TROUBLESHOOTING CHEAT SHEET
FOR Models (LS Series) Hi - Performance

1. NO LIGHTS ON UNIT

?? The 3 amp slo-blo (main) fuse has Blown

A: There may be 220V going to a unit wired 110V (Steps 1 - 4 below)
B: The Transformer is shorted (Steps 5 - 7)
C: The 803 power board may have failed (Step 8)

?? To determine the cause of the blown 3 amp main fuse, follow the steps below:

1: Shut off the main filter pump.
2: Unplug the black, 4- prong transformer connector.
3: Restart pump.
4: Using a multimeter, check the voltage coming in. Check the number of wire nuts from the transformer, 110v (2 wire nuts) Blue & White, Black & Red, 220v Red & white (3 wire nuts) if incorrect turn off pump and rewire. **SEE ATTACHED DIAGRAM "1A"**
5: Replace the failed 3-amp fuse.
6: Restart the main filter pump for 1 - 2 minutes (remember to have your chlorine dial setting on a number before restarting the pump).
7: Shut off the main filter pump again, remove the 3-amp fuse and examine it. If the fuse has failed, then you have a bad transformer.
8: If the fuse is Good then the 803 power board must be replaced.

?? The 906 wire harness (black and orange wires) may be loose

A: Examine wires and make sure they are not loose and check for continuity. **SEE ATTACHED DIAGRAM "1B"**

?? 2 amp fuse may have blown (located on 803 power board)

A: Check fuse for continuity
- Use a Multi meter with a continuity check

2. NO CELL LIGHT

?? The Unit is in rest mode (not producing chlorine) - the output dial runs on a 48 minute on/off cycle w/ 10 & 11 = max (42 of 48 minutes)

?? The unit was powered up with the output dial set to "0".

A: Shut the system off, make sure the output dial is set between 1 &11, then wait at least 15 seconds and re-power the unit. If you have no red lights, all green lights should come on, except the salt light, which takes up to 6 minutes.

B: If you have a Red flow light, Red Salt light or Red temperature light you will NOT have a Cell light on, until the Red light is corrected.

?? The #906 wire harness may be loose.

A: Check the wire connections.

?? The main board has Failed

A: If you have No Red Lights and you restart the unit and there is no Cell light, then change out the main board.

3.RED CELL LIGHT

?? The cell is scaled

A: If cell has calcium scale on blades, put cell in bucket with 1 part muriatic acid to 4 parts water for 15 minute intervals until scale is completely removed.

*** Always add acid to water and never the other way around.**

B: Need to get chemical readings and find out why the cell has scaled. Chemicals may be unbalanced or our unit may not be reversing polarity. If chemicals are within proper ranges, the main board may not be reversing polarity.

- *Scale usually develops within one week if the unit is not reversing.*
- *If scale develops in two weeks or longer, water is unbalanced. (Scale forming according to the Saturation Index).*

?? The cell cord is disconnected or wired improperly

A: **SEE ATTACHED DIAGRAM "1C"**

- If the unit has an RC-15 or AP-500 cell, it should have a Green connector and the wiring should be: from left to right: red/white/black or white/red./black and verify wires are not loose.

3. RED CELL LIGHT – Cont

- If the unit has an RC-7 or AP-125, or AP-250 cell, it should have a black connector and the wiring should be (from left to right) black, red & white together and positions 3 & 4 jumped with a chrome jumper. (Chrome jumper removed w/ Hi performance Units).

B: Check the Cell cord for Continuity - Black cord is always center hole.

- Use a Multi Meter with a continuity check.

?? The 10 amp cell fuse has blown

A: 803 Power board may have failed.

B: Check the Salt level – If you have the old style Rev 6 (prior to SN# 711000) board, high salt would cause the fuse to blow.

?? To determine the cause of the blown 10 amp fuse:

1: Shut off the main filter pump.

2: Take out the bad 10 amp fuse and replace with a new fuse.

3: Turn on unit. If the 10 amp fuse blows immediately, replace the power board. ***HINT***:If the unit has an 803R8 Power board; the board may still be bad. When you put in the new fuse, the system may work for a little while before the fuse blows again! So what you can do is have the Homeowner or Dealer use a multi meter and check at the cell monitor on the board, to see what the DC amps are coming out of the unit. **SEE ATTACHED DIAGRAM "1D"**

- Put the Multimeter on DCVolts.
- At the cell monitor location P6 on the Power board place 1 prong from the multi meter on the middle pin and place the other prong on the right pin. Now you should get a DC amp reading. A RC-7 cell pulls 3-3.5 amps and RC-15, AP-125, AP-250 and AP-500 cell pulls 5 - 5.25 amps.

?? The unit is factory wired 220 VAC & is receiving 110VAC. (the unit will show a red cell light & dim flow light.)

A: Using a Voltmeter, measure the secondary AC voltage from the transformer. Turn off main Filter pump. Unplug the black 4-position connector at the top of the 803 board, which holds the transformer secondary wires. Turn filter pump back on. If the unit is wired properly, the voltage measurement across the yellow wires should be <u>30-37 VAC</u> and across, the blue wires should be <u>10-17 VAC.</u> If the unit is wired for 220v and the incoming voltage is 110 V, the yellow wires will be 15-20 VAC and the blue wires will be 7-10 VAC. Also do a visual check and make sure the 4-position connector is not burnt. If burnt replace Connector and Power Board.

4. RED FLOW LIGHT

?? The Tri sensor may have failed.

?? The Tri sensor **cable** may have failed.

?? The 800 main board may have failed

A: To determine if the main board or tri sensor cable has failed

For ***service centers*** *use the 986 tri sensor simulator.*
If it is a ***homeowner*** *have them use a paper clip.*

1) Disconnect the tri sensor cable from the tri sensor with the unit on. **SEE ATTACHED DIAGRAM "1E"**

2) Connect the tri sensor simulator to the cable, or put the paper clip in the #1 and #2 position, as indicated in diagram of the cable plug.

3) If the flow light goes to Green then the problem is in the tri sensor or plumbing so you would check the following:

?? Verify that the Filter is clean

A: If Filter is dirty, clean the filter to increase the overall flow.

?? Water exiting the filter is being diverted away from the inlet of the manifold.

A: Make sure they do not have valves closed off or water diverting away to other water features like waterfalls, therapy jets, etc. If they are diverting water away to a water feature, they may have to adjust the valve so more flow through the tri sensor to activate the flow switch. **REMINDER**: You need at least 15 gpm going through the **flow** switch to activate it.

?? Replace the Tri Sensor and check system.

?? Verify that the Strainer Screen is Clean

A: The strainer screen is located in the bottom portion of the manifold on the inlet side.

Ensure that the Tri Sensor is installed in the proper direction of the Flow.

?? If the Flow light Stays Red when using the tri sensor simulator or the paper clip then there is a problem in the cable or main board.

4. RED FLOW LIGHT - Cont'd

A: To help determine if it is the tri sensor cable or the main board:

1) Turn off main filter pump
2) Unplug the tri sensor cable from the main board and turn on the
3) Jump out the top 2 flow pins with a screw driver or you can take the jumper from the temperature display on the main board and put it on the 2 flow pins.
4) If the flow light goes green, replace the tri sensor cable. If the light stays red, replace the main board.

5.YELLOW or RED SALT SENSOR LIGHT

?? The tri sensor may have failed
?? The tri sensor cable may have failed
?? The 800 main board may have failed

A: To determine if the main board or tri sensor cable has failed *use the tri sensor simulator*.

1) Disconnect the tri sensor cable from the tri sensor with the unit on.
2) Connect the tri sensor simulator to the tri sensor cable
3) If the salt light goes to green this indicates that the main board and tri sensor cable are good. Please check the following: (old style Tri Sensor simulator will show yellow salt).

?? The residual salt level is below the 2500 ppm minimum.
?? Cold water (below 60 F) is causing the unit to display inaccurate salt lights
Scale formations may be on at least one salt blade on the tri sensor
?? The Tri sensor may have failed.

- To determine if the tri sensor has failed:
Test across the salt blades for continuity

SEE ATTACHED DIAGRAM "1E"

?? **If the Salt light stays RED when you attach the tri sensor simulator then the cable or main board is BAD!**

A: To determine if it is the cable or the board:

1) Check the tri sensor cable for continuity
- **SEE ATTACHED DIAGRAM "1E"**
2) If the cable has continuity then the main board is bad.

6. RED TEMPERATURE LIGHT

?? The water is below 65 degrees F.
?? The tri sensor may have failed
- To determine if the tri sensor has failed:
Test for resistance on the Temp pins - 900 - 1100 ?
SEE ATTACHED DIAGRAM "1E"

?? The tri sensor cable may have failed
- Check the tri cable for continuity
?? The main board may have failed

7. RED/GREEN/RED/GREEN (flashing) CELL LIGHT

?? CVC (Cell Voltage Clamp) has Enabled

A: Cell may be scaled
B: Low Salt
C: Failing/Scaled Cell
D: Cold Water Temperature (below 65 Degrees)

8. LS1500 TIMECLOCK DOES NOT RESTART FILTER PUMP AT NEXT CYCLE

?? TIMECLOCK WIRED INCORRECTLY –
SEE ATTACHED DIAGRAM "1F"
?? LS1500 - 987 WIRE HARNESS FROM FILTER PUMP RELAY TO MAIN BOARD MAY HAVE FAILED

A: Verify 987 harness is correctly connected to main board
SEE ATTACHED DIAGRAM "1F"
B: Verify that when time clock is activated "on" that relay #2 is receiving 12 VDC across the green and white wires from the 987 harness.

1) At Relay #2 - where the 987 harness green and white wires attach to the relay, test for 12 VDC.
Use multi meter – put meter on DC Volts
- Turn on Time clock
- If you **do not** receive 12VDC replace 987 harness