AquaPure Troubleshooting

Jandy

Control Center

OR

PureLink

Flow/Temp/Salinity Sensor

Low Voltage Cable

Tee

Cell

AquaPure

What is the unit saying?

- What is the serial #?

  The serial# is on a white tag on the bottom of the power supply. For example, serial number CM3 01 06 13 86 can be read as follows: CM3 means it is a ClorMatic III, 01 is the year, 06 is the month, 13 is the day and 86 is the unit manufactured that day.

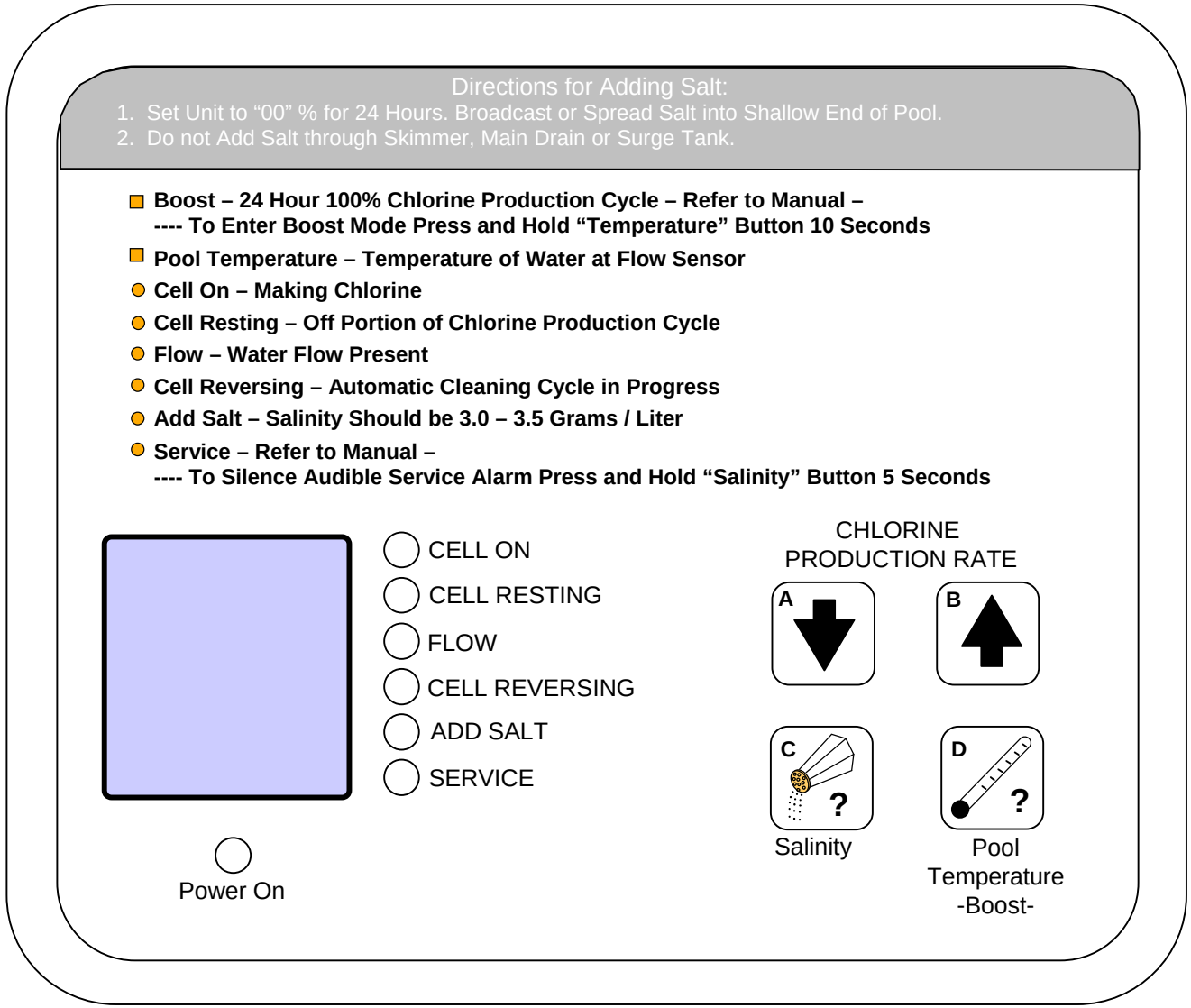
- Is the unit in warranty? Warranty is 2 years from the date of installation.

- What is displayed on the LCD?

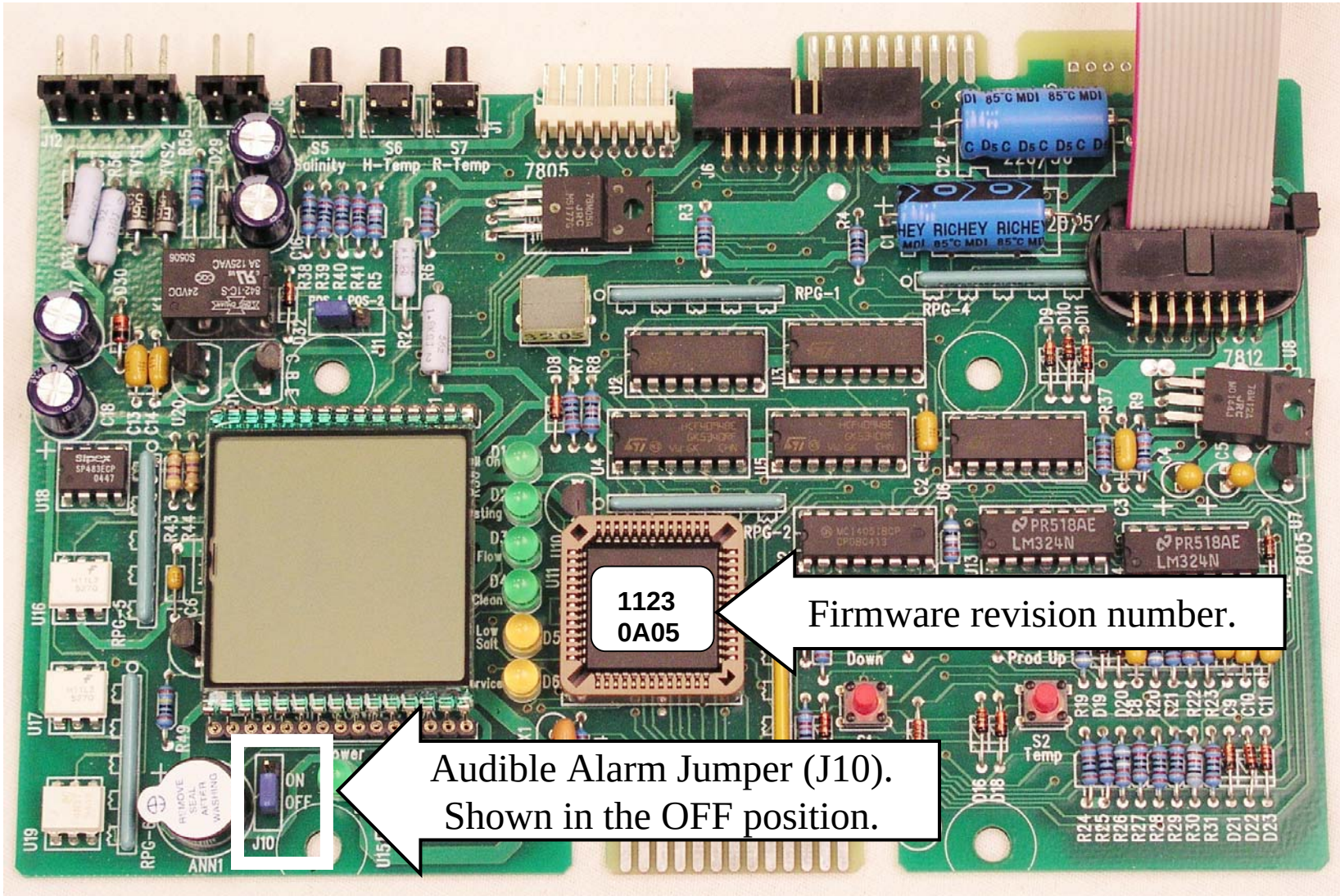
  If the unit is on don't turn it off!

- Which indicator lights are lit (if any)?

AquaPure Display



FRONT BOARD


1123
0A05
Firmware revision number.
Audible Alarm Jumper (J10).
Shown in the OFF position.
ON
OFF
J10

What does the LCD mean?

On power up the AquaPure/PureLink unit:

- **‘50’** or **‘60’** – The unit is detecting the electrical supply to optimize the unit settings. 60 cycle power is the US standard. 50 cycle power is common in Europe (*note: if the unit detects 60 cycle electric supply then it will default to degrees F for the pool temperature reading*).

- **‘Chlorine Production’** – displays current % production rate for chlorine

- **‘Wait’** – the unit is still testing its diagnostics

- **‘No Flow’** – the unit does not detect enough water flow

- **‘Flow’** – flow sensor is indicating to the unit that it has enough water flow

What does the LCD mean?

- **‘LO’** – indicates that the water temperature is less than 51 deg. F
- **‘BO’** – indicates the boost cycle which can be activated by pressing the ‘Pool Temperature’ key for 10 seconds; it can be cancelled by holding the same key for 10 seconds.
- **‘EC’** - indicates the unit is being controlled by an external controller or ORP device.
- **‘JA’ –** Indicates operation is controlled by a Jandy AquaLink RS or PDA, and system is in AUTO MODE.
- **‘JO’ –** Indicates operation is controlled by a Jandy AquaLink RS or PDA, and system is in SERVICE or TIME MODE.
- **‘JB’ –** Indicates operation is controlled by a Jandy AquaLink RS or PDA, and system is in BOOST MODE.

What do the indicator lights mean?

- '**Cell On'** – Full power is being applied to the cell, and making chlorine
- **'Cell Resting'** – The cell is in the off portion of the chlorine production cycle
- **'Flow'** – Water flow is present
- **'Cell Reversing'** – Automatic cell cleaning cycle in progress
- **'Add Salt'**– Salinity is 2.5 grams/liter or less. Should be 3.0 – 3.5 grams/liter
- **'Service'** – Read the service code and refer to the manual
- **'Power On'** – Power is turned on and reaching the front board

What do the other keys mean?

Chlorine Production Rate

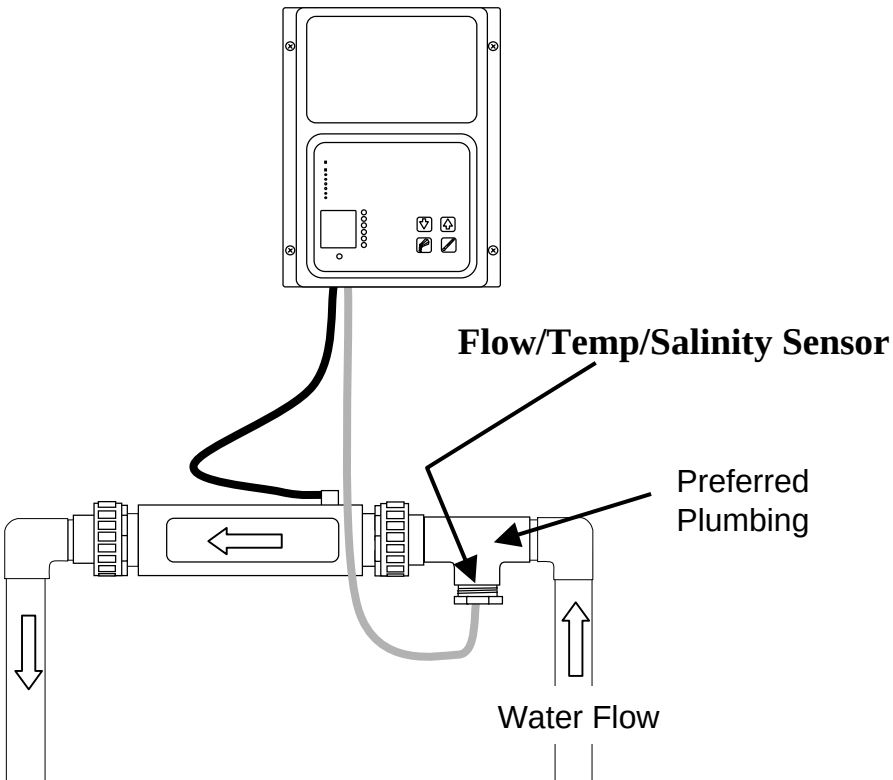
- The arrow up button (‘**B**’) increases the % chlorine production
- The arrow down button (‘**A**’) decreases the % chlorine production

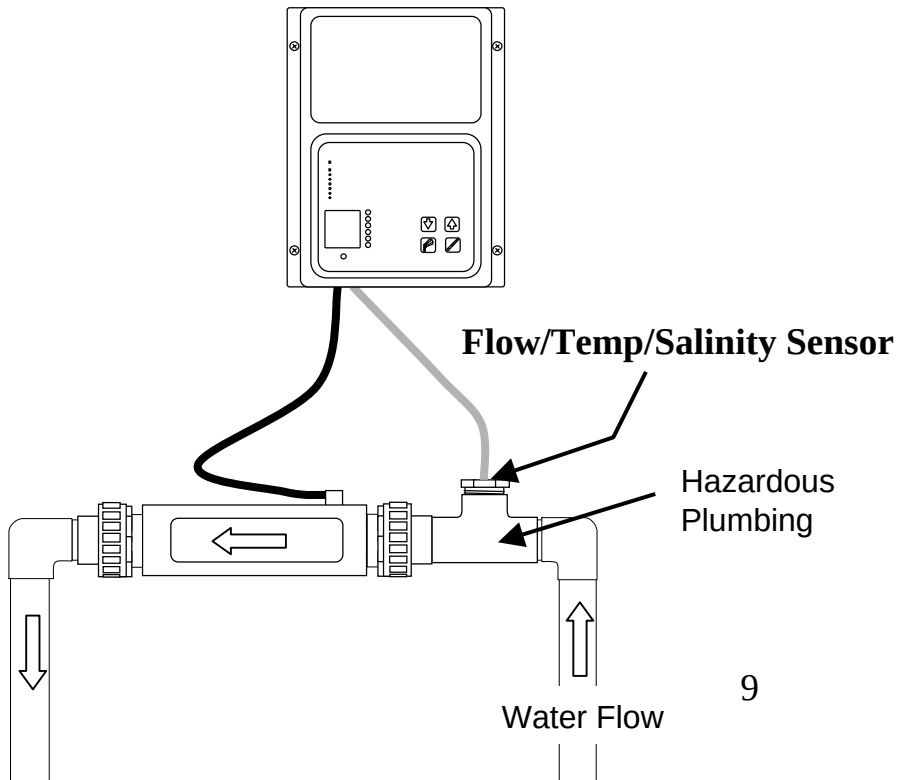
- **‘Pool Temperature’** (‘**D**’) will give the water temperature in either degrees Fahrenheit or Centigrade

- **Salinity** (‘**C**’) will give the salt reading in grams per liter, this can be converted to parts per million by removing the decimal point and add 2 zeros. Example 2.8 gpl = 2800 ppm

Visual check - flow sensor/cell

- Check the cell, flow/salinity sensor and power supply for damage
- Ensure that there is water flow through the cell and that the flow sensor is plumbed in the proper position below the pipe so that it can’t trap air or gas (hazardous) against the sensor.





Visual check for installation & damage

- Be sure that the cell positioned properly and the DC cord is connected properly to the cell.
- Check the flow sensor cable and cell cable for damage (chewed on by an animal, weed-wacked, etc.).
- Look for water leaks at the cell and flow sensor.
- Examine the cover and overlays to ensure their integrity against the elements
- Inspect for proper installation of unit. For safety reasons it is IMPORTANT that the unit is wired to turn off/on with the pool pump. The cell is mounted as the last piece of equipment in the return line.

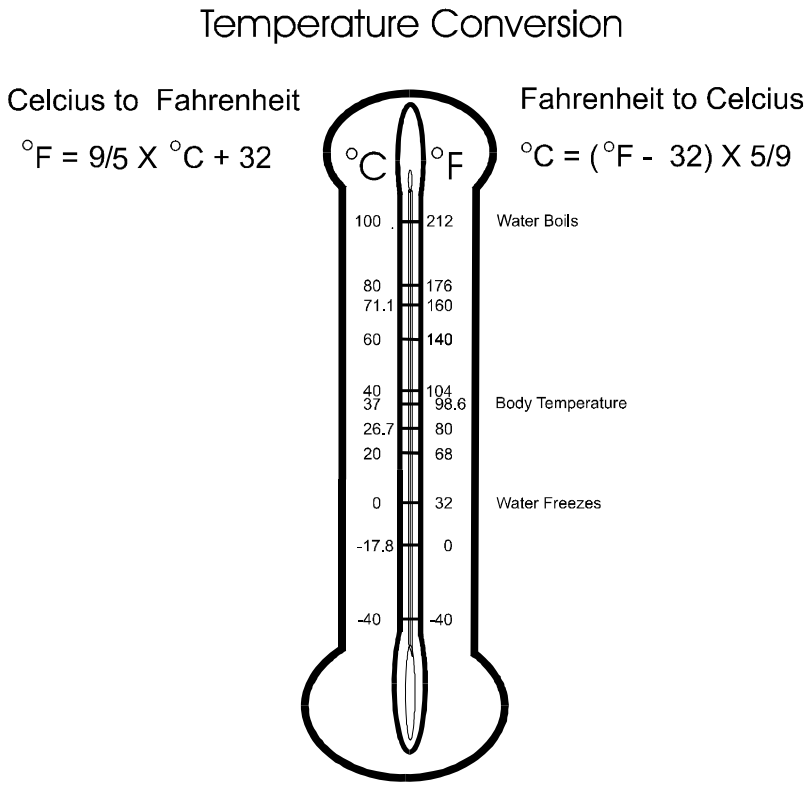
Inspection of Power Supply

- Carefully remove the front cover and support it to avoid damaging the connectors and wires inside. There is a cable which connects the front and back boards together, which can be easily damaged.
- Inspect the front and back boards for damage (cable pulled loose, pins bent in connectors, etc.). Look for burn marks that might indicate an over-heating condition.
- Inspect the transformer wires at the back board connection to ensure there isn’t any indication of overheating.
- Look for indications that water has been in the unit.
- Check the unit to be sure that it is grounded to a permanent earth ground (the common approved earth bonding point).

Temperature

Change display between Fahrenheit and Celsius

- Press and hold the ‘Pool Temperature’ (‘D’) key for 15 seconds. The system will beep when the button is pushed, it will beep again after 10 seconds, and again after 15 seconds. Release the key after the **third** beep.
- Press ‘Salinity’ (‘C’) key within 5 seconds to enter temperature change screen.
- The system will display a “1” followed by ‘F’ or ‘C’. Press ‘Chlorine Production Rate’ up arrow key (‘B’) to toggle from F to C.
- Press ‘Salinity’ (‘C’) key within 5 seconds to place the change into memory, (the unit will beep when pressed).



Salinity Calibration

Conditions to check before calibrating

The salinity reading must be compared to a reliable outside source. (Myron meter, titration test, etc.) Minor variations are to be expected.

The flow sensor must be cleaned, and checked for damage.

If unit has a Rev. 8 front board it must be tested before proceeding.

Salt must NOT have been added within the last 24 hours.

If a spare flow sensor is available. Connect it to the unit and place it in a bucket of the pool water to compare readings.

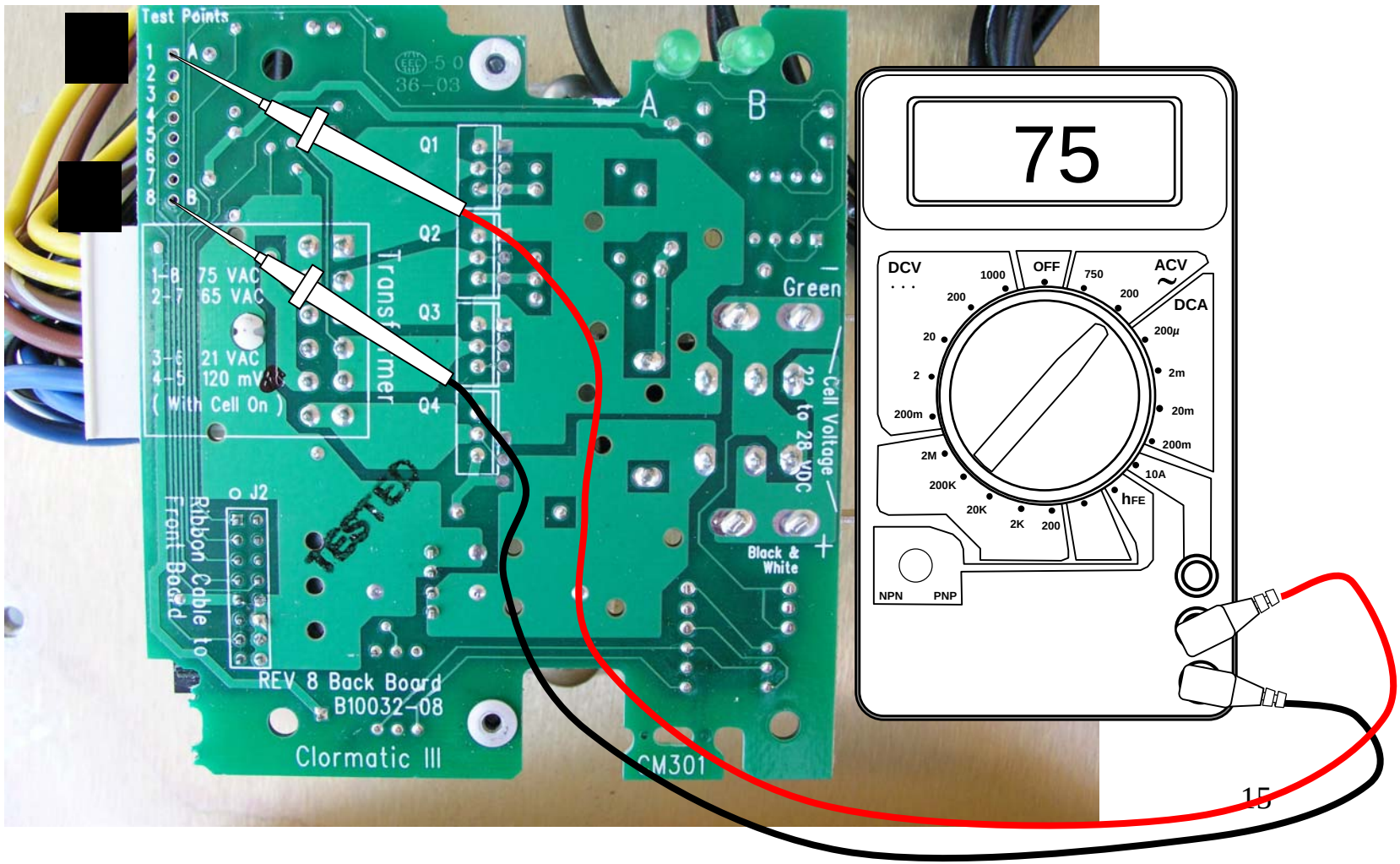
Note- The unit must have the power turned off before either the old or new flow sensor can be installed. Each time a flow sensor is unplugged and plugged back in again the computer inside the unit must be reset by turning the power ‘off’ and then ‘on’. Failure to do this will result in erroneous readings.

Salinity Calibration

- Press the “Salinity” button and hold it until it beeps 3 times. The system will beep when you push it and then at 5 seconds and again at 10 seconds. Release the button after the 3rd beep.
- Press and release the “Temperature “ button within 5 seconds to enter the salinity calibration screen.
- The system will display the salinity reading, press the up arrow to increase the reading and the down arrow to decrease the reading.
- When the proper reading is reached press the “Temperature” button within 5 seconds to store it in memory.

Transformer Voltage on Rev. 2 backboard

Reading the AC voltage between T.P.-A and T.P.-B will check the transformer output voltage. It should be approximately 75 VAC.



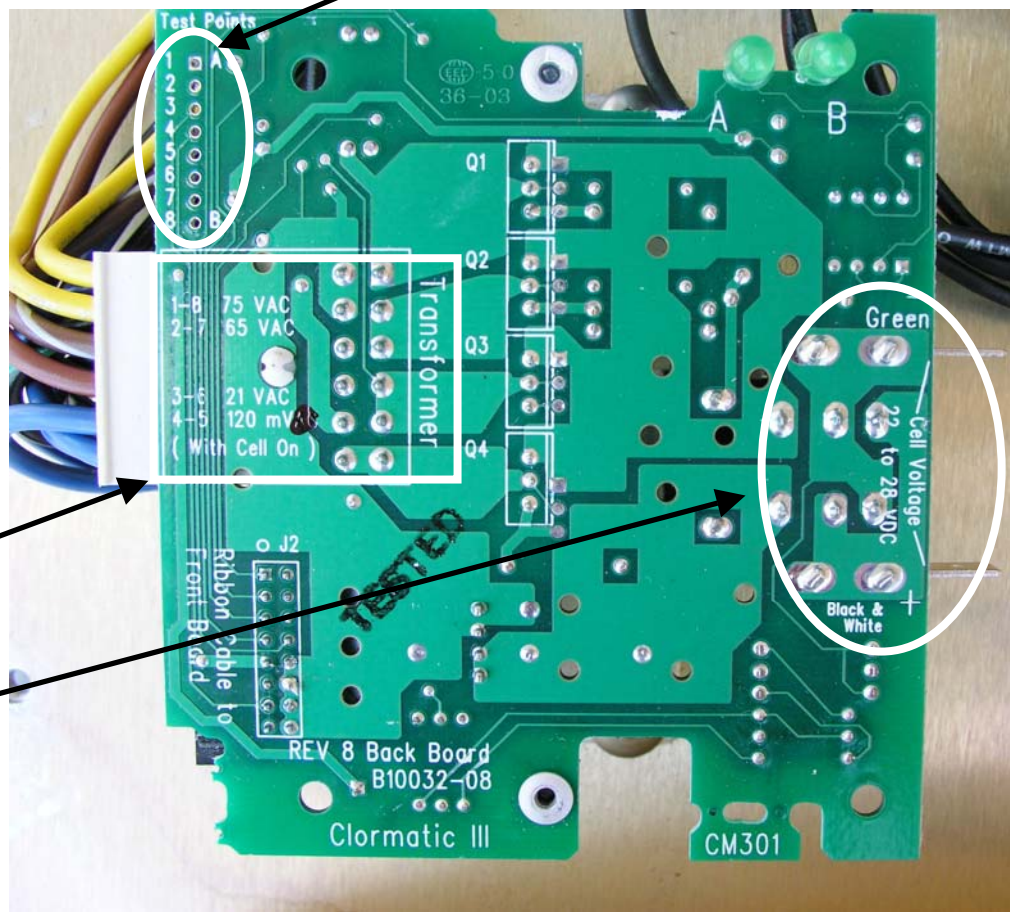
Back Board Test Points

- In the upper left corner are test points 1-8
- In the middle of the left side are the voltage readings that each of the test point combinations should have.
- In the middle of the right side are the cell test points with the DC voltage readings.

Test Points 1 - 8

Test Information

Cell Test Points



Current test on front board

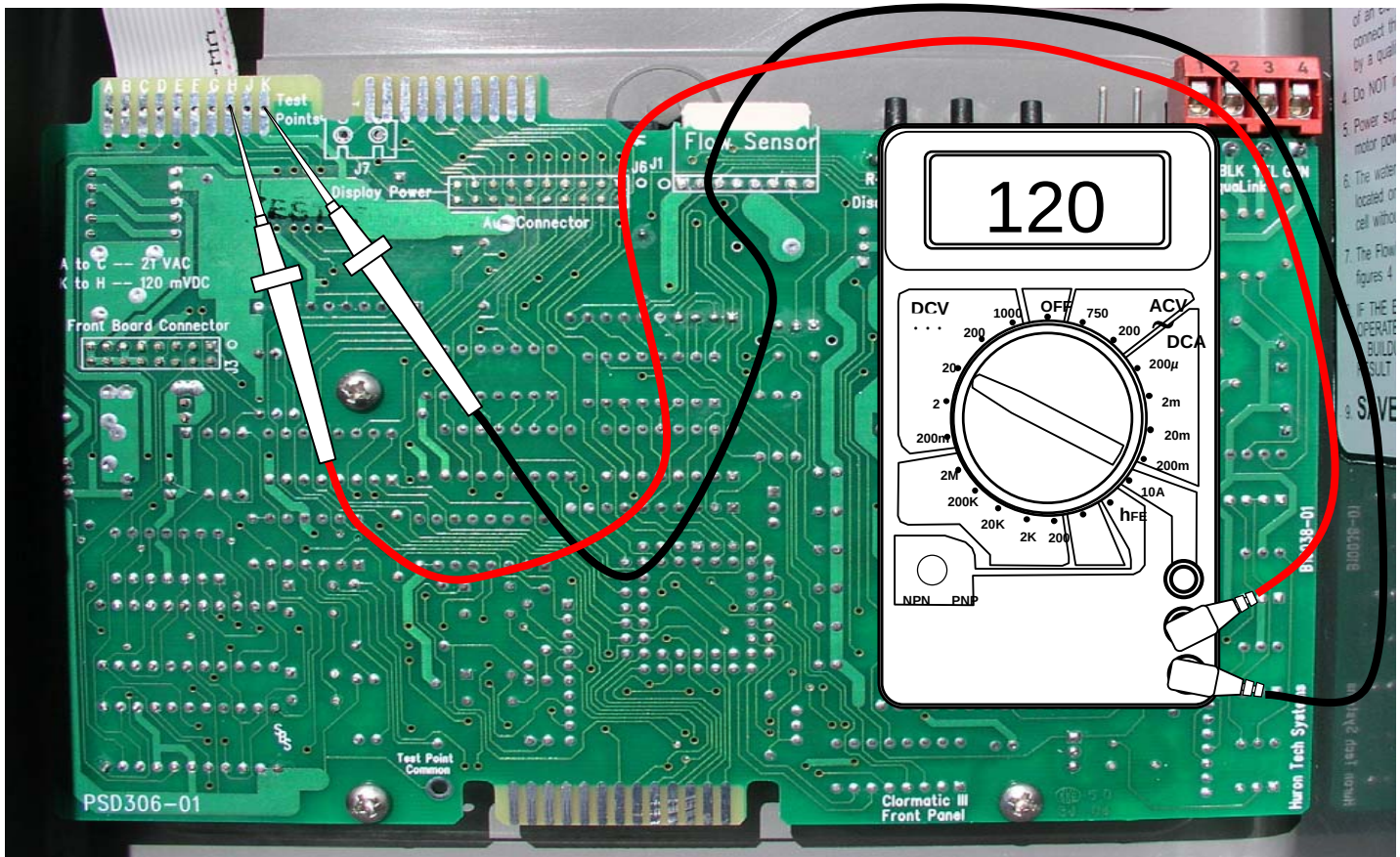
(Note: - either the 'Cell On' or 'Cell Reversing' light must be lit during this entire test)

Test Cell Current Flow

To test the amperage going across the cell, you need to test the DC millivolts from K to H

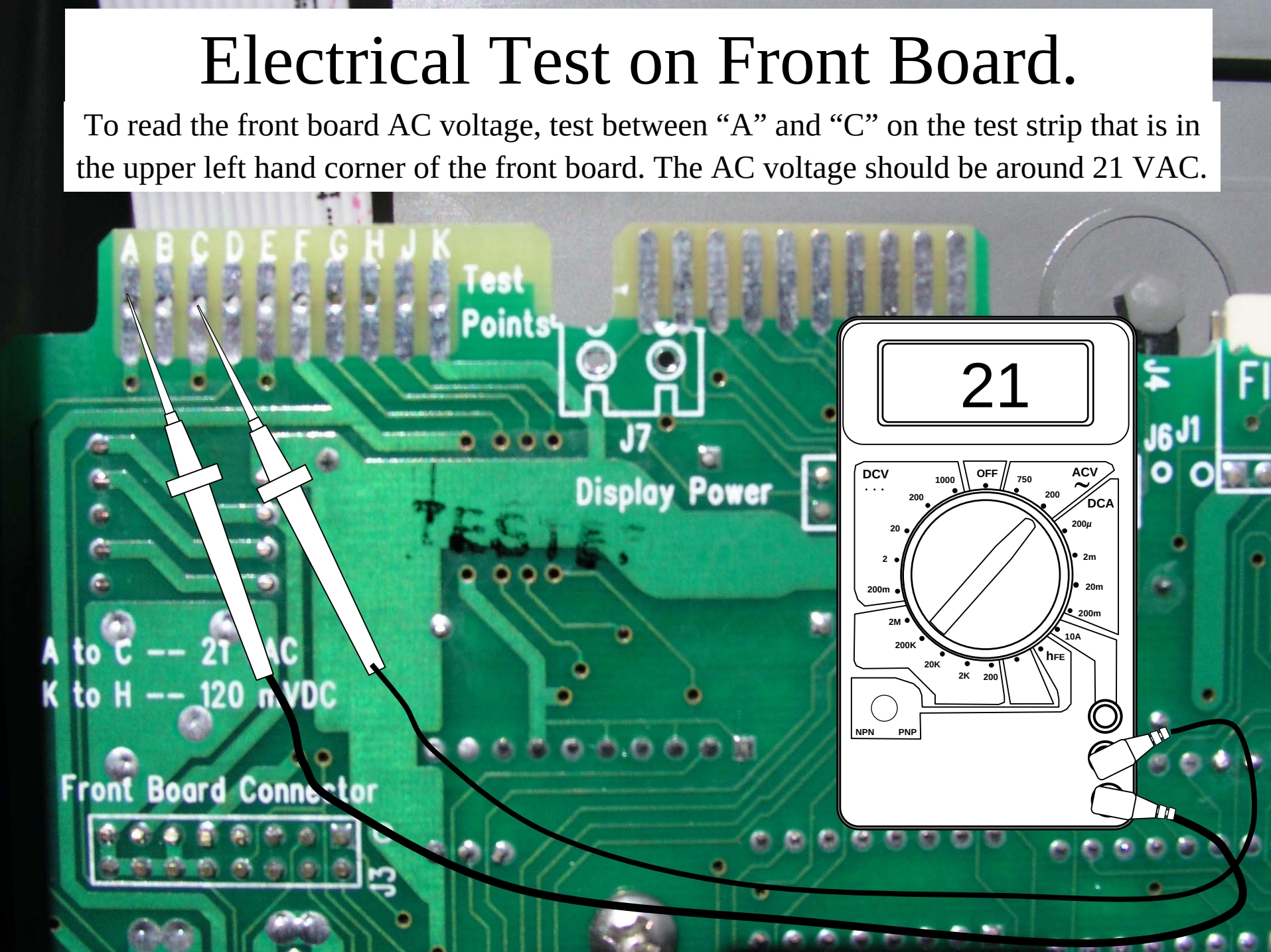
The reading should be approximately 120 DC millivolts.

- 20 millivolts equal 1 ampere on a 1400 unit,
- 40 millivolts equal 1 ampere on a 700 unit.



Electrical Test on Front Board.

To read the front board AC voltage, test between “A” and “C” on the test strip that is in the upper left hand corner of the front board. The AC voltage should be around 21 VAC.

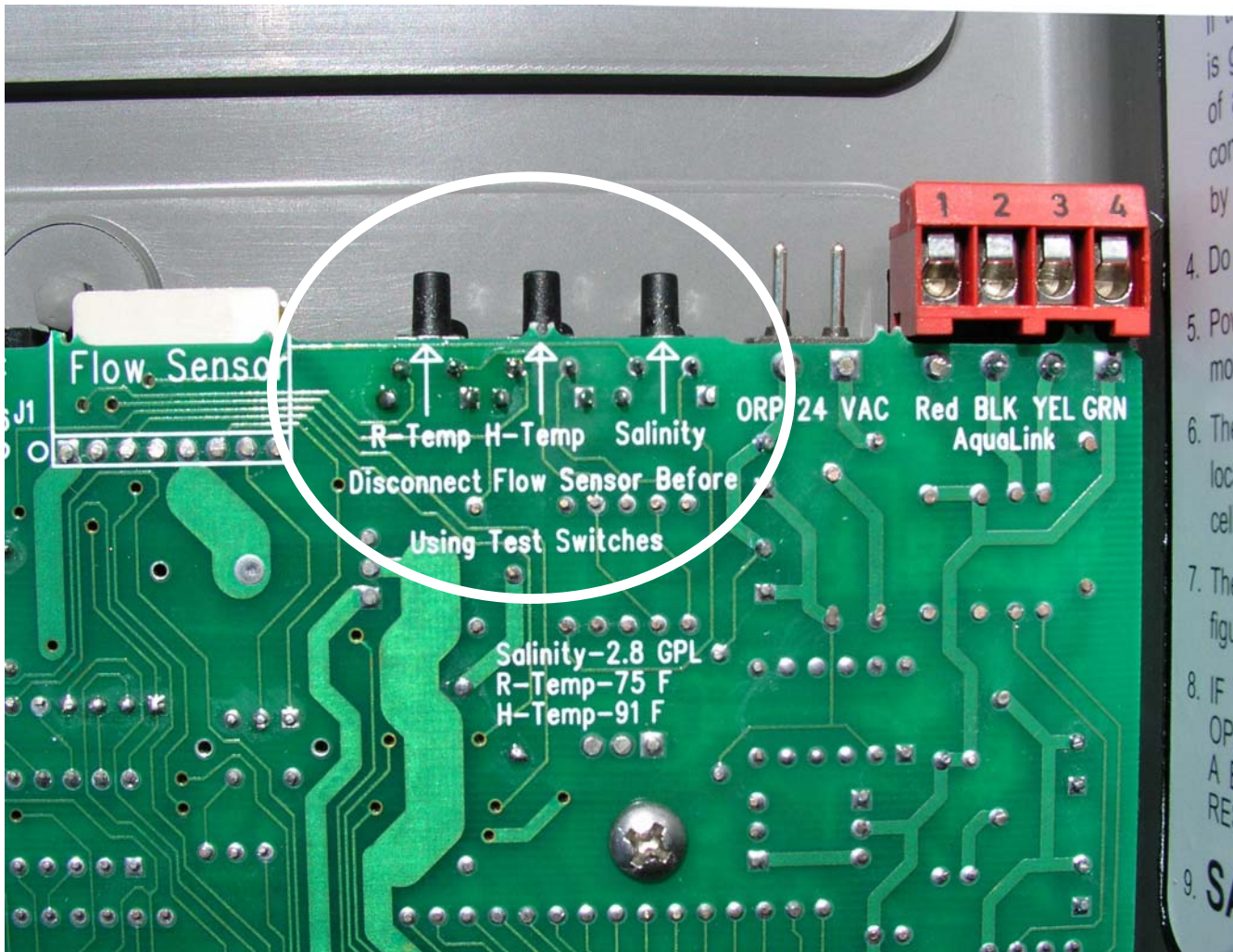


Troubleshooting - Front Board

To help diagnose whether faults are occurring on the front board or with the flow/salinity sensor three new test buttons have been added in the upper corner of the front board.

They are:

- ‘R-Temp’
- ‘H-Temp’
- ‘Salinity’



Troubleshooting - Front Board

Disconnect the flow salinity temp sensor from the front board. Press and hold the test buttons marked salinity and R-temp. While still pressing the test buttons press the 'Salinity' key **('C')** on the front cover of the unit. The LCD should read **2.8 gpl***.

While still holding the two front board test buttons press the 'Pool Temperature' key ('D'). It should read **75° F or 24° C**.

Next, press and hold the board 'H-Temp' test button, and at the same time press the 'Salinity' key ('C') together with the 'Chlorine Production Rate' arrow down key ('A') on the front cover of the unit. The LCD should read **91° F or 33° C** .

If the readings are correct then the front board is O.K. and the problem is with the flow sensor.

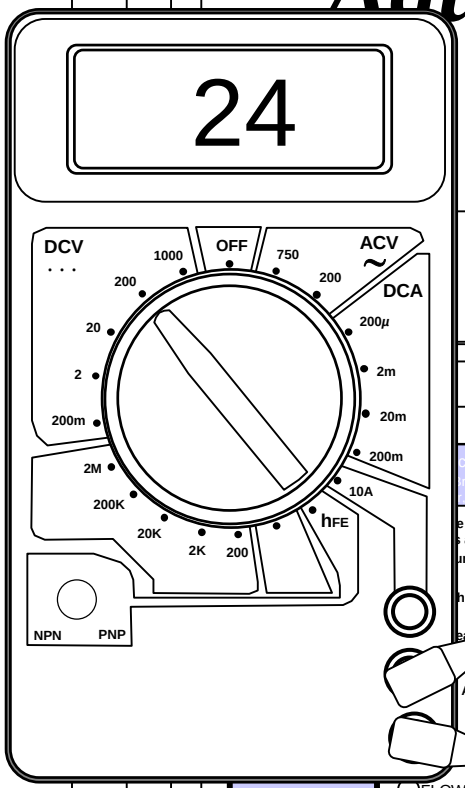
On the other hand if the readings are different then it indicates that there is a problem with the front board.

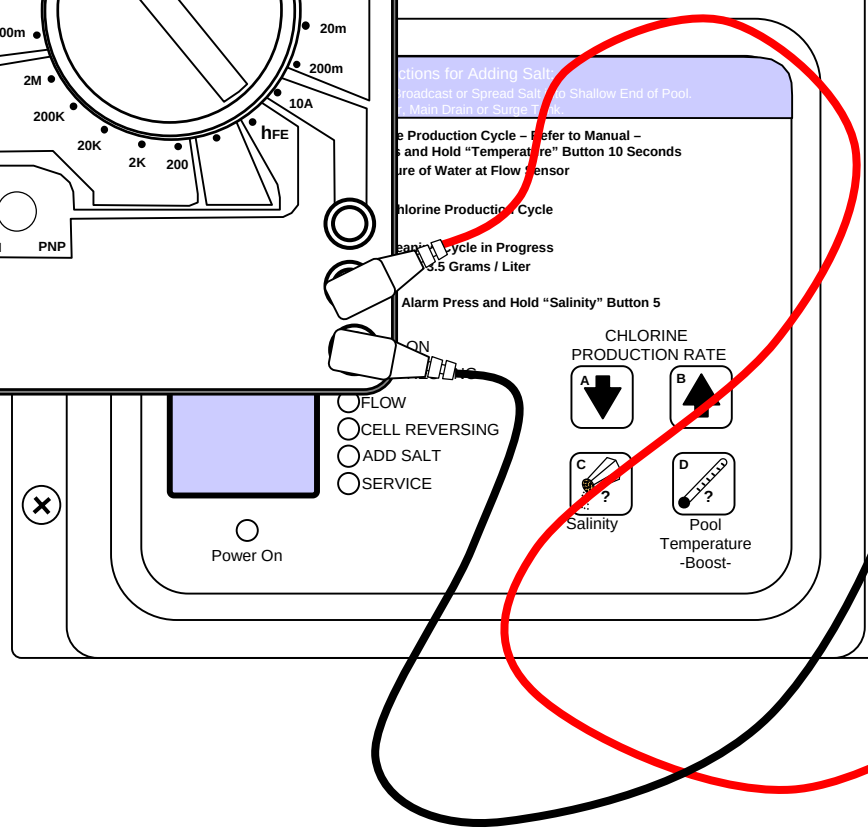
When the testing and repair is complete reconnect the flow sensor and reset the internal computer (do this by restarting the unit).

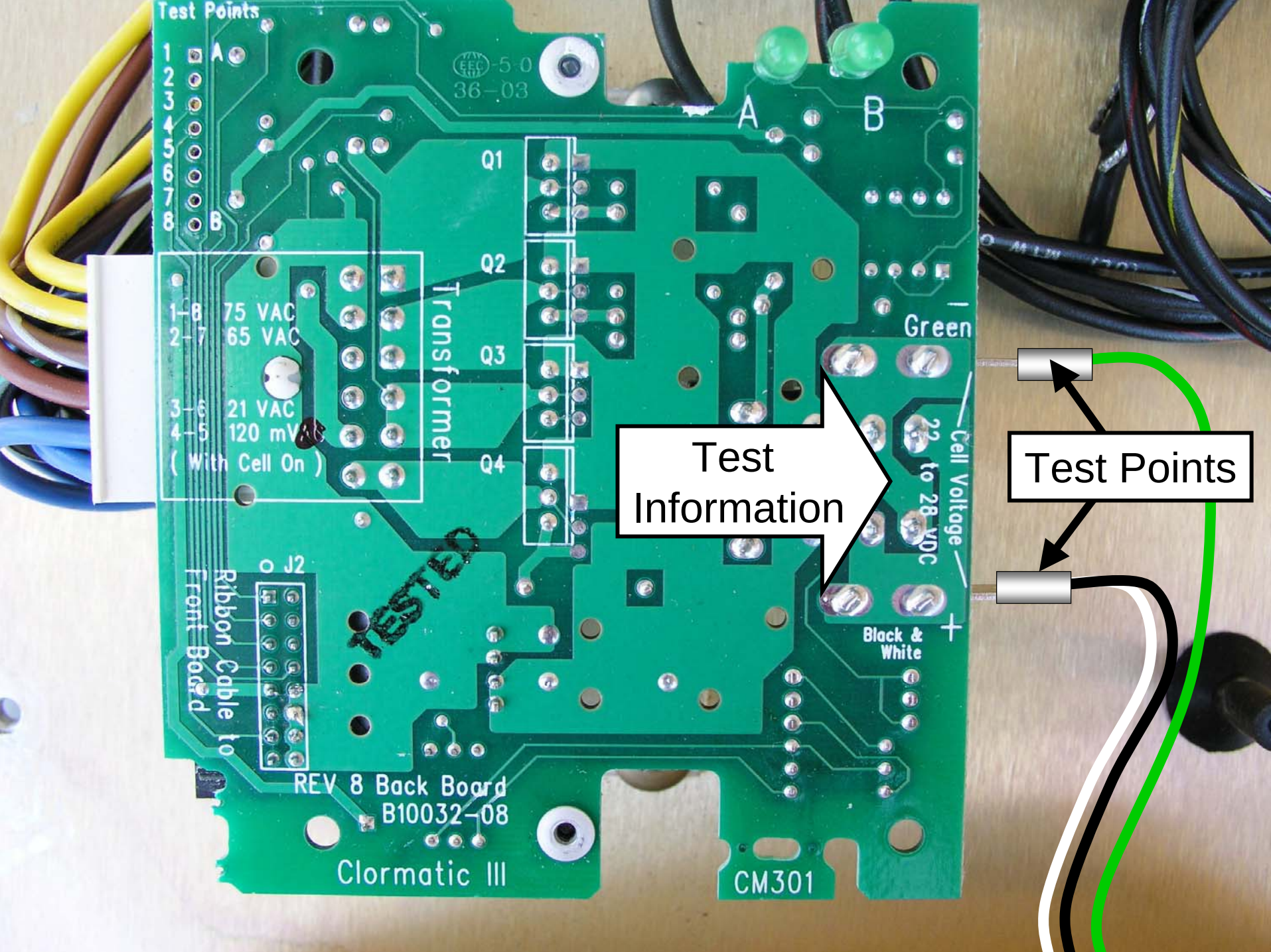
*Note: If the the salinity reading has been recalibrated this reading maybe different. Before condemning the board check salinity setting.

Test the DC voltage at the Back Board.

With the cell under full load you should read 22 to 28 volts DC.

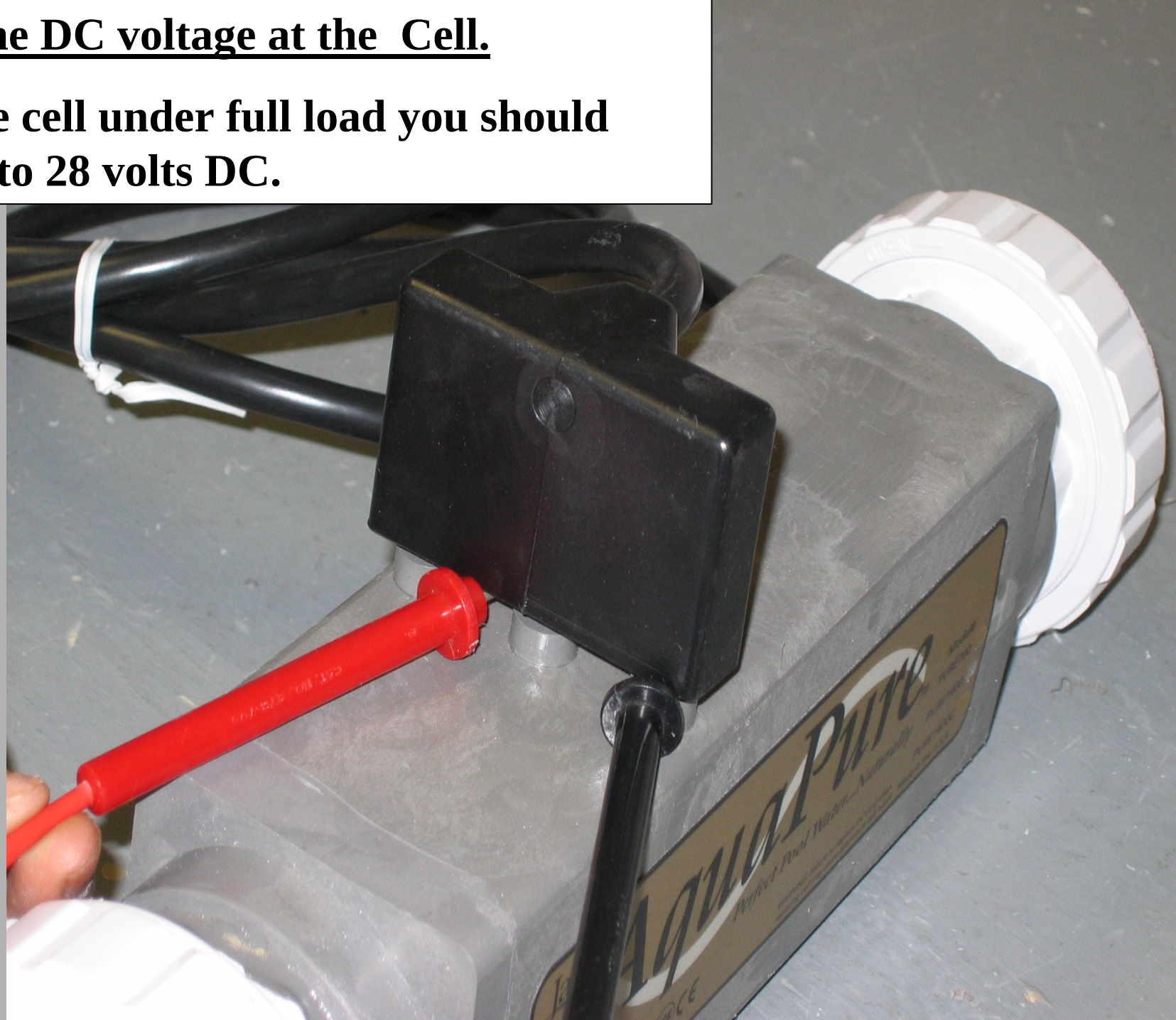





Test Points
1 2 3 4 5 6 7 8
A
B
36-03
A
B
Q1
Q2
Q3
Q4
Transformer
1-8 75 VAC
2-7 65 VAC
3-6 21 VAC
4-5 120 mVAC
(With Cell On)
J2
Ribbon Cable to Front Board
TESTED
REV 8 Back Board
B10032-08
Clormatic III
CM301
Green
Cell Voltage
22 to 28 VDC
Black & White
Test Information
Test Points

Test the DC voltage at the Cell.

With the cell under full load you should read 22 to 28 volts DC.



SERVICE CODES

LEVEL 1

120 - Low cell current in forward direction - check DC cord, clean cell if necessary or replace cell.

121 - Low cell current in reverse direction, same as 120 above.

123 - Low to no current at cell - check DC cord, clean cell or replace if necessary.

124 - High current indicated at the cell - this usually means a bad back board.

125 - Cell needs to be cleaned or replaced.

126 - Low current in forward direction and VAC input voltage below 100/200 VAC - check input voltage, transformer and back board voltages.

127 - Low current in reverse direction and VAC input voltage below 100/200 VAC - check input voltage, transformer and back board voltages.

144 - Low Salinity (below 2.0 gpl) - indicates the pool needs salt added.

145 - High Salinity (above 4.0 gpl), indicates pool needs to be diluted.

170 - Front board service condition indicated and is usually caused by low AC voltage from back board - check transformer and back board voltages.

171 - Back board service condition - indicates board needs to be replaced.

172 – Flow sensor service - clean sensor, check for damage and replace if necessary.

173 - Low VAC input voltage and on-board power supply is not regulated - make sure unit is wired with the proper voltage.

174 - Pool temperature is too high for operation of AquaPure (i.e. > 108°F).

175 - Flow sensor air lock condition or very low salinity.

LEVEL 2

180 - Heated sensor element not heating (generates 172 code)

181 - Flow sensor temperature sensor failure (generates 172 code – Flow sensor service)

182 - Salinity Sensor sees less than 0.2 gpl of salt, either no salt in pool or sensor air locked (generates 175 code – Flow sensor air lock)

183 to **186** - flow salinity sensor temperature probe error codes. They will all generate 172 codes which indicate flow sensor service is required.

187 - Front board power supply either too low or too high (generates 173 - Low input voltage code if Level II code 188 is present) (generates 170 code if 188 is not present).

188 - VAC input voltage is too low (generates 173 code if Level II code 187 is present)

189 - Relay not conducting in the forward direction (generates 171 code - Back board service)

190 - Relay not conducting in the reverse direction (generates 171 code - Back board service)

191- High cell current (at upper limit of A/D converter) and cell voltage below 19V (generates 170 code front board service)

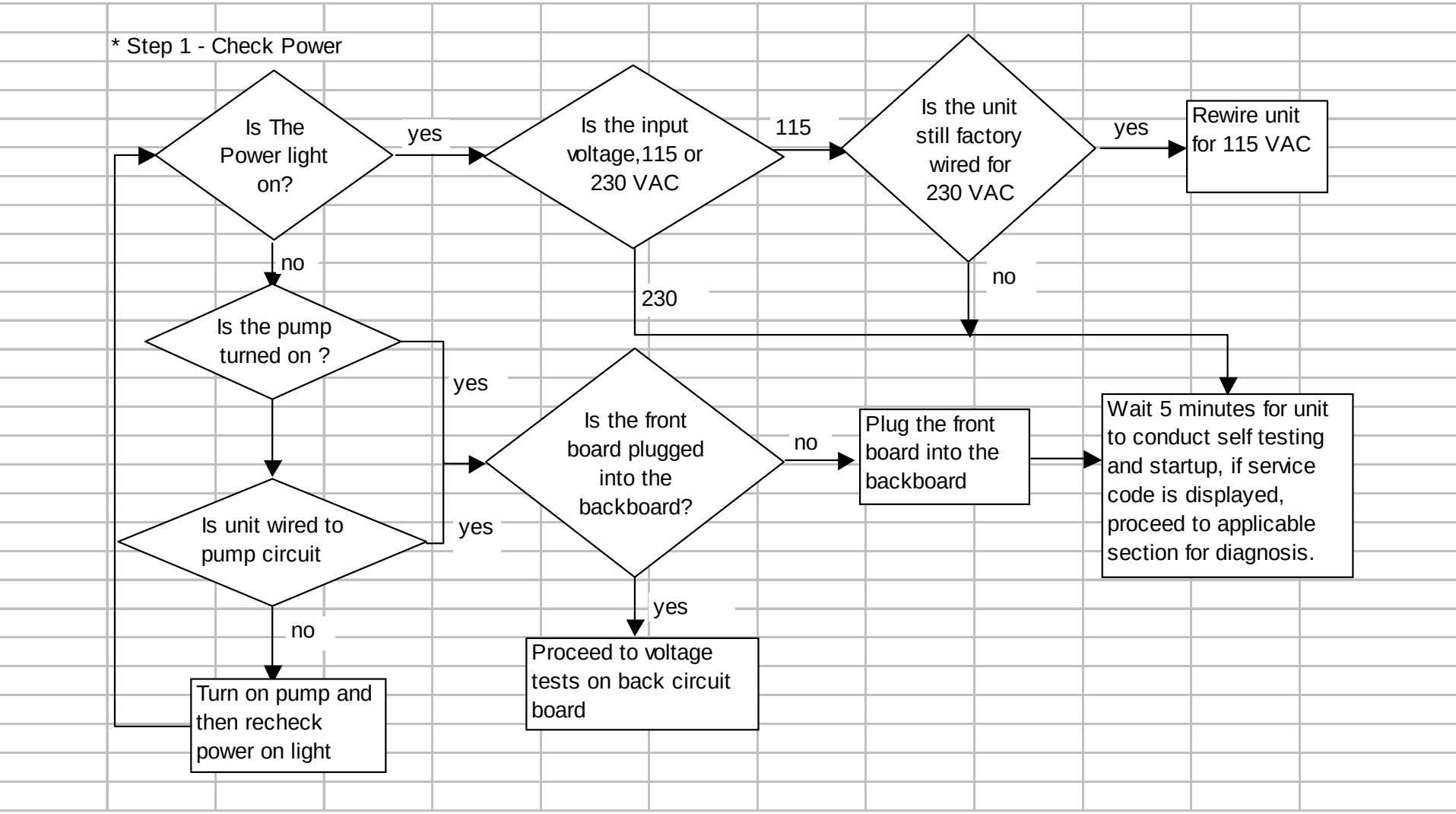
192 -High cell current and cell voltage below 19V (generates 171 code – Back board service).

193 -Measured significant cell current when SCRs were turned off (generates 170 code – Front board service).

194 -Cell Current is 85% lower than desired and cell voltage above 19V (generates 125 code - Cell dirty or needs replacement).

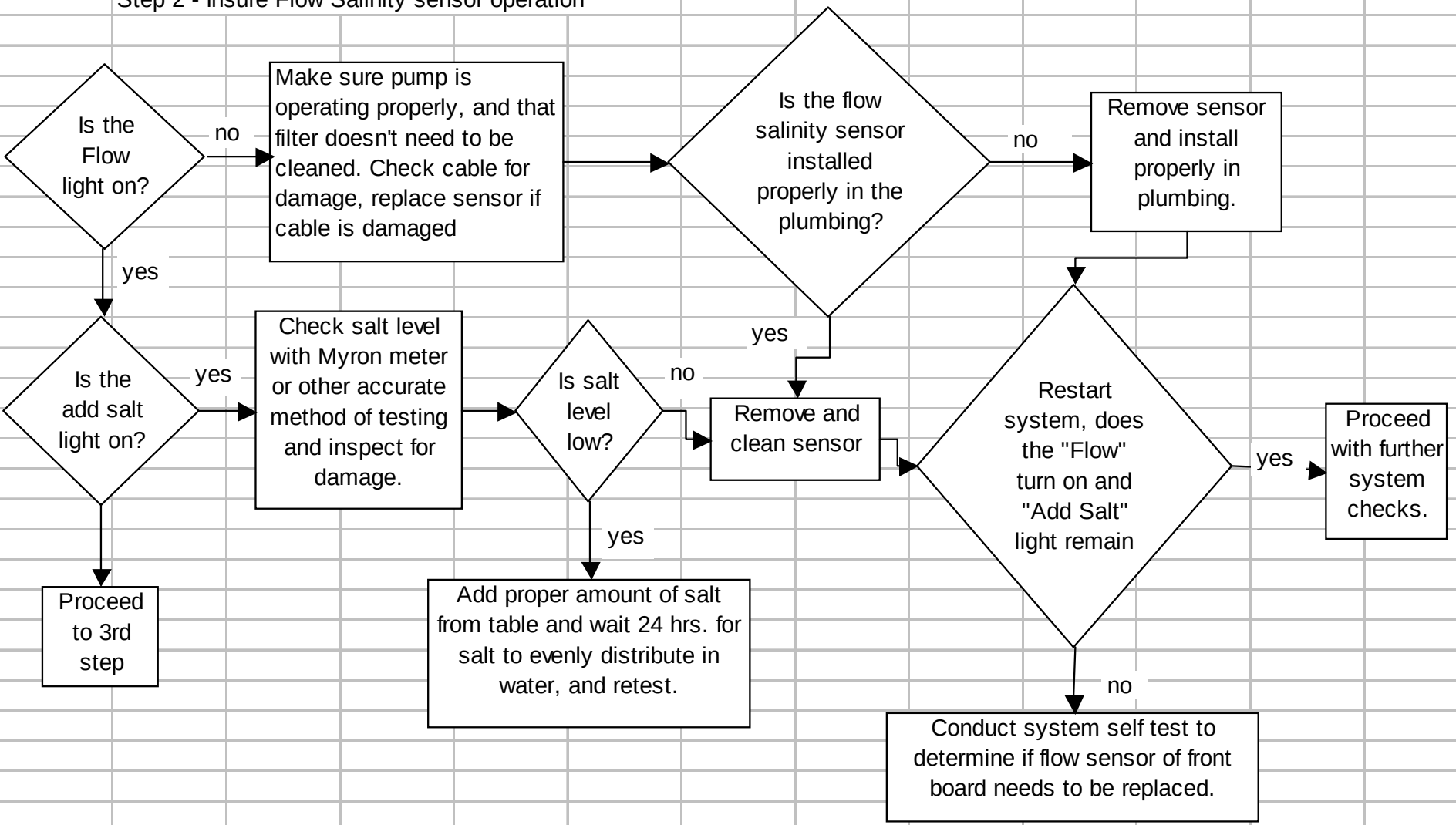
195 -Salinity invalid due to out of range measurements caused by front board error (generates 170 code – Front board service).

AquaPure Troubleshooting Flow Chart*

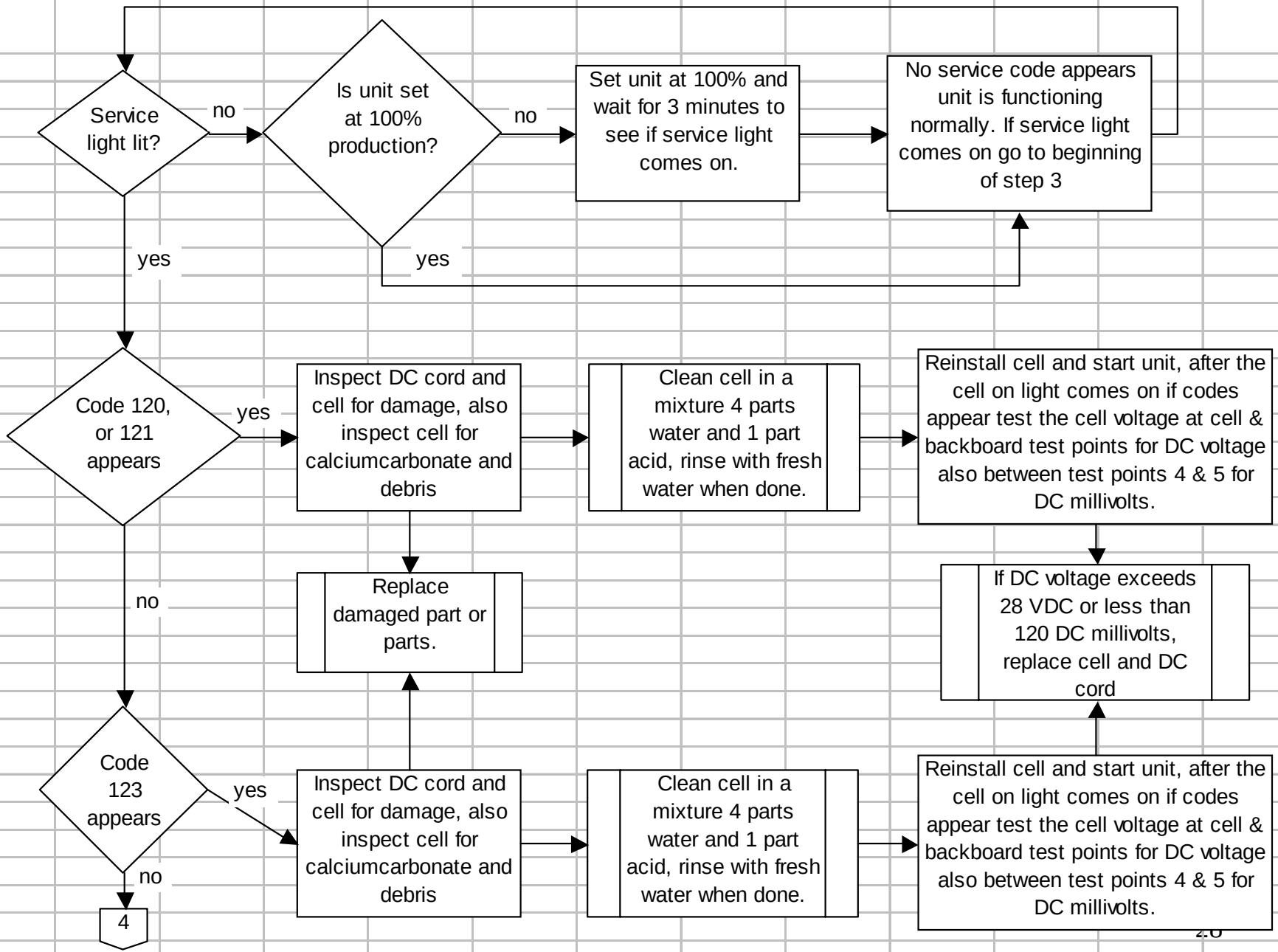


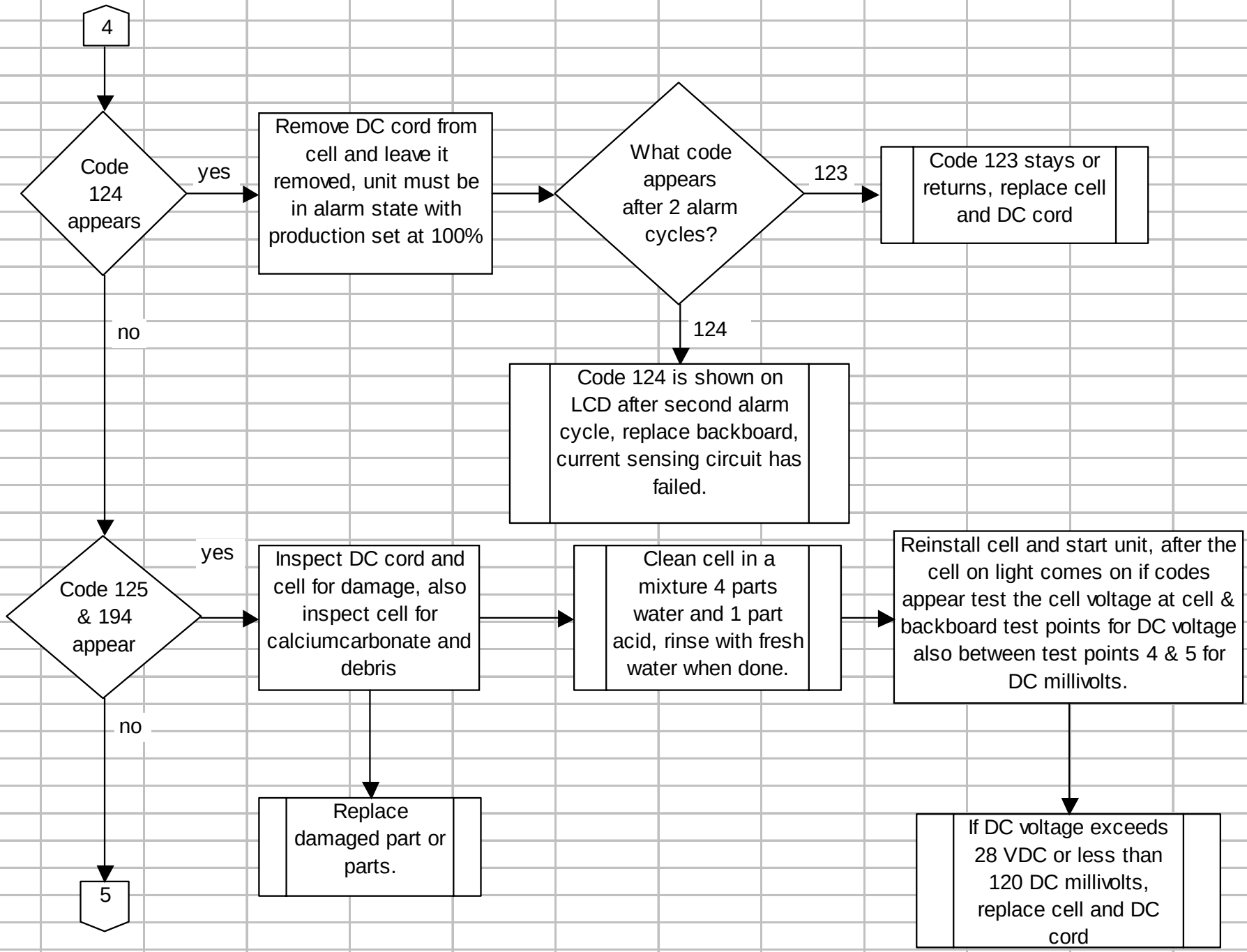
*Note: If the AquaPure is connected to an AquaLink RS, and you do not have a AquaLink RS Service Controller, disconnect the 4 conductor wire to the AquaLink RS before proceeding.

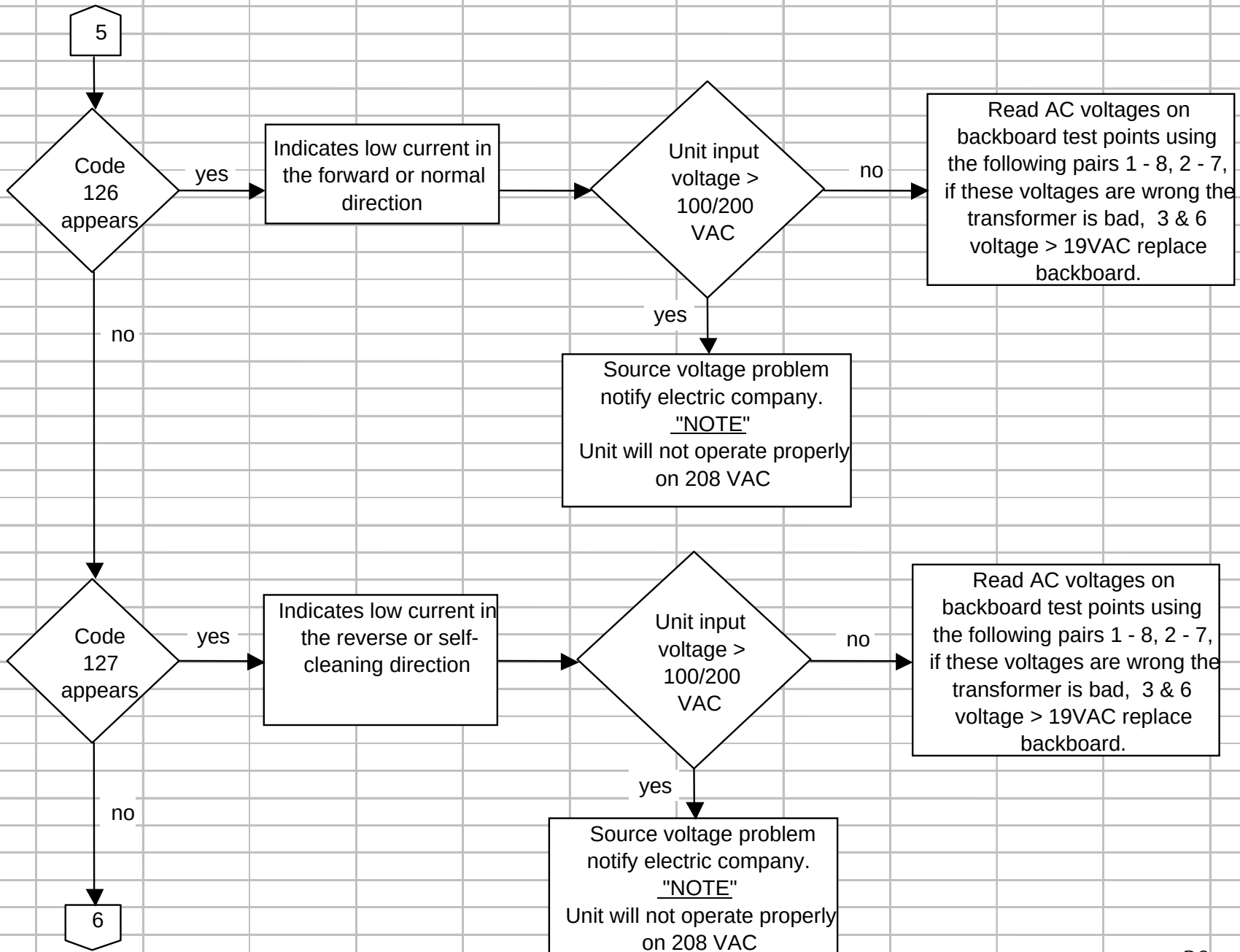
Step 2 - Insure Flow Salinity sensor operation

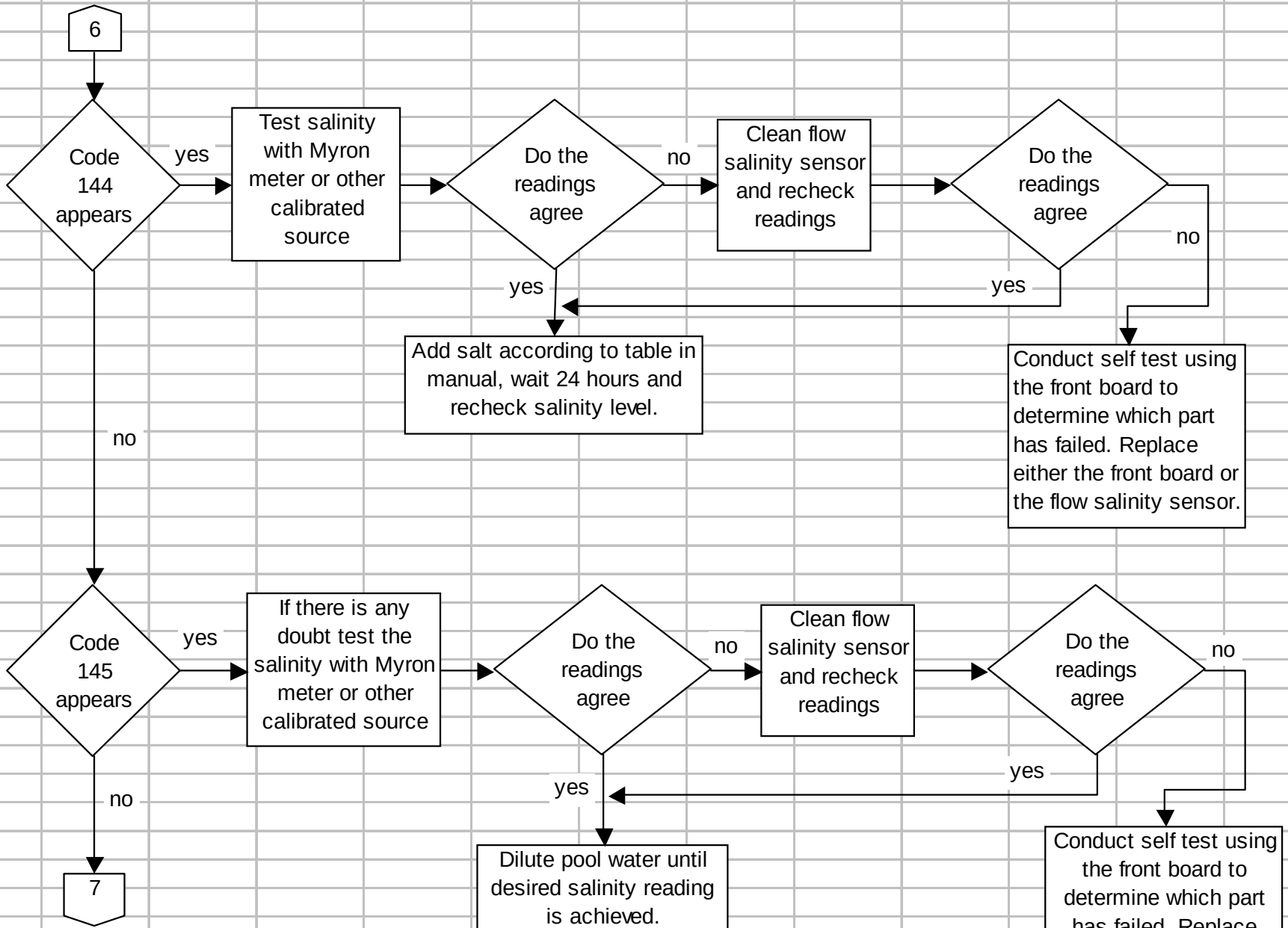


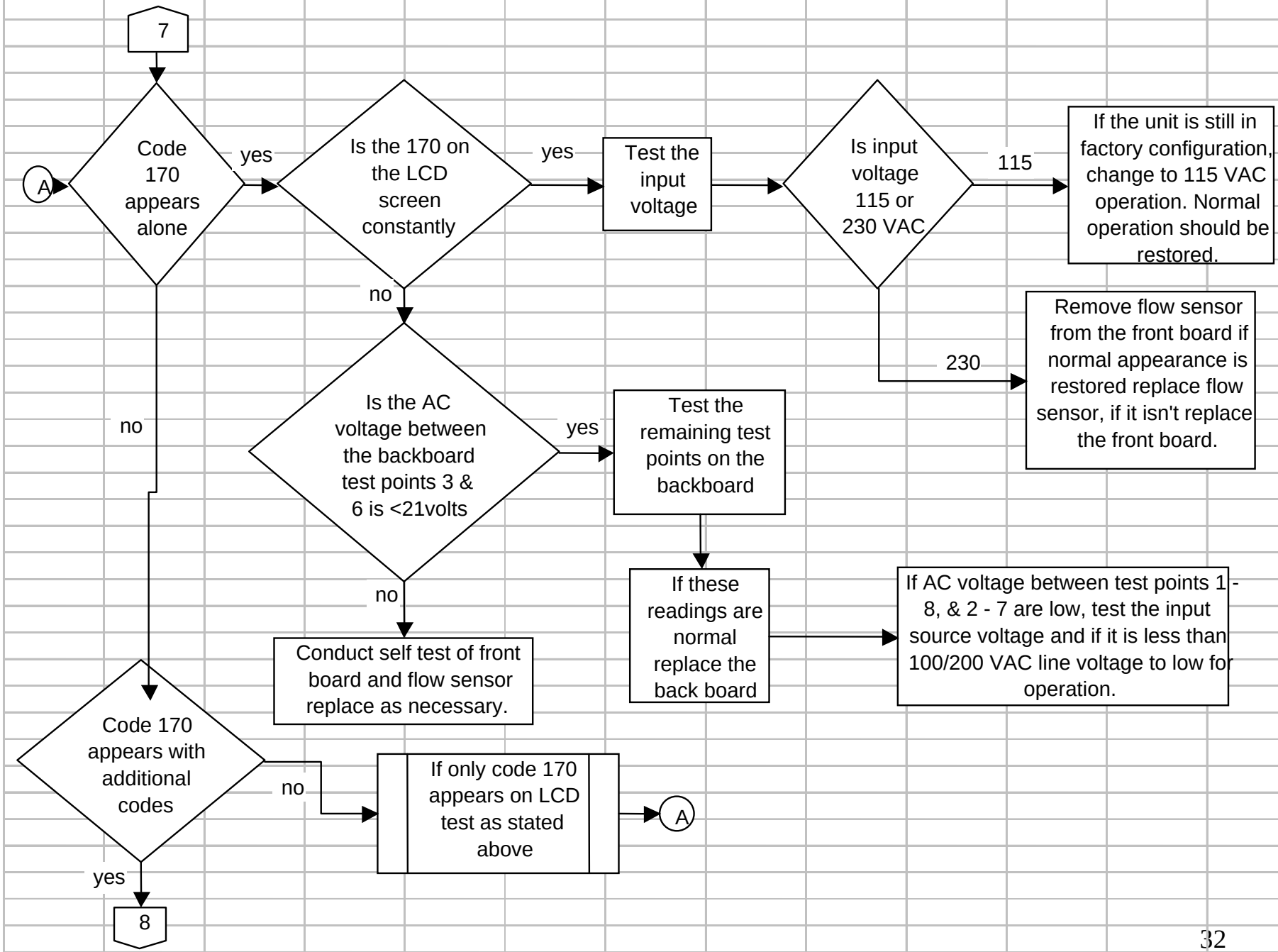
Step 3 - Codes and what to do

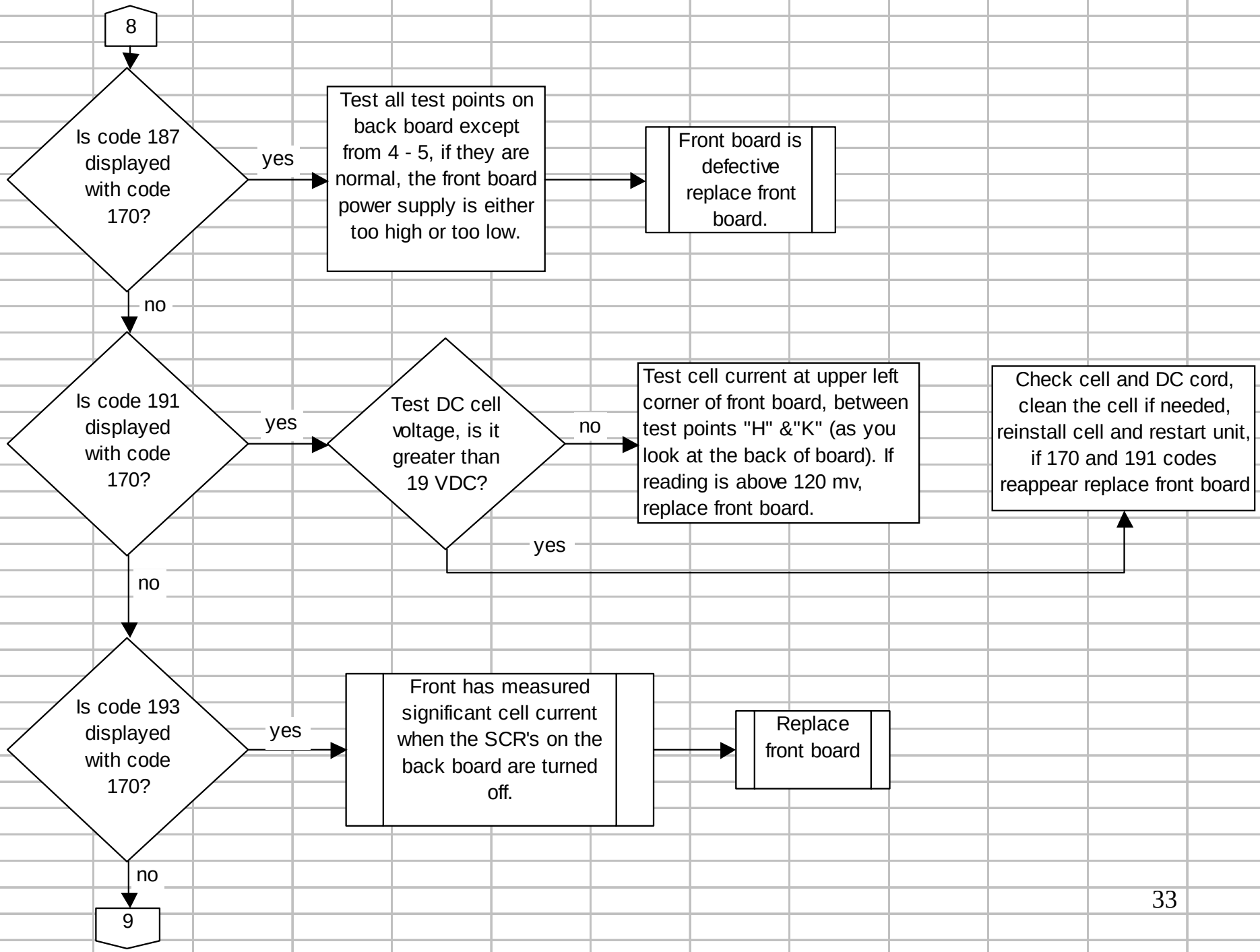


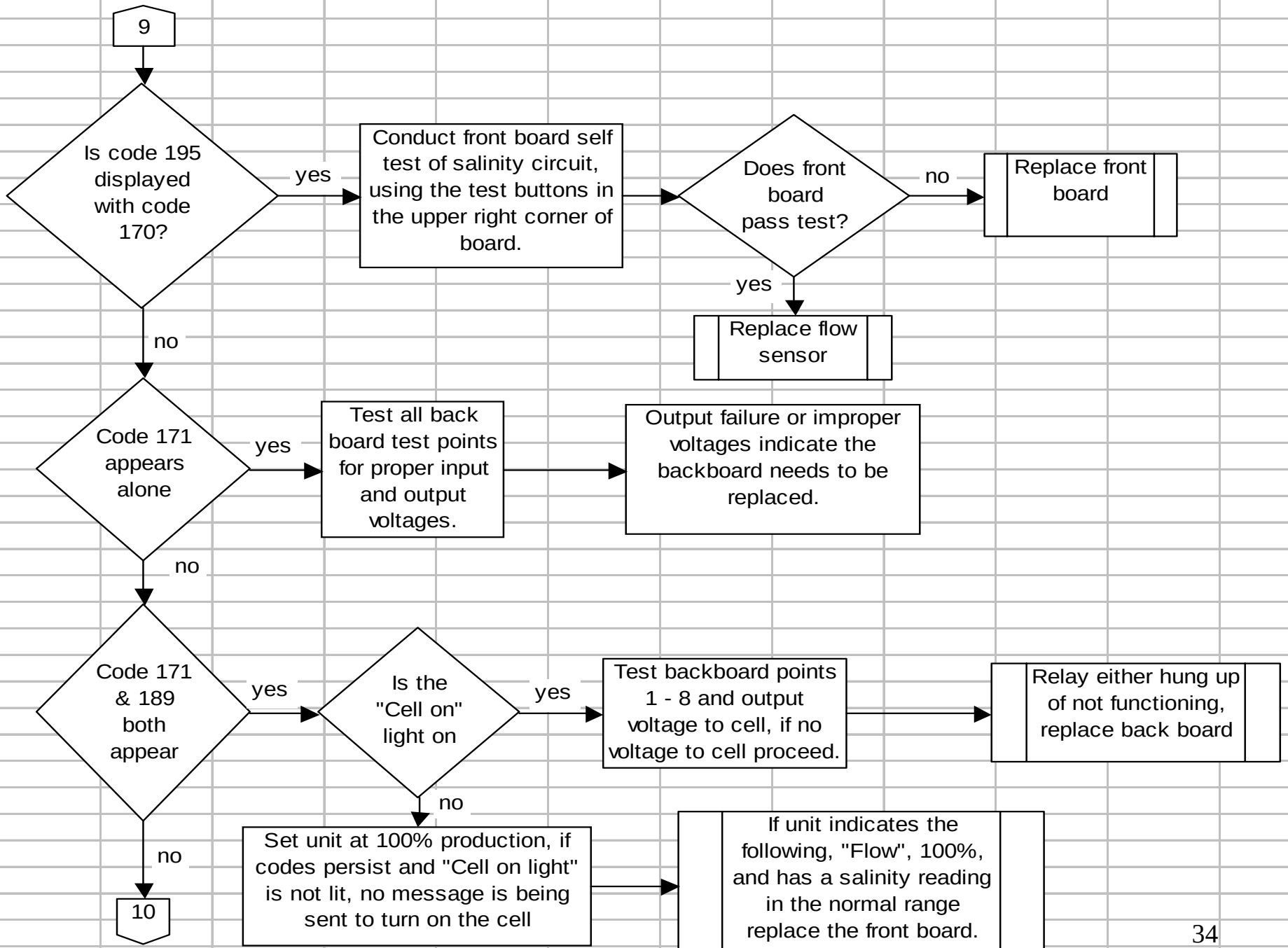

4
Code 124 appears
yes
Remove DC cord from cell and leave it removed, unit must be in alarm state with production set at 100%
What code appears after 2 alarm cycles?
123
Code 123 stays or returns, replace cell and DC cord
124
Code 124 is shown on LCD after second alarm cycle, replace backboard, current sensing circuit has failed.
no
Code 125 & 194 appear
yes
Inspect DC cord and cell for damage, also inspect cell for calciumcarbonate and debris
Clean cell in a mixture 4 parts water and 1 part acid, rinse with fresh water when done.
Reinstall cell and start unit, after the cell on light comes on if codes appear test the cell voltage at cell & backboard test points for DC voltage also between test points 4 & 5 for DC millivolts.
no
Replace damaged part or parts.
If DC voltage exceeds 28 VDC or less than 120 DC millivolts, replace cell and DC cord
5

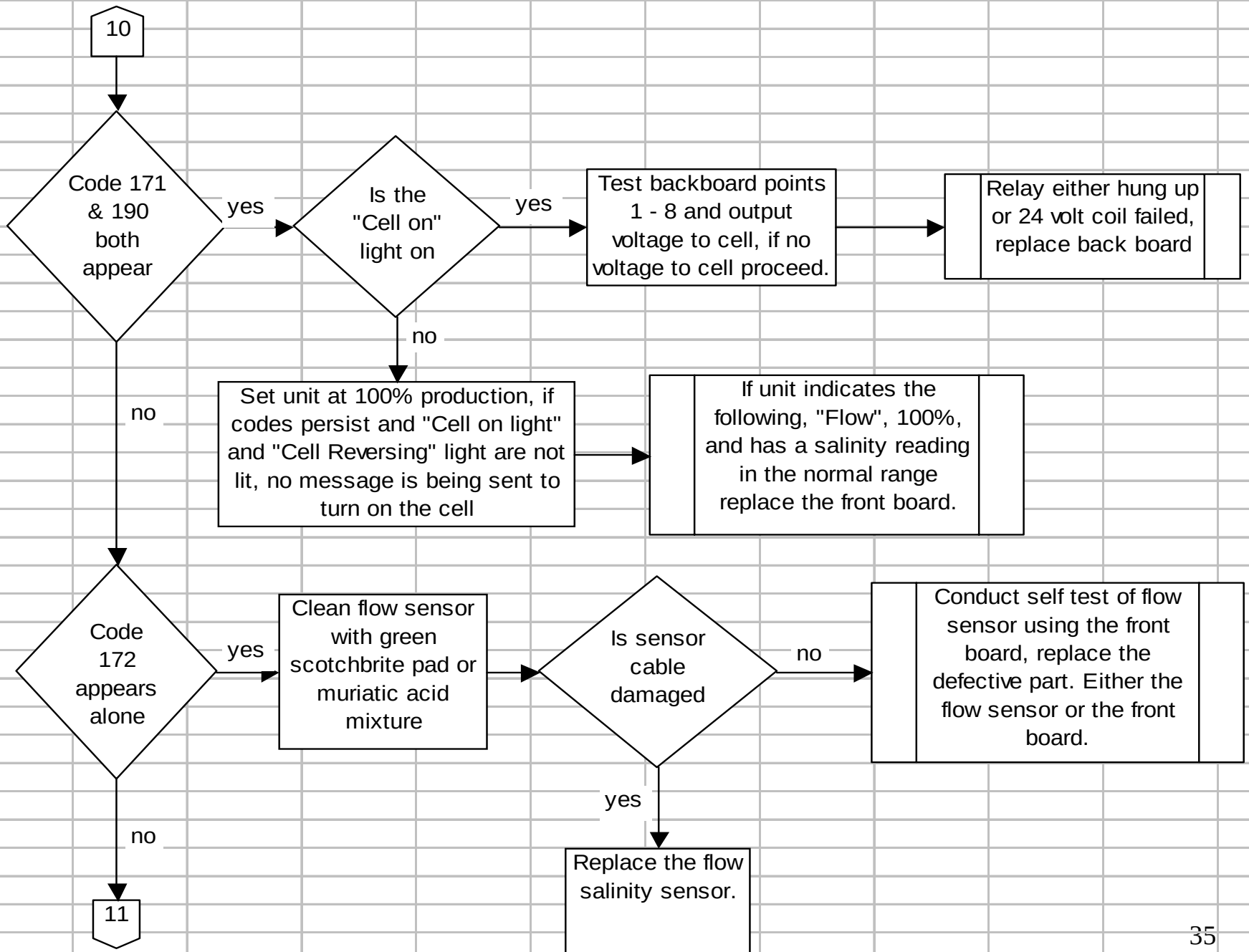

5
Code 126 appears
yes
Indicates low current in the forward or normal direction
Unit input voltage > 100/200 VAC
no
Read AC voltages on backboard test points using the following pairs 1 - 8, 2 - 7, if these voltages are wrong the transformer is bad, 3 & 6 voltage > 19VAC replace backboard.
yes
Source voltage problem notify electric company.
"NOTE"
Unit will not operate properly on 208 VAC
no
Code 127 appears
yes
Indicates low current in the reverse or self-cleaning direction
Unit input voltage > 100/200 VAC
no
Read AC voltages on backboard test points using the following pairs 1 - 8, 2 - 7, if these voltages are wrong the transformer is bad, 3 & 6 voltage > 19VAC replace backboard.
yes
Source voltage problem notify electric company.
"NOTE"
Unit will not operate properly on 208 VAC
no
6

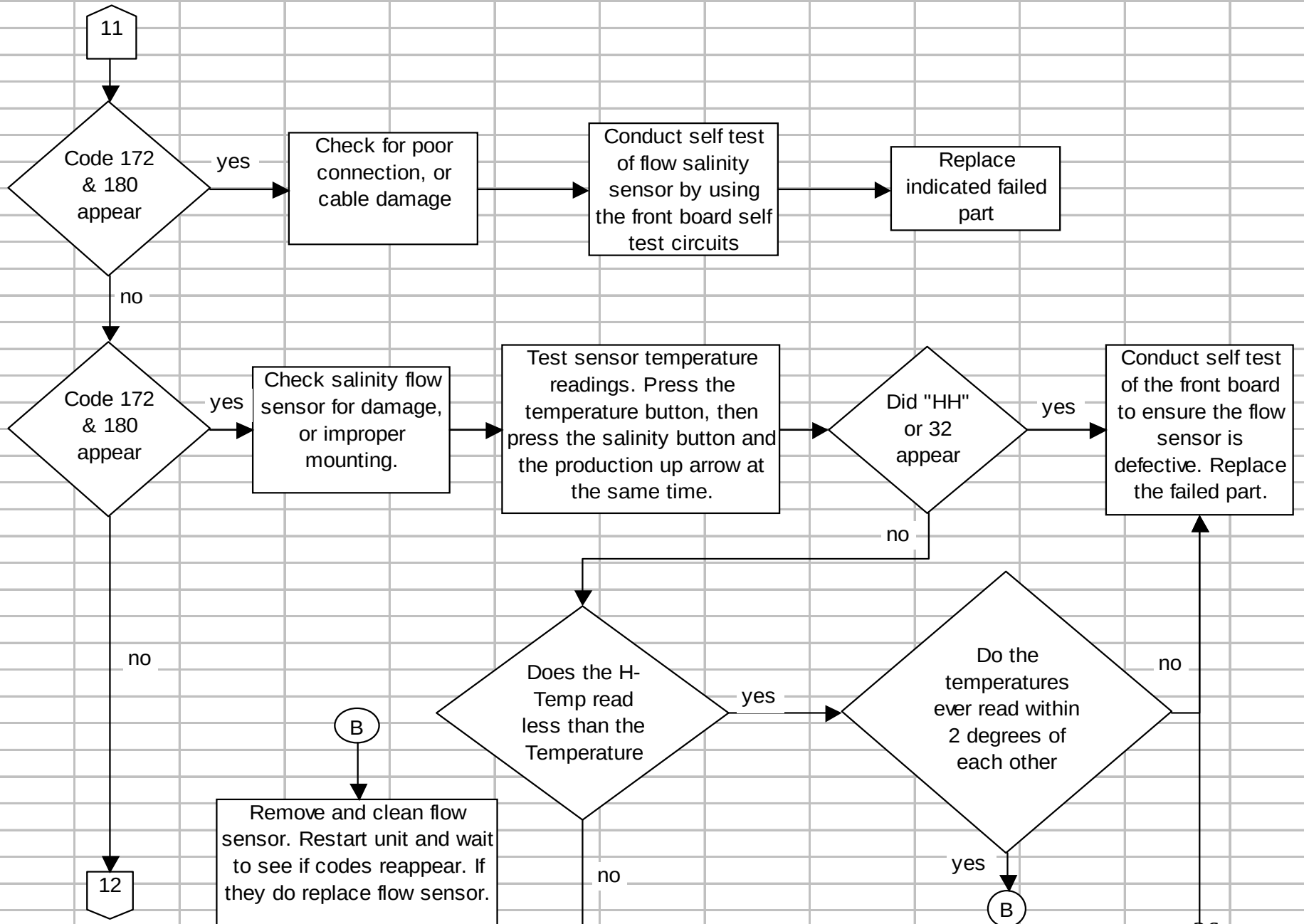

6
Code 144 appears
yes
Test salinity with Myron meter or other calibrated source
Do the readings agree
no
Clean flow salinity sensor and recheck readings
Do the readings agree
no
yes
yes
Add salt according to table in manual, wait 24 hours and recheck salinity level.
Conduct self test using the front board to determine which part has failed. Replace either the front board or the flow salinity sensor.
no
Code 145 appears
yes
If there is any doubt test the salinity with Myron meter or other calibrated source
Do the readings agree
no
Clean flow salinity sensor and recheck readings
Do the readings agree
no
yes
yes
Dilute pool water until desired salinity reading is achieved.
Conduct self test using the front board to determine which part has failed. Replace either the front board or the flow salinity sensor.
no
7

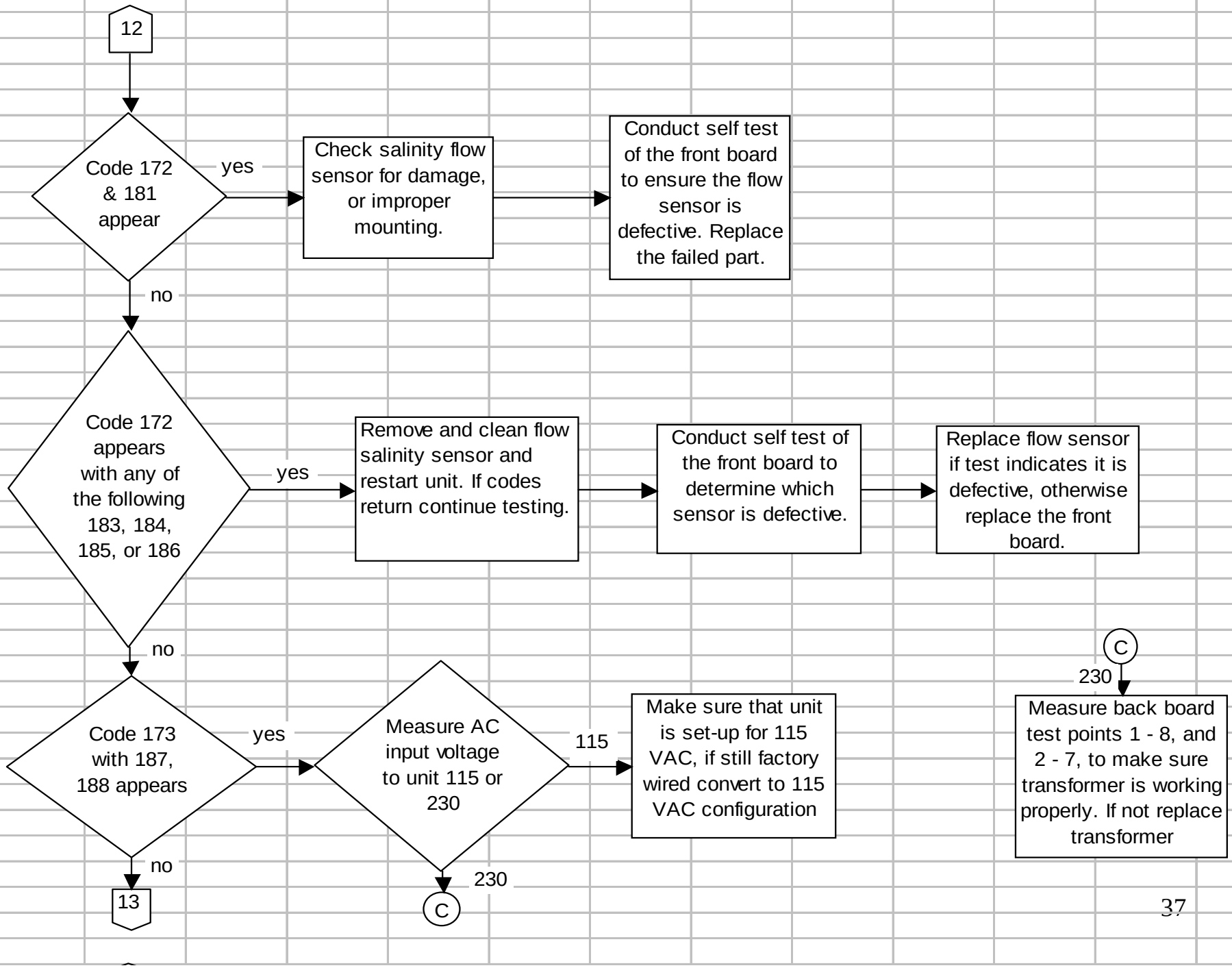

7
A
Code 170 appears alone
yes
Is the 170 on the LCD screen constantly
yes
Test the input voltage
Is input voltage 115 or 230 VAC
115
If the unit is still in factory configuration, change to 115 VAC operation. Normal operation should be restored.
230
Remove flow sensor from the front board if normal appearance is restored replace flow sensor, if it isn't replace the front board.
no
Is the AC voltage between the backboard test points 3 & 6 is <21volts
yes
Test the remaining test points on the backboard
If these readings are normal replace the back board
If AC voltage between test points 1 - 8, & 2 - 7 are low, test the input source voltage and if it is less than 100/200 VAC line voltage to low for operation.
no
Conduct self test of front board and flow sensor replace as necessary.
no
Code 170 appears with additional codes
no
If only code 170 appears on LCD test as stated above
A
yes
8

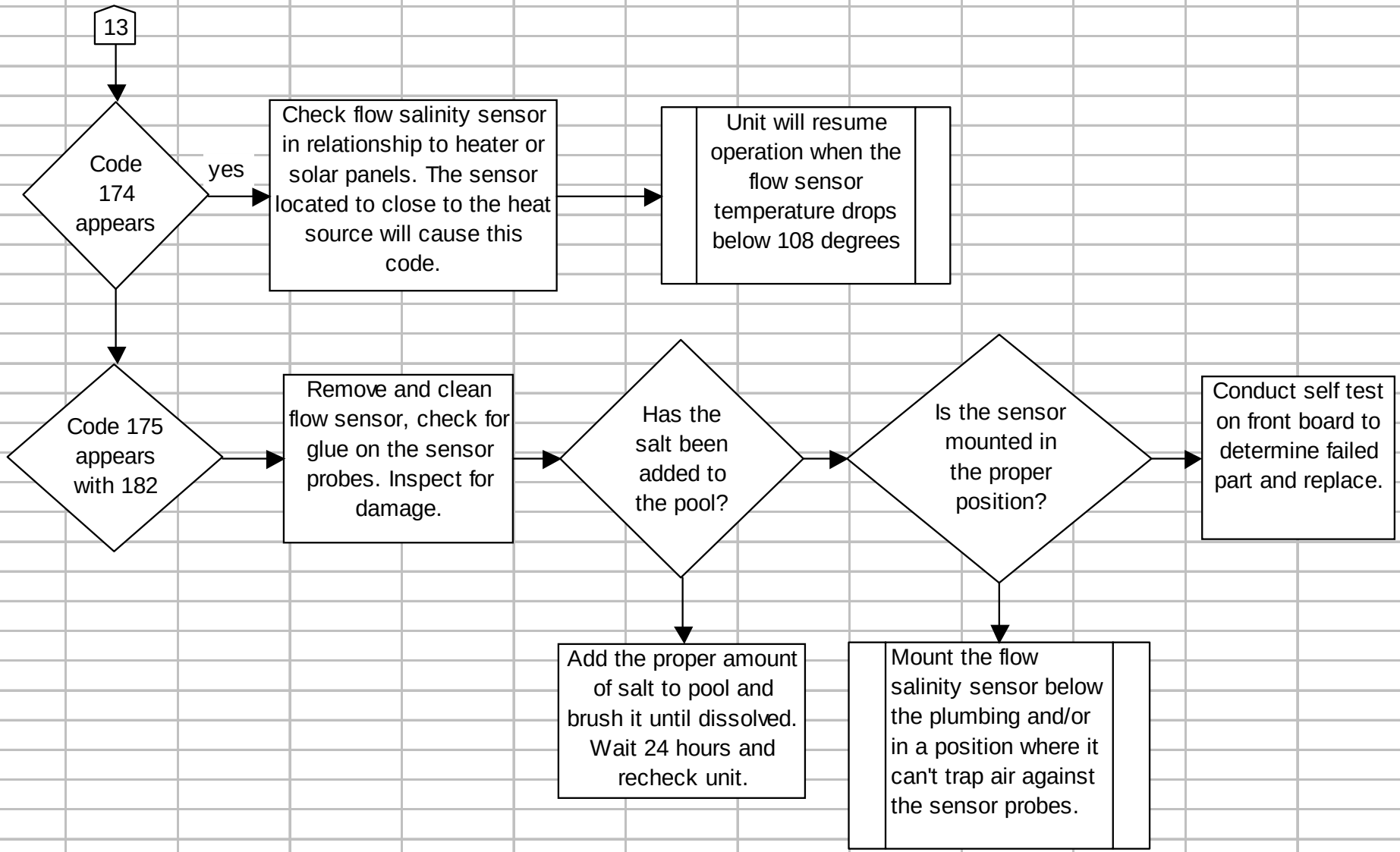

8
Is code 187 displayed with code 170?
yes
Test all test points on back board except from 4 - 5, if they are normal, the front board power supply is either too high or too low.
Front board is defective replace front board.
no
Is code 191 displayed with code 170?
yes
Test DC cell voltage, is it greater than 19 VDC?
no
Test cell current at upper left corner of front board, between test points "H" &"K" (as you look at the back of board). If reading is above 120 mv, replace front board.
Check cell and DC cord, clean the cell if needed, reinstall cell and restart unit, if 170 and 191 codes reappear replace front board
yes
no
Is code 193 displayed with code 170?
yes
Front has measured significant cell current when the SCR's on the back board are turned off.
Replace front board
no
9


9
Is code 195 displayed with code 170?
yes
Conduct front board self test of salinity circuit, using the test buttons in the upper right corner of board.
Does front board pass test?
no
Replace front board
yes
Replace flow sensor
no
Code 171 appears alone
yes
Test all back board test points for proper input and output voltages.
Output failure or improper voltages indicate the backboard needs to be replaced.
no
Code 171 & 189 both appear
yes
Is the "Cell on" light on
yes
Test backboard points 1 - 8 and output voltage to cell, if no voltage to cell proceed.
Relay either hung up of not functioning, replace back board
no
Set unit at 100% production, if codes persist and "Cell on light" is not lit, no message is being sent to turn on the cell
If unit indicates the following, "Flow", 100%, and has a salinity reading in the normal range replace the front board.
no
10


10
Code 171 & 190 both appear
yes
Is the "Cell on" light on
yes
Test backboard points 1 - 8 and output voltage to cell, if no voltage to cell proceed.
Relay either hung up or 24 volt coil failed, replace back board
no
Set unit at 100% production, if codes persist and "Cell on light" and "Cell Reversing" light are not lit, no message is being sent to turn on the cell
If unit indicates the following, "Flow", 100%, and has a salinity reading in the normal range replace the front board.
no
Code 172 appears alone
yes
Clean flow sensor with green scotchbrite pad or muriatic acid mixture
Is sensor cable damaged
no
Conduct self test of flow sensor using the front board, replace the defective part. Either the flow sensor or the front board.
yes
Replace the flow salinity sensor.
no
11


11
Code 172 & 180 appear
yes
Check for poor connection, or cable damage
Conduct self test of flow salinity sensor by using the front board self test circuits
Replace indicated failed part
no
Code 172 & 180 appear
yes
Check salinity flow sensor for damage, or improper mounting.
Test sensor temperature readings. Press the temperature button, then press the salinity button and the production up arrow at the same time.
Did "HH" or 32 appear
yes
Conduct self test of the front board to ensure the flow sensor is defective. Replace the failed part.
no
no
Does the H-Temp read less than the Temperature
yes
Do the temperatures ever read within 2 degrees of each other
no
B
Remove and clean flow sensor. Restart unit and wait to see if codes reappear. If they do replace flow sensor.
no
yes
B
12


12
Code 172 & 181 appear
yes
Check salinity flow sensor for damage, or improper mounting.
Conduct self test of the front board to ensure the flow sensor is defective. Replace the failed part.
no
Code 172 appears with any of the following 183, 184, 185, or 186
yes
Remove and clean flow salinity sensor and restart unit. If codes return continue testing.
Conduct self test of the front board to determine which sensor is defective.
Replace flow sensor if test indicates it is defective, otherwise replace the front board.
no
Code 173 with 187, 188 appears
yes
Measure AC input voltage to unit 115 or 230
115
Make sure that unit is set-up for 115 VAC, if still factory wired convert to 115 VAC configuration
230
C
C
230
Measure back board test points 1 - 8, and 2 - 7, to make sure transformer is working properly. If not replace transformer
no
13


13
Code 174 appears
yes
Check flow salinity sensor in relationship to heater or solar panels. The sensor located to close to the heat source will cause this code.
Unit will resume operation when the flow sensor temperature drops below 108 degrees
Code 175 appears with 182
Remove and clean flow sensor, check for glue on the sensor probes. Inspect for damage.
Has the salt been added to the pool?
Add the proper amount of salt to pool and brush it until dissolved. Wait 24 hours and recheck unit.
Is the sensor mounted in the proper position?
Mount the flow salinity sensor below the plumbing and/or in a position where it can't trap air against the sensor probes.
Conduct self test on front board to determine failed part and replace.

Step 4 - Blank Screen