



**MineralPURE®**

## INSTALLATION & POOL CARE MANUAL

**MODELS  
R-20                      &                      R-40**



**RESIDENTIAL POOLS**



# **FIRST, BALANCE THE POOL'S WATER**

Before installing the **R-20/R-40 ionizer**, the pool's water must be clear and balanced properly. It is extremely important that the following guidelines are implemented - so please read thoroughly.

## **PREVIOUS SANITIZER USE**

If the previous sanitizer used was **Baquacil**, you will need to remove every drop of it, as Baquacil is not compatible with any other sanitizer including the **MineralPURE Ionizer**. The best way to remove it is to drain the pool completely and refill with fresh water. You should also change the sand in the filter, acid wash the cartridges, or change the DE in the DE filter. Consult a professional first if draining the pool. Please contact your **dealer** or **Clearwater Enviro Tech** directly for further help on a pool with Baquacil.

If the pool was using an automatic chlorine generator (where salt is added to make chlorine at the site), the water should be drained at least halfway and refilled with new water.

If the pool is using chlorine, it is all right to go ahead and install the ionizer, as the two work together fine. Chlorine is actually required as it may take a few days to fully "ionize" your pool.

Never add algaecides or any sequestering agents unless recommended by **Clearwater Enviro Tech**. If algaecides or certain types of sequestering agents are in the water, they can cause problems.

## **CIRCULATION**

Before testing the pool's water chemistry, make sure the filtration system and circulation is good. Check the filter to make sure it is cleaned. The filter pressure gauge should give you an indication right away. If the customer has been using a sand filter, and the sand is several years old, you may want to change the sand for best results. If it is a cartridge filter, check the canister inside to make sure the polyester fabric or corrugated paper is in good shape. If the customer has a DE filter, change the DE.

Good circulation is important because you will no longer be dumping a lot of chlorine in the pool to "cover up" a bad filtering system.

## **CHLORINE**

Always make sure there is some chlorine in the pool when first starting up the system, as it may take a few days to fully "ionize" the pool. **NEVER ADD GRANULAR CHLORINE** (like HTH) directly into the pool's water with copper-ions in the water. If so, you will get black stains on the pool's surface immediately. If you do use granular chlorine, it must be dissolved first, or poured directly into the skimmer with the pump on. Always make sure the water is clear before installing the ionizer by using chlorine. The ionizer by itself will not clear up cloudy water.

## **pH**

**IT IS VERY IMPORTANT THAT THE pH OF THE WATER IS BETWEEN 7.2 - 7.8. THIS IS STANDARD POOL CHEMISTRY. IT IS ALSO IMPORTANT THAT IF THE pH IS ALLOWED TO GO OVER 7.8, THE CLEARWATER'S MINERALPURE IONIZER WILL NOT WORK PROPERLY AS THE IONS CAN FALL OUT OF SOLUTION, AND YOU WILL BE UNABLE TO OBTAIN A PROPER COPPER-ION LEVEL.** If the pH in the pool tends to go up, balance the pool so that the pH is on the *lower* side - 7.2. If the pH tends to go down, balance the pH on the *higher* side - 7.8. When you test the pH again (always at least once a week) the pH should be in the proper range by following this method.

**HOW TO BALANCE** - If the pH is above 7.8, use an acid demand test (from your regular test kit) to determine the amount of muriatic acid needed to lower the pH down to 7.2. Add the acid and check a few hours later to make sure it is in the correct range. If the pH is under 7.2, use a base demand test (from your regular test kit) to determine the amount of soda ash needed to raise the pH to at least 7.2. When adjusting the pH, don't wait for the pH to reach 8.0 before adding acid. Go ahead and add a little acid whenever required.

Always test the pH at least once a week, and more often in hot summer months.

## **TOTAL ALKALINITY**

The total alkalinity should be **between 80-120 ppm.**, and should be tested at least once a month. This is standard pool water chemistry. Using a total alkalinity test kit (from your regular test kit) determine the reading and adjust. If the total alkalinity is under 80 ppm, raise the total alkalinity by adding sodium bicarbonate (baking soda). Consult test kit's chart on the amount needed. If the total alkalinity is over 120, add muriatic acid. Consult chart on amount needed. Never add acid if the pH is under 7.2.

## **CALCIUM HARDNESS**

The calcium hardness should be **between 150-350 ppm.**, and tested yearly. If the reading is below 150 ppm, add calcium chloride, available in any pool store. If the calcium hardness is over 350 ppm, the water should be partially drained and refilled with fresh water.

## **TOTAL DISSOLVED SOLIDS (TDS)**

Usually, the total dissolved solids should be **between 300-2000 ppm.**, and tested once a year. For the system to perform on maximum capabilities (a pool with very warm water or a pool that is close to the maximum number of gallons rated for the system), the TDS needs to be at least 500 ppm. If installing the unit on a brand new pool, you may need to have to raise the total dissolved solids level. **THIS IS ONLY NECESSARY IF YOU ARE UNABLE TO OBTAIN THE DESIRED COPPER-ION LEVEL.** First, determine the TDS level. To raise the TDS level, you need to add 1 pound of regular table salt to increase the TDS by 12 ppm per 10,000 gallons. Once the TDS level has reached 500 ppm you will be all set, because the TDS level always raises.

If the TDS is over 2,000, you should partially drain and refill with fresh water. This is standard pool water chemistry. If the unit is being installed on a salt-water pool, the unit will work fine without any adjustments.

## **COPPER LEVEL**

Before installing the unit, you should test the copper level. There may be copper sulfate in the water from leached copper pipe or from a copper based algaecide. If the reading is over .10 ppm, adjustments may have to be made. You want to have a proper balance of copper and silver in the water, so you need to find the source of the copper already in the water. Remember, this is not the same copper that is produced by the purifier. A low pH 7.0 or less will leach copper from copper pipes. If the source is from copper-based algaecides, shock the pool with an extra large dose of liquid chlorine. This will burn out the algaecide. Note-sometimes the copper based algaecides can remain in the water for many months. **NEVER ADD ANY ALGAECIDE WITH THE IONIZER HOOKED UP.**

## **SEQUESTERING AGENTS**

Sometimes pool owners will add a flocking or sequestering agent to the water to remove stains or scaling in the pool or to remove undesired metals that are in the source water. Sometimes, these products can remove or "tie-up" the copper ions that you are trying to release into the water.

For best results, you should test the sequestering agent level before installing the unit. **Clearwater Enviro Tech** sells a "Sequestering Agent" test kit. However, this test kit will give you only the total reading of sequestering agents in the water, and that may not tie up the copper-ion level. It is only an indication if you are unable to obtain the proper copper-ion level. Some products that cause problems include *Sequasol*, *Cop-out*, *Metal Magnet*, *aluminum sulfate*, or *Alum*. Products that do not cause problems include *Pool Stain Treat* by *United Chemical*, and any of *Jack's Majic products*. All polymer based products like *Super Blue* and *Sea-Klear* do not cause problems either.

**ONCE THE WATER CHEMISTRY IS IN THE PROPER RANGE, INSTALLATION CAN THEN PROCEED.**

# **INSTALLATION PROCEDURES**

## **TOOLS AND MATERIAL REQUIRED**

Channel lock wrench	Hacksaw or backsaw	Screws & anchors	Utility knife
Crescent wrench	Teflon tape	Flexible conduit	Hammer
Screwdriver	PVC cleaner/primer	Voltage meter	Drill & drill bit
PVC cement	Wire stripper		

## **COMPONENTS OF THE R-20/40 IONIZER**

Control box  
3" long set of electrodes in clear capsule  
2" slip/slip/threaded tee  
Pair of 2" x 1 1/2" reduced bushings  
Set of 4 mounting brackets and screws  
Copper-ion test kit  
Warranty card  
Quick Chart Sheet (blue sheet)  
Installation & pool care manual

## **FIRST, MOUNT THE FLOW CELL TEE**

- 1.) Locate a space for the electrode flow cell tee (the 2" slip/slip/threaded tee). The tee should be installed after the pump and either before or after the filter. After the filter is preferred, but it will work fine if installed before the filter. **NEVER INSTALL THE TEE NEXT TO THE POOL'S HEATER.**
- 2.) Turn off the pump and close all valves. Disconnect all sources of power going to the timer or pump.
- 3.) Using a hacksaw or backsaw, cut a 4-inch gap in the section of pipe if 1 1/2" pipe exists, or cut out a 3" gap if a 2-inch pipe exists.
- 4.) Sand the burrs off the pipe. Dry the pipe and clean the ends with PVC primer/cleaner.
- 5.) If 1 1/2" pipe exists, cement the 2" to 1 1/2" reducer bushings into the tee (included with the unit).
- 6.) The tee should be mounted on the return line after the pump and **mounted slightly downward so that no air-pocket can form in the electrode chamber (below a horizontal position). THIS IS EXTREMELY IMPORTANT.** If there is not enough "give" to allow insertion of the tee, install unions.
- 7.) Screw the electrodes into the tee. Generously wrap teflon tape around the threaded part of the electrode assembly several times before installing to prevent leaks.

MAKE SURE THERE IS ENOUGH ELECTRODE WIRE COMING FROM THE CONTROL BOX LOCATION TO REACH THE ELECTRODES WHEN INSTALLED ON THE RETURN LINE.

## **INSTALLING THE CONTROL BOX**

- 1.) Before installing the control box, you must determine the voltage at the installation site. By using your voltage meter, determine if the voltage is 110VAC or 220VAC.

**ALL UNITS ARE FACTORY SET AT 220 VAC. IF THE INSTALLATION CALLS FOR A 110 VAC SETTING, YOU WILL NEED TO MAKE AN ADJUSTMENT TO THE UNIT.**

## **CHANGING VOLTAGE FROM 220 VAC TO 110 VAC**

- a.) Open up the clear control box panel.
- b.) Unscrew the four (4) screws holding the faceplate assembly in place.
- c.) Lift the unit out of the enclosure and turn over. Do not disconnect any wires!
- d.) Locate switch on circuit board (between fuse and transformer) where 220V - 110V wording is located. (see page 10)
- e.) Slide switch from 220VAC to 110VAC.
- f.) Place the faceplate assembly back in its place.
- g.) Retighten four (4) screws to hold in place.

### **FAILURE TO SET UNIT ON PROPER VOLTAGE CAN CAUSE PROBLEMS:**

If the actual voltage was 220VAC, and the unit was set on 110, the internal fuse will blow.

If the actual voltage was 110VAC, and the unit was set on 220, the unit will not work at 100% efficiency.

- 2.) Mount the brackets to the back of the control box. Use enclosed screws.
- 3.) Mount the control box to the wall allowing for the power cable wire to reach the source of power and the electrode wire to reach the electrode chamber. Use proper anchors and screws to mount.
- 4.) Make sure the surface is flat, firm, and as close to the power source as possible.
- 5.) Connect the two-conductor gray wire coming from the purifier to the electrodes two terminals. It does not matter which wire is connected to the terminals.

## **CHOOSING THE POWER SOURCE**

When locating the power source, the unit should turn on and off when the pump and motor does. The best location is the pool's timer box. If no timer box exists, you can use the pump motor as its power source by removing the back plate.

### *Connecting to the timer box*

**220VAC** - Connect the black (3 stranded) wire cable to the 220VAC timer box by splicing the 3 wires and connecting the black and white wires to the LOAD side of the timer box. It makes no difference which colored wire goes to the two load connections. Connect the green wire to GROUND. When installed correctly, the unit should come on and off when the power comes on and off.

**110VAC** - Connect either the white wire or the black wire to the LOAD side on the timer box. Install the other wire to neutral. Always connect the green wire to GROUND.

### *Connecting to pump motor*

Disconnect the back plate to the motor where the electrical connections are. You will notice two connections where the power source is connected to. Connect the ionizers black, white and green wires to the same as the motor. If connected properly, the ionizer will come on and off with the motor.

**YOU MUST FOLLOW ALL LOCAL, STATE, NATIONAL OR INTERNATIONAL CODES WHEN INSTALLING. A CERTIFIED ELECTRICIAN MAY BE REQUIRED.**

You should use a flexible conduit from connection to connection on the power cable. The conduit connector (already on the unit) is 1/2". There is no need to cover up the electrode wire.

Once all of this is complete, open up all valves and turn on the power. Check for leaks and make sure all electrical connections are tightened properly.

### **ADDING A SEQUESTERING AGENT**

If the swimming pool is a marcite or gunite pool, we strongly recommend you add a sequestering agent to prevent any type of staining in the pool. There are two types **Clearwater Enviro Tech** recommends:

1.) **Pool Stain Treat**, by **United Chemical**. Available in 2 lb. containers, you should add 1 pound per 10,000 gallons when starting up the system, and add 1 pound per 10,000 gallons every 60 days afterwards. Follow manufacturers instructions on bottle. Available in many pool stores, your **dealer** or **Clearwater Enviro Tech**, or call **United Chemical** direct for dealer nearest you -1-800-524-5550, Fax - (805) 521-1018.

2.) **Jack's Magic** Product line. Call 1-800-348-1656 or fax (727) 532-0250 for dealer nearest you. Available in many pool stores. Product line includes "**Metal Solution**", "**The Pink Stuff**" and "**The Blue Stuff**".

### **SETTING THE CONTROL BOX**

To get the pool "ionized", turn the control knob to one of the 5 settings. For faster results, set on "5". With the pH in the proper range and all other factors ideal, it should take a few days to get the pool fully ionized. This also depends on the size of the pool and the number of hours the filter is running.

### **TESTING FOR COPPER-IONS**

All units include a copper-ion test kit. Follow the simple directions on the inside label of the test kit to determine the copper-ion level in the pool. When testing, you must always look down from the top of the tube -not from the side. **We recommend a copper-ion level 0.2 - 0.3 ppm. In very hot, humid areas, you may go slightly higher to 0.4 ppm. For best results, maintain at least 0.3 ppm.**

Keep the ionizer on its highest setting if you want to reach these levels the fastest when first starting up the system. Once the ideal copper-ion level has been reached, turn down the control knob one notch and test a couple of days later. If the reading is too high, lower the control knob another notch again and test a few days later. Once you obtain a steady copper-ion level in the proper range, keep the control knob on that setting. There is no need to test the silver ions as that will be in the correct range if the copper is.

**ALWAYS KEEP THE TEST KIT OUT OF DIRECT SUNLIGHT AND STORE IN ROOM TEMPERATURE. TEST THE COPPER LEVEL ON A WEEKLY BASIS.**

**The copper-ion level is too low, turn the control knob up a notch and retest a couple of days later.**

**If the copper-ion level is too high, turn the control knob down a notch and retest a couple of days later.**



## INDICATOR LIGHTS

On the face plate of the control box are three indicator lights. The top light - **Power indicator** - lets you know that power is going to the control box. **This light should stay on all the time as long as the power source is on.** The bottom two lights - **Alternating Electrode Indicators** - lets you know a charge is going to the electrodes. One light should come on at a time, meaning a charge is going to one of the electrodes. Every 3 minutes and 30 seconds or so, the charge will alternate - and the other light will come on.

**NOTE:** With the control knob set to the "OFF" position, the "Power indicator" light will be ON but the "Alternating Electrode Indicators" lights will be OFF (both of them).

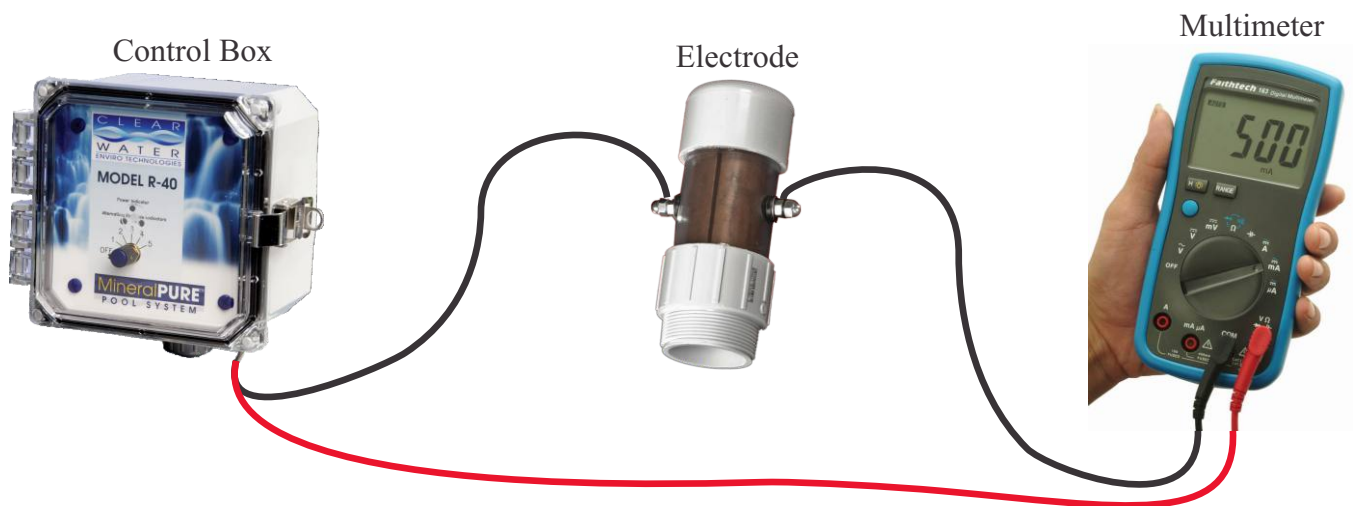
## TO DETERMINE ACTUAL OUTPUT OF THE UNIT

There is a way to determine the actual milliamp charge going to the electrodes while the electrodes are in the water and the unit turned on.

By using a standard multimeter to read out DC current (an LCD Digital is preferred), take one of the connectors either the red (positive) or the black (negative) and connect it to one of the electrode terminals. Take the other connector and hook it up with one of the electrode wires (black or red) coming from the control box. The other wire from the control box should remain hooked up to the electrode terminal. This hookup, while running in series, will give you the actual milliamp output of the ionizer at the given moment. The R-20 should read about 250 mA on max (setting number 5). The R-40 should read about 500 mA on max (setting number 5).

**NOTE:** These actual readouts will vary slightly, so do not be alarmed if you get a reading of 265 on the R-20, and 530 on the R-40. The readings should lower as the control knob is turned to a lower setting.

If the TDS level is not at least 500, the readings will be lower.



**The electrode chamber must be full of water with the filtering system on for this to give you an accurate readout.**

## QUICK CHART

A separate Chart Quick Sheet, a blue sheet, which is included with every unit, should be followed at this point.

## TROUBLE SHOOTING

### **Cloudy water or algae**

If algae is present, you must take steps to solve the reason it formed. First, brush the algae. Add chlorine to the pool to oxidize. Check filtering system and backwash or clean filter. Check the water chemistry - especially pH and total alkalinity. Make sure copper-ion level is in range. You may need to oxidize more frequently if problems persist. Contact your **dealer** or **Clearwater Enviro Tech** for help. If cloudy water is a problem, add chlorine to clear it up. Again, make sure all chemistry readings are in the proper range, and filter is clean. Usually, cloudy water is from a poor filtering system. Make sure you oxidize on a timely basis. Never use granular chlorine without dissolving it first or pouring it directly into the skimmer.

### **Can't obtain the proper copper-ion level**

If you are unable to obtain the proper copper-ion level, check all the following factors to solve the problem:

- 1.) **High algae growth and cloudy water** may be using up all available copper-ions that the unit can produce. Make sure pool is balanced and turn the control knob up. Oxidize the water with chlorine.
- 2.) **Correct sizing of the pool.** The R-20 is designed for pools up to 20,000 gallons, while the R-40 is designed for pools up to 40,000 gallons. Never undersize a unit, especially in warm water areas.
- 3.) Make sure the unit is set on the **correct voltage**. A unit set on 220VAC with the power source at 110VAC will cut the power output in half. A unit set on 110VAC with the power source at 220VAC will blow the internal fuse.
- 4.) **Scaled, dirty or worn electrodes.** A blue-greenish coating around the electrodes is normal. However a build-up of scale, dirt or debris around the electrodes can effect the unit from producing ions. Simply unscrew the electrodes and clean off the build-up using an old toothbrush and lemon juice or a muriatic acid/water solution. Re-apply teflon tape when screwing the electrodes back in place.
- 5.) **TDS is too low.** If the TDS of the water is not at least 500, the unit will not work at 100% efficiency. Add salt to bring the TDS up. See TDS section earlier in this booklet.
- 6.) **Improper test kit readings.** Make sure you follow the proper copper-ion test kit procedures. Many people look at the side of the test tubes when testing instead of looking down from the top. Also, be sure to wait 3 minutes for the reagents to develop. The reagents should be replaced yearly, and kept out of direct sunlight, and stored at normal room temperature. Never let them freeze or be exposed to extreme heat. This will cause false readings.
- 7.) **Improper pH readings.** This is usually the main reason for a low copper-ion level. Make sure the pH is maintained between 7.2-7.8, with the lower end preferred. When the pH goes over 7.8, the copper-ions can fallout of solution. Make sure your pH test kit is updated with fresh reagents, and is also kept out of direct sunlight and kept in normal room temperatures.
- 8.) **Too much chlorine in the pool.** If the pool was just shocked with alot of chlorine, this can give you an improper test kit reading on the copper test kit. The high chlorine level can "bleach" out the readings and appear to read zero.
- 9.) **Metal out removers in the water.** As mentioned in the Sequestering Agent Level section in this booklet, there are a few metal out removers or stain removers that can "tie-up" the copper-ion levels. If a metal out remover has been used during the past year or so, this will cause problems. You will need to supershock the pool with alot of chlorine to "burn" it all out.

10.) **Steel plumbing.** Never install the electrodes on steel piping. Cut out a section of pipe and replace with PVC pipe where the electrodes are installed.

11.) **Improper installation.** Have the electrodes been installed on the return line? Make sure the electrode chamber is angled downward so that the chamber is full of water and no airpocket can get in there. Check all wires for proper connections.

12.) **Indicator lights do not come on.** Make sure the unit has been installed properly to the correct voltage. Make sure power is going to the main source. Check fuse inside unit.

To check the fuse, first open up the unit: **TURN OFF ALL POWER FIRST!!!!**

- 1.) Open up the clear lid.
- 2.) Unscrew the four (4) screws holding the faceplate assembly in place.
- 3.) Lift up faceplate assembly and flip over.
- 4.) Locate fuse and check. (see page 10 for photo)
- 5.) Replace fuse if blown (5mm x 20mm 20V, 1/4A, fast acting)
- 6.) Mount faceplate assembly back in place
- 7.) Tighten four (4) screws to secure.

If the fuse was blown, try to determine what happened. If this repeats again, you may need to install a surge protector before the power source.

If the fuse was not blown, and you get no output at all, check the back or the circuit board for anything unusual - loose parts, burn marks, etc. If this is the case, call your **dealer** or **Clearwater Enviro Tech** direct to return the circuit board. **YOU MUST OBTAIN AN "RMA" NUMBER BEFORE RETURNING ANY EQUIPMENT FOR REPAIR.**

This unit was designed for easy removal of the circuit board. See next section for details to remove circuit board. **THERE IS NO NEED TO RETURN THE ENTIRE CONTROL BOX. THIS WILL SAVE TIME AND SHIPPING COSTS AT BOTH ENDS.**

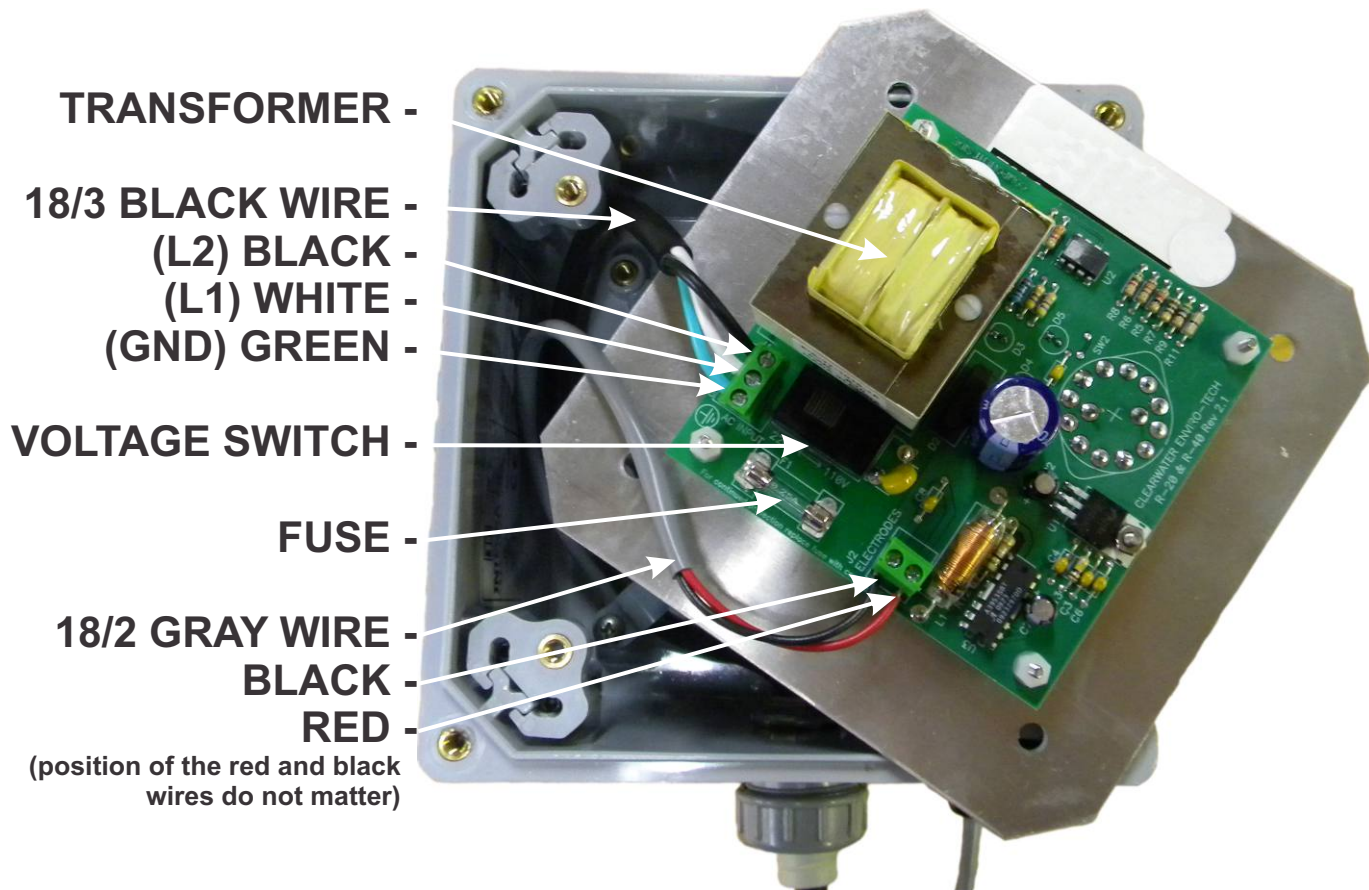


## **REMOVING THE CIRCUIT BOARD**

If the control box needs to be replaced for any reason, the unit was designed so that only the circuit board needs to be checked out. This allows for all external electrical connections and the enclosure to remain at the same location during repair.

To remove the circuit board: **FIRST DISCONNECT ALL POWER!!!**

- 1.) Open up clear lid
- 2.) Unscrew four (4) screws holding faceplate assembly in place.
- 3.) Lift up faceplate assembly and turn over.
- 4.) Note the two sets of wires going to the circuit board. Using a small screwdriver, unscrew them. A diagram follows to help you reinstall a new board.



a.) The thick black power cord has three wires coming out of it - black, white and green. A green terminal with three screws (next to AC Input-printed on circuit board) houses these three wires. The far left terminal, **L2** should have a black wire going to it. The middle terminal, **L1** should have a white wire coming from it. The right terminal, **GND** should have a green wire coming from it (ground).

b.) The gray electrode wire set has two wires coming out of it - black and red. A green terminal with two screws (next to Electrodes printed on circuit board). *It does not matter which wire goes to each of the terminals, just as long as the red is connected to one of them, and the black to the other.*

- 5.) Once the wires are disconnected, remove the faceplate assembly, with circuit board attached.
- 6.) Obtain an **RMA** number from **Clearwater Enviro Tech** before returning the faceplate assembly, with circuit board attached.
- 7.) When reinstalling the circuit board, use the following chart to reconnect. Improper connections may void the warranty. See warranty card for full details.

## **ADDING AN OXIDIZER**

An occasional oxidizer is required to burn off body oils, suntan lotion, and debris that gets into the water and causes cloudiness.

There are several options:

**NON-CHLORINE SHOCK** - Add 1 pound of potassium monopersulfate (non-chlorine shock) per 10,000 gallons of water at least once a week during summer season, or after heavy bather load. Add less frequency in cooler weather. For best results, do not wait for the water to get cloudy when adding. Always add when water is not sparkling, or just starting to get cloudy. If the water is cloudy, it is best to add chlorine or household bleach. In very warm water areas, it is best to add a double dose of non-chlorine shock at least once a week or after a rainstorm.

To purchase, contact your **dealer**, or it is available in most **pool stores**. Always mention non-chlorine shock -potassium monopersulfate. You may also order it from **Leslie's Swimming Pool Supplies**. Call 1-800-537-5437 for the nearest store location or to have a direct shipment to your location. Ask for **Fresh'n Clear**.

It is best to order by the large bucket for the best pricing. You may go swimming within minutes after applying.

**HOUSEHOLD BLEACH** - Add two (2) quarts of regular household bleach per 10,000 gallons once a week during the summer season, or after heavy bather load. Add less frequently in cooler weather.

**CHLORINE** - You can use any type of chlorine as an oxidizer. If you use granular chlorine, always dissolve it first, or pour it into the skimmer with the pump running. If you use liquid chlorine, use 1 quart per 10,000 gallons on a weekly basis, less frequently in cooler weather. The chlorine will be gone by the next morning, allowing for chlorine-free swimming the rest of the week.

**TABLET IN SKIMMER** - simply put a 3" trichlor tablet in the skimmer for continuous oxidizing. This is ideal for pools with heavy swimmer use or in very warm water areas.

**OZONE** - by adding a corona discharge ozonator to the system, you will virtually eliminate any need to add a oxidizer. Call your **dealer** or **Clearwater Enviro Tech** for more details.

**Pools that have heavy use of swimmers, dogs, or that get a lot of rain may require a constant oxidizer in the water to keep the water clear and bacteria free.**

## R-20 IONIZER SPECIFICATIONS

### Water Specifications

**POOL SIZE:** up to 20,000 U.S. gallons

**IONIZATION METHOD:** electrolysis of copper or copper/silver alloy electrodes

**ELECTRODE CHAMBER:** 2" schedule 40 tee with bushings for 2" or 1 1/2" PVC pipe

**ELECTRODE:** one set 3" long, comprised of copper (CLE-02)  
or optionally available 90/10 copper/silver alloy (CLE-51)

<b>HEAD LOSS:</b>	<b>Flow Rate</b>	<b>Total Head Loss (psi)</b>
	25 gpm	0.06 psi
	50 gpm	0.21 psi

**Hydrostatic Pressure:** Maximum Recommended Pressure: 50PSI

**Ion Production:** With the output set to:

125mA this ionizer produces 90mg of copper ions per hour

250mA this ionizer produces 179mg of copper ions per hour

These measurements were made with the following conditions:

Electrode Used: CLE-02

Water Temperature: 72.7 °F

Total Chlorine: 0

pH: 7.45

TDS: 347 mg/L

Hardness: 215 mg/L

Total Alkalinity: 85 mg/L

### Electrical Specifications

**INPUT VOLTAGE:** 115 VAC or 230 VAC, manually switch from inside of control box

**INPUT CURRENT:** 200 mA rms at 115 VAC  
100 mA rms at 230 VAC

**INPUT POWER:** 10 Watts

**OUTPUT VOLTAGE:** < 20 VDC

**OUTPUT CURRENT:** Adjustable in 6 increments from 0 TO 250mA DC

**CIRCUIT PROTECTION:** internal fuse and input MOV line surge protection

**FUSES:** 1 ea .25 Amp Fast Acting, Cartridge Style, 250VAC, 5x20mm

Radio Shack Part Number 270-1046 (use 270-1061 if other is unavailable)

### Mechanical Specifications

**ENCLOSURE:** weather resistant NEMA 4 rated high impact corrosion resistant thermoplastic with hinged polycarbonate cover, includes mounting brackets

**ENCLOSURE DIMENSIONS:** 6.54" x 6.54" x 4.82"

**SHIPPING WEIGHT:** 7.6 lbs

**CARTON DIMENSIONS:** 12" x 11" x 6"

### Other Specifications

**OPERATING TEMPERATURE RANGE:** 32 to 110 degrees Fahrenheit

**WARRANTY:** 5 years, parts and labor - excluding electrodes

## R-40 IONIZER SPECIFICATION SHEET

### Water Specifications

**POOL SIZE:** up to 40,000 U.S. gallons

**IONIZATION METHOD:** electrolysis of copper or copper/silver alloy electrodes

**ELECTRODE CHAMBER:** 2" schedule 40 tee with bushings for 2" or 1 1/2" PVC pipe

**ELECTRODE:** one set 3" long, comprised of copper (CLE-02)  
or optionally available 90/10 copper/silver alloy (CLE-51)

<b>HEAD LOSS:</b>	<b>Flow Rate</b>	<b>Total Head Loss (psi)</b>
	25 gpm	0.06 psi
	50 gpm	0.21 psi

**Hydrostatic Pressure:** Maximum Recommended Pressure: 50PSI

**Ion Production:** With the output set to:

250mA this ionizer produces 179mg of copper ions per hour

500mA this ionizer produces 358mg of copper ions per hour

These measurements were made with the following conditions:

Electrode Used: CLE-02

Water Temperature: 72.7 °F

Total Chlorine: 0

pH: 7.45

TDS: 347 mg/L

Hardness: 215 mg/L

Total Alkalinity: 85 mg/L

### Electrical Specifications

**INPUT VOLTAGE:** 115 VAC or 230 VAC, manually switch from inside of control box

**INPUT CURRENT:** 220 mA rms at 115 VAC  
110 mA rms at 230 VAC

**INPUT POWER:** 13 Watts

**OUTPUT VOLTAGE:** < 20 VDC

**OUTPUT CURRENT:** Adjustable in 6 increments from 0 TO 500mA DC

**CIRCUIT PROTECTION:** internal fuse and input MOV line surge protection

**FUSES:** 1 ea .25 Amp Fast Acting, Cartridge Style, 250VAC, 5x20mm

Radio Shack Part Number 270-1046 (use 270-1061 if other is unavailable)

### Mechanical Specifications

**ENCLOSURE:** weather resistant NEMA 4 rated high impact corrosion resistant thermoplastic with hinged polycarbonate cover, includes mounting brackets

**ENCLOSURE DIMENSIONS:** 6.54" x 6.54" x 4.82"

**SHIPPING WEIGHT:** 7.6 lbs

**CARTON DIMENSIONS:** 12" x 11" x 6"

### Other Specifications

**OPERATING TEMPERATURE RANGE:** 32 to 110 degrees Fahrenheit

**WARRANTY:** 5 years, parts and labor - excluding electrodes

## **CLEANING & CHANGING THE ELECTRODES**

The only part of the purifier that will need maintenance or replacement is the electrodes. The electrodes should last 1 to 4 years depending on pool size, length of swimming season, water temperature and how well the water was balanced.

If you are unable to maintain a normal copper-ion level, check the electrodes. Simply unscrew the electrode chamber from the tee and visually inspect. A blue-greenish coating is *normal*, however a build-up with scale should be cleaned off by using an old toothbrush and lemon juice or a muriatic acid/water solution. There is no need to polish the electrodes, just clean them off. Always wrap new teflon tape when reinstalling.

If the electrodes are worn out, they need to be replaced. Contact your dealer or call **Clearwater Enviro Tech** for a replacement set. The entire chamber is replaced and a new set is screwed into the tee. Always use plenty of teflon tape around the threads to prevent leaking.

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## **REORDERING INFORMATION**

To order a new set of electrodes, please call your **dealer**. He can install them for you or you can install them yourself

**REPLACEMENT ELECTRODES - Part # CLE-02** - residential electrodes, 3" long in clear capsule for R-20/40 ionizers.

**REPLACEMENT TEST KITS - Part # CLE-41** - complete new copper-ion test kit, includes reagents "A" and "B", cap, chart and plastic holder.

**REPLACEMENT REAGENTS - Part # CLE-42** - replacement reagents bottles "A" and "B" only.

If you are unable to locate your **dealer**, you can call **Clearwater Enviro Tech** and we will help you locate your dealer. If necessary, you can order directly from **Clearwater Enviro Tech**. Our phone number is (727) 562-5186, fax number is (727) 562-5187, email address [info@clearwater-enviro.com](mailto:info@clearwater-enviro.com) and our mailing address is 8767 115th Avenue, Largo, FL 33773 USA

PLEASE BE SURE TO FOLLOW ALL INSTRUCTIONS FROM THE QUICK CHART INCLUDED WITH THE SYSTEM



Manufactured by

