



ZODIAC

DuoClear™

Troubleshooting Manual



IMPORTANT SAFETY INFORMATION

READ AND FOLLOW ALL INSTRUCTIONS.

NOTE: This manual is for use by licensed electricians or trained pool professionals only. No other person is to install, service or troubleshoot this C Series Chlorinator.



WARNING

Failure to heed the following warnings can result in permanent injury, electrocution or drowning.

ELECTRICAL HAZARD

- To reduce risk of electrical shock
 - Make sure all power to pool equipment area is off prior to any installation or removal of DuoClear components.
 - Replace damaged power pack cord immediately.
 - Do not bury cord. Locate cord to minimize abuse from lawn mowers, hedge trimmers and other equipment.
- Severe shock or injury will likely occur as a result of a drill or drill cord coming in contact with water. Never allow electric drill or cord to come in contact with water. Only plug drill into a Class A (5 Milliampere Trip) protected Ground Fault Circuit Interrupter (GFCI) in accordance with the National Electrical Code Section 680 (USA only). Please see your drill owner's manual for further safety precautions.
- Install the power pack at least 10 feet from the inside walls of a pool to prevent any possibility of the unit coming in contact with water.
- Your DuoClear system has been designed with an electronic flow switch. This device automatically switches the chlorinator 'OFF' when the water through the cell stops. To prevent cell damage and personal injury, do not in any way interfere with this system which has been designed for your protection.

CHEMICAL USE HAZARD

- To avoid personal injury when working with pool chemicals, always wear rubber gloves and eye protection and work in a well-ventilated area. Use caution when choosing a location to open and use chemicals as they may damage any surface in which they come in contact.
- The addition of certain chemicals can reduce the effectiveness of chlorine. Always make sure that proper residual chlorine levels are maintained to avoid personal injury.
- This product manufactures chlorine. Individuals with any type of chlorine sensitivity should take the appropriate precautions to avoid injury or illness.

EQUIPMENT WATER PRESSURE HAZARD

- Always turn pump off prior to installing or removing any DuoClear system. Your pump/filter system is operated under pressure and the pressure must be released before you begin work. Please see your pump/filter owner's manual for further instructions.
- To avoid vessel damage, water pressure in the cell must not exceed 45 psi.

PREVENT CHILD INJURY AND DROWNING

- To reduce the risk of injury, do not permit children to operate this product.
- Do not let anyone, especially small children, sit, step, lean, or climb on any equipment installed as part of your pool's operational system. Unless otherwise stated, ALL components of your pool's operational system should be located at least 3 feet from the pool so children cannot use the equipment to gain access and be injured or drown.



CAUTION

Failure to heed the following warnings could cause damage to pool equipment or personal injury.

- Chlorinator must be installed and operated as specified.
- Scratching or bending plates in vessel housing can reduce cell life.
- Power to the DuoClear system should be turned off before unplugging the vessel connectors to prevent cell damage and low voltage sparks.
- Keep the cell terminals protected with a light coating of silicone grease to allow for a positive electric connection. Use of any other type of grease may damage the terminal seals and 'o' rings. Do not immerse these terminals in acid wash solution, and avoid accidental contact with salt water.
- Water above the temperature of 104 degrees F (40 degrees C) flowing through the vessel can cause plastic vessel to discolor.
- Power pack must not be installed directly above any other heat source such as filter, pump or heater. It must be at least 1 Ft. (300 mm) from the ground to allow free circulation of air around it. It must not be installed in a closed box. If the power pack is to be installed on a post, then it must be centrally positioned on a flat panel of suitable waterproof material at least 10 inches (240mm) wide and 18 inches (440mm) high.
- Check the cell frequently to prevent the accumulation of pool debris that for any reason may have by-passed the pool filter.

Table of Contents

Safety Instructions	2	Chlorine reading too high	12
Look /Feel.	3	Calcium Build-up On Cell	12
Circuit Breaker	4	Reversing Polarity	13
Power Cord.	4	Cleaning/Replacing Cell	13
Testing Power Path	5	Touch Pad PCB	14
Chlorinator Not Operating.	6	To Replace the Clear Cover.	15
No chlorine reading	7	PCB Replacement for DuoClear.	16
Output Lights will Not go to 100%	8	Triac Screws.	17
Output Lights will Not go Down	9	Exploded Diagram	18
Amber Output Light Blinking.	9	Parts List.	19
Transformer	9		
No Flow Light Is On	10		
Add Salt Light Is On	11		
Add Salt Light and/or No Flow Light Are On	11		

Look/Feel

Before removing chlorinator cover, check the following:

1. Is the pool pump on?
2. Is the chlorinator turned on?
3. Do the indicator lights function? (If NO, see Output Lights pg. 8-9)

(If all of the above answers are “YES”, there is no problem with the chlorinator. Have the consumer bring a water sample to their dealer for analysis.)

4. Is the circuit breaker tripped? (see Circuit Breaker pg. 4)
5. Is the output cord damaged or the plug cap not properly attached? (see No Flow Light Is On pg. 10)
6. Is there calcium built-up on the cell? (see Calcium Build-up on Cell pg. 12)

After checking the above items:

1. Turn off power supply.
2. Remove 4 screws to remove cover and hang cover from venting with “S” hooks provided in kit. Do not disconnect ribbon wire. Check the following:
 - Are there any visible burn marks?
 - Is there any visible water damage?
 - Are there any loose wires or screws?



Circuit Breaker

Reset Circuit Breaker

1. Turn off power supply.
2. Find circuit breaker on bottom near power cord. **Note:** In some cases, insects may make nests under edge of power pack – use caution.
3. Push button in.
4. Turn on power supply.
5. If breaker continues to trip, replace breaker and PC board.

Replace Circuit Breaker

1. Disconnect power supply.
2. Remove 4 screws to remove cover.
3. Disconnect ribbon wire connector from power PCB and set cover aside.
4. Remove 2 push-on wire connectors from back of circuit breaker.
5. Use pliers to squeeze base of circuit breaker and push through hole from the inside.
6. Push new circuit breaker through hole from the outside till it snaps in place.
7. Reconnect 2 push-on wires to back of circuit breaker.
8. Reconnect ribbon wire connector to power PCB.
9. Replace cover with 4 screws.
10. Replace chlorinator on wall.
11. Connect power supply.

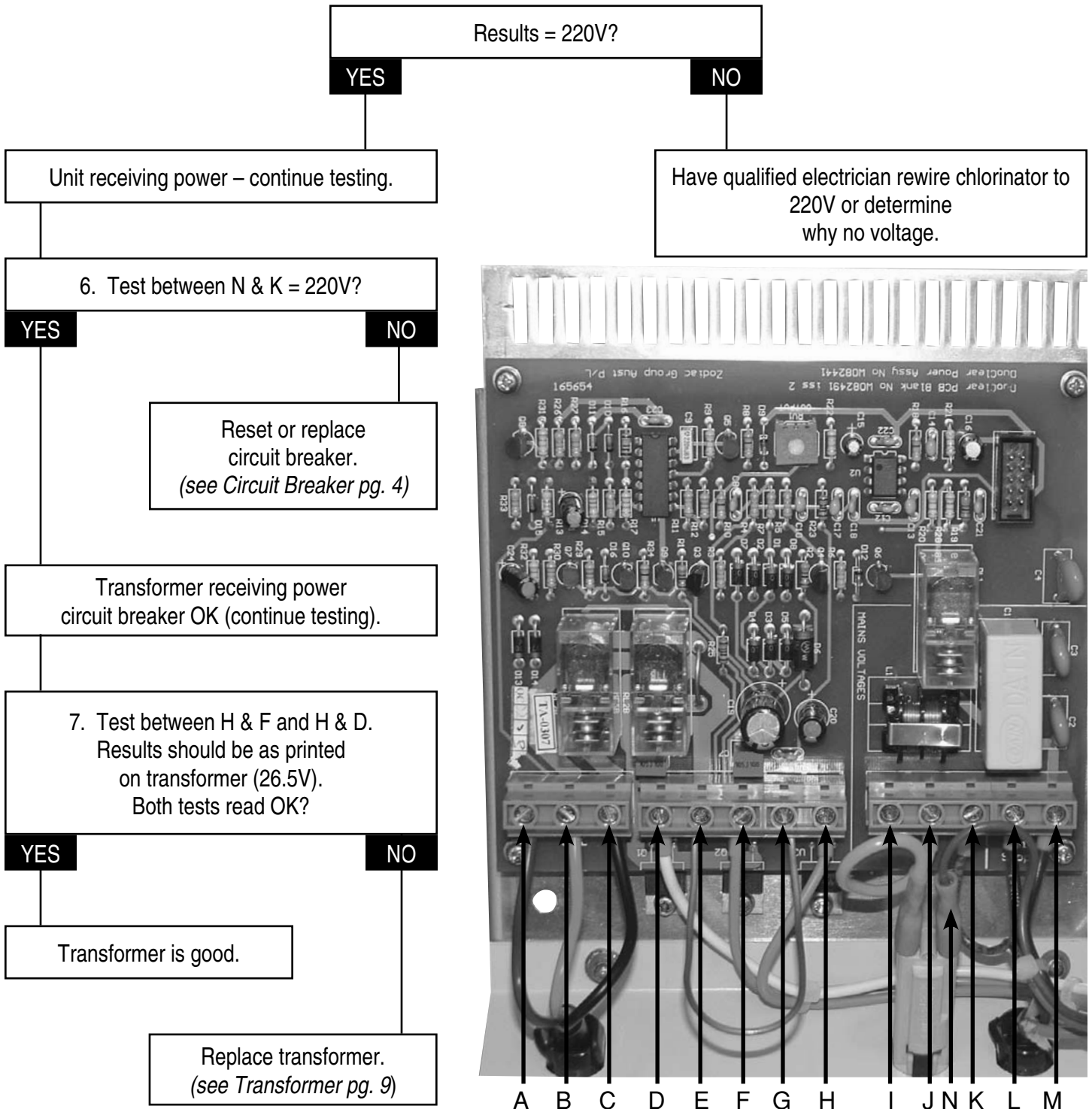
Power Cord

Power Cord Replacement

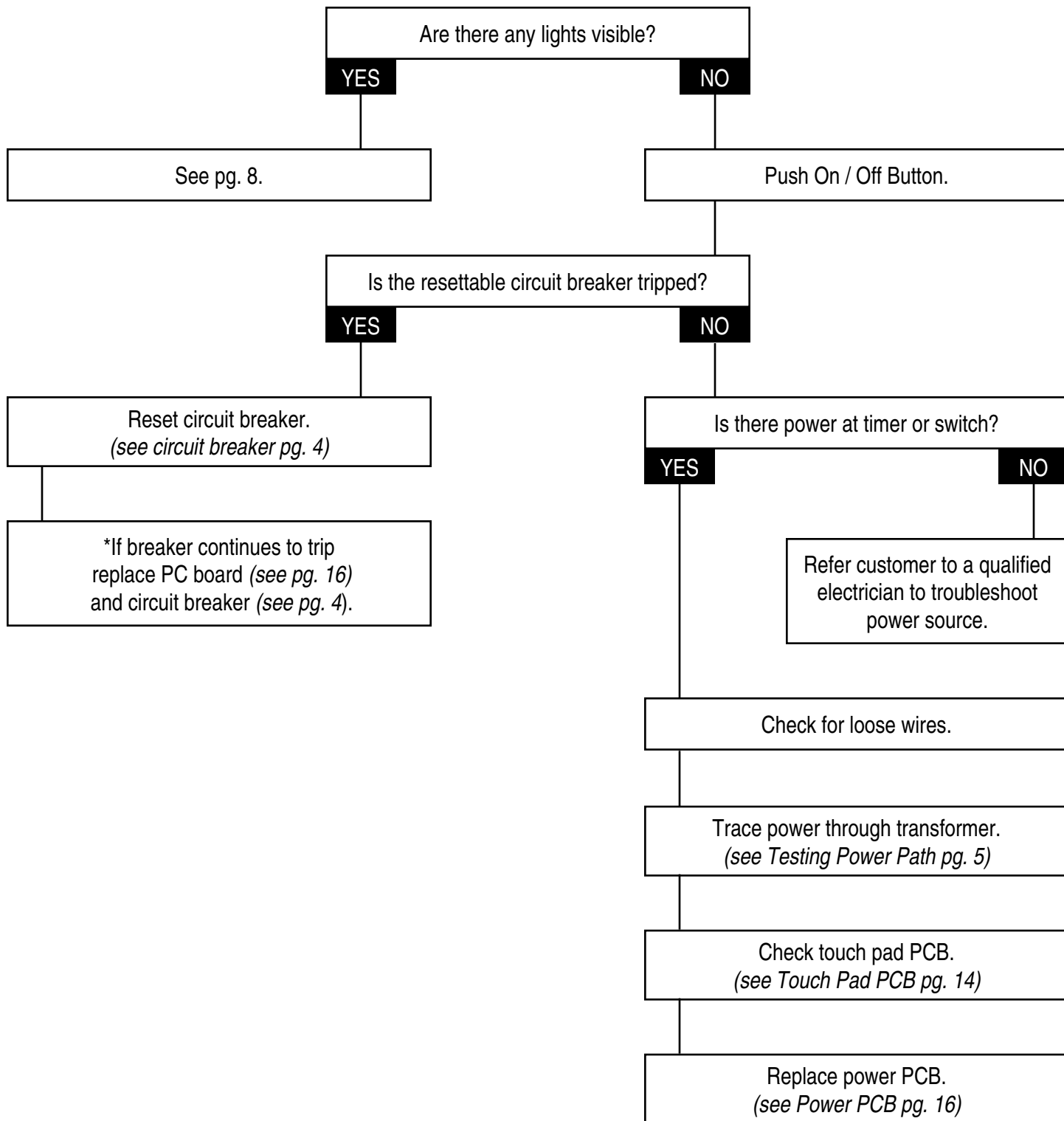
1. Disconnect power cord from power source.
2. Remove 4 screws to remove cover.
3. Disconnect ribbon wire connector from power PCB and set cover aside.
4. Unscrew ground wire from back and disconnect the ground wire.
5. Unscrew posts that attach 3 input wires and remove the fourth wire from the circuit breaker.
6. Use pliers to squeeze base of power cord holder and push through hole from the inside.
7. Unclip power cord holder and transfer to new power cord.
8. Push power cord holder with new power cord through hole from the outside till it snaps in place.
9. Reconnect all wires and screw ground wire to back.
10. Reconnect ribbon wire connector to power PCB.
11. Replace cover with 4 screws.
12. Replace chlorinator on wall.
13. Connect power cord to power source.

Testing the Power Path

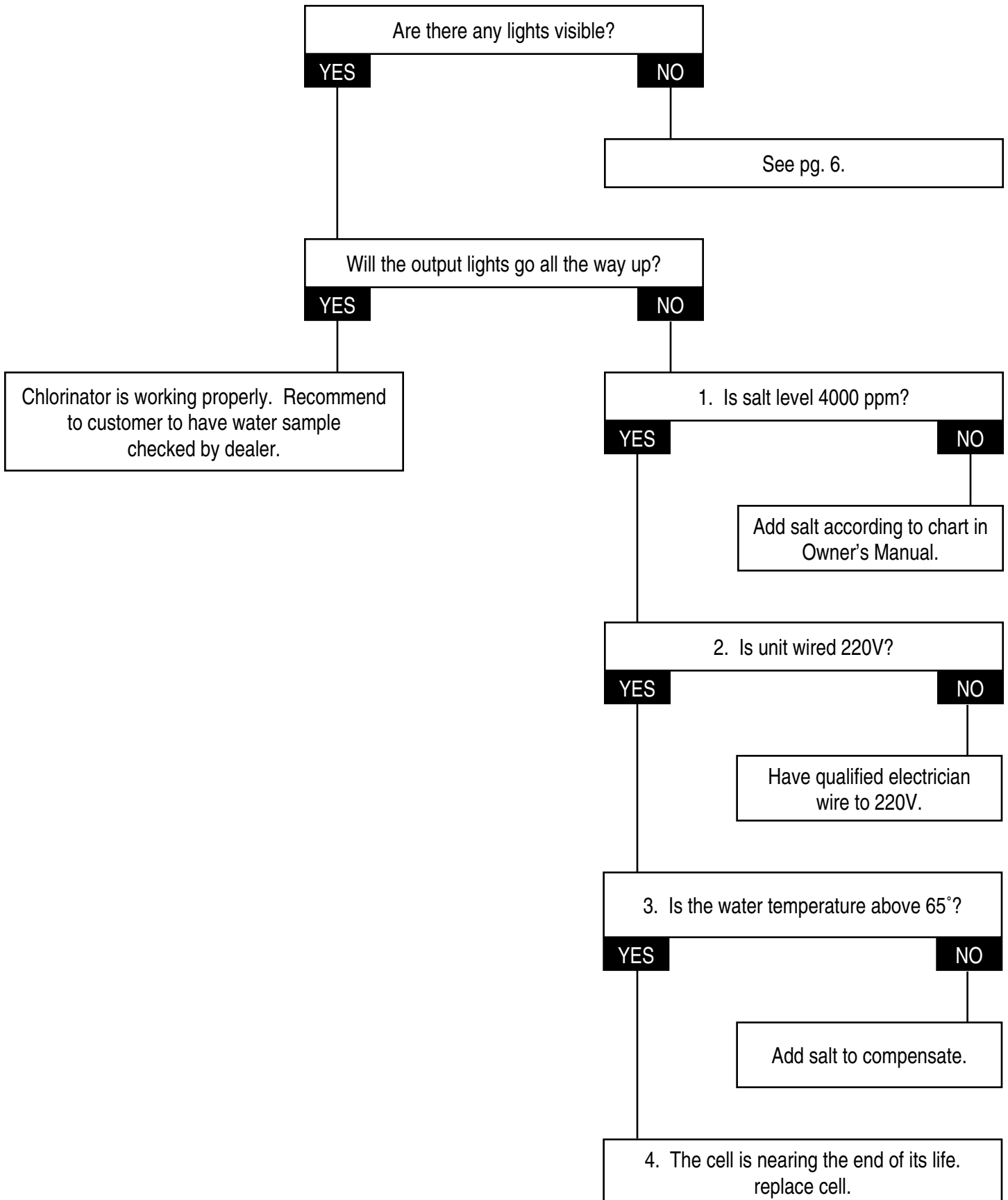
1. Turn off power supply.
2. Remove 4 screws to remove cover and hang cover from venting with "S" hooks provided in kit. Do not disconnect ribbon wire.
3. Turn on power supply.
4. Use multimeter set on AC volts up to at least 250 VAC to test between L & M (All results should be +/- 10%).



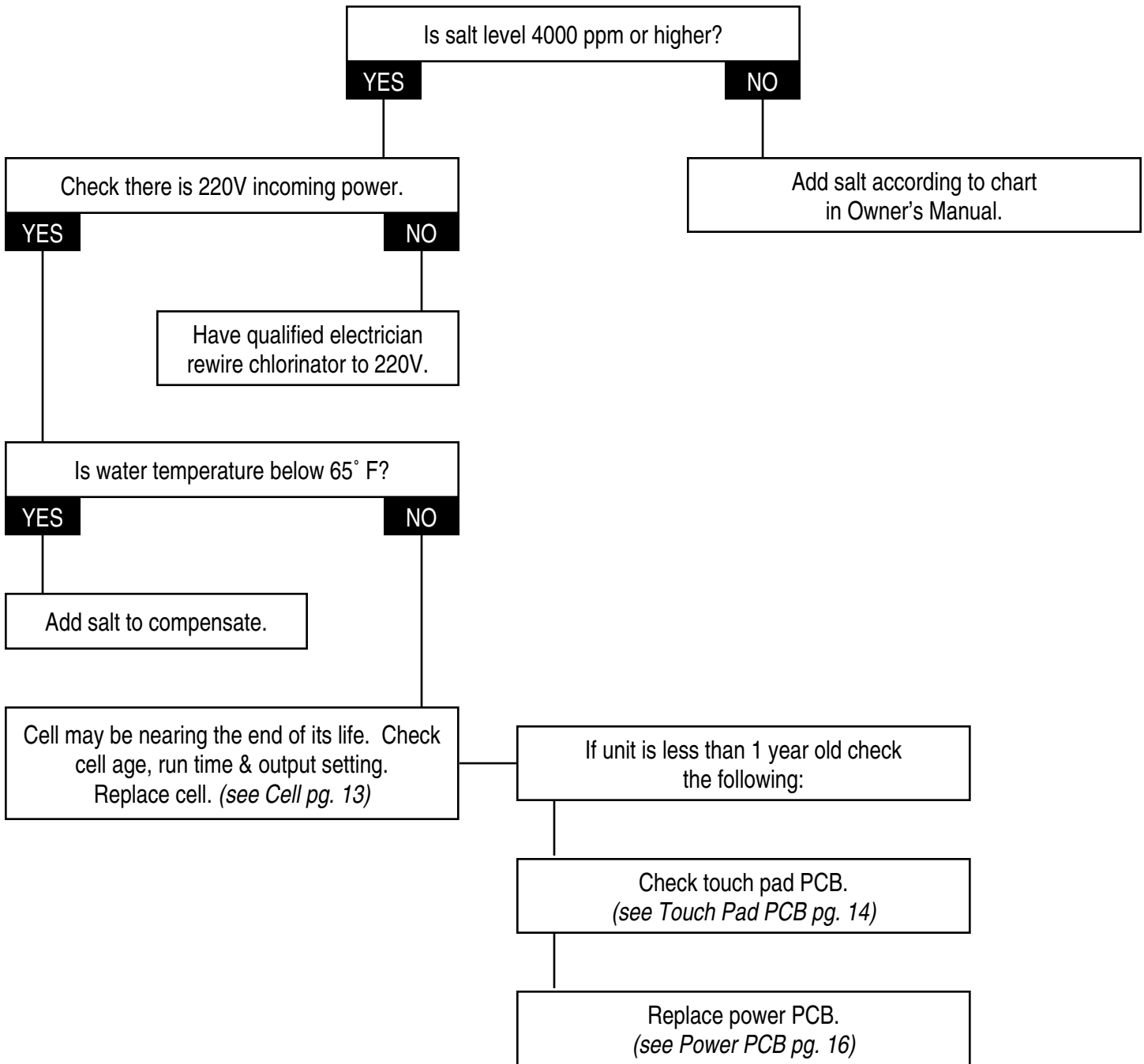
Chlorinator Not Operating



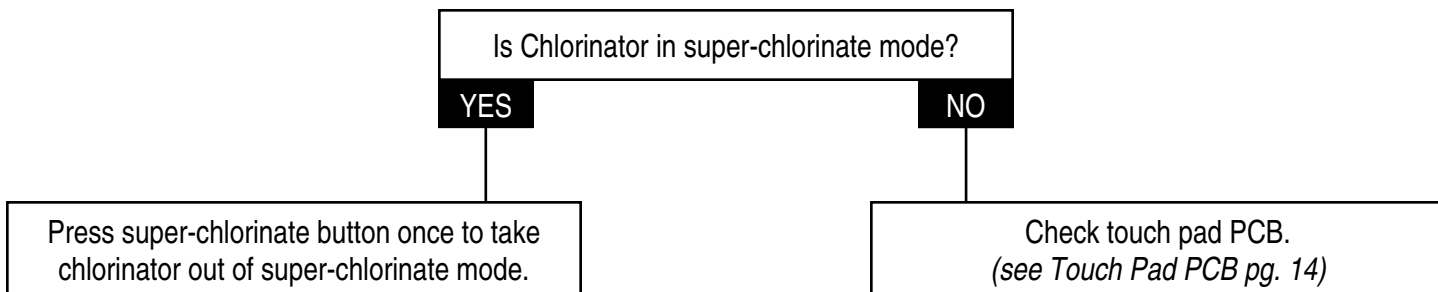
No Chlorine Reading



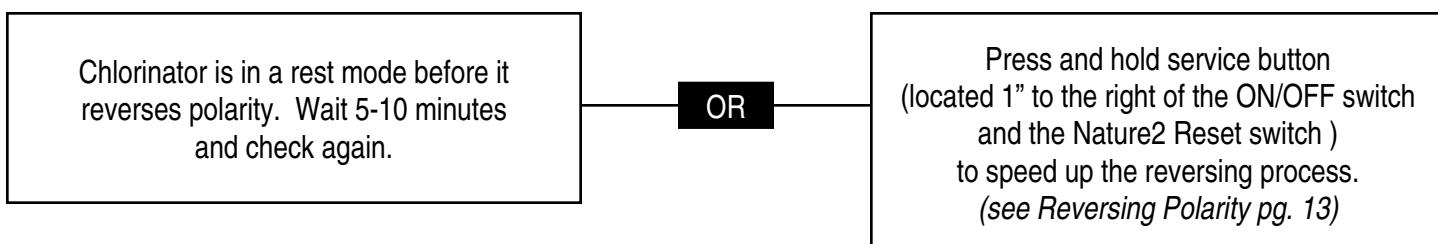
Output Lights Will Not Go To 100%



Output Lights Will Not Go Down



Amber Output Light is Blinking



Transformer

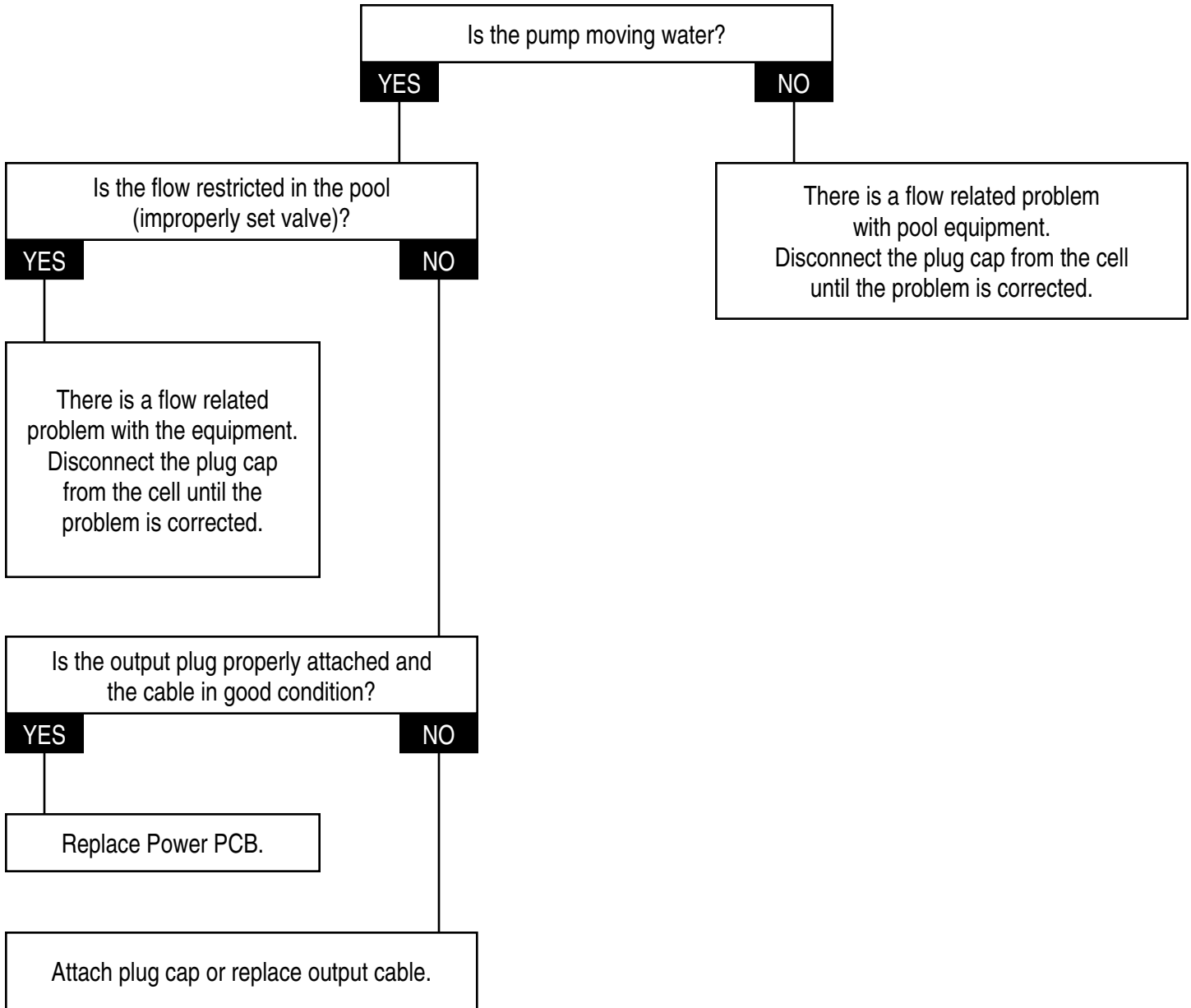
Testing

(see *Testing Power Path* pg. 5)

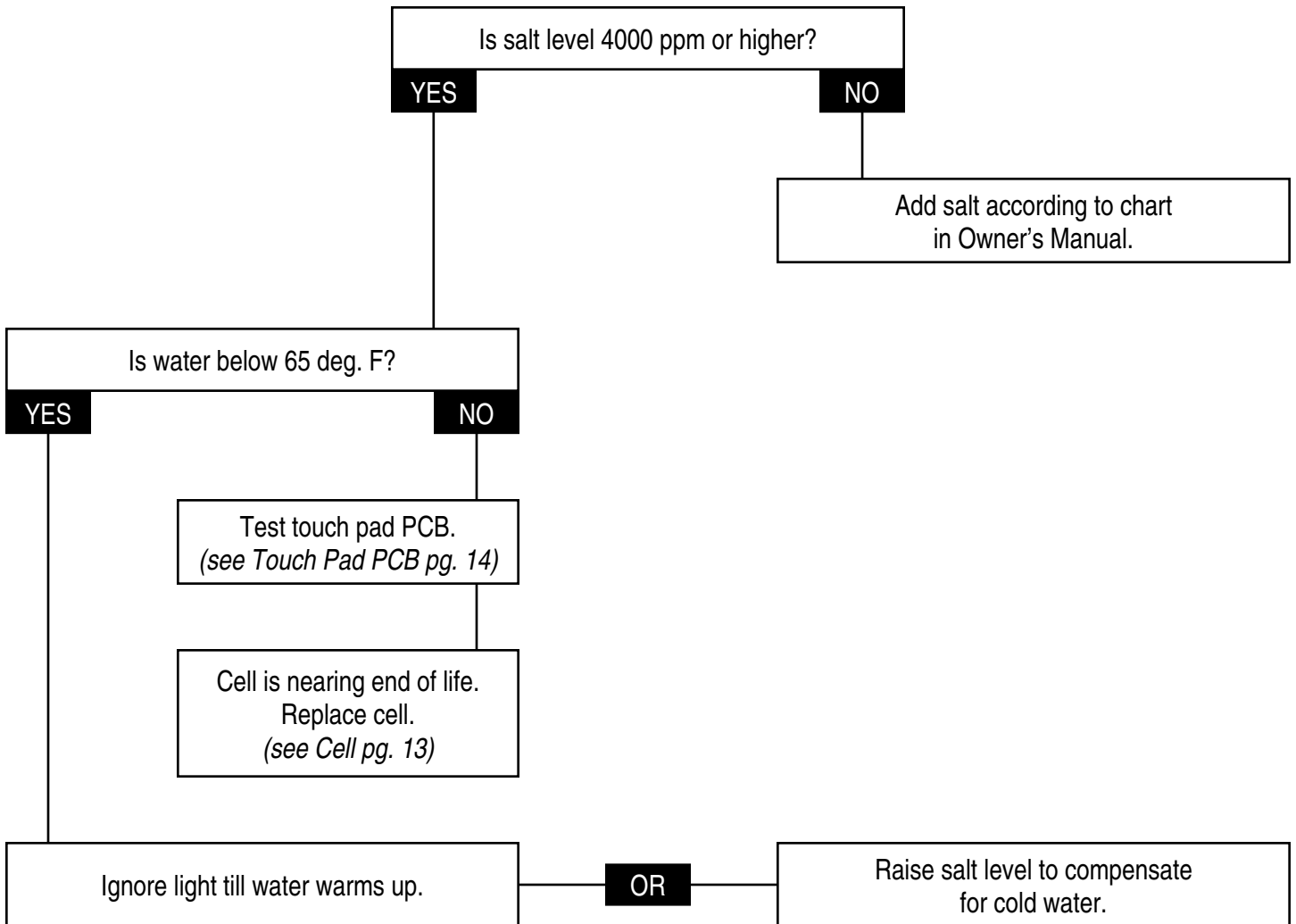
Replacement

1. Disconnect power supply.
2. Remove chlorinator from wall.
3. Remove 4 screws to remove cover.
4. Remove ribbon wire connector from power PCB and set cover aside.
5. Disconnect the 5 wires from the transformer (keep track of each wire location for reassembly).
6. Turn over powerpack, remove screw from the center of the transformer and remove the transformer.
7. Mount new transformer using the nut & bolt.
8. Attach wires from new transformer to correct plastic terminals.
9. Attach ribbon wire connector.
10. Attach cover with 4 screws.
11. Replace chlorinator on wall.
12. Reconnect power supply.

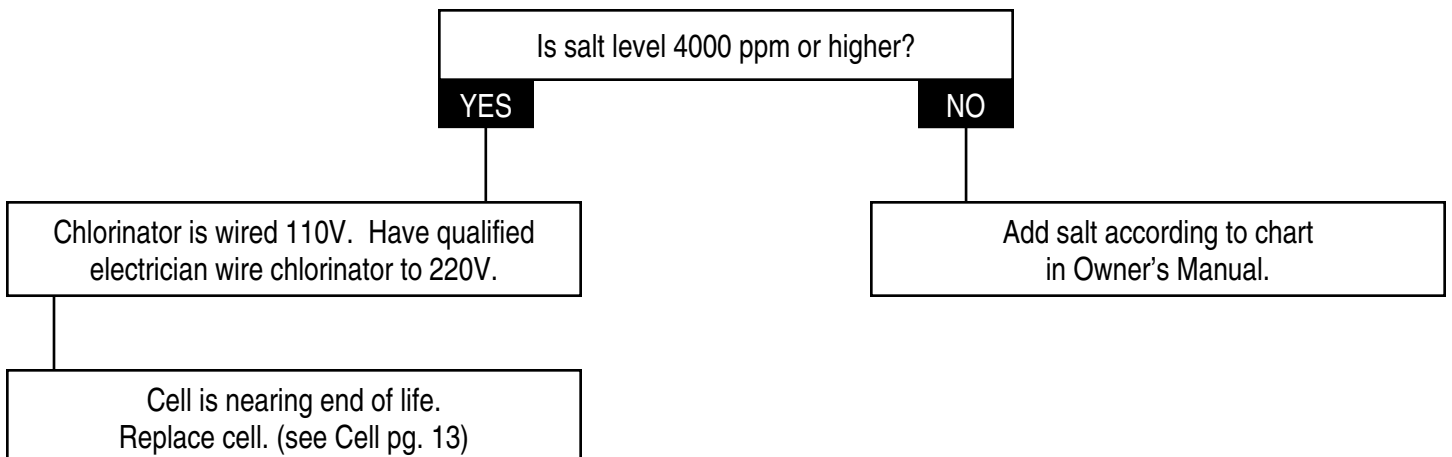
No Flow Light is On



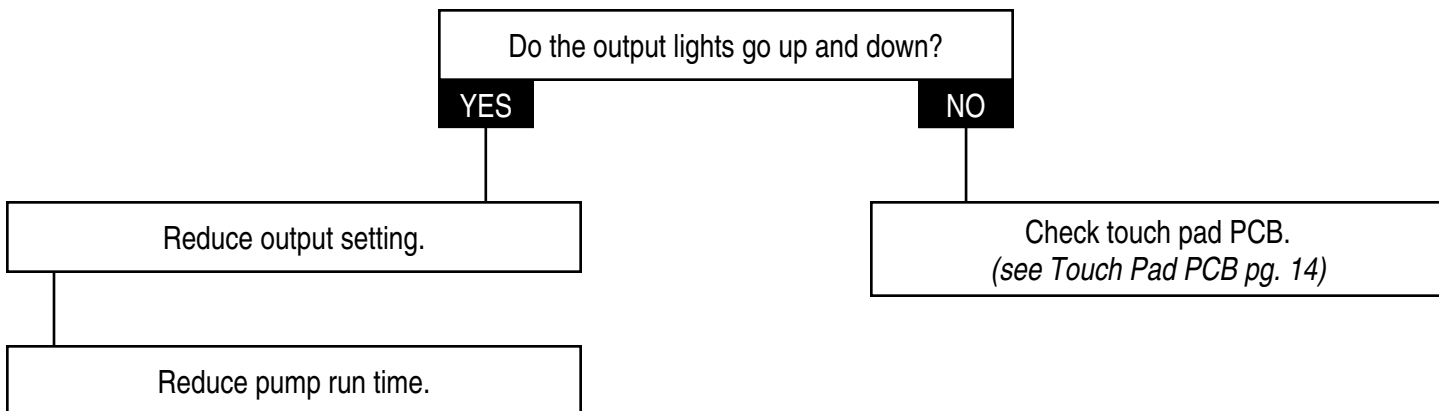
Add Salt Light is On



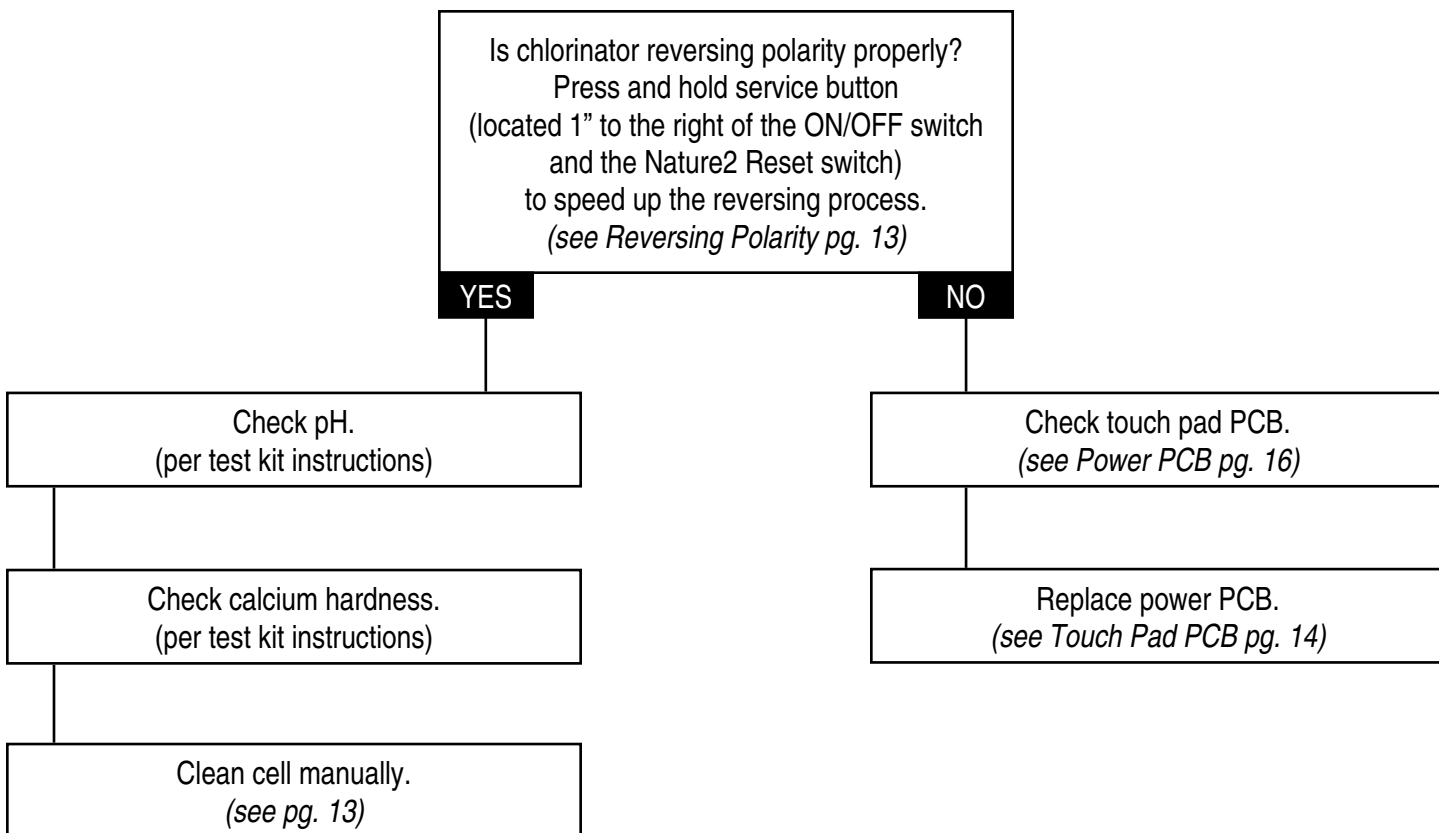
Only 1 or 2 Output Lights and/or Add Salt and/or No Flow Lights are Flickering



Chlorine Reading is Too High



Calcium Build-up on Cell



Note: New plaster pools will have a continuous demand for acid for 6 months or more.

High pH conditions and/or high calcium hardness levels will make scale build-up more likely. Maintain a pH between 7.2 and 7.6.

Reversing Polarity

1. With power on, be sure chlorinator is NOT in super-chlorinate mode.
2. Locate service button 1" to the right of the ON/OFF switch and Nature2 Reset switch.
3. Press and hold service button down.
4. You should hear a click and see the output lights flash once within 30 seconds (this indicates the polarity has reversed).
5. Continue to hold service button down to hear and see polarity reversing every 10 – 15 seconds.
6. If it does not switch polarity or times are longer than above, check touch pad PCB (see pg. 14) or Replace power PCB (see pg. 16).

Cell



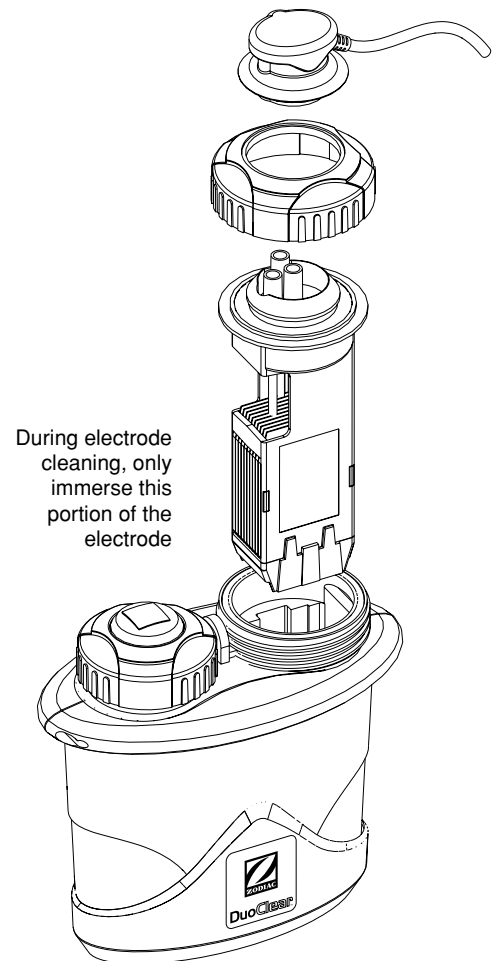
WARNING

Cell is under pressure! Make sure that the pump is off and that the pressure has been released by opening the air-bleed valve on top of the filter before removing the cell.

Clean the Cell

1. Turn off pump and the DuoClear.
2. Close any applicable valves.
3. Remove yellow plug cap from DuoClear.
4. Unscrew locking ring and remove cell.
5. Hose off excess calcium.
6. Use a solution of 10 parts water to 1 part muriatic acid in a plastic pail (stronger solutions will damage the cell and void the warranty). Submerge only the cell portion and let sizzle for 10-15 minutes. If scraping is needed, use a soft object like a popsicle stick (no metal).
7. Remove cell and rinse with fresh water. Repeat soaking as needed. Rinse and replace.
8. Insure o-ring is in place.
9. Tighten locking ring and attach yellow plug cap.
10. Open any applicable valves.
11. Start pump and check for leaks.

CAUTION: Always wear rubber gloves & eye protection when handling muriatic acid. Always pour acid into water, NEVER water into acid. Sodium bicarbonate (baking soda) neutralizes muriatic acid.



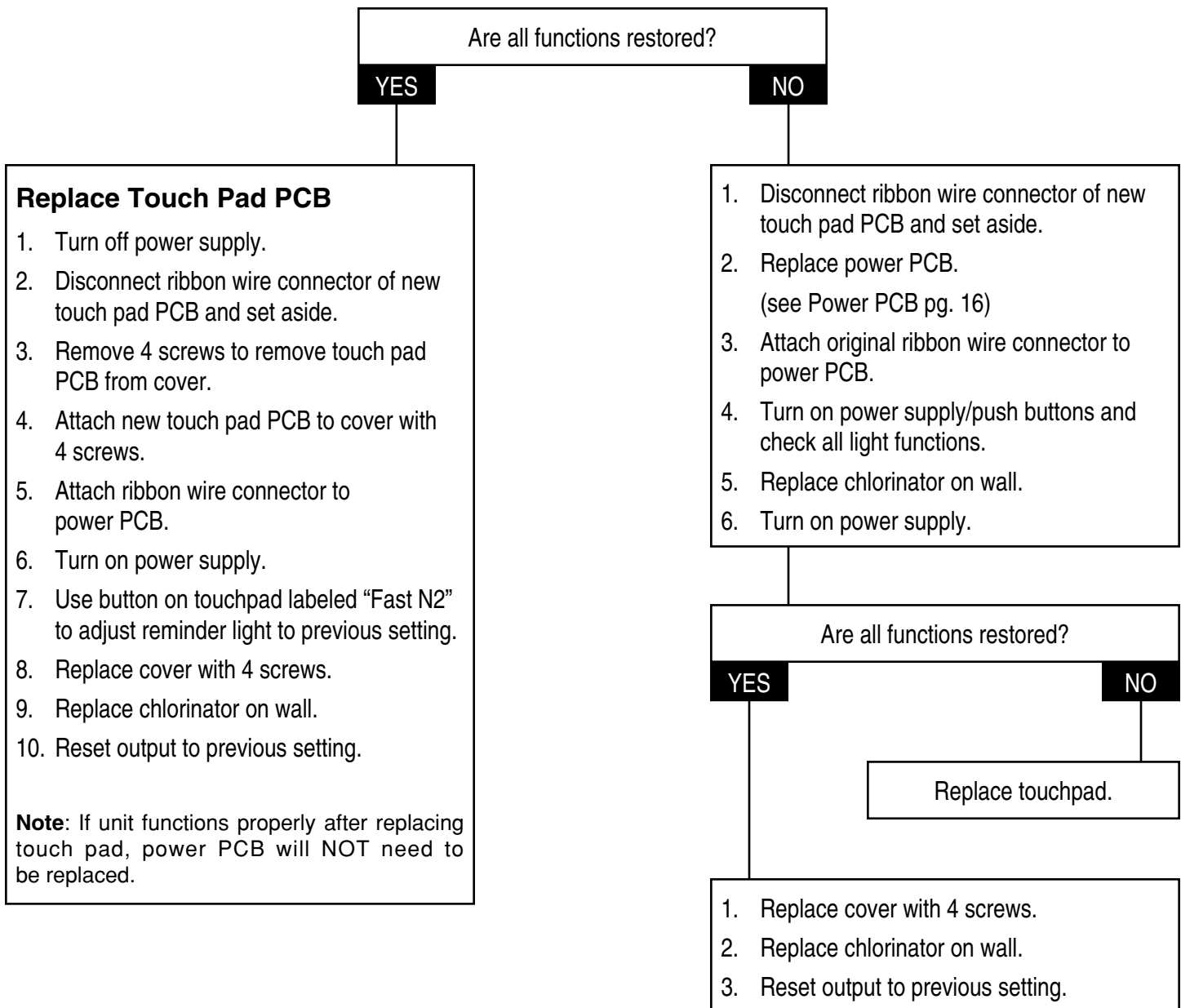
Replace the Cell

1. Turn off pump.
2. Close any applicable valves.
3. Remove yellow plug cap from DuoClear.
4. Unscrew locking ring and remove cell.
5. Insure o-ring is in place.
6. Insert new cell and tighten lock ring.
7. Attach yellow plug cap.
8. Open any applicable valves.
9. Start pump and check for leaks.

Touch Pad PCB

Check / Replace

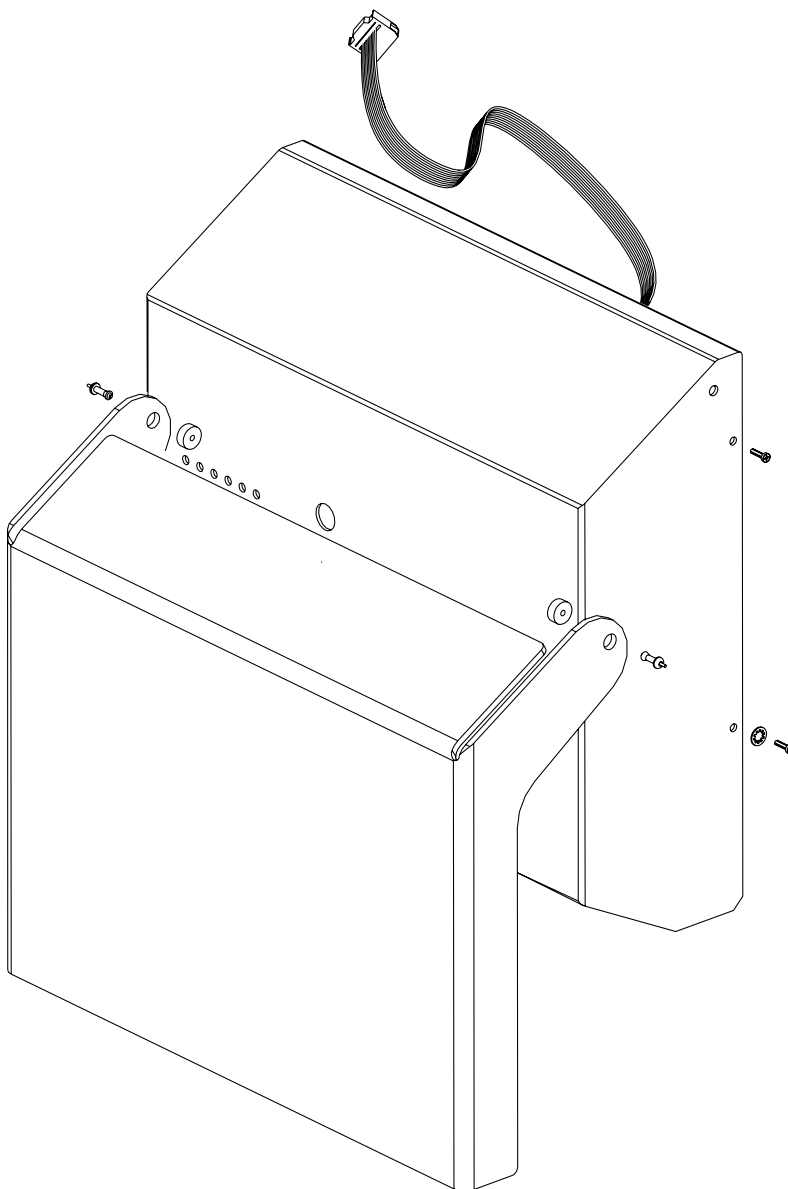
1. Note position of Nature2 reminder light and output setting.
2. Turn off power supply.
3. Remove chlorinator from wall if needed.
4. Remove 4 screws to remove cover.
5. Disconnect ribbon wire connector from power PCB (do NOT remove touch pad PCB from cover at this time).
6. Plug ribbon wire connector from new touch pad PCB into power PCB.
7. While holding edges of touch pad PCB, turn on power supply.
8. Push buttons and check all light functions.



Clear Cover

Replace

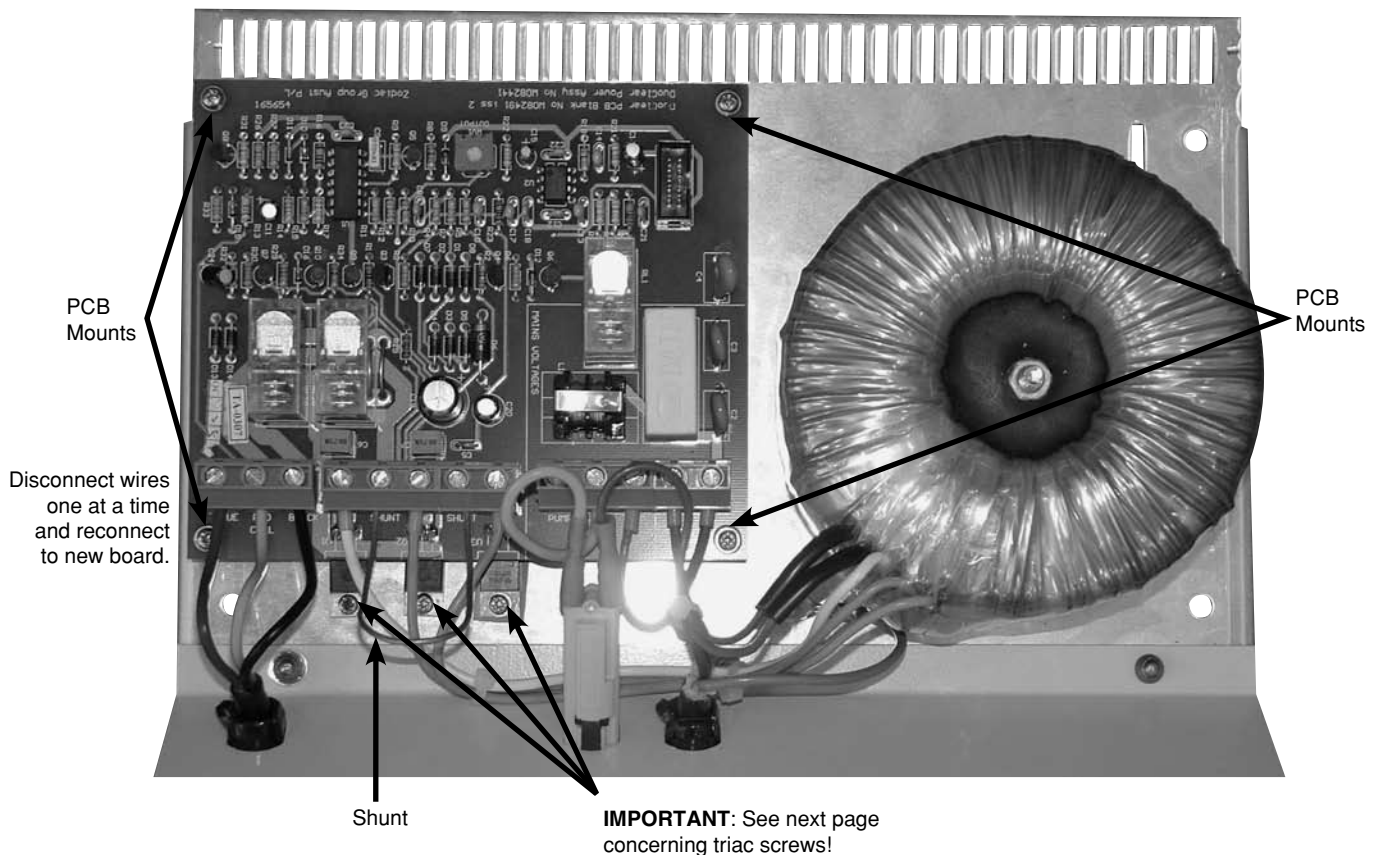
1. Turn off power supply.
2. Remove the 4 cover screws, disconnect the ribbon wire and remove the cover.
3. From the inside, push the center pin out of the plasti rivet, remove (pliers may be needed).
4. Gently pull the plasti rivets out of the cover & remove the clear cover.
5. Lay paper down (to avoid scratching the replacement cover) and place the new cover on the paper.
6. Insert the plasti rivet thru the hole in the clear cover and push the anchor partially into the spacer (to hold the spacer in place).
7. Set the metal cover into the clear plastic cover.
8. Insert the pins through the anchor to lock the cover in place.



PCB Replacement for DuoClear

Replacement

1. Disconnect power supply.
2. Remove chlorinator from wall if needed.
3. Remove 4 screws to remove cover.
4. Remove ribbon wire connector from power PCB and set cover aside.
5. Remove 3 triac screws "A", "B" and "C". (IMPORTANT: Read pg. 17) Note that screw "C" has a special insulating washer and pad.
6. Remove the 4 screws holding the board on.
7. Lift power PCB away without removing wires and fold forward.
8. Place new PCB in position and replace 4 screws.
9. Replace 3 triac screws "A", "B" and "C" and tighten securely (special insulating washer and pad on screw "C" MUST be in place).
10. Transfer wires one at a time to avoid misplacement.
11. **Remove the shunt from the old board and position onto the new board. The terminals are labeled. The shunt hangs down and should not be touching any wires.**
12. Attach ribbon wire connector.
13. Attach cover with 4 screws.
14. Replace chlorinator on wall.
15. Reconnect power supply.
16. Test all functions.

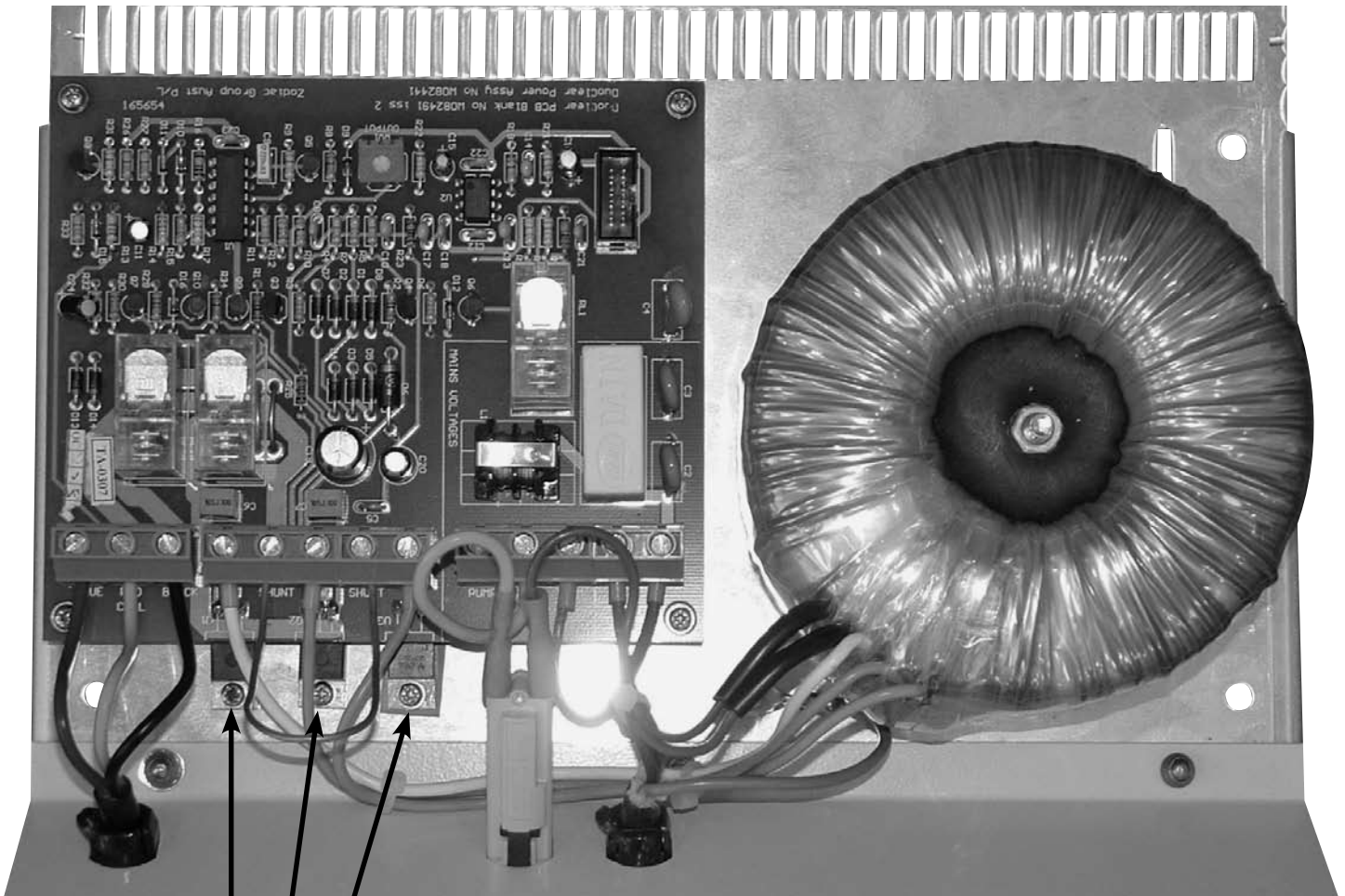


Triac Screws

The triac screws are the 3 screws at the base of the power PCB. It is imperative that these screws be tightened all the way. The triac tabs are used to transfer heat from the power PCB to the back panel of the chlorinator.

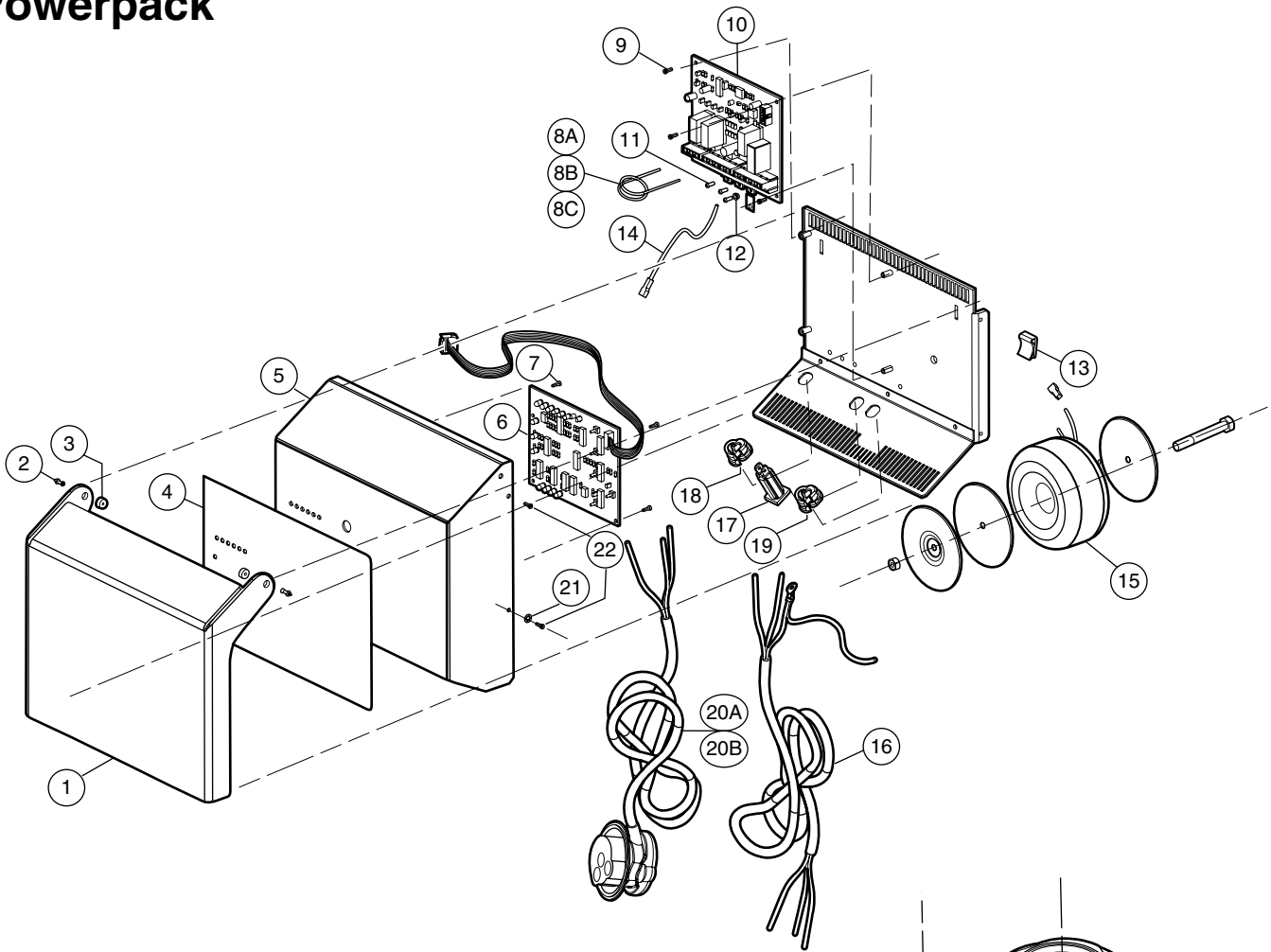
If the triac screws are NOT tight, the power PCB will overheat and be damaged.

It is also imperative to have screw "C" insulated with the special washer and pad. This special washer and pad insulates this triac tab while still allowing heat to transfer.

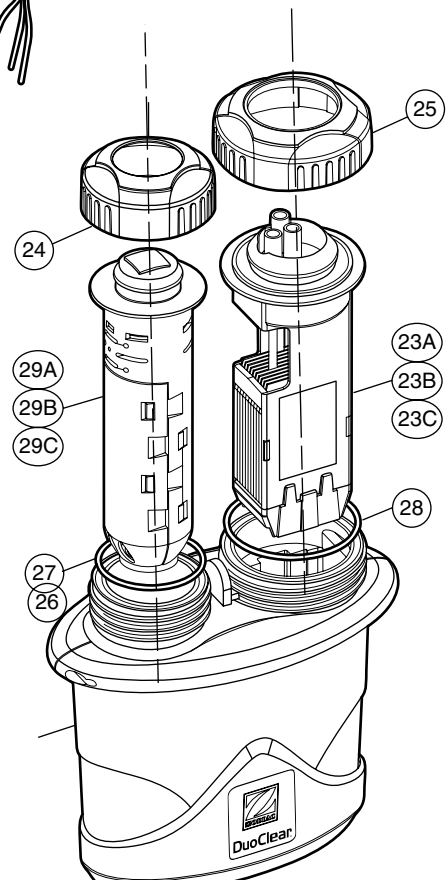


Triac screws "A", "B", & "C". Note that screw "C" has an insulating pad and washer that **MUST** be replaced when the PC board is changed. These screws must be tight in order to dissipate heat from the board.

DuoClear Powerpack



DuoClear Vessel



DuoClear

DuoClear 220V S Power Pack

No.	Part #	Description
1	W012381	Duoclear Perspex Cover
2	W001281	Plasti Rivet (Duoclear Hinge)
3	W042281	Nylon Spacer 4mm Hinge
4	W173671	S Cover Label Duoclear
5	W012321	S Cover Duoclear
6	W082462	Duoclear S Control PCB Assy
7	W000351	Screw Pan Hd Phil M3*8 Wth Cap
8A	W141441	Shunt Duoclear 25 150mm
8B	W141431	Shunt Duoclear 35 110mm
8C	W141421	Shunt Duoclear 45 130mm
9	W000351	Screw Pan Hd Phil M3*8 Wth Cap
10	W082441	Duoclear Power PCB Assy
11	W000351	Screw Pan Hd Phil M3*8 Wth Cap
12	W000651	Insulation Mounting Kit To 220
13	W001321	Ribbon Cable Clamp (Multicomp)
14	W052271	Duoclear Circuit Brkr Cable
15	W130671	Transformer (220 290va 54v Ct)
16	W052301	Duoclear UL Mains Cable USA
17	W111071	Circ. Break.W28-Xq1a03 Potter
18	W000661	Cord Grip Grommet HE1200 15 amp
19	W000021	Cord Grip Grommet HE1217 /6N-4
20A	W052311	6' Output Cable With Plug
20B	W052313	12' Output Cable With Plug (not shown)
21	W000261	Washer Shkproof Int 1/8 Z/P
22	W000581	M3 X 6mm Taptite Screw

DuoClear Vessel

No.	Part #	Description
23A	W202241	Duoclear 25 Electrode
23B	W202251	Duoclear 35 Electrode
23C	W202261	Duoclear 45 Electrode
24	W042071	Nature2 Locking Ring
25	W042081	Electrode Locking Ring
26	W042232	Vessel Assembly
27	W151201	Nature2 O-Ring
28	W151211	Electrode O-Ring
29A	W26000	DuoClear 25K (4pk)
29B	W26001	DuoClear 35K (4pk)
29C	W26002	DuoClear 45K (4pk)



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