

# ProLogic<sup>®</sup>/AquaLogic Consumer Troubleshooting Guide



CTSG-PL447a



#### **High Voltage Electrocution Hazard**

Hazardous voltage can shock, burn, cause serious injury and or death. To reduce the risk of electrocution and or electric shock hazards:

- Only qualified technicians should remove the dead front
  - Qualified technicians should: replace damaged wiring immediately
  - Qualified technicians should: Insure panel is properly grounded and bonded

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## **ProLogic: How It Works**

- All ProLogic systems are salt chlorination ready and can control 4-16 high voltage relays, 3-4 valve actuators and 1-2 heaters.
- These systems can manage: Hayward Variable Speed Pumps, ColorLogic Lighting, Sense & Dispense, AquaConnect Homenet, as well as a wide variety of remotes.
- The panel features an 8 slot, 100amp subpanel.
- Equipment can be programmed to run off daily schedules and/or based on manual commands.
   Equipment such as heaters can be programed to operate only on demand. Safety features suchas interlocks and freeze protection can help protect pool pad equipment.







## **ProLogic**<sup>®</sup>

## How To:



## **How To: Reset Average Salt**

Follow these steps <u>ONLY</u> if Salt Chlorination is Enabled. The Average Salt level needs to be reset after initial start up, after a board replacement, following major pool chemistry adjustments, and when a cell is replaced.



**NOTE:** The main circulation pump MUST be <u>ON</u> and the chlorinator <u>AND</u> flow switch MUST have flow to successfully complete this process.



## **How To: Adjust Chlorinator Output**

Follow these steps to adjust the Chlorinator Output Percentage <u>ONLY</u> if Salt Chlorination is Enabled. NOTE: IF Sense & Dispense 'ORP Auto Sensing' is being used, output must be adjusted under the 'Chemistry Config. Wizard'; refer to next page.



Use the (+) or (-) button to adjust desired chlorinator output. If multiple bodies of water are programmed, press the (>) button again. IF only one body of water, press the 'Menu' button to exit. For the second body of water, use the (+) or (-) key to adjust the desired chlorinator output. Once complete, press the 'Menu' button to exit.

Note: If the chlorine levels do not increase within 24 hours, test the water chemistry to determine the current salt, stabilizer, phosphate, and nitrate levels.

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## How To: Adjust ORP Set Point (S&D)

Follow these steps to adjust the Chlorinator's ORP Set Point, <u>ONLY</u> if Salt Chlorination is Enabled AND the system is configured for 'ORP Auto Sensing'.





Use the plus (+) key to increase, or the minus (-) key to decrease the ORP set point.

Once the value is set, press the (>) key until '-End of Wizard-' appears on the display, then press 'Menu' to exit config.

Note: ONLY increase or decrease the ORP Set Point in increments of 25 mV. Once free chlorine reaches 3.0, verify and/or balance the water chemistry. Once balanced, note the reported ORP reading, this represents the value for maintaining adequate free chlorine levels.



## **How To: Adjust Heater Set Points**

Follow these steps to adjust the Heater set points through your ProLogic system.





Use the plus (+) key to increase, or the minus (-) key to decrease the temperature set point.



Repeat Steps 2-3 for all applicable bodies of water, then press the 'MENU' button four times to return to the 'Default Menu'.

NOTE: If the heater is not wired through the ProLogic then it will need to be adjusted directly on the Heater instead of through the ProLogic system.

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## **How To: Clear Inspect Cell Message**

Follow these steps <u>ONLY</u> if Salt Chlorination is Enabled AND the system shows a Check System LED, with an 'Inspect Cell' message. Every 500 operational hours this message will appear. Before resetting, inspect and/or clean the cell if necessary.



Press the 'Menu' until, 'Default Menu' appears on the display. This menu is where the 'Inspect Cell' message is stored. Press the (>) key, repeatedly, until 'Inspect Cell, Hold + to reset' appears on the display.



To clear, press & hold the (+) key while message is displayed.



Once complete, press the 'Menu' button to exit.



## **How To: Set a Pump Schedule**

Follow these steps to program your pump to turn ON & OFF automatically through the Timer's Menu.



Press the 'Menu' repeatedly, until 'Timers Menu' appears on the display.



Press the (>) until 'Filter T1,T2,T3,T4' or 'Spa-all' appears on the display (depending on which schedule you wish to program).



Use the plus (+) key or the minus (-) to adjust the start time (left side), then press the (>) once to get to the stop time.

Use the plus (+) key or the minus (-) to adjust the stop time. Repeat Steps 2-3 for all desired schedules.

Filter T1-all

08:00A to 12:00

NOTE: The 'T' in 'Filter T1' stands for time window, there are up to four of these for the pool in a PL-PS system. IF a variable speed pump is being used go to the next page to learn how to set the pump operation percentage for each timer.

Step 4

## **How To: Change VSP Speed Settings**

Follow these steps <u>ONLY</u> if using a Variable Speed Pump in conjunction with the ProLogic Controller <u>AND</u> you wish to change the pump's operational percentages.





Press the (>) until Filter Speed1 appears, use the (+) & (-) buttons to adjust up/down, then press the (>) to navigate forward.



Repeat Step 3 until all desired percentages are set, then press the 'Menu' button to exit the 'Settings Menu'.

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## How To: Clean the TurboCell

Cell cleaning frequency is dependent on several factors; pH & calcium levels have the greatest effect on how often cells requires cleaning. In pH environments between (7.2 - 7.8) cells typically require cleaning 3-4 times a year (with moderate calcium levels).



production has diminished.



Wear Protective Equipment

If the cell requires cleaning, please wear protective equipment. It is highly recommended to use a Hayward Cell Cleaning Stand as shown on the right (GLX-CELLSTAND)

NOTE: ALWAYS WEAR PROPER EYE PROTECTION AND PROTECTIVE GLOVES. MIX SOLUTION AND CLEAN CELL ONLY IN A WELL VENTILATED AREA. MURIATIC AND OTHER ACIDS CAN CAUSE SEVERE INJURY, BURNS AND RESPIRATORY PROBLEMS IF NOT HANDLED PROPERLY. REFER TO THE MANUFACTURER'S DIRECTIONS FOR SAFE HANDLING.



## How To: Clean the TurboCell (cont.)

The TurboCell draws amperage when power is applied, during chlorination. The amperage draw will be impaired when calcium and other debris exist within the cell's electrolytic grid; this in turn effects the salt reading and chlorination efficiency.



NOTE: ALWAYS ADD ACID TO WATER! <u>NEVER ADD WATER TO ACID.</u> The cell cleaning solution may be reused a few times. ALWAYS: STORE MIXED SOLUTIONS IN A SAFE AREA, OUT OF HARMS WAY. When the solution is depleted, follow the manufacturer's instructions for proper disposal.



## How To: Clean the TurboCell (cont.)

The check system > 'Inspect Cell' message indicates that the system is recommending the TurboCell should be inspected and cleaned (if necessary). This message will appear every 500 operational hours as a reminder to inspect and/or clean the TurboCell.



#### Reset: 'Inspect Cell' message



IF the 'Inspect Cell' alarm appears, then press the 'Menu' button until 'Default Menu' screen appears, navigate using the (>) until 'Inspect Cell press + to reset' appears, then promptly press the (+) key.

NOTE: If the cell was reading a low salt level prior to cleaning, the average salt may need to be reset. To reset the average salt level, follow the steps outlined on pg.6 or wait 24 hours for the system to acclimate to the recent changes. For detailed instructions on resetting the 'Inspect Cell' message, refer to pg. 10.





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## Troubleshooting



#### **1. No Cell Power/Cell Power Error/Low Volts**

These messages all imply that the chlorinator cycle has been interrupted due to no/low voltage detected when the cell power was turned on. Please add liquid chlorine to the pool until the issue has been resolved.



Please contact a technician

NOTE: These reported errors <u>DO NOT</u> indicate that there is a problem with the turbo cell. However, it is recommended to clean the cell, if it is calcified, before scheduling service repairs. Cell cleaning instructions may be found on pg. 13-15)

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## 2. Chlorinator OFF, High Salt/Amps

The message 'Chlorinator Off – High Salt/Amps' indicates that the ProLogic has detected an amperage draw, from the turbo cell, that exceeds the allowable threshold for the programmed cell model.



NOTE: If the main circulation pump was recently turned on, the chlorinator may show up to a 60 second Filter delay. Once the countdown expires, verify the voltage, amperage, temperature and salt level are expressed under the 'Diagnostic Menu'.

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## 2. Chlorinator OFF, High Salt/Amps (cont.)

The message 'Chlorinator Off – High Salt/Amps' indicates that the ProLogic has detected an amperage draw, from the turbo cell, that exceeds the allowable threshold for the programmed cell model.

 Step 2C

 +40.620
 +10.04R

 859F
 1900 PPM

 After a short delay, new readings should appear on the display. These readings report on the active chlorinator circuit. If the Prologic is reporting a voltage of 35V or

Verify chlorinator readings

After a short delay, new readings should appear on the display. These readings report on the active chlorinator circuit. IF the ProLogic is reporting a voltage of <u>35V</u> or higher, contact a contact a pool professional: https://www.hayward-pool.com/shop/en/pools/Dealer-Locator

IF voltage is under 35V, Contact tech service: (908) 355-7995 for more assistance.

NOTE: IF the error persists, Please add liquid chlorine to the pool until the issue has been resolved.

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## 2. Chlorinator OFF, High Salt/Amps (cont.)

The salt concentration will need to reduced. To calculate how much water to drain, follow the formula provided below (Proportional Method):

Step 2D Part I

> (Ave. Pool Depth" X 3200) Actual Salt level in Pool

<u>Part 1:</u> Take the average depth of the pool in inches and multiply that by 3200. Then divide that number by the actual salt level in the pool (based on the independent test).

<u>Part 2:</u> Subtract the "Ave. Pool Depth" by the answer from part 1. This will give you the total number of inches to drain and replenish with fresh water to achieve a salt level of 3200.

Part II

Ave. Pool Depth - Answer from Part 1 = Amount of Water to Drain

Example: a pool has an ave. depth of 54" and the salt level is 4500ppm



Note: It is recommended to reduce the water level no more than six inches at a time before replenishing with fresh water. Failure to due so may result in damage to the pool structure or surface.



#### 3. Chlorinator OFF, Cell Senor Open

The 'Chlorinator Off, Cell Sensor Open' indicates that the system can not see a connection to the cell.

Inspect the Turbo Cell cable



Verify cell cable is not cut or damaged. IF cable is free of damage, go to 3B. IF the wire is damaged, please contact an authorized dealer to purchase a replacement: <u>https://www.hayward-</u> <u>pool.com/shop/en/pools/Dealer-Locator</u>

#### Unplug the Turbo Cell



Unplug the Turbo Cell then plug it back in. Reset the chlorinator (pg. 6). Press the 'Menu' button until the 'Default Menu' appears then scroll to the right. IF the error message has not cleared, contact technical support for more assistance: (908) 355-7995.

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#### **4. Freeze Protection Active: In Error**

Freeze Protection is a safety feature built into ProLogic systems to protect all freeze enabled equipment from dangerously low temperatures.

#### Verify ambient temperature



Freeze Protection will run between a range of 33ºF -42ºF. IF the air temperature is within this range, this operation is justified and interruption is not recommended. IF ambient temperatures are well above this range, go to step 4B.

# Step 4B Air Temp 33°F

Locate & inspect air sensor

Navigate through the 'Default Menu', press the (>) until the air temperature readout appears. IF the sensor is not reading accurately, try moving it to see if the reading improves. IF the reading still does not improve, go to step 4C.

## 4. Freeze Protection Active: In Error (cont.)

When freeze protection is active, even though the water temperature is reading normal, the ProLogic will continue to make chlorine. Suspending freeze protection by activating service mode will suspend chlorination.

Contact service (\*optional: activate service mode)



The air temperature sensor may need to be replaced. To locate a pool professional visit: <u>https://www.hayward-pool.com/shop/en/pools/Dealer-Locator</u>. To temporarily suspend freeze protection, active service mode by pressing the red service button one time.

\*Warning: IF activating service mode all chlorination and automatic filter times will be interrupted. While in service mode the pool/spa pump will need to be manually turn on and off AND the pool should be chlorinated using liquid chlorine.

#### **5. Heater Not Firing**

The ProLogic features a normally open circuit for each heater. When heat is called for, based on the temp set point and water sensor, the low voltage contact will close; once closed, the low voltage supplied by the heater should be returned to it.



On the display, verify that the Filter relay is activated (denoted by an illuminated Filter LED). Also, verify the main circulation pump is running. IF the pump is off and cannot be turned on through the controller, go to section 6. IF pump is running, proceed to step 5B.

#### Verify the heater LED is ON



On the local display, with the main circulation pump running, verify the Heater LED is illuminated. IF the heater LED is not illuminated, go to step 5C. IF the heater LED is illuminated, proceed to step 5D to test the heater relay.

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## **5. Heater Not Firing (cont.)**

Service mode cancels all scheduled automation and also suspends safety features such as 'Freeze Protection'. If the heater only fires while in service mode, make sure freeze protection is not active, also verify that solar priority is not overriding regular heating.



Service mode test

Press the service mode button AND turn on the main circulation pump. Press the heater button to force it on. If the heater LED illuminates AND the heater fires, then take the system out of service and go to step 5E. IF the heater LED illuminates but the heater does not fire, go to step 5D.



#### Inspect heater display

Verify the heater display is ON AND the heater has been set for BO, which stands for bypass operation (if applicable). Also, inspect heater for errors. IF the heater displays an error, please contact tech support for more assistance: (908) 355.7995. IF no errors appear, proceed to step 5E.

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### **5. Heater Not Firing (cont.)**

The ProLogic supports features like Solar Priority. Verify that no additional heating is occurring, as this can take precedence over automatic heating.

Step 5E

First verify the status of the Check System LED. IF ON, go to the 'Default Menu' to identify if error relates to heating (i.e. water temperature sensor failure). IF Check System LED is OFF, access the heater set points under the 'Settings Menu'. Raise all heater set points to 104°F. IF heater still does not fire contact a pool professional by visiting: <u>https://www.haywardpool.com/shop/en/pools/Dealer-Locator</u> Prior to calling, under the 'Settings Menu' return set points back to their original state.

### 6. Auxiliary Equipment Inactive

The ProLogic should only attempt to turn on wired equipment if the LED next to the specific auxiliary or value is illuminated.



The ProLogic will only attempt to engage a relay if the specific Auxiliary LED is illuminated on the display. Press the Auxiliary button that corresponds with the relay in question. IF the relay LED fails to turn ON, proceed to step 6B. IF ON, jump ahead to step 6C for more information.



Activate service mode & press the relay button. IF the LED illuminates, a control related feature is overriding the relay (example: interlock...etc.), go to step 6C. IF LED does not turn ON contact a pool professional by visiting: <u>https://www.hayward-</u> <u>pool.com/shop/en/pools/Dealer-Locator</u>

#### Service mode

### 6. Auxiliary Equipment Inactive (cont.)

Service mode suspends all automation, including schedules, equipment protections and set point limitations.

Equipment running/on in service?



While in service mode: IF the equipment wired to the relay in question does not run/turn on, then there is likely a problem with that piece of equipment. IF running/on, then exit service & attempt to manually turn Auxiliary ON. After pressing the button the system should explain any interlocks or preventions. Contact service for additional assistance (908)355.7995.

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#### 7. Wireless Remotes Not Pairing to ProLogic

All Wireless remotes that pair with the ProLogic run of RF. There are up to 5 RF channels that can be used to counteract possible interference.



Verify that a RF antenna is attached or connected to the ProLogic system. NOTE: the antenna may extended away from the main panel. IF an antenna is visible please go to step 7B. IF not, please contact tech support for more assistance: (908) 355-7995.



When the system is in service mode, all remotes are temporarily disabled. Verify the system's red 'Service' LED is NOT illuminated. IF illuminated, press the red service button until the LED goes out. IF not on, proceed to step 7C.

#### Service mode

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#### 7. Wireless Remotes Not Pairing to ProLogic

The ProLogic RF remotes should work between 200-400ft line of sight (depending on the remote). The RF antenna may also be mounted up to 500ft away from the ProLogic control panel.



Press the 'Menu' button until 'Settings Menu' appears. Press the (>) until 'Teach Wireless: + to start' appears. IF this does not appear go to step 7F. IF this option appears, press the (+) button and immediately go to step 7D.

# Step 7D

On the remote, press and hold the 'Menu' button if applicable. IF there is no 'Menu' button on the remote press and hold any button. IF display show 'Teach Wireless: Successful, then the two are now paired. IF display shows 'Failed', go to 7E.

#### Attempt pairing

#### 7. Wireless Remotes Not Pairing to ProLogic

All Wireless remotes that pair with the ProLogic run of RF. There are up to 5 RF channels that can be used to counteract possible interference.



Press the 'Menu' button until 'Settings Menu' appears. Press the (>) until 'Wireless Channel:' appears. Press the (+) or (-) to change to a different channel. Press the right arrow and (+) again to save. Repeat steps 7C and 7D. IF pairing is still unsuccessful, go to 7F.

#### Step 7F Compatible ProLogic Base Antenna Remotes Firmware (prefix) (prefix) Rev. AQL2 AQL2 2.60 +AQL/GLX AQL/GLX 1.10 +

Verify the remote and base antenna part number prefixes match the included table. Also, verify the main software revision (found under the 'Diagnostic Menu') is also complies with the table requirements. IF correct please contact tech support: (908) 355-7995.

#### Verify compatibility

#### 8. Pump Error Codes

Below is a list of additional "Check System" error codes which relate to the ProLogic's operation with Hayward's TriStar and EcoStar Variable Speed Pumps. All errors may be prefaced with Pool Filter (or Spa Filter (Dual Equipment) or Lights or Aux 1...14):

- VSP Comm Error
- VSP Drive Comm Error
- VSP Err: xx
- Mains voltage low
- Mains voltage high
- Rmt Stop is pressed

- Remote Stop: + to rst
- Prime Fail: + to rst
- Fail start: + to rst
- Pump stall: + to rst
- SVRS trip: + to rst
- Drv failure: See pump

Please refer to the pump service manual for detailed troubleshooting.



#### **9. Sense & Dispense Error Codes**

Below is a list of additional "Check System" error codes which relate to the Pro Logic's operation with Sense and Dispense<sup>™</sup> Chemistry Automation:

> • pH Calibration Error •pH Probe Error •pH Low-Check feeder •pH High-Check feeder •ORP Probe Error •pH Timeout-Chk feedr, •CSM Comm Error Press + to reset

 ORP Low-Check Chlor •ORP High-Check Chlor •ORP High-Chlor off •ORP Timeout-Chlr off, Press + to reset

Please refer to the Sense & Dispense<sup>™</sup> service manual for detailed troubleshooting.



#### **10. Additional Sensor Error Codes**

Below is a list of additional "Check System" error codes which relate to open or shorted sensors:

- Cell Sensor Open
  Cell Sensor Short
  Wtr Sensor Open
  Wtr Sensor Short
  Pool Sensor Open
  Pool Sensor Short
- •Spa Sensor Open
- Spa Sensor Short
- •Air Sensor Open
- •Air Sensor Short
- •No Flow Filter Pump
- •Chk Flow Switch

- •Solar Sensor Open
- Solar Sensor Short
- •Ambient Sensor Open
- •Ambient Sensor Short
- •Cell Missing

'Open sensor', 'Cell Missing', and 'Check Flow Switch' errors should be checked by confirming sensor wiring is not broken. Shorted sensor errors require may require replacement by a pool professional, to locate one, please visit: <u>https://www.hayward-pool.com/shop/en/pools/Dealer-Locator</u>

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## **Additional Information**



## **Software Revision: Cell Compatibility Chart**

Cell Compatibility Chart									
	Control Center Model								
Септуре	AquaLogic	AquaPlus	ProLogic						
T-CELL-3 For residential pools up to 15,000 gallons	Х	4.10 or later	4.10 or later						
T-CELL-5 For residential pools up to 18,000 gallons	All revisions	All revisions	All revisions						
T-CELL-9 For residential pools up to 25,000 gallons	Х	4.10 or later	4.10 or later						
T-CELL-15 For residential pools up to 40,000 gallons	All revisions	All revisions	All revisions						



## Salt Addition Chart: lbs. required for 3200ppm

Current	Pool Size - Gallons																
Salt Level	8,000	10,000	12,000	14,000	16,000	18,000	20,000	22,000	24,000	26,000	28,000	30,000	32,000	34,000	36,000	38,000	40,000
0	213	267	320	373	427	480	533	587	640	693	747	800	853	907	960	1013	1067
200	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
400	187	233	280	327	373	420	467	513	560	607	653	700	747	793	840	887	933
600	173	217	260	303	347	390	433	477	520	563	607	650	693	737	780	823	867
800	160	200	240	280	320	360	400	440	480	520	560	600	640	680	720	760	800
1000	147	183	220	257	293	330	367	403	440	477	513	550	587	623	660	697	733
1200	133	167	200	233	267	300	333	367	400	433	467	500	533	567	600	633	667
1400	120	150	180	210	240	270	300	330	360	390	420	450	480	510	540	570	600
1600	107	133	160	187	213	240	267	293	320	347	373	400	427	453	480	507	533
1800	93	117	140	163	187	210	233	257	280	303	327	350	393	397	420	443	467
2000	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400
2200	67	83	100	117	133	150	167	183	200	217	233	250	267	283	300	317	333
2400	53	67	80	93	107	120	133	147	160	173	187	200	213	227	240	253	267
2600	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
2800	27	33	40	47	53	60	67	73	80	87	93	100	107	113	120	127	133
3000	13	17	20	23	27	30	33	37	40	43	47	50	53	57	60	63	67
3200	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal	Ideal
3400	OK	ОК	OK	ОК	OK	OK	ОК	ОК	ОК	OK	ОК						
3600+	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute	Dilute

#### Note: Prior to adding salt, always test water with independent tests to determine current salt and stabilizer levels.

#### How to add salt

Brushing the salt around will speed up the dissolving process. DO NOT allow the salt to sit in a pile at the bottom of the pool. Salt water is heavier than fresh water, so the salt water will tend to accumulate at the deepest part of the pool. Run the filter system with the suction coming from the main drain for 24 hours to evenly distribute the salt throughout the pool

Note: Refer to the Plasters recommendations for cure time before adding salt.

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#### **Chlorine Output & Salt Levels**

- The cycle time (reversal of polarity) is 180 minutes (3 hrs). When you set the 'Desired Output %' through the control system it sets the level of chlorination based on the three hour cycle. 50% represents the factory default. The following represents an example of how the system reacts to percentage output:
  - <u>3 hr cycle</u>: If the output is set at 50% and the total time for operation is 9 hrs, the salt cell will operate (and produce chlorine) for 50% (1.5 hrs) of each 3 hr. cycle for a total of 4.5 hrs
- 2. Super-chlorinate is an additional option to use in order to 'catch up' in chlorine production when making adjustments to the desired output level. To activate, press the menu button until the 'Settings Menu' appears. Press the right arrow until 'Super Chlorinate Off' appears; press the (+) to change it from 'Off' to 'On'. This will cause the system to produce chlorine at 100% output for 24 hours (unless the Super Chlorination duration was changed previously in the configuration. Once the Super Chlorinate function has concluded the chlorine output percentage will once again drive the chlorine production.



### **Chlorine Output & Salt Levels (cont.)**

- 3. It is possible that the displayed salt level can be significantly different from the actual salt level (when measured through an independent test). This can happen as a result of a dirty cell or from a cell that is experiencing the aging process. Low salt readings should ALWAYS be followed by a cell cleaning first and then an actual meter measurement of the salt level in the water. If the cell is clean and the level of salt measured in the water is correct, then the cell has started to age, which results in a lower calculated salt level. This is an acceptable situation, assuming the level of free chlorine in the pool is appropriate. NEVER add additional salt in this circumstance.
- 4. If the free chlorine is not appropriate and the steps in item 2 have been followed and addressed as needed, then the 'Desired Output %' needs to be increased in a 25% increment (for example from 50% to 75%) to allow for the TurboCell to operate for a longer period (% of total operating time)in order to produce a sufficient amount of chlorine as the cell begins to age. Allow 24 hours and re-test free chlorine. Increase in increments of +10% if required. Keep in mind this is assuming the chemistry parameters are correct in the pool and there is nothing that is creating a significant chlorine demand. Also, it is common to have to increase the chlorine output % during the hotter months of the season, when a-typical temperatures are recorded.

