# Table of Contents

- Important safety instructions  Pg. 1
- Check Salt/Inspect Cell LED flashing or ON  Pg. 2-3
- How to Set Cell Type  Pg. 4
- How to Reset Average Salt Level  Pg. 5
- Adjusting Chlorine Output  Pg. 6
- High Salt LED ON  Pg. 7
- No Flow LED flashing or ON  Pg. 8
- No LED’s/LCD display  Pg. 9-12
- Low/High Cell temperature  Pg. 13
- Cell cleaning instructions  Pg. 14-16
- Troubleshooting flow charts  Pg. 17-21
- Salt Chart  Pg. 22
- Software Revision Compatibility Chart  Pg. 23
- Important Information- Chlorine output and salt  Pg. 24
Aqua Rite/Aqua Rite XL Diagnostics

Warning

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 panel
• Replace damaged wiring immediately
• Insure panel is properly grounded and bonded
Check Salt & Inspect Cell LED flashing or ON

Check Salt & Inspect Cell LED’s will flash together when salt level is between 2500-2600ppm. Chlorine is still being produced. Check Salt & Inspect Cell LED’s will be ON when salt level is 2300ppm or less. Chlorine production is halted. Inspect Cell LED will flash by itself when 500 operational hour countdown timer has expired. Requires manual reset. To manually reset the Inspect Cell LED, press and hold the Diagnostics button until LED goes out (approximately 3 to 5 seconds).

![Image of Diagnostics panel]

**NOTE:** Check Salt & Inspect Cell LED’s will also be ON if the control is set for the wrong Turbo Cell type or the cell is unplugged.

**Step A** Verify salt level is 2700-3400ppm and check with independent test to ensure accuracy. 3200ppm is the ideal level.

![Image of salt level display]

If salt level is within range, go to step B. If salt level is below range, add enough salt to achieve a salt level of 3200ppm. (Refer to Salt Chart, Page 21)

**Step B** Inspect and/or Clean Cell

![Images of cells 4A and 4B]

If cell looks like 4A, go to step C. If cell looks like 4B, clean cell. (Refer to Pages 12 thru 15)
Check cell voltage and amperage in both polarities.

Voltage Range: 22.0 – 26.0 VDC

T-15 Amp Range: 3.1 – 8.0 amps
T-9 Amp Range: 2.3 – 6.7 amps
T-5 Amp Range: 1.9 – 5.7 amps
T-3 Amp Range: 1.3 – 4.5 amps

To switch polarities, cycle Main Switch from AUTO ➔ OFF ➔ AUTO.
Before operation, the Aqua Rite must be configured for the chlorinator cell that will be used. *“1-15”* is the factory default. If the incorrect cell is chosen the salt level, amperage, and voltage will not be correct and the system will turn the chlorinator off.

**Slide the Main Switch to the “Auto” position.**

To switch Cell Type, cycle Main Switch from AUTO ➔ Super Chlorinate ➔ AUTO.

Push the diagnostic button until “t-xx” appears on the display.
How to Reset Average Salt Level

The Average Salt level needs to be reset for start up and when a cell is replaced. (factory default is 2800ppm)

To reset, turn the unit to Off and then back to Auto. Wait for the relay to click (5 to 10 seconds).

Press Diagnostics button 5 times to display Instant Salt level. Wait for the number to settle.

Cycle slide Main Switch from Auto ➔ Super Chlorinate ➔ Auto
Desired Output % Dial
1 to 100% sets the level of cell operation in % of operating time.
Example: 50% (factory default) cell is operating and generating chlorine 50% of the total pump/filter operating time.

Refer to page 24 for important additional information!

Note: If the chlorine level does not increase within 24 hours after increasing output, test water with independent tests to determine current salt, stabilizer, phosphate, and nitrate levels.

Note: Output is scaled back to 20% of desired output setting at 60° F and output stops at 50° F.
The High Salt LED will be ON when the cell amperage is above the maximum limit. High Salt LED will also be ON if the control is set for the wrong Turbo Cell type. The LCD display will read “HI”.

Verify salt level is 2700-3400ppm and check with independent test to ensure accuracy.

Maximum Current (Amps) before shutdown

<table>
<thead>
<tr>
<th>T-Cell 3</th>
<th>T Cell 9</th>
<th>T-Cell 5</th>
<th>T Cell 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.15</td>
<td>9.50</td>
<td>6.40</td>
<td>10.00</td>
</tr>
</tbody>
</table>

If salt level is above the range, partially drain pool and/or spa and refill with fresh water to achieve a salt level of 3200ppm. (RULE of THUMB: Each inch of water drained will reduce the salt level 100ppm.)
No Flow LED flashing or ON

No Flow LED will flash for up to 60 seconds on start-up.

No Flow LED will be ON when there is a flow switch problem.

If LED is flashing, wait 60 seconds after starting filter pump. Check for possible turbulence inside of flow T. Installation requires 12 inches of straight pipe before flow switch. There should be no elbow after the flow switch.

If LED is ON, check for flow switch installed backward. Arrows at the top of the hex nut need to point in the direction of water flow. Flow switch requires a minimum flow rate of 11 gpm to stay closed consistently. Check for damaged or cut wire.
No LED’s/LCD display

Verify 220-240 VAC or 115-125 VAC at input terminal TB1.

Verify 20-24 VAC between yellow wires

If voltage is good, go to step D.
If no voltage, check to see that breaker and/or time clock are not off.
Check input jumpers for correct position.
220-240 VAC: jumpers on 2 & 3 (factory default)
115-125 VAC: jumpers on 1 & 2 and 3 & 4

If no voltage go to step E.
If voltage is good go to step F.
Shut off power to the control box. Disconnect the blue, white, gray and violet wires from the main board and measure the following:

Step E

Insert probes and measure resistance between the Blue & White wires and the Violet & Gray wires. The readings should be 2.0 – 2.9 Ohms.

If the readings of either of the two measurements are not 2.0 – 2.9 Ohms, the transformer is faulty and should be replaced. If measurements are OK, go to step F.

Step F

Test for continuity of 20 amp slow blow fuse

Replace fuse if blown. If fuse OK, go to step G.
No LED’s/LCD display

Verify 18-33 VDC between black & red wires on main board

If no/low voltage replace rectifiers.
If voltage OK, go to step H.

Step G

Reseat DSP Board

Remove and/or reseat DSP board. Pins may be shorted together or not making contact with connector. If pins are good, check for 3 to 5 volts (DC) on pins 1 & 3, starting from the left. If DC voltage is correct, replace DSP board.

Step H
No LED’s/LCD display

Control box shows LCD display but no LED’s are illuminated.

Visually inspect main PCB board for any damaged or burnt components. If damaged or burned, replace the main PCB.

Jumpers on terminal TB1 are configured for 240 VAC (factory default), but there is 120 VAC applied to control box.
The operating temperature range for the cell is 50° F to 140° F.

Verify actual water temperature

Cell Temperature Sensor

LCD display will read "COLD" when the water temperature is below 50° F.
LCD display will read "HOT" when the water temperature is above 140° F.
If the water temperature reads 215° F, the cell temperature sensor is shorted and the cell needs to be replaced.

Output is scaled back to 20% at 60° F and output stops at 50° F
Cell cleaning frequency is dependent on several factors; pH and calcium levels in the water are the two that have the greatest effect on how often the cell requires cleaning. Maintaining pH at the levels recommended in the Operating Instructions (7.2 - 7.8) should result in the cell being cleaned 3-4 times a year in areas with hard water. Cells may be cleaned less frequently in soft water areas.

After removing the Turbo Cell from the plumbing of your pool; inspect the cell for white deposits between the plates inside of the cell. Please remember that even if you cannot see deposits on the cell it still may need cleaning. If no deposits are found (4A), the cell may have to be held towards ample amounts of light and angled in different directions to reveal smaller white deposits deeper within the nest of the cell.

**CAUTION**

ALWAYS ADD ACID TO WATER, NEVER WATER TO ACID. ALWAYS WEAR PROPER EYE PROTECTION AND PROTECTIVE GLOVES. USE 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.
Cell Cleaning Instructions

Cleaning instructions using a container.

We strongly recommend using a Goldline Controls cell cleaning stand. (GLX-CELLSTAND)

**Step 1:** Use a water hose to dislodge small debris.
**Step 2:** Use a non-metal (plastic or wood), non-abrasive tool to dislodge minor calcium buildup and small debris.
**Step 3:** Use a solution of water and Muriatic acid. Stand the cell vertically in the solution. Mix 1 part acid to 4 parts water. The level of the solution should be slightly over the product label. Let the cell stand in the solution for 15 minutes (Fig. 6A below), then flip the cell over and let stand on the other end (Fig. 6B below) for an additional 15 minutes. Although the cord can be submerged, be sure that the connector does not come in contact with the solution.

Inspect the cell after both sides have soaked. If there are no deposits after soaking, rinse with water and reinstall. If there are still deposits after soaking, repeat the soaking procedure until clean. The water/muriatic acid mixture can be stored for later use or it can be disposed. Follow chemical manufacturer’s recommendations when storing or disposing the water/acid solution.

After you inspect the cell (and clean, if necessary) press the small "diagnostic" button next to the display for 3 seconds to stop the flashing "Inspect Cell" LED and reset the countdown timer for another 500 operational hours.
Using the Goldline T-Cell Cleaning Stand

Follow the same safety and mixing instructions as described when using a container on page 14. Mix enough solution to fill the inside of the cell (Approximately 1.5 qts). Mix 1 part acid to 4 parts water.

Fasten the cell to the T-Cell Cleaning Stand with the cord side down (Fig. 6A below). Before filling cell with muriatic acid solution, put a container underneath to avoid any spills damaging the surrounding area. Fill the cell to the top with the solution and let soak for 15 minutes (Fig. 6B below). Empty the cell and inspect. If the cell is clean, rinse with water and reinstall. If there are still deposits after soaking, repeat the soaking procedure until clean. The water/muriatic acid mixture can be stored for later use or it can be disposed of. Follow the chemical manufacturer’s recommendations when storing or disposing the water/acid solution.

After you inspect the cell (and clean, if necessary) press the small "diagnostic" button next to the display for 3 seconds to stop the flashing "Inspect Cell" LED and reset the countdown timer for another 500 operational hours. If the cell was cleaned because of ‘Low Salt”, be sure to reset the average salt reading by following the instructions on page 4.
Check Salt & Inspect Cell LED flashing or ON Troubleshooting Chart

Check Salt & Inspect Cell LED Flashing or ON

Set for correct cell type? (Page 4)

YES

Salt level is 2700-3400ppm (Page 2)

YES

Is the cell clean?

YES

Reset average salt level (Page 4)

YES

Problem solved

NO

Set for correct cell type (Page 4)

NO

Raise salt level to 3200ppm

NO

Clean the cell

NO

Go to A

A

Measure system parameters in both polarities using customers cell

Are the amps in either polarity=0

NO

Replace PCB

YES

Measure system parameters in both polarities using new cell

Is the higher amp reading of the customer cell more than .75 amps less than the higher amp reading of the new cell (Page 3)

YES

Replace cell

Inspect Cell LED Flashing or ON

Inspect/Clean cell

Press & hold Diagnostics button for 3 sec. to reset (Page 15)

YES
High Salt LED ON Troubleshooting Chart

High Salt LED ON

Set for correct cell type? (Page 4)

Salt level is 2700-3400ppm (Page 2)

Is the cell clean?

Reset average salt level (Page 4)

Problem solved

NO

Set for correct cell type (Page 4)

Lower salt level to 3200ppm (Page 5)

Clean the cell

Replace cell

Replace PCB

YES

YES

YES

NO

NO

NO

YES
No LED’s/LCD Display Troubleshooting Chart

No LED’s or LCD Display

YES
Jumpers are in correct position(s)

NO
Place in correct position(s) (Page 7)

C

YES
Check input voltage using DVOM (Page 7)

NO
Wire timer and/or breaker

LED/LCD turns on

YES
Check AC voltage between yellow wires (Page 7)

NO
Correct voltage is present

LED/LCD turns on

YES
Problem solved

NO
Ohm out transformer (Page 8)

Ohm readings are correct (Page 8)

NO
Replace transformer

LED/LCD turns on

YES
Go to C

C

LED/LCD turns on

YES
Check 20 amp fuse for continuity (Page 8)

NO
LED/LCD turns on

YES
Replace fuse

NO
Replace rectifiers (Page 9)

YES
LED/LCD turns on

NO
LED/LCD turns on

YES
LED/LCD turns on

YES
Reseat DSP board (Page 9)

LED/LCD turns on

NO
Replace PCB (Page 10)

Problem solved

No LED’s or LCD Display
## Salt Chart

### Pounds of Salt required for 3200 ppm

<table>
<thead>
<tr>
<th>Current Salt Level (ppt)</th>
<th>8,000</th>
<th>10,000</th>
<th>12,000</th>
<th>14,000</th>
<th>16,000</th>
<th>18,000</th>
<th>20,000</th>
<th>22,000</th>
<th>24,000</th>
<th>26,000</th>
<th>28,000</th>
<th>30,000</th>
<th>32,000</th>
<th>34,000</th>
<th>36,000</th>
<th>38,000</th>
<th>40,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>213</td>
<td>257</td>
<td>320</td>
<td>373</td>
<td>427</td>
<td>480</td>
<td>533</td>
<td>587</td>
<td>640</td>
<td>693</td>
<td>747</td>
<td>800</td>
<td>853</td>
<td>907</td>
<td>960</td>
<td>1013</td>
<td>1067</td>
</tr>
<tr>
<td>200</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>350</td>
<td>400</td>
<td>450</td>
<td>500</td>
<td>550</td>
<td>600</td>
<td>650</td>
<td>700</td>
<td>750</td>
<td>800</td>
<td>850</td>
<td>900</td>
<td>950</td>
<td>1000</td>
</tr>
<tr>
<td>400</td>
<td>187</td>
<td>233</td>
<td>289</td>
<td>327</td>
<td>373</td>
<td>420</td>
<td>467</td>
<td>513</td>
<td>560</td>
<td>607</td>
<td>653</td>
<td>700</td>
<td>747</td>
<td>793</td>
<td>840</td>
<td>887</td>
<td>933</td>
</tr>
<tr>
<td>600</td>
<td>172</td>
<td>217</td>
<td>260</td>
<td>303</td>
<td>347</td>
<td>390</td>
<td>433</td>
<td>477</td>
<td>520</td>
<td>563</td>
<td>607</td>
<td>653</td>
<td>700</td>
<td>747</td>
<td>793</td>
<td>840</td>
<td>887</td>
</tr>
<tr>
<td>800</td>
<td>150</td>
<td>200</td>
<td>240</td>
<td>280</td>
<td>320</td>
<td>360</td>
<td>400</td>
<td>440</td>
<td>480</td>
<td>520</td>
<td>560</td>
<td>600</td>
<td>640</td>
<td>680</td>
<td>720</td>
<td>760</td>
<td>800</td>
</tr>
<tr>
<td>1000</td>
<td>134</td>
<td>183</td>
<td>220</td>
<td>260</td>
<td>303</td>
<td>347</td>
<td>390</td>
<td>433</td>
<td>477</td>
<td>520</td>
<td>563</td>
<td>607</td>
<td>653</td>
<td>700</td>
<td>747</td>
<td>793</td>
<td>840</td>
</tr>
<tr>
<td>1200</td>
<td>120</td>
<td>167</td>
<td>200</td>
<td>233</td>
<td>267</td>
<td>300</td>
<td>333</td>
<td>367</td>
<td>400</td>
<td>433</td>
<td>467</td>
<td>500</td>
<td>533</td>
<td>567</td>
<td>600</td>
<td>633</td>
<td>667</td>
</tr>
<tr>
<td>1400</td>
<td>120</td>
<td>150</td>
<td>180</td>
<td>210</td>
<td>240</td>
<td>270</td>
<td>300</td>
<td>330</td>
<td>360</td>
<td>390</td>
<td>420</td>
<td>450</td>
<td>480</td>
<td>500</td>
<td>500</td>
<td>520</td>
<td>540</td>
</tr>
<tr>
<td>1600</td>
<td>107</td>
<td>133</td>
<td>160</td>
<td>187</td>
<td>213</td>
<td>240</td>
<td>267</td>
<td>293</td>
<td>320</td>
<td>347</td>
<td>373</td>
<td>400</td>
<td>427</td>
<td>453</td>
<td>480</td>
<td>507</td>
<td>533</td>
</tr>
<tr>
<td>1800</td>
<td>93</td>
<td>117</td>
<td>140</td>
<td>163</td>
<td>187</td>
<td>210</td>
<td>233</td>
<td>257</td>
<td>280</td>
<td>303</td>
<td>327</td>
<td>350</td>
<td>373</td>
<td>397</td>
<td>420</td>
<td>443</td>
<td>467</td>
</tr>
<tr>
<td>2000</td>
<td>80</td>
<td>100</td>
<td>120</td>
<td>140</td>
<td>160</td>
<td>180</td>
<td>200</td>
<td>220</td>
<td>240</td>
<td>260</td>
<td>280</td>
<td>300</td>
<td>320</td>
<td>340</td>
<td>360</td>
<td>380</td>
<td>400</td>
</tr>
<tr>
<td>2200</td>
<td>67</td>
<td>83</td>
<td>100</td>
<td>117</td>
<td>133</td>
<td>150</td>
<td>167</td>
<td>183</td>
<td>200</td>
<td>217</td>
<td>233</td>
<td>250</td>
<td>267</td>
<td>283</td>
<td>300</td>
<td>317</td>
<td>333</td>
</tr>
<tr>
<td>2400</td>
<td>53</td>
<td>67</td>
<td>80</td>
<td>93</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>133</td>
<td>147</td>
<td>160</td>
<td>173</td>
<td>187</td>
<td>200</td>
<td>213</td>
<td>227</td>
<td>240</td>
<td>253</td>
</tr>
<tr>
<td>2600</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td>80</td>
<td>90</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
<td>160</td>
<td>170</td>
<td>180</td>
<td>190</td>
<td>200</td>
</tr>
<tr>
<td>2800</td>
<td>27</td>
<td>33</td>
<td>40</td>
<td>47</td>
<td>53</td>
<td>60</td>
<td>67</td>
<td>73</td>
<td>80</td>
<td>87</td>
<td>93</td>
<td>100</td>
<td>107</td>
<td>113</td>
<td>120</td>
<td>127</td>
<td>133</td>
</tr>
<tr>
<td>3000</td>
<td>15</td>
<td>17</td>
<td>20</td>
<td>23</td>
<td>27</td>
<td>30</td>
<td>33</td>
<td>37</td>
<td>40</td>
<td>43</td>
<td>47</td>
<td>50</td>
<td>53</td>
<td>57</td>
<td>60</td>
<td>63</td>
<td>67</td>
</tr>
</tbody>
</table>

### 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: Allow 10-14 days for the plaster on new pools to cure before adding salt
## Software Revision Compatibility Chart

<table>
<thead>
<tr>
<th>Aqua Rite Pro</th>
<th>Aqua Rite XL</th>
<th>Aqua Rite Logic</th>
<th>Aqua Plus</th>
<th>Pro Logic</th>
<th>SwimPure Plus</th>
<th>SwimPure Plus w/Controls</th>
<th>H4O</th>
<th>SmartPure Sanitizer II</th>
<th>Splash CLEAR</th>
<th>SF40</th>
<th>Guardian</th>
<th>Nature Soft</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-CELL-3 &amp; GLX-CELL-3-W (pools up to 15K gallons)</td>
<td>1.10 or later</td>
<td>1.50 or later</td>
<td>X</td>
<td>None</td>
<td>X</td>
<td>X</td>
<td>4.10 or later</td>
<td>1.50 or later</td>
<td>4.10 or later</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>GLX-CELL-5 &amp; GLX-CELL-5-W (pools up to 20K gallons)</td>
<td>All revisions</td>
<td>1.50 or later</td>
<td>X</td>
<td>All revisions</td>
<td>All revisions</td>
<td>All revisions</td>
<td>All revisions</td>
<td>1.50 or later</td>
<td>All revisions</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>T-CELL-9 &amp; GLX-CELL-9-W (pools up to 25K gallons)</td>
<td>1.10 or later</td>
<td>1.50 or later</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>4.10 or later</td>
<td>1.50 or later</td>
<td>4.10 or later</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
| T-CELL-15 & GLX-CELL-15-W (pools up to 40K gallons) | All revisions | All revisions | X | All revisions | All revisions | All revisions | All revisions | All revisions | All revisions | All revisions | All revisions | All revisions | All revisions | All revisions
1. The ‘Desired Output %’ dial on the main panel sets the level of salt cell operation as a percent of the total operating time of the entire system. A simple example is that if the pump/filter is programmed to operate a total of 8 hours in a given day and the ‘Desired output %’ is set to 50% the salt cell will operate (and produce chlorine) approximately half the time, or 4 hours. 50% is the factory default.

2. The salt level that is calculated (and displayed) in the system is determined from several variables. It is possible that the displayed salt level can be significantly different from the actual salt level (when measured in the water with a tester). This can happen as a result of a dirty cell or from a cell that has began aging. Low salt should always require 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 began 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.

3. 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 salt cell 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.

4. Super-chlorinate is an additional option to use in order to ‘catch up’ in chlorine production when making adjustments to the desired output level. Move the switch to ‘Super Chlorinate’ to enable.