henden™

Henden Water Quality Hub
HWQH

INSTALLATION & OWNERS MANUAL

IMPORTANT
Please read carefully

WARNING:
Failure to follow these instructions and comply with all applicable codes may cause serious bodily injury and/or property damage.

The installation of this product should be carried out by a person knowledgeable in swimming pool plumbing requirements following the installation instructions provided in this manual.

Always ensure you're working from the current revision of this manual. Refer to www.bit.ly/HendenHWQH

Please pass these instructions on to the operator of this equipment

Contents

Henden Water Quality Hub

Contents

Henden Water Quality Hub

1. IN THE BOX

A. 1 x Henden Water Quality Hub (HWQH)

B. 2 x 40/50mm unions

C. 1 x QRG (Quick Reference Guide)

D. 1 x Incoming power lead

E. 1 x Acid Dosing Pump (including clear tubing, mounting kit, injection point, drum weight and suction filter)

F. 1 x HWQH controller antenna

G. 1 x pH probe

H. 1 x ORP probe

I. 1 x Salt/temperature probe

J. 1 x Acid feed injection point

K. 1 x Probe and injection point housing

L. 1 x RJ45 connection cable

M. 4 x pH calibration solution

N. 3 x ORP calibration solution

O. 1 x TDS calibration solution

P. 1 x pump connection cable

Q. 1 x Wall plug and screw kit

2. IMPORTANT SAFETY INSTRUCTIONS

ATTENTION: Power connections and wiring must be carried out by an authorised electrician.

3. COMMON TERMS

- **Acid:** A chemical compound that lowers pH level by contributing hydrogen ions to a water solution.[1]
- **Acid dosing pump:** Peristaltic pump to provide measured amounts of acid to the pool water to facilitate pH correction by lowering pH.
- **Alkaline (a.k.a. Base):** A chemical that neutralises solids, usually by furnishing hydroxyl ions (OH-). The opposite of an acid.[1]
- **Balanced Water:** The correct ratio of hardness, alkalinity, temperature, dissolved solids, and pH that prevents pool water from being either corrosive or scale forming.[1]
- **Calcification:** Formation of calcium carbonate scale on pool walls or the surface of circulation system components due to the precipitation of calcium carbonate.[1]
- **Calcium Hardness:** The calcium portion of the total hardness. The level of calcium determines whether water is overly soft (too little) or hard (too much). Excessively high hardness levels may cause cloudy water and scale. Excessively low levels may harm the pool.[1]
- **Calibration:** The process of checking or adjusting (by comparison with a standard) the accuracy of a measuring instrument.[1]
- **Chlorine:** A common oxidiser used as a disinfectant and algicide in swimming pools.
- **Cyanuric Acid ($C_3N_3O_3H_3$) (a.k.a. Stabiliser):** A chemical that restricts the loss of chlorine because of ultra-violet rays from sunlight.
- **Hardness (water):** Refers to the quantity of dissolved minerals, chiefly calcium and magnesium compounds in the water. May be measured as Total Hardness (TH) or Calcium Hardness (CH). Not to be confused with Total Dissolved Solids (TDS) which is different.
- **Hydrochloric Acid (HCl) (a.k.a. Muriatic Acid):** A strong acid used to reduce the pH and total alkalinity as well to clean scale or acid wash surfaces. It is also generated in the reaction of chlorine gas and water.[1]
- **ORP (a.k.a. Oxidation Reduction Potential):** A method of measuring the disinfectant, which often relates to the concentration of an oxidiser in the water.[1] In swimming pools this is generally measuring the chlorine available for use as an oxidiser. When measured by a probe the value should normally be 650mV but may vary by ⧺15mV. Too high indicates too much chlorine while too low indicates chlorine levels are low.
- **pH:** A measure of the degree of acidity or alkalinity of a solution. A pH of below 7.0 is considered acid. A pH above 7.0 is considered alkaline.[1]
- **ppm:** An abbreviation of parts per million.
- **Probe (a.k.a. Sensor or Electrode):** A device placed in the pool water piping system that measures specific water properties. The measurements provided are interpreted by the HWQH controller to either take corrective action or to send a warning.
- **Re-climatising probes:** the process of reinstating probes to their normal operating condition after being allowed to dry out.
- **Total Alkalinity:** A measure of the ability of the water to maintain a desirable pH when acid is added to the water.[1]
- **Total Dissolved Solids: (a.k.a. TDS)** any minerals, salts, metals, cations or anions and some, usually small amounts, of organic matter that are dissolved in water. Total dissolved solids (TDS) in a pool commonly reflects the salt levels in the water. This can be measured with a conductivity probe.
- **Total Hardness (TH):** The total of all calcium hardness and magnesium hardness in water.[1]

Ref: 1: National Swimming Pool Foundation Pool and Spa Operators Handbook 2017

4. INSTALLING THE HENDEN WATER QUALITY HUB

4.1 TOOLS REQUIRED

- Cordless drill
- 6mm drill bit
- 5.5mm drill bit
- # 2 Phillips head screwdriver
- Cable ties
- 5L HCl acid
- Chemical handling PPE (see section 4.3)
- 15L or 20L container suitable for use with HCl acid storage
- Clippers, or knife to cut acid feeder tube
- Hacksaw
- Teflon tape (plumbers tape)
- PVC primer
- PVC glue

4.2 INSTALLATION OF THE HENDEN SALT AND MINERAL CHLORINATOR

Before installing the Henden Water Quality Hub (HWQH), you must first install the Henden Salt & Mineral Chlorinator (HSMC) according to the instructions supplied with the unit. For access to a full digital version of the installation and operating instructions, visit https://bit.ly/hendenchlioi or by scanning this QR code

IMPORTANT: If you are upgrading an already installed, existing HSMC it is important to connect your HWQH to Wi-Fi after completing first time set-up so that the HSMC can receive a software update.

4.3 THE ACID DOSING PUMP

4.3.1. Components of the acid dosing pump

Figure 4.1

A: Clear cover of acid dosing pump
B: Squeeze tube roller
C: Locating lugs for clear cover of acid dosing pump
D: Squeeze tube
E: Squeeze tube locking nuts, for acid feeder tube
F: Suction feeder tube drum weight
G: Suction filter
H: Mounting bracket
I: Double sided tape for assisted wall mounting
J: Wall plug for mounting screw
K: Mounting screw
L: 24VDC power lead
M: Acid injection point fitting
N: Clear tubing (4m)

4.3.2. General information about the acid dosing pump

ATTENTION: If any of the instructions here contained is not respected, there can be damage to persons &/or incorrect working, or damage to the apparatus. Henden recommends the use of 5L HCl acid, added to 15L of tap water or a ratio of 1 part acid, added to 3 parts of tap water. This should be done in a container suitable of use with HCl acid. Do not use Sulphuric Acid. Suitable Personal Protective Equipment (PPE) should be worn during the process. Consult warnings on chemical containers where necessary.

ATTENTION: The acid drum should be located at least 2 meters from any other pool equipment.

If the acid drum is located inside a room or an area with limited ventilation then a vent hole needs to be drilled in the lid and tubing run out to open area.

Henden recommends the use of low fuming pool acid.

Acid fumes will damage equipment and will not be covered by warranty.

When installing the pump, read the labels and verify the following:

- Tubing material is compatible with the liquid
- The pressure at the injection point is lower, or equal to the pump nominal pressure
- Acid (suction) feeder tubing is inserted in the liquid container, fitted to the suction connection of the pump (represented on the lid with △) and tightened with the proper nut
- Acid (delivery) feeder tubing is fitted to the delivery connection of the pump (represented on the lid with ▽), tightened with the proper nut
- Allow sufficient length of feeder tubing to reach the proposed probe & acid dosing injection housing and
- The locating lugs for the clear cover of acid dosing pump are correctly seated.

IMPORTANT: Henden recommends ensuring that all feeder tubing and probe cables be attached to pipework where possible. Use "cable ties" or "sticky/electrical tape". This is good practice as it not only looks more professional, but also limits potential damage to feeder tubes and probe cables by becoming entangled, or pulled by users during servicing of equipment etc.

4.3.3. Mounting the acid dosing pump

ATTENTION: Before carrying out any operation on the pump, disconnect the power supply.

The acid dosing pump needs to be installed a minimum of 2m away from the acid chemical drum (not included), but no higher than 1.5m above it.

4.3.3.1. Installation with the provided bracket:

- Fix the bracket with the provided screw
- In case of tiled, or low friction walls, use the supplied adhesive tape as follows:
  - Peel off one of the two protective foils from the tape
  - Stick the tape to the bracket
  - Peel off the second protective foil and press the bracket, tape side down against the wall until adhered
- Fix the pump on the bracket ensuring tongues on the back of the pump slides onto the bracket.

4.3.3.2. Suction filter installation:

- Feed the acid feeder tube through the lid of your acid container. A 5.5mm or 7/32" drill bit is ideal to make this hole
- Always ensure you drill a venting hole in the lid too (refer Figure 4.2). This is particularly important if the chemical container is stored in an unventilated area, as the venting port should be used to extract fumes from the area
- Insert the end of the tubing in the weight so that it exits from the flared part (refer Figure 4.3)
- Insert the suction filter in the same end of the tubing (refer Figure 4.3)
- Replace the acid drum lid with the tube, weight and filter inside the drum. Allow for enough tube for the weight to sit at the bottom of the acid drum.
- It is strongly recommended to use the suction filter in all situations. It is the combination of the hose weight and suction filter that ensures that the acid tube intake does not suck itself flat against the bottom of the acid drum
- Clean it periodically to avoid dry residue of product and accumulation of dirt

Figure 4.2

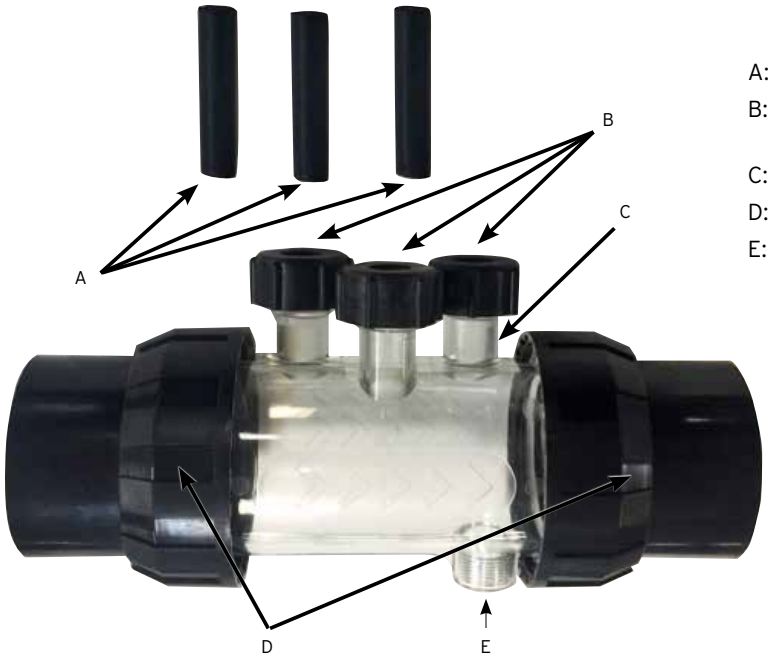
Figure 4.3

4.3.3.3. Squeeze tube replacement:

- Disconnect the pump from the power supply;
- Ensure that your circulation pump isn't running, or isn't about to run. For above ground pools (or pools where the water level is higher than the equipment) it may be necessary to close isolation valves to ensure water doesn't flood from the pool;
- Remove the clear cover of acid dosing pump;
- To remove the squeeze tube:
  - Turn the squeeze tube roller so that the roller is vertical;
  - Remove the feeder tube from its seated connection on the left of the pump. Alternately, pull the squeeze tube from its seat and manually rotate the squeeze tube roller clockwise until it is possible to extract the right-hand side connection from its seat.
- To fit the tube:
  - Turn the squeeze tube roller horizontally
  - Insert the connection in its seat on the left of the pump with the curved side towards the floor. Alternately, push the tube into its seat and manually rotate the squeeze tuber roller clockwise until it is possible to insert the right-hand side connection into its seat and
  - Refit the clear cover of the acid dosing pump.

4.4. INSTALLATION OF THE PROBE & INJECTION POINT HOUSING

4.4.1. Components of the probe & injection point housing



A: 3 x probe sealing blanks

B: 3 x probe locking nut with o-rings and washers

C: Probe housing

D: 2 x barrel unions with tail, nut & o-ring

E: Acid feed injection point

Figure 4.4

4.4.2. General information about the probe & injection point housing

The probe housing comes with 3 x probe sealing blanks (labelled A in Figure 4.4). These will be useful for winterising the pool, or in the event of servicing. This will allow continued operation of the pool system, without the probe(s) fitted. Inside the 3 probe locking nuts (labelled B in Figure 4.4), there is an o-ring and washer for fitting each probe.

4.4.3. Plumbing the probe & injection point housing

IMPORTANT: When installing the probe & injection point housing, it is critical that the housing be installed correctly.

Ensure the following conditions are met:

- The housing is installed so the 3 probes insert into the housing from above. The acid injection point is underneath (refer Figure 4.5)

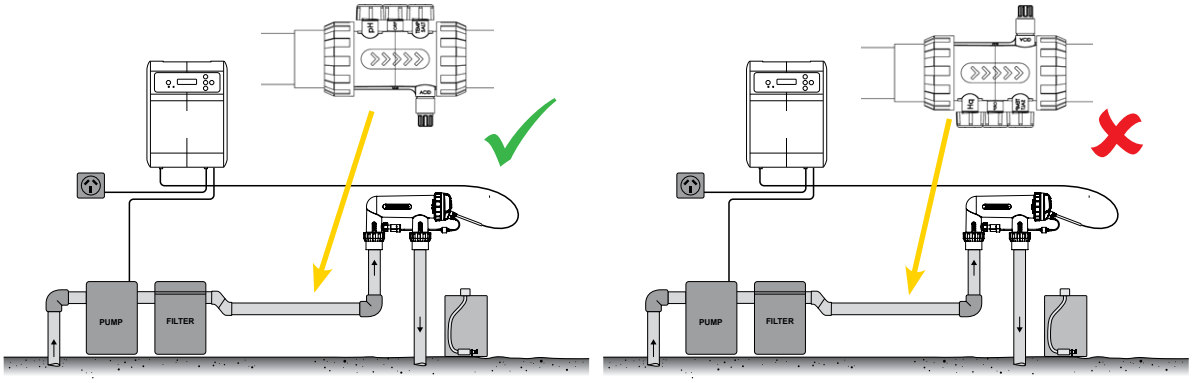


Figure 4.5

- The housing is installed so as water flow moves in the correct direction, shown by arrow markings on the housing (refer Figure 4.6)

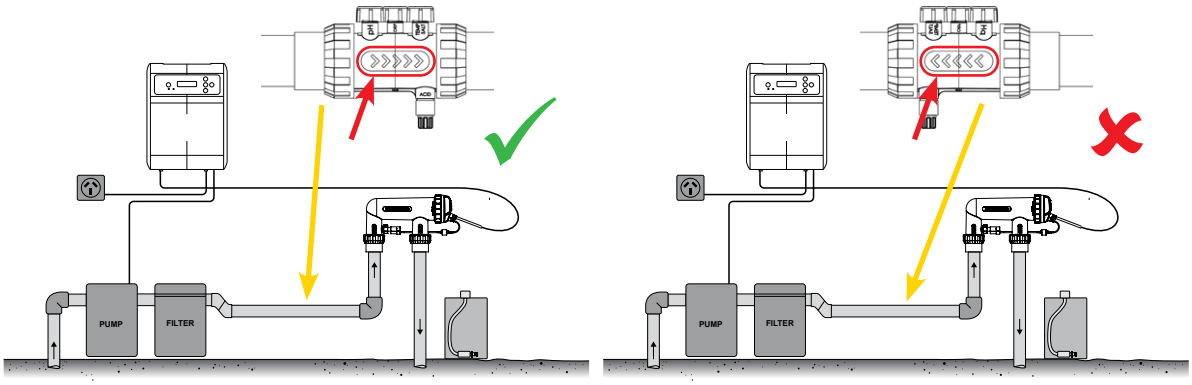


Figure 4.6

- The housing is installed horizontally (refer Figure 4.7)

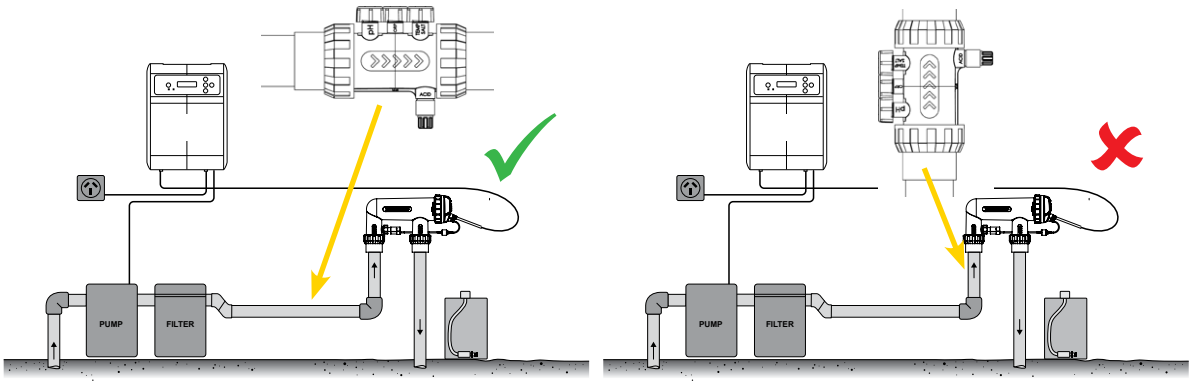


Figure 4.7

- The housing is installed up-flow of the HSMC cell housing (refer Figure 4.8)

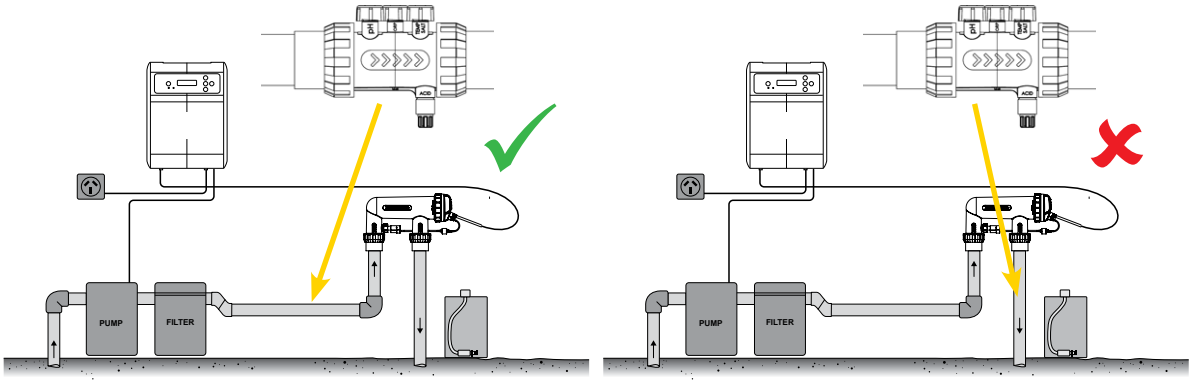


Figure 4.8

4.4.4. Water draining from probe & injection point housing

IMPORTANT: When installing the probe & injection point housing, the installation should ensure the probes remain wet, especially during the pump's off period.

If water is found to drain from pipework and especially from the probe and injection point housing, it is possible that the probes may dry out. Should this occur, please refer to the troubleshooting section that covers recovering dry probes. Where pipework is found to drain, the probe housing should be installed to allow a low point, to keep water in the housing, ensuring the probe ends remain submerged (refer Figure 4.9).

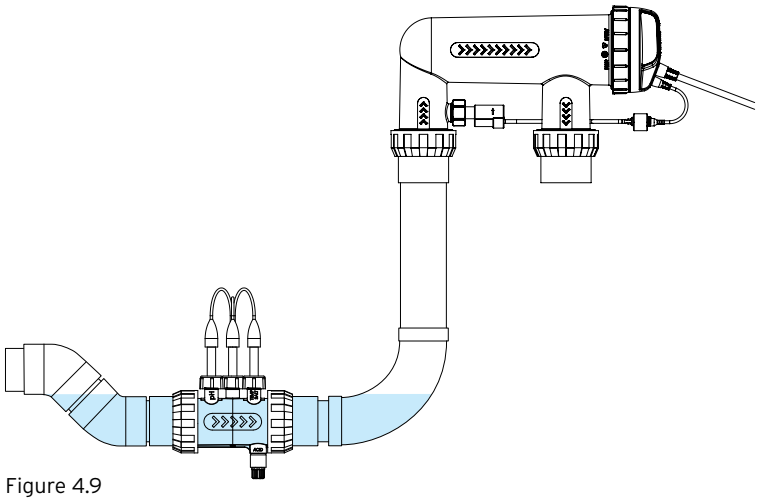


Figure 4.9

4.4.5. Plumbing the probe & injection point housing to acid dosing pump

Following section 4.2.2, the acid (delivery) feeder tubing should be fitted to the delivery connection of the pump (represented on the lid with s), and tightened with the locking nut.

IMPORTANT: Henden recommends ensuring that all feeder tubing and probe cables be attached to pipework where possible. Use "cable ties" or "sticky/electrical tape". This is good practice, not only as the installation looks more professional, but it also limits potential damage to feeder tubes and probe cables by becoming entangled, or pulled by users during servicing of equipment etc.

- Screw the acid injection point, into the probe injection point housing (refer Figure 4.10). This will require plumbing thread tape only. DO NOT USE SEALING COMPOUNDS, OR PIPE DOPE.

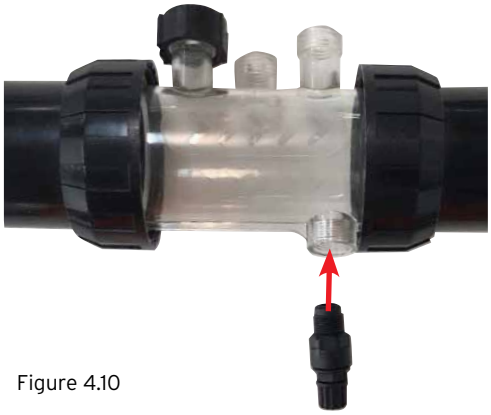


Figure 4.10

- Attach the other end of the acid injection point to the acid (delivery) feeder tubing and tighten the nut on the acid injection point (refer Figure 4.11).

Figure 4.11

- Attach the other end of the acid (delivery) feeder tubing to the acid dosing pump and tighten nut (refer Figure 4.12).

Figure 4.12

4.4.6. Wiring the acid dosing pump to the HWQH controller

The acid dosing pump is powered by an ELV (extra low voltage) 24VDC supply. On the end of the acid dosing pump power lead is a Tamiya connector (refer Figure 4.13).

The Tamiya connector needs to fit into the back of the HWQH controller (refer Figure 4.13).
The connector is deliberately designed such that it fits only one way.

Figure 4.13

4.4.7. Plumbing probe blanks into probe and injection point housing:

On the probe and injection housing, under each of the 3 x probe locking nuts, is an o-ring and washer (refer Figure 4.14). Remove the first probe locking nut on the housing (where it's marked pH)

Figure 4.14

- Carefully slide the probe locking nut, then the washer, then the o-ring, onto the probe blank (refer Figure 4.15)

Figure 4.15

- When sliding the blanking plug into the housing, ensure that the blank is located 20-25mm way into the probe housing.
- Hand tighten the probe locking nut onto the probe housing, that will in turn tighten the washer onto the o-ring (and create a seal). Repeat the process for all remaining probe blanks.
- The o-ring should not be lubricated when being fitted please ensure it is completely dry.

4.5. PROBE CONNECTIONS

4.5.1. pH probe

On the end of the pH probe lead is a locking BNC plug. The BNC plug for the pH probe needs to fit into the back of the HWQH controller, into the third BNC socket (refer Figure 4.16). The connector is deliberately designed such that it fits only one way.

Figure 4.16

4.5.2. ORP probe

On the end of the ORP probe lead is a locking BNC plug. The BNC plug for the ORP probe needs to fit into the back of the HWQH controller, into the second BNC socket (refer Figure 4.17). The connector is deliberately designed such that it fits only one way.

Figure 4.17

4.5.3. Temperature sensor and TDS probe

On the end of the temperature sensor and TDS probe lead is a locking BNC plug and an RCA plug. Both the BNC plug and the RCA plug needs to fit into the back of the HWQH controller controller. The BNC plug for the TDS probe needs to fit into the first socket (refer Figure 4.18) and the RCA plug for the temperature sensor needs to plug into the RCA socket above it (refer Figure 4.19). The connector is deliberately designed such that it fits only one way.

Figure 4.18

Figure 4.19

On the back of the controller at the base, use the cable retention slots for all cables & leads, ref Figure 4.20.

Figure 4.20

4.6. THE HWQH CONTROLLER

4.6.1. Powering the HWQH controller

IMPORTANT: The product shall be connected to the installation protective earthing conductor (for example, by means of a power cord set connected to a socket-outlet with earthing connection). For pluggable equipment, the socket-outlet shall be easily accessible

On the back of the controller is an IEC input power socket.

- Connect the incoming power lead (supplied) into the IEC power socket on the rear of the HWQH controller (refer Figure 4.21).
- The other end of the incoming power lead should be plugged into your 220-240VAC power supply.

Figure 4.21

4.6.2. HWQH communication lead to HSMC

For the HWQH controller to communicate to the HSMC, an RJ45 connection cable must be used. Plug the RJ45 connection cable into the back of the HWQH controller (refer Figure 4.22). Plug the other end of the RJ45 connection cable into the back of HSMC (refer Figure 4.23).

Figure 4.22

Figure 4.23

ATTENTION: Power connections and wiring must only be carried out by suitably electrically qualified personnel. Both the HWQH and HSMC must remain powered and communication lead firmly connected until the HSMC has been programmed. The HSMC will look like the image below (Figure 4.24).

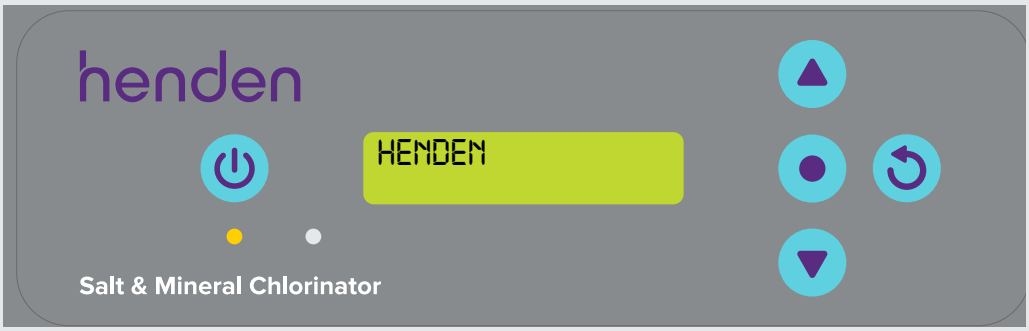


Figure 4.24

4.6.3. Connecting HWQH to H8VSPBT

For the HWQH controller to communicate to the H8VSPBT pool pump, an RJ45 connection cable must be used. Plug the RJ45 connection cable into the back of the HWQH controller (refer Figure 4.25). Plug the other end of the RJ45 connection cable into the port of the H8VSPBT (as explained in its I&OI).

Figure 4.25

4.6.4. Mounting the HWQH controller

For adequate weatherproofing, the wall or post that the HWQH is mounted to should be flat and at least as wide as the unit. Ensure the top and bottom of the HWQH is not protruding higher than what it is mounted to. Henden recommends installation under cover or eaves.

The rear of the HWQH controller has mounting supports 205mm apart (refer Figure 4.26).

Figure 4.26

The wall plug and screw kit provided should be used to mount the HWQH controller. Henden recommends HWQH mounting holes be drilled 170mm higher than the top of the current HSMC power supply box (refer Figure 4.27).

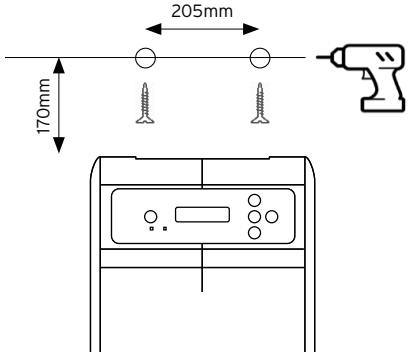


Figure 4.27

Before powering up the HWQH ensure:

- ☐ All probes are plugged in to HWQH (as per section 4.5)
- ☐ RJ45 communication cable and power lead connected
- ☐ pH and salt water calibration solutions are nearby
- ☐ The ORP probe has been in calibration solution for 10 minutes
- ☐ Pump is not powered and pipework pressure relieved
- ☐ Power is connected and on to the Henden Salt and Mineral Chlorinator

Allow between 5 and 15 minutes for first time start-up.

5. CONTROL PANEL

5.1 LAYOUT KEY

Figure 5.1

Manual on/off

Menu up/down

Menu/setting select

Menu/setting cancel (go back)

Power indicator
(lit when HSMC on)

Alarm indicator
(flashes when alarm active)

Time out
(whenever device is left for 30 seconds without input from user, settings are saved, and home screen displayed)

6. FIRST TIME START-UP PROCEDURE

6.1 LANGUAGE MENU

Upon initial power up, HWQH runs through a start-up process. This process is also run if the system is put through a "factory reset". The first screen displayed is the LANGUAGE menu (refer Figure 6.1).

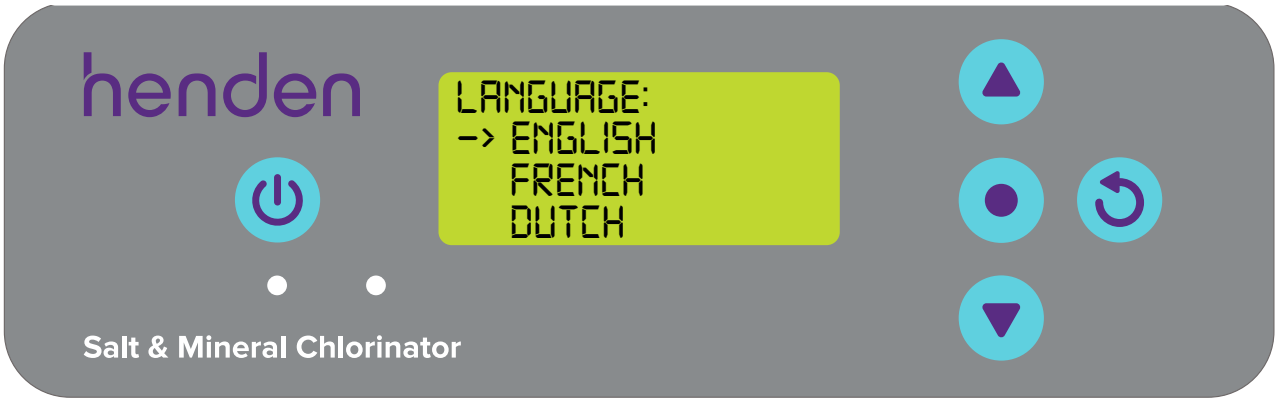


Figure 6.1

- Scroll to your preferred language by using the **menu up/down** buttons. Options include:
  - English;
  - French;
  - Dutch;
  - Portuguese;
  - Spanish;
  - German; and
  - Italian.
- Once your preferred language is highlighted, press **menu/setting select**.

6.2 CLOCK FORMAT MENU

- The next screen shown is the **CLOCK FORMAT** menu (refer Figure 6.2)

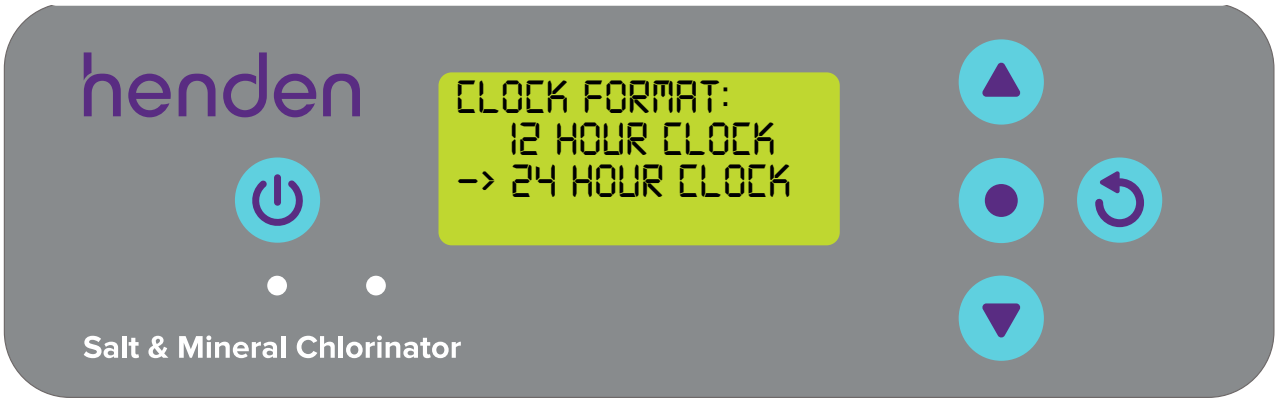


Figure 6.2

- Scroll to your preferred clock format by using the **menu up/down** buttons. Options include:
  - 12 hour clock; and
  - 24 hour clock.
- Once your preferred clock format is highlighted, press **menu/setting select**. The following instructions assumes the 12-hour clock format has been chosen.

6.3 CLOCK MENU

- The next screen shown is the **CLOCK** menu (refer Figure 6.3)

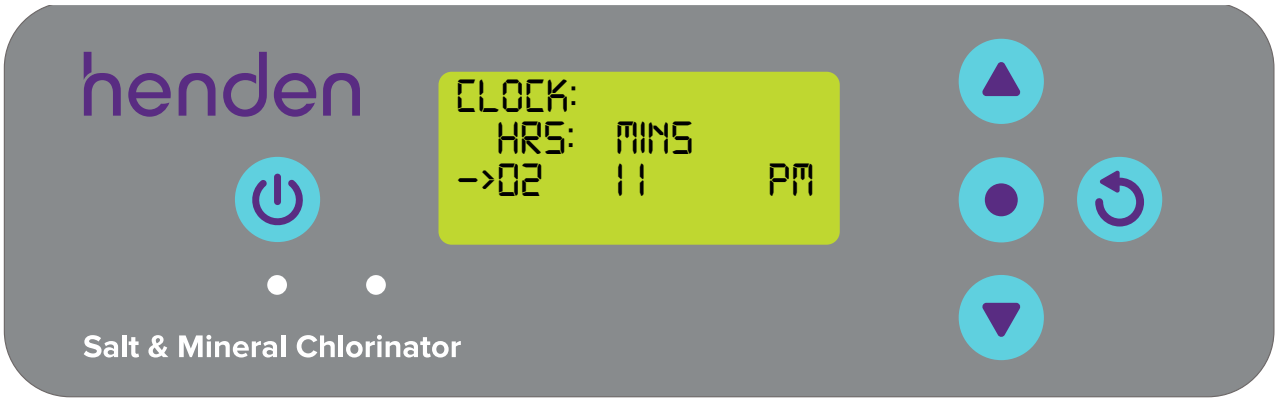


Figure 6.3

- Starting with the clock hours, use the **menu up/down** buttons to adjust until correct, then press **menu/setting select**.
- Repeat this process with clock minutes adjustment and AM/PM toggle (if 12 hour clock format has been chosen);
- The display will then request clock confirmation (refer Figure 6.4)

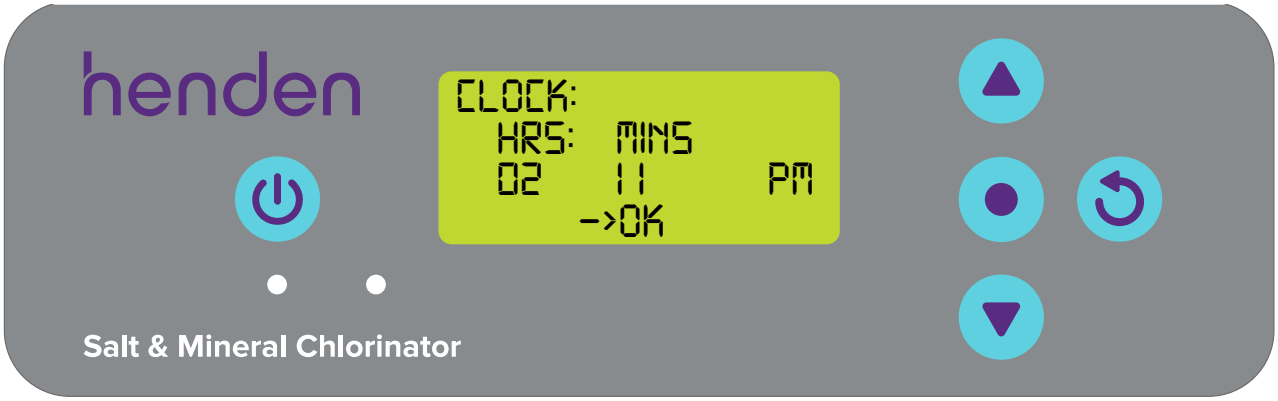


Figure 6.4

- Press **menu/setting select** to save and continue.

6.4 POOL VOLUME MENU

- The next screen shown is the **POOL VOLUME** menu (refer Figure 6.5)

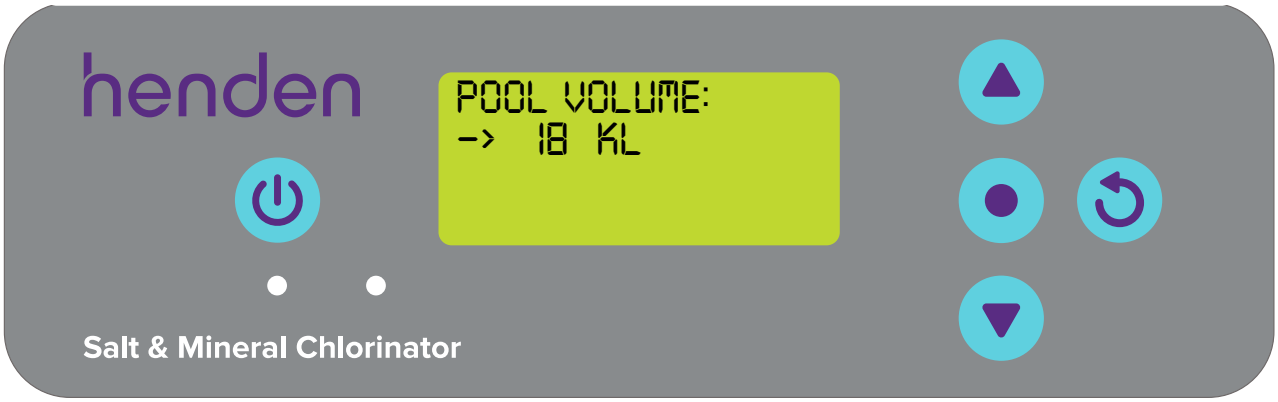


Figure 6.5

- Use the ▲▼ **menu up/down** buttons to adjust the POOL VOLUME in kilolitres until correct, then press ● **menu/setting select**.

6.5 pH PROBE MENU

- The next screen shown asks if the pH probe is currently connected and to be used (refer Figure 6.6)

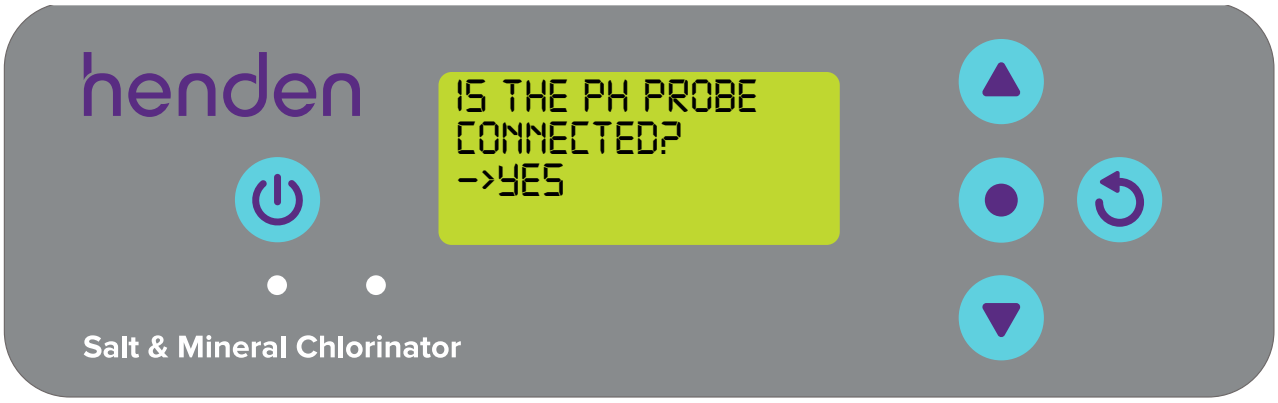


Figure 6.6

- Use the ▲▼ **menu up/down** buttons to toggle between yes and no;
- If you've chosen not to use the pH probe, skip to step 6.5 of this manual
- If you've chosen to use the pH probe, the next screen will instruct you to put the pH probe into pH 7 solution (ref Figure 6.7)
- Once correct, then press ● **menu/setting select**

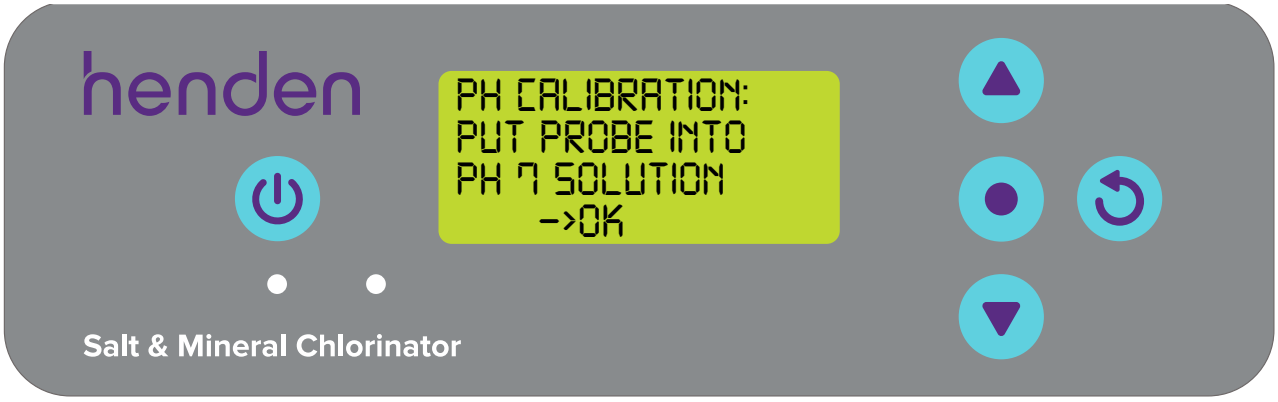


Figure 6.7

ATTENTION: When packaged, the probe comes connected to a bottle of chemical solution. The excess solution should be kept for future winterising of probes.

- Carefully unscrew the bottom half of the bottle, from the bottle's lid (refer Figure 6.8). Do not attempt to pull the whole bottle off the probe as you risk damaging the probe end

Figure 6.8

Figure 6.9

- Now carefully slide the lid and o-ring off the end of the probe. Ensure the probe end remains intact and ideally untouched (refer Figure 6.9). If the probe end is broken, the probe will need to be replaced (refer to spare parts section at the back of this manual). If the probe is touched, simply use a soft cloth, or tissue to clean, then resoak the probe in its chemical solution for 60 seconds
- At this point, ensure that the pH probe is placed into the pH 7 solution (ref Figure 6.10). Currently the probe blanking plug should be plumbed into the probe & injection point housing, you will need to remove it. Ensure that your circulation pump isn't running, or isn't about to run. For above ground pools (or pools where the water level is higher than the equipment) it may be necessary to close isolation valves to ensure water doesn't flood from the pool

Figure 6.10

- Once the pH probe is bathing in pH 7 solution, press **menu/setting select**;
- The screen will next display pH calibration in progress (refer Figure 6.11). A count will commence. Typically, the calibration will take less than 15 seconds, but may take up to a minute;

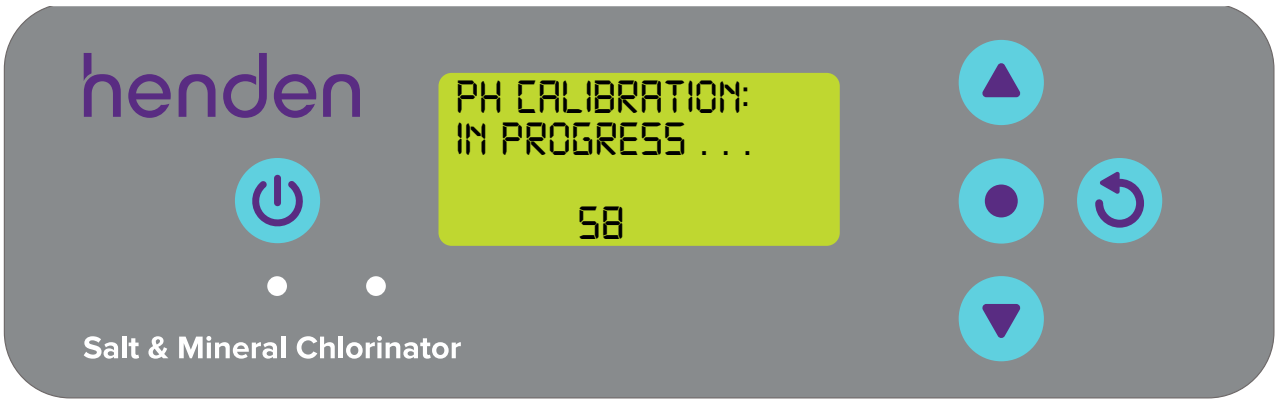


Figure 6.11

- Once complete, the display will instruct you to remove the probe (refer Figure 6.12).

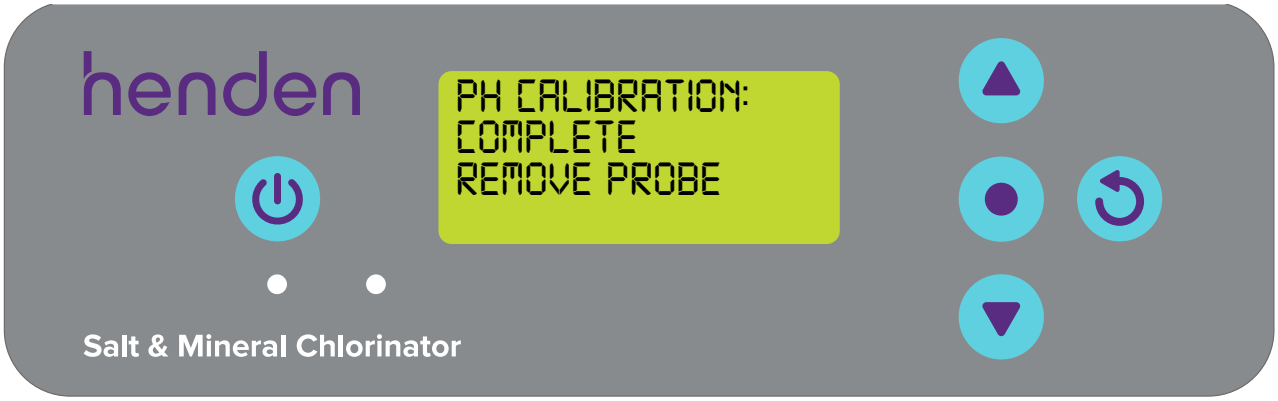


Figure 6.12

- The probe can then be removed from the pH calibration solution and installed into the probe and injection housing. The injection housing has written in the moulding which probe is mounted where (refer Figure 6.13)

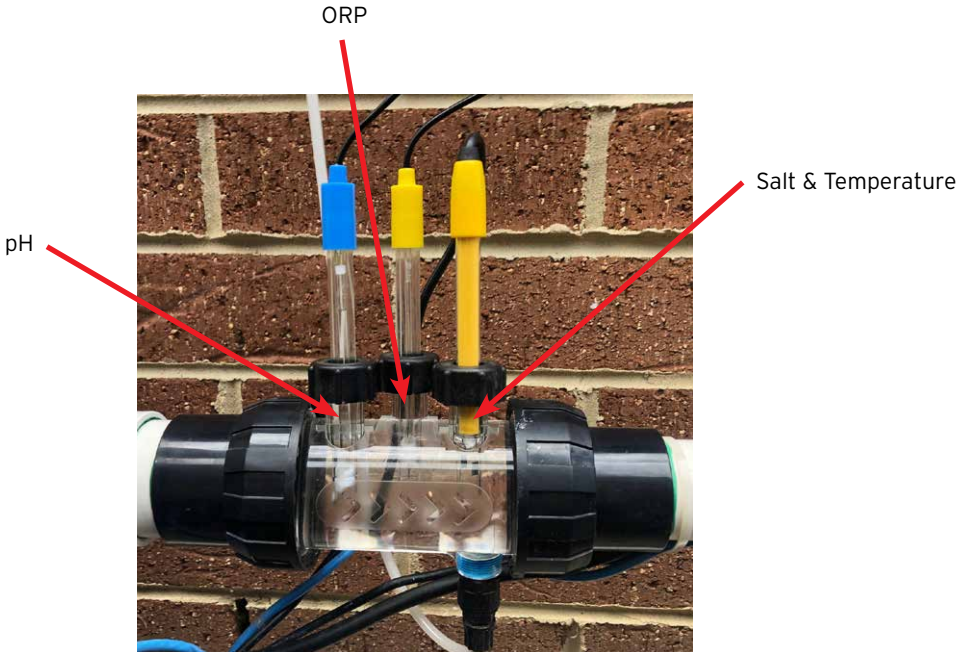


Figure 6.13

- On the probe and injection housing, under each of the 3 x probe locking nuts, is an o-ring and washer (refer Figure 6.14). Remove the first probe locking nut on the housing (where it's marked pH)

Figure 6.14

- Carefully slide the probe locking nut, then the washer, then the o-ring, onto the probe (refer Figure 6.15)
- The o-ring should not be lubricated when being fitted, please ensure it is completely dry.

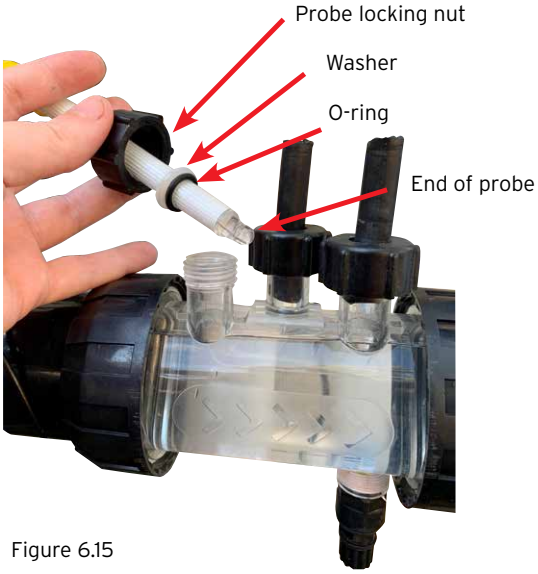


Figure 6.15

- When sliding the probe into the probe housing, ensure that the probe is located approximately half way into the probe housing (refer Figure 6.16).

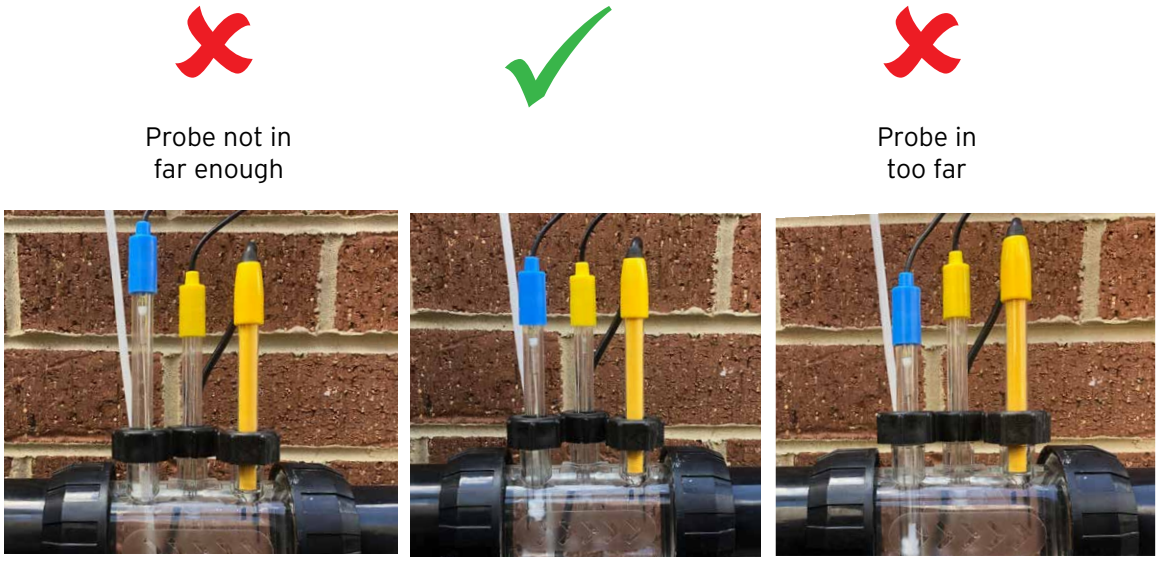


Figure 6.16

- Hand tighten the probe locking nut onto the probe housing, that will in turn tighten the washer onto the o-ring (and create a seal).
- It is a good idea to periodically check the nuts securing the probes onto the manifold to ensure they haven't come loose.

IMPORTANT: Ensure that the probe isn't inserted too far into the probe housing. Pushing the probe against the inside of the probe housing (on the underside) risks breaking the glass. Do not over tighten the probe locking nut onto the probe housing.

- Press **menu/setting select**, the display then shows the pH set point (refer Figure 6.17);

The factory default pH set point is 7.4, however you may wish to change this once the HWQH is installed. It should be noted that chlorine's effectivity is greatly influenced if pH levels are too high, or too low. Henden recommends the pool chemistry levels shown in section 10.

Figure 6.17

Adjustments to pH set point can be made as follows:

- Use the **menu up/down** buttons to scroll to your desired set point;
- Once correct, then press **menu/setting select**.

6.6 ORP PROBE MENU

- The next screen shown asks if the ORP probe is currently connected and to be used (refer Figure 6.18). Unlike the pH probe, the ORP probe needs to be left to soak in its calibration solution for 10 minutes prior to calibrating. If it has not been soaking, you may wish to come back to this step later, or if you've chosen not to use the ORP probe, skip to step 6.7 of this manual. The ORP probe can always be re-calibrated after initial installation, refer Section 8.2.2

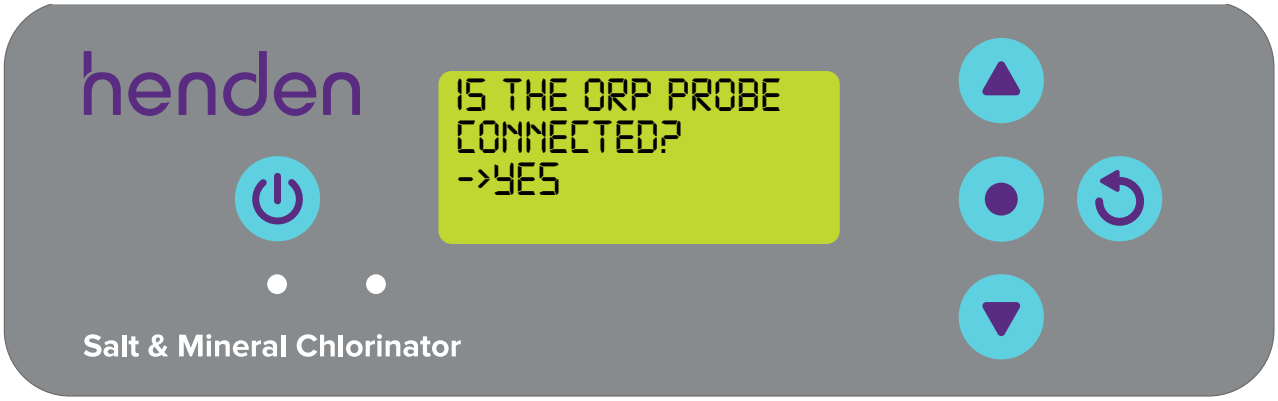


Figure 6.18

- If you've chosen not to use the ORP probe, skip to step 6.7 of this manual
- Use the **menu up/down** buttons to toggle between yes and no. Once correct, then presss **menu/setting select**
- If you've chosen to use the ORP probe, the next screen will instruct you to put the ORP probe into the ORP solution (ref Figure 6.19)

Figure 6.19

- With the ORP probe in its solution, press **menu/setting select**
- The screen will next display ORP calibration in progress (refer Figure 6.20). A count will commence. Typically, the calibration will take less than 15 seconds, but may take up to a minute

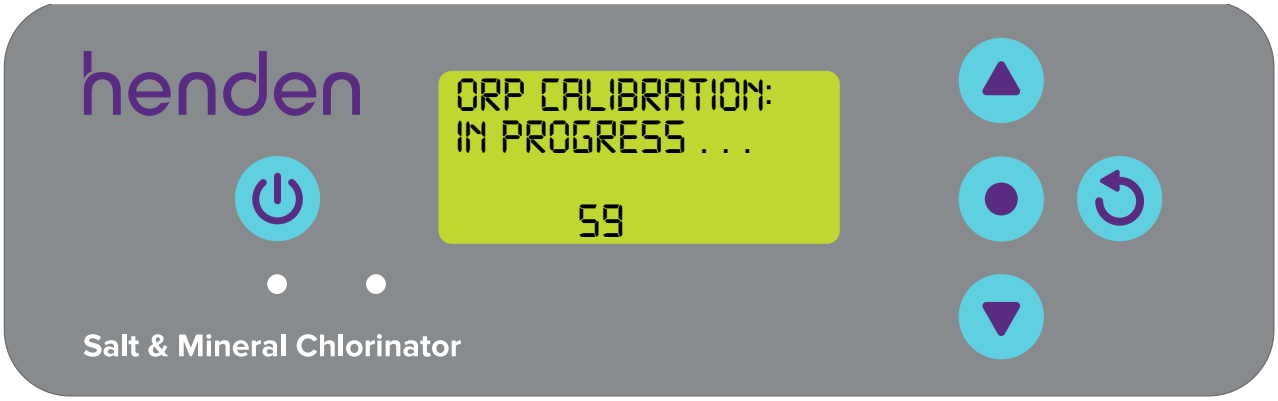


Figure 6.20

- Once complete, the display will instruct you to remove the probe (refer Figure 6.21).

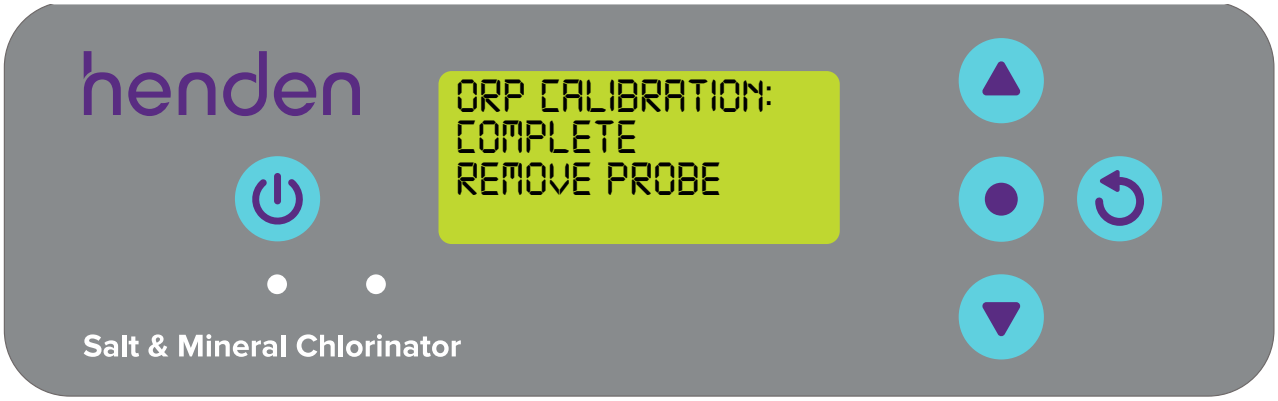


Figure 6.21

- The probe can then be removed from the calibration solution and re-installed back into the probe & injection housing
- On the probe and injection housing, under each of the 3 x probe locking nuts, is an o-ring and washer (refer Figure 6.22). Remove the second probe locking nut on the housing (where it's marked ORP)

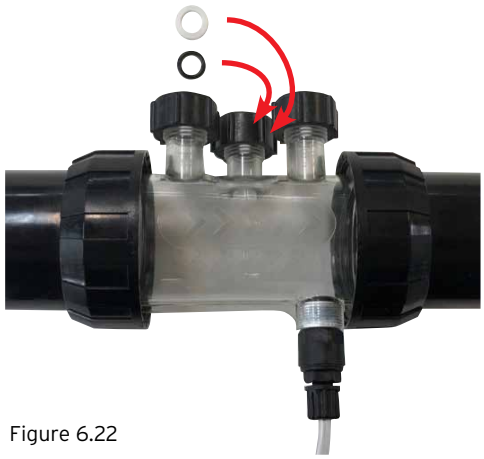


Figure 6.22

- Press **menu/setting select**, the display then shows the ORP set point (refer Figure 6.23). The factory default ORP set point is 650mV, however you may wish to change this once the HWQH is installed.

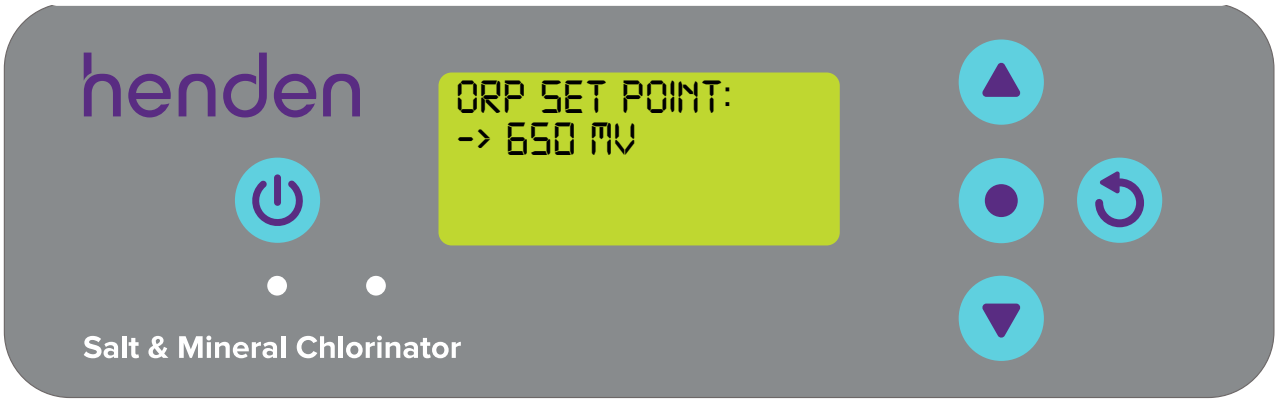


Figure 6.23

It should be noted that chlorine's effectivity is directly related to the pool water's ORP level as explained in section 3. Henden recommends following the pool levels shown in section 10. Adjustment to the ORP set point can be made as follows:

- Use the **menu up/down** buttons to scroll to your desired set point. Once correct, then press **menu/setting select**.

Should you select NO for "Is the ORP probe connected?" you will be shown a screen to choose a chlorine output. This step is only necessary if you select NO ORP probe. Should you wish to control the chlorine output manually, the HWQH's chlorine output works the same as explained in the HSMC manual. Refer to the relevant section following URL **https://bit.ly/hendenchlioi**

6.7 SALT PROBE MENU

- The next screen shown asks if the salt/conductivity probe is currently connected and to be used (refer Figure 6.24)

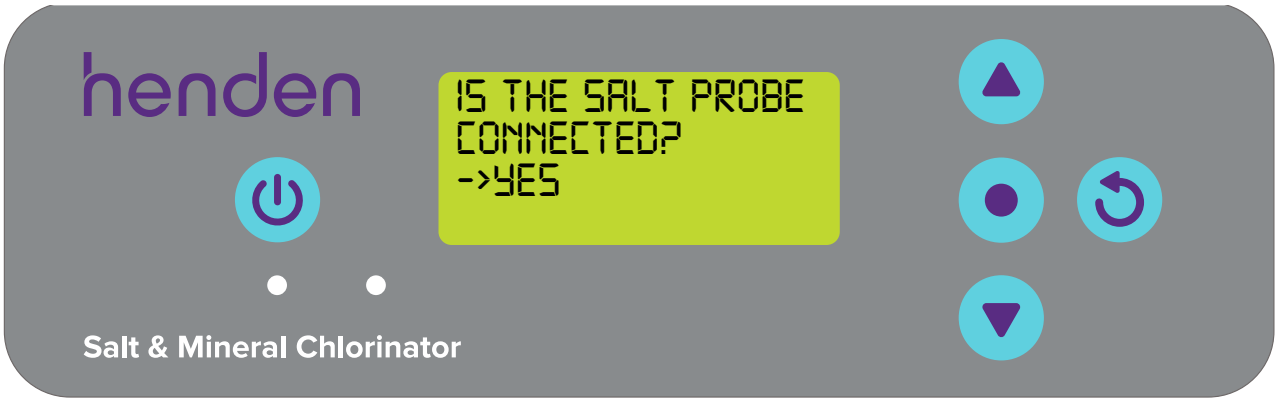


Figure 6.24

- If you've chosen not to use the salt probe, skip to section 7 of this manual
- Use the **menu up/down** buttons to confirm connection of the salt probe. Press **menu/setting select**.
- If you've chosen to use the salt probe, the next screen will display 0ppm salt (refer Figure 6.25).

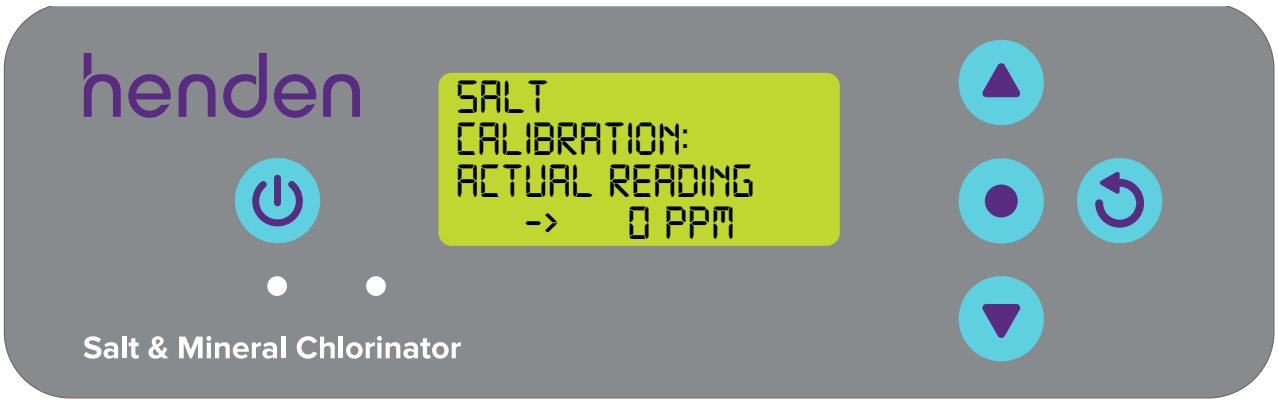


Figure 6.25

- Carefully unscrew the bottom half of the bottle, from the bottle's lid. Do not attempt to pull the whole bottle off the probe as you risk damaging the glass probe end. Follow the same process outlined for the pH probe (refer Section 6.5)
- Place the salt probe into the TDS solution, press the **menu up/down** buttons to scroll to show 3000ppm, then press **menu/setting select**

6.8 TEMPERATURE PROBE MENU

- The next screen asks if the temperature probe is currently connected and to be used (refer Figure 6.26). The temperature probe is the same probe as the salt probe, but it does plug into the HWQH controller by a separate socket

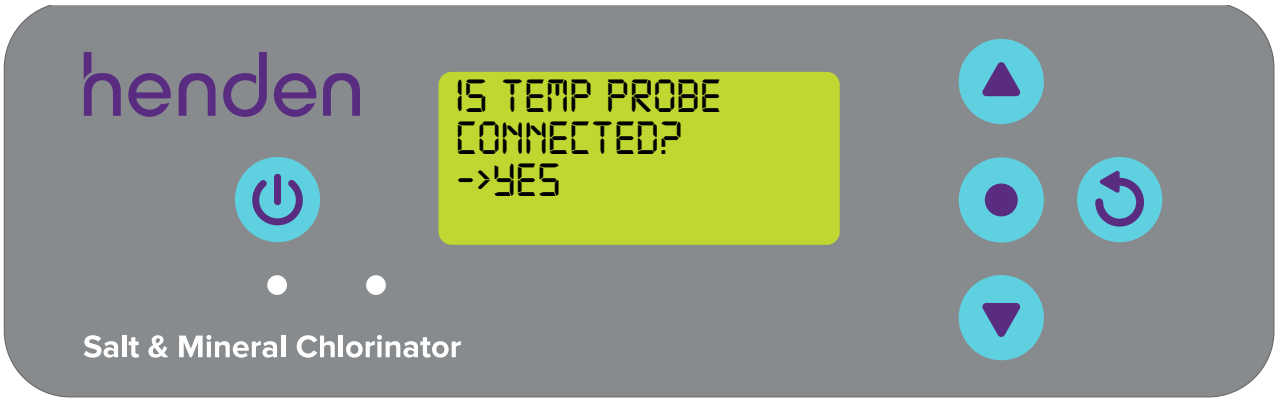


Figure 6.26

- Use the **menu up/down** buttons to toggle between yes and no.
- Once correct, then press **menu/setting select**;
- If you've chosen to use the temperature probe, use the **menu up/down** buttons to display the current approximate temperature of the probe - this can be updated later to be more accurate.

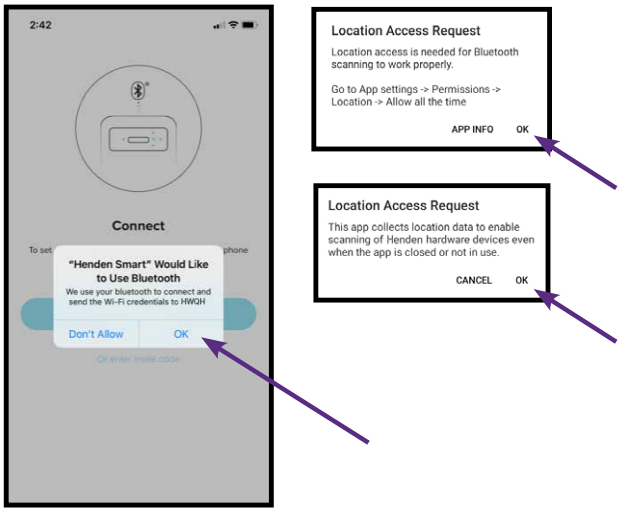
7. CONNECTING THE HWQH TO Wi-Fi

Download the Henden Smart Chlorinator App from the App store or Google play.

Henden Smart Chlorinator App

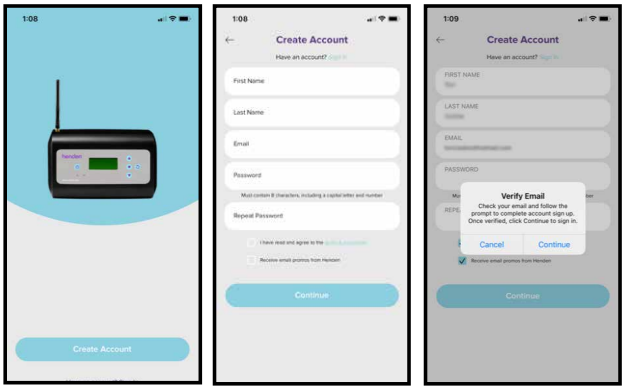
When you open the app for the first time, you will recieve a location access request. Select 'Allow all the time'. You will also be asked to use Bluetooth. Select ok. These are critical for correct function of the app.

Note: Ensure your phone is connected to the same Wi-Fi network you are planning to connect to the HWQH.



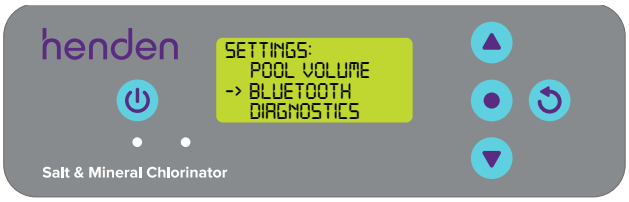
Creating your account

Create your account. You will be asked to verify your email address, follow the prompts in the email you receive.

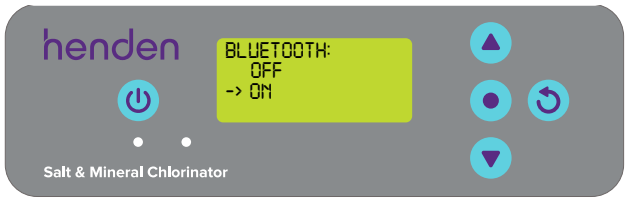


Switching on Bluetooth

From the menu on your HWQH unit, go into settings and then to Bluetooth.

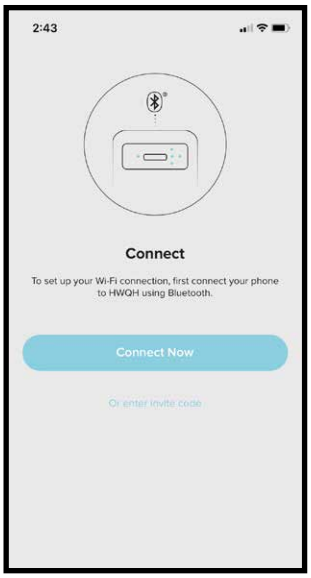


Use the up and down select buttons to enter the **Bluetooth passcode 1234.** Then select Bluetooth ON and press menu/setting select to confirm.



Connecting your Henden Water Quality Hub

Ensure your phone Bluetooth is turned on and press connect now on the APP.



- Key to symbols

This symbol confirms HWQH's connection to HSMC. If the "N" is flashing, HWQH is attempting to connect. If the "N" is solid, the connection is made

This symbol confirms HWQH's connection to the internet. If the symbol is shown solid, it indicates that HWQH is connected to the internet. If it is flashing, the HWQH isn't connected to the internet

This symbol shows the signal strength of the local Wi-Fi.

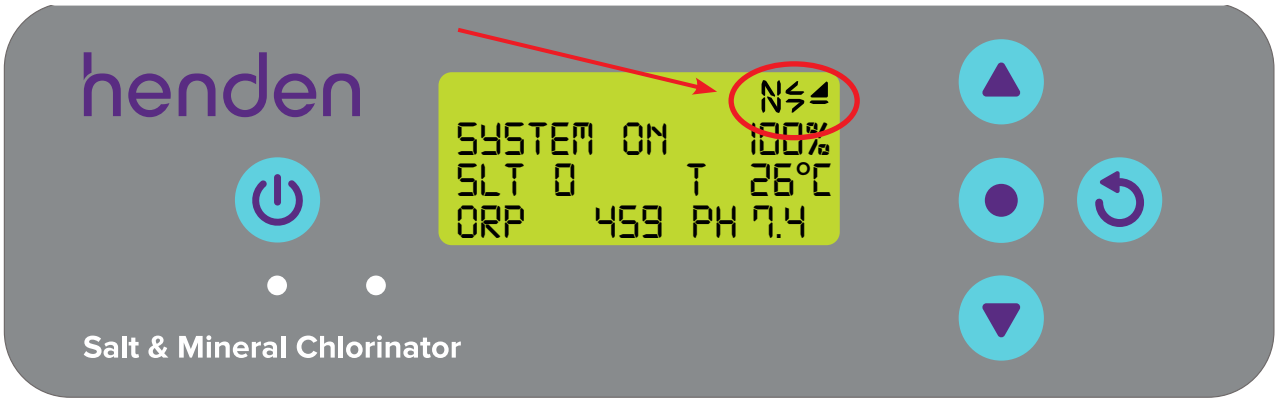


Figure 7.2

As is the case with most "smart devices", it is important to ensure that your HWQH and HSMC have the latest revision of firmware. When a critical firmware update is released, your HWQH &/or HSMC will be able to update over the air (OTA), as long as they are correctly connected to the internet. Henden recommends forcing an OTA firmware update of both the HWQH and HSMC systems on installation and periodically after installation to ensure you are using the latest firmware release. It is important to start with the HWQH:

- On the HWQH, hold down the **menu down** button for approx 5 seconds.
- The display will go blank.
- Then the words "software update in progress" will appear on the display.
- To update your HSMC, hold down the **menu/setting cancel (go back)** button on your HWQH controller for approx 5 seconds
- The display will again go blank & the software update will occur.

8. OPERATIONAL INSTRUCTIONS

8.1 PH CONTROL

In a swimming pool application, control of the water's pH is essential in order to allow chlorine to correctly and efficiently oxidise pathogens in the water. The HWQH's **HOME SCREEN** (refer Figure 8.1) shows the current pH of the pool water, as measured from the HWQH's pH probe.

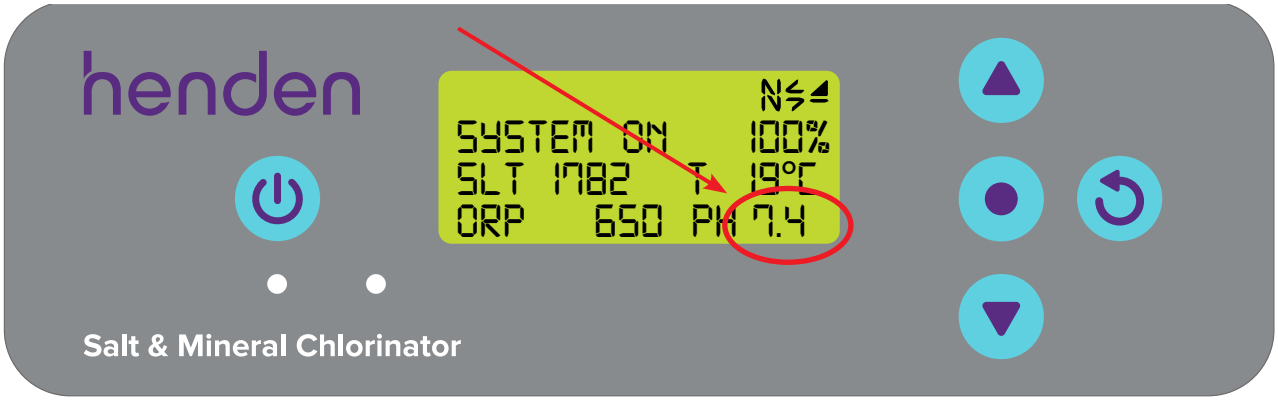


Figure 8.1

This can also be observed from the home screen of the Henden Smart Chlorinator App (refer Figure 8.2).

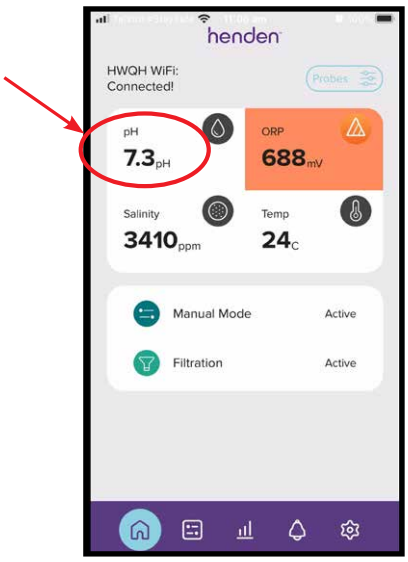


Figure 8.2

8.1.1. Adjusting pH set point

The factory default pH set point is 7.4, however you may wish to change this once the HWQH is installed. It should be noted that chlorine's effectivity is greatly influenced if pH levels are too high, or too low. Henden recommends following the pool chemistry levels shown in section 10. Adjustments to pH set point can be made as follows.

8.1.1.1. Adjusting the pH set point on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. This will now show the main menu (Figure 8.3);

Figure 8.3

- Press the **menu up/down** button to scroll down to settings (Figure 8.4);

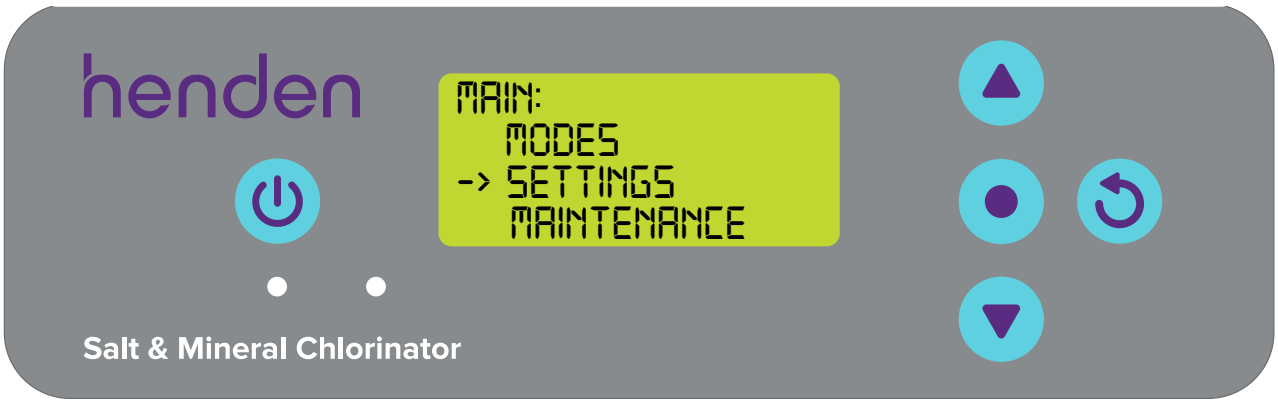


Figure 8.4

- Press the **menu/setting select** button. This will now show the settings menu (refer figure 8.5);

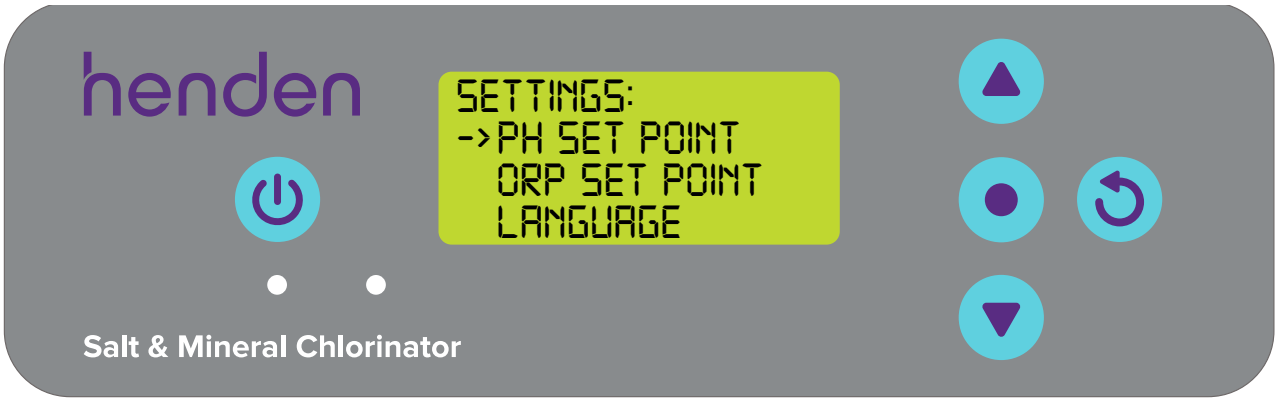


Figure 8.5

- Press the **menu/setting select** button. The next screen ask "is the pH probe connected?" (Refer Figure 8.6);

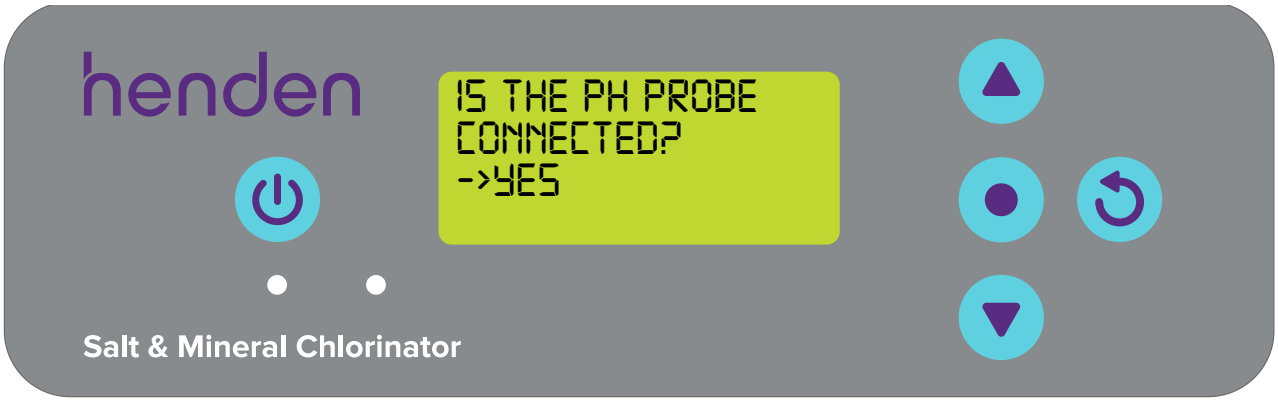


Figure 8.6

- Press the **menu/setting select** button. The next screen shows the current pH set point (Refer Figure 8.7);

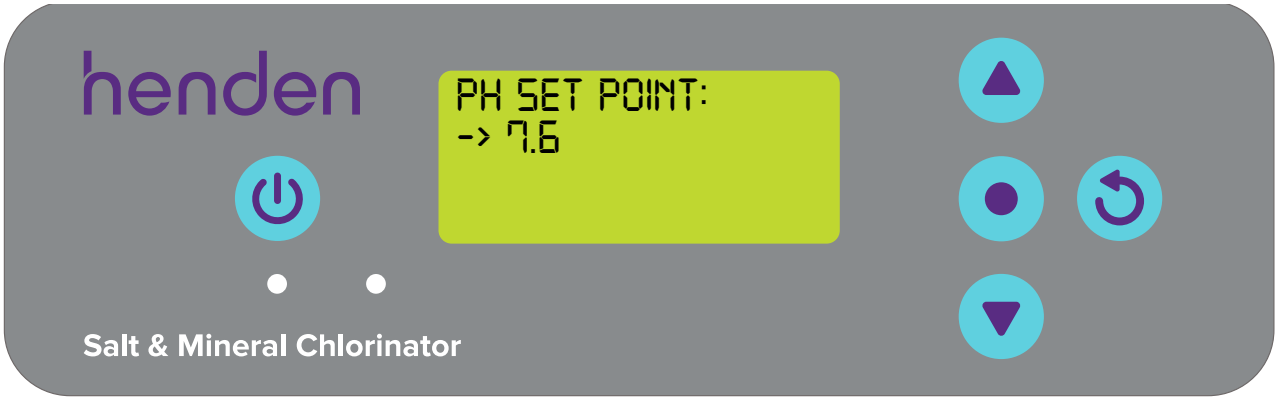


Figure 8.7

- Should you wish to change the setting, use the **menu up/down** buttons to scroll the display to your desired pH set point. Once your desired pH set point is displayed, press the **menu/setting select** button. The change is then saved, and the display reverts back to the settings menu.
- Press the **menu/setting cancel (go back)** button twice to revert back to the **HOME SCREEN**.

8.1.1.2. Adjusting the pH set point using the Henden Smart Chlorinator App

- From the dashboard of the Henden Smart Chlorinator App, press "Probes" (refer figure 8.8);

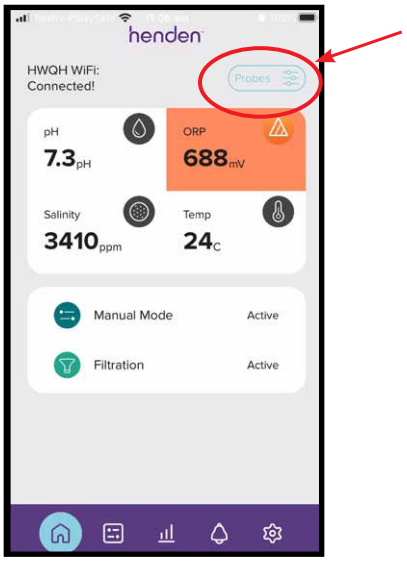


Figure 8.8

- In the probe setting menu, you'll notice that the current pH set point. From the probe settings menu, press "edit" (refer figure 8.9)

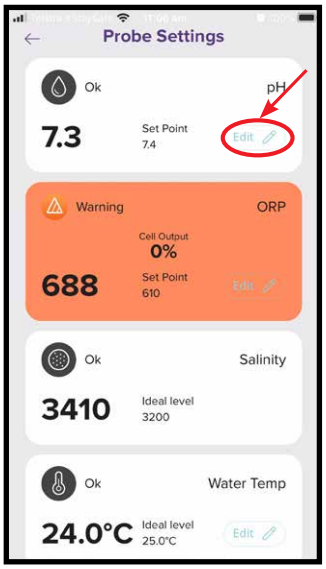


Figure 8.9

- From the pH adjustment menu, scroll up or down to edit the pH set point (refer figure 8.10);

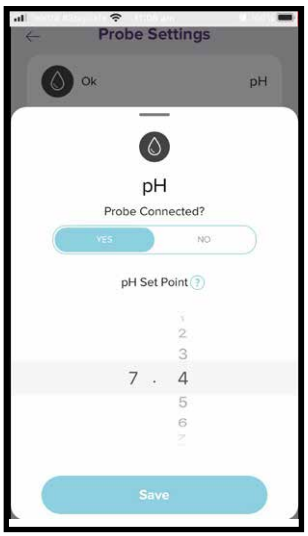


Figure 8.10

- Once your preferred set point is shown, press “save” (refer figure 8.11);

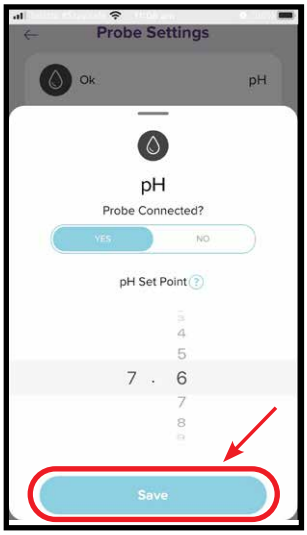


Figure 8.11

- Once you’re back to the probe setting menu, you’ll notice that the pH set point has changed (refer figure 8.12)

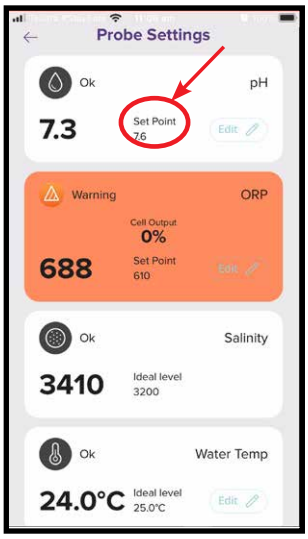


Figure 8.12

- Now simply press the back arrow button at the top left corner to return to the home screen of the Henden Smart Chlorinator App (refer figure 8.13).

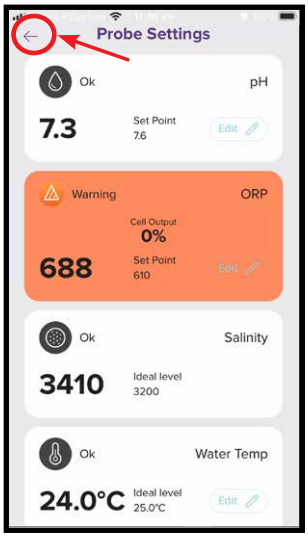


Figure 8.13

8.1.2. RE-CALIBRATING PH PROBE

NOTE: The pH cannot be calibrated via the App. To calibrate the pH, follow the steps below.

Checking the calibration of the probe is a good practice to do on a 3-monthly basis. Conduct a water analysis with a reliable pool water test kit and compare the reading from the test kit, to the reading from the HWQH probe. Realistically, there'll be very little adjustment required initially. However, the probes are sacrificial and will deteriorate with age. The older the probes become, the more likely the need for re-calibration, until the point of replacement. If the probe is damaged, it will require replacement (refer section 13). Upon replacement of the probe, a new re-calibration should be performed.

8.1.2.1. Recalibrating the pH probe on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select**. This will now show the main menu (Figure 8.14)

Figure 8.14

- Press the **menu up/down** button to scroll down to maintenance (Figure 8.15)

Figure 8.15

- Press the **menu up/down** button (Figure 8.16)

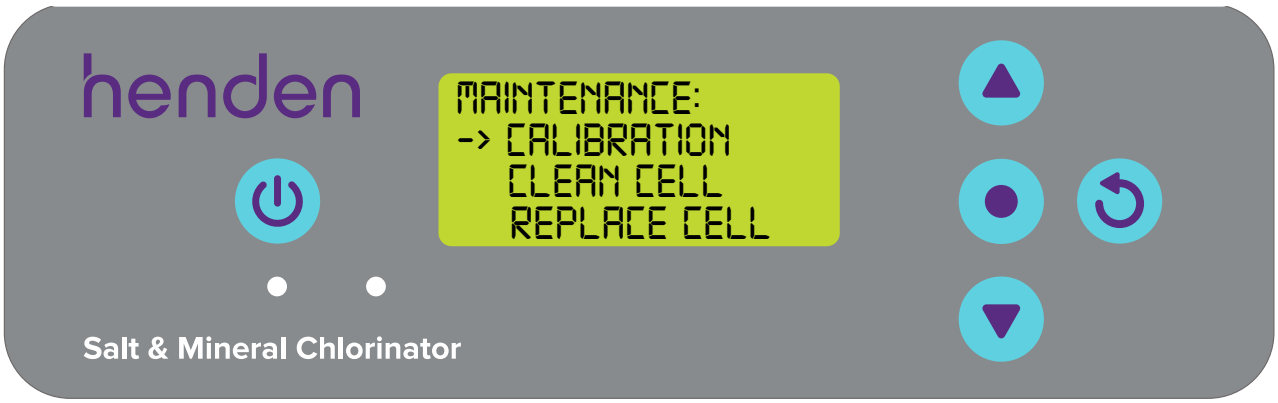


Figure 8.16

- Press the **menu up/down** buttons to scroll down to PH CAL (refer figure 8.17). Then press the **menu/setting select** button

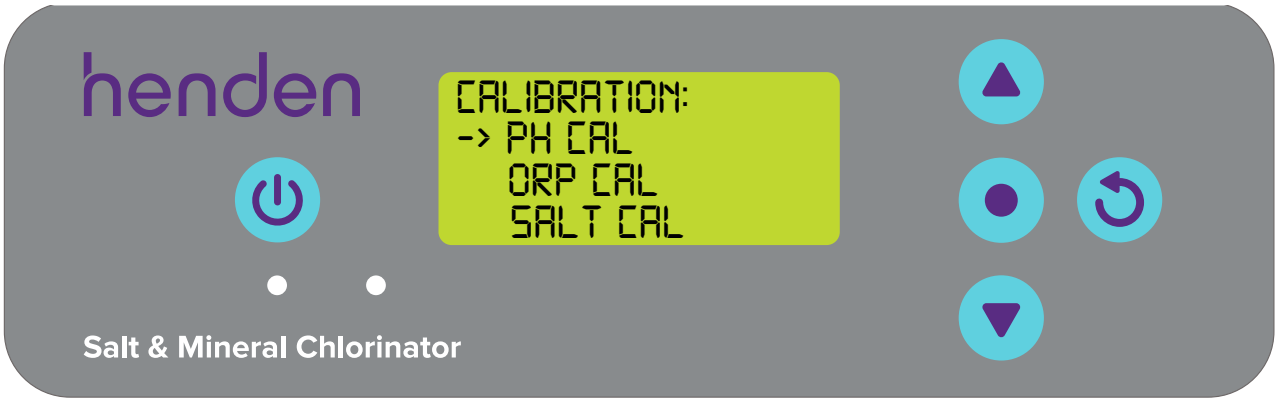


Figure 8.17

- Now follow the instructions for pH calibration from section 6.6.

8.1.3. Overriding/ignoring pH probe

Should the need arise whereby the pH probe needs to be isolated (turned off, or ignored) this is possible both via the HWQH control panel, or via the Henden Smart Chlorinator App. This may become necessary if the probe is damaged during a maintenance clean. If the probe is damaged, refer to maintenance section 11.

8.1.3.1. Overriding/ignoring the pH probe on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. This will now show the main menu (refer figure 8.18)

Figure 8.18

- Press the **menu up/down**, scrolling down to settings (refer figure 8.19)

Figure 8.19

- Press the **menu/setting select** button. This will now show the settings menu (refer figure 8.20)

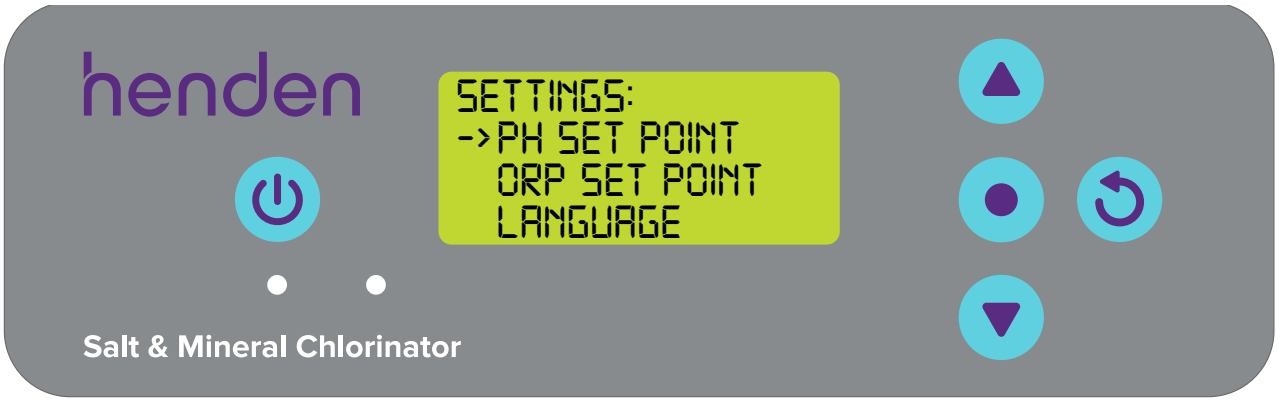


Figure 8.20

- Press the **menu/setting select** button. The next screen will ask "is the pH probe connected?" (refer figure 8.21)

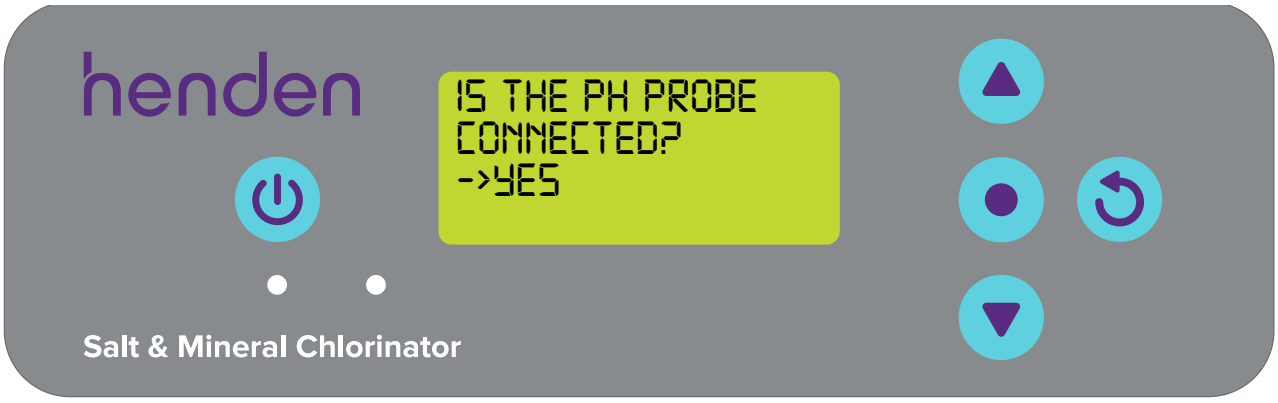


Figure 8.21

- Should you wish to change the setting, use the **menu up/down** to scroll the display to "NO" (refer figure 8.22)

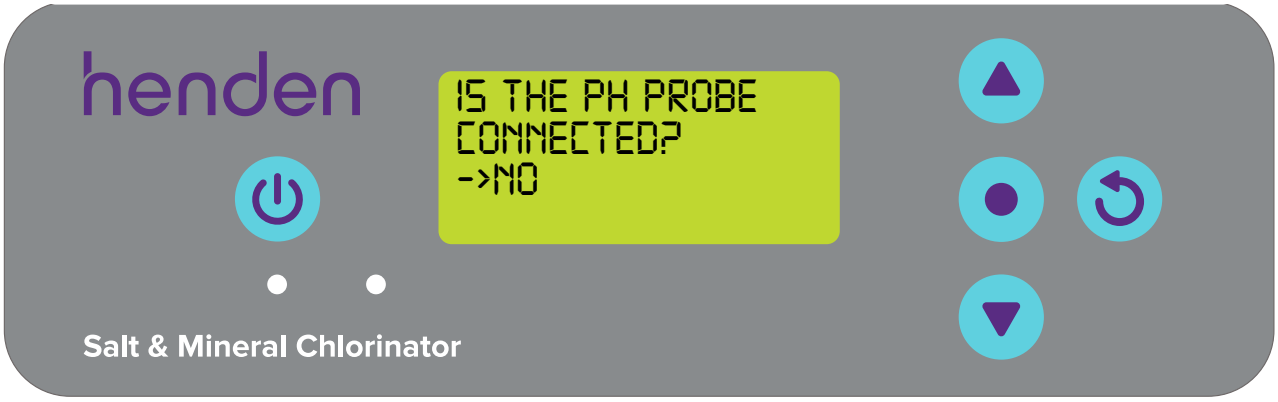


Figure 8.22

- Then press the **menu/setting select** button. The change is then saved, and the display reverts back to the settings menu.

8.1.3.2. Overriding the pH probe on the Henden Smart Chlorinator App

- From the dashboard of the Henden Smart Chlorinator App, press “probe settings” (refer figure 8.23)

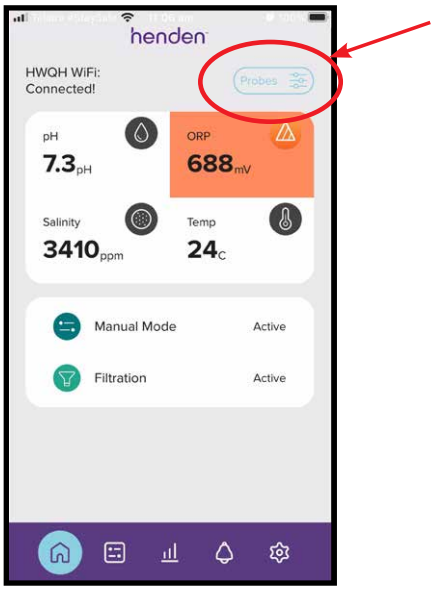


Figure 8.23

- In the probe setting menu, press “edit” (refer figure 8.24)

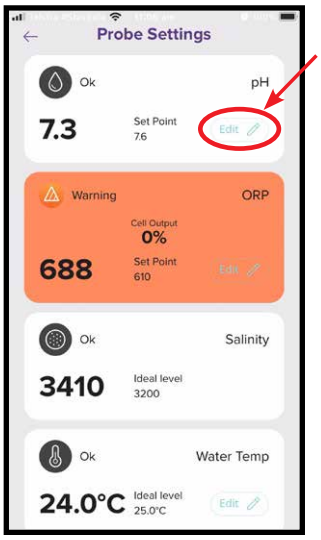


Figure 8.24

- From the pH adjustment menu, under “Probe connected”, press no, then press “save” (refer figure 8.25)

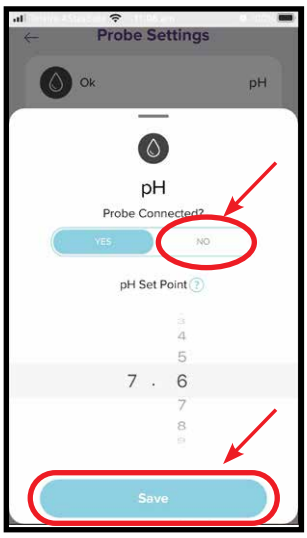


Figure 8.25

- Once you're back in the probe setting menu, where the pH reading was previously shown, it will now read "no probe" (refer figure 8.26).

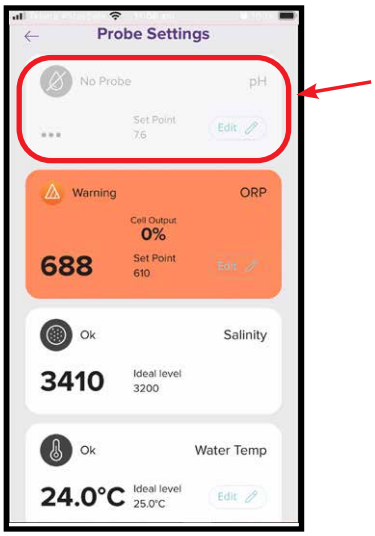


Figure 8.26

- Press the back arrow to return to the home screen of the Henden Smart Chlorinator App (refer figure 8.27).

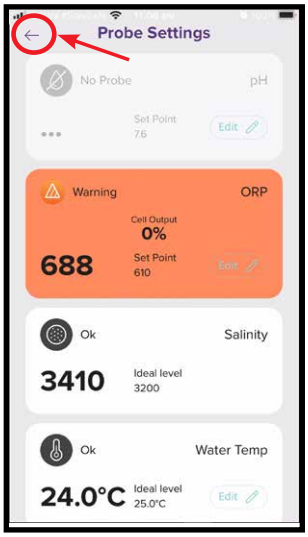


Figure 8.27

8.2 ORP/CHLORINE CONTROL

In a swimming pool application, control of the water's chlorine level is essential in order to correctly and efficiently oxidise pathogens in the water. The HWQH's **HOME SCREEN** (refer Figure 8.28) shows the current ORP of the pool water, as measured from the HWQH's ORP probe.

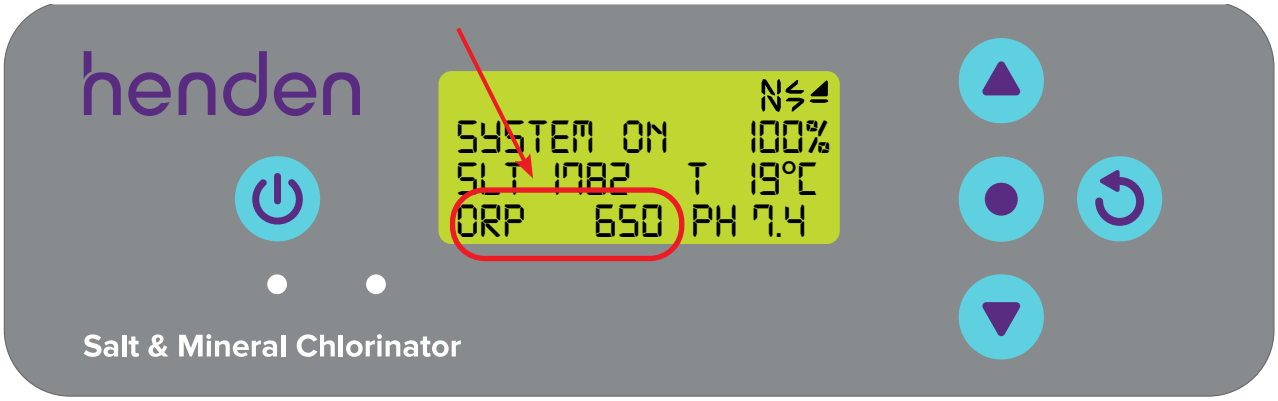


Figure 8.28

This can also be observed from the home screen of the Henden Smart Chlorinator App (refer Figure 8.29).

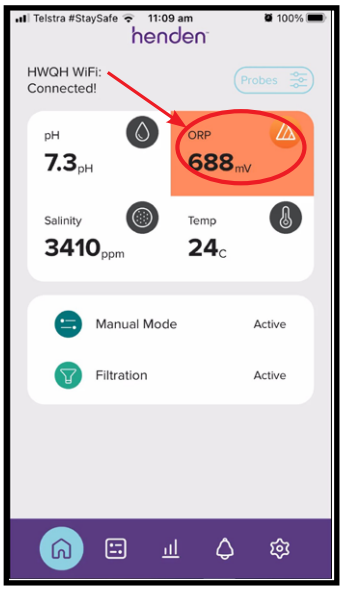


Figure 8.29

8.2.1. Adjusting ORP set point

The factory default ORP set point is 650mV, however you may wish to change this once the HWQH is installed. It should be noted that chlorine's effectivity is greatly influenced if pH levels are too high, or too low. Henden recommends following the pool levels shown in section 10. Adjustments to ORP set point can be made as follows.

8.2.1.1. Adjusting the ORP set point on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. This will now show the main menu (Figure 8.30)

Figure 8.30

- Press the **menu up/down** button to scroll down to settings (Figure 8.31)

Figure 8.31

- Press the **menu/setting select** button. This will now show the settings menu (Figure 8.32)

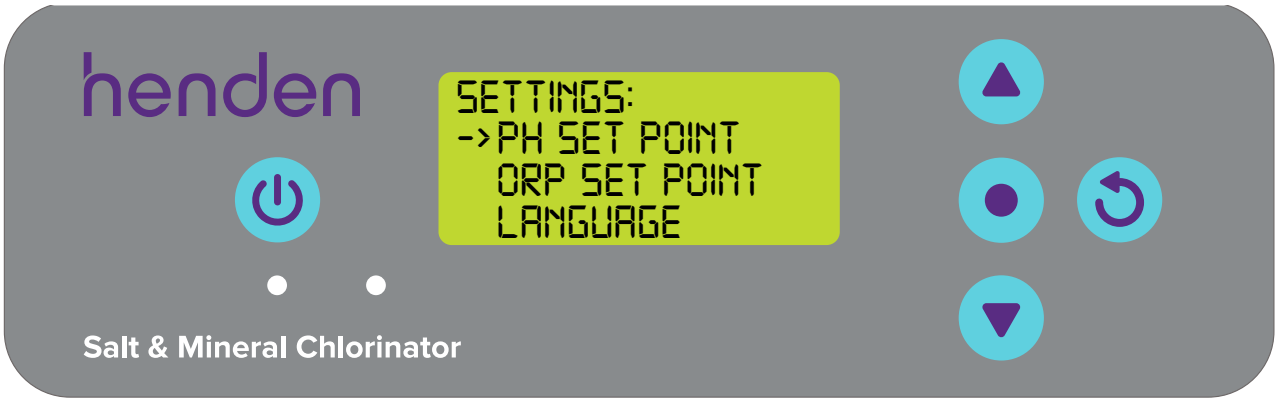


Figure 8.32

- Press the **menu up/down** button to scroll down to ORP set point (Figure 8.33)

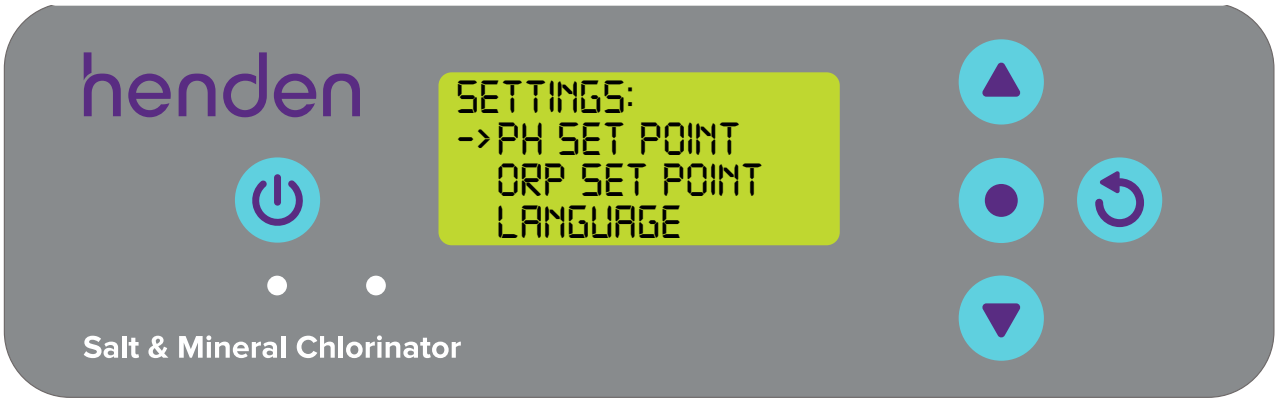


Figure 8.33

- Press the **menu/setting select** button. The next screen will ask "is the ORP probe connected?" (Refer Figure 8.34)

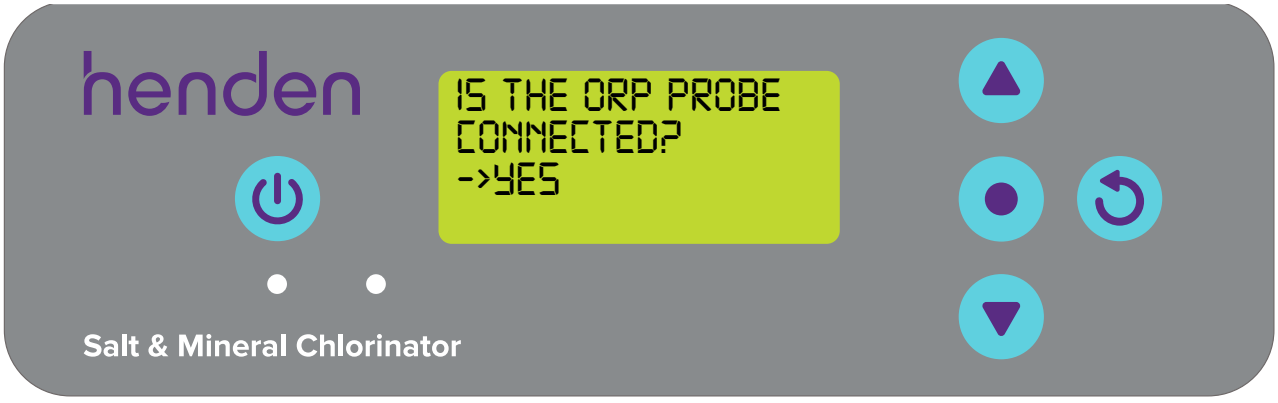


Figure 8.34

- Press the **menu/setting select** button. The next screen shows the current ORP set point (Refer Figure 8.35)

Figure 8.35

- Should you wish to change the setting, use the **menu up/down** buttons to scroll the display to your desired ORP set point. Once your desired ORP set point is displayed, press the **menu/setting select** button. The change is then saved, and the display reverts back to the settings menu.
- Press the **menu/setting cancel (go back)** button twice to revert back to the **HOME SCREEN**.

8.2.1.2. Adjusting the ORP set point using the Henden Smart Chlorinator App

- From the home screen of the Henden Smart Chlorinator App, press "probe settings" (refer figure 8.36)

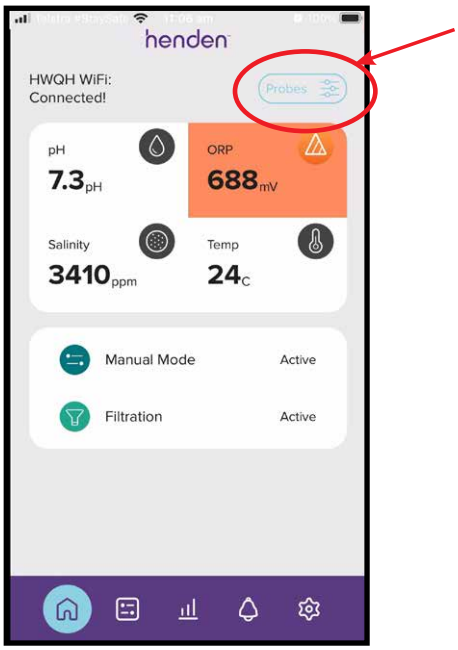


Figure 8.36

- In the probe setting menu, press "edit" (ref figure 8.37)

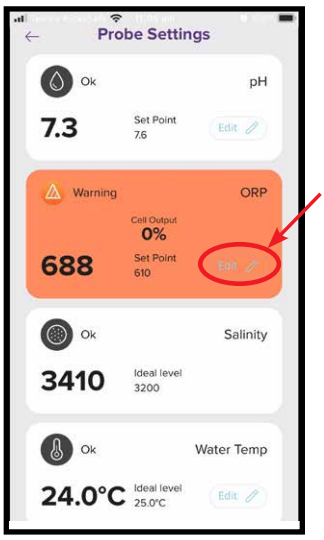


Figure 8.37

- From the ORP adjustment menu, scroll the dial onscreen to edit the ORP set point (refer figure 8.38)

Figure 8.38

- Once your preferred set point is shown, press "save" (refer figure 8.39)

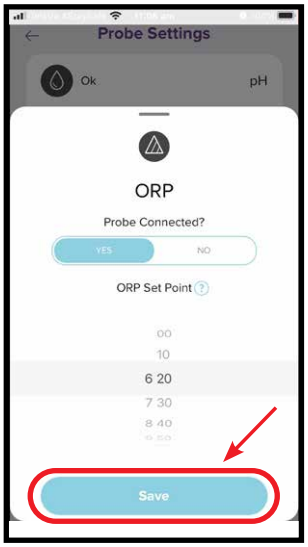


Figure 8.39

- Once you're back to the probe setting menu, you'll notice that the ORP set point has changed (ref figure 8.40)

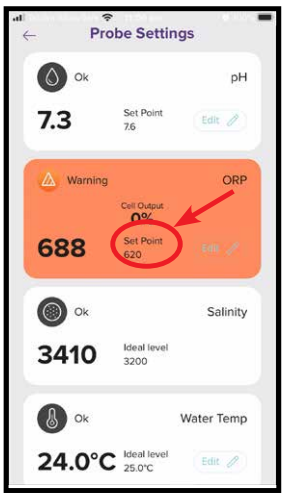


Figure 8.40

- Press the back arrow to return to the home screen of the Henden Smart Chlorinator App (refer figure 8.41).

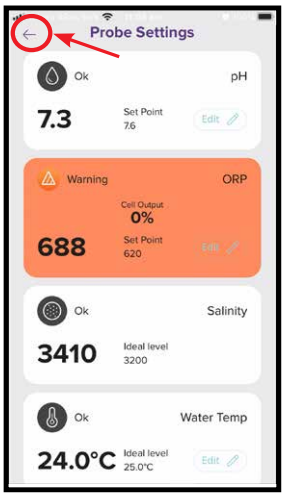


Figure 8.41

8.2.2. Re-calibrating ORP probe

NOTE: The ORP cannot be calibrated via the App. To calibrate the ORP, follow the steps below.

Checking the calibration of the probe is a good practice to do on a 3-monthly basis. Conduct a water analysis with a reliable pool water test kit and compare the reading from the test kit, to the reading from the Henden HWQH probe. Realistically, there'll be very little adjustment required initially. However, the probes are sacrificial and will deteriorate with age. The older the probes become, the more likely the need for re-calibration, until the point of replacement. Upon replacement of the probe, a new re-calibration should be performed.

8.2.2.1. Re-calibrating the ORP probe on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. This will now show the main menu (Figure 8.42)

Figure 8.42

- Press the **menu up/down** button to scroll down to maintenance (Figure 8.43)

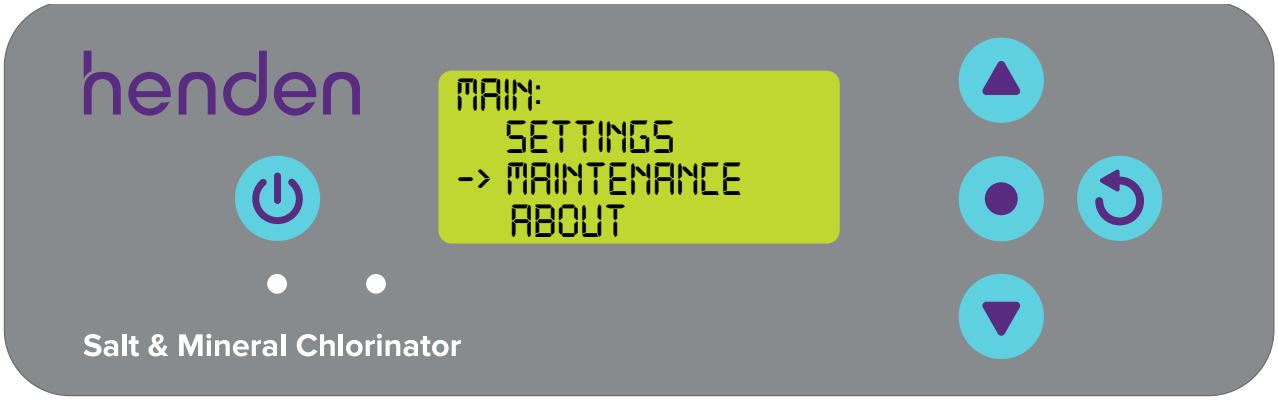


Figure 8.43

- Press the **menu up/down** button (Figure 8.44)

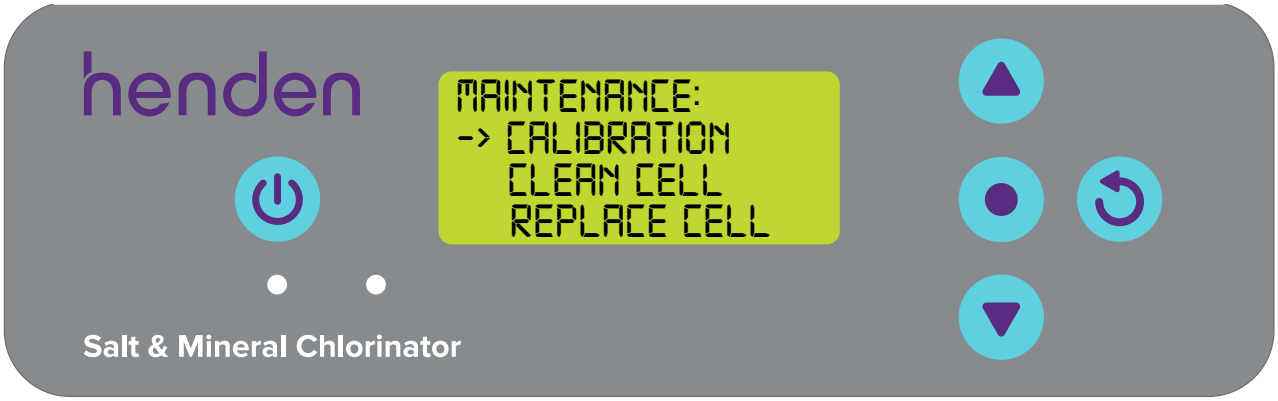


Figure 8.44

- Press the **menu up/down** buttons to scroll down to ORP CAL (Figure 8.45). Then press the **menu/setting select** button

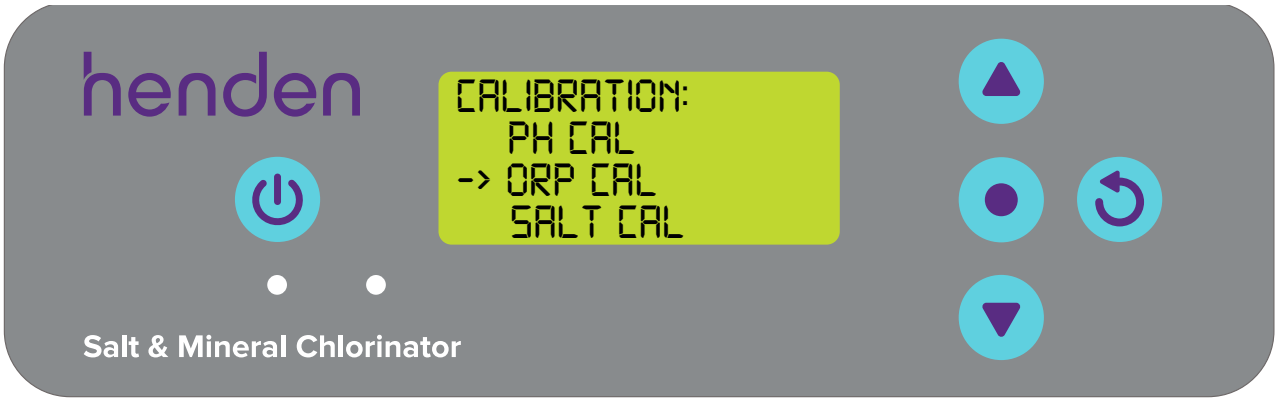


Figure 8.45

- Now follow the instructions for ORP calibration from section 6.6.

8.2.3. Overriding ORP probe

Should the need arise whereby the ORP probe needs to be isolated (turned off, or ignored) this is possible both via the HWQH control panel, or via the Henden Smart Chlorinator App. This may become necessary if the probe is damaged during a maintenance clean. If the probe is damaged, refer to maintenance section 11.

8.2.3.1. Overriding the ORP probe on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. This will now show the main menu (Figure 8.46)

Figure 8.46

- Press the **menu up/down** to scroll down to settings (Figure 8.47)

Figure 8.47

- Press the **menu up/down** button to scroll down to ORP set point (Figure 8.48)

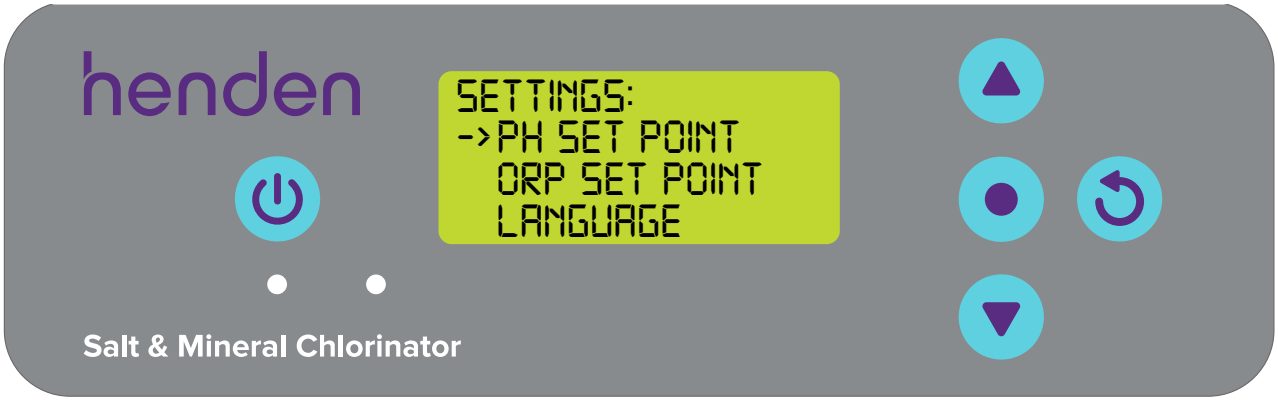


Figure 8.48

- Press the **menu/setting select** button. The next screen will ask "is the ORP probe connected?" (Refer Figure 8.49)

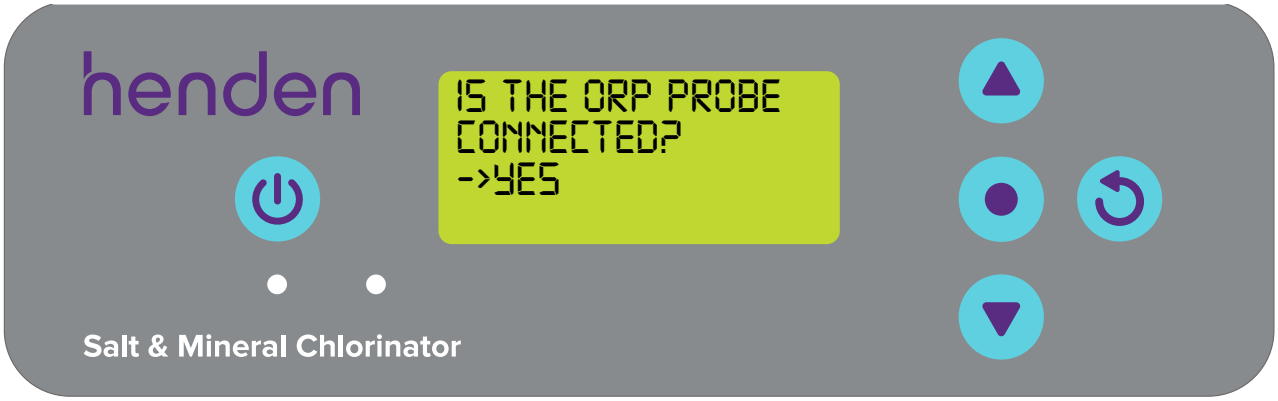


Figure 8.49

- Should you wish to change the setting, use the **menu up/down** to scroll the display to "NO" (refer Figure 8.50)

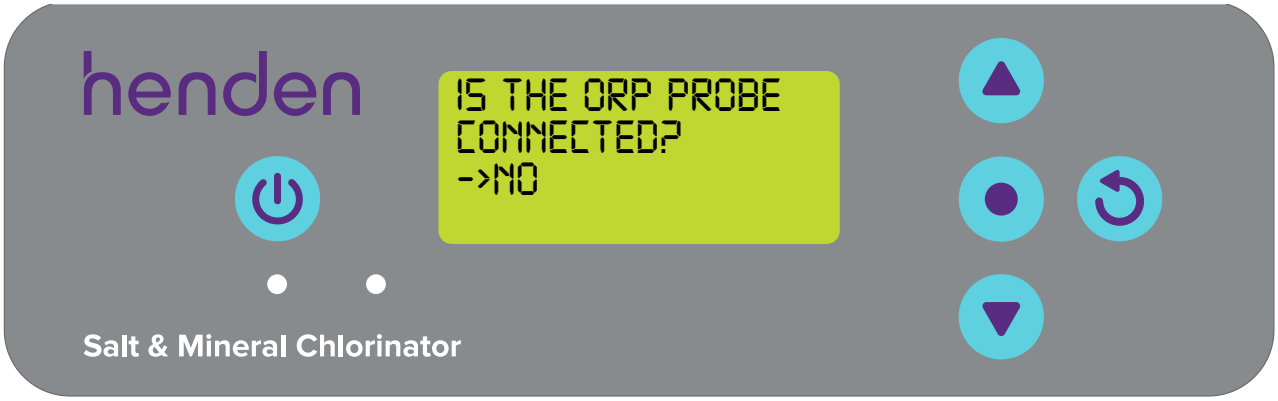


Figure 8.50

- Press the **menu up/down** buttons to scroll to your chosen CHLORINE OUTPUT (Figure 8.51);
- This step is only necessary if you select NO ORP probe. Should you wish to control the chlorine output manually, HWQH's chlorine output works the same as explained in the HSMC manual. Refer to the relevant section following URL **https://bit.ly/hendenchlioi**

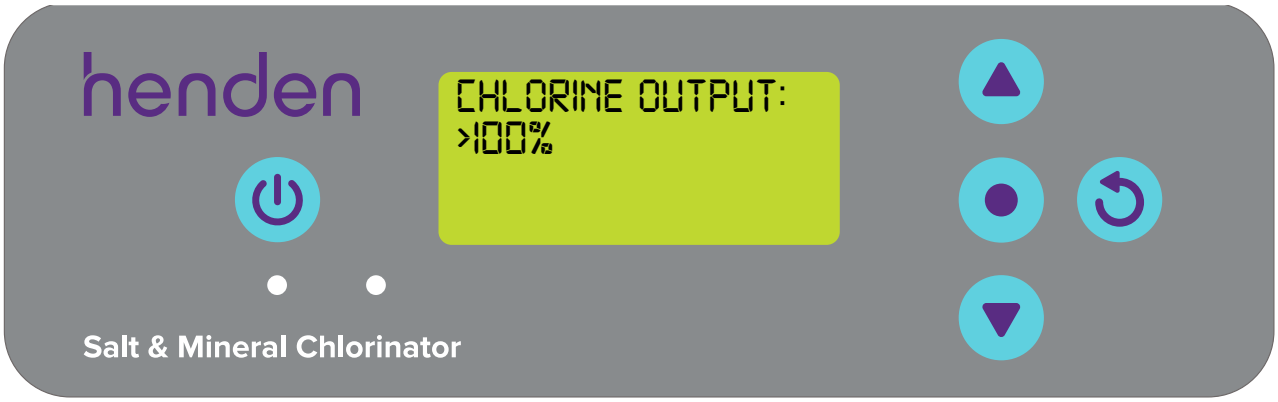


Figure 8.51

- Then press the **menu/setting select** button. The change is then saved, and the display reverts back to the settings menu.

8.2.3.2. Overriding the ORP probe using the Henden Smart Chlorinator App

- From the dashboard of the Henden Smart Chlorinator App, press "probe settings" (refer figure 8.52)

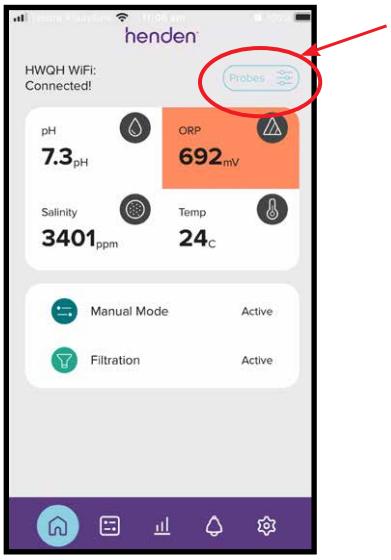


Figure 8.52

- In the probe setting menu, press “edit” (ref figure 8.53)

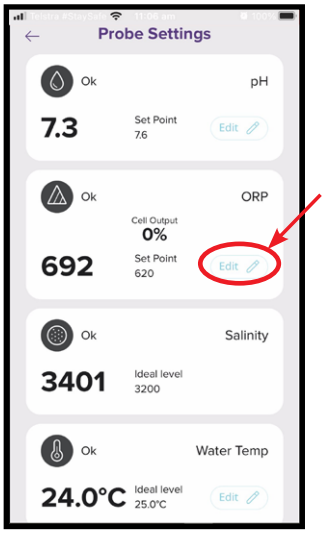


Figure 8.53

- From the ORP adjustment menu, under “Probe connected”, press no, then press “save” (refer figure 8.54)

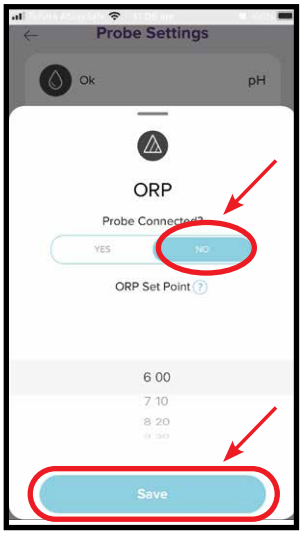


Figure 8.54

- Once you’re back in the probe setting menu, where the ORP reading was previously shown, it will now read “no probe” (refer figure 8.55).

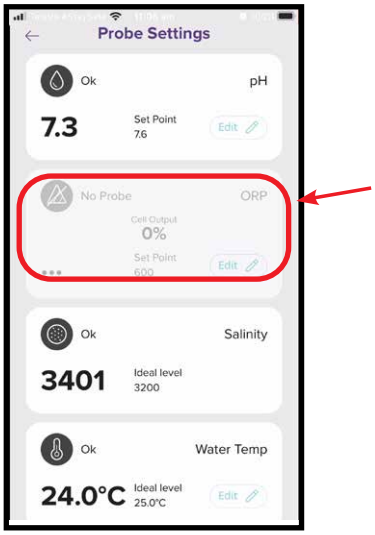


Figure 8.55

- Now simply press the back arrow button at the top left corner to return to the home screen of the Henden Smart Chlorinator App (ref figure 8.56).

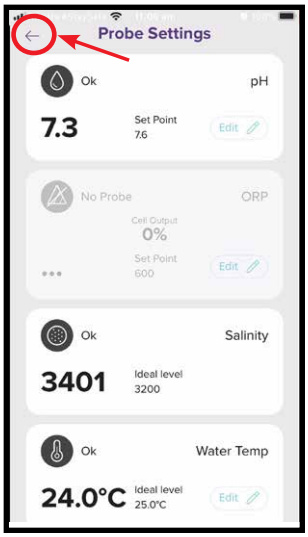


Figure 8.56

8.3. ADD SALT WARNING

The HWQH registers conductivity from the salt probe (or from within the chlorinator cell if the salt probe is not connected). Low conductivity could be triggered by cold water (below 15ºC), a salt concentration below its minimum, or a cell that's in need of cleaning. To confirm the salt level required, refer to the respective section of your HSMC's owner's manual. An electronic copy can be downloaded from https://bit.ly/hendenchlioi. The HWQH's **HOME SCREEN** shows the **ADD SALT WARNING**.

This can also be observed from the home screen of the Henden Smart Chlorinator App.

Additional salt may be added to overcome a lower temperature. However, the maximum salt level should also be considered and if water temperature drops too far, the system should be turned off.

Once the salt concentration is back within range (refer to recommended salt range section in the manual), the HWQH will resume normal operation.

8.4. LOW SALT CUT-OUT ALARM

Should the salt concentration continue to be diluted, the HWQH will enter **LOW SALT CUT-OUT WARNING**.

The HWQH's **HOME SCREEN** shows the **LOW SALT CUT-OUT WARNING**.

This can also be observed from the home screen of the Henden Smart Chlorinator App.

Once the salt concentration is back within range (refer to recommended salt range section in the manual), the HWQH will resume normal operation.

9. ADVANCED FEATURES

There are several advanced features available in the HWQH. These modes can be found in the main menu (Figure 9.1). For any modes to be active the HWQH must be on.

Figure 9.1

9.1 VSD SET POINT

The HWQH controller can control the speed of your connected circulation pump (if compatible. The Henden 8 star Variable speed pump (H8VSPBT only) is an example of a compatible pump). To correctly operate the VSD pool pump control, ensure that the compatible pump is wired into the HWQH controller (refer Section 4.6.3).

9.1.1. Adjusting VSD set point on HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. Press the **menu down** to scroll down to **SETTINGS** (ref Figure 9.2), then select by pressing the **menu/setting select** button.

Figure 9.2

- Press the **menu down** to scroll down to VSD SET POINT (ref Figure 9.3), then select by pressing the **menu/setting select** button.

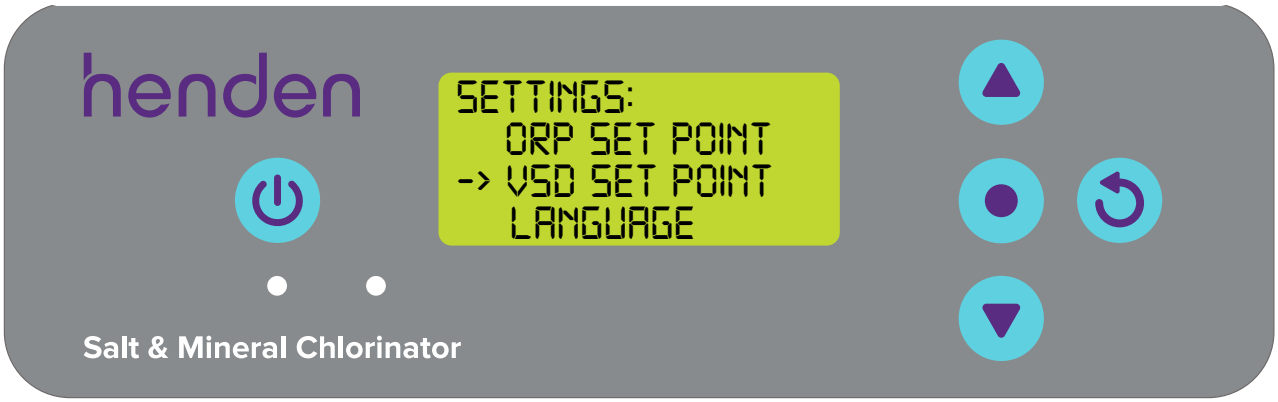


Figure 9.3

- You will be asked if a compatible VSD pump is connected. Use the **menu up/down** buttons to toggle YES/NO when appropriate (refer Figure 9.4) and then pressing the **menu/setting select** button.

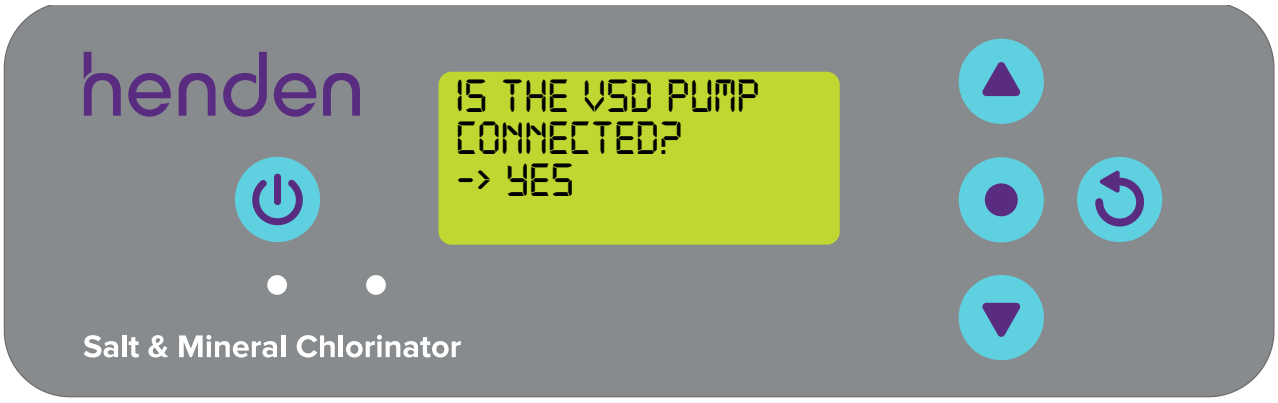


Figure 9.4

- The current speed setting will be shown next (refer Figure 9.5). Use the **menu up/down** buttons scroll the speed setting between 20%, 40%, 60%, 80% and 100%, then press the **menu/setting select** button to confirm.

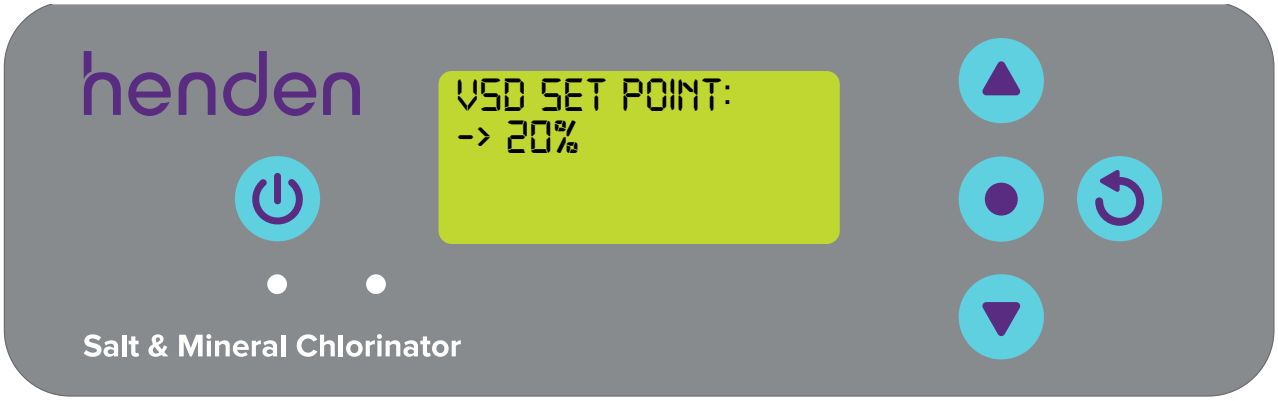


Figure 9.5

9.2 SYSTEM MODE

Consider this setting as "manual (override) on" and "standby". When set to "SYSTEM ON", the home screen will display "SYSTEM ON" (refer Figure 9.6). The pH and ORP control will operate normally, but the circulating pump (if powered by HSMC) will run continuously.

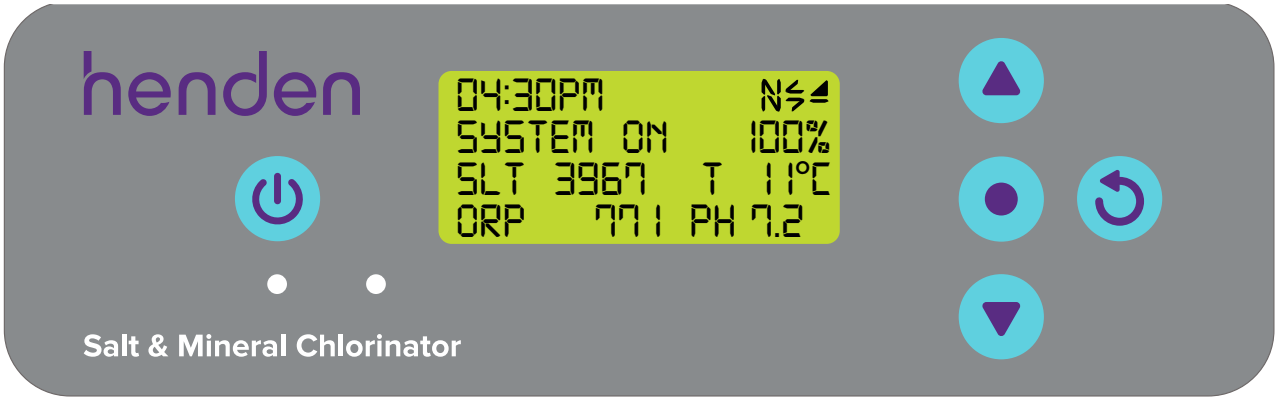


Figure 9.6

When set to "SYSTEM OFF", the home screen will still display dashes where the last recorded probe readings were (refer Figure 9.7), and the circulating pump will not run. Nor will the salt cell produce chlorine, or acid dosing pump feed acid.

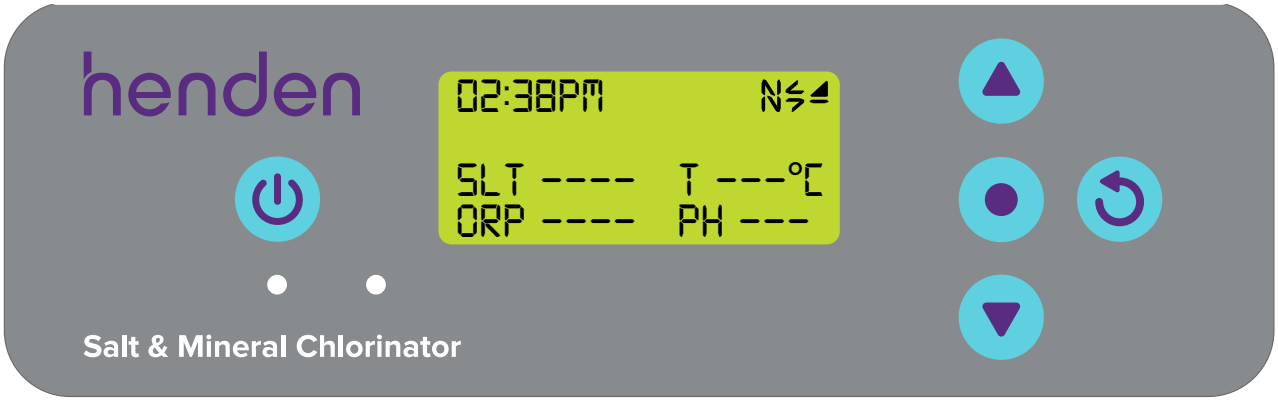


Figure 9.7

9.2.1. Activating system mode on the HWQH control panel

System Mode can change between System on or off by pressing the **Manual on/off** button from the **HOME SCREEN** or via the Modes section in settings.

- From the **HOME SCREEN**, press the **menu/setting select** button and go into MODES (refer Figure 9.8).

Figure 9.8

- From the MODES menu, select SYSTEM (refer Figure 9.9).

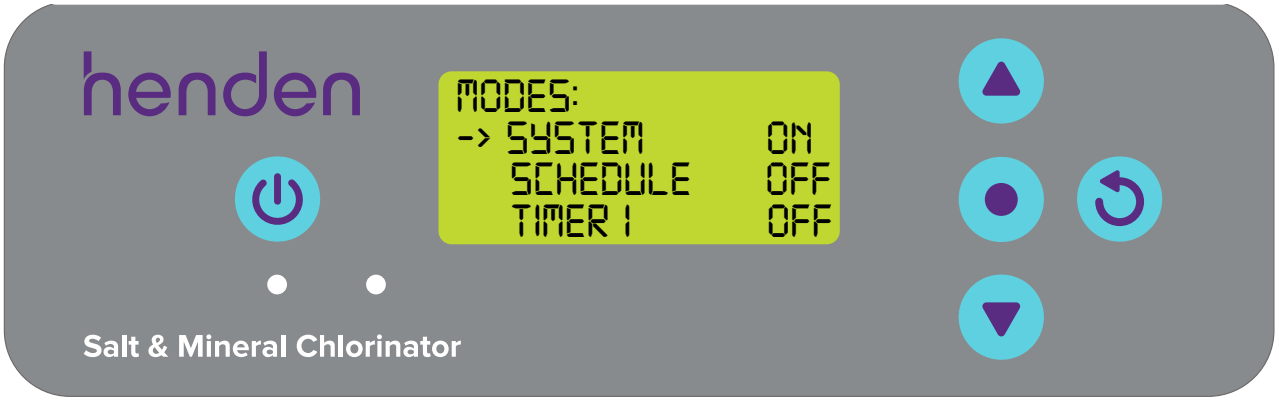


Figure 9.9

- The setting can be ON, or OFF. Use the **menu up/down** buttons to toggle YES/NO depending on your needs (refer Figure 9.10). Then press the **menu/setting select** button to confirm.

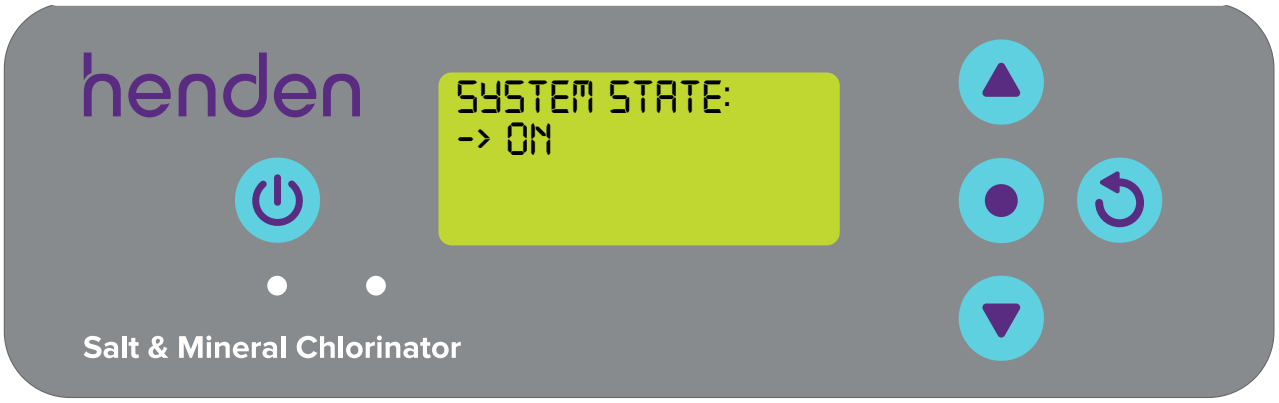


Figure 9.10

9.2.2. Activating system mode using the Henden Smart Chlorinator App

- From the dashboard of the Henden Smart Chlorinator App, go to the "modes" menu by using the modes button (refer Figure 9.11).

Figure 9.11

- In the "modes" menu, manual mode can be toggled off (as shown), or on by simply sliding the switch (ref Figure 9.12).

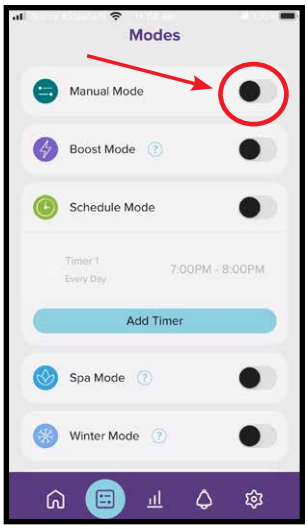


Figure 9.12

- You can now return to the home screen by using the home button (refer Figure 9.13).

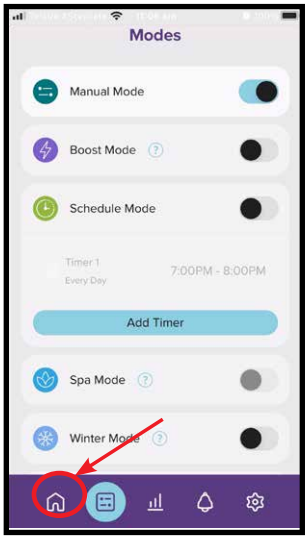


Figure 9.13

9.3 SCHEDULE MODE

Schedule mode allows the HWQH to run the system at specific times of the day. It also enables your circulation pump to run at selected speeds, during specific times of the day (if compatible – refer Section 9.1). This could be particularly handy if you wish to run your pump, for example::

- on a low speed during the night, to keep noise levels down; but
- want it running faster in the morning to skim leaves from the pool surface.

Turning Schedule mode on requires at least one timer to be set and turned on (refer Section 9.3.1).
To operate correctly, Schedule mode requires System mode to be turned off (see Section 9.2).

9.3.1.Adjusting Schedule Mode on the HWQH control panel

9.3.1.1. Adding a timer

- From the **HOME SCREEN**, press the **menu/setting select** button and go into MODES (refer Figure 9.14).

Figure 9.14

- From the MODES menu, select TIMER 1 (refer Figure 9.15).

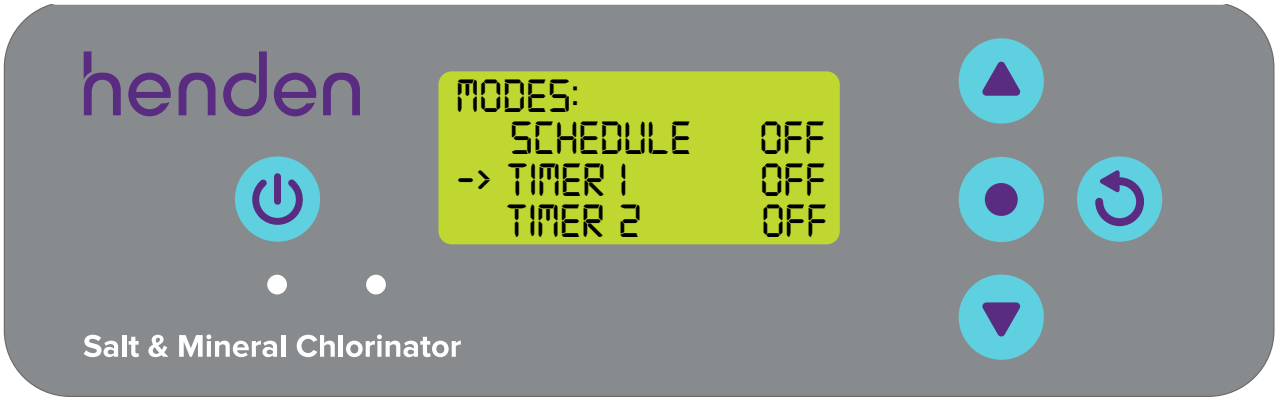


Figure 9.15

- From the TIMER 1 menu use the **menu up/down** buttons to scroll down and select EDIT (refer Figure 9.16).

Figure 9.16

- From the TIMER 1 menu, you will be asked to select a speed you wish to run your VSD pump at, during this specific time (refer Figure 9.17). If you do not have a compatible pump connected, or you have not set your VSD speed control (refer Section 9.1), skip this step.

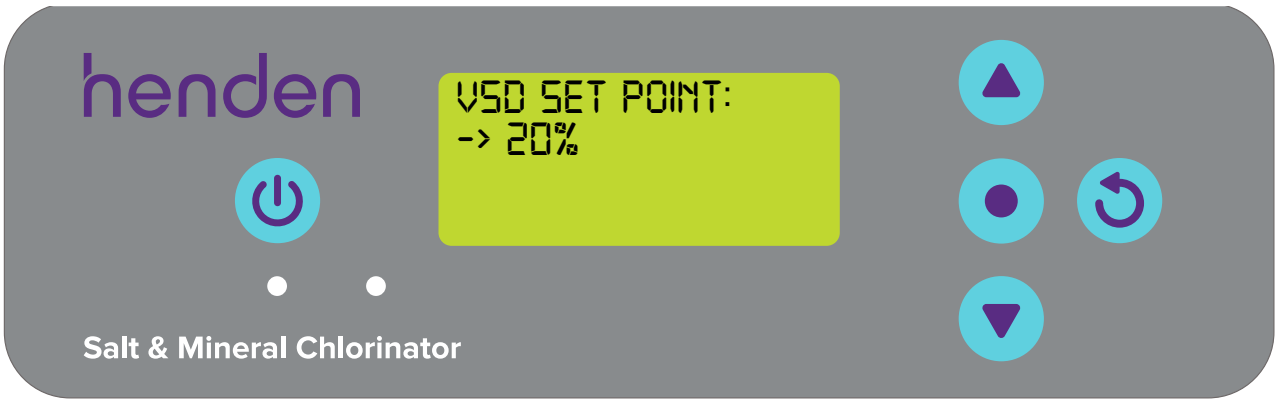


Figure 9.17

- Next, you will be asked to select the TIMER 1 ON time (refer Figure 9.18). Adjust this time setting as you adjusted clock settings for first time setup (refer Section 6.3).

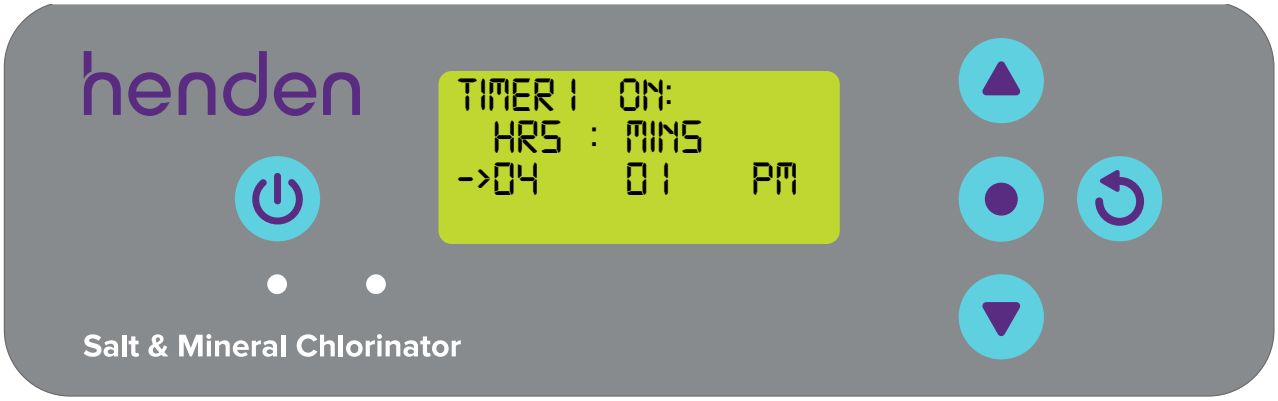


Figure 9.18

- Next, you will be asked to select a TIMER 1 OFF time (refer Figure 9.19). Adjust this time setting as before.

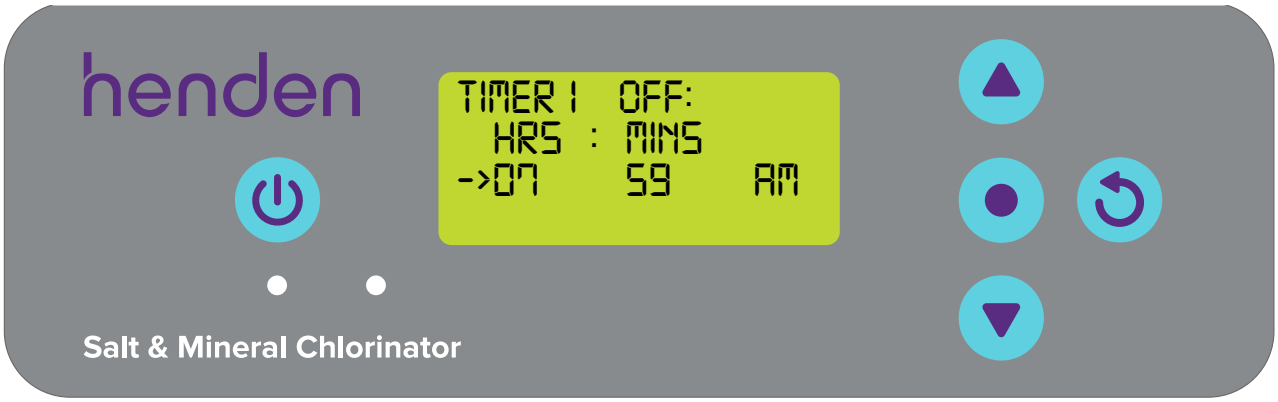


Figure 9.19

- Once time settings have been made to TIMER 1, press the **menu/setting select** button to re-enter the TIMER 1 menu (refer Figure 9.20).

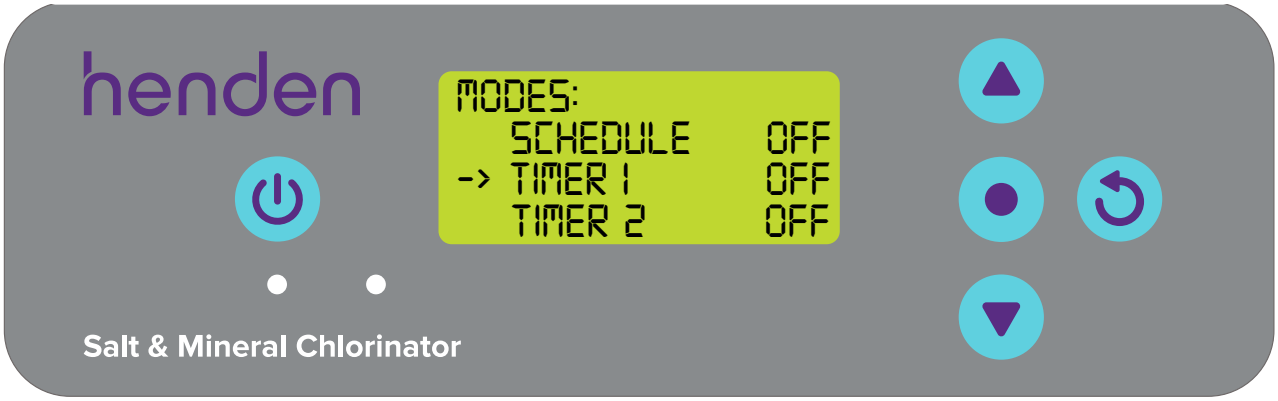


Figure 9.20

- Use the **menu up/down** buttons to scroll down to ON (refer Figure 9.21).

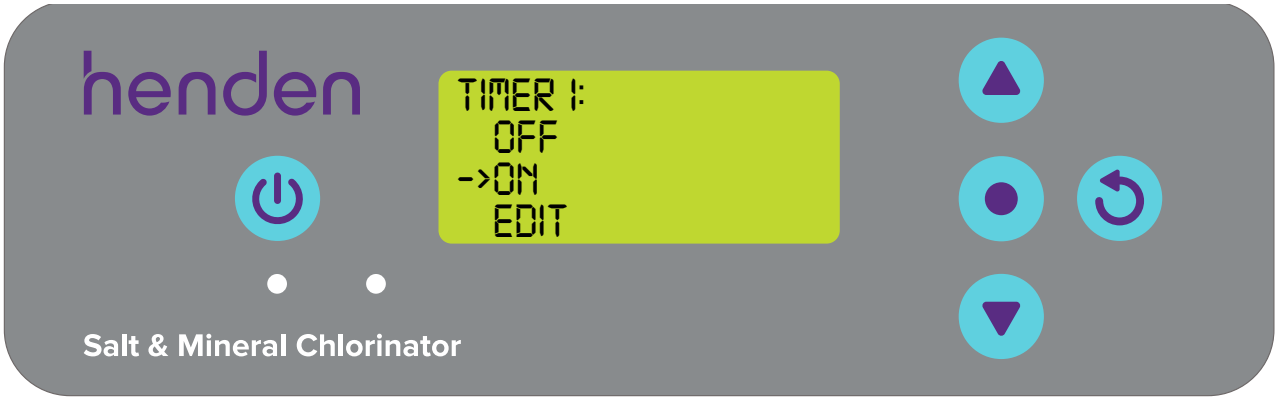


Figure 9.21

- Then press the **menu/setting select** button to confirm. This process can be replicated for TIMER 2.

9.3.1.2. Activating Schedule Mode

Schedule Mode can change between Schedule on or off, if timers are already set, by holding down the **Manual on/off** button from the **HOME SCREEN** or via the Modes section in settings.

- From the **HOME SCREEN**, press the **menu/setting select** button and go into MODES (refer Figure 9.22).

Figure 9.22

- From the MODES menu, use the **menu up/down** buttons to scroll down to SCHEDULE (refer Figure 9.23). Then press the **menu/setting select** button to confirm.

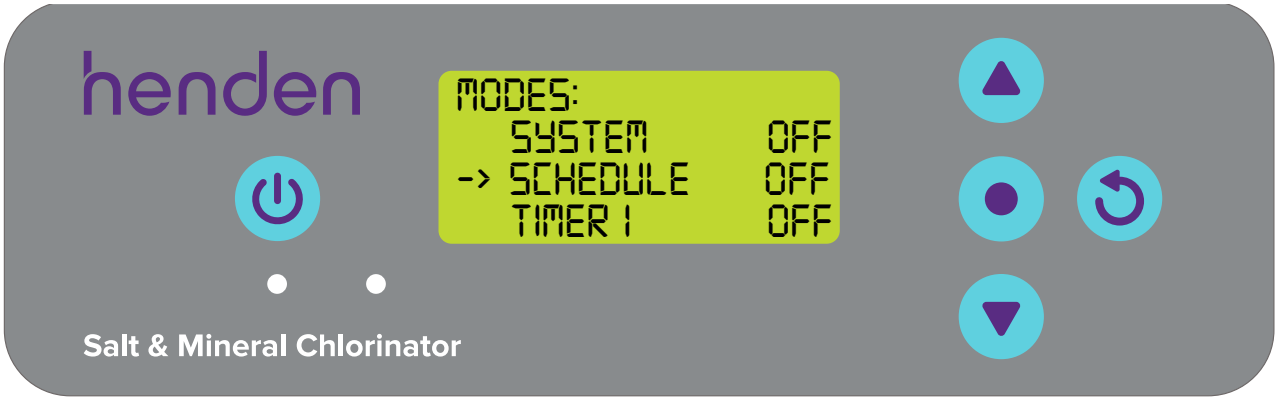


Figure 9.23

- Use the **menu up/down** buttons to toggle ON/OFF as required (refer Figure 9.24). Then press the **menu/setting select** button to confirm.

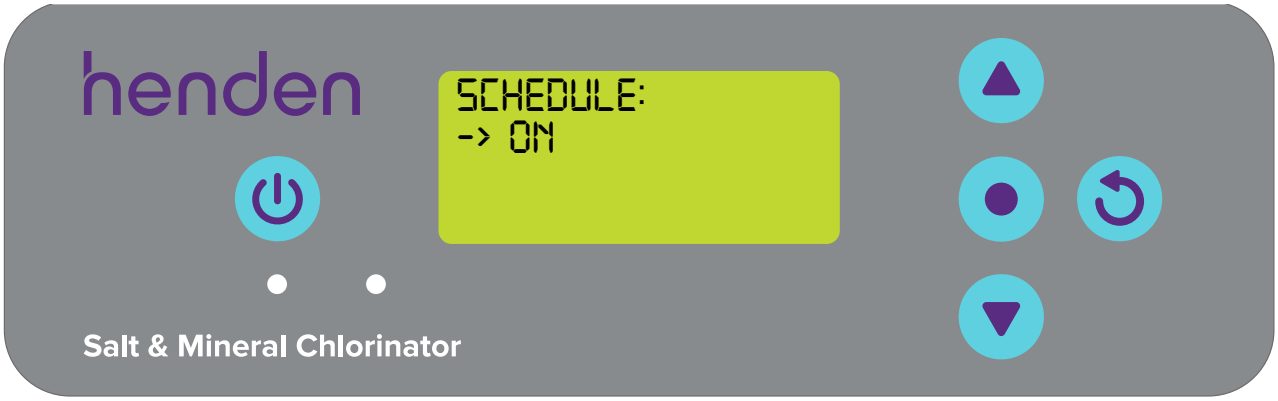


Figure 9.24

- As a reminder, to correctly operate schedule mode, there must be at least one timer set and turned on (refer Section 9.3 and Figure 9.25).

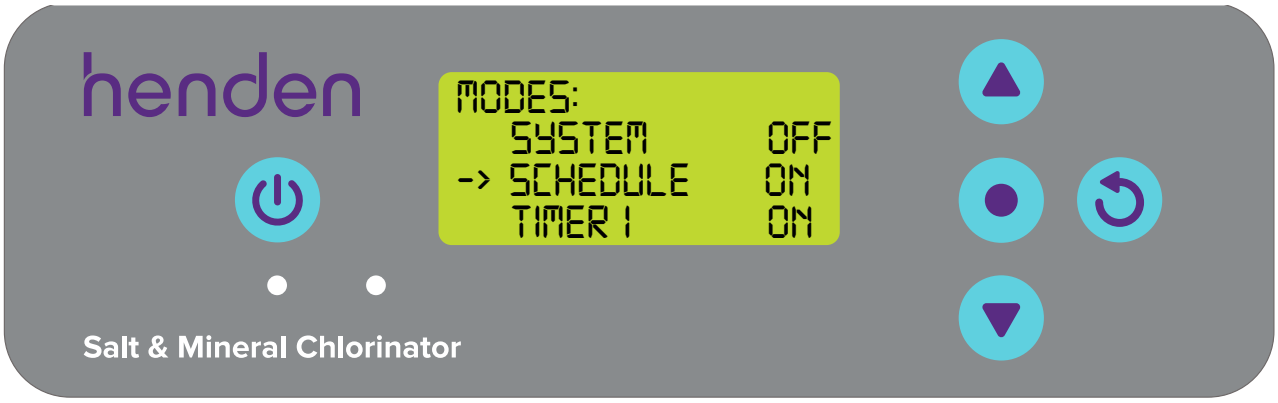


Figure 9.25

9.3.2.Adjusting Schedule Mode on the Henden Smart Chlorinator App

9.3.2.1. Adding a timer

- From the dashboard, go to the "modes" menu by using the modes button (refer Figure 9.26).

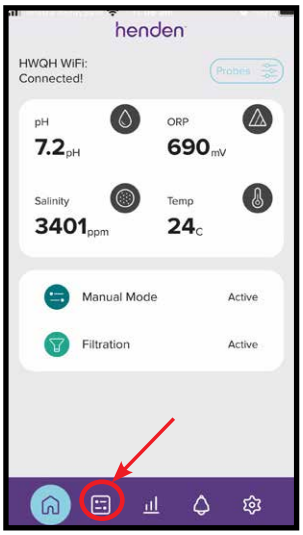


Figure 9.26

- In the "modes" menu, click the "Add Timer" button (refer Figure 9.27).

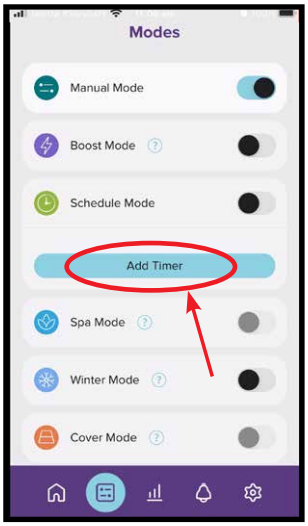


Figure 9.27

- The first time to set will be the start time for your timer. You can see this as the "Start Time" field is highlighted yellow initially (refer Figure 9.28). Consider this as the time you want the system to turn on.

  If you have compatible equipment, you can also elect a pump run speed, for this timer (refer Section 9.1).

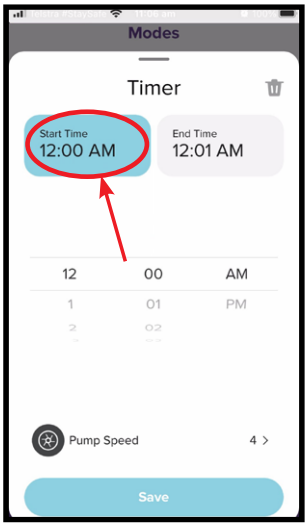


Figure 9.28

- Adjustments can be made to the scheduled start time by scrolling the hours &/or minutes up and down with your finger on the screen (refer Figure 9.29).

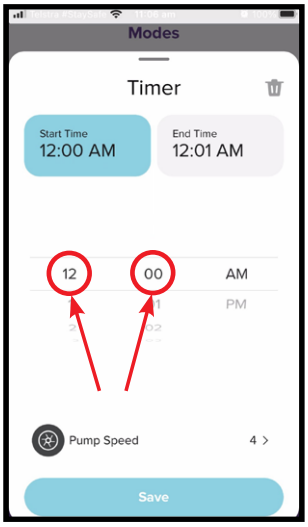


Figure 9.29

- To set the end time, first ensure you push the "End Time" button (refer Figure 9.30), then adjust the time as above.

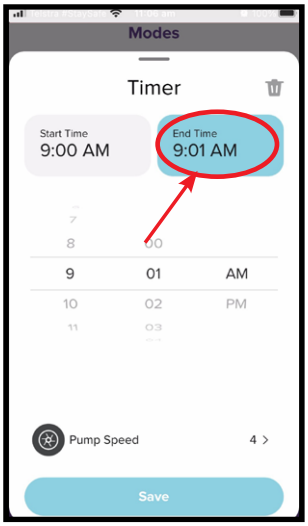


Figure 9.30

- To save the timers you've set, simply click save at the bottom of the screen. You can now return to the dashboard by using the home button (refer Figure 9.31), or activate Schedule Mode (refer Section 9.3.2.3).

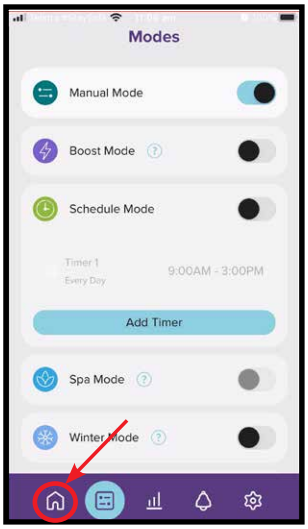


Figure 9.31

- Should you wish to add two separate timers, repeat the process above. They will appear in the Modes menu as shown (ref Figure 9.32).

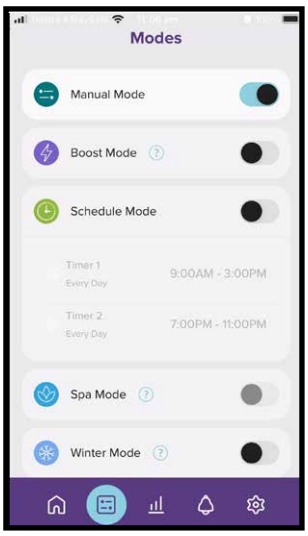


Figure 9.32

9.3.2.2. Removing a timer

- From the dashboard, go to the "modes" menu by using the modes button (refer Figure 9.33).

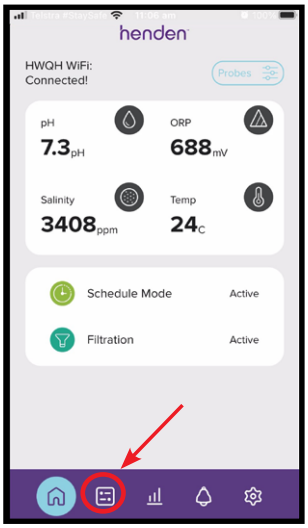


Figure 9.33

- In the "modes" menu, click the timer you wish to remove (refer Figure 9.34).

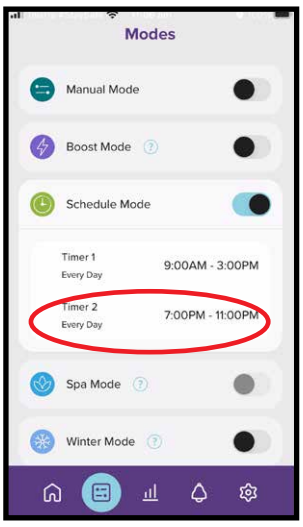


Figure 9.34

- Once a specific timer has been chosen, push the trash can logo on the right of the screen (refer Figure 9.35).

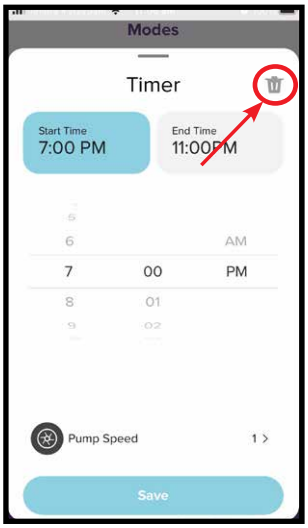


Figure 9.35

- The Modes screen should no longer show that specific timer. You can now return to the dashboard by using the home button (refer Figure 9.36).

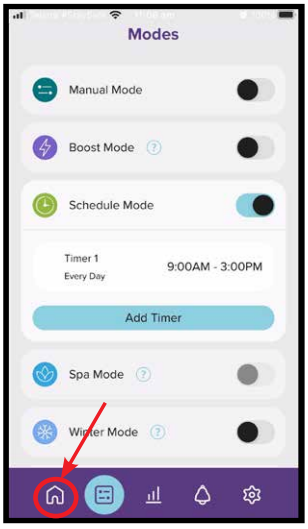


Figure 9.36

9.3.2.3. Activating Schedule Mode

- Ensure Manual Mode is off (refer Section 9.2). To activate system mode, go to the "modes" menu by using the modes button (refer Figure 9.37).

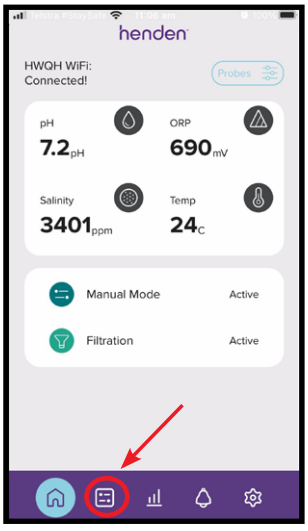


Figure 9.37

- Schedule Mode can now be toggled on/off by simply sliding the switch (ref Figure 9.38).

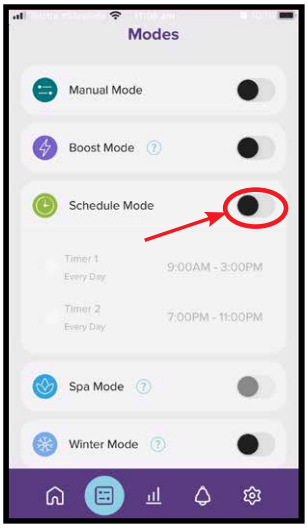


Figure 9.38

- You can now return to the dashboard by using the home button (refer Figure 9.39).

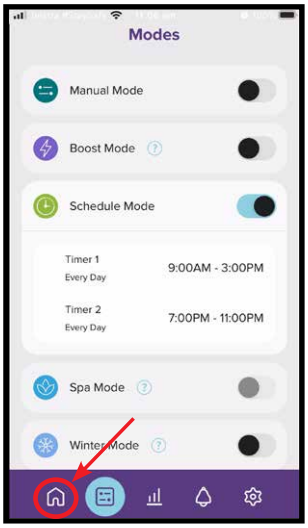


Figure 9.39

9.4 BOOST MODE

Should the pool experience a heavy bather load, debris/contamination, or extreme warm weather, there may be a need to super-chlorinate the pool. Turning on the **BOOST MODE** increases the chlorinator cell duty cycle to 100% and overrides the cell current (output) to 100% for a period of 24 hours.

Probes aren't resistant to high levels of chlorine for extended periods of time as it may reduce the life of the probe. Henden recommends removing the probes from the manifold when increasing chlorine in the pool.

9.4.1. Activating Boost Mode on HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. Press the **menu up/down** buttons to scroll down to **MODES** (ref Figure 9.40), then select by pressing the **menu/setting select** button.

Figure 9.40

- Press the **menu up/down** buttons to scroll down to **BOOST** (ref Figure 9.41), then select by pressing the **menu/setting select** button.

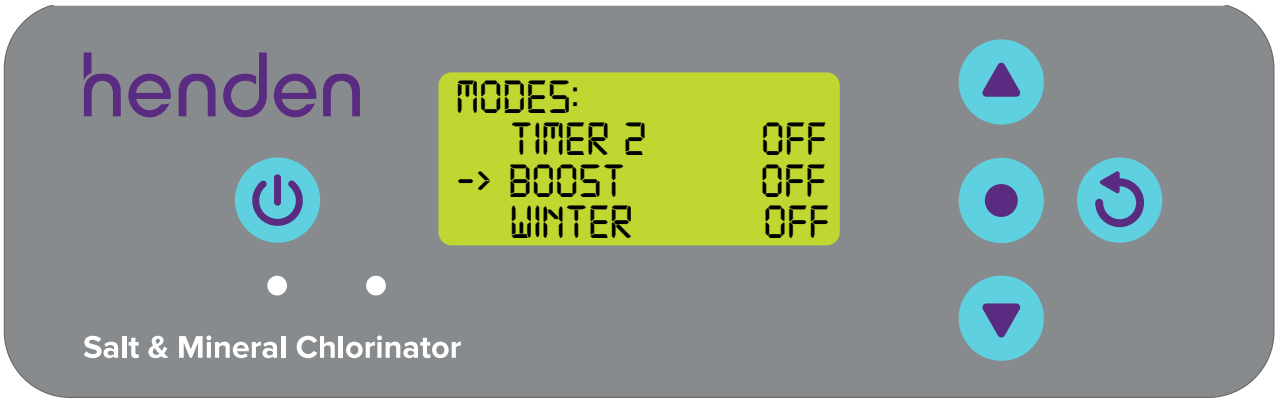


Figure 9.41

- Boost mode can now be toggled ON/OFF where appropriate by using the **menu up/down** buttons (ref Figure 9.42), then select by pressing the **menu/setting select** button.

Figure 9.42

- Press the **menu/setting cancel (go back)** button twice to revert back to the HOME SCREEN (refer Figure 9.43).

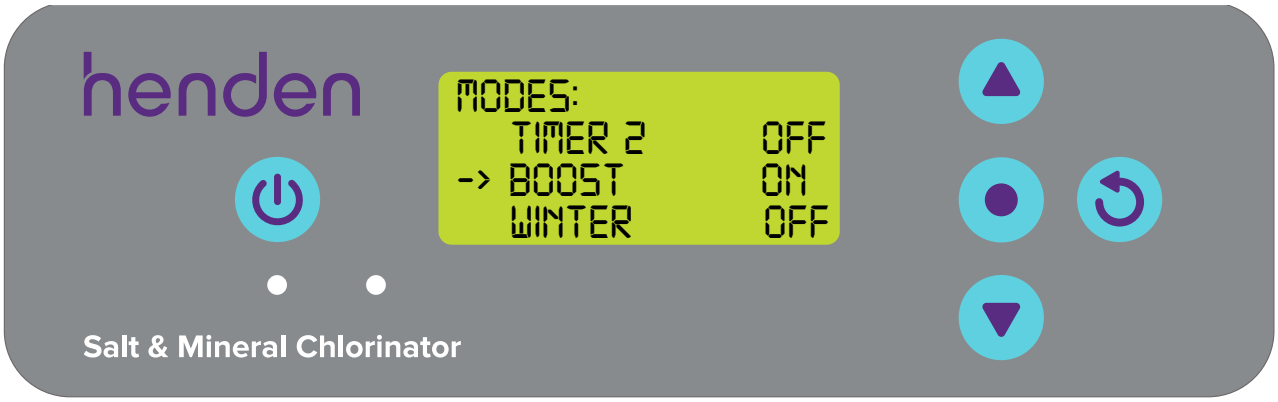


Figure 9.43

- Once back at the HOME SCREEN the display will toggle to show BOOST ON (refer Figure 9.44).

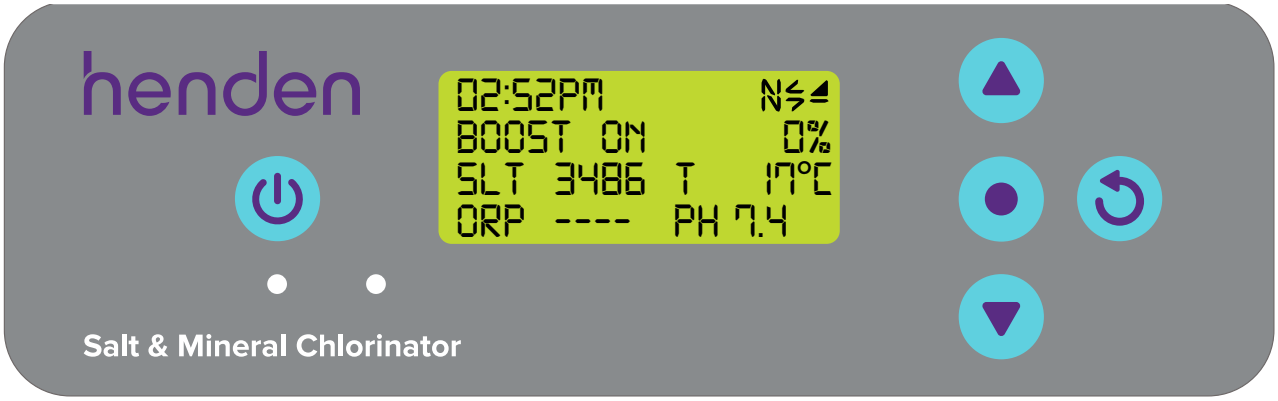


Figure 9.44

- To turn off **BOOST MODE**, repeat the process shown above, but opt for "**BOOST MODE:** OFF".

9.4.2. Activating Boost Mode on the Henden Smart Chlorinator App

- From the dashboard of the the Henden Smart Chlorinator, go to the "modes" menu by using the modes button (refer Figure 9.45).

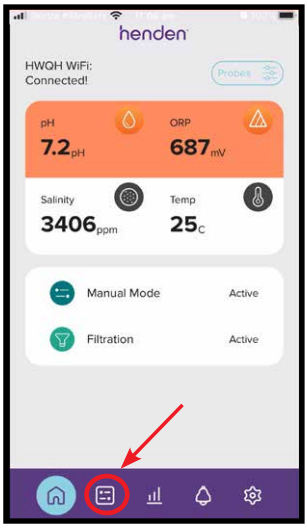


Figure 9.45

- In the "modes" menu, **BOOST MODE** can be toggled on, or off by simply sliding the switch (ref Figure 9.46).

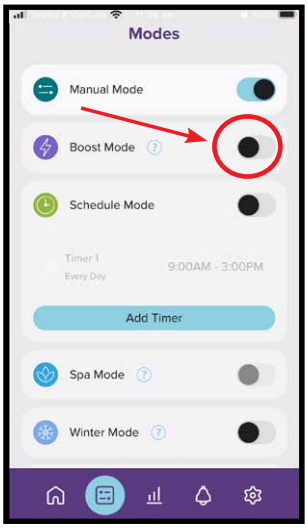


Figure 9.46

- Return to the dashboard now by using the home button (refer Figure 9.47).

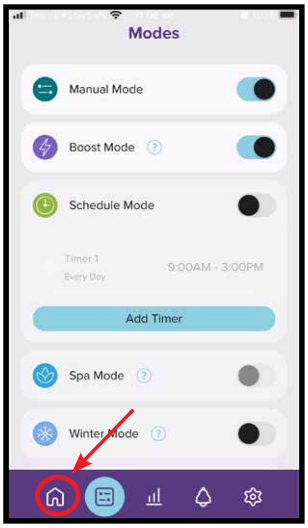


Figure 9.47

- Once back at the dashboard "Boost Mode Active" will now appear (refer Figure 9.48).

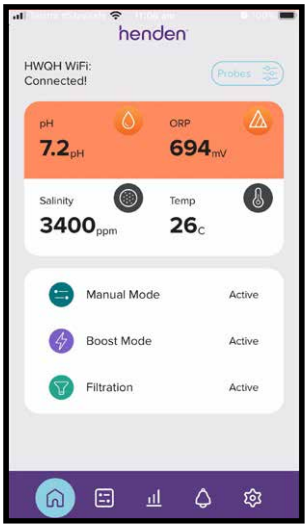


Figure 9.48

- To turn off **BOOST MODE**, repeat the process shown above, but opt for "**BOOST MODE:** OFF".

9.5 WINTER MODE

During winter months the conductivity is affected by low water temperatures, this can have a significant effect on the life of cell. There is also typically less chlorine demand as the pool is not likely to be used.

WINTER MODE reduces the cell current across the cell plates to 85% to protect the cell and allow the ability to run in low conductivity conditions.

For example:

- When the HWQH is running the chlorinator and **WINTER MODE** is off. The chlorinator cell current (typically measured in Amps) will be operating at 100% capacity.
- When the HWQH is running the chlorinator, but **WINTER MODE** is on, the chlorinator cell current (typically measured in Amps) will only be operating at 85% capacity.

9.5.1. Activating Winter Mode on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. Press the **menu up/down** buttons to scroll down to **MODES** (ref Figure 9.49), then select by pressing the **menu/setting select** button.

Figure 9.49

- Press the **menu up/down** buttons to scroll down to **WINTER** (ref Figure 9.50), then select by pressing the **menu/setting select** button.

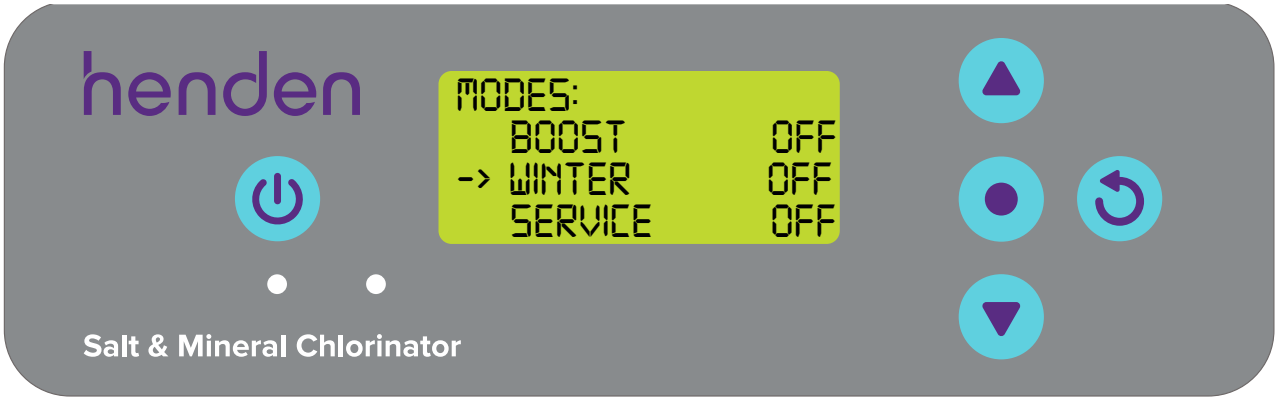


Figure 9.50

- **WINTER MODE** can now be toggled ON/OFF where appropriate by using the **menu up/down** buttons (ref Figure 9.51), then select by pressing the **menu/setting select** button.

Figure 9.51

- Press the **menu/setting cancel (go back)** button twice to revert back to the HOME SCREEN (refer Figure 9.52).

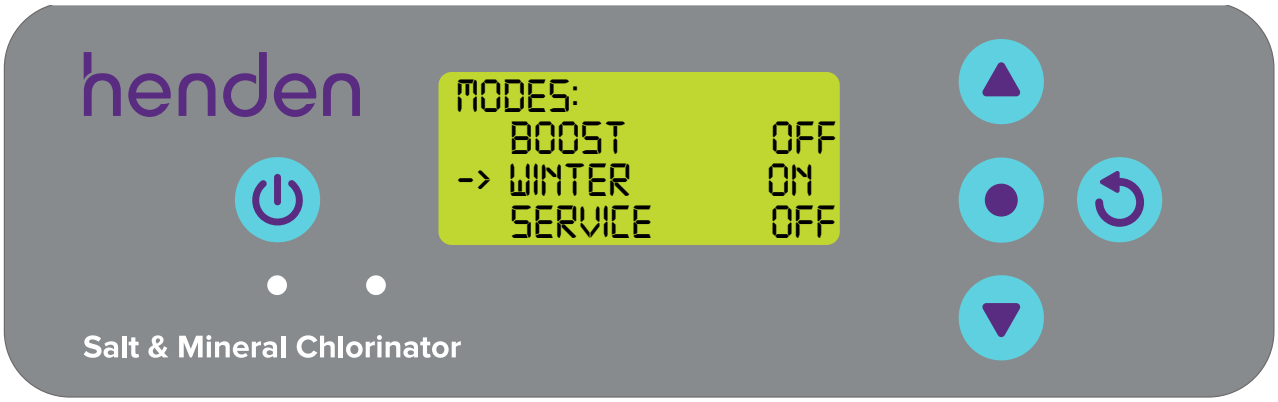


Figure 9.52

- Once back at the **HOME SCREEN** the display will toggle to show WINTER ON (refer Figure 9.53).

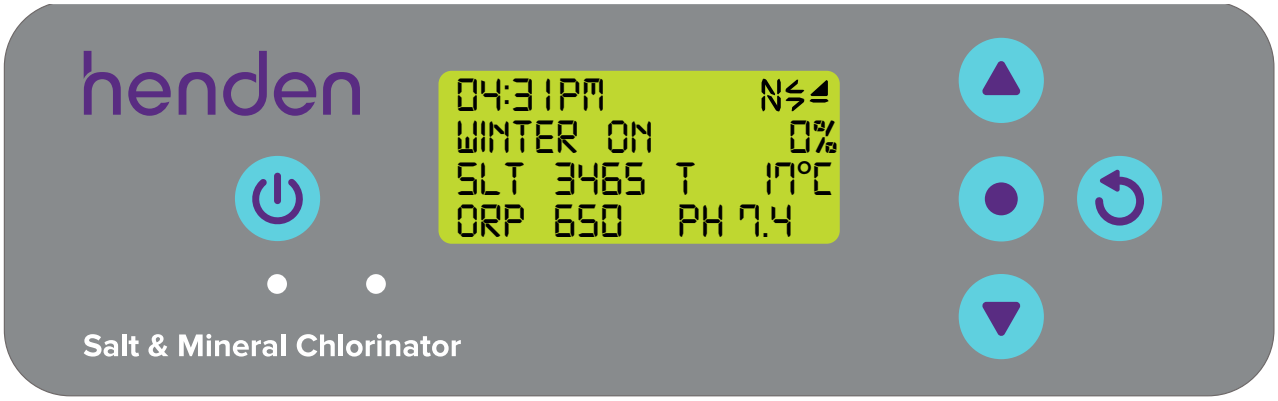


Figure 9.53

- To turn off **WINTER MODE**, repeat the process shown above, but opt for "**WINTER MODE:** OFF".

9.5.2. Activating Winter Mode on the Henden Smart Chlorinator App

- From the dashboard, go to the "modes" menu by using the modes button (refer Figure 9.54).

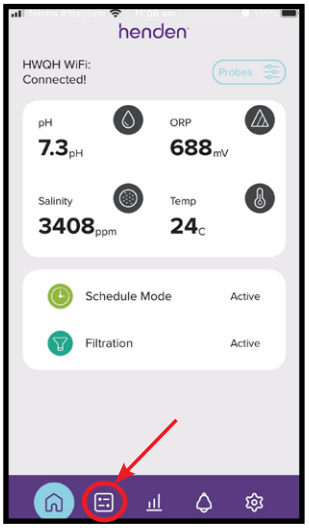


Figure 9.54

- In the "modes" menu, **WINTER MODE** can be toggled on, or off by simply sliding the switch (ref Figure 9.55).

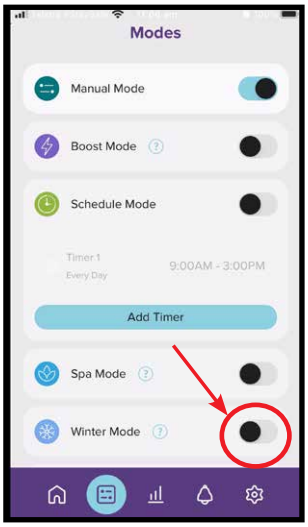


Figure 9.55

- Return to the dashboard now by using the home button (refer Figure 9.56).

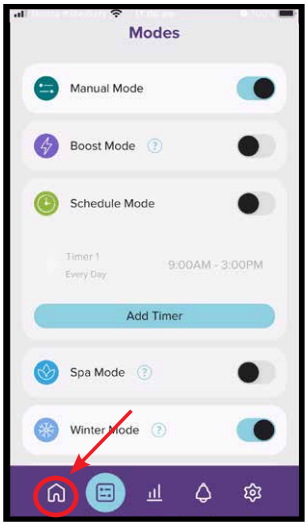


Figure 9.56

- Once back at the dashboard "Winter Mode Active" will now appear (refer Figure 9.57).

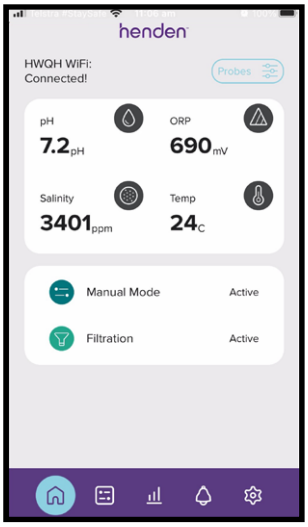


Figure 9.57

- To turn off **WINTER MODE**, repeat the process shown above, but opt for "**WINTER MODE:** OFF".

9.6 SERVICE MODE

The service mode menu is only accessed by the manufacturer &/or it's Authorised Service Representatives.

9.7 BACKWASH MODE

When using a media filter, there will occasionally come a need to backwash the pool's filter. During the backwash process, water is typically expelled from the pool's filter, out to waste (rather than through the salt cell & back to the pool). The backwash mode in HWQH disables the Henden Smart Chlorinator App, to ensure that the pumps are only turned on & off (during the maintenance), by the person operating the controller. In addition, backwash mode automatically triggers the pool pump (if compatible – refer Section 9.1) to vary the speed of its motor & fluctuate the flow of water through the media bed. This enables a more thorough clean of the media & ultimately a more effective backwash, using less water.

9.7.1. Adjusting backwash mode on the HWQH control panel

If you plan to run a backwash of a media filter, first switch the system to SYSTEM OFF (refer Section 9.2). Also ensure that the pump is not set to come on again via any means, remote or otherwise (refer Section 9.3). Then turn your media filter to backwash setting.

- From the **HOME SCREEN**, press the **menu/setting select** button and go into **MODES** (refer Figure 9.58).

Figure 9.58

- From the **MODES** menu, use the **menu up/down** buttons to scroll down to **BACKWASH** (refer Figure 9.59).

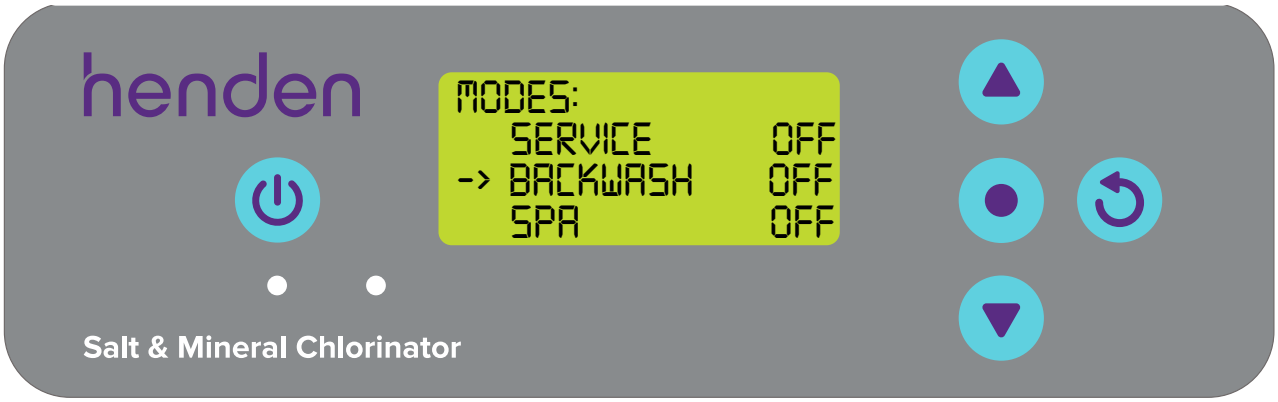


Figure 9.59

- In the backwash menu, use the **menu up/down** buttons to toggle ON/OFF as required (refer Figure 9.60). Then press the **menu/setting select** button to confirm.

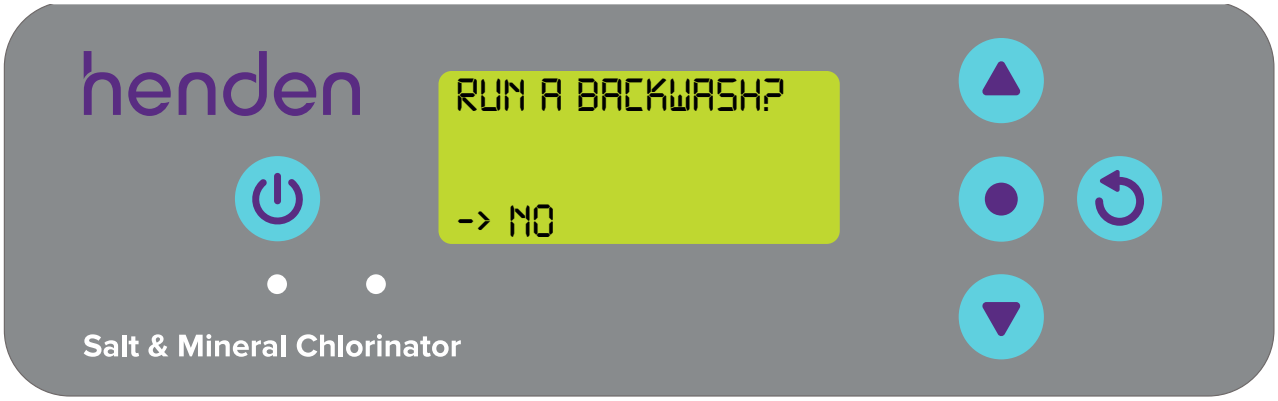


Figure 9.60

- The pump will turn on and in the case of a compatible pump (refer Section 9.1), the flow will begin to vary as the motor speeds up and slows down. During this time, the probes will not show a reading (refer Figure 9.61) as water will be passing from the pool filter to waste. This will continue for ~ 2 minutes. The pump will then stop.

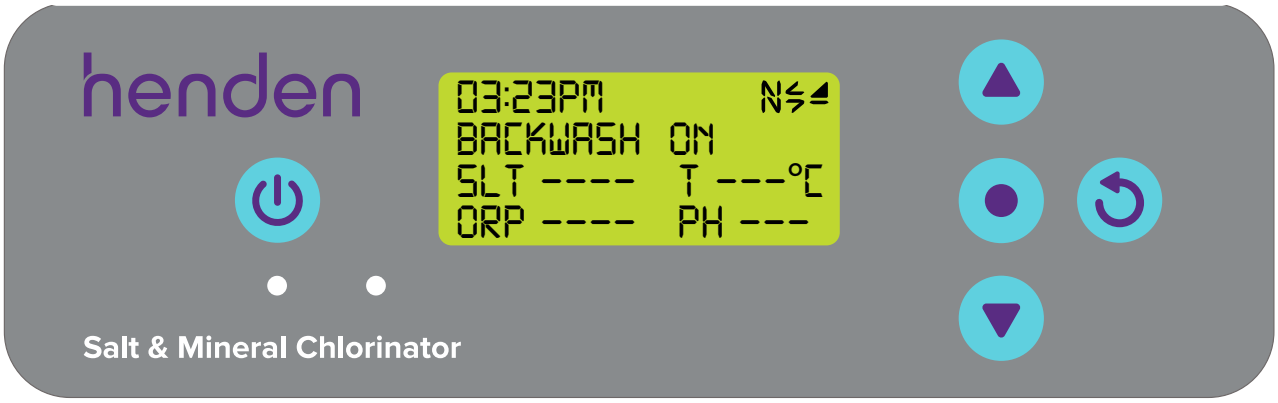


Figure 9.61

- If the sight glass of your media filter was yet to clear in that period, repeat the steps above for another 2-minute cycle. If the sight glass did clear, turn your media filter to rinse setting and allow the pump to run again for another 2-minute cycle. When the pump again stops, your filter can be returned to its normal/filter setting.

  HWQH **BACKWASH** mode should now be returned to normal (refer Figure 9.62), following the steps above.

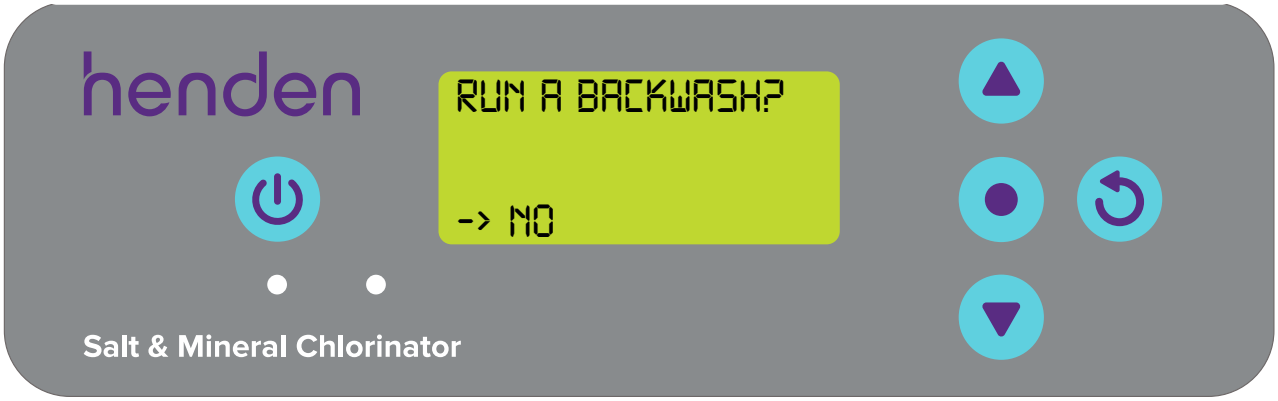


Figure 9.62

- You can now turn back on the system, either by SYSTEM ON (refer Section 9.2), or by SCHEDULE ON (refer Section 9.3).

9.7.2. Operating backwash mode using the Henden Smart Chlorinator App

Backwash mode control is not available via the app and must be controlled by the HWQH control panel. This ensures that the operator is present, with the pool equipment during the maintenance.

9.8 SPA MODE (for use if NO ORP probe is connected)

The HWQH is compatible with large swimming pool applications as well as much smaller spa applications. Turning on the **SPA MODE** reduces the chlorinator cell duty cycle by 80% of its current setting.

For example:

- If the HSMC is on for 10 hours per day, the **CHLORINE OUTPUT** is set to 50%, but the **SPA MODE** is off: the HSMC cell duty cycle is 5 hours of that day.
- However, if the HSMC is on for 10 hours per day, the **CHLORINE OUTPUT** is set to 50%, and **SPA MODE** is on: the HSMC cell duty cycle is only 1 hour of that day.
- Similarly, if the HSMC is on for 10 hours per day, the **CHLORINE OUTPUT** is set to 25%, and **SPA MODE** is on: the HSMC cell duty cycle is only 30 minutes of that day.

Reminder: **SPA MODE** can only be selected from the menu if ORP probe is not connected.

9.8.1. Activating Spa Mode on the HWQH control panel

- From the **HOME SCREEN**, press the **menu/setting select** button. Press the **menu up/down** buttons to scroll down to **MODES** (ref Figure 9.63), then select by pressing the **menu/setting select** button.

Figure 9.63

- Press the **menu up/down** buttons to scroll down to SPA (ref Figure 9.64), then select by pressing the **menu/setting select** button.

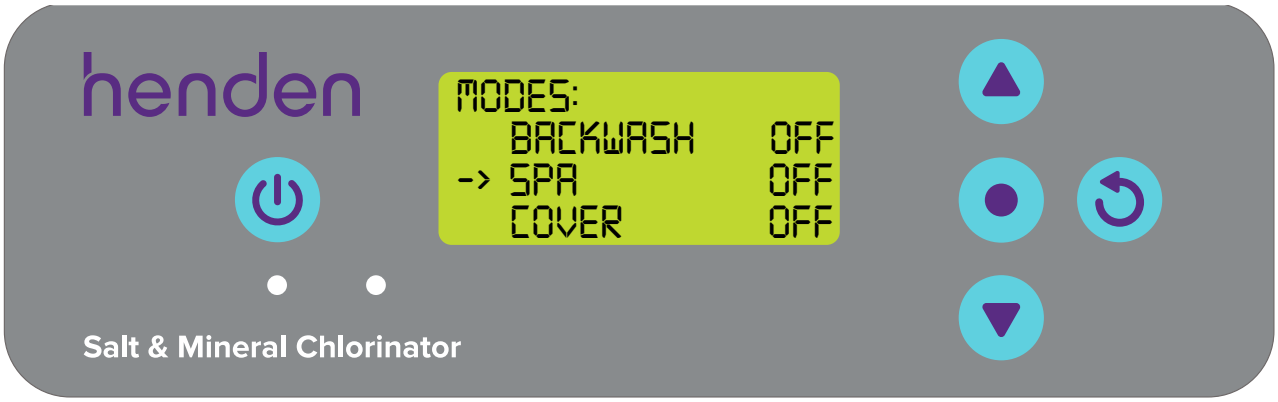


Figure 9.64

- SPA mode can now be toggled ON/OFF where appropriate by using the **menu up/down** buttons (ref Figure 9.66), then select by pressing the **menu/setting select** button.

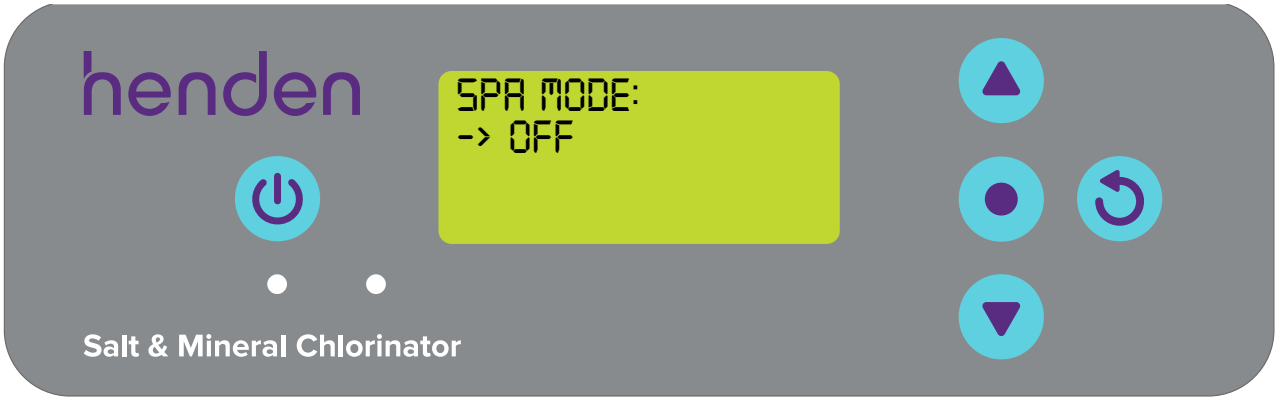


Figure 9.66

- Press the **menu/setting cancel (go back)** button twice to revert back to the **HOME SCREEN** (refer Figure 9.67).

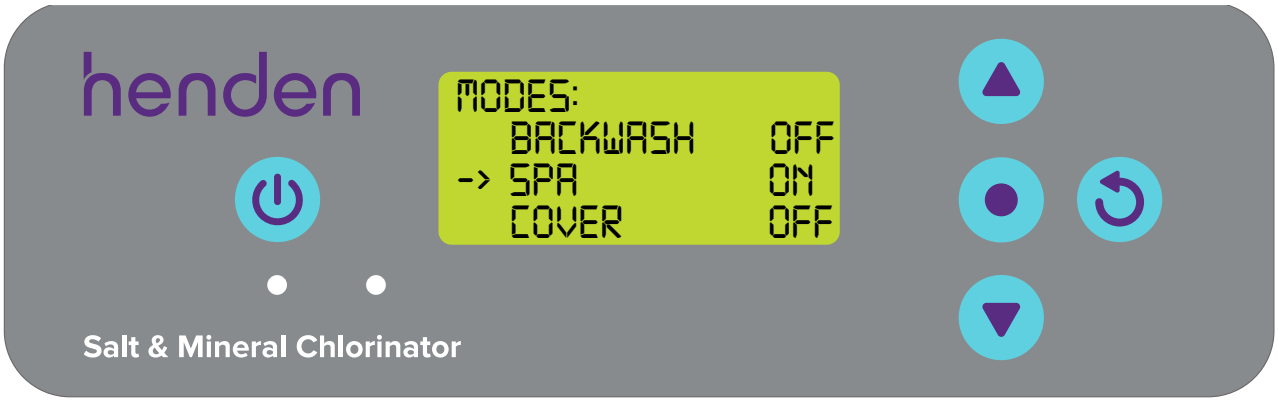


Figure 9.67

- Once back at the **HOME SCREEN** the display will toggle to show SPA ON (refer Figure 9.68).

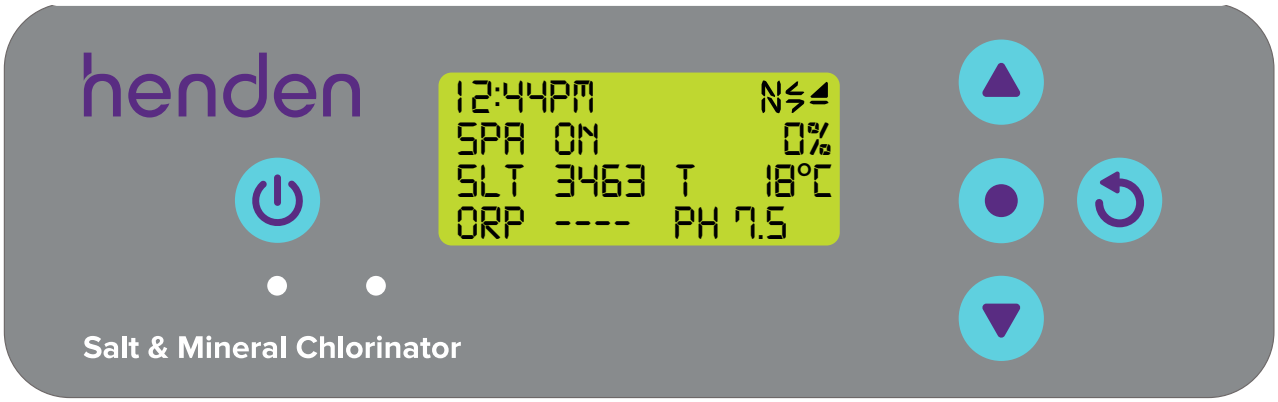


Figure 9.68

- To turn off **SPA MODE**, repeat the process shown above, but opt for "**SPA MODE:** OFF".

9.8.2. Activating Spa Mode using the Henden Smart Chlorinator App

- From the dashboard of the Henden Smart Chlorinator App, go to the "modes" menu by using the modes button (refer Figure 9.69).

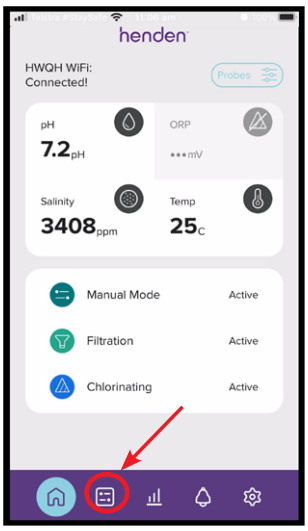


Figure 9.69

- In the "modes" menu, **SPA MODE** can be toggled on, or off by simply sliding the switch (ref Figure 9.70).

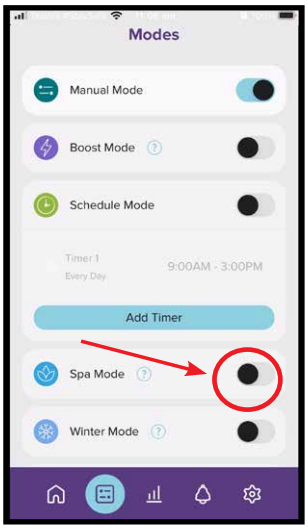


Figure 9.70

- Return to the dashboard now by using the home button (refer Figure 9.71).

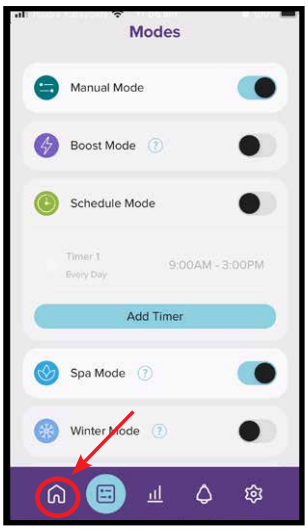


Figure 9.71

- Once back at the dashboard "Spa Mode Active" will now appear (refer Figure 9.72).

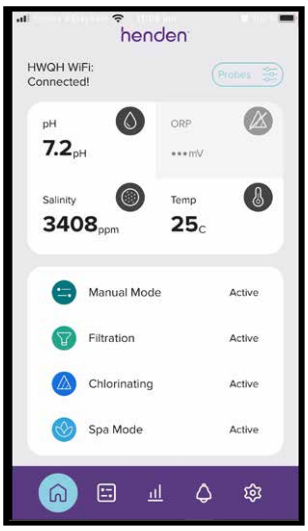


Figure 9.72

- To turn off **SPA MODE**, repeat the process shown above, but opt for "**SPA MODE:** OFF".

9.9 COVER MODE (for use if NO ORP probe is connected):

The HWQH is compatible with large swimming pool applications as well as much smaller spa applications. Turning on the **COVER MODE** reduces the chlorinator cell duty cycle by 80% of its current setting.

For example:

- If the HSMC is on for 10 hours per day, the **CHLORINE OUTPUT** is set to 50%, and **COVER MODE** is off: the HSMC cell duty cycle is 5 hours of that day.
- However, if the HSMC is on for 10 hours per day, the **CHLORINE OUTPUT** is set to 50%, and **COVER MODE** is on: the HSMC cell duty cycle is only 1 hour of that day.
- Similarly, if the HSMC is on for 10 hours per day, the **CHLORINE OUTPUT** is set to 25%, and **COVER MODE** is on: the HSMC cell duty cycle is only 30 minutes of that day.

Reminder: **COVER MODE** can only be selected from the menu if ORP probe is not connected.

9.9.1. Activating Cover Mode on the HWQH control panel

- From the **HOME SCREEN**, press the ● **menu/setting select** button. Press the ▲▼ **menu up/down** buttons to scroll down to **MODES** (ref Figure 9.73), then select by pressing the ● **menu/setting select** button.

Figure 9.73

- Press the **menu up/down** buttons to scroll down to COVER (ref Figure 9.74), then select by pressing the **menu/setting select** button.

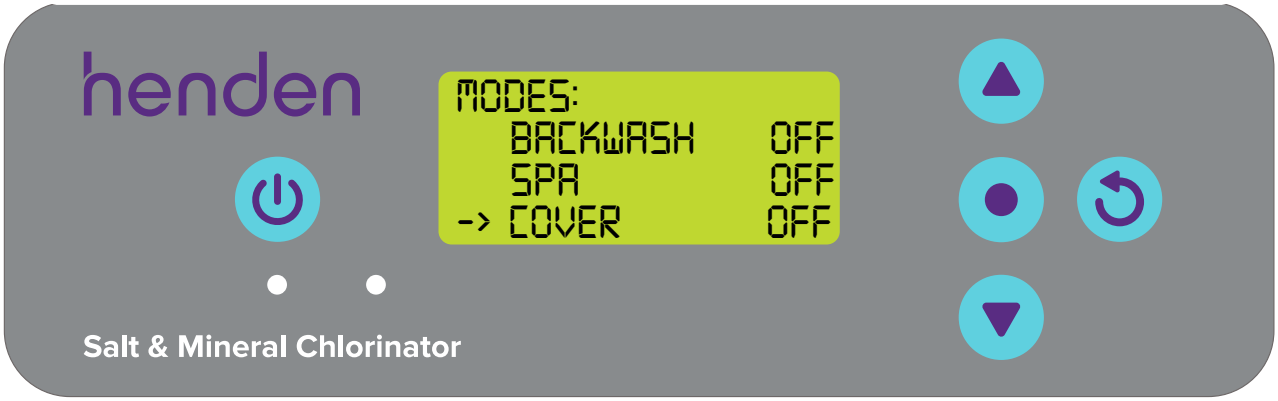


Figure 9.74

- **COVER MODE** can now be toggled ON/OFF where appropriate by using the **menu up/down** buttons (ref Figure 9.75), then select by pressing the **menu/setting select** button.

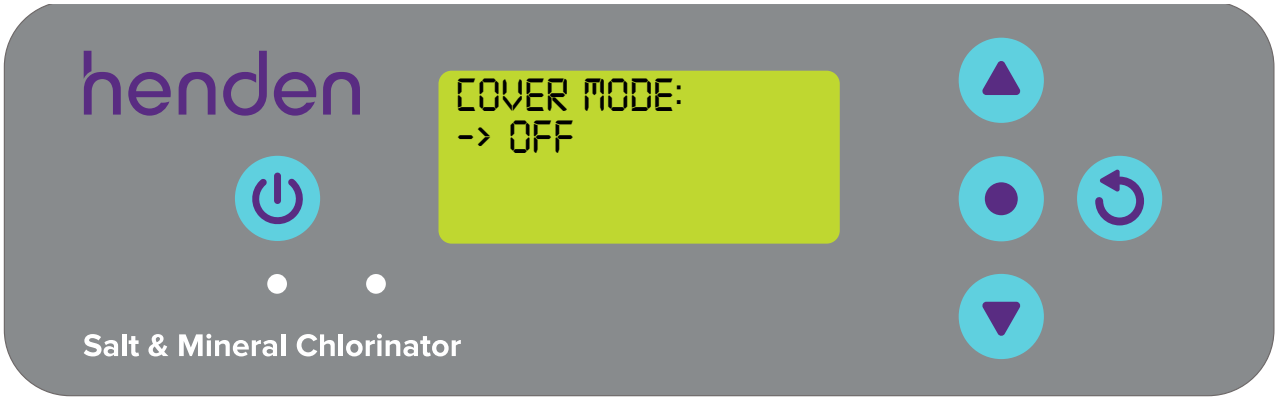


Figure 9.75

- Press the **menu/setting cancel (go back)** button twice to revert back to the **HOME SCREEN** (refer Figure 9.76).

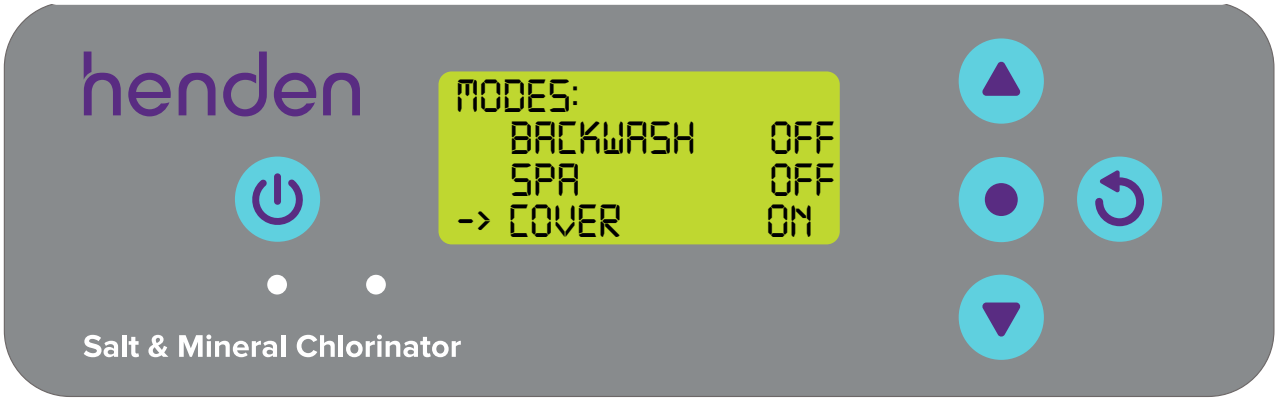


Figure 9.76

- Once back at the **HOME SCREEN** the display will toggle to show SPA ON (refer Figure 9.77).

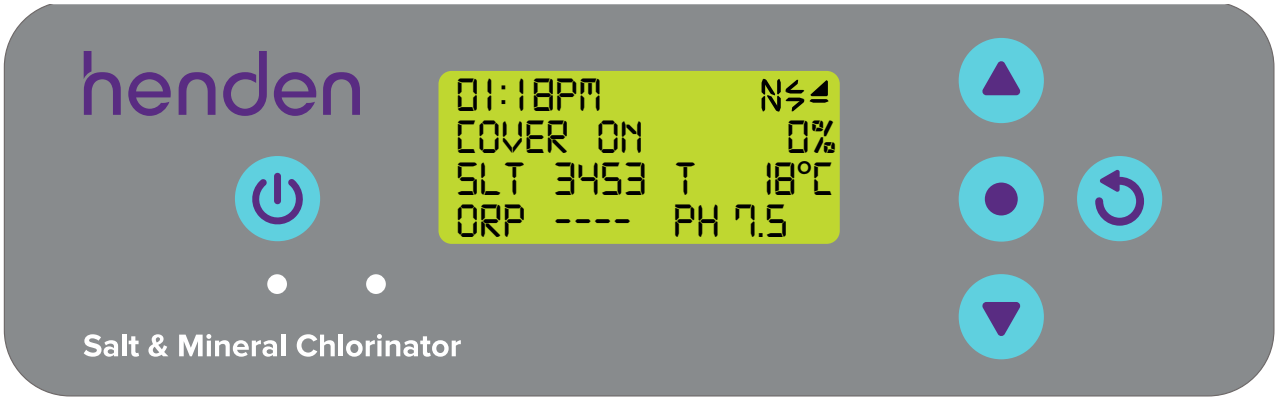


Figure 9.77

- To turn off **COVER MODE**, repeat the process shown above, but opt for "**COVER MODE:** OFF".

9.9.2. Activating Cover Mode using Henden Smart Chlorinator App

- From the dashboard, go to the "modes" menu by using the modes button (refer Figure 9.78).

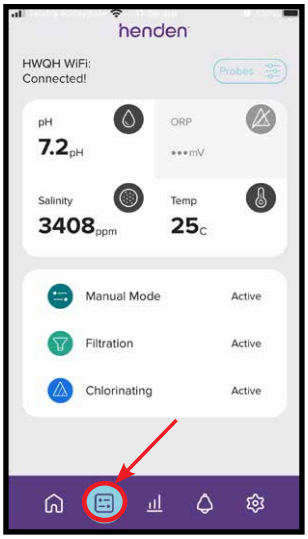


Figure 9.78

- In the "modes" menu, scroll the screen to reveal **COVER MODE**. **COVER MODE** can be toggled on, or off by simply sliding the switch (ref Figure 9.79).

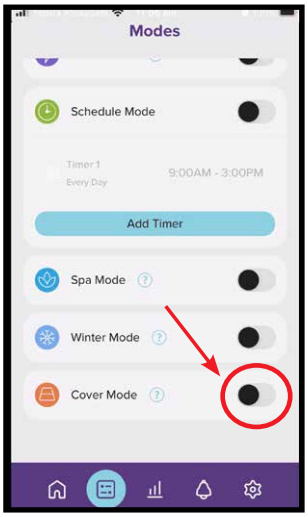


Figure 9.79

- Return to the dashboard now by using the home button (refer Figure 9.80).

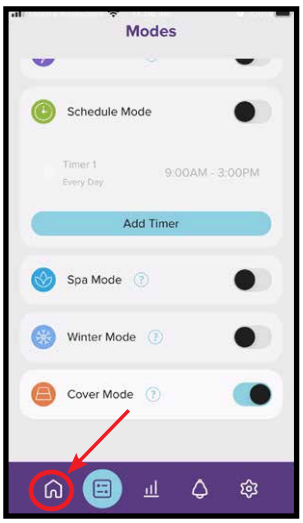


Figure 9.80

- Once back at the dashboard "Cover Mode Active" will now appear (refer Figure 9.81).

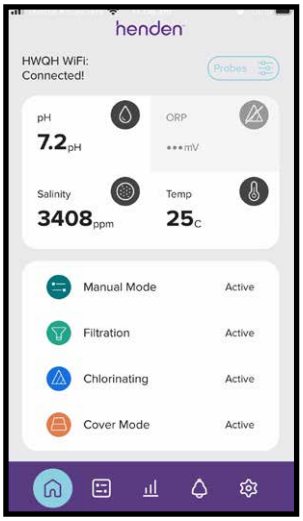


Figure 9.81

- To turn off **COVER MODE**, repeat the process shown above, but opt for "**COVER MODE:** OFF".

9.9.3. Activating Cover Mode remotely

- **COVER MODE** can also be triggered remotely by an automated pool cover controller. By closing the terminal block contacts on the rear of the HSMC power supply (ref Figure 9.82), the HWQH will remotely switch to **COVER MODE**. This can be overridden by user intervention, by following the steps explained previously.

Figure 9.82

9.10 SPA & COVER MODE (SIMULTANEOUS):

Should it be necessary to run **SPA MODE** and **COVER MODE** simultaneously, the chlorinator cell duty cycle is only reduced by 80% That is, the cell duty cycle isn't reduced by 80%, followed by a further 80%. The **HOME SCREEN** display will toggle between showing **COVER** and **SPA**. As previously mentioned, neither **COVER**, or **SPA** mode is necessary when HWQH is working with an ORP probe.

For example:

- If the HSMC is on for 8 hours per day, the **CHLORINE OUTPUT** is set to 50%, but the **COVER MODE** is on: the HSMC cell duty cycle is only 48 minutes, of that day;
- If the HSMC is on for 8 hours per day, the **CHLORINE OUTPUT** is set to 25%, but the **COVER MODE** is on: the HSMC cell duty cycle is only 24 minutes, of that day.

COVER MODE can also be triggered remotely by an automated pool cover controller. By closing the terminal block contacts on the rear of the HSMC power supply (ref figure 9.2), HWQH will remotely switch to **COVER MODE**. This can be overridden by user intervention, by following the steps explained previously.

9.11 HEAT PUMP CONNECTION

The Henden Smart Chlorinator App (not the controller itself) can control the set temperature of your connected pool heat pump (if it's a compatible model). The following models are examples of compatible heat pumps covered by this section.

Henden Heat Pump models
HHP16C
HHP23C
HHP28C
HHP35C

Note: You can upgrade your Henden Heat Pump suffix B model (i.e. HHP23B) to be compatible by purchasing and installing a HHPWIFI Wi-Fi module.

The instructions for connecting the heat pumps do differ slightly depending on the model of heat pump you have. Please ensure you use the correct section following. Turning the heat pump on/off can not be controlled by the HWQH, only the temperature adjustment. The Heat pump will run automatically while the filtration cycle is on or while in manual mode and will show a flow alarm (E3 for DHP models) while not running, this is normal.

If you would like the heat pump not to run at all, you can isolate the power to the heat pump or set the temperature to 0°C.

9.11.1. Connecting the Henden Smart Chlorinator App to a "Davey Heat Pump"

- From the dashboard, go to the "settings" menu by using the modes button (refer Figure 9.84).

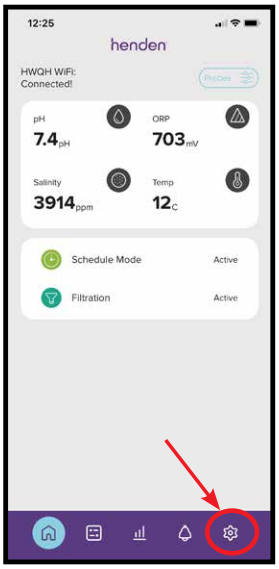


Figure 9.84

- Press the "Heat Pump" button (refer Figure 9.85).

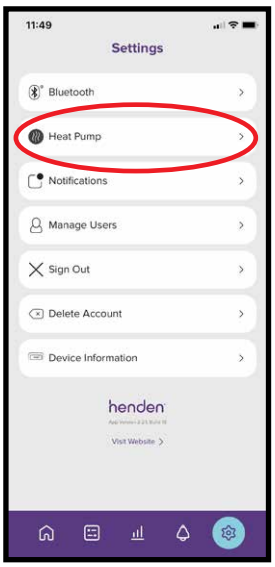


Figure 9.85

- If you are looking to sync a "Davey Heat pump", then press the respective button (refer Figure 9.86). If you are looking to sync a "Henden Heat Pump", go to section 9.11.2 of this manual.

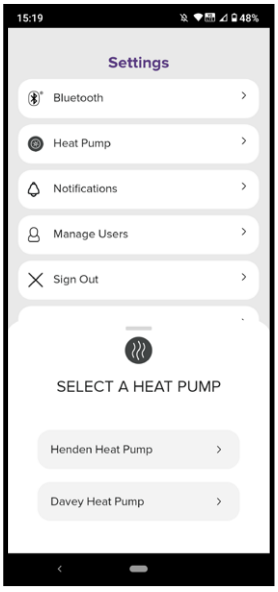


Figure 9.86

- It is important to ensure that your device is connected to the Wi-Fi network you wish to use. This must be a 2.4GHz Wi-Fi network, not a 5GHz Wi-Fi network. To continue, simply press "Connect Now". Alternatively, should you need to cancel, you can via the back button (refer Figure 9.87).

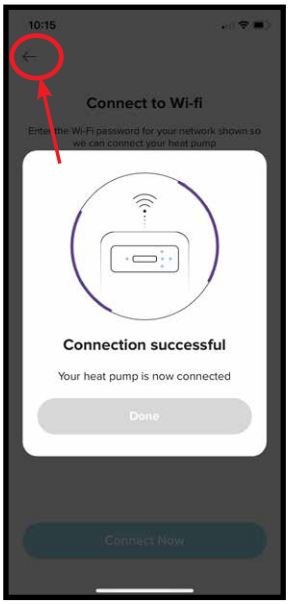


Figure 9.87

- Ensure the current network shown is the same network that your smart device is connected to. Enter the Wi-Fi password now (refer Figure 9.88). Follow instructions relating to touchpad controls on the heat pump, before clicking "Connect Now".

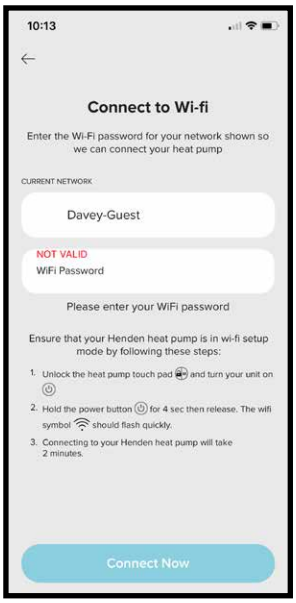


Figure 9.88

- Allow a couple of minutes to connect the Henden Smart Chlorinator App to your Davey Heat Pump. Your app with show the connection is in progress (refer Figure 9.89). This screen will continue for ~ 10 seconds.

Figure 9.89

- Once connection between the Henden Smart Chlorinator App and the Davey Heat Pump is complete, the confirmation will show (refer Figure 9.90). Click "Done" to return to the dashboard.

Figure 9.90

9.11.2. Connecting the Henden Smart Chlorinator App to a "Henden Heat Pump"

- If you are looking to sync a "Davey Heat Pump", go to section 9.11.1 of this manual.
- On your Henden Heat Pump, press the menu button to go into the main menu.
- Use the ▲ up and ▼ down buttons to scroll down to WIFI and press the ▶ button to confirm.

Figure 9.91

- Select RECONFIGURE WIFI by pressing the ▶ button.

Figure 9.92

- It will then ask you to confirm or cancel the reconfigure. Use the ▼ down button to move the selection to RECONFIGURE and then press the ◀ button to confirm.

Figure 9.93

- You should see the screen below:

Figure 9.94

- It will then confirm that the RECONFIGURE has been successful and display the MAC address or Heat Pump ID. You will need to write this down.

Figure 9.95

- Open your phone settings and go to the Wi-Fi settings, you will see a Nirvana SSID. Click on this to connect to your heat pump (Figure 9.96).

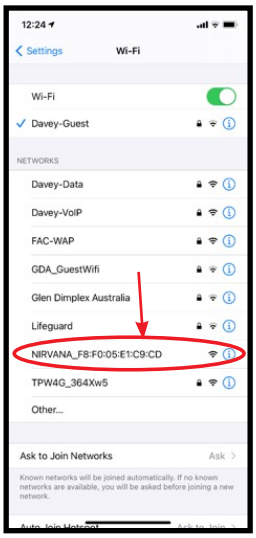


Figure 9.96

- A screen should open from the Nirvana site (Figure 9.97). If it doesn't open automatically, open a web browser manually. Please enter your Wi-Fi SSID or username and password and click connect.

Figure 9.97

- The Henden Heat Pump screen will show the below message:
'RECONFIGURE WIFI SUCESS! CONNECTED TO WEB SERVICE'

- From the dashboard, go to the "settings" menu and select "Heat Pump" from the list. Then select the "Henden Heat Pump" option and "Connect now".

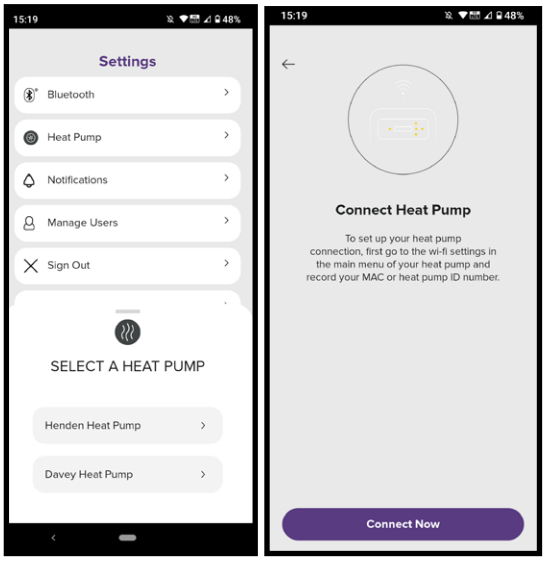


Figure 9.98

• Enter your MAC or heat pump ID in the format shown. Then press "Connect Now"

Note: It is important to enter the MAC or heat pump ID number in this format XX-XX-XX-XX-XX-XX

Figure 9.99

• Once connection between the Henden Smart Chlorinator App and the Henden Heat Pump is complete, no confirmation will show, the app will return to the home screen.

9.11.3. Adjusting set temperature of a heat pump using the Henden Smart Chlorinator App

- From the dashboard of the Henden Smart Chlorinator App, press "probe settings" (refer figure 10.0)

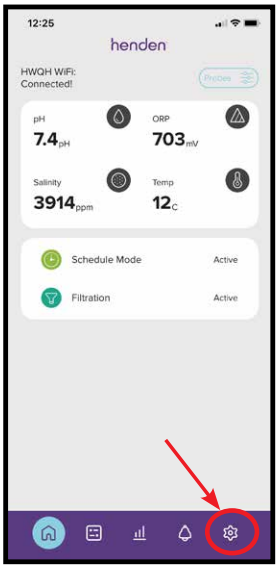


Figure 10.0

- With the heater already on, press the button for "Water Temp" "Edit" (refer Figure 10.1).

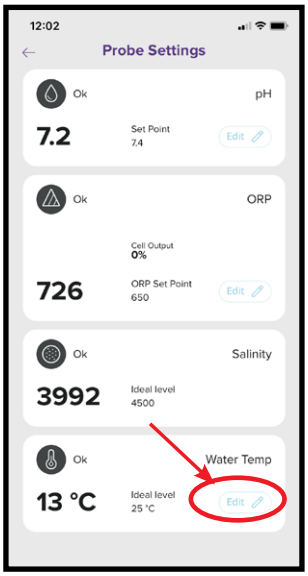


Figure 10.1

- Ensure that "Probe Connected?" is shown as "YES", as indicated by blue highlight (refer Figure 10.2). Adjust to the pool set temperature by scrolling the set point up and down.

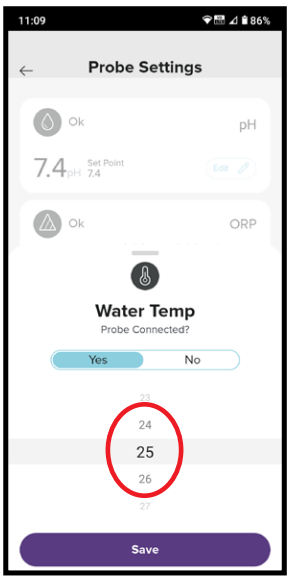


Figure 10.2

- Once you're happy with the change, press "Save" (refer Figure 10.3).

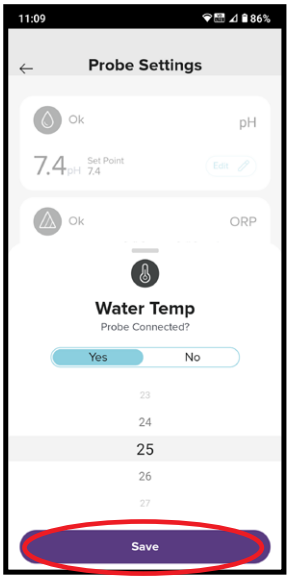


Figure 10.3

- Now the change is reflected in the Probe Settings screen, press the back button to return to the dashboard (refer Figure 10.4).

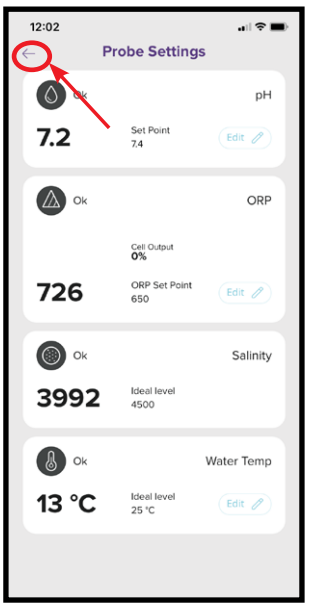


Figure 10.4

10. POOL CHEMISTRY INFORMATION

10.1 RECOMMENDED POOL WATER LEVELS

POOL WATER BALANCE	Ideal reading / range	To increase	To decrease	Frequency of testing
Free chlorine (ppm)	1.5 - 3	Increase ORP setpoint on HWQH. If not using ORP control, increase output of chlorinator, add chlorine or increase filtration time.	Reduce ORP setpoint on HWQH. If not using ORP control, decrease output of chlorinator or decrease filtration time.	Weekly
pH	Concrete & tiled pools 7.4-7.6 Other surfaces 7.2-7.4	Add Soda Ash (Sodium Carbonate)	Add Hydrochloric Acid	Weekly
Total Alkalinity TA (ppm)	80 - 150	Add Buffer (Sodium Bicarbonate)	Add Hydrochloric Acid or Dry Acid	Weekly
Calcium Hardness (ppm)	Concrete & tiled pools 200-275 Other surfaces 100-225	Add Calcium Chloride	Partially drain & refill pool with lower hardness water to Dilute	Weekly
Stabiliser - Cyanuric Acid (ppm)	15-25ppm if using ORP control (25-50 if not using ORP control) Not to be used for indoor pools.	Add Cyanuric Acid	Partially drain & refill pool to dilute	Monthly
Recommended salt Levels (ppm)	3000-6000ppm	Add salt	Partially drain & refill pool to dilute	Monthly

Figure 10.1

10.2 FACTORS THAT INFLUENCE YOUR POOL WATER CHEMISTRY

10.2.1. Cyanuric Acid:

- Cyanuric Acid (aka Stabiliser as explained in section 3) is used in swimming pools that are exposed to UV, to help retain chlorine in the water and limit rapid chlorine breakdown. The recommended cyanuric acid range in most outdoor swimming pools is 25-50ppm.

  What is not commonly known is the effect cyanuric acid has on ORP (also defined in section 3). It should be realised that your pool water's ORP can be reduced by an increase of cyanuric acid (refer Figure 10.2).

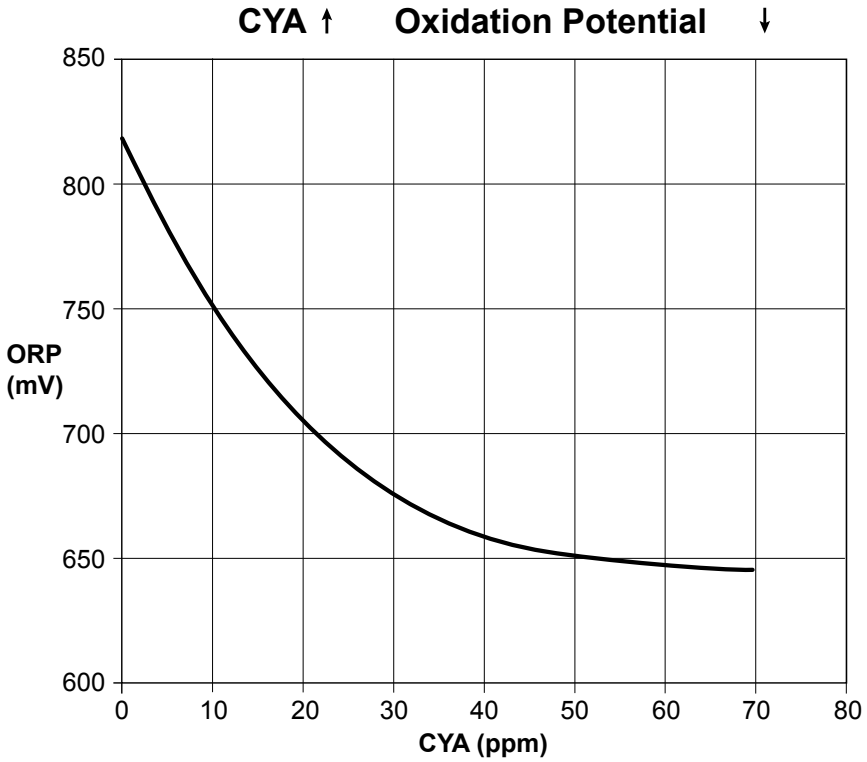


Figure 10.2

This reduction of ORP can be confused by HWQH to be a low chlorine level. In reaction to the perceived low chlorine level, HWQH will increase it's chlorine production (unnecessarily) and elevate the chlorine level in the pool.

If the stabiliser levels in your pool are higher than 25ppm, Henden recommends adjusting your ORP setpoint down to achieve the correct chlorine level.

- Only adjust in increments of 20mV per day.
- Take water tests after each filtration cycle until the correct chlorine level is reached.
- It is a good idea to regularly check your pool chemistry at your nearest pool shop.

10.2.2. Sodium Bicarbonate:

- Sodium Bicarbonate (aka Buffer as explained in section 3) is used in swimming pools to increase a pool's Total Alkalinity, to assist in the control of pH balance. The recommended Total Alkalinity range in most pools is 80-150ppm.

  What is not commonly known is that adding Sodium Bicarbonate to a swimming pool also will also (temporarily) cause pH fluctuations. This "pH bounce" must be acknowledged as it will affect HWQH's ability to control pH during the time. It is recommended that immediately after a dose of Sodium Bicarbonate, the pH control side of HWQH should be switched off (refer section 8.1). The effect should be considered proportionate to the pool volume and the quantity of Sodium Bicarbonate being added. For example, to add 2kg of Sodium Bicarbonate to a 30,000L pool, it is recommended that the automated pH control be switched off for 24 hours. Similarly, if 4kg of Sodium Bicarbonate is added to a 30,000L pool, it is recommended that the automated pH control be switched off for 48 hours.

11. MAINTENANCE

This section should be read in conjunction with the maintenance section of your HSMC manual.
Refer to https://bit.ly/hendenchlioi

11.1 PROBE DAMAGE

Should one of the probes become damaged, the system need not be completely shut down. During the time it takes to replace the damaged probe(s), simply use the probe blanks in place. This will allow the continued circulation and filtration of your pool water. To fit the probe blanks, follow the relevant part of section 4.

IMPORTANT:
Be sure to turn off the probe in the HWQH menu, following the relevant part from section 6.

When re-fitting the replacement probe, following the relevant part from section 6.

11.2 WINTERISING THE PROBES

When winterising the pool, if the pool equipment is to be completely switched off, Henden recommends the probes be unplumbed from the pipework and stored in a ''winterising solution''. Using the original probe bottles, the salt/conductivity probe should be stored in distilled water. The ORP and pH probes should be winterised in a 3M~3.5M KCl solution.

This solution can be made by dissolving 22g of Potassium Chloride into 100mL of distilled water.

12. TROUBLESHOOTING

12.1 WARNINGS AND ALARMS

Warning or Alarm	Message on HWQH	Cause for Alarm	Clearing the Alarm
Low Salt Warning	SALT LOW	Salt reading of 3000ppm or below.	Once the HWQH registers a salt concentration within range the warning will clear.
Low Salt Alarm	SALT LOW	Salt reading of 2500ppm or below.	Once the HWQH registers a salt concentration within range the HWQH will return to normal operation once the System on/off button is pressed.
Check Pool Chem Alarm	CHECK POOL CHEM	Dirty cell or inaccurate pool chemistry.	Cell will have turned off. Check cell is clean and clean if required. Have a full analysis of water done and make sure that all parameters are within the recommended range in the table (Figure 10.1 next page). Press the SELECT button to clear the alarm.
Wi-Fi Disconnected Warning	Flashing icons 	Henden HWQH is disconnected from Wi-Fi.	The HWQH will attempt to re-connect itself to Wi-Fi. If this does not happen automatically press and hold the SELECT button for 5 seconds and until both icons will toggle to re-establish internet connection. Connection is established when both icons are stable.
pH Low Warning	PH LOW	If a pH reading is great than or equal to 0.2pH units less than set point is recorded.	Will clear automatically once pH is within 0.2pH units away from set point.
pH Low Alarm	PH LOW	If a pH reading of 6.8 or below is recorded.	Will clear automatically once pH is raised above 6.8.
pH High Warning	PH HIGH	If a pH reading greater than or equal to 0.2pH points more than set point is recorded.	Will clear automatically once pH is within 0.2pH units away from set point.
pH High Alarm	PH HIGH	If a pH reading of 8 or above is recorded.	Will clear automatically once pH is below 8.
ORP Low Warning	ORP LOW	If an ORP reading greater than or equal to 100mV points less than set point is recorded.	Will clear automatically once ORP is within 15mV of set point.
ORP High Warning	ORP HIGH	If ORP reading is greater than or equal to 100mV more than set point.	Will clear automatically once ORP is within 15mV of set point.
ORP High Alarm	ORP HIGH	If the ORP reading of 1,000mV or higher is recorded.	Will clear automatically if once ORP reading is lower than 1,000mV.
ORP Low Alarm	ORP LOW	If an ORP reading is 335mV or below.	Will clear automatically once ORP is above 335mV.
Low Flow Alarm	FLOW LOW	A flow rate below 60L/min.	Fault is cleared instantly and automatically once correct flow is detected.
Setup Incomplete	SETUP INCOMPLETE	The first time set-up process was not completed.	Select FACTORY RESET and complete the process.

Check ORP Probe	CHECK ORP PROBE	ORP probe is measuring unexpected results.	Check that the ORP probe is properly installed, perform a recalibration. You may need to replace the probe.
Check ORP Probe	CHECK ORP PROBE	pH probe is measuring unexpected results.	Check that the pH probe is properly installed, perform a recalibration. You may need to replace the probe.
VSD Fault	VSD FAULT	The VSD pump has an error.	Refer to your VSD Installation and operating instructions to diagnose the fault.

ADDITIONAL INFORMATION:

LED = solid is a warning, = flashing is an alarm
Clearing probe alarms are done automatically when readings are within limits.
Probe alarms are triggered only if there is flow, and will remain on until cleared

12.2 RECOVERING DRY PROBES

Should one of the probes dry out the following method should be followed:

1. Remove the probe from the manifold and place in a probe cleaning solution for 15-20 minutes.
2. Remove probe from cleaning solution and rinse thoroughly in deionized/distilled water.
3. Place probe in a storage solution for at least 1 hour (can be left overnight).
4. Remove probe from storage solution and rinse thoroughly with deionized/distilled water.
5. Recalibrate probe and return to manifold, if calibration is successful, if unsuccessful the probe must be replaced.

12.3 ADDITIONAL TIPS

Note:

- Always double check any abnormal probe readings with a pool chemistry test.
- Always ensure your HWQH is connected to Wi-Fi when troubleshooting connectivity concerns. This can be checked via the HWQH dashboard (refer Figure 12.1).

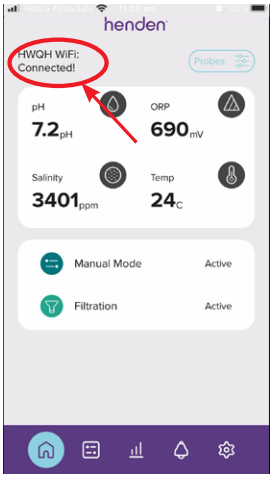


Figure 12.1

Pool pH is high but the probe is showing normal

- Check that the setpoint of your pH level isn't set too high.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.

Pool chlorine is high but the probe is showing normal or low ORP

- Check that the setpoint of your ORP level isn't set too high. Your ORP may need to be adjusted down.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.
- Pool chemistry levels such as pH, alkalinity and stabiliser/cyanuric acid levels will affect your ORP reading. If a pool test shows that their levels are outside of the recommended range you will need to ignore/disconnect your ORP probe using the app or at the HWQH unit and correct the levels of the other chemistry. If your stabiliser/cyanuric acid levels remain out of range, adjust your ORP setpoint down to compensate when the probe is reconnected and recalibrated.

Pool chlorine is low but the probe is showing normal ORP

- Check that the setpoint of your ORP level isn't set too low. Your ORP may need to be adjusted up.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.

Pool salt is low but the probe is reading normal/high TDS

- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.
- The low salt models of the HWQH and HSMC are designed to operate down to 1500ppm TDS, check if you have a low salt model.
- Add more salt to increase it to within the recommended levels.

Pool salt is normal but the probe is reading a lower TDS

- Check that the Salt probe is installed correctly and in the correct position in the manifold.
- Check that the probe lead is correctly connected into the back of the HWQH and is in the correct position.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.

Pool salt is normal but the HWQH has a low salt alarm

- Your electrolytic cell may require cleaning. Please refer to your HSMC instructions on how to clean your cell.
- Check that the Salt probe is installed correctly and in the correct position in the manifold.
- Check that the probe lead is correctly connected into the back of the HWQH and is in the correct position.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.

If calcium levels in the pool are high, you will notice more build up on your electrolytic cell and more instances of a low salt alarm. For these applications, it's possible to change your polarity reversal time to help clear the build up.

- Enter the service mode from the main menu
- Passcode is 1234
- Change the reversal time for your cell

Regular cleaning will still be required to maintain the cell and prolong life.

Probe is reading low or negative levels

- Check that the probes are installed correctly and in the correct position in the manifold.
- Check that the probe lead is correctly connected into the back of the HWQH and is in the correct position.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.

Pool pH is not adjusting itself

- Check that your pH probe is correctly reading the pH levels, you may need to recalibrate the probe.
- Check that your acid drum is not empty and your feeder tubes haven't been blocked or broken. Please follow the instructions for the acid pump if you require changing the tubes.
- Check that your pH pump is connected in the back of the HWQH unit.
- Your acid pump will not run if the pH exceeds 9.0, manually add acid to your pool to bring the level down and ensure all other chemistry levels are within recommended levels.
- If your acid pump will still not run you may need to replace it, this is available as a spare part from Henden.
- Your unit may need repair, please call your nearest Henden pool dealer

The HWQH is not maintaining the chemical levels

- Make sure your schedule is set for enough time to allow for the HWQH to reach the setpoints.

Note: Always have your schedule set to allow for the pool volume to turnover 2 times per day. This will ensure that the HWQH has sufficient time to maintain your pH and chlorine levels.

pH pump is running continuously

- Make sure your acid probe is correctly connected to your HWQH.
- If it is not connected, reconnect or follow the instructions in the manual to ignore the probe.
- The probe may need recalibration, please follow the instructions in your manual to recalibrate the probe. You should recalibrate each of your probes every 3 months to maintain accuracy. If the problem isn't resolved you may need to replace the probe.

No power to the HWQH

- Check that the IEC plug in the back of the HWQH is inserted properly and secured through the cable retention feature.
- Check that the power to your power outlet is switched on
- Your unit may need repair, please call your nearest Henden pool dealer or dial 1300 HENDEN (1300 436 336)

HSMC is not connected to the HWQH

- If your HSMC chlorinator is not displaying HWQH on the screen check that the RJ45 cable is connected from the back of your HSMC to your HWQH.
- Check the (HSMC symbol) on your HWQH is solid.
- HWQH will need to be powered before the HSMC on first time start up.
- It may be necessary to force a software update – make sure your HWQH is connected to Wi-Fi then hold the down button on your HWQH down until the screen goes blank, it will update your HWQH to the latest version. Once complete, hold the back button down until the screen goes blank, this will update your HSMC chlorinator.
- Your unit may need repair, please call your nearest Henden pool dealer

The HWQH is showing low flow alarm

- If your pump is running check that the set speed is high enough for your pool installation, you may need to increase the speed.
- Ensure any valves including the filter multiport valve is set to the correct position.
- Check that your flow sensor isn't jammed off and is free from any debris and is in the correct flow direction.
- Check that your pump is plugged into your HSMC chlorinator (or power outlet).
- Check that your HSMC is being powered (au) – the screen should read HENDEN.
- You may need to Backwash your sand filter to reduce the flow restriction.

The HWQH is showing low salt alarm

- Check that your salt levels are in range.

The HWQH screen is black

- If your unit is in direct sunlight this can occur.
- Screen should return to normal when cool.
- Install shade or move unit out of direct sunlight.

The HWQH screen is blank

- Ensure there is power to the unit.
- Try resetting the HWQH by disconnecting and reconnecting the power to the unit.
- Your unit may need repair, please call your nearest Henden pool dealer on 1300 HENDEN (1300 436 336)

Clicking sound coming from HSMC Chlorinator

- This usually indicates that the flow is a bit too low for your installation and the flow switch is not staying on consistently. Increase the speed on your pump to correct the problem.
- You may need to Backwash your sand filter to reduce the flow restriction.

Cannot connect to Wi-Fi

- Check that your home Wi-Fi is working and you have a full strength Wi-Fi signal at your pool equipment installation (refer Section 7).
- You may need to install a Wi-Fi extender to boost the signal to that area.
- Check that your antenna is properly installed on your HWQH unit.
- (make sure your Wi-Fi password isn't over 20 characters) if issue isn't fixed

13. HENDEN™ REPAIR OR REPLACEMENT GUARANTEE

Henden Guarantee Period
4 years warranty on controller
6 months on probes & accessories

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Should you experience any difficulties with your Henden product, we suggest in the first instance that you contact the installer of the product or your local Reece Irrigation & Pools branch.

Alternatively you can phone Henden. On receipt of your claim, Henden will seek to resolve your difficulties if the product is faulty or defective, advise you on how to have your Henden product repaired, obtain a replacement, or a refund.

Henden does not cover normal wear or tear, or damage resulting from misuse or negligent handling, improper use for which the product was not designed or advertised, failure to properly follow the provided installation and operating instructions, failure to carry out maintenance, corrosive or abrasive water or other liquid, lightning or high voltage spikes, or unauthorised persons attempting repairs. Where applicable, your Henden product must only be connected to the voltage shown on the nameplate.

Henden does not cover freight or any other costs incurred in making a claim. Please retain your receipt as proof of purchase; you MUST provide evidence of the date of original purchase when making a claim.

Henden shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Henden products.

Should your Henden product require repair or service after the guarantee period contact your nearest Reece Irrigation & Pools branch or phone the number below.

For a complete list of Reece Irrigation & Pools branches visit our website reece.com.au/storefinder or contact:

TECHNICAL AND AFTER SALES SUPPORT:
1300 HENDEN (1300 436 336)

MAILING/MANUFACTURER ADDRESS:
Reece Group
118 Burwood Highway
Burwood, Victoria 3125
ABN 49 004 313 133

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