PERAQUA®

INSTRUCTIONS AND USER MANUAL

iQntrol DOS-ECO

www.peraqua.com

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1 WARNING AND ADVICES

Please read the warning notices very carefully because they provide important information regarding safety in installation, maintenance and use of the pump.

- Keep this manual in a safe place, so that it will always be available for further consultation.
- The device complies with EMC: 2004/108/EEC “electromagnetic compatibility” and LVD: 2006/95/EC “ low voltage ” as also the subsequent modifications.

N.B. : the pump has been constructed in accordance with best practice. Both its life and its electrical and mechanical reliability will be enhanced if it is correctly used and subjected to regular maintenance.

1.1 ⚠ Guarantee and Warning

1.1.1 General equipment

The material is guaranteed 24 months parts and labour. The return address in our center is the following :

PERAQUA Professional Water Products GmbH
Handelsstraße 8
4300 St. Valentin - Austria

The shipping costs are charged of the customer. If the repair is carried out as part of the warranty, return is supported by Peraqua. The wear parts excluded of the warranty are: pH or redox probe (except for the validation of the warranty extension), injection valve, foot filter and peristaltic hose.

⚠ **WARNING** : any intervention or repair to the internal parts of the pump must be carried out by qualified and authorized personnel. The manufacturers decline all responsibility for the consequences of failure to respect this rule.

1.1.2 Warranty extension for the sensor

Applicable conditions : The user's purchase must be declared on the PERAQUA website (www.peraqua.com) within one month. The warranty runs for 12 months from the date of. The warranty consists of the direct replacement of the sensor identified as being faulty by our Technical Department, or its repair, after examination by our Technical Department, excluding any other compensations of whatever form.

Exclusion conditions : This warranty does not cover damage caused by an accident, improper installation or use, a lack of reasonable care, attempted falsification or attempted repair performed by an unauthorised person.

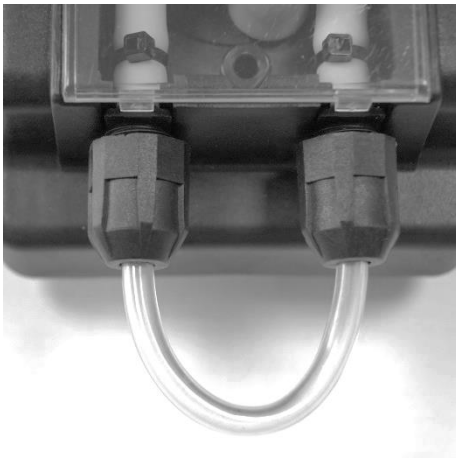
Return conditions :

- The probe's serial number must always be on its cable and readable as at the time of purchase.
- A photocopy of the purchase receipt must be sent together with the return package.
- The sensor must be sent in its original packaging with the extremity protected by its cap and filled with water.

The transport costs to our company must be paid by the customer. However, for sensors under warranty, the return transport costs will be paid by PERAQUA.

1.2 ⚠ Shipping and transporting

L'expédition No matter what the means of transport employed, delivery of the pump, even when free to purchasers or the addressee's domicile, is always at the purchaser's risk. Claim for any missing materials must be made within 10 days of arrival, while claims for defective materials will be considered up to the 30th day following receipt. Return of pump or other materials to us or the authorized distributor must be agreed beforehand with the responsible personnel. Material should be disassembled and packed with care. All parts in contact with the chemical should be purged and rinsed for everyone's safety. If the pump can not be purged, fasten the input with the output using a tube (see figure below). In the case of non-compliance with this guideline, we reserve not to support the materials and to return it at your expense and any damage created by the chemical on the material will undergo a repair quote.



1.3 ⚠ Proper use of the pump

The pump should be used only for the purpose for which it has been expressly designed namely the dosing of liquids. Install the pump in a dry and not floodable place and well away from sources of heat, and in any case, at environmental temperature not exceeding 40°C. The operating minimum temperature depends of the liquid to be pumped, bearing in mind that it must always remain in a liquid state. Any different use is to be considered dangerous. The pump should not therefore be used for applications that were not allowed for in its design. In case of doubt please contact our offices for further information about the characteristics of the pump and it proper use. The manufactures can not be held responsible for damage deriving for improper, erroneous or unreasonable use of the pump.

1.4 ⚠ Risk

After unpacking the pump, make sure that it is completely sound. In case of doubt, do not use the pump and contact qualified personnel. The packing materials (plastic bags, polystyrene, etc.) should be kept out of the reach of children: they constitute potential sources of danger.

Before you connect the pump make sure that the voltage ratings correspond to your particular voltage supply. You will find this value on the rating plates attached to the pump.

The electrical installation to which the pump is connected must comply with the standards and good practice rule in force in the country under consideration.

Use of electrical equipment always implies observance of some basic rules. In particular:

- Do not touch with wet or damp hands or feet.
- Do not operate the pump with bare feet (typical place: swimming pool)
- Do not leave the equipment exposed to the atmospheric agents
- Do not allow the pump to be used by children or unskilled individuals without supervision

The device must be supplied through a circuit with a residual current differential device (RCD) rated differential operating current not exceeding 30 mA

In case of breakdown or improper functioning of the pump, switch off, but do not touch. Contact our technical assistance for any necessary repairs and insist on the use of original spares. Failure to respect this condition could render the pump unsafe to use.

In case of damage of power supply cord please ask the repair to our technical assistance or qualified and authorized personnel, to avoid any hazard.
When you decide to make no further of an installed pump, make sure to disconnect it from the power supply.
Before carrying out any service on the item, check:
1) Disconnect the plug from the mains.
2) Relieve all the pressure from the pump head or the injection tube.
3) Drain or flush all dosing liquid from the pump head. This operation can also be done with the pump disconnected from the plant by turning the pump upside-down for 10 seconds and without connecting the tubing to the nipples.
In event of possible losses on the hydraulic system of the pump (breakage of the O-ring, the valves or the hoses), the pump should immediately be brought to a stop, emptying and depressurizing the delivery hos while taking all due the safety precautions (gloves, goggles, overalls, etc.).

1.5 ⚠ Toxic and/or dangerous liquid dosage

To avoid risk from contact with hazardous liquids or toxic fumes, always adhere to the notes in this instruction manual:
• Follow the instructions of the dosing liquid manufacturer
• Check the hydraulic part of the pump and use it only if it is in perfect condition
• Use only the correct materials fir the tubing, valves and seals to suit the liquid to be dosed : where possible shield the tubing with PVC conduit.
• Before disconnecting the metering pump, make sure to flush out and neutralize the pump head with the proper reagent liquid.

1.6 ⚠ Assembling and dismantling the pump

1.6.1 Assembly

See paragraph **3 RECOMMeNDATIONS and INSTALLATION** page 9

1.6.2 Dismantlement

Proceed as follows when you dismantle the pump or before performing any operation on it :

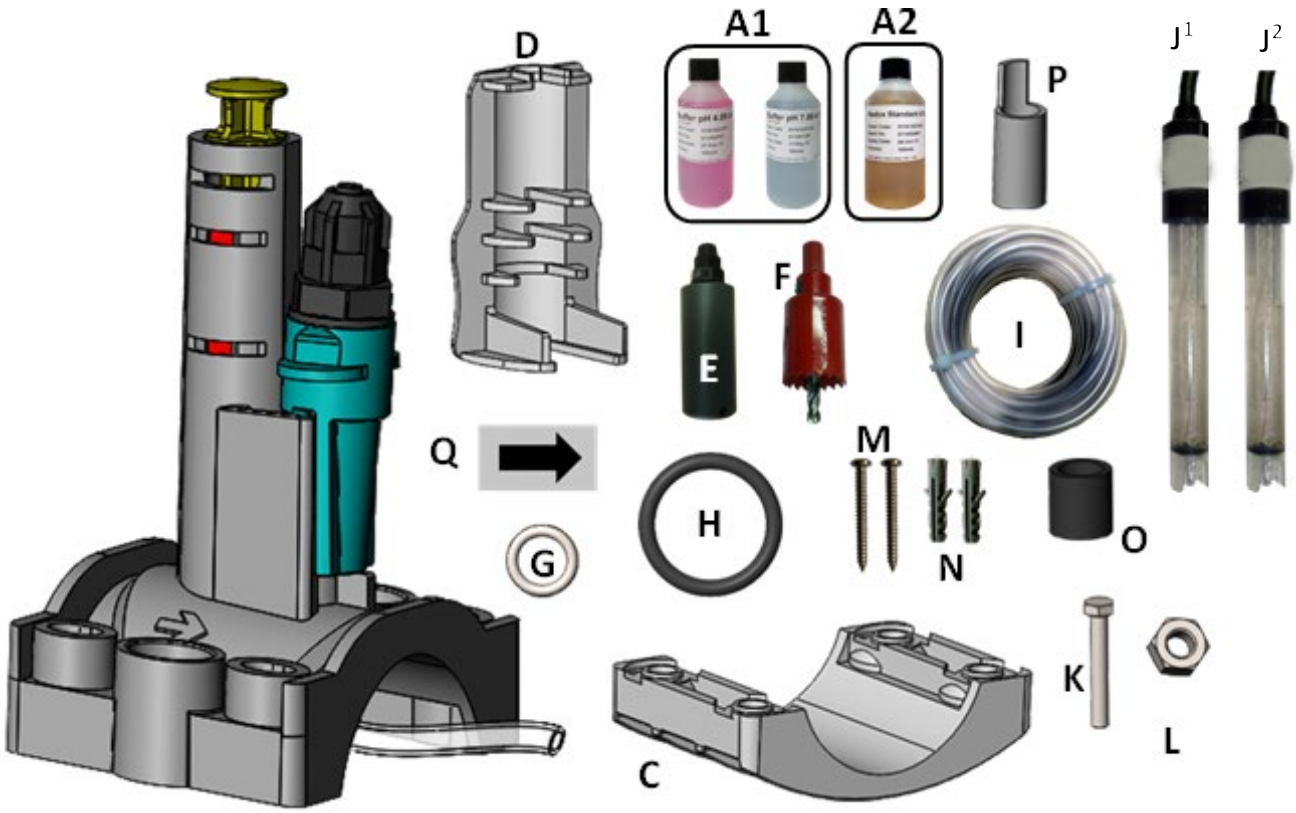
- Disconnect the plug from the mains.
- See paragraph **1.2 ⚠ Shipping and transporting** page 5

2 DOS-ECO DESCRIPTION

The DOS-ECO is characterized by its ability to measure the pH (0 to 14 pH) with its probe placed in the filtration circuit which analyzes the water of your pool.
Depending on the measured value, the DUO will inject the amount of product needed to maintain the water balance of the pool thanks to its dosing pump.
The DUO operates as dosing acid (pH-) or basic (pH+) depending on its configuration.

2.1 Parts description

The complete list of accessories delivered with the equipment is given below. All the parts will be necessary for the correct operation of your unit.

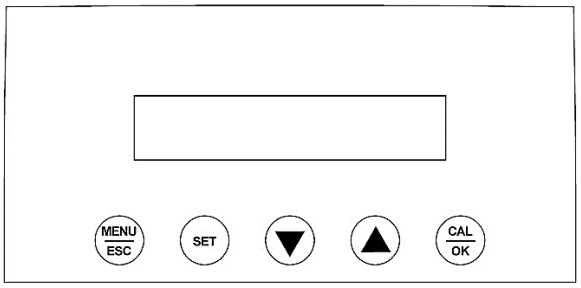


A1 : pH4 / pH7 calibration solutions (kit pH)
A2 : 475mV calibration solution (kit redox)
B : Probe holder (x2)
C : Guide collar (x2)
D : Clip (x2)
E : Foot strainer
F : Drill bit
G : Probe's o-ring (x4)
H : Probe holder's o-ring (x2)
I : 4x6 PVC tube (4m) (x2)
J^1 : pH probe
J^2 : redox probe

K : Probe holder's screw (x8)
L : Probe holder's nut (x8)
M : Wall mounting screw (x2)
N : Wall mounting plug (x2)
O : Spacers for Ø63 pipe (x8)
P : Spacer for long
probe 120mm (x2)
Q : Water direction flux arrow

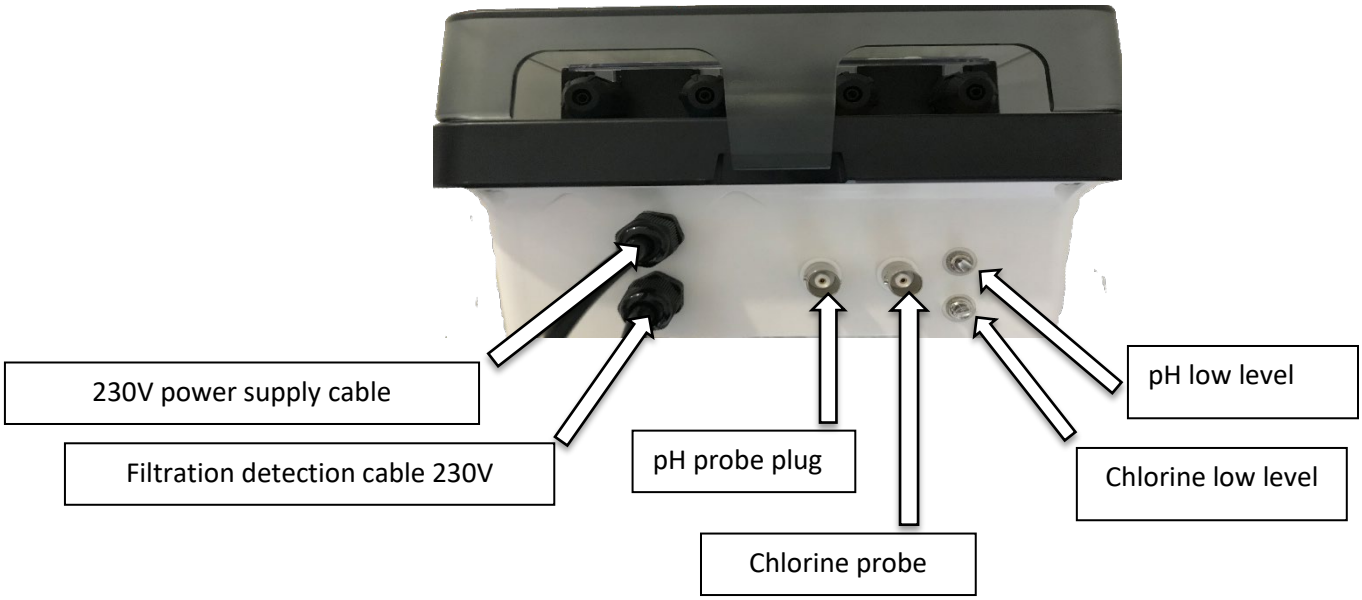
Optionnal : Sucction lance

2.2 Buttons description



Buttons	Type d'appuis	Actions
▼	Short press ▼	- Decrease a numerical value - Scroll a list of selections
	Long press ▼	- Decreases a numerical value quickly
▲	Short press ▲	- Increase a numerical value - Scroll a list of selections
	Long press ▲	- Increases a numerical value quickly
MENU ESC	Short press MENU ESC	- Switch from one display to an other - Exit current menu
	Long press MENU ESC	- Give access to the installation configuration
SET	SET with ▲	- SET & ▲ Increase the value of setpoint
	SET with ▼	- SET & ▼ Decrease the value of setpoint
CAL OK	Short press CAL OK	- OK allows the user to validate the value changes or validate a selection in a menu - Switch from one display to an other
	Long press CAL OK	- CAL allows the user to enter the automatically-guided calibration phase

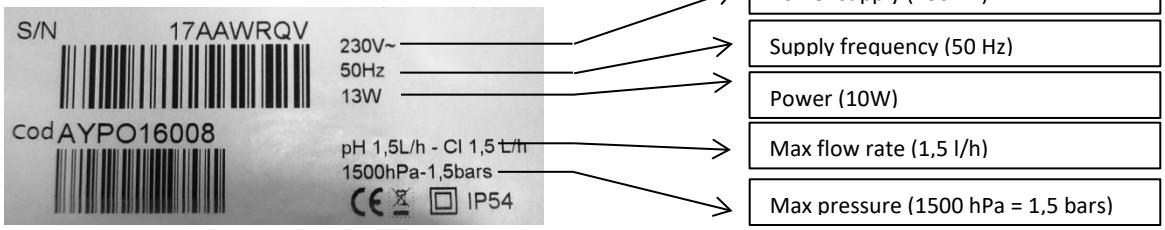
2.3 DOS-ECO plugs description



3 RECOMMENDATIONS AND INSTALLATION

3.1 Recommandations

1.1.1 Nameplate



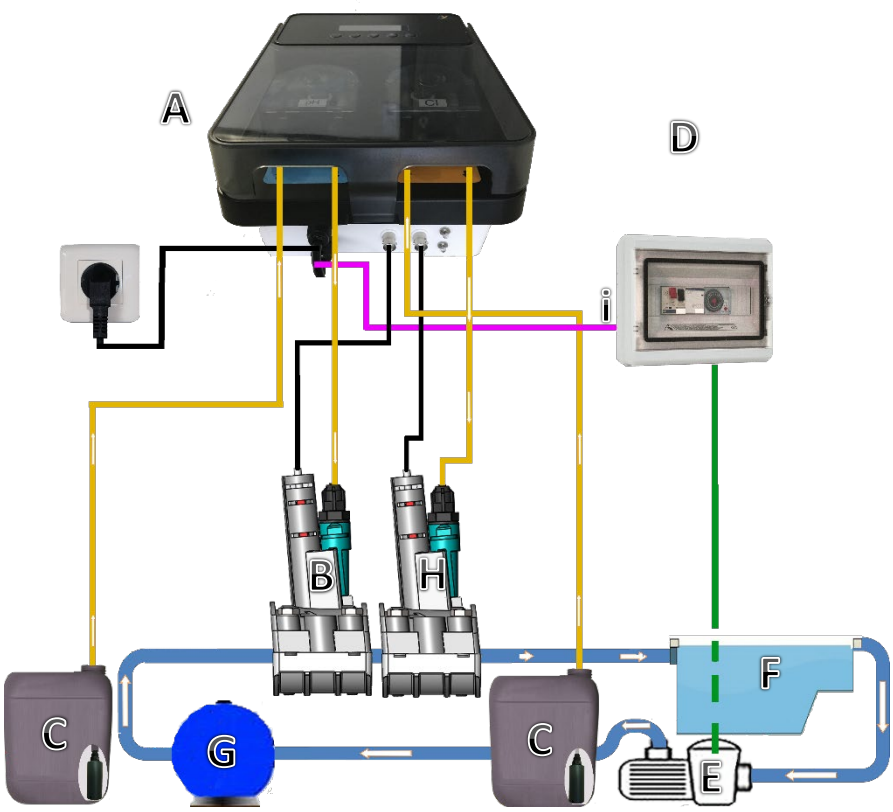
3.1.2 Recommended chemicals

- It is recommended to use sulfuric acid, which is 100% compatible with the Santoprene tube.
- It is recommended to use chlorine diluted to 5% (maximum 10%)

3.1.3 Unrecommended chemicals

- It is not recommended to use **hydrochloric acid which can reduce the peristaltic tube's lifetime to a few weeks** and oxidise the pump's s metallic parts. In this case, the warranty is voided
- The **stabilizer rate must be less than 15 ppm** in order not to disturb the reading of the redox.
- The use of chlorine in hard water may clog the injection valve by the formation of a white deposit on the part in contact with water. Please periodically check that the passage of the valve is free. In case of blockage, the peristaltic tube may be damaged.

3.2 Hydraulic and electrical installation principle



Description des repères

A- DOS-ECO connected to a permanent power supply and filtration detection

B-H 2 in 1 probe holder :

B- pH probe holder: supports the pH probe and the injection valve

H- Probe holder for Rx: supports the redox probe and the injection valve

C- Chemicals tanks

D- Electrical control box for the control of the swimming pool circulation pump

E- Pool water circulation pump

F- Pool

G- Pool filtration

i- Electrical cable for wire detection connected in electrical box D

⚠ Warning :

-Under no circumstances will "i" be connected in parallel to the power supply terminals of the filter pump "E" in the electrical box "D".

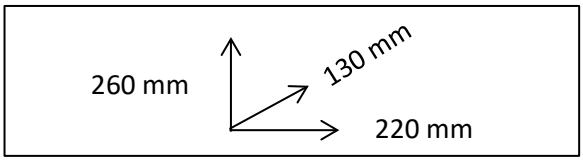
- The 2 in 1 probe holder "B" or "H" can have a maximum inclination of +/- 45° with respect to the vertical axis.

-For an optimal lifetime of your peristaltic tube, it is preferable not to exceed a pressure of 1 bar and in no case exceed a pressure of 1.5 bar.

-The pH probe must be located before (upstream) the redox probe

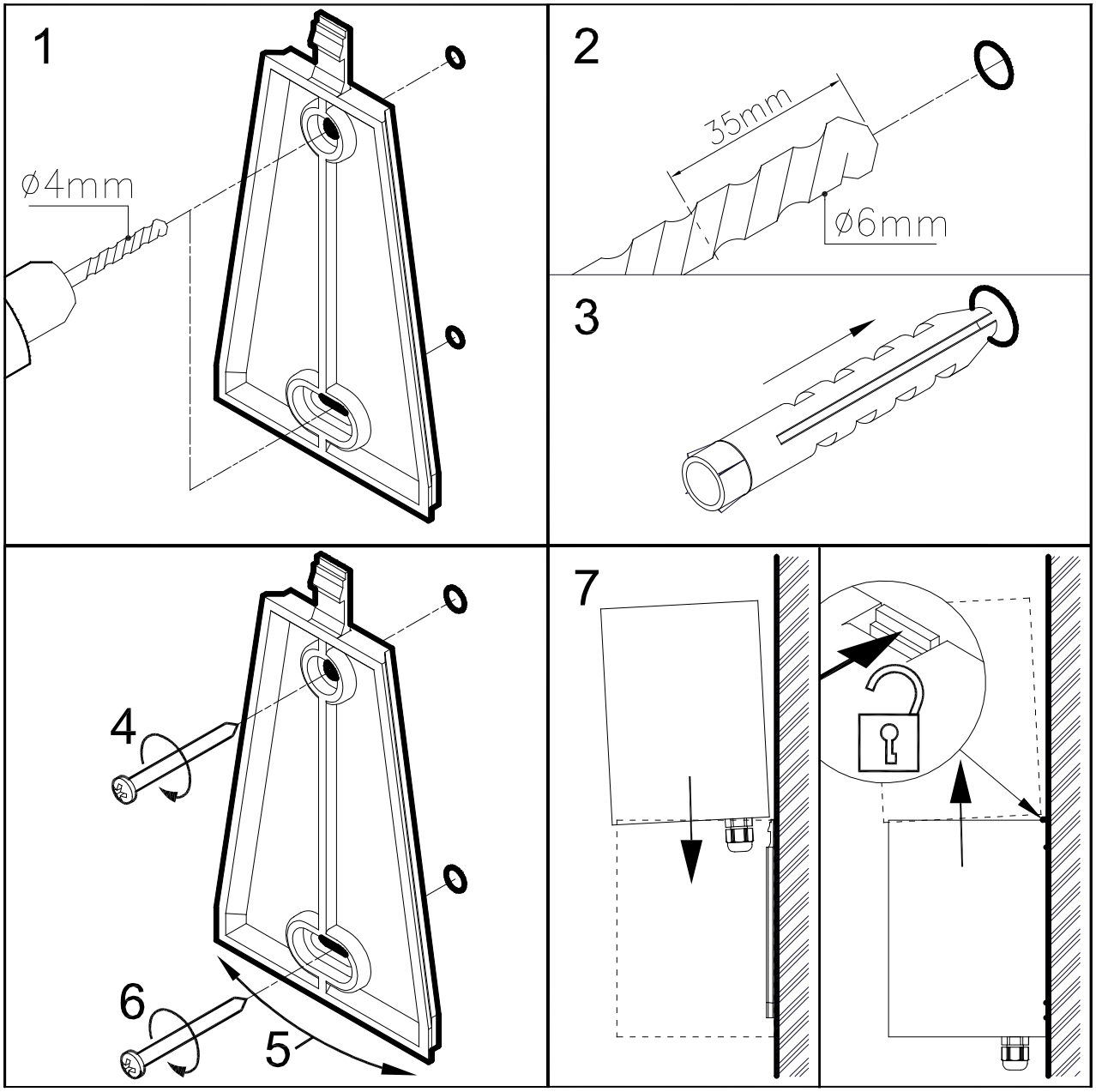
3.3 Device Dimensions

Height: 260 mm
Width: 220 mm
Depth: 130 mm



3.4 Device installation

STEP 1 : Mounting the housing



STEP 2 : Prepare the sensor for start-up

1) Remove the sensor's protective cap and keep it to re-use it for the winter shutdown period

2) Leave the sensor submerged in tap water for at least **20 minutes**, before proceeding with the calibration.

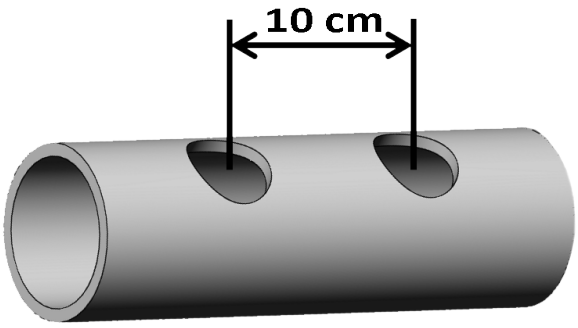
We therefore recommend that you start your installation with this step.

Do the same for the Rx probe.

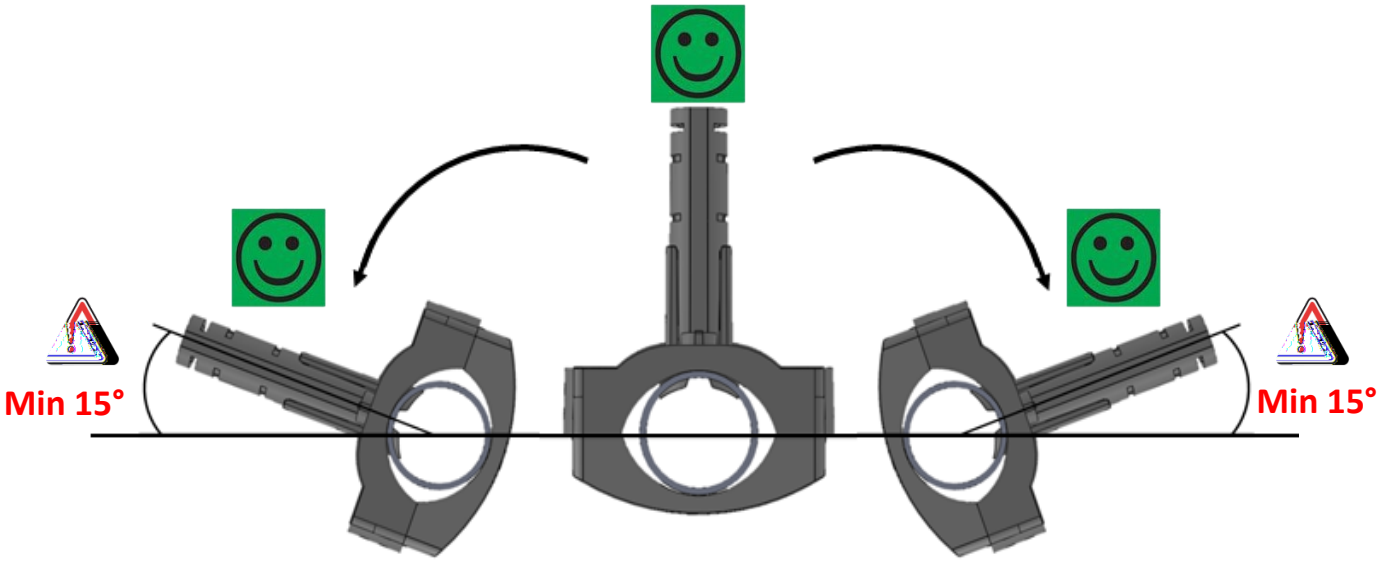
STEP 3 : Drill a hole in the pipe using tool F

F

Sensor holder pH + sensor holder RX

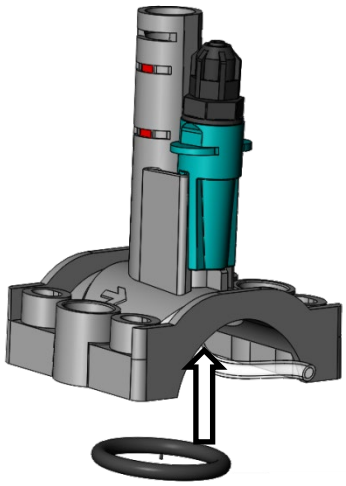


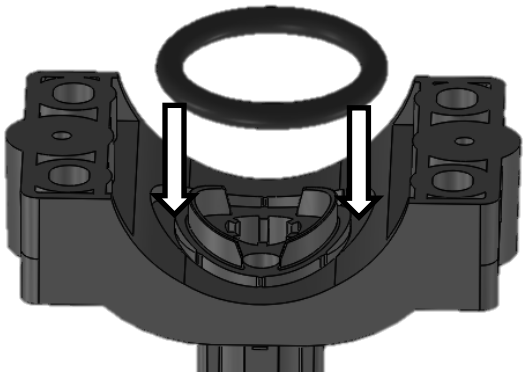
Positioning on a horizontal pipe



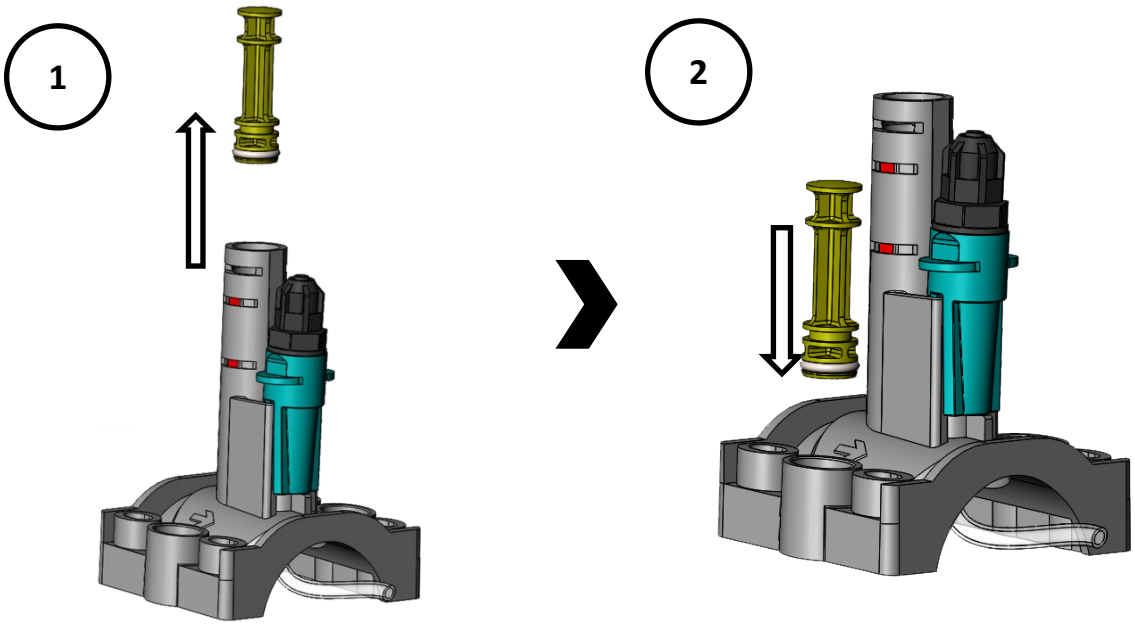
STEP 4 : Preparation of the probe holder

Mount the O-ring (H) under the support flange (B).

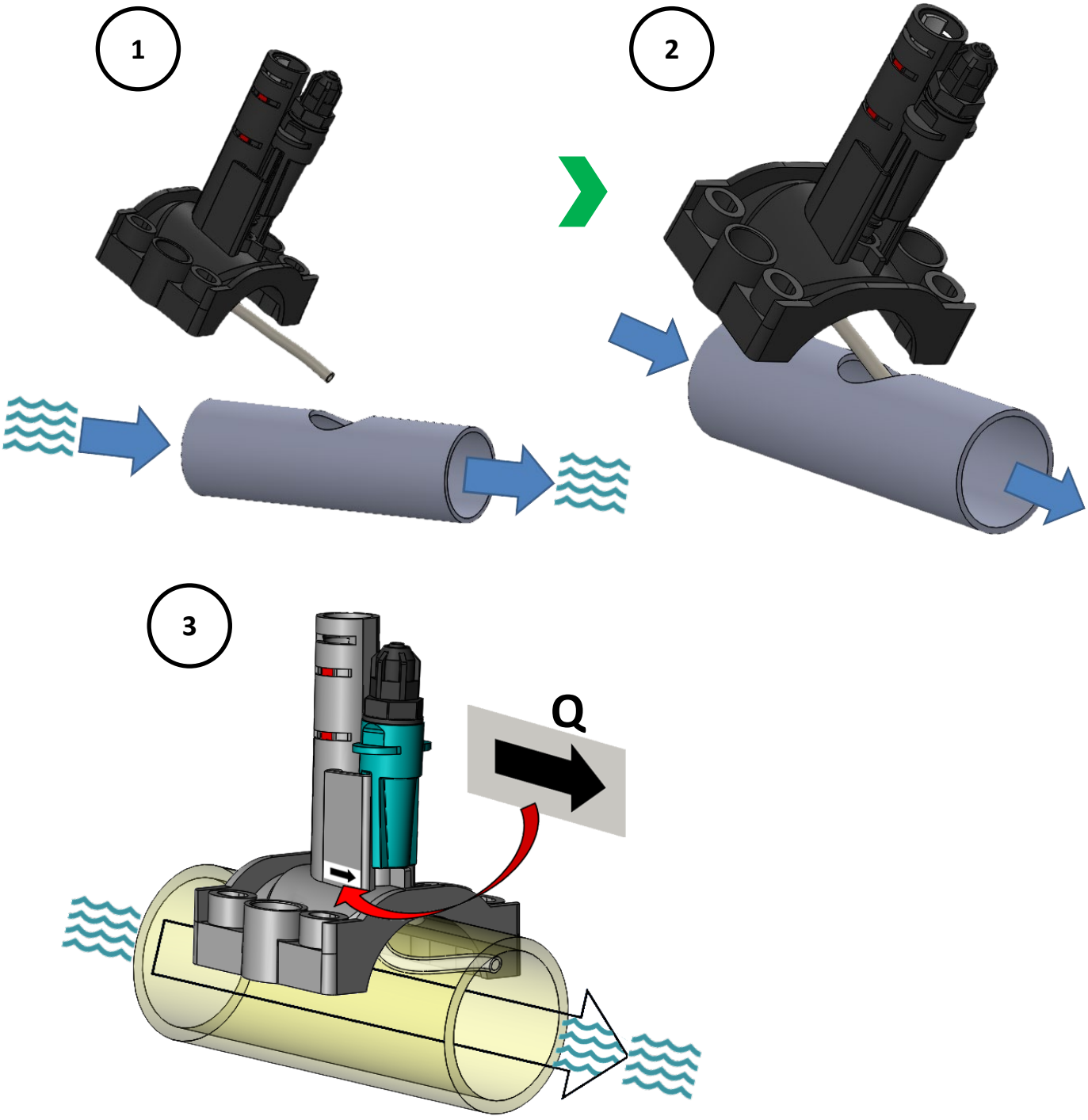




Remove the cap and store

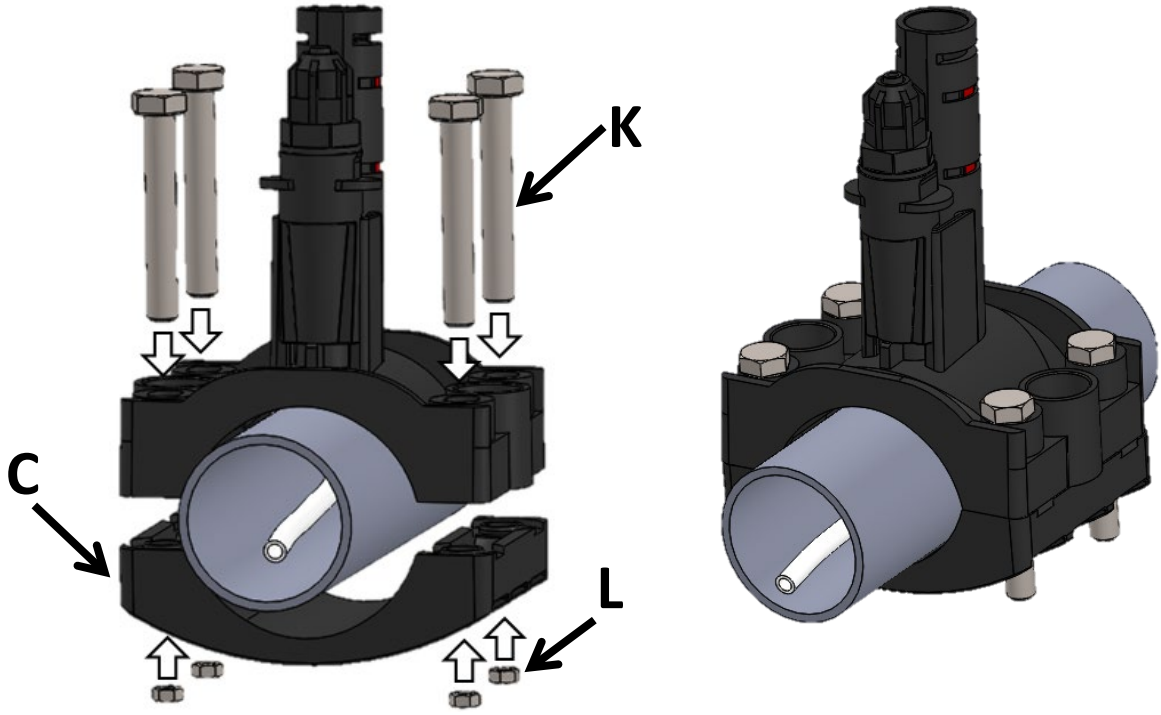


STEP 5 : Position the support flange by inserting the injection pipe in the direction of flow.

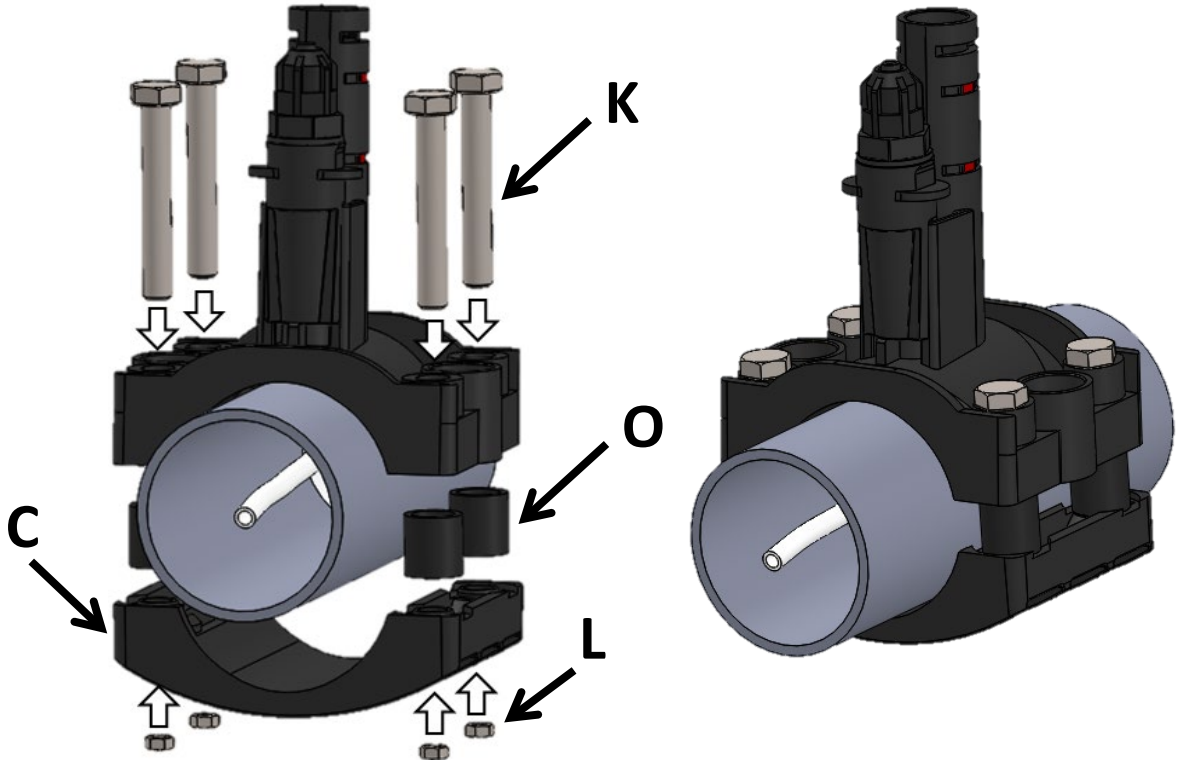


STEP 6 : Attachment to the pipe

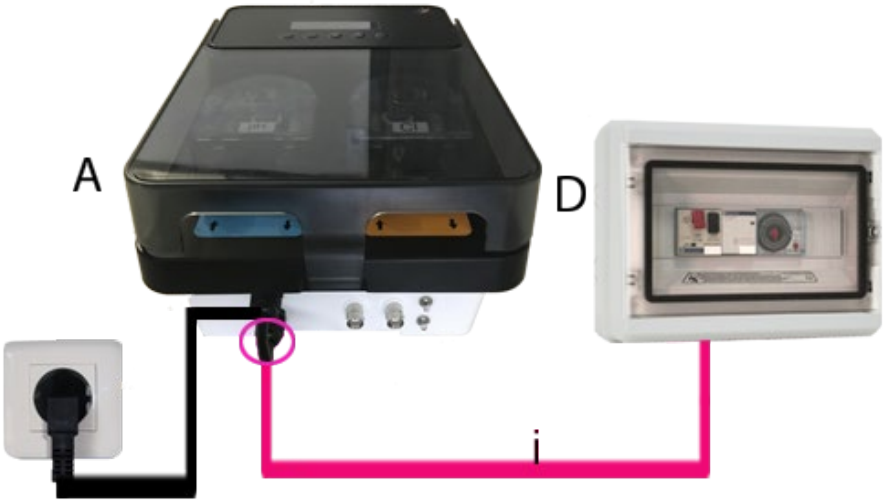
Ø50 pipe



Ø63 pipe



STEP 7 : Electrical connection



Filtration sensing cable and power cable

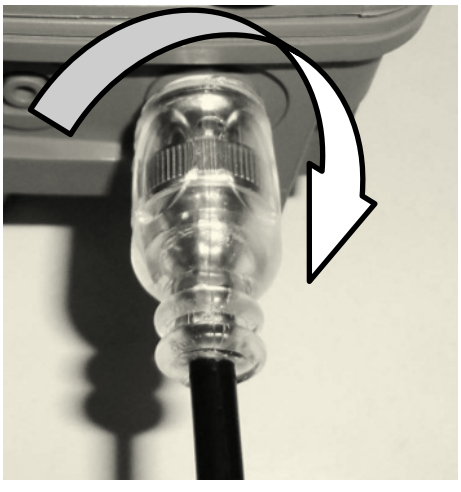
1° Plug the cable i (without plug) for filtration detection into the electrical box D on your pool:
- Either on the terminals of an auxiliary contact to the relay of the filtration pump
- Either on terminals A1 and A2 in parallel with the coil of the filter pump relay

The voltage to be applied to this cable is 230V~. This means that the unit will only be supplied with power when the filter pump is switched on.

2° Connect the power cable with its domestic electrical plug. It is preferable that the 230 Vac power supply come from the electrical box D of your pool just after the main switch.

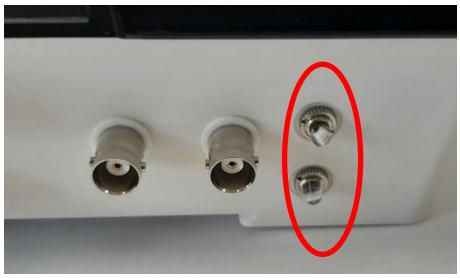
STEP 8 : Connect the pH and Rx probes to the corresponding plug of the instrument.

Insert the plug into the bayonet socket



Turn the plug ¼ to close the connection.

STEP 9 : OPTIONAL Connecting the suction lances to the unit



2 protective covers for Jack sockets

Remove the 2 protective covers from the sockets Jack

Plug the Jack plug into the socket

If you remove the suction lances for a long period of time : replace the protective covers on the jacks.

STEP 10 : Calibrating the pH probe

Remove the probe from its soaking water in **STEP 2** and remove the excess water.

↓6.9pH 720mV↑

MENU ESC

720mV ↑
SET CAL

MENU ESC

↓6.9pH
SET CAL

CAL OK

INSERT PROBE IN BUFFER 7pH, MOVE, LET INSIDE DON'T TOUCH IT
press OK

CAL OK

CALIBRATING pH 7
7.25pH* (-90s)

Tip

PRESS THE **ESC** KEY AT ANY TIME TO EXIT THE CALIBRATION PROCEDURE

***** : 7.25 is an example of instantaneous measurement before calibration (values are commonly between 6.5 and 7.5)

CAUTION : ***before soaking the sensor in the pH4 solution, rinse well using clean water***

INSERT PROBE IN BUFFER 4pH, MOVE, LET INSIDE DON'T TOUCH IT
press OK

CAL OK

CALIBRATING pH 4
4.25pH* (-90s)

***** : 4.25 is an example of instantaneous measurement before calibration (values are commonly between 3.5 and 4.5)

QUALITY 100%
4.0Ph press OK

CAL OK

After pressing OK, the unit continues operating normally

STEP 11 : Calibration of redox sensor

Remove the sensor from its soaking water indicated in **STEP 2** and remove any excess water..

↓6.9pH 720mV↑

MENU ESC

720mV↑
SET CAL

CAL OK

INSERT PROBE IN BUFFER 475 mV, MOVE, LET INSIDE DON'T TOUCH IT
press OK

CAL OK

CALIBRATING 475mV
462mV* (-90s)

QUALITY 100%
475mV press OK

CAL OK

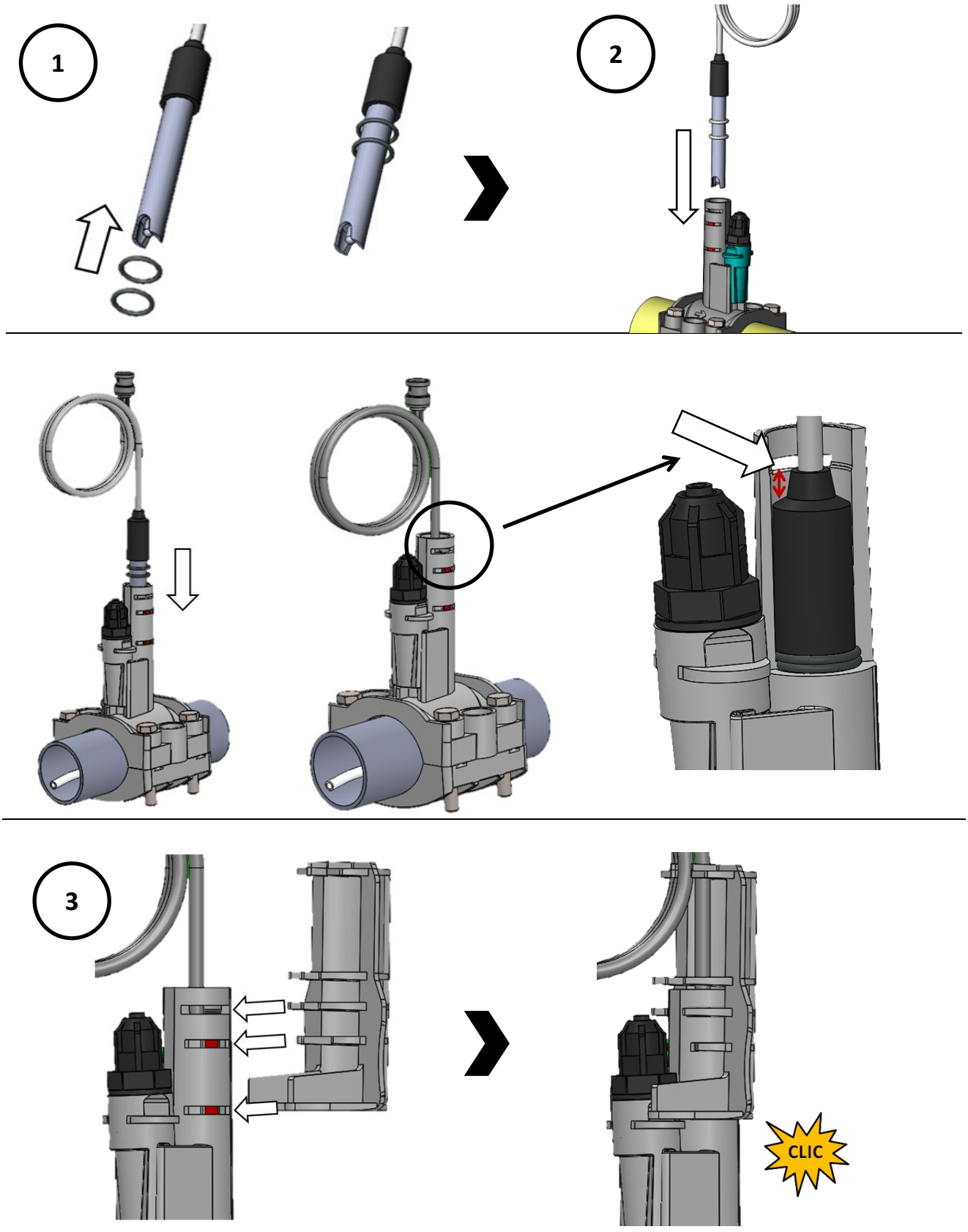
After pressing **OK,** the unit continues operating normally

Tip

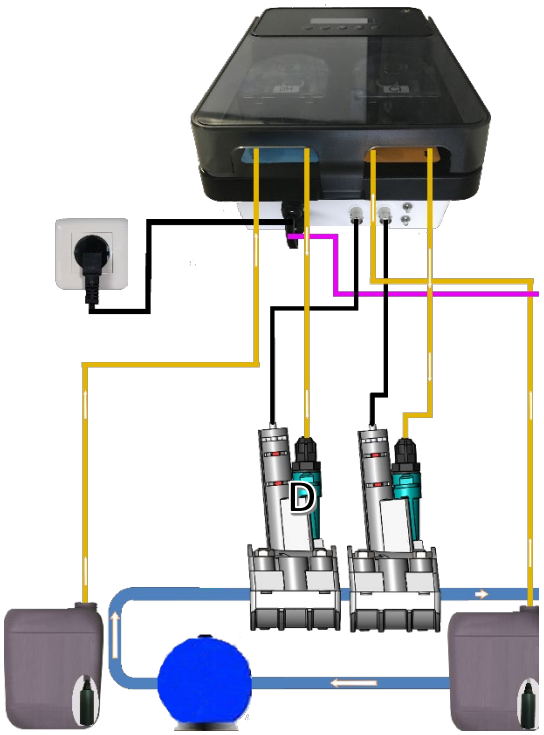
PRESS THE **ESC** KEY AT ANY TIME TO EXIT THE CALIBRATION PROCEDURE

***** : 462mV is an example of instantaneous measurement before calibration

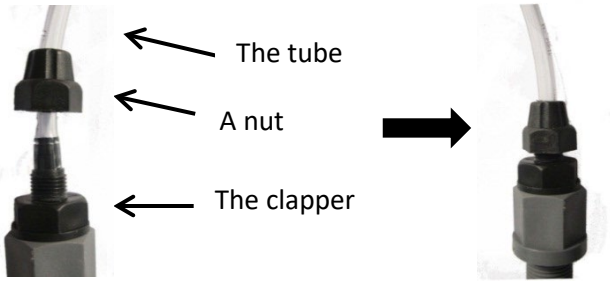
STEP 12 : Installation of the probe pH (J^1) and Rx (J^2)



STEP 13 :Hydraulic circuit



Cut tube **J** to connect foot filter **E** to the left inlet of the pump and probe holder **D** to the right inlet of the pump.
Place foot filter **E** in the bottom of the tank.
Repeat the same operation with the other probe holder.



The hydraulic tube is placed in the same way on the strainer and the pump.

1: Slide the tube through the nut

2: Insert the tube at the bottom of the conical coupling.

3: Screw the nut onto the fitting by hand.

STEP 14 : Installation end

At this point the DOS-ECO is ready for use without further adjustment in most cases..

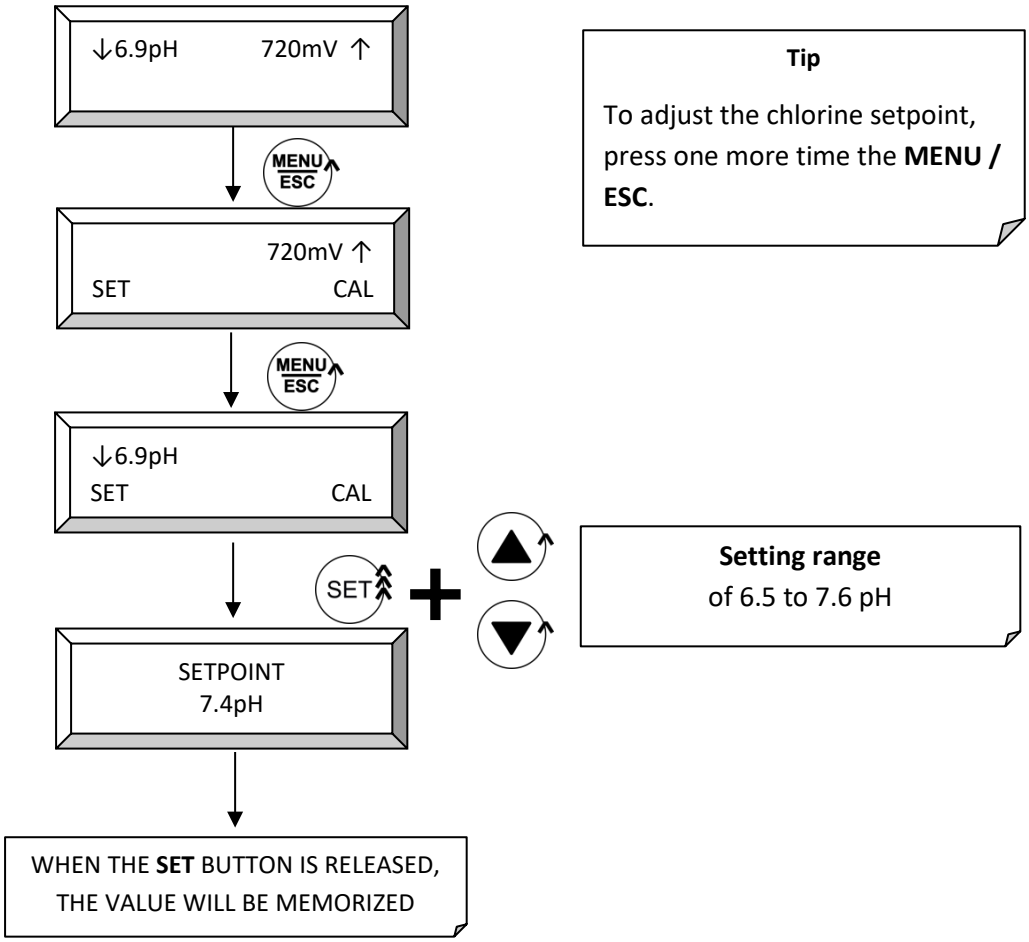
Default values pH
- Setpoint at 7.4 pH
- Dosing of acidic product to lower the pH value

Default values Redox
- Setpoint at 700mV (corresponding to approximately 1 mg/L at pH 7.4)

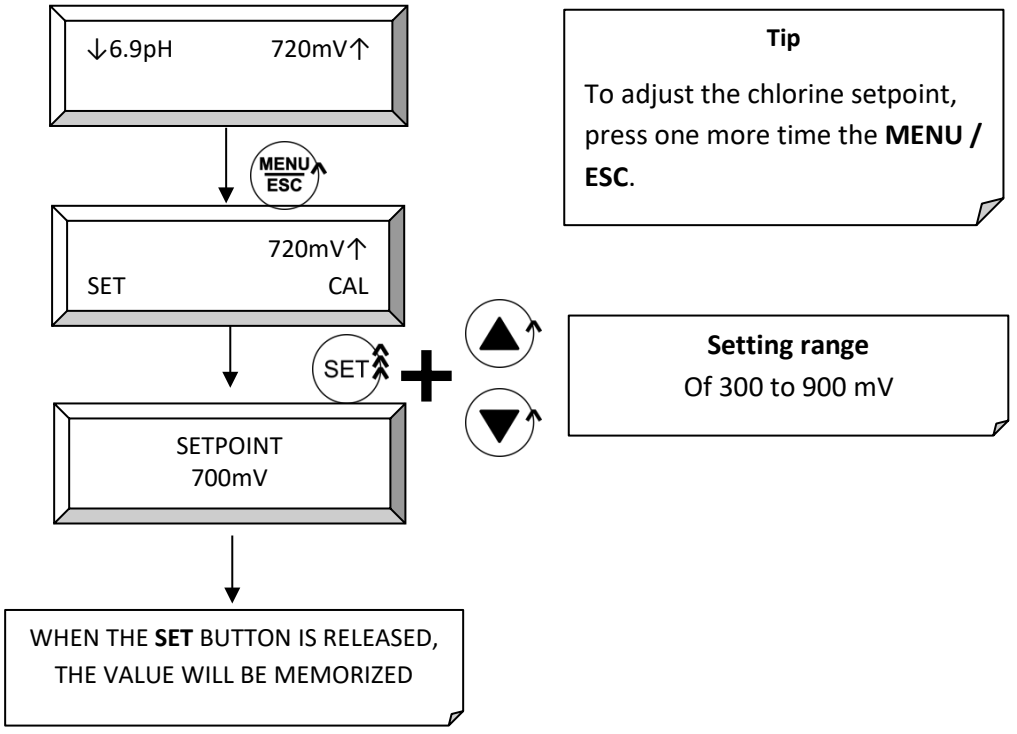
If you want a pH value of 7.4 and you are dosing acid, your instrument is ready for use without doing anything more. If not, please refer to the following chapters to adjust the advanced settings as required.

4 ADVANCED DEVICE SETTINGS

4.1 pH setpoint



4.2 Redox setpoint



4.3 Activation type

4.3.1 Principle of operation

In order to allow the chemical product to be mixed in the pool and therefore not to overdose, the device has activation and pause times for dosing. When it activates its dosing, the / symbol appears. When it is in dosing pause time, the symbol ⧗ appears. **It's normal!**

Adjusting the pH slowly preserves the natural quality of your water.

4.3.2 Proportional activation

The farther away the measured value is from the desired value (setpoint), the longer the instrument activates the dosing. The closer the measured value is to the desired value (setpoint), the shorter the dosing time.

Pool size	**Pump Acti Time S / 0,1 pH**	**Pump Acti Time S / mV**	**Pump Acti Time S / mV**
Pump Flow Rate	**1.5L/h**	**1.5L/h**	**3L/h**
From 1 to 10m3	3	1	1
From 11 à 20m3	6	2	1
From 21 to 40m3	10	3	2
From 41 to 90m3	20	6	3
From 91 to 120m3	25	-	6
From 121 to 150m3	30	-	8
From 151 to180m3	40	-	10

Proportional activation setting guide

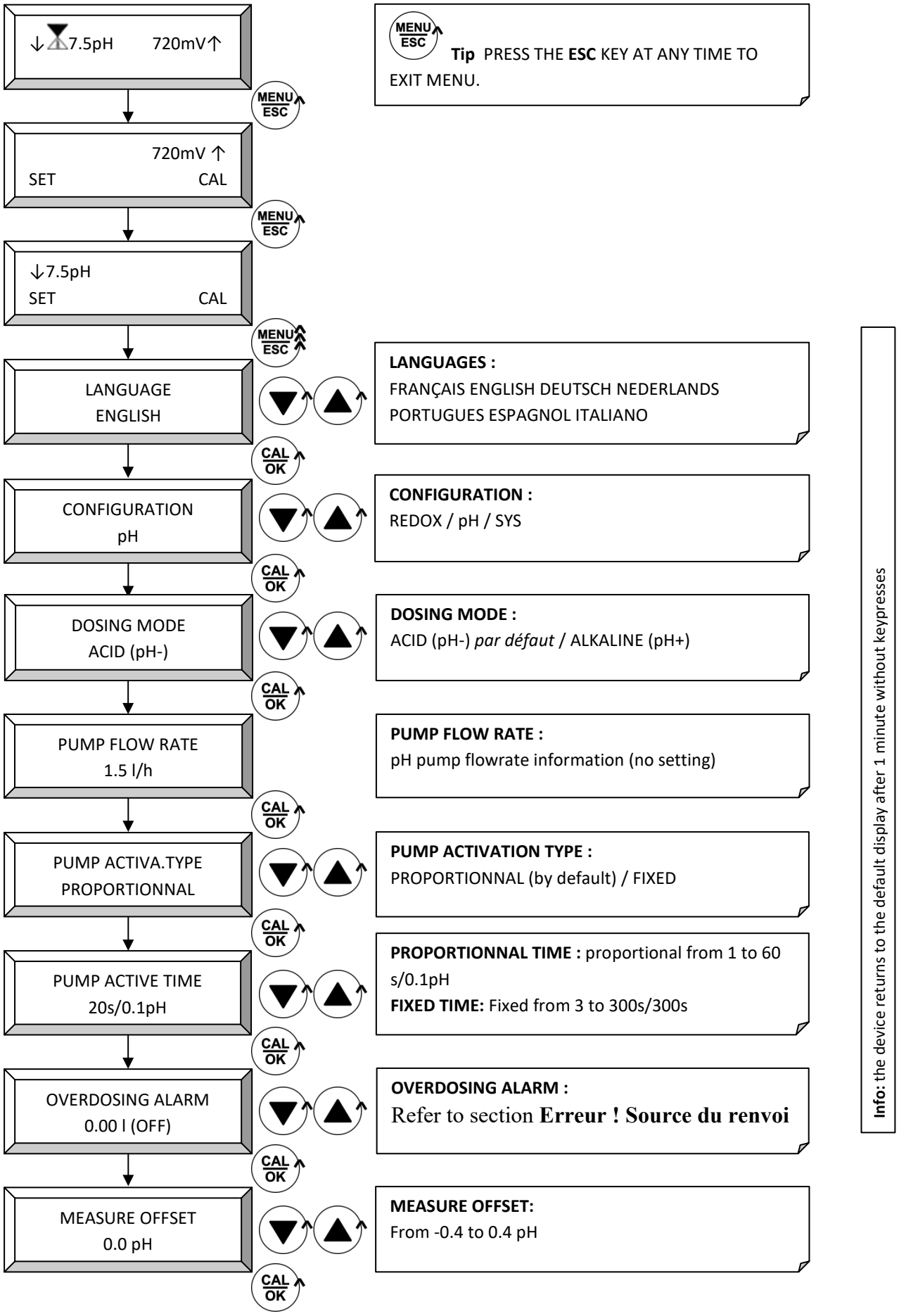
The values given in this table are indicative and should be adjusted as a function of the configuration and use of your pool.

4.3.3 Fixed activation

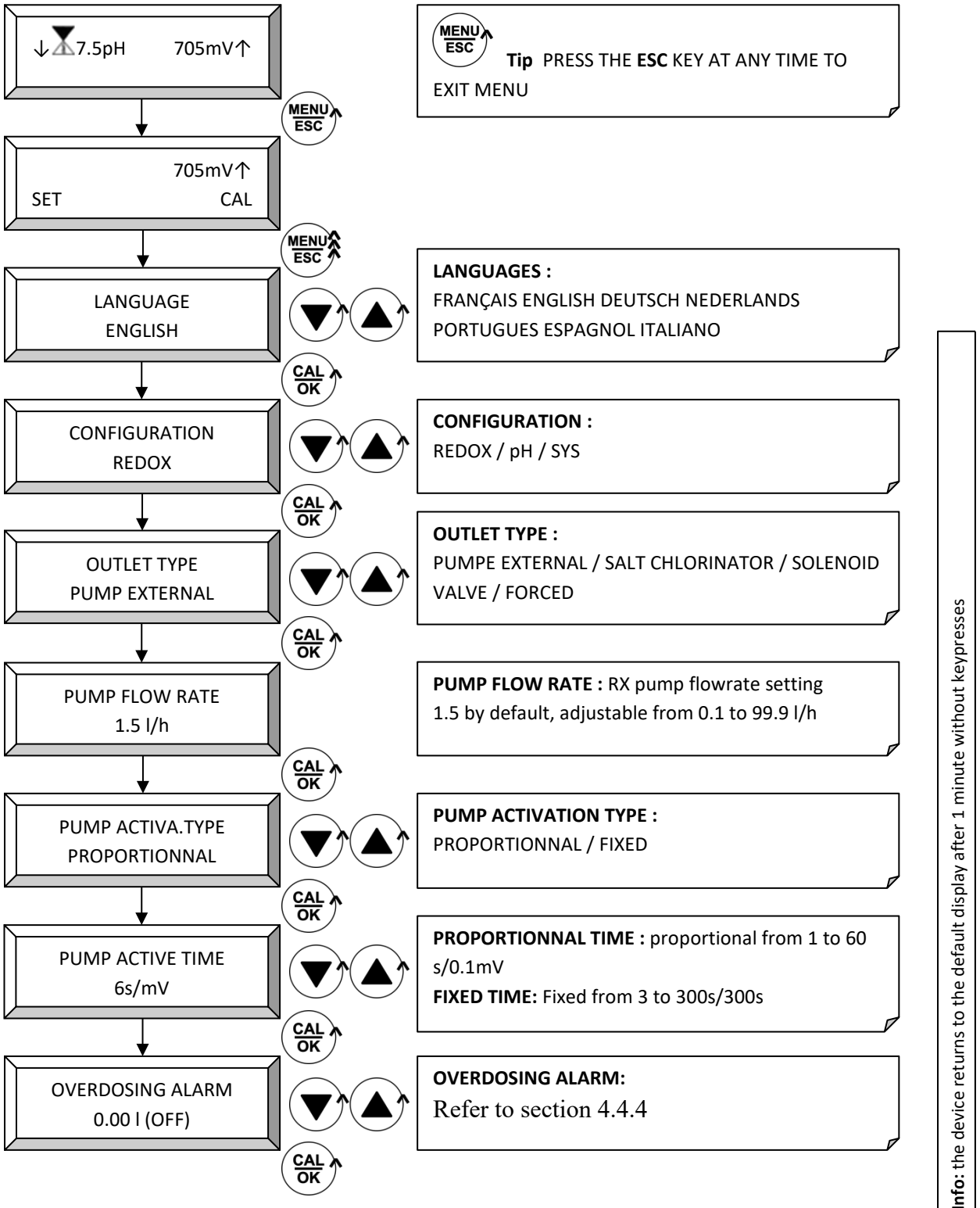
The length of the dosing period is fixed. The measured value being close or far of the desired value (setpoint) does not affect it

4.4 iQntrol DOS-ECO settings

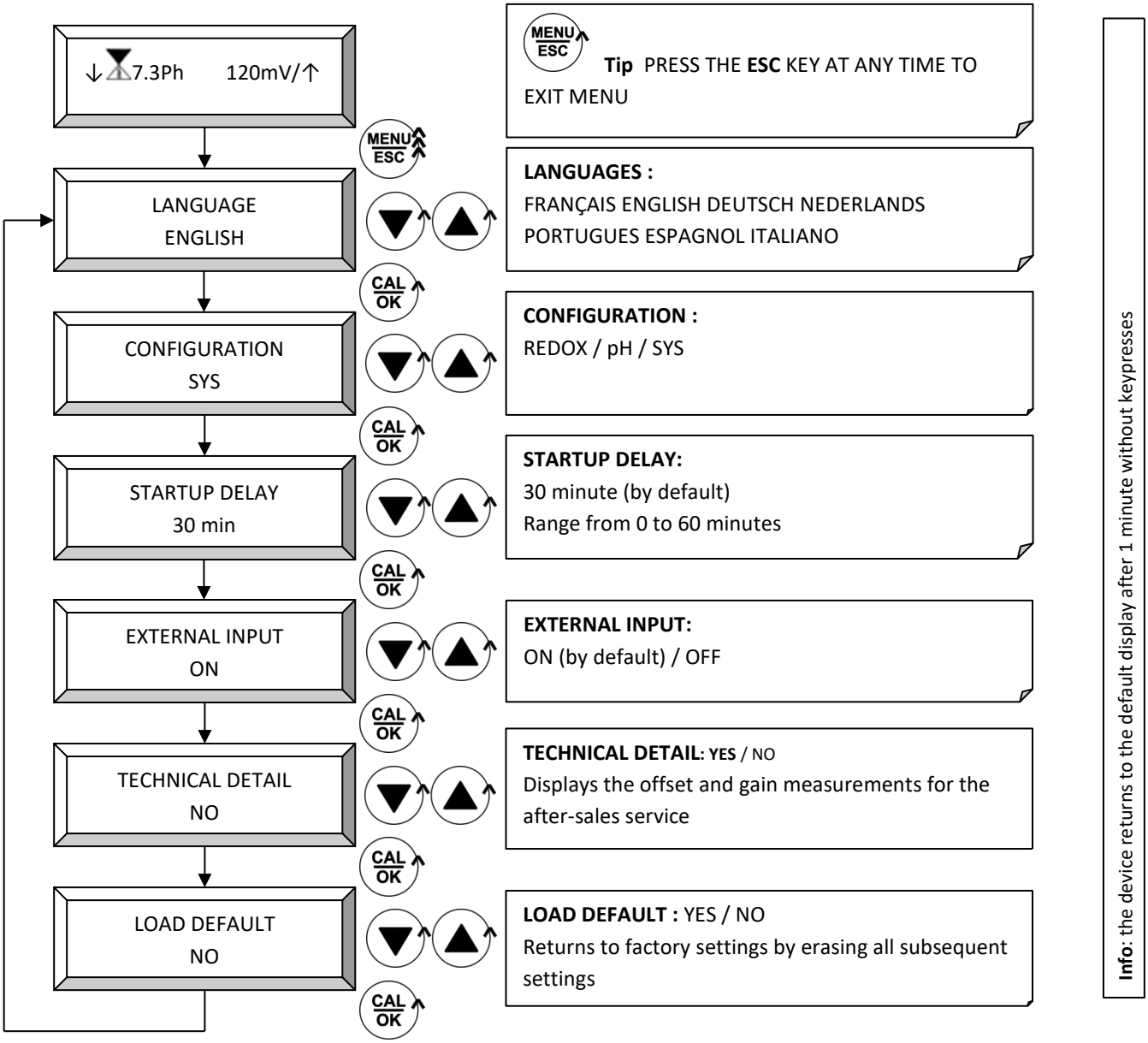
4.4.1 pH menu



4.4.2 REDOX menu



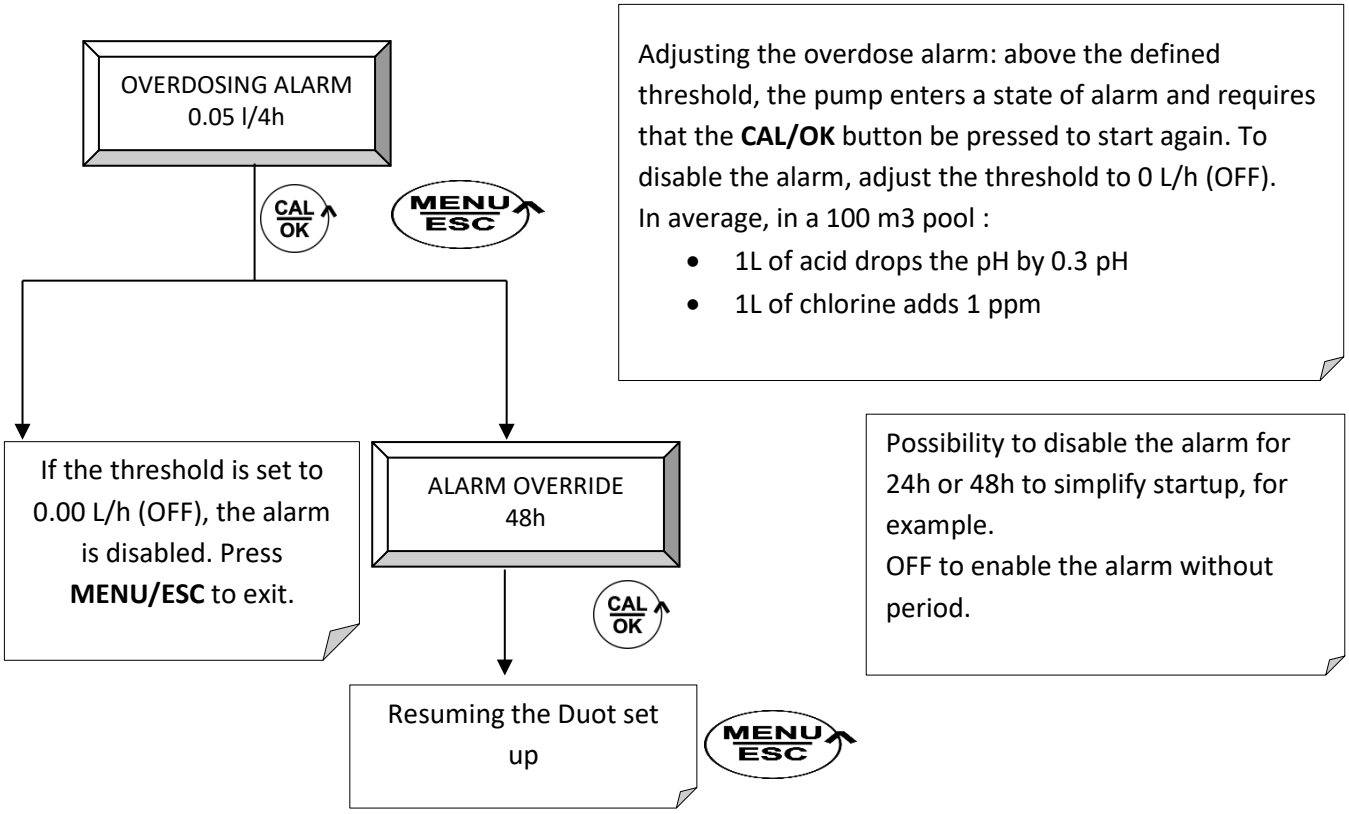
4.4.3 System menu « SYS »



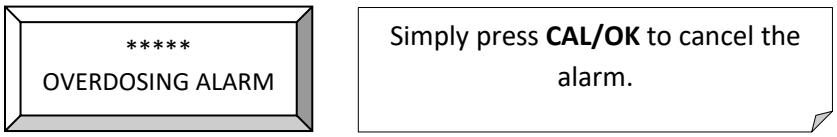
4.4.4 Overdose alarm

The pump blocks its dosing and displays an alarm message when it has dosed in 4 consecutive hours more than the volume indicated in the alarm menu. This alarm allows the dynamic monitoring of a possible overdose.

In the overdosing alarm menu, see access in § 4.4.1 for pH and § 4.4.2 for Rx :



When the unit is in an alarm state, the following screen is displayed



4.5 Duo standby mode

To place the DUOin standby mode, press the ▲and ▼ keys simultaneously for 5 seconds.
To exit standby mode, repeat the same operation.

4.6 DOS-ECO priming

1° Place the DUO in standby mode by pressing the ▲ and ▼ keys simultaneously for 5 seconds.
2° Press the **MENU/ESC** and **CAL/OK** keys simultaneously for the desired time to prime the pump.
3° Exit standby mode by again pressing ▲ and ▼simultaneously.

4.7 Display backlight

After 30 minutes without key presses, the backlight turns off to save power. A short press of **SET** or **CAL** turns it on.

5 SOLUTIONS TO PROBLEM

5.1 Incorrect measure and procedure for increasing the TAC

If the displayed value on the device differs from the value obtained by another control method (drops, strip, photometer) : check that the **TAC (Total alkalinity) > 100 mg/L**.

Procedure for increasing the TAC
In order to add TAC in your pool, follow the following procedure :

- Stop the pH and chlorine regulators.
- Add in the pool the required amount specified on the TAC packaging. It is preferable to increase the TAC to 250 mg/L of 50 mg/L at a time.
- Wait 4 hours for complete dissolution.
- Turn on the pH regulator.
- When the pH < 7,8 turn back on your chlorine disinfection system.

To get a stable pH value : **150 mg/L < TAC < 300 mg/L**

5.2 Alarms and displayed symbols

Message	Meaning	Action
/ and \ alternatives	The pump is currently dosing	
	Dosing has stopped : - Either in the pause cycle - Either by the activation delay	Wait for: - The end of the pause cycle - The end of the activation delay
CALIBRATION ERR.	Calibration not possible	- Check state of calibration solution - Clean the sensor - Replace the sensor
TANK LEVEL LOW	The dosed fluid reservoir is empty	- Refill the corresponding reservoir with fluid
MEASURE TOO LOW	pH mode : measured pH < 5 pH REDOX mode : mesurement < 100 mV	Check pool water parameters TAC > 100 mg/L Check the status of the probes cable
MEASURE TOO HIGH	pH mode: Measured pH > pH 9 REDOX mode: measurement > 900 mV	Check pool water parameters TAC > 100 mg/L
FILTRATION OFF	The filtration pump is not operating. The device is therefore paused.	Refer to section 0 page 26 to disable filtration pump input if you do not want the DUO unit to pause when the filtration pump stops.
OVERDOSING ALARM	The DOS-ECO unit has dosed more than the threshold defined in the settings.	Refer to 0
!	Value on alarm.	Refer to the alarm message displayed on the screen

6 MAINTENANCE

Parts of wear of the pump

To protect the quality of your device, we advise you (*) to change the rooms of following wears:

MEASURED PRODUCTS	FREQUENCY	CODE	NAME
pH- or pH+	2 years		Peristaltic tube 6*9mm
			Crystal PVC tube, 4x6
	4 years		Roller holder 6*9mm + bearing kit + front cover
			Complete 2-in-1 sensor holder
Chlore	1 years		Peristaltic tube 6*9mm
	2 years		Roller holder 6*9mm + bearing kit + front cover
			Complete 2-in-1 sensor holder
			Crystal PVC tube, 4x6
	4 years		Strainer

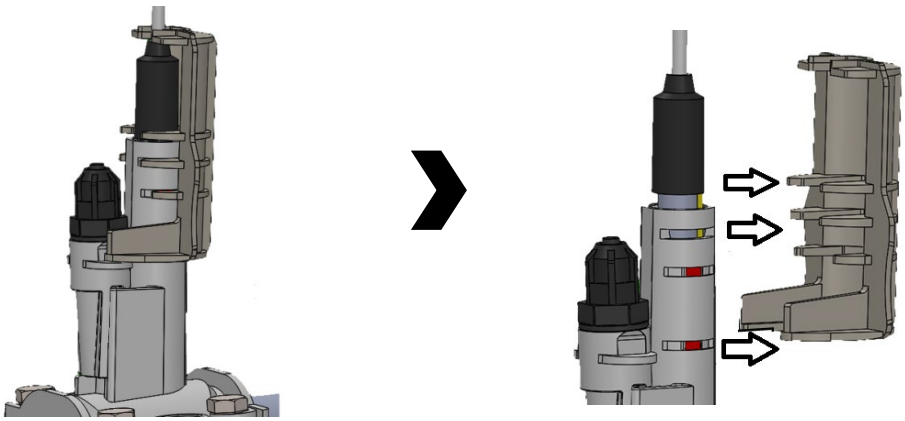
(*) the frequency of replacement of rooms(parts,plays) is indicative, she can vary according to conditions of use

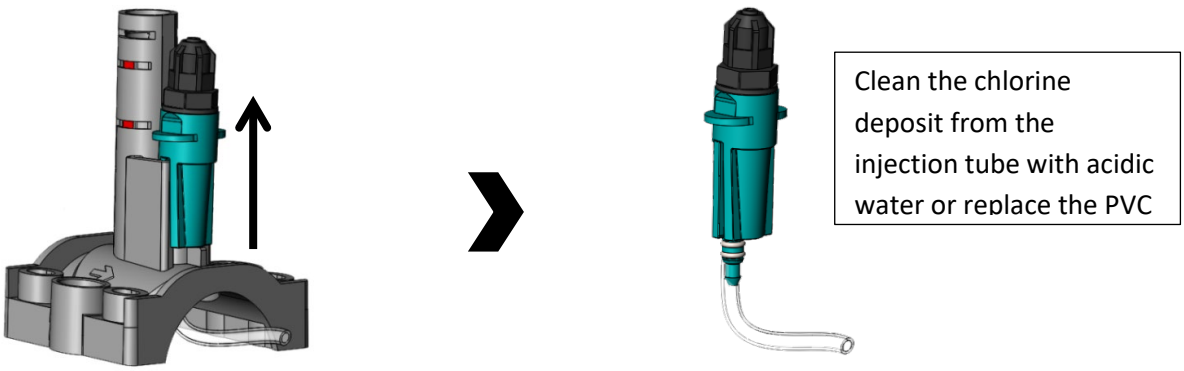
6.1 General

Over time, in addition to the normal wear and tear of the electrode, depending on the use and the quality of the more or less calcareous water, the measurement will deteriorate. A thin film of limescale will be deposited on the sensitive element of the probe together with other elements present in the pool water. To overcome this problem, we recommend using the cleaning solution for pH or redox electrodes AYACSOLNET02 and following the procedure indicated on the bottle.

6.2 Chlorine injection valve maintenance

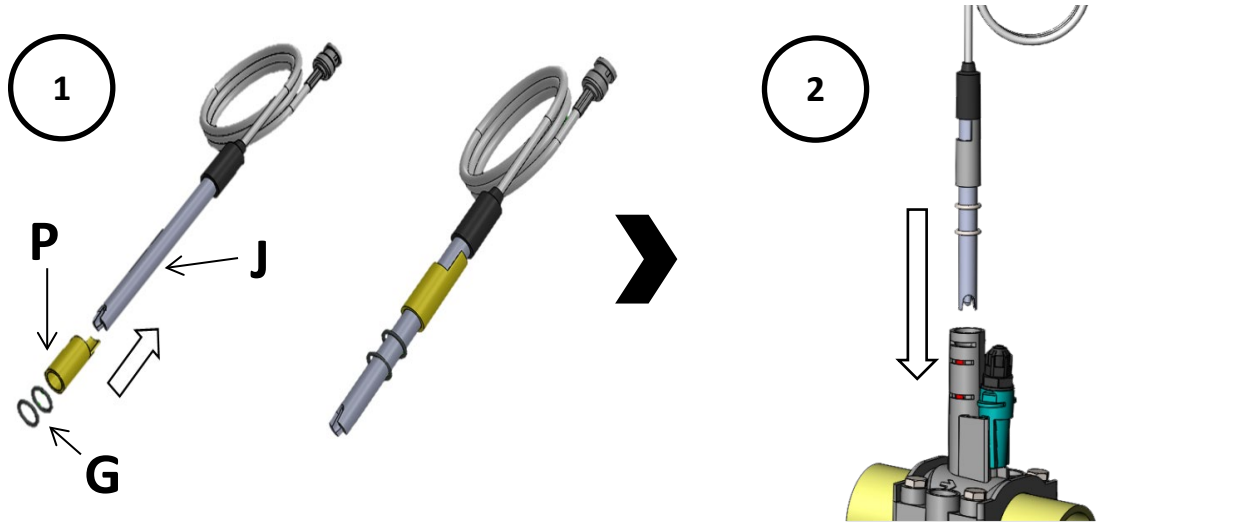
Periodically check that the injection valve is not clogged. A precipitate forms in the injection valve in contact with chlorine and the lime contained in the water. After a certain time depending on the chlorine used and the lime content in the water, the valve will clog. In this case the peristaltic tube may burst and drain the chemical or the engine may break. This is an external problem to our equipment, these damages are not covered under warranty.

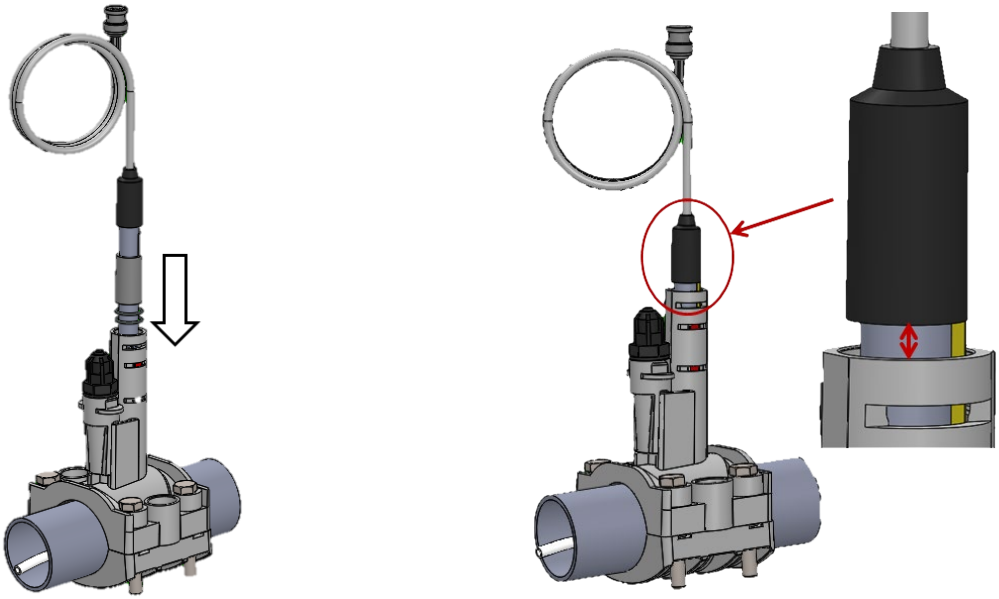


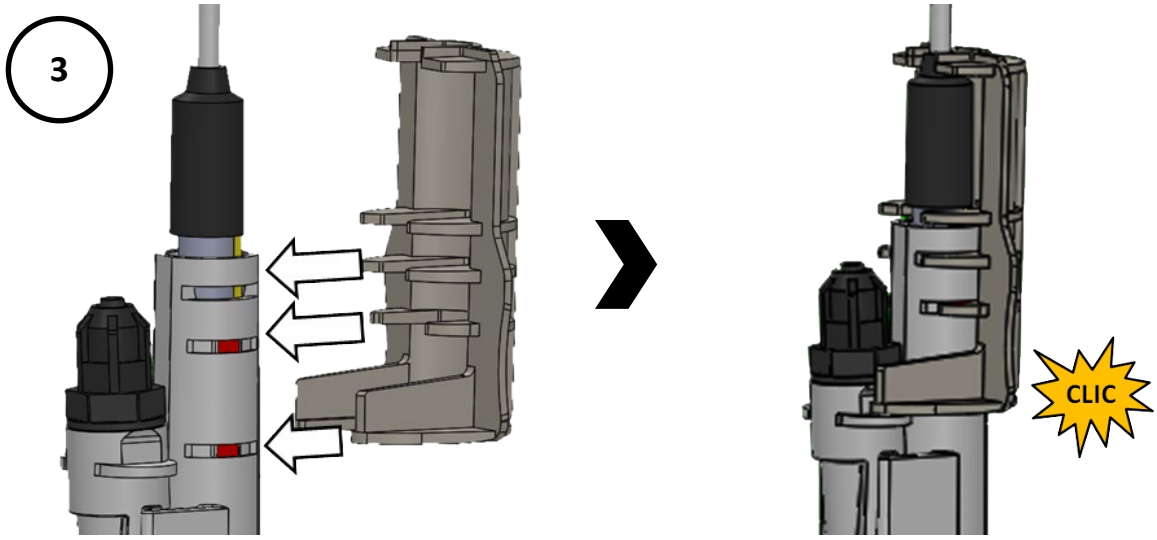


Clean the chlorine deposit from the injection tube with acidic water or replace the PVC

6.3 Installation of a long probe (120 mm)

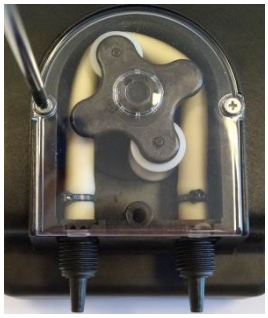


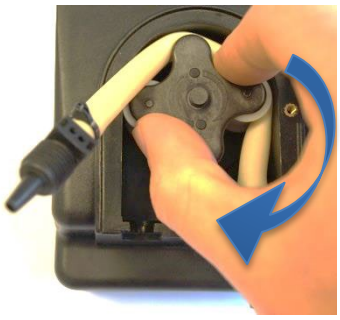




6.4 Peristaltic tube replacement

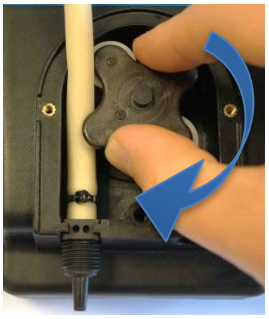
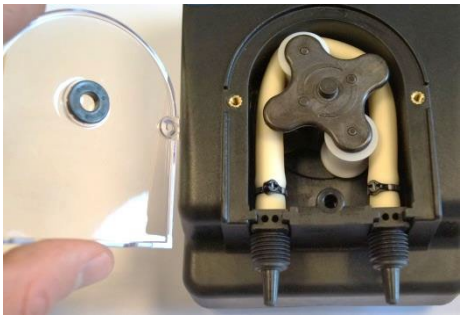
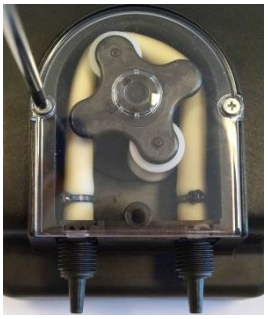
Removal of the old tube





Setting up the new tube

Ensure that the tube is properly lubricated with **silicone** grease.

6.5 Wintering

6.5.1 Pum wintering

It is important to know that for the winter shutdown of your unit, it is the **peristaltic tube** that needs protecting. It is then recommended to pump clean water to rinse the peristaltic tube.

- As described in the section 4.6 , set the pump rollers in the « 12:30 » position (see below) to extend the life of the peristaltic tube.

Rollers in the **"12:30 position"**

6.5.2 Device stand-by

To set the DOS-ECO onstand-by, press simultaneously during 5 seconds ▲and ▼ buttons.

6.5.3 Probe Wintering

- For the winter shutdown, the sensor must be removed from the installation and stored in non-freezing conditions.
- Clean the sensor extremity using AYACSOLNET02 cleaning solution. This allows the removal of any deposits formed during its use in pool water.
- The sensor must be filled to 1/3 with AYACSOLSTK01 storage solution and the protective cap placed on the sensor's extremity. This assembly must be stored away from freezing conditions at ambient temperature.

7 AFTER SALE SERVICE

To contact our technical services (contact details page 4), you will need the following information as a complete analysis of your water:

pH		TAC level in mg/L		Serial number	
Temperature		Stabilizer level in mg/L		Device code	
		Chlorine level ien mg/L		Device type	

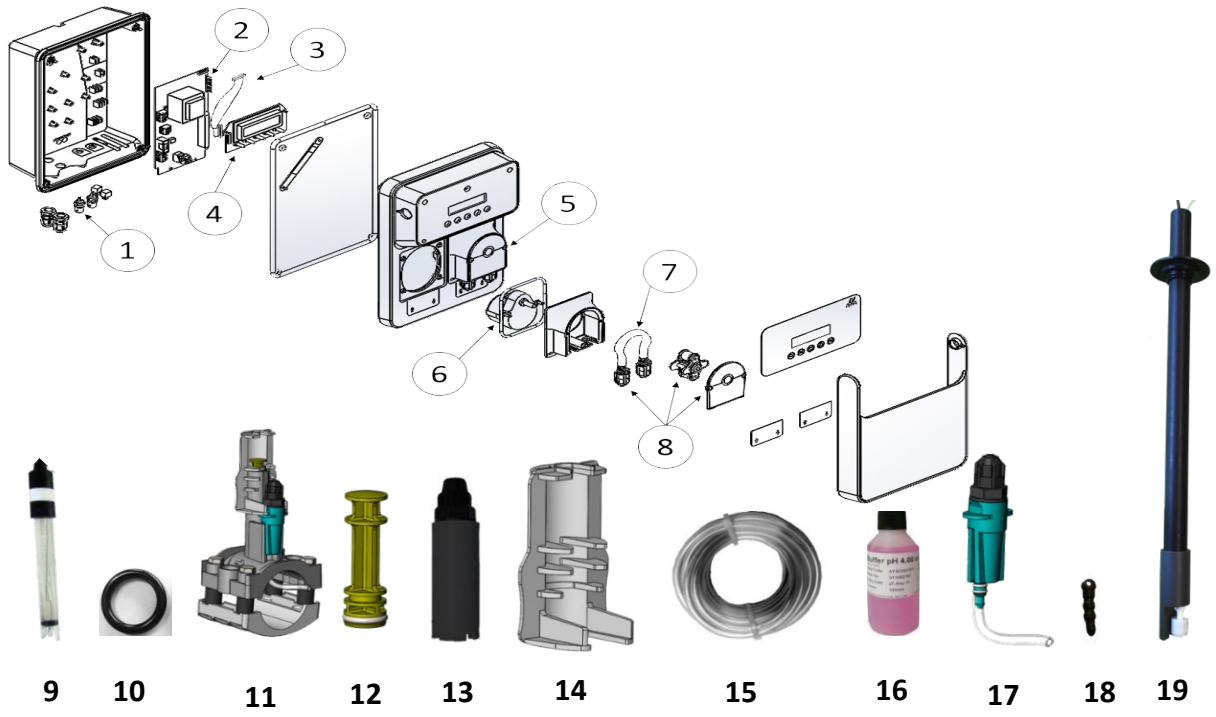
Serial number

Device codel

For any return of the device, thank you for being willing to follow the instructions of the paragraph " **1.2 SHIPPING AND TRANSPORTING** " in page 1 of this manual book.

8 SPARE PARTS LIST

Fig. 14	Code	Description des pièces
1		BNC
2		pH and RX power supply cardboard
		Supply circuit Duo pH 1.5L/h Rx 3L/h
3		Power supply link cable – Display
4		Display cardboard
5		Black PPF/P 1,5L/h SANTOPRENE and transparent cover
		Black PPF/P 3L/h SANTOPRENE and transparent cover
6		10 RPM 230-240 Vac motor(1.5L/h pump)
		10 RPM 230-240 Vac motor(3L/h pump)
7		6*9mm peristaltic tube
8		Roller holder kit + transparent cover + tube 6x9
9		pH probe
		Rx probe
10		EPDM 11,9 X 2,62 O-rings(per 10 units)
11		2 in 1 probe holder
12		Probe holder's cap
13		Succion strainer
14		2 in 1 probe holder maintain clip
15		4x6 PVC Cristal tube
16		pH4 calibration solution
		pH7 calibration solution
		475 mV redox calibration solution
17		2 in 1 probe holder injection
18		Hide Jack's plug (per 10 units)
19		Succion lance (option)
OPTION		pH-RX 100mL Probe storage liquid
OPTION		pH-RX 250mL Probe cleaning solution



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