LAPIERRE

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pH BALANCER

USER MANUAL

July 2024 | Version 02

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A leader in equipment and products for the maple syrup industry, LAPIERRE EQUIPMENT distinguishes itself by its ability to innovate and develop high-performance solutions. This is what enables it to make significant changes in production techniques and processes in order to increase crop yield of high quality syrup.

LAPIERRE EQUIPMENT has a wealth of experience accumulated over three generations of maple syrup producers. These are also people driven by passion and a deep desire to help the industry evolve with the utmost respect for nature.

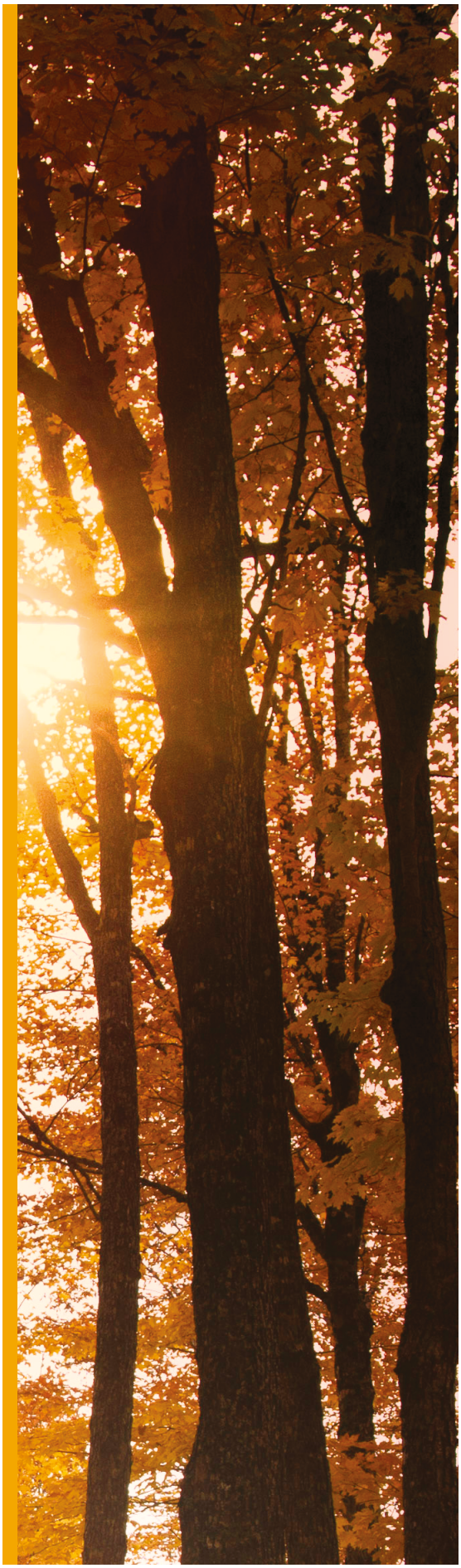
Honoured to serve your customers

LAPIERRE EQUIPMENT is honoured to actively assist maple syrup producers during the sugar season.

Today you have made a wise choice for at least two good reasons: the superior quality of our products and the exceptional quality of all our expert advisers in the region.

We sincerely appreciate your trust. And we will be happy to serve you again in your future equipment purchases, regardless of the size of your sugar bush.

Thank you!



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pH BALANCER

Please note the information required below when dealing with customer service professionals. You can easily find this information on the **data plate** on your pH balancer as well as on **your invoice**. You can also refer to *Section 1* of this manual for additional information.

The model shown may differ from your model.

IMPORTANT INFORMATION ABOUT YOUR pH BALANCER

Customer Service: 819 548.5454 | 1 833 548.5454 | info@elapierre.com

Serial number: _____

Purchase date: _____

Invoice number: _____

We will be pleased to answer any of your questions, please do not hesitate to contact us.

LAPIERRE pH BALANCER | In harmony with the environment

The LAPIERRE pH BALANCER treats wash and rinse water from R. O. and evaporators. It neutralizes the pH of this water to adhere to the environmental standard for wastewater discharge that has been in force since 2020, the *Regulation respecting the regulatory scheme applying to activities on the basis of their environmental impact (REAFIE)*.

The LAPIERRE pH BALANCER meets the needs of producers with maple groves located on private land and taps numbering between 20 and 75,000 located on a single operating site, as stipulated by the regulation. *Environmentally conscious producers* with fewer taps may also use this equipment, even if they are not covered by the regulation.

The pH level of the water should be between 6 and 9.5. Once treated to an acceptable pH level, the water can then be discharged in an environmentally responsible manner onto your own land.

pH BALANCER

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IMPORTANT NOTE ON FREEZING AND pH SENSORS

It is essential to install your pH BALANCER in a frost-free location. **pH SENSORS CANNOT WITHSTAND FREEZING**. Failure to adhere to this instruction will obviously result in problems and damage to your sensors the next time they are used because of freezing.

This manual assumes that your pH BALANCER **is installed in a frost-free location**.

LATEST VERSION OF THIS USER'S MANUAL: Please refer to our website for the latest version of this user's manual.

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SECTION 1 WHERE TO FIND INFORMATION ABOUT YOUR EQUIPMENT

When you contact our customer service professionals, it is important to have certain information about your equipment on hand as you will be asked for it.

You can easily find this information on the **data plate** on your pH balancer as well as on **your invoice**. The **data plate** is located inside the control box.

Information about your equipment	**Data plate** (affixed to your equipment)	**Invoice**
Serial number	✓	✓
Purchase date	–	✓
Invoice number	–	✓

2.1 INSTRUCTIONS

- It is important to read, understand and follow the instructions and warnings contained in this user manual.
- This manual must be stored in a known place and accessible at all times by staff.
- All product operators must be familiar with the contents of this manual.

2.2 WARNING

Electricity

- Before turning On the equipment, check the power supply specifications. You will find these specifications on the pH balancer data plate. Also check the specifications of the electrical circuit you intend to use. Then make sure that the two components are compatible.
- Never connect the electrical cords to overloaded electrical circuits.
- Never use extension cords that are longer than necessary or of low gauge.
- Make sure that the electrical cords are in good working order, that they are not pinched or stripped, and that they are not altered in any way that could affect their safe use.
- Never touch a stripped wire when it is live. Then turn Off the power and repair the equipment before turning it back On and using it.
- The user must check the grounding circuit. Some equipment must be used or connected to other equipment that is also equipped with a grounding circuit. Disabling or a malfunctioning of this circuit may cause equipment operating conditions that are hazardous to its users.
- Always unplug the power cord from the equipment when it is not going to be used for a long period of time.

Liquids

- Never expose the pH balancer to rain or excessive condensation.
- Never bring liquids into contact with the electronic components.
- Unless otherwise specified, never submerge the electrical components of this equipment.

Other

- Always keep hair, hands, and jewellery away from equipment components that are operating, or may unexpectedly start up.
- Never place heavy objects on your equipment as their weight could damage parts of your pH balancer.

2.3 REPAIRS AND MAINTENANCE

- Stop using the equipment immediately if a malfunction is detected.
- Only LAPIERRE EQUIPMENT authorized personnel may carry out repairs on this equipment.
- Unauthorized modifications or repairs may result in hazardous operating conditions. These conditions may also cause varying degrees of injury to users.
- Always disconnect the power supply before performing any maintenance or repairs.
- It is recommended that equipment inspections and maintenance be carried out diligently to ensure optimal operational integrity. Refer to *Section 10: Equipment maintenance and cleaning* for more information.
- Never disassemble the electrical components of this equipment.

PROTECT CHILDREN

- Never allow children to use this equipment.
- Never leave children unattended in proximity to this equipment, whether it is switched On or not.

Here's a checklist for when you receive your Lapierre pH balancer.

3.1 pH BALANCER STATUS

- Check the condition of the pH balancer as soon as it arrives.
- Although LAPIERRE EQUIPMENT applies rigorous quality control at the factory and before shipment, please note, photograph, and inform your representative of any defects or imperfections that may be observed within 5 working days your equipment is received.

3.2 PURCHASE ORDER

- Have the purchase order on hand.
- Visually check that you have received all items, including:
  - the pH balancer,
  - two neutralizer tanks (pre-installed on the pH balancer at the plant),
    - o including four caps, two large and two small,
  - two pH sensors,
    - o attached to the plumbing of your pH balancer for delivery, but not installed in their respective half-ring,
  - the original manufacturer's User Manual for the pH sensors (*Illustration 2*),
  - the original manufacturer's User Manual for the pH controllers (*Illustration 17, No. 7* and *No. 8*),
  - a set of buffer solution packets for pH sensor calibration (*Illustration 7*),
    - o packets labelled *pH Buffer Powder 4.00 pH, 6.86 pH*, and *9.18 pH*,
    - o these packets are inside the control box of your pH balancer,
  - a solution container for long-term storage of pH sensors,
    - o 50 mL (1.70 oz) container identified as *pH Storage Solution*,
    - o this container is inside the control box of your pH balancer.
- Make sure all items are in good condition.

4.1 NEUTRALIZING PRODUCTS

Here, you'll find a list of the two neutralizing products generally used by the industry to balance the pH of wash or rinse water.

- CITRIC ACID: used to lower the pH (-) of water.
  - Citric acid is commonly referred to as R. O. ACID in the maple syrup industry.
- CAUSTIC SODA 50%: used to increase water pH (+).

Citric acid, available in powder form, should be added to water in the following suggested proportion: 45 mL (1.52 oz) of powder per liter (0.26 gal.) of water. This proportion can vary between 30 (1.01) and 60 mL (2.03 oz), as desired. However, the manufacturer's recommendations on the product container label always take precedence over this instruction.

Caustic soda 50% is used as a liquid in its raw, unmixed state.

At the end of the season, don't mix more than you need. It's easier to make more than it is to dispose of it in an eco-responsible way. On the other hand, a preparation risks losing its effectiveness if stored for a long time.

Please note that performance tests for neutralizing products are carried out on the products we distribute. We have no performance tests on replacement products available on the market.

Table 1 | Neutralizing products and general characteristics

GENERAL FEATURE / NEUTRALIZING PRODUCT	Raw shape	Used to	Preparation	Danger hazard	Note
Citric acid	Powder	Reduce pH (pH-)	Mix 45 mL (1.52 oz) of powder with 1 L (0.26 gal.) of water*	• Skin • Eyes • Avoid inhalation	Store in a dry place
Caustic soda 50%	Liquid	Increase pH (pH+)	• Raw liquid state • Unmixed • No preparation required	• Skin • Eyes • Avoid inhalation --- • Highly corrosive	Store at ≥ 16°C (61°F)

* The recommended minimum is 30 mL (1.01 oz) per liter (0.26 gal.) of water, with a maximum of 60 mL (2.03 oz) per liter (0.26 gal.).

To find out more about these neutralizing products, we invite you to consult the manufacturers' Material Safety Data Sheets (MSDS) on our website. Go to www.elapierre.com, then click the DOCUMENTS section, then click SAFETY DATA SHEETS [electronic version: Click here].

Look for CITRIC ACID and CAUSTIC SODA 50%.

REMINDER ON HANDLING NEUTRALIZING PRODUCTS. Before using a neutralizing product, have the manufacturer's Material Safety Data Sheet (MSDS) on hand. Download and print it from our website (see text under *Table 1* above) or from the manufacturer's website. Familiarize yourself with it so you can deal with an emergency quickly and methodically. Keep it close to the equipment when in use and inform your operators. At other times, keep it with your operator's manual.

4.2 SAFETY INSTRUCTIONS FOR NEUTRALIZING PRODUCTS

- Wear appropriate protective equipment such as goggles, gloves, and chemical-resistant clothing.
- Handle only hermetically sealed containers, except when decanting, which must be done with great care.
- If you accidentally spill a quantity of product, first secure the area so that no person, animal, or other product comes into contact with the product. Move away from the contaminated area. Immediately refer to the manufacturer's Material Safety Data Sheet (MSDS) to take appropriate action.
- Wash your hands thoroughly after handling neutralizing products.
- Store neutralizing products in their hermetically sealed original containers in a safe, dry, well-ventilated, and preferably locked place, out of the reach of visitors, children, and pets.
- If you need to dispose of leftovers or containers, it's essential to do so in an eco-responsible way, in accordance with local standards.
- Have a copy of the manufacturer's Material Safety Data Sheet (MSDS) on hand in case of medical emergency or fire.

The manufacturer's instructions take precedence over those given above.

4.3 TANKS FOR NEUTRALIZING PRODUCTS

The pH balancer includes two safe tanks for the use of neutralizing products. It is strongly recommended to use both tanks. One is used for citric acid, and the other for caustic soda 50% (*Illustration 1, No. 1 and No. 2*). Although removable, these tanks are pre-installed at the factory.

A special space on your pH balancer has been designed to accommodate these two tanks so that they become one with the equipment, are immobile, and the two neutralizer feed hoses (*Illustration 1, No. 5 and No. 6*) do not pose an accident risk.

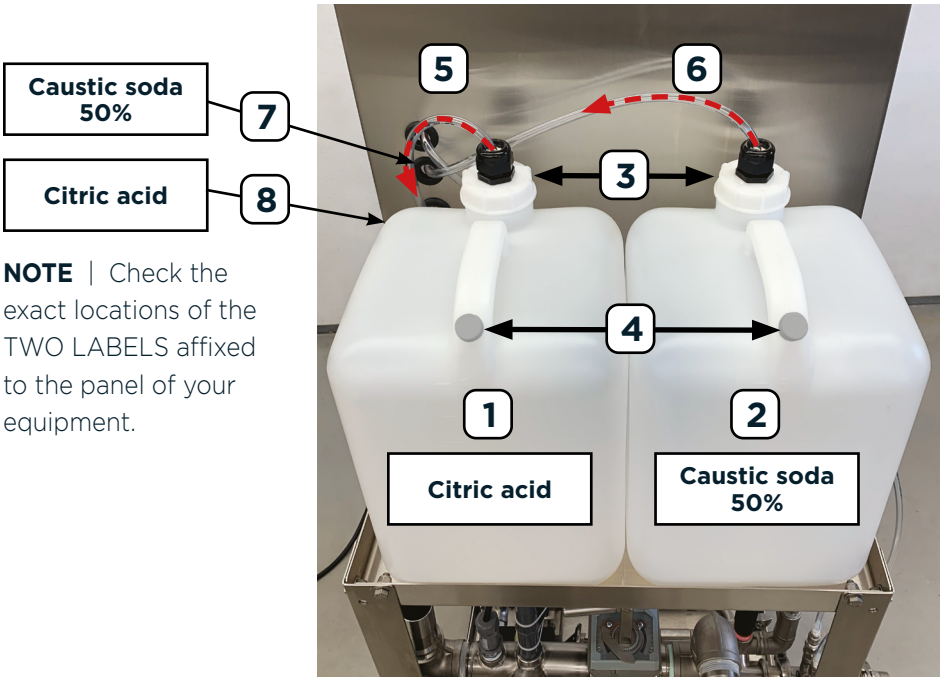
Each tank has two threaded openings.

- A large opening (*Illustration 1, No. 3*):
  - to receive the supply hose conveying the neutralizing product FROM the tank TO the equipment,
    - o the supply hose is pre-installed at the factory, both on the tank and on the equipment,
  - and to REFILL the tank with neutralizer.
- A small opening (*Illustration 1, No. 4*):
  - to act as a vent, when its cap is slightly unscrewed, to allow the air necessary for the circulation of the neutralizing products to escape.

Your pH balancer therefore includes two supply lines for each of the two neutralizing products (*Illustration 1, No. 5 and No. 6*).

Each tank and each of the two holes in the stainless steel panel through which the supply hoses pass (*Illustration 1, No. 7 and No. 8*) are identified with one of these two products. For example, the citric acid supply hose should be connected to the tank identified as such, and the caustic soda 50% hose to the tank identified as such.

Illustration 1 | Neutralizer tanks



NOTE | Check the exact locations of the TWO LABELS affixed to the panel of your equipment.

SECTION 5 **pH SENSOR CALIBRATION, INSTALLATION AND STORAGE**

THE pH SENSOR MUST NEVER BE EXPOSED TO FREEZING.

The front of the pH sensor is fitted with a transparent storage cap (*Illustration 2, No. 2*).

This is where the sensor head is located (*Illustration 2, No. 1*). The head consists of a protective glass shell in which a white membrane is located (*Illustration 3, No. 2*). This membrane is immersed in a suitable fluid supplied by the sensor manufacturer.

When the sensor is new or out of service for a long period, its cap should contain a pH storage solution in which half the sensor sponge is immersed (*Illustration 2, No. 4*) to recharge the membrane and preserve all its properties.

The sensor is permanently attached to your pH balancer by its electrical cord. Consequently, when you remove your sensor from its half-ring (*Illustration 15-E and F*), you must do so as shown in *Illustration 8* or secure it in some other way to your pH balancer. It is VERY IMPORTANT that it be installed in a **permanent vertical position**.

Illustration 2 | pH sensor

1. Sensor head
2. Transparent storage cap
3. Sponge
4. pH storage solution covering half the sponge

Illustration 3 | pH sensor head

1. Black protective sheath
2. Protective glass shell and white membrane

5.1 pH SENSOR CALIBRATION AND INSTALLATION

To calibrate your sensor, you must first enter the parameters.

5.1.1. Entering calibration parameters with preconfigured password

Illustration 4 | Parameter operation screen

The data displayed on your screen may differ from what is shown in our example.

1. When the *Parameter operation screen* opens (*Illustration 4*), press **MENU**.
   - You will then be taken to the *User password screen* [USER PASSWORD] (*Illustration 5*).

Illustration 5 | User password screen

2. Press Enter **[ENT]**.
   - You don't need to enter a password.
   - The pre-set password is "0 0 0 0".
   - **We recommend using this preconfigured password.**
   - If you lose your personalized password, please contact the pH controller manufacturer directly.
     o Refer to the manufacturer's manual (supplied) to contact the manufacturer.

3. You will then be directed to the *Main settings menu screen - 1 of 3* [MAIN MENU] (*Illustration 6*).

Illustration 6 | Main settings menu screen - 1 of 3

5.1.2 pH sensor calibration

We recommend that you calibrate your sensor, then install it on the pH balancer in the same operation.

Your pH sensor should be calibrated at the beginning of each season. It's a good idea to calibrate your sensor even if it's new, as it may have been stored for some time.

WHAT YOU NEED TO PREPARE | To calibrate your pH sensor, you'll need:

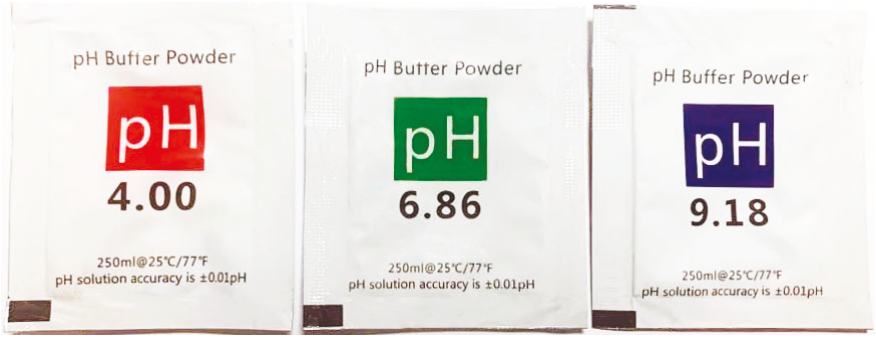
- an ultra-clean surface (e.g., parchment or similar),
- the three buffer solutions: 4.00 pH, 6.86 pH, and 9.18 pH (*Illustration 7*),
- two liters (0.53 gal.) of distilled water,
- a kettle,
- a measuring cup,
- a thermometer (not supplied),
- and three tall, ultra-clean, dry containers measuring at least 300 mL (10.14 oz),

- o with an opening allowing for easy reception and shaking of the pH sensor head,
- o identified with each of the three buffer solutions: 4.00 pH, 6.86 pH, and 9.18 pH,
- o into each of which 250 mL (8.45 oz) of distilled water at a temperature of 25°C (77°F) is poured,
  - › into which the contents of each of the three pH buffer packets are added and thoroughly mixed,
  - › the manufacturer's recommendations on the pH buffer solution packet always take precedence,
  - › these packets are available from your LAPIERRE EQUIPMENT distributor,

- pH storage solution,
  - o this solution is available from your LAPIERRE EQUIPMENT distributor,
- and two 3/4 MNPT PVC plugs (not supplied), one for each of the two transparent sensor storage caps (*Illustration 2, No. 2*),
  - o these same plugs can also be used to close the half-rings on the pH balancer when the sensors are not installed.

TIP | You can use a single set of pH buffer solutions to calibrate both pH sensors of your pH balancer in turn. Please also read *Section 5.1.3: pH sensor installation* before calibrating your sensors.

Illustration 7 | Example of buffer solutions for calibrating a pH sensor



Here are the instructions for performing this calibration.

NOTE | There are two sensors and two half-rings (*Illustration 15-E and F*). Correctly identify the location of each of the two sensors, as each must be installed in its respective half-ring. Then, store the two storage stakes (*Illustration 8*) for your pH sensors in a safe place if you wish to use them again at the end of the sugaring season.

1. Carefully remove the pH sensor transparent storage cap.

- Leave the sponge (*Illustration 2, No. 3*) and the pH storage solution (*Illustration 2, No. 4*) in the cap.
- Place it upright on the ultra-clean surface.

2. Place your sensor on the ultra-clean surface.

IMPORTANT | The entire sensor head, including the black protective sheath (*Illustration 3, No. 1*), must not come into contact with residues or impurities.

3. Enter the calibration parameters with preconfigured password “0 0 0 0”, as described in *Section 5.1.1.* above.

Illustration 8 | pH sensor storage stake for shipping

Illustration 9 | Main settings menu screen - 2 of 3

4. Move the indicator to the line marked *3. Online Calibration* (*Illustration 9*) using the push-button with the downward-pointing arrow (*Illustration 9*).
   - Use the same push-button to return to *1. System Setting*.
5. Press *Enter* **[ENT]**.
6. You will then be taken to the *Main calibration menu screen* [ONLINE CALIBRATION] (*Illustration 10*).

Illustration 10 | Main calibration menu screen

7. By default, the indicator should be located on the first line *1. pH calibration* (*Illustration 10*).
   - If not, move the indicator to this line.
8. Press Enter **[ENT]**.
9. You will then be directed to the *pH calibration screen* [pH CALIBRATION] (*Illustration 11*).

Illustration 11 | pH calibration screen

10. Since the calibration is based on pH 4.00, 6.86, and 9.18 buffer solutions, choose this option.
    - By default, the indicator should be on the first line identified with these pH buffer solutions. If not, move the indicator to this line.
11. Press *Enter* **[ENT]**.
12. You will then be directed to the *4.00 pH calibration screen* [pH CALIBRATION] (*Illustration 12*).

Illustration 12 | 4.00 pH calibration screen

13. **4.00 pH |** Bathe the pH sensor head in your 4.00 pH container.
    - Carefully shake the sensor head in the pH buffer solution.
    - Leave the sensor head in the pH buffer solution for a few moments.
    - DISPLAY: When “4.00” appears continuously on the display, press *Enter* **[ENT]**.
    - Rinse the pH sensor head with distilled water and shake dry.

    Pressing *Enter* **[ENT]** again will take you to the *6.86 pH calibration screen*.
14. **6.86 pH |** Bathe the pH sensor head in your 6.86 pH container.
    - Carefully shake the sensor head in the pH buffer solution.
    - Leave the sensor head in the pH buffer solution for a few moments.
    - DISPLAY: When “6.86” appears continuously on the display, press *Enter* **[ENT]**.
    - Rinse the pH sensor head with distilled water and shake dry.

    Pressing *Enter* **[ENT]** again will take you to the *9.18 pH calibration screen*.

15. **9.18 pH |** Bathe the pH sensor head in your 9.18 pH container.
    - Carefully shake the sensor head in the pH buffer solution.
    - Leave the sensor head in the pH buffer solution for a few moments.
    - DISPLAY: When “9.18” appears continuously on the display, press *Enter* **[ENT]**.

The pH sensor calibration screen should then display
"SUCCESSFUL"
indicating the successful and final calibration of your pH sensor.

    - Rinse the pH sensor head with distilled water and shake dry.
16. Place the sensor on the ultra-clean surface.
17. If necessary, pour pH storage solution into the cap up to halfway up the sponge. Seal cap with the 3/4 MNPT PVC plug.
    - Store the cap in a safe place, away from dust and frost, for reuse at the end of the sugaring season.

TIP | Place the sealed cap in a resealable bag.

Note that further information is available in the original manufacturer’s User Manual supplied with your pH balancer.

Follow the instructions in the next section to install your pH sensor.

5.1.3 pH sensor installation

Following sections *5.1.1: Entering calibration parameters with preconfigured password* and *5.1.2: pH sensor calibration*, you can proceed to installing your calibrated pH sensor.

WHAT YOU NEED TO PREPARE | To install your pH sensor, you’ll need:
- plumbing tape.

IMPORTANT | Before installing your pH sensors, make sure that the part of your pH balancer’s plumbing below the half-ring (*Illustration 15-E and F*) is **filled with water.** The water level must not rise into the chimney of the half-ring.

1. Correctly identify which of the two sensors you are going to install. Each sensor must be installed in its respective half-ring (*Illustrations 15-E or F and 17, No. 7 or No. 8*).
2. Check that the internal thread and the top of the half-ring on the pH balancer (*Illustration 15-E and F*) are dry, clean, and free of residue. If not, correct the situation.
3. Apply plumbing tape to the sensor head threads.
4. Carefully insert the sensor head into its specific half-ring on the pH balancer.

NOTE | The protective glass shell is very fragile.

5. Immediately screw the sensor into its half-ring carefully, by hand, and **without excessive pressure**.

5.2 STORING THE pH SENSOR AFTER THE SEASON

Here are the instructions for storing your pH sensors after the season.

It is not advisable to leave your pH sensors in the half-rings of your pH balancer for several weeks or months. In fact, it's preferable to **RETURN YOUR SENSORS TO THEIR ORIGINAL pH STORAGE SOLUTION**. This solution recharges the membrane and preserves all its properties.

NOTE | Don't forget to correctly identify the location of each of the two sensors on your pH balancer. Each sensor must be reinstalled in its respective half-ring at the start of the next season. Each half-ring refers to its own pH controller (*Illustrations 15-E or F and 17, No. 7 or No. 8*).

WHAT YOU NEED TO PREPARE | To store your pH sensor, you'll need:

- the storage stake (*Illustration 8*), if you have kept it,
  - otherwise, you'll need two 3/4 MNPT plugs (not supplied) to close each of the two half-rings on your pH balancer,
    - you can use the plugs used to store your transparent sensor storage caps,
- the pH transparent sensor storage cap and sponge (*Illustration 2, No. 2 and No. 3*),
- an ultra-clean surface (e.g., parchment paper or similar),
- distilled water,
- filter paper, if necessary,
- pH storage solution, if required,
  - this solution is available from your LAPIERRE EQUIPMENT distributor,
- tie wraps long enough to meet your needs.

1. At the end of the season, reuse the transparent storage cap and sponge from the pH sensor.
   - The cap and sponge were stored when you calibrated the pH sensor (*Section 5.1.2, Item No. 17*).
2. Open the transparent storage cap, leave the sponge in place, and place on an ultra-clean surface.
   - **If there are any CRYSTALS** in the cap, it must be cleaned.
     - Place the sponge on the ultra-clean surface.
     - Clean cap with distilled water.
     - Dry with filter paper or other residue-free material.
     - Place the sponge in the cap and pour the pH storage solution halfway down the sponge.

       NOTE | The spongy characteristic of the sponge allows part of the protective glass shell and its membrane to be in continuous contact with the pH storage solution. In this way, the membrane retains its properties over extended storage periods.
   - **If there are NO CRYSTALS** in the cap:
     - pour the pH storage solution up to halfway up the sponge, if necessary.

3. Carefully unscrew the pH sensor from its half-ring on the pH balancer (*Illustration 15-E or F*).
   - Remove all plumbing tape.
   - Rinse sensor head generously with distilled water.
   - Slightly dry by shaking/dripping.

   NOTE | The protective glass shell is very fragile.
4. Carefully screw the transparent storage cap onto the pH sensor head.
5. Screw the pH sensor storage stake into the half-ring, if retained.
   - If not, use a 3/4 MNPT plug (not supplied) to close the half-ring.
6. Secure the pH sensor to the storage stake using the tie wraps or attach it to your pH balancer in another way if you no longer have the stake.
   - It is VERY IMPORTANT that it be fixed in **an upright position**.

Note that further information is available in the manufacturer's User Manual supplied with your pH balancer.

SECTION 6 **SETTING pH LEVEL ALARMS**

Please note that the environmental standard for wastewater discharge sets the acceptable pH level at between 6 and 9.5. As an environmental precaution, the alarm levels in the parameters have been set by our technicians at the factory to 6.5 and 9.2.

The alarm levels can be modified. To do so, please refer to *Appendix A*.

7.1 FREEZING

Your pH balancer should be installed in a warm, dry, and frost-free environment.

pH SENSORS CANNOT WITHSTAND FREEZING. Failure to adhere to this instruction will obviously result in problems and damage to your sensors the next time they are used because of freezing.

7.2 SURFACE

Your pH balancer must be **INSTALLED SAFELY ON A HORIZONTAL AND PERFECTLY STABLE SURFACE**. If it tilts or tips over, it may cause severe injury or burns to the operator and any other persons in the vicinity of the equipment. Its weight and the hazardous nature of its neutralizing products represent a real hazard.

7.3 NEUTRALIZATION TANK

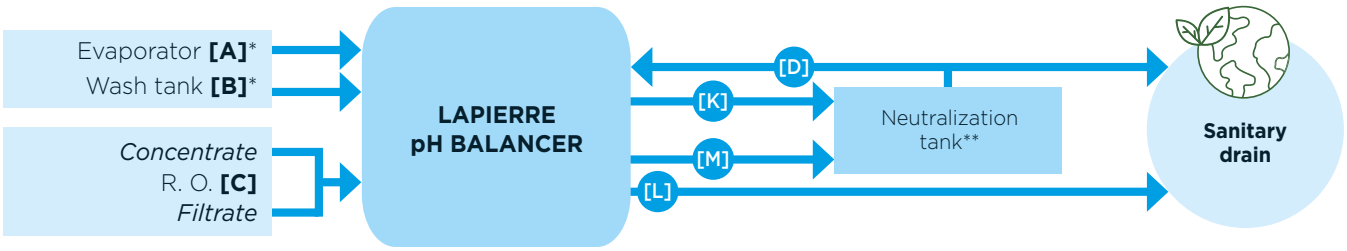
It's best to keep your neutralization tank closed to avoid odours and overflows.

To facilitate pump operation, by taking advantage of the effect of gravity, we recommend installing the neutralization tank at a level equal to or higher than that of the pH balancer.

7.4 EQUIPMENT CONFIGURATION

Below, you will find the configuration of the equipment required to use the Lapierre pH balancer.

Illustration 13 | Equipment configuration



* Each of the two inlets (A and B) can accommodate either the evaporator or the wash tank, at the discretion of the owner and/or installer. However, please note that the instructions in this manual are written as shown in *Illustration 14*. The letters refer to *Illustrations 14 and 15*.

** Contact your LAPIERRE EQUIPMENT distributor to obtain the neutralization tank that meets your preferences.

7.5 EQUIPMENT INTERCONNECTION

Below, you'll find instructions for interconnecting all your equipment.

The piping and hardware required for this installation are available from your LAPIERRE EQUIPMENT distributor.

Table 2 | Wash, rinse, and recirculation water inlets TO the pH balancer

INLETS TO THE pH BALANCER	
FROM	**TO (*Illustrations 13-14-15*)**
Evaporator, secondary tank, or other, depending on your installation	**Inlet A** pH Balancer
- Locate your evaporator drain. - Connect this drain to inlet A of your pH balancer.	
Wash tank	**Inlet B** pH Balancer
- Locate your wash tank drain. - Connect this drain to inlet B of your pH balancer.	
R. O. (Concentrate + Filtrate)	**Inlet C** pH Balancer
- Locate your R. O.'s **concentrate** and **filtrate** drains. - Connect these drains to inlet C of your pH balancer. o The use of a **"Y" pipe fitting** is required.	
Neutralization tank	**Inlet D** pH Balancer
- Locate your neutralization tank drain*. - Connect this drain to inlet D of your pH balancer.	

NOTE | The pH balancer does not handle drainage from the neutralization tank to the sanitary drain. This must be done manually using a valve (*Illustration 14, No. 2*).

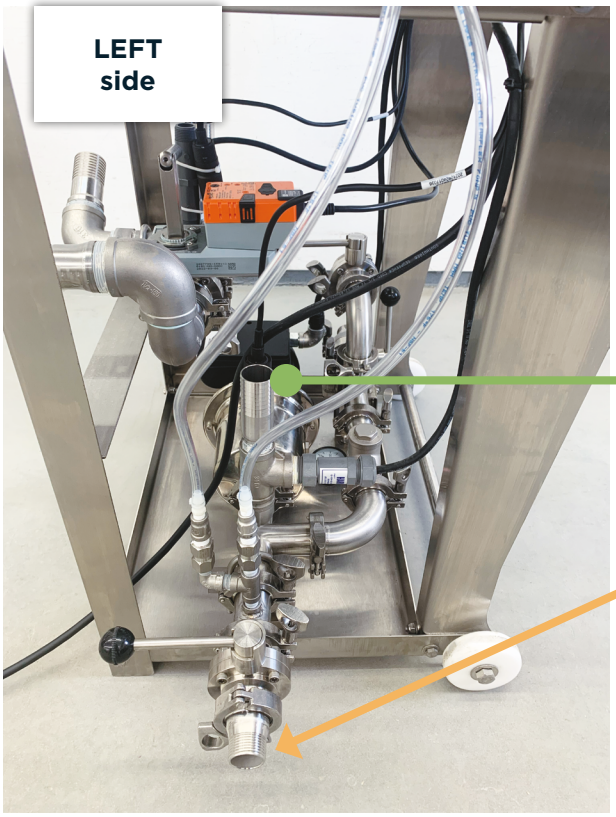
* The drain piping on your neutralization tank must allow for either a return to the pH balancer for recirculation (Inlet D) or to the sanitary drain for drainage. A T-fitting and manual valve (not supplied / see *Illustration 14, No. 1 and No. 2*) must therefore be installed on your tank piping to implement your choice.

Table 3 | Wash and rinse water drainage outlets TO the neutralization tank or sanitary drain

OUTLETS TO TANK OR DRAIN		
FROM	**(*Illustrations 13-14-15*)**	**TO**
Neutralization tank	**n/a**	Sanitary drain
- Connect the neutralization tank drain to the sanitary drain*.		
pH balancer / pump	**Output K**	Neutralization tank
- Connect the pump outlet of your pH balancer (*Illustration 14-K*) to your neutralization tank.		
pH balancer / R. O.	**Output L**	Sanitary drain
- Connect the pH balancer/R. O. drain (*Illustration 14-L*) to your sanitary drain.		
pH balancer / R. O.	**Output M**	Neutralization tank
- Connect the pH balancer/R. O. outlet (*Illustration 14-M*) to your neutralization tank.		

* The drain piping on your neutralization tank must allow for either a return to the pH balancer for recirculation (Inlet D) or to the sanitary drain for drainage. A T-fitting and manual valve (not supplied / see *Illustration 14, No. 1 and No. 2*) must therefore be installed on your tank piping to implement your choice.

Illustration 14 | Equipment connection diagram



Inlet

Output

1 T-fitting

2 Manual valve

K
Pump

D
Neutralization tank
- Recirculation

1

2

Neutralization tank

Sanitary drain

L
R. O.

M
R. O.
See *Illustration 15-M*

C
R. O.
- Concentrate
- Filtrate

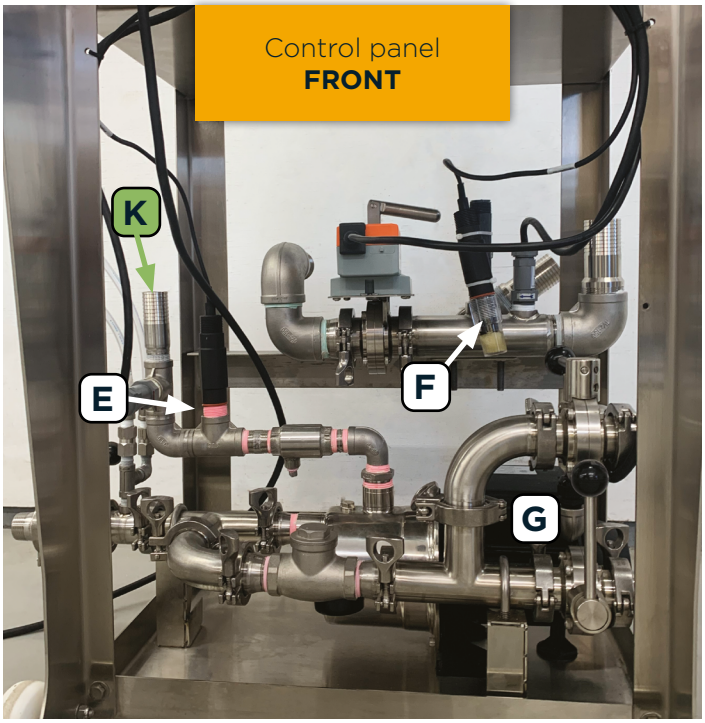
B
Wash tank

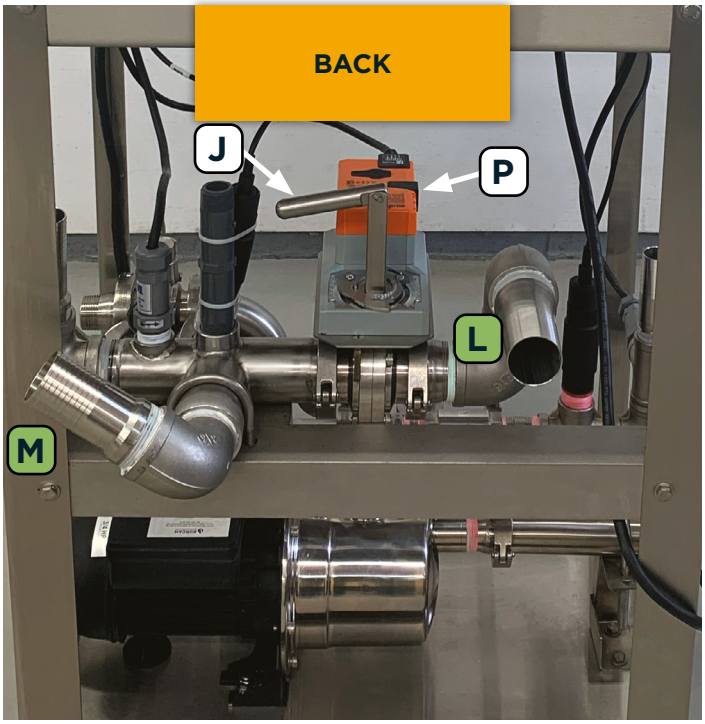
A
Evaporator

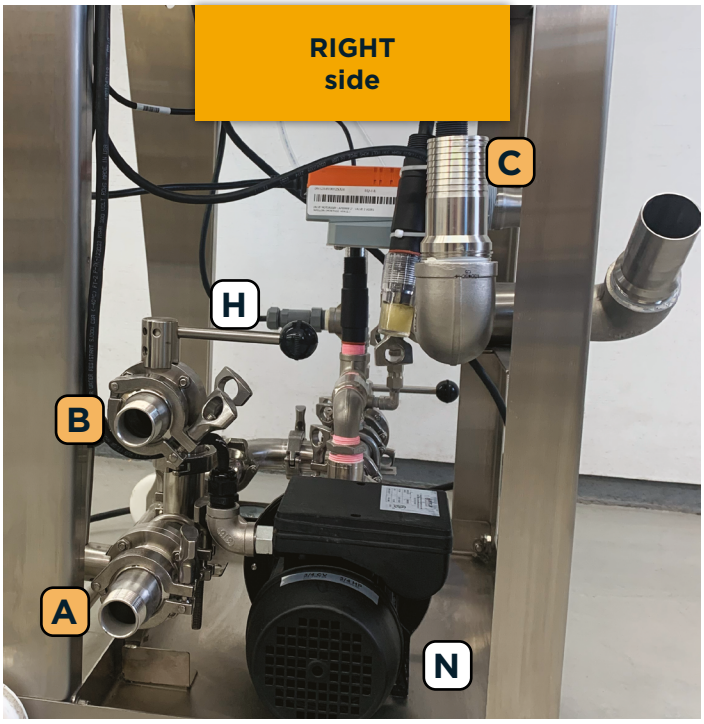
7.6 MECHANICAL COMPONENTS OF YOUR pH BALANCER

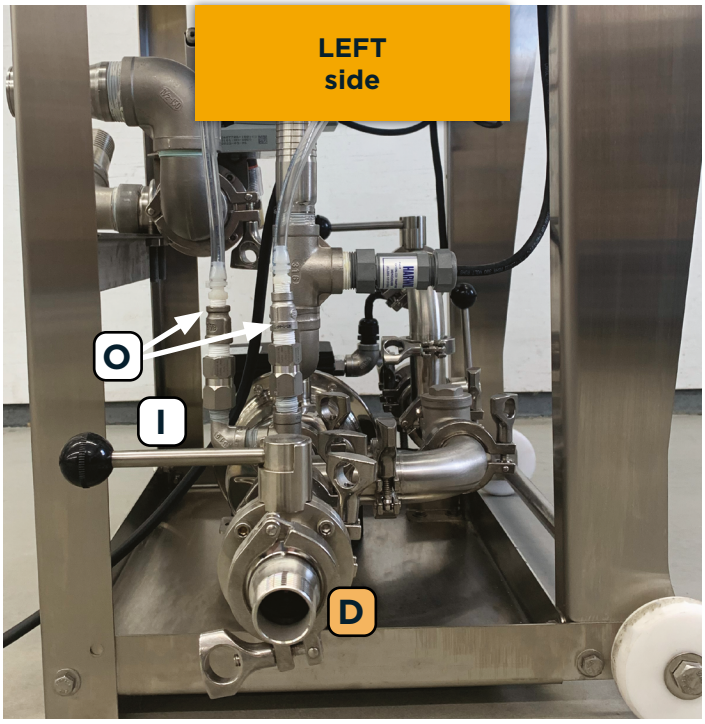
Below, you'll find the location of the various components of your pH balancer, such as the water inlets, pH sensors, levers, outlets, and pump.

Illustration 15 | Mechanical components of the pH balancer









INLETS

A) INLET A – From the evaporator

B) INLET B – From the wash tank

C) INLET C – From the R. O. (concentrate and filtrate)

D) INLET D – From the neutralization tank (recirculation)

Half-rings and pH sensors

E) Half-ring for pH sensor on inlets A (Evaporator), B (Wash tank), and D (Neutralization tank)

- The pH sensor is installed in this example.
- This pH sensor refers to the DISPLAY [pH CONTROLLER - NEUTRALIZATION TANK] (*Illustration 17, No. 7*).

F) Half-ring for pH sensor on inlet C (R. O.)

- The pH sensor is fixed for delivery in this example, as it is when shipped.
- This pH sensor refers to the DISPLAY [pH CONTROLLER - R. O. OUTLET] (*Illustration 17, No. 8*).

Controllers

G) Lever for opening and closing inlet valve A (Evaporator)

H) Lever for opening and closing inlet valve B (Wash tank)

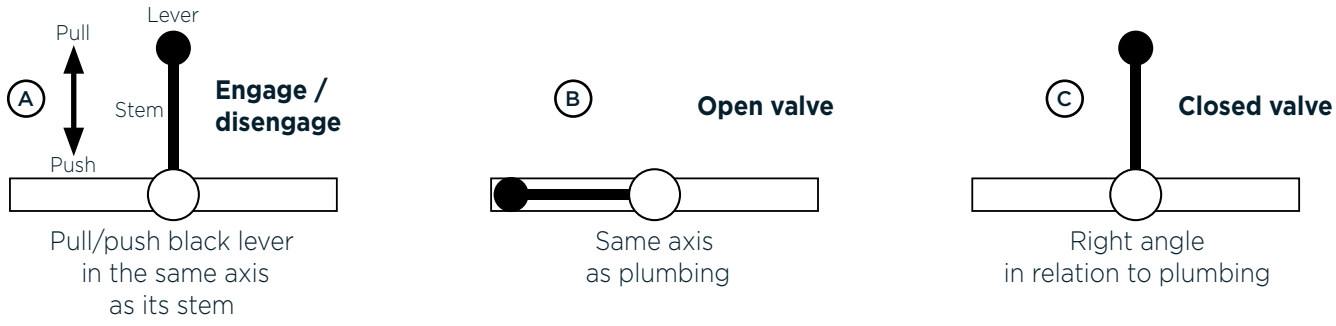
I) Lever for opening and closing the recirculation circuit inlet valve D for tank water neutralization

J) Manual opening and closing lever in the event of mechanical failure of the Belimo actuator (P)

Engaging/disengaging a lever from its anchorage (see *Illustration 16-A*) | To use a lever, you must first **disengage** it from its anchorage (lock). To do this, simply pull the black lever in **line with its stem**. Then, move it to the open or closed position. Then, re-engage the lever in its anchorage.

Open or closed valve (see *Illustration 16-B and C*) | An **open** supply valve follows the **same axis** as its plumbing, whereas it is **closed** if it is at a **right angle** to its plumbing. Consequently, levers G, H, and I in our example are closed.

Illustration 16 | About the levers



OUTLETS

K) OUTLET K - FROM pH balancer pump TO neutralization tank

L) OUTLET L - FROM INLET C (R. O.) TO sanitary drain

M) OUTLET M - FROM INLET C (R. O.) TO neutralization tank

Other

N) pH balancer pump

O) Neutralizer injection nozzles (2)

P) Belimo actuator

- The actuator automatically directs water from the R. O. to the neutralization tank or sanitary drain, depending on the pH sensor reading.

7.7 PARTS AND SOLUTIONS CODES

Below, you'll find the codes for certain parts, as well as those for the various solutions required to use your pH balancer. These codes are useful when ordering from our main factory and our various service centres.

Part description	Part code
Parts	
pH sensors (*Illustration 2*)	**EL**675-**PH**5019**XX**
Neutralizer tank (*Illustration 1, No. 1 and No. 2*)	**DV**037-000005**XX**
Transparent hose for neutralizer tank (*Illustration 1, No. 5 and No. 6*)	**TY**022-6697**N**1**P**5
Acid, soda, and solutions	
Citric acid (2 kg / Powder)	**DV**425-010002**XX**
Caustic soda 50% (30 kg / Liquid)	**TE**525-014270**XX**
4.00 pH buffer solution for calibrating a pH sensor (*Illustration 7*)	**DV**397-000400**XX**
6.86 pH buffer solution for calibrating a pH sensor (*Illustration 7*)	**DV**397-000686**XX**
9.18 pH buffer solution for calibrating a pH sensor (*Illustration 7*)	**DV**397-000918**XX**
Storage solution for pH sensor (50 mL) (1.69 oz) (*Illustration 2, No. 4*)	**DV**397-275652**XX**

This section provides information on your pH balancer's control panel and how to operate it, depending on whether your water comes from your evaporator, wash tank, or R. O.

PROTECT CHILDREN

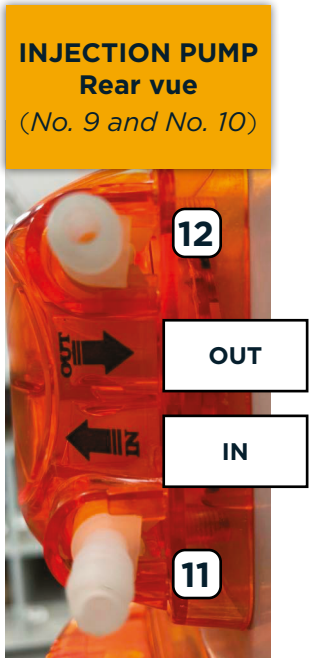
- Never allow children to use this equipment.
- Never leave children unattended in the vicinity of this equipment, whether it is in operation or not.

You must also be very careful with all other **PEOPLE NEAR THE EQUIPMENT**, whether they are children, family members, or guests, as well as with pets.

8.1 pH BALANCER CONTROL PANEL

Here are the details of the components found on the control panel of your pH balancer. Each component is accompanied by a brief description of its function.

Illustration 17 | pH balancer control panel



1) LED INDICATOR LIGHT [NEUTRALIZATION COMPLETE]
   - When illuminated, it indicates that the water neutralization is complete.
2) LED INDICATOR LIGHT [NEUTRALIZATION TANK ◆ HIGH LEVEL]
   - When illuminated, it indicates that the water level in the neutralization tank has reached the high level alarm float.

   IMPORTANT | This warning does not stop the pH balancer pump.
3) LED INDICATOR LIGHT [DEFAULT]
   - When illuminated, it indicates that the pH balancer has stopped and is malfunctioning.
     - Refer to *Section 11: Troubleshooting kit, Item No. 1*.
4) PUSH-BUTTON [ON]
   - Used to activate the pH balancer pump.
5) PUSH-BUTTON [STOP/RESET]
   - Used to stop or reset the pH balancer.
     - Refer to *Section 11: Troubleshooting kit, Item No. 1* for more information on resetting the equipment.
6) SELECTOR [MODE pH+ ◆ 0 ◆ pH-]
   - Used to adjust the pH level of the water during neutralization:
     - pH+: increases the pH level of the water,
     - 0: no action,
     - pH-: lowers the pH level of the water.
7) DISPLAY [pH CONTROLLER ◆ NEUTRALIZATION TANK]
   - pH meter display for water from evaporator, wash tank (*Illustration 15-A and B*), or neutralization tank (*Illustration 15-D*) when pH balancer is in recirculation mode.
8) DISPLAY [pH CONTROLLER ◆ R. O. OUTLET]
   - pH meter display for rinse water from R. O. (*Illustration 15-C*).
9) INJECTION PUMP for caustic soda 50%
10) INJECTION PUMP for citric acid
11) INLET of neutralizing product from its tank
12) OUTLET of neutralizing product to the injection nozzle (*Illustration 15-O*)

8.2 pH BALANCER OPERATION

Here's how it works, depending on whether the water comes from the evaporator or the wash tank (*Illustration 15-A and B*), or from the R. O. (*Illustration 15-C*).

When the water is transferred from the wash tank or evaporator, or from the R. O., a sensor (*Illustration 15-E or F*) analyzes its pH content. The result is shown on the pH meter display (*Illustration 17, No. 7 or No. 8*).

NEVER RUN THE PUMP DRY.

NEVER MOVE THE EQUIPMENT WHILE IT IS RUNNING. If necessary, and only if necessary, first switch off the pump, then unplug the power cord and check that the floor is horizontal, perfectly stable, and unobstructed throughout the planned movement.

8.2.1 Water from your EVAPORATOR (*Illustration 15-A*) or WASH TANK (*Illustration 15-B*)

➜ Transfer the water to the neutralization tank.

1 Check that there are sufficient quantities of neutralizing products in the tanks before proceeding with the pH neutralization operation.

2 Check that the cap of the small opening (*Illustration 1, No. 4*) on each neutralizer tank is slightly unscrewed in order to allow air to escape and the neutralizer to circulate.

3 Check that the selector switch for adjusting the pH level of the water is at "0" (*MODE, selector switch, Illustration 17, No. 6*).

4 Close the manual valve from the neutralization tank to the sanitary drain (*Valve, Illustration 14, No. 2*).

5 Close the recirculation circuit inlet valve for tank water neutralization (*Lever, Illustration 15-I*).

- A feed valve that is:
  - o open follows the same axis as its plumbing,
  - o closed is at a right angle to its plumbing.
- To use a lever, you must first disengage it from its anchorage (lock). To do this, simply pull the black lever in line with its stem (see *Illustration 16-A*). Then, move it to the open or closed position. Re-engage the lever in its anchorage.

6 Open the evaporator inlet valve (*Lever, Illustration 15-G*) or the wash tank inlet valve (*Lever, Illustration 15-H*), as appropriate.

7 Start the pH balancer pump (*ON push-button, Illustration 17, No. 4*) to transfer the wash water from the evaporator or wash tank (*Illustration 15-A or B*) to the neutralization tank.

- Check the pH level of the water during transfer (*left pH CONTROLLER display, Illustration 17, No. 7*).

  - This check is optional.

8 [Passive action] The pump stops automatically when the evaporator or wash tank is empty.

➔ **Now, neutralize the water in the neutralization tank.**

9 When the transfer is complete and the pump has stopped, close the evaporator inlet valve (*Lever, Illustration 15-G*) or the wash tank inlet valve (*Lever, Illustration 15-H*), as appropriate.

10 Open the recirculation circuit inlet valve (*Lever, Illustration 15-I*).

11 Start the pH balancer pump (*ON push-button, Illustration 17, No. 4*) to activate the water recirculation from the neutralization tank.

12 Set the selector to adjust the pH level of the water (*MODE selector, Illustration 17, No. 6*) according to the reading on the display (*Left pH CONTROLLER display, Illustration 17, No. 7*).

- The range of acceptable values in the standard is: **6 ≤ X ≤ 9,5 pH**.
  - If the value displayed is below 6 pH: set the selector to pH+.
  - If the value displayed is above 9.5 pH: set the selector to pH-.

Value	Select
X < 6 pH	pH+
6 ≤ X ≤ 9,5 pH	Drain (*Item No. 13*)
X > 9,5 pH	pH-

13 [Passive action] The balancer then brings the water to an acceptable pH level in a closed circuit and the "NEUTRALIZATION COMPLETE" LED indicator lights up.

- When the acceptable pH level is reached and remains stable for 5 minutes, the pH balancer pump automatically stops, the operation is completed, and the "NEUTRALIZATION COMPLETE" LED indicator (*Illustration 17, No. 1*) lights up.
- However, if the acceptable pH level is not reached after 60 minutes of operation, the pH balancer will stop and the "DEFAULT" LED (*Illustration 17, No. 3*) will light up, indicating that the pH balancer has a malfunction. The situation must be corrected before continuing with the neutralization operation.
  - Refer to *Section 11: Troubleshooting, Item No. 1* for more information.

➔ **Drain the water from the neutralization tank.**

14 Finally, drain the neutralization tank.

- To do this, open the manual valve from the neutralization tank to the sanitary drain (*Valve, Illustration 14, No. 2*).

NOTE | In *Appendix B*, you'll find a CHECKLIST for the steps in this section.

8.2.2 Water from your R. O. (*Illustration 15-C*)

➔ Transfer the water to the neutralization tank.

1 Check that there are sufficient quantities of neutralizing products in the tanks before proceeding with the pH neutralization operation.

2 Check that the cap of the small opening (*Illustration 1, No. 4*) on each neutralizer tank is slightly unscrewed in order to allow air to escape and the neutralizer to circulate.

3 Check that the selector switch for adjusting the pH level of the water is at "0" (*MODE selector switch, Illustration 17, No. 6*).

4 Close the manual valve from the neutralization tank to the sanitary drain (*Valve, Illustration 14, No. 2*).

5 Check that the inlet valves to the evaporator (*Lever, Illustration 15-G*) and wash tank (*Lever, Illustration 15-H*) are closed.

6 Switch on the **R. O.**

- The rinse water is then routed via the R. O. pump to inlet C (*Illustration 15-C*) of the pH balancer. It then continues on its way to the neutralization tank (*Illustration 15-M*), since its detected pH level is obviously not acceptable at this point.
  - Check the pH level during the water transfer (*RIGHT pH CONTROLLER display, Illustration 17, No. 8*).
  - This check is optional.

7 [Passive action] When the pH sensor for inlet C (*Illustration 15-F*) detects that the pH level of the water coming from the R. O. is acceptable, it automatically routes it to the sanitary drain (*Illustration 15-L*).

➔ Now, neutralize the water in the neutralization tank.

8 Open the recirculation circuit inlet valve (*Lever, Illustration 15-I*).

9 Start the pH balancer pump (*ON push-button, Illustration 17, No. 4*) to activate the water recirculation from the neutralization tank.

10 Set the selector to adjust the pH level of the water (*MODE selector, Illustration 17, No. 6*) according to the reading on the display (*Left pH CONTROLLER display, Illustration 17, No. 7*).

- The range of acceptable values in the standard is: **6 ≤ X ≤ 9,5 pH**.
  - If the value displayed is below 6 pH: set the selector to pH+.
  - If the value displayed is above 9.5 pH: set the selector to pH-.

Value	Select
X < 6 pH	pH+
6 < X < 9,5 pH	Drain (*Item No. 12*)
X > 9,5 pH	pH-

11 [Passive action] The balancer then brings the water to an acceptable pH level in a closed circuit and the "NEUTRALIZATION COMPLETE" LED indicator lights up.

- When the acceptable pH level is reached and remains stable for 5 minutes, the pH balancer pump automatically stops, the operation is completed, and the "NEUTRALIZATION COMPLETE" LED indicator (*Illustration 17, No. 1*) lights up.

- However, if the acceptable pH level is not reached after 60 minutes of operation, the pH balancer will stop and the "DEFAULT" LED (*Illustration 17, No. 3*) will light up, indicating that the pH balancer has a malfunction. The situation must be corrected before continuing with the neutralization operation.

  - Refer to *Section 11: Troubleshooting, Item No. 1* for more information.

➔ **Drain the water from the neutralization tank.**

12 Finally, drain the neutralization tank.

- To do this, open the manual valve from the neutralization tank to the sanitary drain (*Valve, Illustration 14, No. 2*).

NOTE | In Appendix B, you'll find a CHECKLIST for the steps in this section.

9.1 DAILY SHUTDOWN OF THE pH BALANCER

The instructions for the daily or temporary shutdown of your pH balancer are as follows:

1. Drain your outdoor neutralization tank and its pipes if there is a risk of freezing.
2. Make sure that the plumbing of your pH balancer under the pH half-rings and sensors (*Illustration 15-E and F*) is and will remain filled with water throughout the period of inactivity.
3. Switch off the power supply.

NOTE | Make sure that your pH balancer is always protected from freezing.

9.2 ANNUAL SHUTDOWN OF THE pH BALANCER

9.2.1. Your installation is permanent

The instructions for the annual shutdown of a permanent installation are as follows:

1. first, prepare what you need to store your pH sensors (*Section 5.2: Storing the pH sensor after the season*),
2. drain your outdoor neutralization tank and its pipes,
3. flush and drain your pH balancer pump and plumbing with clean water,
4. switch off the power supply,
5. store your pH sensors (*Section 5.2: Storing the pH sensor after the season*),
6. maintain and clean the equipment (refer to *Section 10*).

9.2.2 Your installation is not permanent

Here are the instructions to follow if your installation is not permanent and you are storing your pH balancer elsewhere.

You must **store your pH balancer in a frost-free location**, as pH sensors are not frost-safe. Failure to adhere to this instruction will obviously result in problems and damage to your sensors the next time they are used because of freezing.

1. First, prepare what you need to store your pH sensors (*Section 5.2: Storing the pH sensor after the season*).
2. Drain your outdoor neutralization tank and its pipes.
3. Flush and drain your pH balancer pump and plumbing with clean water.
4. Switch off the power supply.
5. Store your pH sensors (*Section 5.2: Storing the pH sensor after the season*).
6. Disconnect the piping from your pH balancer.
7. Plug all the openings in the pH balancer and any remaining tubes connected to it. Don't forget the ends of any sensor stakes. This protects the equipment from small rodents, insects, and other pests.
8. Maintain and clean the equipment (refer to *Section 10*).
9. Store the pH balancer in a dry place, away from moisture and frost.

SECTION 10 **EQUIPMENT MAINTENANCE AND CLEANING**

- The stainless steel components of your equipment must be cleaned using a product specially designed for this purpose. **Do not use flammable liquids.**
- Never use abrasive products, products containing chlorine or muriatic acid (also called hydrochloric acid) to clean the components of your pH balancer.
- The use of wire brushes and steel wool should also be avoided.

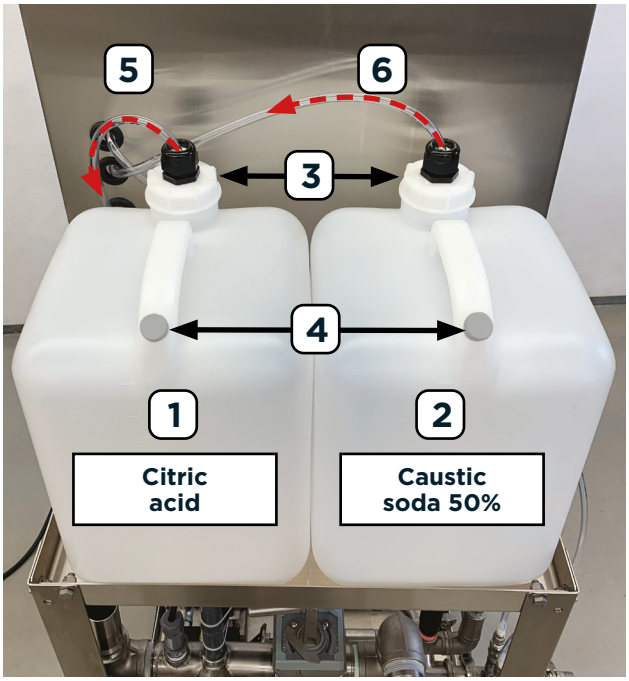
During prolonged storage, even the slightest **CLEANING PRODUCT RESIDUE ON ALL COMPONENTS** will obviously lead to inconvenience and damage at the beginning of the next season. Rinse each cleaned component thoroughly.

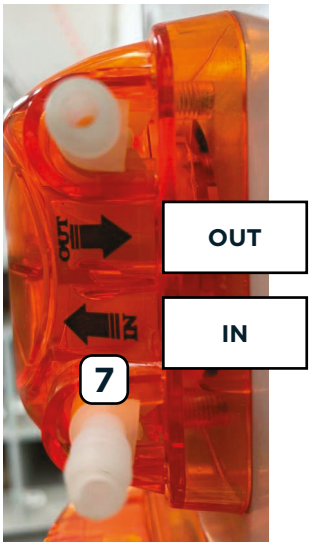
11.1 "DEFAULT" LED INDICATOR LIGHTS UP (*ILLUSTRATION 17, No. 3*)

This case refers to the operation of the pH balancer (*Sections 8.2.1, Item No. 13 and 8.2.2, Item No. 11*).

If the "DEFAULT" LED indicator lights up, the pH balancer has a malfunction. Below is a checklist to help you rectify the situation.

Illustration 18 | Neutralizer tanks and injection pump





Injection pump

Solutions

Neutralizer tanks (*No. 1 and No. 2*)

1. Check that there is sufficient neutralizing product left in each tank.

   - This is generally the most likely cause of the problem.

2. If your operation uses citric acid, is it possible that its concentration is too low?

   - Have you adhered to the recommended ratio of 45 mL (1.52 oz) citric acid to 1 L (0.26 gal.) water (*Section 4.1*)?

   NOTE | A lower concentration increases the time required for neutralization. Conversely, it is not recommended to exceed 60 mL (2.03 oz) per liter (0.26 gal.) of water.

Neutralizer supply hoses (*No. 5 and No. 6*)

1. In the neutralizer tanks, check that the ends of the hoses are thoroughly immersed in their respective solutions.

2. Check their connection to the injection pump.

   - The supply hose from the TANK is connected to IN (*No. 7*).

   - The connection is firm, beyond the barbs, and up to the shoulder joint.

3. Check hose integrity.

   - Check for breakage, obstructions, tampering, etc.

Mechanical breakdown

It could also be a mechanical failure.

If the situation cannot be corrected, contact your LAPIERRE EQUIPMENT service centre.

When the situation has been corrected, proceed as follows:

1. Press the **[STOP/RESET]** push-button (*Illustration 17, No. 5*) to reset the pH balancer.
2. Press the **[ON]** push-button (*Illustration 17, No. 4*) to restart the pH balancer.
3. Continue the neutralization operation until it is complete.
   - This means that the pH balancer pump stops automatically and the [NEUTRALIZATION COMPLETE] LED indicator (*Illustration 17, No. 1*) lights up.

pH BALANCER	
MODEL	**Model number**
pH BALANCER	**PH**001-000000**XX**

GENERAL WARRANTY
(WARRANTY CERTIFICATE)

KEEP YOUR PURCHASE INVOICE It is very important to keep the original invoice for the purchase of your equipment or a legible copy of it. **Otherwise, LAPIERRE EQUIPMENT INC. will not accept your warranty claim.**

The term MANUFACTURER is used for LAPIERRE EQUIPMENT to simplify the text.

1. TWO-YEAR LIMITED WARRANTY

The MANUFACTURER warrants that ***all new products that it manufactures*** are free of defects in manufacturing, materials, and workmanship. The warranty is valid for the end user for a period of two years, on parts and workshop labour, from the date of invoice of the product.

Furthermore, the warranty on parts and labour carried out on site, at the customer's location, is valid for a period of up to two years, depending on the product.

The warranty only applies when the product meets normal conditions of installation, use, and maintenance.

PRODUCT DEFECT | The appearance of a defect before the expiry date of the warranty must be reported to the MANUFACTURER immediately. The latter then repairs or replaces the defective parts with new equivalent parts.

DEFECTIVE PARTS | The defective parts replaced become the property of the MANUFACTURER. They are recovered during the after-sales service operation.

AESTHETICS | The aesthetic appearance of the products — parts and equipment — is covered by a 5-day warranty from the date of invoice.

Refer to *Section 10 — WARRANTY SUMMARY TABLE* for more information about the warranties.

2. ONE-YEAR LIMITED WARRANTY

NEW PRODUCTS AND EQUIPMENT | This warranty applies to certain products from our suppliers, certain wearing parts of our evaporators, extractor pumps, and certain labour services performed either by the MANUFACTURER or one of our suppliers.

The MANUFACTURER warrants that all new products are free of defects in manufacturing, materials, and workmanship. The warranty is valid for the end user for a period of one year, on parts and labour, from the date of invoice of the product. It only applies when the product meets normal conditions of installation, use, and maintenance.

The provisions of *Section 1 — PRODUCT DEFECTS, DEFECTIVE PARTS*, and *AESTHETICS* also apply.

USED PRODUCTS AND EQUIPMENT | This warranty applies to used products, unless otherwise stated.

The MANUFACTURER warrants that all used products are free of defects in manufacturing and materials. The warranty is valid for the end user for a period of one year, on parts and workshop labour, from the date of invoice of the product. It only applies when the product meets normal conditions of installation, use, and maintenance.

The provisions of *Section 1 — PRODUCT DEFECTS* and *DEFECTIVE PARTS* apply. *The AESTHETICS* provision does not apply.

OUT-OF-WARRANTY REPAIRS | This warranty also applies to out-of-warranty repairs, unless otherwise stated.

The MANUFACTURER warrants all out-of-warranty repairs for a period of one year, on parts and workshop labour, from the date of invoice of the repair. It only applies when the product meets normal conditions of installation, use, and maintenance.

The provisions of *Section 1 — PRODUCT DEFECTS* and *DEFECTIVE PARTS* apply. *The AESTHETICS* provision does not apply.

Refer to *Section 10 — WARRANTY SUMMARY TABLE* for more information about the warranties.

3. THREE-MONTH LIMITED WARRANTY

Hardware and accessories from suppliers.

4. ORIGINAL MANUFACTURER'S WARRANTY

Tools and instruments from suppliers.

5. OTHER WARRANTY

Collection tubing and fittings have their own warranty — warranty certificate. Refer to the document: *WARRANTY CERTIFICATE — Collection tubing and fittings*.

6. WARRANTY TRANSFERABILITY

This warranty is transferable and applicable upon presentation of the original purchase invoice or a legible copy of it.

7. ELIGIBILITY FOR WARRANTY REPAIRS AND MODIFICATIONS

To be eligible for the warranty, any warranty repair or modification must MANDATORILY BE APPROVED BEFOREHAND by the MANUFACTURER, whether it is carried out by one of ITS AUTHORIZED DISTRIBUTORS or by other third parties.

8. EXCLUSIONS TO THE WARRANTY CERTIFICATE

8.1 OBSERVED CONDITIONS

This warranty becomes null and void when one or more of the following conditions are observed.

8.1.1 An altered, modified, or removed serial number

8.1.2 A product damaged by:

8.1.2.1 The user

- Usage deemed abusive or negligent.
- An accident caused by the user.

8.1.2.2 Negligence in following the instructions in the user manual

- Negligence on the part of the user to follow the instructions in the user manual: safety instructions, equipment installation, start-up and operating procedures, equipment maintenance and cleaning, and all other recommendations provided by the MANUFACTURER.

8.1.2.3 The installation, modification, or repair of the equipment

- Installation in a location unsuitable for normal use.
- A modification or repair not authorized by the MANUFACTURER.

8.1.2.4 A non-compliant equipment part

- The use of equipment parts other than the original parts from the MANUFACTURER.
- The use of equipment parts obtained through a service centre, technician, or distributor not authorized by the MANUFACTURER.
- The use of equipment parts likely to alter or damage the equipment.

8.1.2.5 An electrical problem

- A variation, an electrical surge, or excessive voltage.
- Poor quality of the power supply or electrical connection.

8.1.2.6 A problem with the cleaning products

- The use of cleaning products or acids likely to alter or damage the equipment, or used without following the recommendations of their respective manufacturer.

8.1.2.7 Inappropriate storage of corrosive products

- Corrosive products such as chlorine, for example, must not be stored in the same room as your equipment.

8.1.2.8 An event beyond control

- Events which are beyond the control of the MANUFACTURER, such as a mechanical shock (impact, collision, vibrations), water damage or a flood, a fire, lightning, a storm, an earthquake, or any other natural or human disaster.

8.2 EXPENSES AND LOSSES

This warranty does not cover the following expenses or losses.

8.2.1 Expenses for:

- transporting the equipment to the repair site and bringing it back to the customer,
- making the product accessible during a service call,
- service calls for reasons other than those provided for in the warranty. The warranty applies when a flaw, malfunction, or defect in manufacturing, materials, or workmanship appears,
- service calls associated with product start-up at the beginning of the season and product shutdown at the end of the season or after the season. However, these expenses may be covered if they are specified in the purchase contract,
- service calls received upon expiry of the warranty,
- annual equipment tune-ups.

8.2.2 Losses:

- revenue losses caused by:
  - maple sap harvest losses,
  - syrup quality;
- production losses, in terms of quantity or quality, related to the provisions covered by this warranty.

8.3 EVAPORATORS

Please find below two conditions of exclusions to the warranty certificate specific to evaporators.

8.3.1 Use of inappropriate wood, agents, and fuels

This warranty becomes null and void if a defect appears caused by the use:

- of wood that is painted or treated, or which contains chemicals or adhesive substances (glue),
- of any agent added to the evaporators,
- of any material, substance or fuel other than natural wood, for wood-fired evaporators,
- of any fuel other than No. 2 fuel oil, for oil-fired evaporators.

8.3.2 Interior aesthetics of the pans

The interior aesthetic appearance of the pans is not covered by the warranty.

8.4 EXTRACTORS AND TRANSFER TANKS

The complete seal of an extractor or a transfert tank is not covered by this warranty.

9. PRODUCTS WITHOUT WARRANTIES

The MANUFACTURER does not offer any warranty on the following products:

- batteries installed on the equipment,
- pH sensors,
- electronic parts such as repair components purchased individually,
- products marked “Liquidation/Final sale” on the invoice — no returns, no warranty.

10. WARRANTY SUMMARY TABLE

The following *Warranty Summary Table* illustrates whether or not a warranty applies to a product or service, as well as its duration, if applicable.

WARRANTY SUMMARY TABLE

LAPIERRE naturally innovative	PARTS	LABOUR		
		In workshop	**On-site support** (diagnostic, repair)	**Remote support**
R. O. Concentrators	2 years	2 years	1 year	2 years
Datacer	2 years	2 years	No	2 years
Finishing and processing equipment, including maple cream makers, bottling systems, candy machines, water jacketed bottling tanks, etc.	2 years	2 years	1 year	N/A
Evaporators including parts and pan washers	2 years *Wearing parts*: 1 year*	2 years *Wearing parts*: 1 year*	2 years *Wearing parts*: 1 year* *Burners adjustment: 1 year*	2 years
Extractors	2 years *Pump: 1 year*	2 years *Pump: 1 year*	1 year	2 years
Vacuum pumps **	2 years	2 years	1 year	2 years
Tanks (basins)	2 years *Structure only*	N/A	2 years *Structure only*	N/A
Transport tanks	1 year	N/A	1 year	N/A
Silos	1 year	N/A	1 year	N/A
Used products and equipment	1 year *Unless otherwise indicated*	1 year *Unless otherwise indicated*	N/A	N/A
Listed chimneys	20 years *Prorated*	N/A	N/A	N/A
Tools and instruments	From the original manufacturer	N/A	N/A	N/A
Hardware and accessories from suppliers	3 months	N/A	N/A	N/A
Fittings and accessories for tubing	1 to 5 years *Prorated*	N/A	N/A	N/A
Tubing	10 to 15 years *Prorated*	N/A	N/A	N/A
Out-of-warranty repairs	1 year	1 year	N/A	N/A

SEALS | All seals, regardless of the equipment, are wearing parts that come with a one-year warranty.

BATTERIES, pH SENSORS, ELECTRONIC PARTS | There is **no warranty** on batteries, pH sensors, and electronic parts such as repair components purchased individually.

SUBMERSIBLE SENSORS | The **2-year** warranty applicable to submersible sensors **is voided** when they freeze or are damaged by poor handling or negligent maintenance.

* Wearing parts gradually deteriorate as the equipment is used. Those found on evaporators are as follows: seals, refractory materials such as bricks and concrete, and windows if applicable.

** The warranty is that of the original manufacturer. This warranty is null and void if water is present in the pump.

11. DISCLAIMER

The MANUFACTURER may not be held liable for incidental or indirect damage, nor for implied material damage.

In the event of a warranty claim, the MANUFACTURER bears no responsibility for:

- the direct or consequential loss of time, production, or profits,
- inconveniences,
- the costs of acquiring equipment, replacing parts, or storage.

12. SUBMITTING YOUR WARRANTY CLAIM

Here is the procedure to submit your warranty claim.

- Contact your representative or distributor, our service centre, or our head office to submit your warranty claim and schedule the after-sales service operation, if necessary.
- **IMPORTANT |** For any claim, you must submit your original purchase invoice or a legible copy of it. Otherwise, the MANUFACTURER will not accept your claim.
- If applicable, the MANUFACTURER will inspect your equipment and confirm whether your warranty claim is accepted.

  If **so**, the MANUFACTURER will carry out an after-sales service operation according to the provisions specified in *sections 1. TWO-YEAR LIMITED WARRANTY* or *2. ONE-YEAR LIMITED WARRANTY.*

  If **not**, you will be offered a cost estimate. This may include the travel expenses of a technician and their mileage, the working time of the technician at the hourly rate in effect, a daily allowance for meals, and other expenses, if applicable.
- If applicable, the functional equipment is then returned to the customer in a condition comparable to that in which it was found when it was received. This *comparable condition* was determined beforehand by the MANUFACTURER and/or one of its representatives or distributors.
- This after-sales service operation under warranty does not extend the duration of the warranty on the equipment. The end date of the warranty remains the same.

Warranty certificate: April 2024 (V05)

SECTION 14 **PARTS AND CONSUMABLES**

Parts for your pH BALANCER or any other equipment manufactured at LAPIERRE EQUIPMENT are available at our main plant in Saint-Ludger, Québec, Canada and at our service centers in Waterloo, Québec, Canada and Swanton, Vermont, USA. However, do not hesitate to contact us or visit our website to locate the distributor nearest you.

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APPENDIX A **SETTING pH LEVEL ALARMS**

Please note that the environmental standard for wastewater discharge sets the acceptable pH level at between 6 and 9.5. As an environmental precaution, the alarm levels in the parameters have been set by our technicians at the factory to 6.5 and 9.2.

If you wish to modify the alarm levels, first enter the calibration parameters with the preconfigured password (refer to *Section 5.1.1*).

Then, proceed as follows:

1. Move the indicator to the *5. Alarm setting* line (*Illustration 19*) using the push-button with the downward-pointing arrow.

   - Use the same push-button to return to *1. System setting*.

2. Press *Enter* **[ENT]**.
3. You will then be directed to the *Main alarm menu screen - 1 of 2* [ALARM SETTING] (*Illustration 20*).

Illustration 19 | Main settings menu screen - 3 of 3

- **Modifying a pH high alarm**

1. By default, the indicator should be on the first line identified with *1. pH high alarm* (*Illustration 20*).

   - If not, move the indicator to this line.

2. Press *Enter* **[ENT]**.
3. You will then be directed to the *pH high alarm setting screen* [ph HIGH ALARM] (*Illustration 21*).

Illustration 20 | Main alarm menu screen - 1 of 2

Illustration 21 | pH high alarm setting screen

4. The indicator shows the active digit for modification (i.e., the first "0" in our example).
   - Use the push-button with the down arrow to change the value, from 0 to 9.
     o If you wish to return to 0, use the same push-button to continue.
     o When your choice is displayed, press *Enter* **[ENT]** to save your selection.
5. To move the indicator to the next digit (9 in our example), use the push-button with the right arrow.
   - If you wish to return to the first digit, use the same push-button to continue.
   - Use the push-button with the down arrow to change the value, from 0 to 9.
   - When your choice is displayed, press *Enter* **[ENT]** to save your selection.
6. Follow the same procedure for the third and fourth digits to be modified.
7. Pressing *Enter* **[ENT]** again takes you to the *High breakaway setting screen* [pH HIGH ALARM/HIGH BREAKAWAY] (*Illustration 22*).

Illustration 22 | High breakaway setting screen

8. Then, press *Enter* **[ENT]**.

   IMPORTANT | Do not modify these values.

   - You will then be directed to the *Main alarm menu screen - 1 of 2* [ALARM SETTING] (*Illustration 20*).

9. Press **MENU** (*Illustration 20*) to return to the main menu.

• Modifying a pH low alarm

1. From *Illustration 20*, move the indicator to the second line, identified with *2. pH low alarm* (*Illustration 23*).
2. Press *Enter* **[ENT]**.
3. You will then be taken to the *Low pick-up alarm value setting screen* [pH LOW ALARM] (*Illustration 24*).

Illustration 23 | Main alarm menu screen - 2 of 2

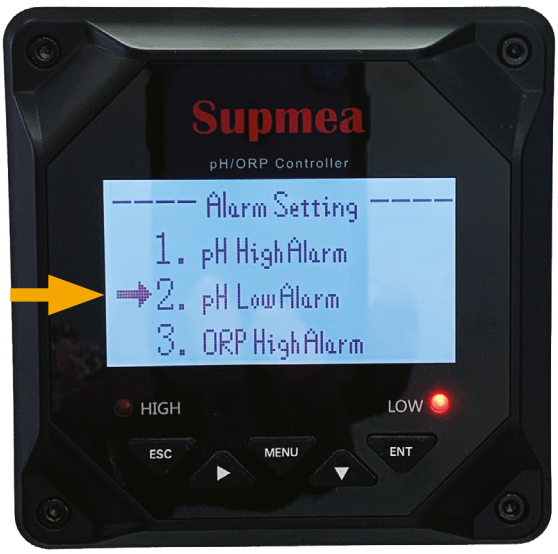

Illustration 24 | Low pick-up alarm value setting screen

4. The indicator shows the active digit for modification (i.e., the first “0” in our example).
   - Use the push-button with the down arrow to change the value, from 0 to 9.
     - o If you wish to return to 0, use the same push-button to continue.
     - o When your choice is displayed, press *Enter* **[ENT]** to save your selection.
5. To move the indicator to the next digit (6 in our example), use the push-button with the right arrow.
   - If you wish to return to the first digit, use the same push-button to continue.
   - Use the push-button with the down arrow to change the value, from 0 to 9.
   - When your choice is displayed, press *Enter* **[ENT]** to save your selection.
6. Follow the same procedure for the third and fourth digits to be modified.
7. Pressing Enter **[ENT]** again will take you to the *Low breakaway setting screen* [pH LOW ALARM/LOW BREAKAWAY] (*Illustration 25*).

Illustration 25 | Low breakaway setting screen

8. Then, press *Enter* **[ENT]**.

   IMPORTANT | Do not modify these values.

   - You will then be directed to the *Main alarm menu screen - 1 of 2* [ALARM SETTING] (*Illustration 20*).

9. Press **MENU** (*Illustration 20*) to return to the main menu.

Note that further information is available in the manufacturer's User Manual supplied with your pH balancer.

APPENDIX B **CHECKLIST | pH BALANCER OPERATION**

Below is a summary of the steps in *sections 8.2.1* and *8.2.2*.

NOTE TO THE OPERATOR: Make a copy of this chart if you wish.

WATER FROM YOUR EVAPORATOR OR WASH TANK (*Section 8.2.1*)

➔ **Transfer the water to the neutralization tank.**

1 QUANTITIES of **neutralizing products** in tanks.

2 **Caps on small tank openings** slightly UNSCREWED.

3 **Selector switch** for setting water pH level AT "0".

4 CLOSE **the manual valve on the neutralization tank.**

5 CLOSE **the recirculation circuit inlet valve.**

6 OPEN **the evaporator or wash tank inlet valve.**

7 START the **pH balancer pump.**

8 [Passive action] When completed, the pump stops.

➔ **Now, neutralize the water in the neutralization tank.**

9 CLOSE **the evaporator or wash tank inlet valve.**

10 OPEN **the recirculation circuit inlet valve.**

11 START **the pH balancer pump.**

12 SET the **selector** to adjust the pH level of the water (left *CONTROLLER*).

13 [Passive action] The "Neutralization complete" LED indicator lights up.

➔ **Drain the water from the neutralization tank.**

14 PROCEED with the **draining** of the neutralization tank.

TABLE 4 | Valve and pump status table when water comes from the evaporator or wash tank

pH BALANCER OPERATION

Water from the EVAPORATOR or WASH TANK

	1 Transfer	2 Neutralize	3 Drain
NEUTRALIZATION TANK **Manual valve** (*Illustration 14, No. 2*)	Closed	Closed	**Open**
RECIRCULATION **Inlet valve** (*Illustration 14-D*)	Closed	**Open**	Closed
EVAPORATOR or WASH TANK **Inlet valve** (*Illustration 14-A or B*)	**Open**	Closed	Closed
pH BALANCER **pump**	**On**	**On**	Off

WATER FROM YOUR R. O. (*Section 8.2.2*)

➔ **Transfer the water to the neutralization tank.**

1 QUANTITIES of **neutralizing products** in tanks.
2 **Caps on small tank openings** slightly UNSCREWED.
3 **Selector switch** for setting water pH level AT "0".
4 CLOSE **the manual valve on the neutralization tank.**
5 CLOSE **the evaporator and wash tank inlet valves.**
6 SWITCH ON the **R. O.**
7 [Passive action] The water is DRAINED to the sanitary drain when its pH level is acceptable.

➔ **Now, neutralize the water in the neutralization tank.**

8 OPEN **the recirculation circuit inlet valve.**
9 START **the pH balancer pump.**
10 SET the **selector** to adjust the pH level of the water (left *CONTROLLER*).
11 [Passive action] The "Neutralization complete" LED indicator lights up.

➔ **Drain the water from the neutralization tank.**

12 PROCEED with the **draining** of the neutralization tank when finished.

TABLE 5 | Valve and pump status table when water comes from the R. O.

pH BALANCER OPERATION

Water from the R. O.

	1 Transfert	2 Neutralize	3 Drain
NEUTRALIZATION TANK **Manual valve** (*Illustration 14, No. 2*)	Closed	Closed	**Open**
RECIRCULATION **Inlet valve** (*Illustration 14-D*)	Closed	**Open**	Closed
EVAPORATOR or WASH TANK **Inlet valve** (*Illustration 14-A or B*)	Closed	Closed	Closed
pH BALANCER **pump**	Off	**On**	Off
R. O. **(pump)**	**On**	Off	Off

pH selector

Value	Select
X < 6 pH	pH+
6 ≤ X ≤ 9,5 pH	Proceed to drainage
X > 9,5 pH	pH-

NOTES

NOTES

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We sincerely appreciate your trust.

Thank you!

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