTION:

The sensors should never be left dried in the pool hose. If dewatering the lifetime is reduced or terminated.



CAUTION:

Repeated surchlorations or deposits of chemicals can affect the operation or destroy sensors.



CAUTION:

Flocculation should never be made on direct contact with sensors. If flocculation occurs in a skimmer so continuously, it is recommended to mount the sensors after the filter.

7-2 Maintenance of the dosing tubes of the metering pumps

Once the pump tube has cracks or leaks, make the change immediately.

Procedure for changing the tube:



Unscrew the fixing screw of the front cover panel and remove it



Position the roller holder at 10H20.



Completely clear the left connection stretching it outwards and then rotate the roller holder to clear the tube.



Position the roller holder at 10H20.



Insert the left connection into its slot, then pass the tube under the roller holder guide. Turn the roller holder, accompanying the tube in the pump head until the right-hand connector.



Show the cap on the pump within the arrows, then tighten the fixing screw of the cover.

8 Wintering

**CAUTION:**

The sensors should never stay dried during the winter in the pool hose.

Sensors should be kept in a dry place, away from moisture in their original packing.

A conservation agent is available from your installer. If you forget, put tap water in the sensor cover, and store it in its original packing.

The lifetime of the sensors depends on the use and conservation.

In normal use, the duration exceeds three years. In case of poor preservation or abnormal use, it can be reduced to a few months!

If these precautions are not taken, the sensors will not operate next season.

**CAUTION:**

The metering pumps should also be wintered.

Run clean water into the pumps tubing.

Disconnect the tubes in case of frost.

Set the pressure rollers of metering pumps according to the position

« 7:05 » by turning the roller holder in the direction of clockwise.

If these precautions are not observed, the pumps will not operate next season. “Tygon” tube will then be marked and destroyed.

**CAUTION:**

Stop pH control by cutting power.

No special precaution has to be performed.

**CAUTION:**

Empty cans of chemicals.

**NOTE:**

The chemicals used in pools can be dangerous and corrosive! They can damage your health and cause environmental damage.

Any mixture of chemicals can be hazardous to health and should never be done!

9 Accessories

Accessories and spare parts for electronic HYDRO' electronic controllers

	Designation of the spare part	Code Reference
	HYDRO'pH single controller with pump 0,4l/h 230V/50Hz	HYD 2120
	HYDRO'pH single controller with pump 0,8l/h 230V/50Hz	HYD 2121
	HYDRO'pH single controller with pump 1,6l/h 230V/50Hz	HYD2122
	HYDRO'pH single controller with pump 2,4l/h 230V/50Hz	HYD2123
	HYDR'ORP single controller with pump 0,4l/h 230V/50Hz	HYD 2520
	HYDR'ORP single controller with pump 0,8l/h 230V/50Hz	HYD 2521
	HYDR'ORP single controller with pump 1,6l/h 230V/50Hz	HYD 2522
	HYDR'ORP single controller with pump 2,4l/h230V/50Hz	HYD 2523
	HYDRO'pH-ORP single controller with pumps 0,4l/h 230V/50Hz	HYD 2420
	HYDRO'pH-ORP single controller with pumps 0,8l/h 230V/50Hz	HYD 2421
	HYDRO'pH-ORP single controller with pumps 1,6l/h 230V/50Hz	HYD 2422
	HYDRO'pH-ORP single controller with pumps 2,4l/h 230V/50Hz	HYD 2423
	HYDRO'pH-DUO single controller with pumps 0,4l/h 230V/50Hz	HYD 2320
	HYDRO'pH-DUO single controller with pumps 0,8l/h 230V/50Hz	HYD 2321
	HYDRO'pH-DUO single controller with pumps 1,6l/h 230V/50Hz	HYD 2322
	HYDRO'pH-DUO single controller with pumps 2,4l/h 230V/50Hz	HYD 2323
	5x20 spare glass fuse for HYDRO controller (x10)	FUS T160
	Bracket + screws for HYDRO' wall box...	BOT 4621
	Mounting kit (Screws+ rawplugs)	KFB 0001

pH or ORP sensors for HYDRO' electronic controllers

	Designation of the spare part	Code Reference
	Standard pH sensor cable 6m	CAA 2524
	Standard ORP sensor cable 6m	CAA 2522
	Standard solution pH=7.00	CAA 2533
	Standard solution pH=4.00	SOL 0002
	Standard solution ORP 465mV	SOL 0014
	pH or ORP sensor-holder	RAC1212
	External test cap for sensor	SKY 0000

Accessories for metering pumps

	Designation of the spare part	Code Reference
	PE Discharge nozzle (1m) 4x6mm	TPE 0604
	Suction pipe in clear PVC (1m) 4x6mm	TPC 0604
	Roller-holder for HYDRO Dulco metering pump (0,4 à 2,4l/h)	DF2 9478
	Standard « Tygon » tube for all flow rates	DF2 9481
	Injection valve for 4/6mm tube	HYD 0001
	Suction-rose for 4/6mm tube	HYD 0002
	Bottom tank detection kit + external command	ECK 0001
	Roll of teflon pipe for waterproofness	TEFLONR

10 Failures and remedies

Failures and possible causes



NOTE:

In case of malfunction on the external sensors, contact your after sales service.

Failure	Cause	Remède
The displays do not light up after switching on. No lights are on.	✓ Primary power supply faulty	✓ Check the fuse of the primary power supply. ✓ Check the power cable.
When powering, sensor (s) do not measure (s) or displayed values are crazy.	✓ Cable sensors offline ✓ Faulty sensor	✓ Check the sensor cable ✓ Check the BNC connector ✓ Change the sensor
The sensor shows a maximum value at all times.	✓ Sensor cable cut ✓ Faulty sensor	✓ Check your connections or replace the faulty sensor
Continuing instability of the measurement sensor.	✓ Worn or defective sensor ✓ Presence of air in the filtration ✓ External interference	✓ Change the sensor. ✓ Check the priming of filtration.
Unable to calibrate the sensor.	✓ Poor electrode or unstable measurement	✓ Change the electrode and check the priming of filtration.
Disturbed and unstable control.	✓ Incorrect parameters setting	✓ Check the program settings. ✓ Check the behaviour of the site and adjust the control parameters.
Proportioning devices do not assay.	✓ Controller safekeeping	✓ Check the errors displayed. ✓ Check the operating limit exceeded.

10 Controller care/ maintenance

The control device is maintenance free.

Repairs can only be performed by qualified technicians and must be achieved in our factory of SAUVAGNON.

In case of problem, please contact our after-sales technical service.

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