SMARTE 5 YEAR WARRANTY REGISTRATION CARD

ECOsmarte agrees to repair or replace all non-performing components for a period of five years on the products if proper installation has been followed. The customer ships prepaid to our office; return freight prepaid by ECOsmarte.

☐ **Automated Non-Chemical Pool** ☐ **Turbo Pool System** ☐ **Above Ground Pool System** ☐ **Turbo Spa**

Date Installed _____

Name _____

Address _____

City _____ State _____ Zip _____

Phone Numbers ( ) _____ ( ) _____
days evenings

Local Dealer Name: _____

REFFERED BUYER

Name _____

Address _____

City _____ State _____

Unit Installed:

☐ Outdoor

☐ Indoor

Corporate Office Use Only

Ship Date _____

Distributor _____

Card Return Date _____

Referral Received _____

Electrodes Shipped Date _____ ☐

FAX THIS FORM TO 612-866-0152 OR SCAN & EMAIL TO pools@ecosmarte.com

Payment by: ☐ Check or Money Order ☐ Visa / Master Card ☐ Discover ☐ Cash
(Check One)

FACTORY SPONSORED - DIRECT TO YOU - FREE COPPER ELECTRODES FOR ONE BUYING REFERRAL
Send to 1600 East 78th Street, Richfield, MN 55423

Video Download of Swimming Pool Operation
ONLINE SUPPORT FRAME
Password: customer2007

Congratulations on your new investment! The *ECOsmarte Pool System* will give you many years of a safe and pure swimming environment. Whether you are building a new pool, switching over from chlorine, baquacil or another sanitation device, by choosing the *ECOsmarte Pool System* you have made an environmental and health statement with your purchase. With the *ECOsmarte Pool System* multiple forms of oxygen are delivered in grams per minute. The electronic oxidation and ionization delivered by the *ECOsmarte Pool System* inhibits algae and bacteria growth while providing the oxygen necessary to qualify as a stand alone sanitizer for the nearly 15,000 residential pools we have installed since 1994.

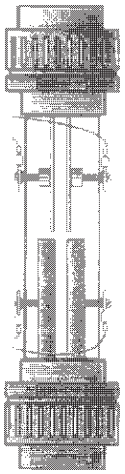
In Australia and Canada, your Government requires a .5 ppm free chlorine residual with the *ECOsmarte* copper ionization. This level must not exceed 1.0 with *ECOsmarte*. NO CYANIDE (Conditioner, Stabilizer) is to be used with the *ECOsmarte Pool System*. All other residential pools are to avoid the use of Chlorine.

CONTENTS DIRECTORY NEXT PAGE

PLANET FRIENDLY®

$6.00 US

To Pool



WIRE HOOK -UPS

BLACK/WHITE

RED/GREEN

(Connect both to front side of chamber.)

The ***Electrode Chamber*** may be installed either horizontally or vertically with our Quick Change Unions. Install the ***Electrode Chamber*** between the pump and filter or between the filter and pool on the pressure side of your piping. The ***ECOsmarte Electronic Box*** can be installed indoors or outdoors. The ***Electronic Box*** is water resistant and comes with pre-wired leads to be connect to the ***Electrode Chamber***. If installation requires additional wire, you may order it from your local ***ECOsmarte*** dealer.

Automated Systems

C US

DO NOT LET YOUR CHLORINE LEVEL fall to ZERO prior to install.

CONTENTS OF THIS MANUAL

SALTWATER and BROMINE POOLS must be drained and refilled

Ecosmarte Planet Friendly FIVE YEAR Manufacturer's Product Warranty Pool and Spa System

The manufacturer warrants its equipment to be free of defects in material or workmanship on the product for the period of five (5) years. This warranty includes the electronic box, the plumbing components and the titanium electrodes. It does not include the self-sacrificing copper electrodes, installation or repair cost and in no event shall the manufacturer's liability exceed its selling price.

The electronic box box shall further have a limited warranty on all operating components; provided in years three through five, warranty expressly excludes misuse of product, submersion or cord removal.

No warranty shall exist on airborne microbes on indoor pool or spa installs.

The manufacturer disclaims all liability for damage to its products through improper installation, acts of God, maintenance, use or attempts to operate such products beyond their functional capacities, intentionally or otherwise, or any unauthorized repair. The manufacturer is not responsible for consequential or other damages, injuries, or expenses incurred through the use of its products.

FREE OFFER: COPPER ELECTRODES

LIMIT ONE PAIR PER HOUSEHOLD

REFERRAL PROGRAM

TWO WAYS TO QUALIFY

1) Send a photo of your pool (mail or email) with a caption telling us what you like about chemical-free water.

2) Refer one buying customer to any ECOsmarte dealer and provide refered buyer name.

Referred Buyer Name _____

Your Name _____

Daytime Phone# _____ Work Phone: _____

Evening Phone# _____ Email _____

Unit 1 Serial# _____ Unit 2 Serial# _____

Date of installation _____

Name of ECOsmarte Dealer _____

ON-LINE SUPPORT AT www.ecosmarte.com

Mail this card to:
ECOsmarte Planet Friendly, Inc.
1600 East 78th Street, Richfield, MN 55423

IMPORTANT SAFETY INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

1) **READ AND FOLLOW ALL INSTRUCTIONS.**
2) (For all units) WARNING - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
3) (For cord- and plug-connected units) WARNING - Risk of Electric Shock Connect only to a grounding type receptacle protected by a ground- fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
4) (For cord- and plug-connected units) Do not bury cord. Locate cord to minimize abuse from lawn mowers, hedge trimmers, and other equipment.
5) (For cord- and plug-connected units) WARNING - To reduce the risk of electric shock, replace damaged cord immediately.
6) (For cord- and plug-connected units) WARNING - To reduce the risk of electric shock, do not use extension cord to connect unit to electric supply; provide a properly located outlet.
7) **SAVE THESE INSTRUCTIONS.**

MODEL: ECOPT
INPUTS: 110/220V 50/60Hz
OUTPUTS: 4V-17V DC. 100-900 Milliamps

CAUTION: CONNECT ONLY TO A CIRCUIT PROTECTED BY A CLASS A GROUND FAULT CIRCUIT INTERRUPTER.

WARNING: DISCONNECT THE ELECTRIC POWER BEFORE SERVICING. USE COPPER CONDUCTORS ONLY.

CAUTION: For continued protection against possible electric shock use only identical replacement parts when servicing.
TO REDUCE THE RISK OF ELECTRIC SHOCK, INSTALL AT LEAST 10 FEET FROM THE INSIDE WALLS OF A POOL. DO NOT USE AN EXTENSION CORD.

CAUTION: ADEQUATE DRAINAGE MUST BE PROVIDED IF THE EQUIPMENT IS TO BE INSTALLED IN A PIT.

1-800-466-7946
www.ecosmarte.com

START-UP

As we begin to protect your water against algae and bacteria by ionization, the first seven days are critical. You need to closely monitor two water factors in particular: pH and Copper. pH levels above 7.2 will render the copper ions *ineffective* and will prohibit accurate copper measurements. Copper ions are the algaecide and bacteriacide in the water. The water in your pool needs a pH below 7.2. Ideally, begin ionizing after adjusting the pH to 6.8 and expect the pH to rise. The total alkalinity of the pool will fall as you lower your pH. ***Do not try to adjust the total alkalinity as we will be changing the water's chemical make-up of calcium to bicarbonate. You must confirm minimum calcium of 300ppm, if upward adjustment is necesarry raise to 400ppm and test six month later.***

During Start-Up the ***ECOsmarte Pool System*** will remove old sanitation chemicals in the water.This process will require you to backwash or clean the filter media until most of the toxic contaminants have been removed. A slight increase in filter pressure indicates a load of toxins has been removed. Expect increases in filter pressure and pH rises during Start-Up (first 2 - 3 weeks). Switch the ***ECOsmarte Electronic Box*** to the Ionize position. After 24 hours of ionizing take a second copper and pH measurement (see TESTING YOUR WATER). Test the pH first and adjust it if necessary with muriatic acid diluted with water. Once your pool has achieved between .4 ppm and .7ppm copper, switch the ***ECOsmarte Electronic Box*** to Oxidize. If your pool registered copper prior to installing the ***ECOsmarte Pool System***, then ionize until you achieve 0.8 ppm, or until the false indicators have been filtered out of the pool.

At this point, your pool should have a copper residual of approximately 0.6 ppm, with chlorine or other "old" sanitation chemical approaching zero, and be ready to begin the WEEKLY MAINTENANCE cycle. If this is not the case, consult the PROBLEM SOLVING section of this document. A minimum level of 0.4 ppm is required to protect your pool. Swimmers, rainfall, evaporation and algae will cause your copper residual to decrease. **Once your minimum copper residual is reached, your control box is always in the oxygen or "oxidize" mode unless your weekly water test indicates copper is below 0.4 ppm. If you go four calendar days and copper is below 0.4 ppm have phosphates, calcium, and pH values tested at local pool store. Add ZeroPhos™ if necessary.**

1-800-ION-SWIM:
FREE five minute orientation available & encouraged with new users.

PRELIMINARY STEPS

(1) Stop using old sanitation chemical or device, but confirm levels.
(2) Backwash or clean filter thoroughly.
(3) Install ***ECOsmarte Electrode Chamber*** either horizontally or vertically.

Note: If chlorine is at zero put one quart Algaecide 60 in the pool until you get copper to .4ppm.

CONVERSION STEPS

(1) Lower pH to 6.8 - 7.2 range.
(2) Measure copper, see TESTING YOUR WATER
(3) Turn ***ECOsmarte Electronic Box*** to Ionize, High for all pools. Take second Copper test after 24 hours, test ph again.
(4) It will take 48 to 72 hours of consecutive ionizing to get copper above .4ppm

ELECTRONIC CONTROL BOX

To Ionize, set the ***ECOsmarte Electronic Box*** in the ionize position. A single, circling light indicates power to the ***Electronic Box***. A small glow-lamp diode at the ***Electrode Chamber*** indicates power to the electrodes

You will oxidize, unless a copper measureme indicates a need for copper ions. On average, oxidize 13 days, ionize 1 day, depending on your bather load. ***ECOsmarte*** recommends turning the water over in your pool once per-day, running the ***ECOsmarte Pool System*** only when filtering your water. When the ***Electronic Control Box*** is in the Oxidize position, your pool water will be oxidized as it passes through the ***Electrode Chamber***.

The lights on the ***Electronic Control Box*** will indicate the mode of operation, confirm polarity shift, and alert you to certain problems. Under proper operating conditions a single light will circle whether in the Ionize or Oxidize mode, and a single steady light will appear next to the selected mode.

(1) A mode light appears next to both Ionize and Oxidize positions regardless of mode selection, then power is feeding back from the selected electrodes to the other electrodes. This is caused by highly conductive water. As long as the lights are not blinking, leave unit in high mode; check again the second season.

(2) One or more mode lights blinks, then water is extremely conductive. Switch ***Box*** to Low. Leave box on high if both lights are on but not blinking.

(3) 98% or more of all systems run in high mode, both on ionize and oxidize.

1-800-ION SWIM

PROCEDURE TO RECEIVE TOLL-FREE SUPPORT
ORDER SUPPLIES & PARTS
email: pools@ecosmarte.com

To properly support thousands of customers in North America, ***ECOsmarte*** has trained, factory support personnel available six days per week. This service is offered at no charge for the first six months you own an ***ECOsmarte Pool or Spa System***. Combination ***Pool and Whole House System*** customers get five years unlimited phone support. When calling 1-800-ION SWIM with a pool problem or question, *please have ready.*

(1) Your Install Date.
(3) Where purchased if applicable
(2) The current pH and copper parts per million test results along with a recent general pH history of your pool.

This information will allow ***ECOsmarte*** personnel to properly advise you. If you wish to receive Toll-Free Customer Support after your 6 months has expired, ***ECOsmarte*** offers three levels of Support at a minimal cost.

All Online Inquiries Answered Within 24 Hours.

BEFORE CALLING ECOSMARTE SUPPORT LINE

Current pH: _____

Copper ppm: _____

pH History: _____

Type of Filtration: _____

2007-2008 Consumable Price List (subject to change)

• ECOsmarte Pool Manager	$ 99
• EC70 Copper Test Kit	$ 22
• Cleaning Caps(cuts acid use)	$ 15
• Glass Pack (Per LB of Filter Capacity)	$ 1
• Replacement Copper Electrodes	$ 125
• Electrode Chamber Hardware Kit (includes bolts, washers & male clips)	

Glass Filtration Media

Finely crushed glass for pool, industrial, and environmental filtration that provides outstanding water clarity and quality - a direct replacement for sand or Zeolite in both freshwater and saltwater pools.

Superior Cleaning

- Cleaner, lighter weight, highly angular crushed recycled glass provides an amazing 25% improvement in turbidity removal over silica sand, and is equivalent to Zeolite. It has been tested in the worst wastewater applications by the U.S. Environmental Protection Agency (EPA).
- Crushed glass filtration media generally removes finer particles from water than silica sand of an equivalent grade, and is comparable to properly configured Zeolite.
- Weak negative surface charge holds fine particles and positively charged iron and manganese ions that are easily released upon back washing. Perfect for well water pools.
- Crushed glass filtration media is less likely to block or channel than silica sand or Zeolite and will not support moss or fungus growth in the media.

Safer to Use

- Glass contains no crystalline silica–resulting in better lung protection for employees and a far healthier environment.
- Glass grains are amorphous, smooth particles that have higher attrition strength and do not permanently trap bacteria in cracks.
- Use of crushed glass filter media will lower your consumption of chlorine and coagulants. Coagulants and metal removers foul Zeolite and are compatible with glass.
- Manufactured from 100% recycled glass machined like sugar.

Lower Operating Costs: Easy Install and Maintenance

- Labor and time savings at install.
- Improved performance for pressure or gravity-flow filters.
- Weighing 20% less than sand, ECOsmarte® crushed glass filtration media provides more filter volume per pound.
- Lower density requires up to 20% less media to fill your filter vessel.
- Better permeability–back washes with up to 25% less water, saving down-time and water/sewer charges.
- Because glass cleans better, you save energy, operating costs, and extend the life of your filter.
- Comparable initial cost to Zeolite on retrofit sand filters.

WATER VOCABULARY

pH

The technical term for the measure of acidity or alkalinity of water. pH is measured on a logarithmic scale from 0 to 14. At a pH of 7.0 and a watertemp of 80^{o}, water is neutral. A reading above 7.2 means the water is alkaline. A reading below 6.8 means the water is acidic. During the swimming season, check the pH level weekly and after heavy rainstorms. Everything that enters your pool has a pH value. Adjustments should be made to keep the pH within 6.8 to 7.2 range. Muriatic acid has an extremely low pH, and, consequently, is used to lower pH. Sodium bicarbonate, or baking soda, has a high pH and is alkaline. With the ***ECOsmarte Pool System*** it is important to maintain a pH within the specified range. The effectiveness of the copper ions depend on a neutral pH. Neutral pH at 85^{o}F water temperature is 6.8. Water without chemicals will want to be neutral, and starting each week at 6.8 will give you best results.

COPPER

The ***ECOsmarte Pool System*** generates copper ions. A body of water protects itself against simple organisms like algae, bacteria, and some viruses by maintaining a copper residual. Copper is lethal to simple organisms, yet beneficial to complex organisms like humans and animals.

TOTAL ALKALINITY

A close cousin of pH, Total Alkalinity is a measurement of all the carbonates in the water: Carbonate, Bicarbonate, and hydroxides. The pool industry has yet to develope a true Total Alkalinity Meter. Available Alkalinity test kits measure the amount of **carbonate alkalinity** in the water. You have **bicarbonate** (soluable) **calcium that does not register on traditional alkalinity test kits.** The ***ECOsmarte Pool System*** will not cause corrosion if the alkalinity measurement is low (below 60). If you were using chlorine the water would become aggressive and potentially destroy pool equipment. Until an accurate means of testing true Total Alkalinity is developed ***ECOsmarte*** has a less scientific way of determining low Total Alkalinity. If the pool water is clear and refracts sunlight in such a way as to appear green. That is, the pool looks like lime jello: or green grass very clear and bright green. Low Total Alkalinity can cause "pH bounce." "pH bounce" shows itself as large changes in pH after additions of acid or alkalai. High alkalinity causes pH to drift upward. Many of the ***ECOsmarte Pools*** balance at as low as 40 measured carbonate alkalinity. Again, true Total Alkalinity (carbonate and bicarbonate) cannot be tested with portable kits currently available.

pH is alkalinity dependent; that is, alkalinity is defined as the ability of the water to resist changes in pH

CALCIUM HARDNESS

Calcium hardness affects pool water quality. Low calcium hardness can promote pool corrosion extremly. High calcium hardness can cause cloudiness. Ideal calcium hardness content is 300 to 400 ppm as measured by a suitable kit. The ***ECOsmarte Pool System*** will eliminate scaling in your pipes. Calcium hardness will need to be tested once, at start-up, adjusted if below 200, and only tested again if your pool is refilled. ***ECOsmarte*** has many pools at 800 to 1000 ppm calcium hardness, and draining back is recommended at 2200-2900 ppm.

POOL STORE COMPUTERS: pH, CALCIUM & PHOSPHATES

Can be a useful tool to double check your ph and calcium hardness. Donot however adjust alkalinity or copper based on the results. Alkalinity should be adjusted upward if the pool is crystal clear and "grass green" or "lime green" in color. Rely only on the Lamotte Copper test kit included with your ECOsmarte System to use the IONIZE mode and add copper to the pool.

PHOSPHATES: Must be confirmed at ZERO once per year.

TIPS FOR pH & ALKALINITY

- **For a reduction in Total Alkalinity experts recommend "pooling" the acid in a small area of low current. Normally, ECOsmarte Pools need no downward alkalinity adjustment.**
- **Upward alkalinity adjustments should be done in 4 lbs increments per day of sodium bicarbonate. Any more and "pH bounce" may result, causing you to waste time and money on acid. Do NOT raise Alkalinity unless water is clear lime green, (or "grass green but clear.") - Adjust no higher than 80 ppm**
- **Upward alkalinity adjustments can be made with sodium bicarbonate, baking soda or any brand of alkalinity enhancer. We recomend 4lbs max per day and DO NOT OVERADJUST.**
- **For a reduction in pH, walk acid around the pool and distribute it to the entire pool, having diluted the acid with water in a 5 gallon bucket.**

GLASS FILTER MEDIA- ANOTHER GREAT PRODUCT DEVELOPED by ECOsmarte

ECOsmarte® glass is made from 100% recycled glass. It is crushed, dried at 250 degrees Fahrenheit, and screened into various sized fractions to achieve optimal filtration properties.

As the grains are nearly all angular in shape and have a fairly high degree of sphericity, the filter bed tends to have more opened packing resulting in better permeability than a filter of spherical silica grains.

Because glass is amorphous and has no internal crystal structure, the particles are homogenous and have no grain boundaries. This gives glass more resistance to breakdown through filtration backwashing cycles.

Furthermore the lack of grain boundaries minimizes cracks where bacteria can lodge and resist flushing in back washing.

Glass particles have a slight negative charge on their surface, which tend to hold onto fine particles during the filtration cycle. Upon back washing, this weak charge releases these fine particles to the effluent thereby contributing to better filtration action. There is less water to the better permeability of a glass filter.

As crushed glass is lighter than silica sand, between 15 and 20% less glass is needed to fill a filtration unit. With the better filtration characteristics and lower density glass is a superior filtration media for many filtration applications. It can be used in swimming pool and spa filters as well. Glass filter media is now being used in storm water runoff filtration systems as a replacement for silica sand. Using glass not only results in good performance, but in real cost benefits over the life of a filter bed.

2007 VIDEO DOWNLOADS
www.ecosmarte.com
ONLINE SUPPORT
Password: customer2007

1. Swimming Pool Operation
2. Programmable w/CO2 Keypad Operation
3. Spa System Installation & Operation
4. Water Testing

ONLINE GUIDES

- **A.** How Do I Raise Calcium Hardness?
- **B.** How to Remove Phosphates Over 1,000 ppm
- **C.** How to Remove Metal Remover or Chelating Agent?
- **D.** How to Remove Yellow, Green, Brown, and Black Spots From Pool Surface
- **E.** How to Avoid or Get Rid of Green Hair?
- **F.** Using a Soft Wash instead of an ACID WASH for Plaster Pools.
- **G.** Receive Your Free Set of Copper Bars by Fax or Email Request.

ONLINE SUPPORT FRAME

Password: customer2007

Sand filtration is dead

but your Sand Filter may not be.

Sand and Cartridge filters leave many undesirable and unhealthy particles in your pool and require more chemicals. The particles accumulate as Total Dissolved Solids (TDS). There has been only one option in the past to solve this problem: a diatomaceous earth filter. While DE filtration will afford you a healthy pool, it will not go without additional costs in DE powder and time. The average DE filter costs $899 and requires avid micromanagement during the pool season. Fortunately ECOsmarte offers the busy, health-conscious pool owner an inexpensive and invigorating option: Glass Pack® Replacement Filter Media. With ECOsmarte you get the best of two filtration worlds: the convenience and simplicity of your old sand filter, and premium filtration. The best part is Glass Pack is compatible with your current sand filter, so you will not have to learn a new system. Glass Pack® replaces your dead sand.

An average sand filter can catch particle as small as 100 microns.
A good cartridge filter can catch particle as small as 40 microns.
Dead skin and blood cells are 9 microns in size.

DE FILTER	2-5 Microns	$399 - $1,299
Glass Pack®	2-10 Microns*	$200 - $500
Sand Filter	50-100 Microns	$299 - $1,299

*(5YR EXPECTED LIFE INSTEAD OF 3 YR SAND)
2-10 MICRONS WHEN PROPERLY SIZED WITH PUMP

ECOsmarte WATER AIDS

Glass Pack®

FILTER
- Trisodium Phosphate (TSP)
- Aluminum Sulphate (Alum)
- Muriatic Acid Rinse
- Ferritabs, Glass Filter Media

SPECIAL PRICING: Media Only

500 LBS. SAND FILTER $500.00
300 LBS. SAND FILTER $300.00
200 LBS. SAND FILTER $200.00
Plus Shipping Or local Install

CALL YOUR DEALER FOR PACKAGE DEALS "INCLUDING A NEW FILTER W/VALVE"

WATER CLARITY
- Non-foaming, Non-Metal Algaecides 40 or 60
- Potassium peroxy monopersulphate 43%, (Not Sodium)
- Zero Phos, No Phos
- Calcium Hardness Increaser

TEST KITS
- LaMotte EC-70 Copper Test -- 0.05 to 1.0 ppm
- Aquality pH Liquid Test Kit
- ECOsmarte Pool Manager (cu, ph and calcium hardnesss)

BETTER THAN D/E WITHOUT THE WORK

TESTING YOUR WATER

The ECOsmarte Pool System requires you to measure two aspects of your water chemistry: (1) Copper Ions and (2) Potential Hydrogen (pH). Each test needs to be performed weekly.

pH TEST

Maintain pH within the specified ***ECOsmarte Water Parameters***. *pH must be between 6.8 and 7.2.* Any pH test kit should work fine. Follow the directions included with your kit. Remember to:

(1) Fill the sample container with pool water from at least 18" below the surface of the pool. Avoid taking samples near the skimmers and return-jets.

(2) Test pH before testing Copper ppm.

(3) Hold tester at arms length (preferrably out of direct sunlight) above the horizon. Look at the sample water and compare to the color standard included with the test kit. Read the pH value once match is obtained.

(4) If a pH adjustment is necessary, use muriatic acid diluted with water in a 5 gallon bucket. (Dilution is to prevent "shocking" any metals out of solution). **DO NOT USE DRY ACID**. See **PH TALK**.

NOTE: We confirm minimum calcium of at least 300 ppm with ideal levels of 300ppm - 400ppm; we do not test or adjust calcium or alkalinity on a regular basis.

pH TALK

- **We can train your pH to remain Neutral. 6.8 to 7.2 is technically pH Neutral.**
- **The first two weeks after installation your pool may consume acid on a regular basis. This is not unusual. If high consumption continues into the fourth week, then possible nitrate and phosphate residuals are creating this problem and a percentage of water may need to be drained back. Consider ZERO PHOS.**
- **Radical changes in pH are not recommended.**
- **Rule of Thumb: If your pool is 15,000 gallons with a pH 7.6 or above, add at least 1/2 gallon of acid; if your pool is 25,000 gallons or above, add at least a full gallon.**
- **Acid consumption will vary according to pool water. However, pH measurements are logarithmic. That is, your pool will need considerably less acid to move from 7.2 to 6.8, then it will to move from 7.8 to 6.8.**
- **DILUTE ACID BEFORE PUTTING IN YOUR POOL**
- **Consider CO2 injection if acid demand exceeds one gallon per week after 3 weeks of operation. During the first year after purchase, all swimming pool customers receive full credit on a trade-in to the automated CO2 system thru your dealer.**

COPPER TEST

Always test pH before Copper. If pH is above 7.2, adjust pH level and wait for pH to come down. If pH is at 7.3 or above you will not get an accurate copper measurement. If the pH is above 8.0 you may create copper chloride (if there is still chlorine in your pool or your city "fill-water" is highly chlorinated) which can stain your pool and bathers. Neither condition is permanent or harmful, but both can be avoided by keeping low pH. Once free-chlorine and total chlorine reach zero, copper chloride cannot be created providing you do not add chlorine to the pool again. The Copper Test procedure for the *EC-70 Liquid Copper Kit*, is as follows.

(1) Fill test tube with pool water to black line. Be sure to take sample from a level 18" or more below the surface of the water. Also, avoid samples near the skimmer and return-jets.

(2) Add five (5) drops of Copper Reagent A to test tube. Cap and invert.

(3) Remove cap and add five (5) drops of Copper Reagent B to test tube. Cap and invert.

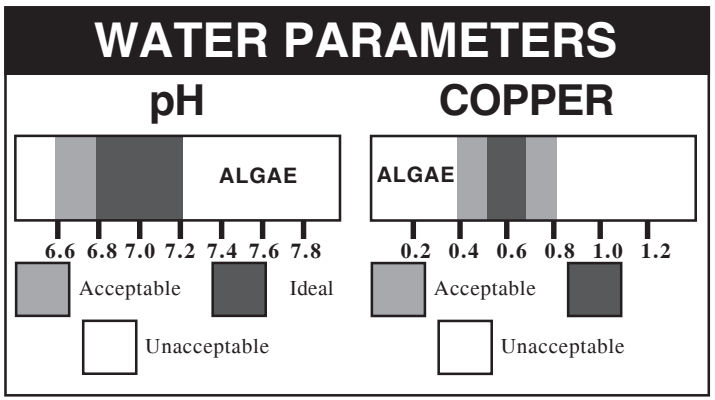
(4) Remove cap and place tube in test-kit holder. Allow to stand for approximately two minutes.

(5) While holding the tube, place color standard chart 1/2" **underneath the verticle tube.** Measure the level of copper by looking directly down into the test tube at a white portion of the color standard provided with the kit. Match the shade of blue and record in parts per million.

NOTE: Magnets, metal removers, copper algaecides, sequestering agents, and other chelating agents will create false copper readings. See INCOMPATIBLE PRODUCTS.

WATER TESTING VIDEO at www.ecosmarte.com

If you have a pool party, rainstorm, or expect either, test your water.



DOWNLOAD THE COMPREHENSIVE GUIDE TO SWIMMING POOL OWNERSHIP
www.ecosmarte.com

COMMON MECHANICAL OR POOL OPERATING ISSUES

Cartridge Filters: NOT COMPATIBLE

They don't receive a regular soak in chlorine and form molds and biofilms and are not compatible with the ECOsmarte system, when total gallons of water exceed 1,000. They are used on spas only.

Sand Filters

At least a 200 lb Sand Filter is needed for the necesarry filter bed depth. 200 lb filter will not support a 1.5 hp or larger pump -- see The Comprehensive Guide to Swimming Pool Ownership at **www.ecosmarte.com**.

Zeolites holding phosphates

Annual acid wash is required along with checking the bed depth in the filter if ZeoBrite is used. Most other zeolites are incompatible as they pull calcium hardness and copper from the pool. All Sand Filters require media changeout every 3 years, zeolites as needed. Consider Glass Pack®

Keeping the Pool clean

Suction vacuuming and/or wall brushing is needed weekly during high season with all heavy vacuuming done to WASTE. As with chlorine pools, water will not be clean for 48 hours after heavy vacuumings or if speciment baskets are

Backwash: Timing & Method

Sand, Glass or Zeolites: At 6 to 10 lbs rise in filter pressure backwash for 2 1/2 minutes, followed by a Rinse to Clear Sight Glass (seconds). Turn off pump and repeat backwash and Rinse. A 5 minute backwash will leave algae spore in the filter. Glass filter to backwash at 6 to 8 weeks if no pressure rise has occured.

D/E or Perlite: At 10 to 18 lbs pressure rise on the gauge backwash for 2 1/2 minutes followed by a Rinse to Clear Sight Glass (seconds). Turn off pump, repeat twice.

AVOID ADJUSTING ALKALINITY UP WITH ECOsmarte

COMPATIBLE PRODUCTS

· Glass Pack® Filter Media, watch for ECOsmarte promos
· Algaecide 40, 60
· Non-Chlorine Shock - **Potassium-Based Only** (GLB OxyBrite is the best)
· Calcium Chloride or Hardness Increaser
· Zero Phos, No Phos
· ZEOBrite with PEA Gravel Base in All Pentair, Sta-Rite, Jacuzzi Brands

ABSOLUTELY INCOMPATIBLE PRODUCTS

· Any Algaecide w/metal
· Any SOLID CHLORINE
· Any metal remover, Scale Control or Clarifier
· Sodium-Based Non-Chlorine Shock
· Guardex **Z** Media, ZEOBest
· ZEOsand and ALL CARTRIDGE FILTERS
· Enzymes

START-UP POOL ISSUES

· Do Not Let Chlorine Fall to Zero Prior to Start-Up
· Bromine Pools Must Be Drained
· Baquacil Pools Are Easy If Drained
· Bio Guard Smart Shock Pool Should Be Drained
· Phosphates Should Be Tested At Fill Up and 2 weeks After Start-up
· Calcium Tested At Fresh Fill and After 2 Weeks Operation

· Surfaces cured with liquid chlorine (Not needed on fiberglass)
· Backwash at pressure rise only on sand; 6 weeks on glass filtration regardless pressure gauge

· D/E Filters broken down twice per year, grids soaked annually

CLOSING NORTHERN POOLS

· Copper at 0.7 ppm, ph 6.8. NO CHEMICALS REQUIRED other than antifreeze.

POOL TALK

TURNOVER CYCLES
The ECOsmarte system requires two complete turnovers during daylight hours, or 6 to 10 hours for most inground or above gound pools. Autocover owners will get best results opening the cover on sunny days even though no swimming occurs (See p. 12).

NO CHEMICALS
ECOsmarte recommends letting the ***Pool System*** work for you. In other words, be patient, the ***System*** itself will work. ***ECOsmarte*** understands circumstances exists where a "quick-fix" is necessary, or desired. In cases such as these the following is a list of compatible products. Note that the list is exclusive and anything outside the list is not recommended. Again, there is no need for regular use of any of these products.

Non-Chlorine Shock (potassium monopersulfate): *Shock 'n Swim*, *Oxybrite*, and *Oxyclear*
ZeroPhos: If phospahtes are above 100 ppm
Alum-based Flocculants: any, but use sparingly, and with phosphates
Non-Metallic Algaecide: any, but use sparingly. Any brand w / 40 or 60.
Filter Cleaner: TSP and Muriatic Acid
Borax: use sparingly, if pH bounce or spotting have been a problem.Requires use of acid immediately after using the Borax. 4 lbs per 10,000 Gallons.

WHAT CAUSES ALGAE PROBLEMS?
(See PHOSPHATES p. 12)
There are over 21,000 known varieties of algae! Algae spores constantly enter the pool, brought in by wind, rain or even contaminated swimsuits or equipment. When conditions are right, an algae bloom can occur seemingly overnight. These conditions include imbalanced water, warm temperatures, sunlight, and the presence of nitrates. Of course lack of proper filtration, circulation, and sanitation may be the primary causes of algae.**A suction vacuum is highly reccommended with the Ecosmarte system, as is backwashing only after preassure rise.**

Algae is a living aquatic creature that multiplies rapidly in warm, sunny conditions. Containing chlorophyll, algae utilizes photosynthesis to grow. That is, they take in carbon dioxide and expend oxygen as a byproduct.

The two main problems with algae are, first, people do not want to go swimming, and second, it takes time and money to rid the water completely of algae. Algae itself is not harmful to swimmers, but pools with algae may also be residence to other pathogens.

REGULAR CHEMICALS ARE NOT REQUIRED TO RUN SWIMMING POOLS OR SPAS.

Proper water balance and filter maintenence are necessary to prevent algae growth. Also regular brushing prevents dirt from harboring in the pores of your pool surface, where algae colonies like to start. The use of specialty chemicals or algaecides may be necessary as a back up to the ***ECOsmarte Pool System*** and existing filtration. Filtration upgrades will solve 99% of these problems.

Again, ***ECOsmarte*** recommends allowing the system to defeat algae on its own. You will want to adjust valving for optimum circulation and allow your pump and filter to run 24 hours a day until the pool clears (the ***ECOsmarte Pool System*** can be shut off after a single cycle of oxidation, providing Copper ppm levels are above 0.4). Turn on any automatic cleaners to stir things up. Continue to brush the walls. If the pool is real "swampy" algaecide 40 or 60 may be a good choice. If you cannot see the bottom of the pool and it is filled with leaves and debris, you must get all leaves and debris out to clean the water.

pools@ecosmarte.com can help with detailed advice

CYCLE TIMES

- ECOsmarte pools should operate 24 hours per day the week you start-up and put in the initial ionization level (Cu 0.4 ppm to 0.7 ppm)
- ECOsmarte pools should circulate 24 hours whenever your water does not look right.
- ECOsmarte pools must circulate during daylight hours, 6 to 12 hours per day in the OXIDIZE or maintenance IONIZE mode.
- Autocover owners should uncover the pool 2 hours minimum on sunny days for best results.

- "Overoxygenation" can occur on 24 hour constant circulation after several weeks, so ECOsmarte only timing systems are recommended for edge pools and environments where 24/7 skimming and filtration is desired.

ECOsmarte Customer Service Guide
Swimming Pool Systems: Common Questions

I CAN'T GET MY COPPER TO RISE

· It takes 36 to 72 consecutive running hours on ionize to get your copper to rise
· The pool will not ionize if calcium hardness is below 200, raise it to 400 at start-up
· The swimming pool will not ionize if the pool pH is above 7.3
· Make sure connectors are solid on your red/green leads and bars are clean
· CONFIRM ZERO PHOSPHATES

MY WATER IS "MURKY" or "HAZY"

· Copper is below 0.4 ppm. Switch to ionize for 8 to 16 running hours, often after lowering pH.
· pH is above 7.2. Lower to 6.8 with acid, even if pool has CO2 injection
· Backwash is only done with 6 lbs minimum rise on sand, ZEOlite or glass filters, 12 lbs pressure rise on DE.
· Do not backwash without pressure rise except GLASS at 6 weeks running.
· Do Not Adjust a 6.6 pH pool up. Start each week at 6.8.
· Let the 6.6 pool rise on its own for a week or two.
· CONFIRM ZERO PHOSPHATES

MY POOL HAS GREEN WATER

· pH is above 7.3, lower to 6.8 with acid
· Copper is above 1.0, exchange one to two feet water out, check pH.
· Do not shock pool with sodium based non-chlorine shock – use potassium based only. GBL OXYBRITE® is a great product.
· Never use metal remover or clarifier, the pool needs two consecutive non-chlorine shocks to remove them.

MY POOL HAS ALGAE

· pH has risen above 7.4, Acid Adjust to 6.8.
· Copper is below 0.4 ppm (or likely both), switch to ionize.
· Filter maintenance, brushing, vacuuming or skimmer baskets need attention.
· Add any Algaecide, follow 24 hours later with 2 lbs per 10,000 gallons non-chlorine shock, if needed.
· CONFIRM ZERO PHOSPHATES

MY DAUGHTER HAS GREEN HAIR

· Copper is above 0.7 ppm, lower with water drained back two feet.
· pH is below 6.6, raise with soda ash.
· Calcium is below 200, raise to 400.
· Customer is getting chlorine from beauty shop perm or city water.
· Wet hair before getting in the pool.
· Run copper at 0.5 ppm at this pool instead of 0.7 ppm

ALWAYS	NEVER
• pH to 6.8	• Use Chlorine
• Copper to 0.7	• Use Metal Remover
• Calcium to 400 ppm	• Use Clarifier

1-800-ION-SWIM
Monday thru Saturday 8am - 6pm

Please Have Water Test Results, Filter Type and Serial Number Ready
ANY SPOTTING BROWN, BLACK or GREEN
Should be Problem-Solved at the Factory

ECOsmarte recommends this procedure. If an algae bloom persists beyond one week, use a Non-Metallic Algaecide for additional help. Finally, without adequate filtration dead algae will remain in a pool and a "bad" filter will spin algae in circles. Note: A DE Filter pool with visible algae should use 1 quart non-metal algaecide to sanitize grids. A suction style vacuum versus a sweep or "pop-ups" is recommended.

BAQUACIL CONVERSION (SWIM 'N PLAY and any BIOGUANIDE)

Baquacil conversions require a slightly different start-up procedure. ***ECOsmarte*** recommends the following:

DAY ONE

(1) Allow Baquacil to run to zero,

(2) Shock the pool water with Non-Chlorine Shock (4 lbs per 10,000 gallons)

DAY TWO

(3) 24 hours later, shock the pool water a second time with Non-Chlorine Shock (4 lbs per 10,000 gallons)

(4) Ionize pool water until a copper ppm of 0.5 is achieved, taking longer than other pools with 96 hours likely.

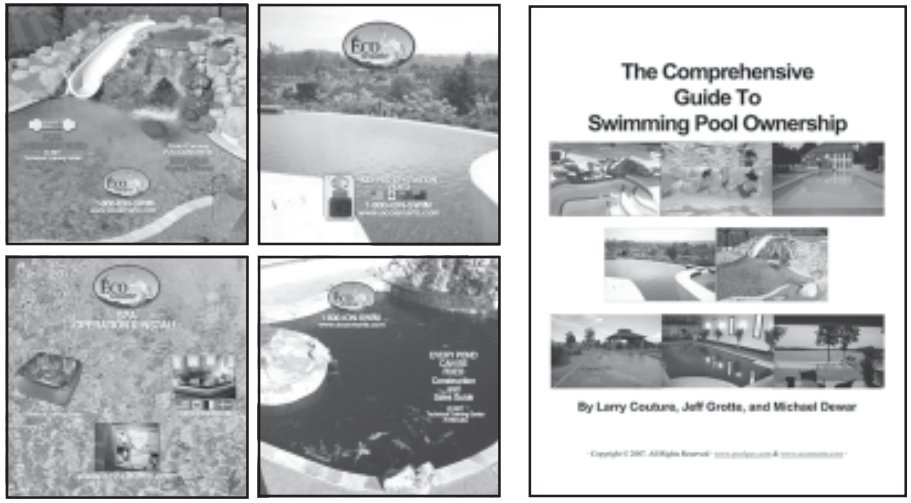
Ex-Baquacil users need to clean their electrodes *(every two weeks of the first year)* to prevent a chemical seal from forming on the electrodes.

NEW VINYL LINER OR GUNNITE SURFACE

Unfortunately, the most effective way to cure a new vinyl liner or gunnite surface is to lightly chlorinate it for 10 to 14 days. This process is designed to remove plaster dust before it gets in your filter and creates a season of problems. The chlorine residual in the pool will run itself to zero within 7 days after the curing process is complete. **Use: 1 gallon of regular bleach per 10,000 gallons each week for two to six consecutive weeks to oxidize the gases from the vinyl or plaster dust from gunnite surfaces. No metal remover in the pool.**

ONLINE VIDEO RESOURCES

ONLINE SUPPORT FRAME (Password: customer2007) See P. 25



CLOSING

CLOSING NORTHERN POOLS - FROZEN WATER

• Test copper and pH. Lower pH to 6.8; Raise Copper to .8 to 1.0 ppm.

DAY OF CLOSING

(1) Drain water below skimmer level. You can achieve this by running your pump to waste through only the main drain.

(2) Turn off pump. Disconnect power to ***Electronic Control Box*** and remove lead wires from chamber. Store ***Box*** indoors for the winter.

(3) Lay out all winterization hardware (caps, Gizmos, etc.).

(4) Unscrew return jets, stand-by with jet plugs.

RETURN LINES

(1) Twist off ***ECOsmarte Electrode Chamber*** (store indoors). The 12" gap will be your "blow spot."

(2) Using a shop-vacuum or other power blower, blow toward the return side of the piping from the "blow spot" **with all returns open**.

(3) Close all return valves. Using the winter plugs, plug all jets finger tight except the nearest jet to the pump. Open return line nearest pump and blow air through that line, from the "blow spot." Repeat this procedure for each return line, re-plugging each jet after water is purged.

(4) Carefully pour one gallon RV Anti-Freeze into the return side of the piping (most likely from the "blow spot"); blow Anti-Freeze through with shop-vacuum until you can see anti-freeze come out of the intended jet. Repeat this procedure for each line starting with the furthest jet and working toward the pump.

PRIOR TO SUCTION SIDE WINTERIZATION

(1) Remove drain plug from hair and lint basket (sump). Allow to drain completely.

(2) Remove drain cap from filter (if sand filter, remove smaller of two caps).

SKIMMERS

(1) Close skimmer and main drain valves.

(2) Working from the suction side of your pool piping, open and blow out skimmers, one at a time, from the nearest skimmer to the furthest. Close skimmer valves after blowing.

(3) Pour one gallon RV Anti-Freeze directly into each skimmer.

(4) Plug skimmers. If Gizmo is not used, leave an empty plastic Anti-Freeze jug in skimmer cavity (plastic jug will absorb winter expansion).

All *ECOsmarte* pools use two winterizing principles: Lower pH to 6.8; Raise Copper to 0.7 ppm

CLOSING NORTHERN POOLS (Cont.)

MAIN DRAIN

(1) With skimmer valves closed, open main drain valve.

(2) Oper hair and lint basket (sump) at pump. Remove basket. Replace drain plug.

(3) Pour approximately two gallons of RV Anti-Freeze into hair and lint basket. Close basket cover.

(4) Blow from suction side of "blow spot" with main drain valve open, until you can see small trace of Anti-Freeze entering the pool.

(5) Close valve quickly.

MISCELLANEOUS

• Stuff rag or sock in each end of "blow spot." Rubber bind or duct-tape rags in place.

• If you have a slide, water-powered vacuum (*Polaris, Kreepy Krauly*, etc.), or water-fill hose installed on your pool they will need to be blown out and filled with Anti-Freeze. Use above procedure in most cases. Some slides, however, may need to be blown from the spot of disconnection.

• **Set sand filter 7-way Valve to the "Winter" or "Closed" position.**

• Remove ladder and railings. Lift cover plate and unfasten 7/16" or 1/2" bolts.

• If diving board is greater than 8' long and snow is expected, remove and store inside for the winter.

• Cover pool with winter cover. If water bag cover is used, fill water bags half-full to prevent winter cracking. Also, allow cover's slack to fall into pool and anchor with as little on deck as possible (1 to 2 feet is ideal). This will prevent the cover from collapsing into the pool under a load of snow.

SOUTHERN POOL CLOSING PROCEDURE

If you are located in a region where freezing water is not a concern, then lower pH to 6.8 and raise copper levels to 0.8 ppm. There is no need to run the pump and filter everyday. You must however run the pool if a frost warning is issued. Southern pool owners may adjust pH every 2 or 3 weeks in a non-circulating pool for maximum control.

OPENING NOTES:

New ECOsmarte pools that were chemically treated the previous year should use identical opening procedures as before ECOsmarte was installed. The ECOsmarte unit should be turned on when water is clear. The oxygen will knock out the chlorine residual in 24 to 48 hours hours.

PROBLEM SOLVING

CLOUDY WATER

If your water appears cloudy, or like milk, the cause is most likely associated with the ionization descalling in your pool pipes. This process is normal, and will eventually cease. Consider this: with whatever sanitation chemical you were previously using, the calcium carbonate has been allowed to scale and build-up inside your pool pipes, heater, filter, and other pool equipment. The ***ECOsmarte Pool System*** will alter the form of calcium, and activate a descaling process which will remove the build-up inside your pipes, heater, filter and other pool equipment. The process is safe to you and beneficial to your pool equipment. Generally a cloudy pool as a result of descaling will last from 1 to 3 weeks, however the condition may show itself periodically until all scaling has been removed. To speed up the removal process, you should:

(1) Clean filter media thoroughly, sand filter & DE owners should break down filter each spring, soaking grids is critical, twice yearly.

(2) Test pH and Copper ppm and adjust as needed.

(3) Oxidize water for two cycles per day.

ECOsmarte recommends the above procedure. If a cloudy condition persists beyond three weeks the filter media may be inadequate. Waiting for pressure rise remove the minute calcium particles and aid your filter in its removal. Glass Pack® (see inside front cover). Replacement media for sand filters. (Sand must be changed every 3 years minimum.) Glass Pack® should last five years.

ALGAE BLOOM

The ***ECOsmarte Pool System*** requires a pH between 6.8 and 7.2. If an algae bloom appears it is usually because the pH drifted above 7.2, or the copper residual is below 0.4. The active algaecide in the water is the copper ion. Measure your copper levels and adjust as needed (between 0.4 and 0.7 ppm). The ***ECOsmarte Pool System*** does not "vaporize" organic matter. The ***System*** will render inert simple organisms, like algae. Adequate filtration is necessary to run a crystal-clear pool. If an algae bloom occurs, there are a few things you can do to speed up the removal of algae.

(1) Clean filter media thoroughly,

(2) Measure pH and Copper ppm and adjust as needed,

(3) Brush algae toward main drain daily,

(4) Backwash media when filter pressure rises 6-10 lbs.

Too much backwashing can cause cloudy or algae water.

SLIDE VALVE SSHOULD UPGRADE TO MULTIPORT ($100)

ELECTRICAL INSTALLATION

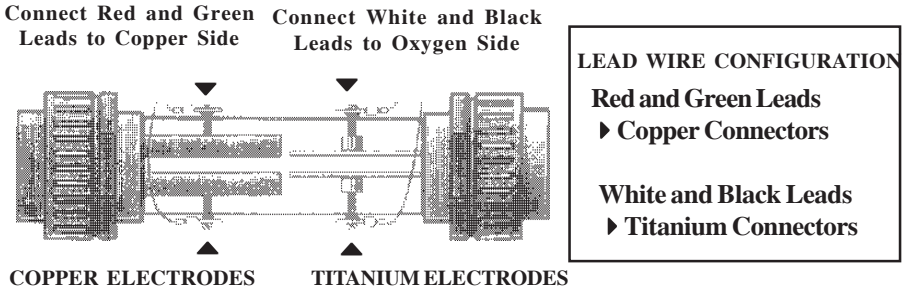
Your ***ECOsmarte Pool System*** comes with paired wires for easy installation. If you remove the ***Electrode Chamber*** or re-install the ***System*** at another location then consult this electronic guide. The ***Electronic Control Box*** requires 110 volts A/C and will transform the current to low voltage DC current. The output depends upon which setting you chose, low or high. If additional wire is needed, standard 2 wire telephone cord can be used (make sure you purchase butt-end connectors).

INSTALLATION METHOD #1

Mount the ***Electronic Control Box*** on a wall or fence near the pump and filter system. Connect the output leads to the ***Electrode Chamber*** (white and black to the titanium, red and green to the copper; see opposite diagram). Plug the electrical cord into a 110 volt A/C outlet. Although this method is the simplest installation, it will require someone to turn the ***Electronic Box*** on and off when the pump is turned on and off, so that the ***Electronic Control Box*** is never on without the water recirculating. An outdoor timer (synchronized to the pump timer) may be installed between the ***Electronic Control Box*** plug and the electrical outlet if desired to solve this problem and ensure proper operation of the ***System***. ***ECOsmarte*** has 110V outdoor timers available as do most pool stores and Home Improvement Centers.

INSTALLATION METHOD #2

If you have an existing pump timer (220V), then the ***Electronic Control Box*** can plug into an outdoor timer (110V) which is set in tandem with your pump timer. Set the ECOsmarte box 15 minutes less time than the pump. This method of installation will ensure proper operation and timing of the ***Electronic Control Box*** with the pump cycle. If the ***ECOsmarte Electronic Control Box*** is wired according to method #2 then someone will still need to switch the control setting on the ***Box*** to ionize when copper measurements indicate a need for copper ions. Follow local codes on all electrical wiring. (Three wire 220V systems may need upgrade to four wire to meet code.)



LEAD WIRE CONFIGURATION

Red and Green Leads
▸ **Copper Connectors**

White and Black Leads
▸ **Titanium Connectors**

SEE IMPORTANT SAFETY ISSUES ON PAGE 28

MAINTENANCE and OWNER RESPONSIBILITY

(1) **ECOsmarte System:** Following the detailed procedure below, the ECOsmarte Electrode Chamber must be cleaned every third month of operation and as needed under certain water conditions.

(2) **Filter Maintenance:** Adequate filtration is required in order to operate a clear swimming pool. Sand filters can be cleaned by soaking sand with one gallon of muriatic acid overnight. Apply the undiluted acid directly to the sand once per year. Cartridge filter elements must be soaked in 5:1 muriatic acid and water solution, then TSP and water for one hour each (as needed). Replace the cartridge every 6 months for spas and every 18 months for pools. DE Filter elements need same muriatic bath as cartridges as well as TSP bath for one hour. (Sand filters backwash twice after 6lbs. rise, DE filters three times after 12lbs. rise.)

(3) **Pool Maintenance:** Gunnite pools require pool brushing of areas where automatic vacuum does not reach on a weekly basis. A cavitating pump will run our Electrode Chamber dry and result in poor automatic vacuuming. **Vinyl, Gunnite, and Fiberglass pools work best with a suction wall vacuum, not a sweep.**

ELECTRODE CLEANING PROCEDURE

(1) Mix solution of 3 to 5 parts water to 1 part acid in a bucket. **When adding acid to water** be careful not to spill or be down wind when pouring.

(2) Disconnect terminal clips. The Red & Green wires attach to the copper side of the chamber, the Black & White to the titanium side. **If uneven electrode wear is noted on copper electrodes you must reverse position of the Green & Red terminal clips after cleaning.**

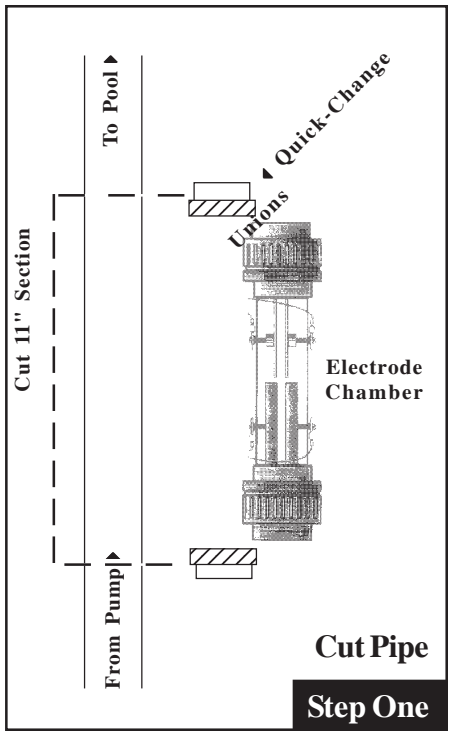
(3) Place entire Electrode Chamber in bucket for 10 to 15 minutes. The build-up will slowly dissolve. Do not scrape the surface of the electrodes. If you will be cleaning yourself, consider cleaning caps to cut acid use and speed process. Cleaning caps from your dealer will cut acid use and simplify this procedure.

(4) Remove Electrode Chamber from bucket and rinse with garden-hose pressure. Make sure to rinse your hand as well.

(5) Wipe terminal clips dry and reconnect leads after reinstalling Electrode Chamber in pressure line. Remember: Red & Green connect to the copper side, Black & White to the titanium.

WHEN CLEANING
DO NOT DISSASSEMBLE chamber OR USE METAL FILES
★ ★ ★ ★ ★

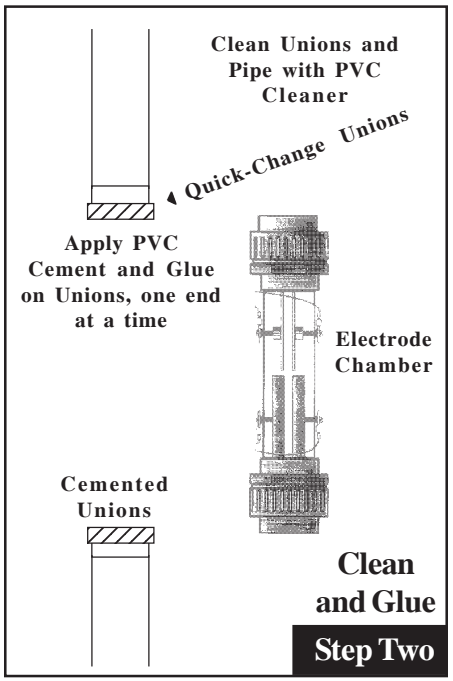
Electrode Chamber Installation

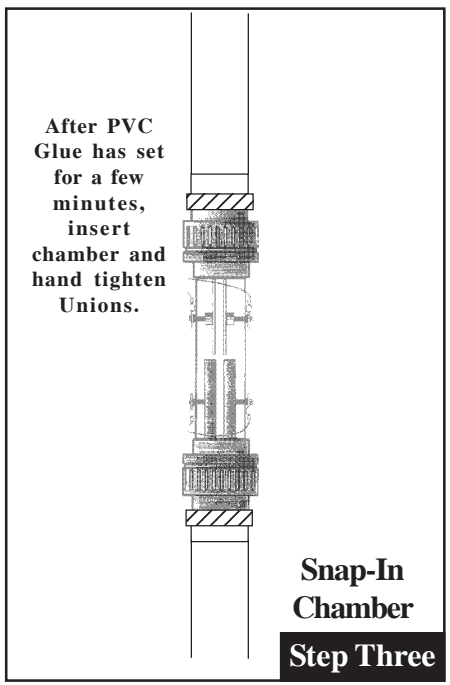


The ***ECOsmarte Electrode Chamber*** may be installed either between the pump and filter or, preferably, after the filter. The titanium electrodes should be aligned nearest the pool (see diagram). If you have a spa in line with your pool filter system, ensure the ***Electrode Chamber*** is located before the valves that divide return water to the pool and spa.

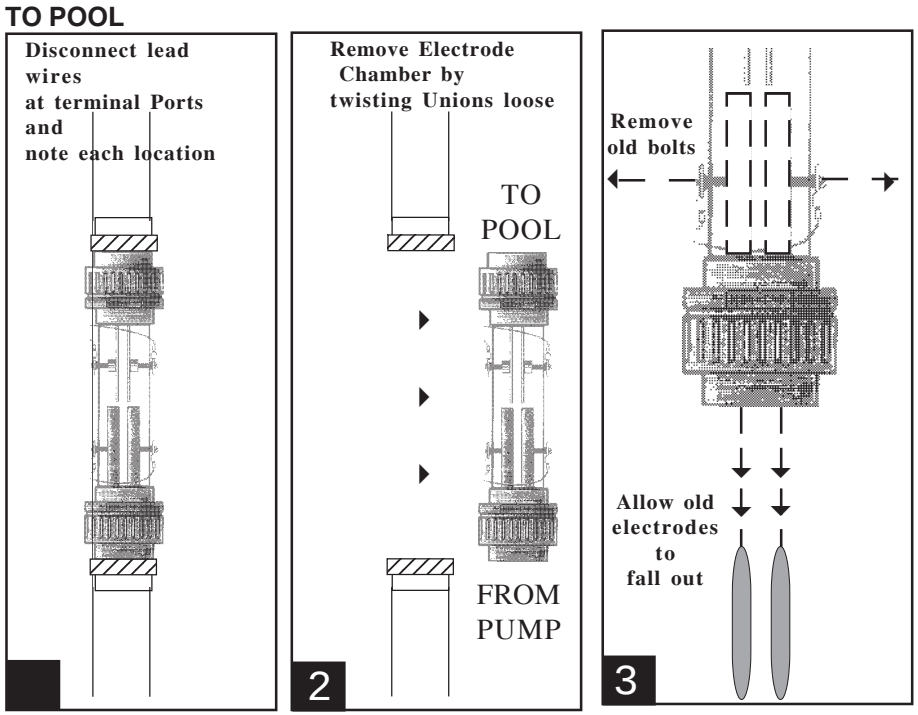
Tools List:

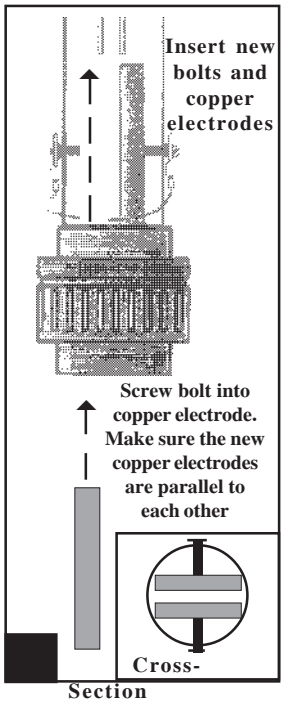
- ☐ Hack Saw
- ☐ PVC Cleaner
- ☐ Felt-Tip Marker
- ☐ Tape Measure
- ☐ PVC Cement





Copper Electrode Replacement





ECOsmarte Copper Electrodes are not protected under the five-year warranty. The life of copper electrodes depends on multiple factors. Worldwide the life of copper electrodes averages three years. You can extend the life of the electrodes by following the directions in the ***Owner's Manual***. *Remember to shut off the Electronic Box when water is not circulating through the Electrode Chamber.* The ***Copper Electrodes*** will continue to be ionized as long as the electrodes are in solid contact with the bolts. If the electrodes corrode free of the bolts then it is time to replace them.

Do not replace your titanium bolts with stainless or brass subtitutes.

You will receive new bolts when you purchase electrodes from your dealer.

REFER ANY BUYING CUSTOMER TO YOUR DEALER AND RECEIVE FREE COPPER BARS.