

CLEARWATER™

P O O L S Y S T E M S

The Healthy Alternative to Chlorine

INSTALLATION & POOL CARE MANUAL

MODEL AQUA ELITE 50



Residential Pools



A.) FIRST, BALANCE THE POOL'S WATER

Before installing the **Aqua Elite 50**, the pool's water must be clear and balanced properly. It is extremely important that the following guidelines are implemented - so please read thoroughly.

pH Reading Must be Between 7.2 and 7.6

The most important factor in the pool's water chemistry is the pH reading. It should be kept between 7.2 and 7.6 at all times. If the pH gets too high, **Aqua Elite 50's** ions lose their effectiveness and can fall out of solution. **Always get the pH on the lower side – 7.2 to 7.4 for best results.**

If the pH is above 7.6 - Using an acid demand test with your regular test kit, 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 - Using a base demand test with your regular test kit, determine the amount of soda ash needed to raise the pH to at least 7.2. If the pH tends to go down all the time, add enough soda ash to raise the pH to 7.6

Tips on balancing the pH - Test the pH at least once a week or after a heavy rainstorm. When adjusting the pH, don't wait for the pH to reach 8.0 before adding acid. Proceed to add a minimum amount of acid if the pH is over 7.6. If you use the non-chlorine shock as an oxidizer, this will lower the pH and may eliminate acid use completely.

Total Alkalinity

Maintain the total alkalinity between 80-120 ppm. This should be tested at least once a month.

If the total alkalinity is under 80 ppm - Raise the total alkalinity by adding sodium bicarbonate (baking soda). Consult chart with your test kit for the amount needed (based on pool size).

If the total alkalinity is over 120 ppm - Lower the total alkalinity by adding muriatic acid. Consult chart with your test kit for the amount to add.

Calcium Hardness

The calcium hardness level should be between 150-350 ppm. If the reading is well over that, the pool should be partially drained and refilled with fresh water. If the reading is under that, chances are the pool was filled with softened water. Calcium chloride should be added to the pool. 1 1/4 lbs will raise the calcium hardness by 10 ppm per 10,000 gallons.

Cyanuric Acid

Cyanuric acid is not required with the **Aqua Elite 50** unit. If the reading is over 150 ppm, the pool should be partially drained and refilled with fresh water.

Total Dissolved Solids

The **Aqua Elite 50** unit requires some conductivity in the water for ionization to take place. A high TDS level can cause cloudiness and the unit not to work efficiently. **The TDS level should be between 300 and 2000 ppm.** The TDS reading can be obtained at any pool store.

If the reading is below 300 ppm - To raise the TDS level, you would need to add one pound of regular salt to raise the TDS by 12 ppm per 10,000 gallons. You should only do this if you are unable to obtain the desired ion level in the pool because of a low TDS (see chapter T on Page 16 - 17). Always consult your dealer or **Clearwater** with help in this matter.

If the reading is over 2000 ppm - To lower the TDS level, you should partially drain and refill with fresh water. This is standard pool water chemistry. If the unit is being installed on a saltwater pool, the unit will work without any adjustments and there is no need to lower the TDS level.

Copper Level

Before installing the **Aqua Elite 50** unit, the copper level should be tested. There may be readings of copper sulfate in the water from leached copper piping or from a copper based algaecide. Correct the problem by either locating the copper pipe (usually next to a water heater) and balancing the pH, or eliminating any algaecides completely. Shock the pool with an extra heavy dose of chlorine to get rid of the algaecides.

B.) IDENTIFYING THE AQUA ELITE 50 COMPONENTS

What comes in the Aqua Elite 50 box, all the components listed below.



AE-50 Control Unit (1)



4 Piece Molly Set with #10 Screws



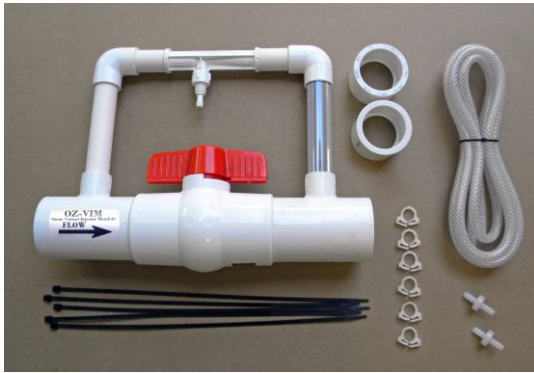
Test Kit (1) CLA-41



Electrode Wire Assembly (1)

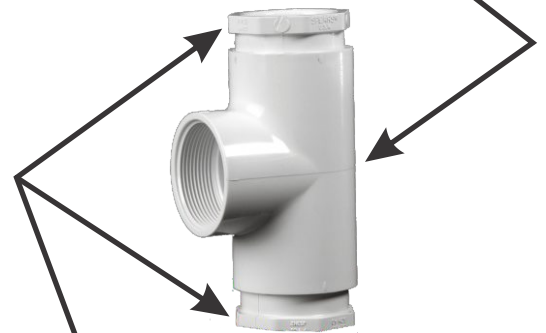


Electrode (1) CLE-02

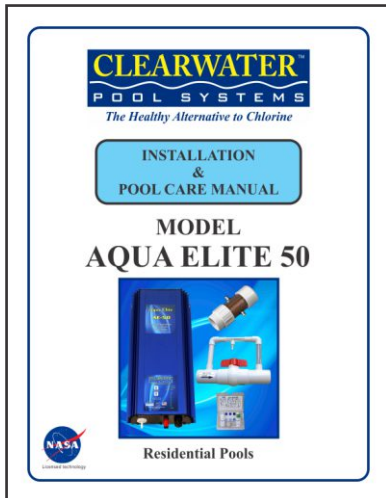


OZ-VIM Venturi Injection Kit with manifold

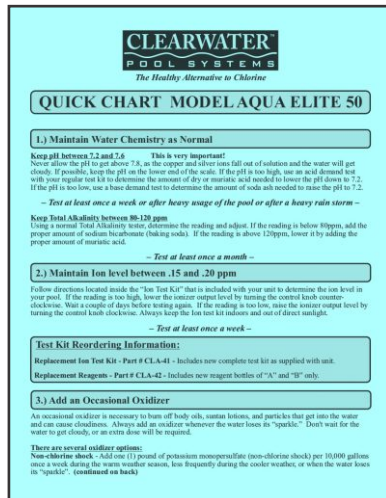
2" Flow-Cell Chamber (1)



2" to 1 1/2" Reducers (2)



Aqua Elite 50 User Manual (1)



Aqua Elite 50 Quick Chart (1)



Aqua Elite 50 Warranty Card (1)

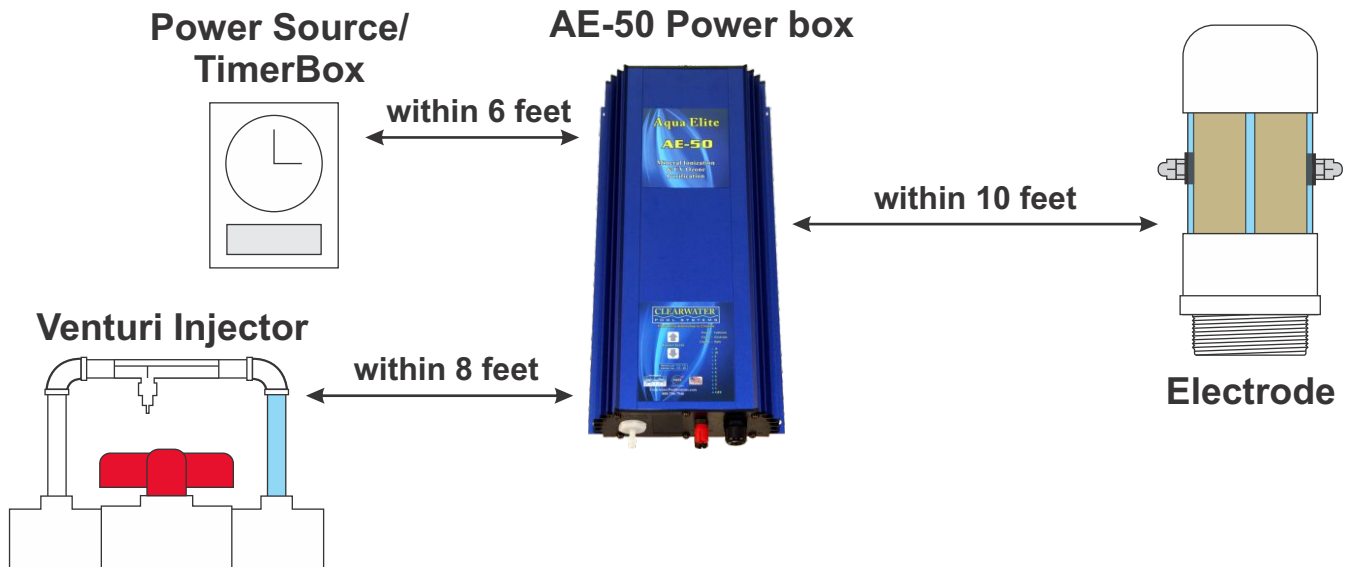
C). TOOLS AND MATERIAL REQUIRED



- Channel lock pliers
- Utility knife
- Crescent wrench
- Screwdriver, Flat and Phillips
- PVC cement
- Hacksaw or backsaw
- Hammer
- Teflon tape
- PVC cleaner/primer
- Wire stripper
- Screws & anchors
- Drill & drill bit
- Flexible conduit
- Voltage meter
- Bullet level

D). SITE SURVEY

The Aqua Elite 50 Clearwater Pool Systems unit should be installed at the pool's pump and filter area. You will need to locate a place to mount the Aqua Elite 50 control box on a wall and within 10 feet or so of where you will install the electrode chamber, within 6 feet of an electrical source and within 8 feet of the Venturi Injector.



E). INSTALLING THE ELECTRODE 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.

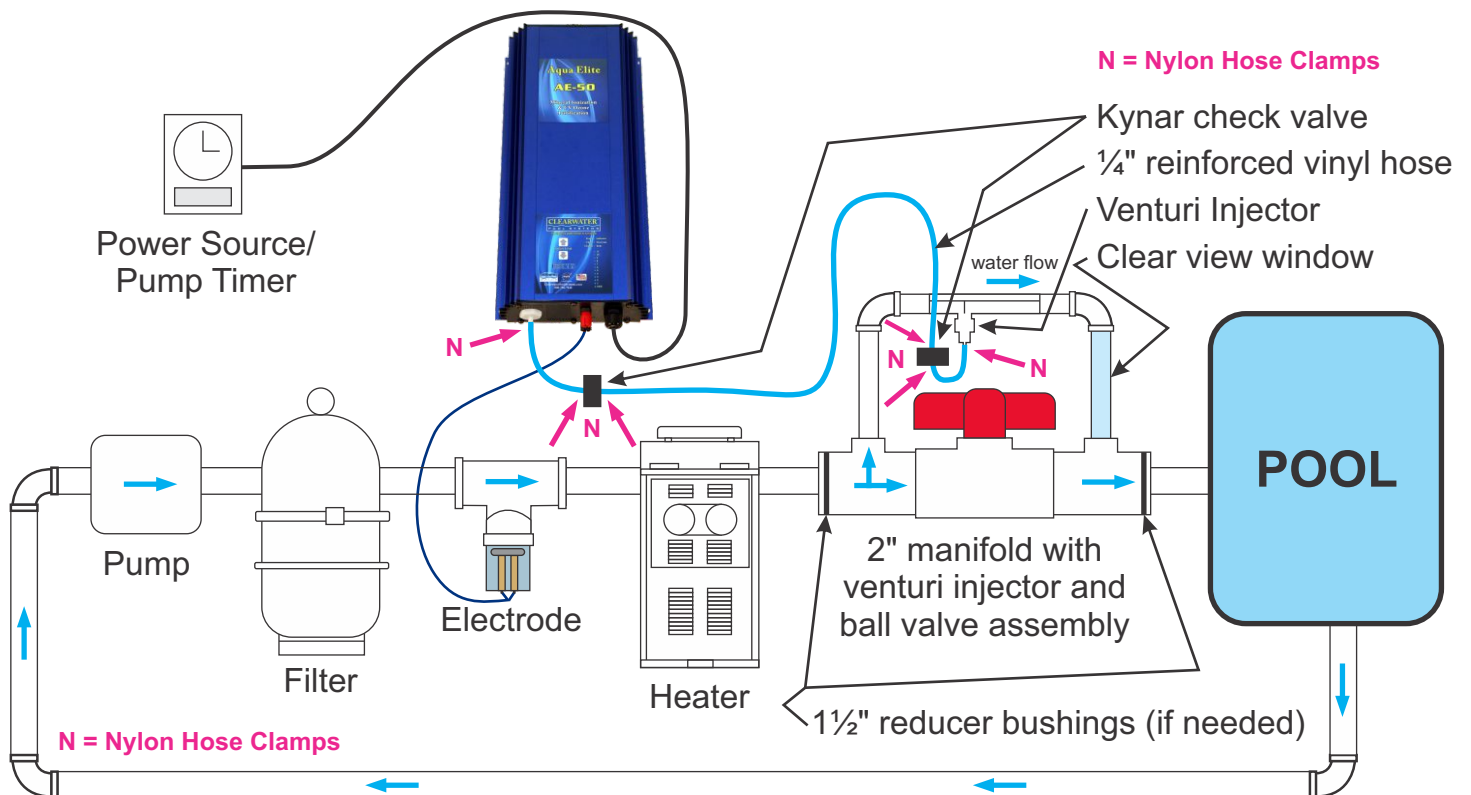


F). INSTALLING THE ELECTRODE

Generously wrap Teflon tape around the threaded part of the electrode assembly several times. Screw electrode into the tee. Do not over tighten.



G). INSTALLING THE VENTURI INJECTOR



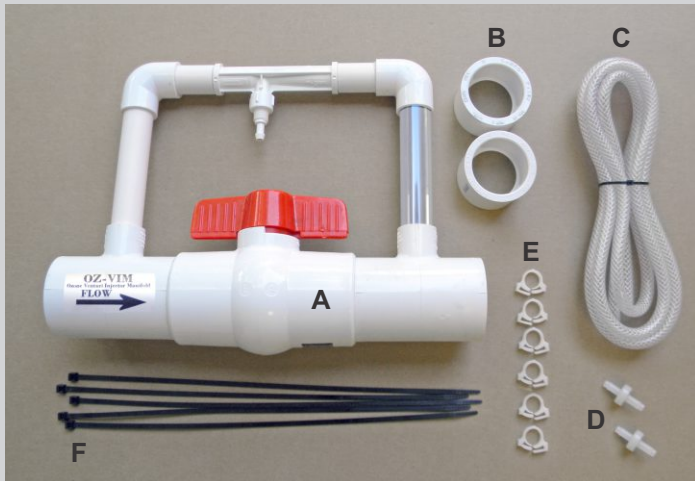
Mount the venturi manifold on the return line (after the filter, pump, electrode chamber, heater, etc.) so it is the last item before entering the pool. This is very important.

MAKE SURE THE WATER FLOWS IN THE DIRECTION OF THE ARROWS MARKED ON THE VENTURI MANIFOLD.

The venturi manifold comes in two-inch pipe. If plumbing size is 1 1/2", you will need to add 2" x 1 1/2" reduced bushings on each end of the manifold (included with the venturi manifold package.)

G. INSTALLING THE VENTURI INJECTOR (continued)

OZ-VIM - Venturi Injection Kit with manifold



- A. (1) 2" manifold with venturi injector and ball valve assembly
- B. (2) 2" x 1 1/2" reducer bushings (only used if 1 1/2" pipe)
- C. (1) 8' long of 1/4" reinforced vinyl hose
- D. (2) 1/4" x 1/4" Kynar check valve
- E. (6) 1/4" nylon hose clamps
- F. (5) 1/4"x 14" long zip ties

The next step involves the tubing going from the ozone power box to the venturi manifold.

Take the 8 feet long 1/4" reinforced vinyl hose and size out the amount needed to go from the ozone unit mounted on the wall going to the installed venturi manifold. You will be adding the two Kynar check valves included with the package in-line using the nylon hose clamps to mount. The check valves are precautionary, we strongly recommend using check valves in case of the unlikely failure of the venturi; the main part of the manifold. This will prevent water from entering the Ozone unit with two backup check valves in place.

IT IS IMPORTANT THAT YOU INSTALL THE KYNAR CHECK VALVES WHERE AIR FLOW IS ALLOWED TOWARD THE INJECTOR. AIR DIRECTION CAN BE VISUALLY TESTED BY A SMALL ARROW ON THE CHECK VALVE ITSELF. IF INSTALLED CORRECTLY, YOU WILL SEE AIR BUBBLES ENTER THE 3/4" CLEAR PVC PIPE.

THESE KYNAR CHECK VALVES AND TUBING WILL WEAR OUT OVER TIME AND YEARLY REPLACEMENT IS STRONGLY RECOMMENDED. (SEE SECTION Q OF THIS MANUAL FOR DETAILS)

DO NOT SUCK ON THE 1/4" ID TUBING WHEN CONNECTED TO THE OZONE SYSTEM.

DO NOT LOOK DIRECTLY AT THE OZONE BULB EXPOSED OUT OF THE METAL ENCLOSURE OR RISK SERIOUS INJURY .

Cut the hose at the areas (depicted on page 5) to add the Kynar check valves. This location should be within 6" of the ozone output coming from the **Aqua Elite 50** connector and 6" of the venturi manifold input connector. Add the Kynar check valves in-line in both locations. Connect one end of the hose to the **Aqua Elite 50** output connector and the other end to the venturi input connector on the manifold assembly.

H). MOUNTING THE CONTROL BOX

Mount the control box on the wall within 6 feet of the electrical source and 10 feet of the electrode flow cell tee and within 8 feet of the venturi injector.

It is strongly recommended to add a protective shade cover to keep the unit out of direct sunlight if possible.

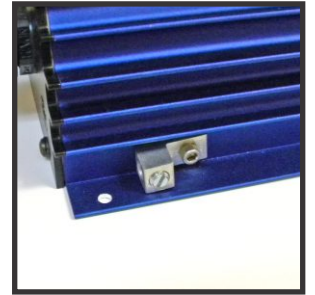


The Healthy Alternative to Chlorine

I). ELECTRICAL

Any electrical connections should be performed by a certified electrician in accordance with all electrical codes. **Aqua Elite 50** systems are universal voltage, meaning the unit will work on 115 or 230VAC without any internal switching. When locating the power source, make sure that when the pump and motor shuts off, the **Aqua Elite 50** will too. The ideal source is the timer box. If no timer box exists, the unit can use the pump motor as its power source. In other words, the electrical connection should be such that the **Aqua Elite 50** is supplied power only when the power is supplied to the pool filter/circulation pump.

A permanent ground bonding connector is provided on this unit and should be used to connect a minimum 12 AWG solid copper wire conductor to any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within five (5) feet of the unit.



J). 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.

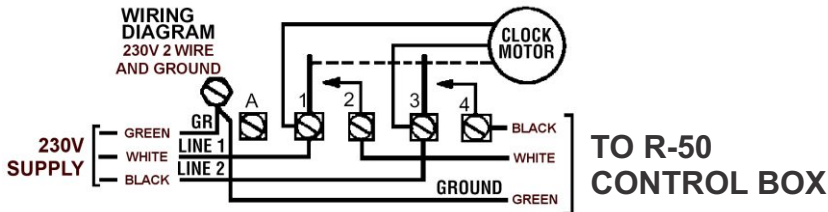
The unit will automatically work on 115VAC or 230VAC

Connecting the control box to the timer box

Below is an example of connecting the control box to a timer box. In this example an Intermatic timer box is used. Although most timer boxes are similar they are not exactly the same, please take care when using the provided information.

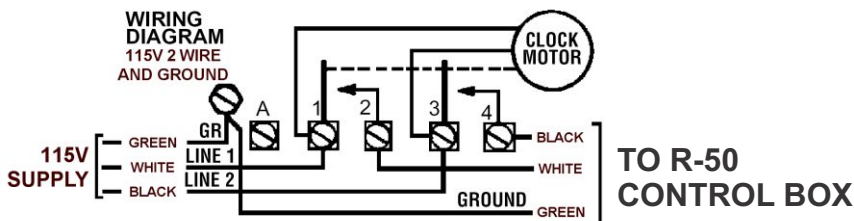
230 VAC Operation:

Connect the black (3 stranded) wire cable to the 230 VAC timer box by splicing the 3 wires and connecting the black and white wires to the LOAD side on the timer box. It makes no difference which colored wire goes to the two load screws. Connect the green wire to GROUND. When installed properly, the unit should come on and off when the pool pump goes on and off.



115 VAC Operation:

Connect either the white wire or the black wire to the LOAD side on the timer box. It makes no difference which colored wire goes to the two load screws. Connect the green wire to ground. When installed properly, the unit should come on and off when the pool pump goes on and off.



J). CHOOSING THE POWER SOURCE (continued)

Connecting the control box to the pump motor

Disconnect the back plate to the motor where the electrical connections are. You will notice two connections where the power source comes in and is connected. Connect the **Aqua Elite 50's** power cable (black, white and green) to the same as the motor's connections. If connected properly, the unit should come on and off with the motor.



K). CONNECTING THE ELECTRODE CABLE

Using the Electrode Wire Assembly, connect the two terminal ends to the connectors on each side of the electrode's connectors by first unscrewing the nuts and then tightening them back on. IT DOES NOT MATTER WHICH END GETS CONNECTED. Then connect the bare ends to the terminal posts coming out of the power box. IT DOES NOT MATTER IF YOU ARE CONNECTING TO THE RED OR BLACK POST.



L). STARTING UP THE SYSTEM / SETTING THE BALL VALVE

Once everything has been connected, turn on the power to the **Aqua Elite 50** unit. Make sure all the connections are complete and tight.

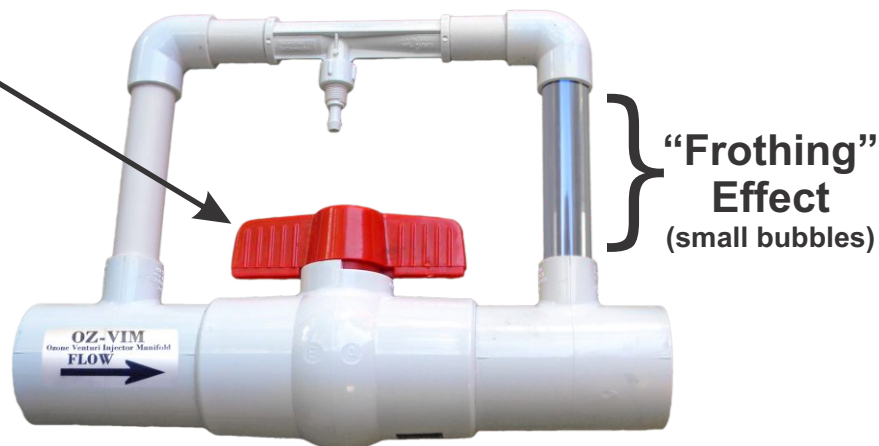
The next step is critical to the performance of the **Aqua Elite 50**.

The ball valve will need to be properly adjusted to maximize ozone output into the water. Adjust it with the pool pump set to the lowest pump speed so that you will see a “frothing” effect in the clear view window of the manifold assembly. This will appear to be very tiny milk-like bubbles. You will also be able to hear a noise at the venturi injector and visually see some small bubble action coming out of the closest return line (and possible other) in the pool.

Adjust the ball valve back until no bubbles and readjust until bubbles just appear and leave the ball valve set at this “setting”. This bubble/no bubble adjustment can be as sensitive as 1/16" to 1/4" rotation after rough audible or visual adjustment is made. It is recommended to mark this location with a marker in case the ball valve is accidentally changed.

NEVER LEAVE THE BALL VALVE CLOSED EXCEPT FOR THIS INITIAL ALIGNMENT STAGE. VERY IMPORTANT.

Adjust valve to proper setting to obtain the “frothing” effect.



The Healthy Alternative to Chlorine

M). SETTING THE UNIT TO THE DESIRED LEVELS

The first step is getting the pool to the desired level of copper-ions as quickly as possible.

We recommend a copper-ion level of .15 to .20 ppm.

Make sure the pH is between 7.2 and 7.6 and never goes over 7.8

Push the button located on the front panel of the control box that has a arrow pointing ↑ up. Push it several times until the LED lights on the control box reaches the top light, or “11”. This will be the maximum output of approximately 400mA of power going to the electrodes.

LED setting	Output mA
OFF	0
1	5
2	10
3	25
4	40
5	60
6	80
7	100
8	150
9	200
10	300
11	400



There are a lot of factors that can affect the rate the **Aqua Elite 50** will produce the ions (see section “T” Troubleshooting on pages 16-17). In order to get the desired reading of 0.15 to 0.20 quickly, you will need to set the unit to its maximum current output #11.

Other factors that affect the level ions are produced are keeping the pH under 7.8; the number of hours the filter runs, and the setting of the unit. Other factors include water temperature and the amount of algae/bacteria already in the water.

As a rule of thumb, it will take about 24 hours to get a pool of 10,000 gallons fully "ionized" and to the desired level of 0.15 to 0.20. So if your pool is 20,000 gallons, it may take two full days of running "around the clock" to reach this level. If you run the pool 8 hours a day (the normal time) it would take six days to reach the desired level.

Test Copper-ion levels daily at this stage until the desired levels are maintained.



Once the setting is established, it will only need to be adjusted as the seasons change.

M). SETTING THE UNIT TO THE DESIRED LEVELS (continued)

Using the Clearwater Pool Systems Ion Test Kit

Included with every unit is an Ion Test Kit. The easy-to-use instructions are located on the inside cover of the lid. Please follow those instructions carefully, as the reading you get is most important in how you set the **Aqua Elite 50**. When using this test kit, make sure you wait 3 minutes for the test to develop and look **down** into the tube, not from the **side**. There is a reading or color match for 0.15 and one for 0.20 on the enclosed chart. Ideally, we would like the readings to be anywhere in that area.



Once the Desired Level is Obtained

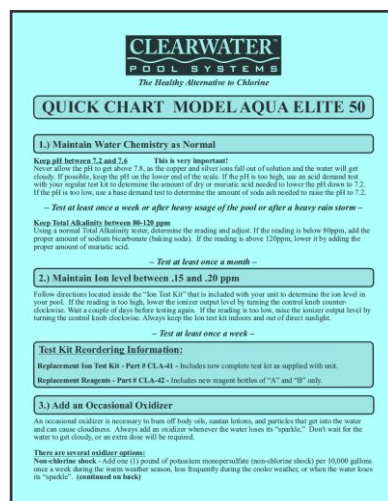
Once the desired level is obtained, you will need to find a setting point on the control box where the ion readings will remain in that range of 0.15 and 0.20. The biggest factor is water temperature. As a rule of thumb, if the pool is 10,000 gallons, the reading on the control box should be around 2 or 3. It may be lower in cooler climates, or higher in warmer climates. Someone in Maine may keep the level at 1, while in Florida it may be 3. A 20,000-gallon pool may need a reading of 4 or 5. A 50,000-gallon pool may need a reading of 7 or 8. This is also based on running the system 8 hours a day. It is all proportionate. So if the pool ran 24 hours a day, the settings would be 1/3 that.

When you lower your setting, it is best to test on a daily basis. If the readings continue to go up, lower the setting and retest the following day at about the same time. If the reading goes down, increase the setting, and test again the next day. Eventually you will find the proper setting. Once you do, the setting will stay near that the entire season. If your pool is open year round, like in Florida, you will have a lower setting in the winter and a higher setting in the summer.

N). PROPER PROCEDURES OF MAINTAINING A HEALTHY POOL

Included with this package is a "QUICK CHART" that gives you the basics of maintaining a proper pool. Please refer to that sheet whenever possible. If you ever have any questions, contact your dealer or Clearwater Enviro for any assistance.

- Keep the pH between 7.2 and 7.6
- Keep total alkalinity between 80-120 ppm
- Maintain Ion level between 0.15 and 0.20 ppm
- Maintain normal pool maintenance – keep filter cleaned, empty baskets, etc.
- Add an occasional oxidizer



N). PROPER PROCEDURES OF MAINTAINING A HEALTHY POOL

Adding an Occasional Oxidizer

An occasional oxidizer is necessary to burn off body oils, suntan lotions, and particles that get into the water and can cause cloudiness. Always add an oxidizer whenever the water loses its “sparkle.” Don't wait for the water to get cloudy, or an extra dose will be required.

There are several oxidizer options:

Non-chlorine shock - Add one (1) pound of potassium monopersulfate (non-chlorine shock) per 10,000 gallons once a week during the warm weather season, less frequently during the cooler weather, or when the water loses its “sparkle.” You may also want to add some non-chlorine shock after a rainstorm if the pool was left uncovered. These are available in most pool stores, or at *Leslie's Swimming Pool Supplies* (1-800-537-5437) ask for "Fresh 'N Clear".

Household bleach - Add two (2) quarts of regular household bleach per 10,000 gallons once a week. You may also use liquid chlorine – but only ½ the amount. This small amount will dissolve rapidly and you will have chlorine-free water in a few minutes.

Tablet in skimmer - Add a 3" Trichlor tablet in the skimmer for continuous oxidizing. The reading will be so low that it won't be detectable. This is ideal for pools with heavy swimmer use or if the homeowner is away often.

WARNING: Excessive amounts of Copper may cause staining of pool and spa surfaces. Always keep pH under 7.8 at all times.



O). CLEANING AND/OR REPLACING ELECTRODE

The only part of the **Aqua Elite 50** that will need maintenance or replacement is the electrodes. They should last about 1-5 years depending on your pool size, length of swimming season, water temperature and how well the water was balanced (ion level, pH, etc.). If the LED light “**Check Electrode**” comes on, it may be time to clean or replace the electrode. To inspect the electrodes, simply unscrew the electrode chamber with your hands and visually inspect the electrode bars. A blue greenish coating is normal, however, if there is a heavy buildup, you may need to clean the electrode. Using an old toothbrush and lemon juice or a muriatic acid/water solution, scrub the buildup off the electrode. If the electrodes are thin and worn out, they will need to be replaced.



Electrode Reordering Information:

Replacement Electrode - Part # CLE-02 - residential copper electrode for the Aqua Elite 50 Model.

Always add more teflon tape when screwing the electrode back into the flow-cell tee.

P). OZONE INSPECTION

The amazing thing you will notice about the **Aqua Elite 50** system is the clarity of the water.

You might initially notice the water getting cloudy the first couple of days. **DO NOT BE ALARMED. THIS IS NORMAL!** You will want to clean or backwash your filter after the first week.

Visual Inspection

You will want to periodically inspect the power box in the evening to ensure the unit is functioning correctly. Turn the system on temporarily, if needed. The indicator light, located next to the output connector will glow a nice blue color. The ozone unit should only be on when the pump is running.

To ensure that the venturi injector and bypass are working correctly, simply observe to see if small bubbles are entering the pool and the “frothing” effect is taking place in the clear window of the venturi manifold window.



Periodically check the unit intake vent holes for the unlikely event of debris accumulation. It is important these vent holes are open for air to enter the ozone unit. Do not look directly into the vent holes when the UV bulb is operating.

Plumbing Issues

Minor adjustment of the ball valve (when installing the manifold) may be required to divert water through the injector. This may be true with two speed or variable speed pumps. Older versions of these adjustable speed pumps do not adjust well and you will need to adjust the ball valve to accommodate flow through the venturi on low speed.

There is an internal check valve in the venturi injector. In the unlikely event this area becomes clogged, it may be cleaned by removing the nut/barb and a retaining rubber seal. Care should be used not to lose the internal ball and spring while taking the rubber seal off. Clean and reinstall.

Q). SCHEDULED OZONE MAINTENANCE

Very Important that this is done once a year!

There is very little maintenance required with the **Aqua Elite 50** unit regarding the ozone production, however we do strongly recommend you replace the ozone hose and the check valves once a year.

The ozone hose and check valves can be easily replaced in a few minutes. A complete package is available that includes 8 feet of hose, two check valves, 6 hose clamps and 5 zip ties.

Replace ozone hose once a year

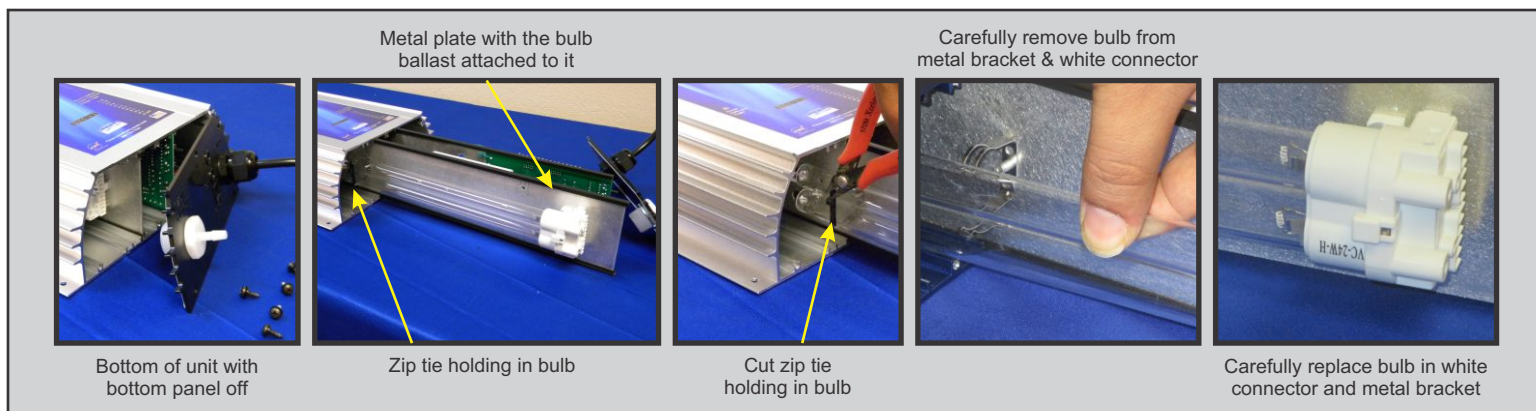
Order replacement part – **OZ-HOSEKIT** – from your dealer. This complete package includes 8 feet of hose, two check valves, 6 hose clamps, and 5 zip ties.



R). REPLACING THE UV BULB

The ozone UV bulb will need replacing after approximately 9,000 hours of use. A unique feature of the **AE-50** is that the unit comes with an exclusive “Change Bulb” indicator. When this light is on, it will be time to replace the bulb. Order the replacement bulb noted above from your dealer. The replacement bulb will come with complete instructions on how to change it. A condensed version is noted below:

When replacing the UV bulb, we strongly recommend you remove the unit from the wall. This is to ensure you carefully remove the delicate equipment from the metal enclosure properly, and seal back up tightly.



Replacing the bulb in the Aqua Elite 50 unit.

1. Disconnect power from the **Aqua Elite 50** unit. Coming into contact of the exposed ozone bulb can cause serious damage to your health.
2. Remove the six (6) screws on the bottom of the unit.
3. Carefully pull off the bottom panel and slide out the 1 metal plate with the UV bulb and ballast attached to it as far as it will go – approximately 11 inches. There is a tether holding it in place so it will not completely disconnect from the **AE-50** box. Be careful **NOT** to pull out any wires.
4. Cut the zip tie holding the bulb in the bulb clamp. Be careful **NOT** to break the bulb.
5. Carefully pull the bulb from the white connectors and the bulb clamp from holding them in place and remove. Be careful **NOT** to break the bulb. Dispose of bulb properly after removal.
6. Snap new bulb in place. Secure with the metal brackets.
7. Push metal plate back into its place inside the unit. There is no need to add another zip tie as this was used for shipping purposes.
8. Replace the bottom panel, making sure the gasket is seated in the groves properly.
9. Tighten the 6 screws back into place, securing the bottom plate tightly.
10. Reconnect power. Make sure the bulb indicator (the clear connector on the output tube of the power box) glows in a blue color. Again, you may want to check this in the evening hours out of direct sunlight.
11. To reset the “Change Bulb” indicator light, you will need to push the two buttons (labeled “up” and “down”) at the same time and hold for about 10 seconds. The “Change Bulb” LED light should go off at that point and be recalibrated for the new UV bulb.

Replacing the UV Bulb

Order replacement part – **OZ-50/75L** –
Replacement **Aqua Elite 50** bulb – from your dealer.



S). ION-TEST KIT REPLACEMENT

You should replace the reagents at least once a year. You can either replace the entire test kit (exactly as supplied in the box when you received the **Aqua Elite 50** unit) or replace the reagents.



CLA-41



CLA-42

Replacement Ion Test Kit - Part # **CLA-41** - Includes new complete test kit as supplied with unit.
Replacement Reagents - Part # **CLA-42** - Includes new reagent bottles of "A" and "B" only.

Contact your dealer or Clearwater Enviro Technologies, Inc. for more ordering information or visit www.ElectrodeWarehouse.com

T). TROUBLESHOOTING

Cloudy Water or Algae Present

If algae is present, you must take steps to solve the reason it formed. First, brush the algae then add chlorine to the pool to oxidize. Check filtering system and backwash or clean filter. Check water chemistry – especially pH. Make sure ion level is in range. You may need to oxidize more frequently if problems persist.

If cloudy water is a problem, add chlorine to clear it up. Again, make sure all 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 add 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 ion level, check all of the following factors to solve the problem:

- 1.) High algae growth and cloudy water / Ion level too low.** A high algae growth or cloudy water will use up all available copper and silver ions in the water that the unit can produce. This would result in a low ion level. Make sure the pool water is balanced (see the rest of this section) and increase the power level to a higher reading. Oxidize the water with chlorine.
- 2.) Correct sizing of the pool.** If the pool is larger than 50,000 gallons, you may need a stronger system.
- 3.) Scaled, dirty or worn electrodes / check electrode light comes on.** A blue-greenish coating around the electrodes is normal. However, a build up of scale, dirt or debris around the electrodes can prevent the unit from producing ions. Simply unscrew the electrodes and clean the buildup using an old toothbrush and use a lemon juice or muriatic acid/water solution. (See details in section O, page 14).

T). TROUBLESHOOTING (continued)

Can't Obtain the Proper Copper-Ion Level (continued)

4.) Total Dissolved Solids (TDS) is too low. If your pool has brand new water in it, and you are unable to obtain a desirable reading on the control unit, chances are the TDS level is too low. 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 300 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.

5.) Improper test kit readings. Make sure you follow the proper Ion-Test kit procedures. Many people look at the side of the test tubes instead of looking down from the top. Also, be sure to wait three minutes for the reagents to develop. These reagents should be replaced yearly and kept out of direct sunlight and stored at normal room temperature. Failure to do so will cause faulty readings. Never let the reagents freeze or be exposed to extreme heat.

6.) Improper pH readings This is usually the main reason for a low copper-ion level. Make sure the pH is maintained between 7.2- 7.6 , with the lower end preferred. When the pH goes over 7.8, the ions fall out of solution. Make sure your test kit is updated with fresh reagents and kept out of direct sunlight and in normal room temperatures. Never mix different manufacturer's reagents with the test kit.

7.) Too much chlorine in the pool If the pool was just shocked with a lot of chlorine, this can give you an improper test kit reading on the Ion Test Kit. The high chlorine level will "bleach" out the reading and appear to read zero.

8.) Sequestering Agents or Metal Out Removers in the water Sometimes pool owners will add a flocking or sequestering agent to the water to remove stains or scaling in a pool or remove undesired minerals that are in the source water. Some of these will interfere with the **Aqua Elite 50's** ions such as Sequasol, Cop-Out, Metal Magnet, Aluminum Sulfate or Alum. Products that won't cause problems and that are actually recommended to use with **Aqua Elite 50** include Pool Stain Treat by *United Chemical* or *Jack's Magic*. All polymer based products like Super Blue and Sea-Klear do not cause problems either. If you are unsure if a sequestering agent is causing a low ion level, send **Clearwater Enviro Technologies** a water sample to test. If it is a problem (these agents can stay in the water for up to a year) add a lot of chlorine to shock it out of the pool water.

9.) Steel plumbing Never install the electrodes on steel piping. Cut out a section of this and replace with PVC pipe.

10.) Improper installation Sometimes installers will mount the electrodes on a bypass line and not on the actual return line that goes back to the pool's water. Make sure unit is installed properly with correct connections.

11.) High Phosphate level A high phosphate level will be a breeding ground for algae. If you have a lot of algae growing and can't keep the Ion-level up, you may have a high phosphate level. Any reading over 125 ppb can cause problems. Have your pool store test for phosphates or contact your dealer or *Clearwater* for more information. There are products available that will remove phosphates from the water quickly and will eliminate algae and low Ion readings.

Questions? Contact your dealer or contact us at:

1-800-756-7946 (SWIM) • ClearwaterPoolSystems.com

Lifetime Support

U). UNIT NOT WORKING PROPERLY

If for any reason you do not get any LED lights to come on, or feel the unit is not working properly, contact your dealer or Clearwater Enviro Technologies for support.



1-800-756-7946 (SWIM)

ClearwaterPoolSystems.com



To Return the Unit

First you must obtain an **RMA (Return Merchandise Authorization) number** from **Clearwater Enviro Technologies, Inc.**

Contact customer service. (see contact info above)
Remove Control box from wall and return to:

Clearwater Enviro Technologies
8767 115th Ave
Largo, FL 33773

The **RMA number** must be clearly marked on the outside of the package

Include a note inside the package with the **RMA number** again and a brief description of your problem.

Include your address and contact information.



3 YEAR LIMITED WARRANTY

This Aqua Elite 50 ionizer/ozone carries a full **three (3) year warranty** to be free from defects in material and workmanship under normal use from the date of purchase. In the event of malfunction or failure of this product, the purchaser should contact their dealer for service. If dealer is unavailable, contact Clearwater direct at 800-756-7946 or 727-562-5186 or by fax 727-562-5187 or going to their website at clearwaterenviro.com to obtain an **RMA (return merchandise number)**. Properly package the entire unit and ship it prepaid with a note containing the RMA number, your name, address, phone number (or best way to contact you) along with a brief description of the difficulty you are experiencing with the unit to:

Clearwater Enviro Technologies, Inc. • 8767 115th Avenue North • Largo, FL 33773

Please be sure to also write the **RMA number** on the outside of the shipping box.

If the malfunction or failure is a result of defects covered by this warranty, Clearwater will repair the product or replace it and return it to the purchaser. After a period of **three (3) years**, a small labor and parts charge will occur.

This warranty is limited to the original retail purchaser and is not transferable. This warranty does not cover damage due to accidents, abuse, tampering, misuse, fire, lightning damage, power surge, flooding or any catastrophic acts of God.

This warranty does not include pool staining as this is beyond our control and can occur due to improper pool maintenance. This warranty does not include the electrodes, which are subject to normal wear and must be replaced periodically.

In no event shall the manufacturer be liable for damages from improper user installation, nor shall they be liable for already damaged pipe and any consequential damages incurred, whether direct or indirect.

This warranty is limited to repair or replacement and does not include consequential damage or installation expenses and is in lieu of all other warranties express or implied. This warranty gives you specific rights and you may also have other rights, which vary from state to state.

To register this warranty on-line go to:
www.ClearwaterPoolSystems.com/warranty/

CUSTOMER COPY, PLEASE DETACH AND KEEP WITH YOUR RECORDS

CUT HERE

Purchase Date: _____ Price Paid: \$ _____

Dealer: _____



Purchaser: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: (____) _____ E-mail: _____

I have read and agree to abide by the conditions in the warranty.

If registering on-line you **do NOT need to mail this in.**

Signature of Owner _____

AQUA ELITE 50 IONIZER & OZONE SPECIFICATION SHEET

IONIZER SPECIFICATIONS:

POOL SIZE: up to 50,000 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 ½" PVC pipe

ELECTRODE: one set 3" long, comprised of copper (CLE-02)

HEAD LOSS:	<u>Flow Rate</u>	<u>Total Head Loss (psi)</u>
	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
400mA this ionizer produces 287mg 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

OZONE VACUUM ULTRAVIOLET SPECIFICATIONS:

Ozone Method: Vacuum ultraviolet lamp produces ozone that is injected into the pool by a vacuum venturi injector to oxidize materials in the water

Ozone Output: 1.26 ppm ozone concentration (independent 3rd party testing)

VUV Lamp: Estimated 9,000 hour life span

Electrical Specifications:

INPUT VOLTAGE: 110/240 VAC @ 50/60 Hz

INPUT CURRENT: 1 A MAX @ 110VAC

INPUT POWER: 25 W MAX

IONIZER OUTPUT VOLTAGE: 24V DC

IONIZER OUTPUT CURRENT: Adjustable in 12 increments from 0 to 400mA DC

CIRCUIT PROTECTION: internal fuse and input MOV line surge protection @ 3KV

Mechanical Specifications:

ENCLOSURE MATERIAL: Extruded Aluminum - 6063-T% Electro-Chemical etched exterior that converts the metal surface into a decorative, durable, corrosion-resistant, anodic oxide finish.
End caps – NEMA 4 ABS 94VO material with silicone sealing.

ENCLOSURE DIMENSIONS: 9.5" x 3.5" x 16"

SHIPPING WEIGHT: 25 lbs

PACKAGING/SHIPPING BOX DIMENSIONS: 12.5" x 9" x 25"

Other Specifications

OPERATING TEMPERATURE RANGE: 32 to 110 degrees Fahrenheit

WARRANTY: 3 years, parts and labor - excluding electrodes

Package includes venturi injection kit manifold



The Healthy Alternative to Chlorine

MineralPURE[®]

The Healthy Alternative to Chlorine

O₃zoneMAX[™]

Vacuum-ultraviolet Ozone System

Manufactured by



Sustainable Solutions for Our Future



Licensed technology

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Phone: 727-562-5186 • Toll Free: 800-756-7946 (SWIM)

04/19