



Video Download of Swimming Pool Operation

www.ecosmarte.com/onlineSupport.htm

Username: ecosmarte

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, salt chlorine generator 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 over 20,000 residential pools we have installed since 1994.

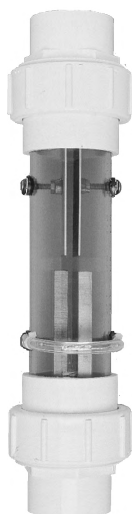
In Australia and Canada, your Government requires a 0.5 ppm free chlorine residual with the ECOsmarte copper ionization. This level must not exceed 1.0 with ECOsmarte. NO CYANIDE (Conditioner, Stabilizer) is to be used with the ECOsmarte Pool System. All other residential pools are to avoid the use of Chlorine.

CONTENTS DIRECTORY NEXT PAGE

ECOsmarte Pool System Owner's Manual - X, 2011



TO POOL



WIRE HOOK-UPS

BLACK/WHITE

Connect both
to front side
of chamber.

RED/GREEN



**Automated
Systems**



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 connected to the Electrode Chamber. If installation requires additional wire, you may order it from your local ECOsmarte dealer.

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

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**SALTWATER and BROMINE POOLS
must be drained and refilled**

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 algacide and bactericide 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 400 ppm.

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 contaminant's 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 0.4 ppm and 0.7 ppm 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 0.7 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 Phos Free™ if necessary, if over 1,000 ppb you may wish to use Sea Klear®.

1-800-ION-SWIM or (612) 866-1200

**FREE Five Minute Phone Orientation
Available & Encouraged with All 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 0.4 ppm.

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 0.4 ppm.

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** as the default, unless a copper measurement 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 1.5 times 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 in either oxidize or ionize.

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 water temp of 80°, 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°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 develop a true Total Alkalinity Meter. Available Alkalinity test kits measure the amount of carbonate alkalinity in the water. You have bicarbonate (soluble) 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 your pool likely has low alkalinity. 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 alkali. 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. High calcium hardness can cause cloudiness. Ideal calcium hardness content is 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 at start-up and if the pool is refilled. It should also be tested after extended days of heavy rain. 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. Do not 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 4lbs 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 recommend 4lbs max per day and DO NOT OVER ADJUST.
- 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.

TESTING YOUR WATER

The ECOsmarte Pool System requires you to measure two aspects of your water chemistry on a regular basis: (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 (preferably 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 must also confirm minimum calcium of 400 ppm and 0 phosphates. While these tests are done less frequently, tests should be done after heavy rainfall or stretches of extremely high heat.

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 PHOS FREE.
- 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 ECOsmarte dealer.

COPPER TEST

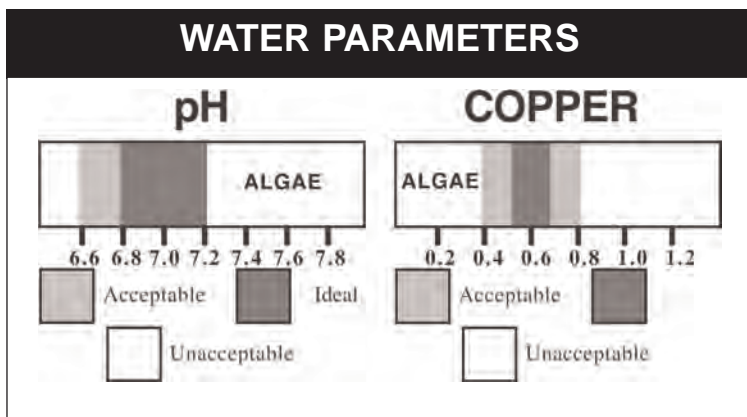
Always test pH before Copper. If pH is above 7.2, adjust pH level and wait for pH to come down. If pH is at 7.3 or above you will not get an accurate copper measurement. If the pH is above 8.0 you may create copper chloride (if there is still chlorine in your pool or your city "fill-water" is highly 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 vertical 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.



POOL TALK

TURNOVER CYCLES

The ECOsmarte system requires 1.5 - 2 complete turnovers during daylight hours, or 6 to 10 hours for most in-ground or above ground pools. Auto-cover 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 exist 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.

PhosFree or Sea Klear: If phosphates 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?

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 recommended with the Ecosmarte system, as is backwashing only after pressure rise of 6 lbs and before 10 lbs.

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 by-product.

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 maintenance 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.

1-800-ION SWIM 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.
 - Auto-cover owners should uncover the pool 2 hours minimum on sunny days for best results.
-
- “Over oxygenation” 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.

<u>SIZE OF POOL</u>	<u>MINIMUM FILTER</u>	<u>REQUIRED PUMP</u>
Less Than 24,000 Gallons	300 LB	1.0 HP
24-39,999 Gallons	600 LB	1.5 HP
40,000 Gallons & Above	900 LB	2.0 HP

CLOSING

CLOSING NORTHERN POOLS - FROZEN WATER

- Test pH and Copper. Lower pH to 6.8; Raise Copper to 0.7 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) Open 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 & 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.

MAINTENANCE and OWNER RESPONSIBILITY

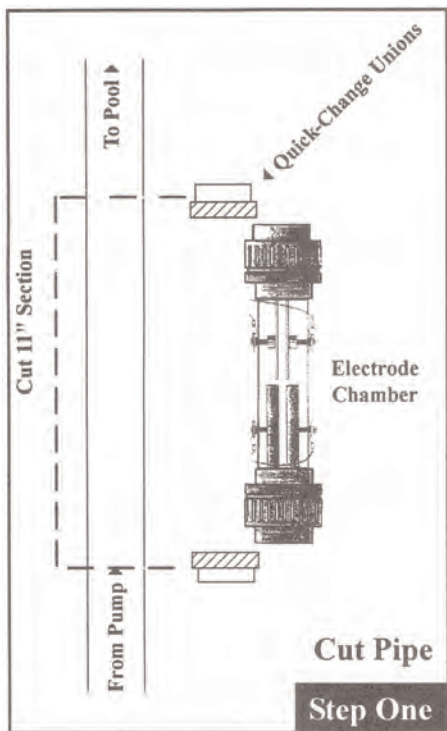
- (1) ECOsmarte System:** Following the detailed procedure below, the ECOsmarte Electrode Chamber must be cleaned every third month of operation and as needed under certain water conditions.
- (2) Filter Maintenance:** Adequate filtration is required in order to operate a clear swimming pool. Sand filters 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:** GUNITE 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, GUNITE, and Fiberglass pools work best with a suction wall vacuum, not a sweep.

ELECTRODE CLEANING PROCEDURE

- (1)** Mix solution 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 DISASSEMBLE chamber OR USE METAL FILES

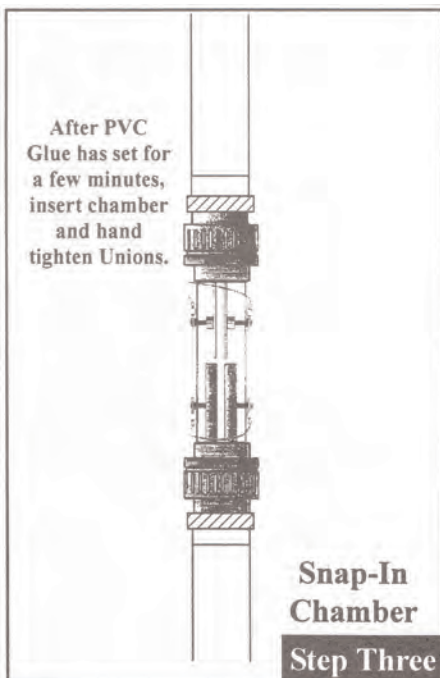
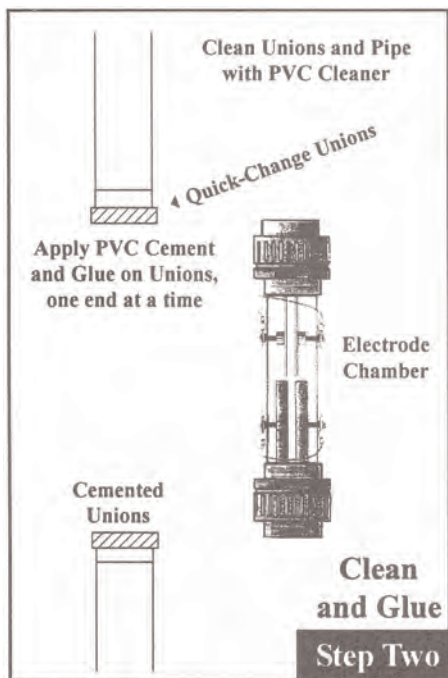
Electrode Chamber Installation



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.

Tool List:

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



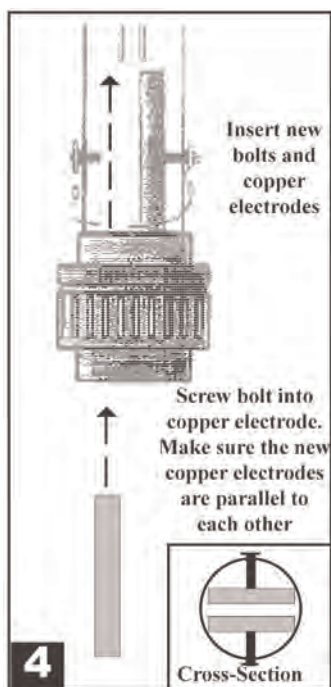
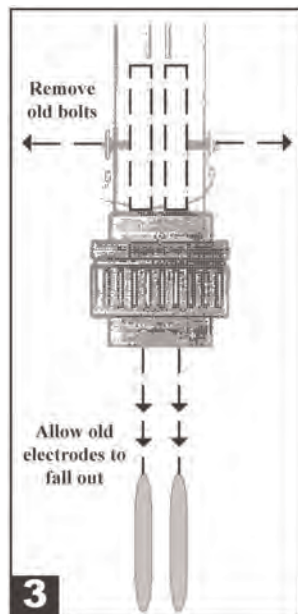
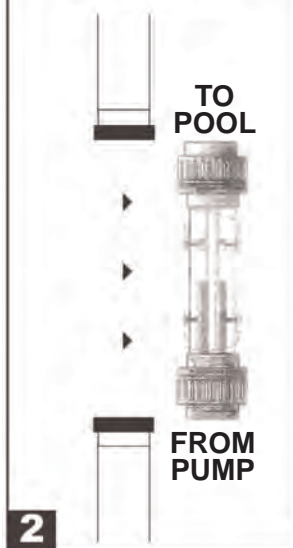
Copper Electrode Replacement

TO POOL

Disconnect lead wires at terminal posts and note each location



Remove Electrode Chamber by twisting Unions loose



ECOsarte 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 substitutes.

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

**REFER ANY BUYING CUSTOMER TO
YOUR DEALER AND RECEIVE
A SET OF FREE COPPER BARS.**

ELECTRICAL INSTALLATION

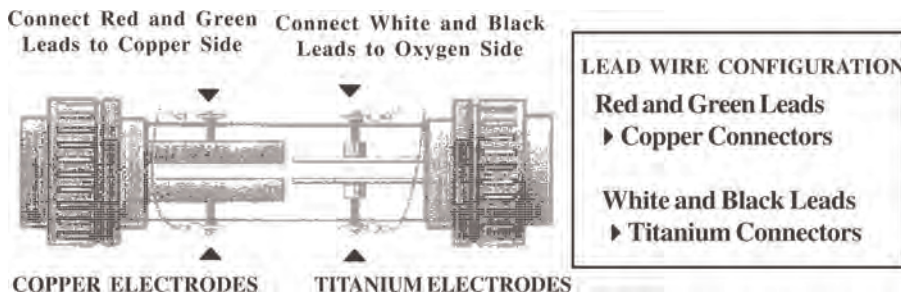
Your ECOsmarte Pool System comes with paired wires for easy installation. If you remove the Electrode Chamber or re-install the System at another location then consult this electronic guide. The Electronic Control Box requires 110 volts A/C and will transform the current to low voltage DC current. The 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 diagram below). 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.)



SEE IMPORTANT SAFETY ISSUES ON PAGE 28

PROBLEM SOLVING

CLOUDY WATER

If your water appears cloudy, or like milk, the cause is most likely associated with the ionization descaling 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.
- (4) **Test water for phosphates.**

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 algae to form or cloudy water. Test water for phosphates.

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 (2 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 GUNITE SURFACE

Unfortunately, the most effective way to cure a new vinyl liner or GUNITE 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 GUNITE surfaces. No metal remover in the pool.

ONLINE VIDEO RESOURCES

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



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 400, 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 with the numbers 40 or 60 on the label, 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 or baking soda.
- 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

- pH to 6.8
- Copper to 0.7
- Calcium to 400 ppm

NEVER

- Use Chlorine
- Use Metal Remover
- Use Clarifier



AVOID ADJUSTING ALKALINITY UP WITH ECOsmart

COMPATIBLE PRODUCTS

- Glass Pack® Filter Media, watch for ECOsmart promos
- Algaecide 40, 60
- Non-Chlorine Shock - Potassium-Based Only (GLB OxyBrite is the best)
- Calcium Chloride or Hardness Increaser
- Phos Free, Sea Klear
- 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
- ALL Salt Pools 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
- Salt Chlorine Generator Pools Must Be Drained and Wiped Down

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

- 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.



**DOWNLOAD THE COMPREHENSIVE GUIDE
TO SWIMMING POOL OWNERSHIP**
www.ecosmarte.com/pool_request.html

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 necessary 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/pool_request.html.

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 change-out 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 vacuuming or if skimmer baskets are full.

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 occurred.

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.

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 micro-management 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
- Ferre Tabs, Glass Filter Media

WATER CLARITY

- Zero Phos, Sea Klear
- Calcium Hardness Increaser
- Non-foaming, Non-Metal Algaecides 40 or 60
- Potassium peroxy monopersulphate 43%, (Not Sodium)

TEST KITS

- LaMotte EC-70 Copper Test -- 0.05 to 1.0 ppm
- Aquality pH Liquid Test Kit
- ECOsmarte Pool Manager
(cu, pH, calcium, phosphates)

SPECIAL PRICING: Media Only

300 LBS. SAND FILTER \$300.00

600 LBS. SAND FILTER \$600.00

900 LBS. SAND FILTER \$900.00

Plus Shipping or Local Install

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

**BETTER
THAN D/E
WITHOUT
THE WORK**

GLASS FILTER MEDIA- ANOTHER GREAT PRODUCT DEVELOPED by ECOsmarte

ECOsmarte's Glass Pack® 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.

2011 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 Put Calcium Hardness In My Pool?
- 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. REGISTER WARRANTY at www.ecosmarte.com

ONLINE SUPPORT FRAME

Password:
customer2007

**Glass
Pack®**



Glass Pack®

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.

**Makes Your Pool
Water Look Like Glass...**

1-800-ION SWIM

PROCEDURE TO RECEIVE TOLL-FREE SUPPORT ORDER SUPPLIES & PARTS

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.

(2) Where purchased if applicable

(3) The current pH, copper, calcium, and phosphate levels 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: _____

Calcium: _____

Phosphates: _____

2011-2012 Consumable Price List (subject to change)

- | | |
|--|-------|
| • ECOsmarte Pool Manager | \$109 |
| • EC70 Copper Test Kit | \$24 |
| • Glass Pack (Per LB of Filter Capacity) | \$1 |
| • Replacement Copper Electrodes | \$175 |
| • Electrode Chamber Hardware Kit
(includes bolts, washers & male clips) | |

Most Items @ www.ecosmarteonlinestore.com

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-ION-SWIM (466-7946)
www.ecosmarte.com



Est. 1994

“OUR BEST CUSTOMERS HAVE BECOME OUR BEST RESELLERS...”

The two largest resellers in ECOsmarte's 17-year history both started as enthusiastic customers with business backgrounds in totally unrelated careers. The first was a newspaper publisher from North Carolina, in the Southeastern United States, and the second a medical emergency room doctor with a territory in Colorado. Outside of a shared belief in ECOsmarte's products, there was no reason to believe that they would become ECOsmarte's highest performing distributors.

**When someone runs a crystal clear pool without any chemicals,
they get so excited they create a business.**

What these two examples show is that you don't need to be a pool or water treatment expert to succeed with our products. Product passion, commitment and entrepreneurial spirit are huge contributors to success. Consumer spending for 2011 looks way up and the “GREEN” product niche is here. An ECOsmarte pool owner has an immediate opportunity.

ENTREPRENEURS WANTED Swimming Pool Owners Preferred

**Glass
Pack®**



www.ecosmarte.com/dlr_info.html

www.glasspackfilter.com

DOMESTIC and INTERNATIONAL TERRITORIES

(612) 866-1200



Est. 1994

AVAILABLE AT OUR ONLINE STORE

www.ecosmarteonlinestore.com



ECOSmarte's Copper Electrodes

For all ECOsmarte Systems: Pool System, Spa System, or city/well Water System.



ECOSmarte's Ferre-Tabs remove iron or excess copper from swimming pools.

Two skimmer tablet doses eliminates the need to waste water by draining the pool back and avoids incompatible metal removers.



The Exact Micro 7 Digital Water Test Kit

makes testing water parameters easy. Just put the test strip into the reader and get a digital readout. No color charts to compare to.

Tests: copper, calcium, and pH
EZ Use. Proven accurate since 2009.

BLOG WITH ECOSMARTE

**Help Us Donate Water
To Those Without Any Water.**

www.ecosmarteblog.com





INTERACTIVE CD

THE ECOSMARTE POOL SYSTEM
Trouble shoot your pool at 2 AM with this interactive problem solving CD. Follow step by step instructions with your pools parameters to solve problems.

SUPPLIES FOR YOUR POOL MANAGER

- Cu
- Calcium
- pH
- Phosphates

Test Kits

(2 Year Shelf Life and Supply)



OTHER SERVICES

A) REGISTER YOUR WARRANTY

(Must have serial number from bottom of control box)

B) CHAT ABOUT YOUR POOL - Using Instant Messenger

A mouseclick or keyboard stroke away for your convenience.

www.ecosmarteonlinestore.com

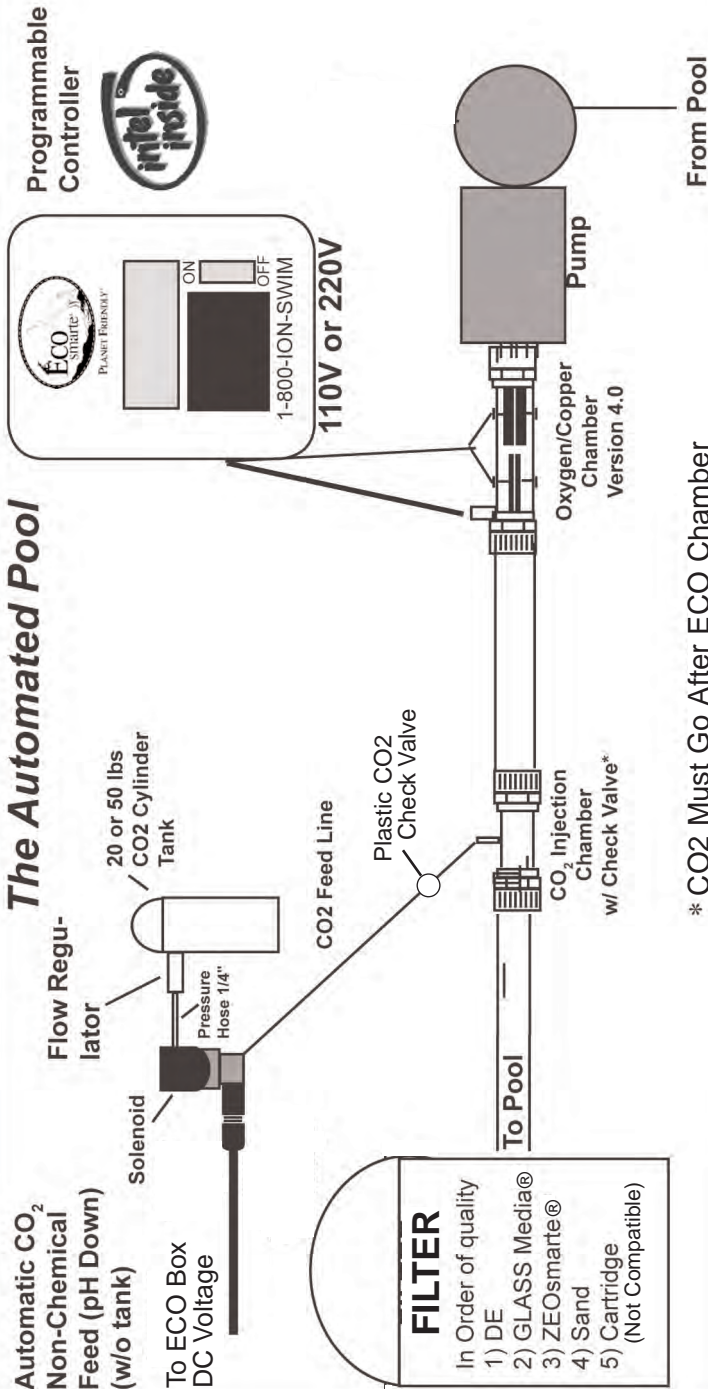


Established in 1994, ECOsmarte is located adjacent to the MSP airport on I-494 at the Mall of America. Come Visit Us.

ECOSmarte Planet Friendly

1600 E. 78th Street
Richfield, MN 55423
(612) 866-1200

The Automated Pool



* CO₂ Must Go After ECO Chamber

1-800-ION-SWIM
www.ecosmarte.com
Certain U.S. and International Patents Pending

MINIMUM FILTER SIZES			
GALLONS	SQ METERS	FILTER SIZE	DIAMETER
0-25,000	Less than 90	150 Kilo/300 LB	24"
25,000-39,000	90-159	300 Kilo/600 LB	31"
40,000 and Up	160 and Up	450 Kilo/900 LB	36"

FREE OFFER: COPPER ELECTRODES
LIMIT ONE PAIR PER HOUSEHOLD
REFERRAL PROGRAM

TWO WAYS TO QUALIFY

- 1) Send us a short video of your pool (mail or email/any handy-cam will do) telling us what you like about chemical-free water.
- 2) Refer one buying customer to any ECOsmarte dealer and provide referred 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

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 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.



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 _____

Email _____

Address _____

City _____ State _____ Zip _____

Phone Numbers: Days _____ Evenings _____

Local Dealers Name: _____

Payment by: ☐ Check or Money Order ☐ Visa/Mastercard ☐ Discover ☐ Cash
Please Check One

REFERRED 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**

Mail to the address below or
Submit Online @
ecosmarteonlinestore.com

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



PROGRAMMABLE BOX APPLICATIONS

(REQUIRES SEPARATE OWNERS MANUAL)

- RESIDENTIAL SPA
- RESIDENTIAL POOL
- 100% CHEMICAL-FREE WATER FEATURES
Pond, Waterfall, Fountain
- COOLING TOWER
Chillers, Swamp Coolers
- CLOSED LOOP
Process Water, Scale and Fungus Control
- GREYWATER
Soft Oxidation; Bacteria Control

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.



Eliminate Acid

WiFi Compatible

1-800-ION-SWIM (466-7946)

www.ecosmarte.com

www.ecosmartecloud.com

Ecosparte Planet Friendly Programmable Control Box Manual Initial Setup

When power to the controller box is first turned on, the following message is displayed on the screen as shown below:

ECO Smarte
Planet Friendly
1-800-ION-SWIM
(C) 1999-2006 V4.12

* Language Setting Screen *

Choose Language

Wait for this screen to pass automatically (about 5 seconds), then the "security screen" will be displayed as shown below:

Please Enter
Security Sequence

To continue, press the keys: "Up, Down, Up" in succession. This sequence of buttons will always unlock and activate your keypad. This is to protect your system from any accidental programming by an unauthorized source (children, neighbors, pool services).

SECURITY SEQUENCE



When the security sequence is entered correctly, the display will change to the "Home Screen."

2:22:20P 1/01/2007
Pool 10:00A- 4:00P-
Oxy 10:00A- 4:00P-
Ion None

Now, it is time to set up the DATE and TIME of your box. Press "CLOCK" or "DATE" to setup either or both values. You will get the following screen:

10:18:07A 1/04/2014
Press CLOCK to set
the DATE and TIME
or NEXT to continue

Press "CLOCK" or "DATE" a second time to continue setting up the DATE and TIME of your box. The "Right" arrow key will return you to the "home screen." Upon pressing "CLOCK" or "DATE" the display will read as follows:

Use ↑↓ >< Keys to set
Day and Date
TU 1/04/2014
Press NEXT when done

The cursor automatically starts on the day of the week. Press the "UP" or "DOWN" arrows until the correct day of week is displayed. Then press the "RIGHT" arrow key to move the cursor across the LCD to the month. Continue this process until the correct year, day, month and day of the week is displayed. At any time, use either the "LEFT" or "RIGHT" arrow keys to move within the LCD. Use "UP" and "DOWN" to change any values. When all values are correct, press the "NEXT WEEK" key to move onto the next screen where you can setup the correct time. The screen is displayed as follows:

Use ↑↓ >< Keys to set
Time
10:18:27A
Press NEXT when done

The cursor automatically starts under the "hour" clock. Use the "UP" or "DOWN" keys to set the correct hour. Then press the "RIGHT" arrow key to switch to minutes. Repeat process until the correct time is displayed. Then press the "NEXT WEEK" key to complete the setup. The display will then return to the "Home Screen." The correct TIME and DATE should be displayed across the top (Shown top of Page 4).

PROGRAMMABLE TIPS

AT START-UP

- The MAN or manual override will put copper constantly to your pool limit until the initial residual reaches .5 ppm.
- PH is controlled in minutes per day AND YOU CANNOT over adjust it using carbonic acid. You can lower your time in minutes the third week to save CO2 gas.
- A 20lb cylinder weighs 35lbs FULL, 15lbs EMPTY. Gauges are not accurate and a \$5.00 Bathroom scale can be put under your tank.
- Profile your pool on the ECOsmarte Cloud. Go to www.ecosmarteccloud.com/register and use your email address for your user name & water1 for the initial password.

PROBLEM SOLVES

1. PROGRAMMABLE BOX CHATTERS

- A) Metal remover is in the water
- B) Salt level is over 600
- C) Phosphates are over 1000ppb

**TURN OFF BOX IMMEDIATELY.
CALL TECH SUPPORT AT 1-800-ION-SWIM
FOR DIRECTIONS.**

2. "LOW VOLTAGE" PLATE ALARM IONIZE / OXIDIZE MODES

- A) Chamber leads hooked up wrong
- B) Metal remover, salt, or phosphate levels are too high
- C) The entire chamber needs cleaning.

**Continued operation will crash the software
in the INTEL chip requiring factory reinstall.**

TYPICAL CO2 TANK LIVES

20 LB	20 min. per day	8 weeks
35 LB	40 min. per day	6 weeks
	60 min. per day	4 weeks
50 LB	20 min. per day	20 weeks
	40 min. per day	10 weeks
	60 min. per day	6 weeks

REPLACEMENT PARTS

CO2 SOLENOID (4YR - 5YR)	\$85.00
INJECTOR CELL (4YR - 5YR)	\$297.00

WARRANTY IS THREE YEARS

CO₂ Swimming Pool Installation Guide

SWIMMING POOL INSTALLATION

- 1) Confirm 110V outlet cord and CO₂ tubing will reach target install area, which is as close as possible to swimming pool on the return lines.
- 2) Plug in electrical timer or Ecosmarte Programmable Controller
- 3) Select area and measure 7", mark pipe
- 4) Cut PVC, and clean pool pipe ends & Chamber fittings.
- 5) Using PVC Glue, install chamber fittings to the pool pipe ends. Let dry, then screw the chamber onto the fittings.
- 6) Screw Flow Regulator into CO₂ Cylinder, and connect 1/4" pressure hose from Regulator to the Solenoid.
NOTE: CO₂ Cylinder must be standing up.
- 7) With Solenoid "OFF," open valve on CO₂ tank SLOWLY until open all the way. Then turn 1/4 turn back. Test all fittings between tank and solenoid for leaks using "Soapy" water. Tighten any loose fittings.
- 8) Start using 30 minutes per day on pools, 3 minutes on spas. Modify as test results dictate with twice weekly testing

Specifications

ELECTRICAL

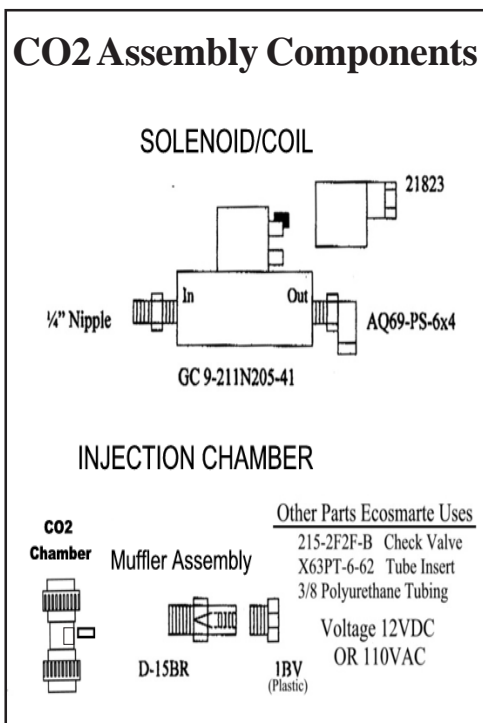
- Manual: 110V, 60 Hz
- Programmable: 12V
- CE, UL Listed Solenoid,
- Power Cord

PLUMBING

- Maximum Tank PSI: 3000
- Maximum Operating PSI: 60
- CGA 320 Valves, Tanks, Fittings

CO₂

- Indoor installations require vented rooms
- Northern units should avoid freezing; 5lb cylinders fit inside cabinet
- Direct sunlight above 120°F on Southern Units should be avoided



HOME SCREEN

2:22:20P	1/04/2006
Pool 10:00A-	4:00P+
Oxy 10:00A-	4:00P+
Ion None	

+ Plus sign indicates output is occurring.

POOL FUNCTION

The next step is to setup the parameters for your pool pump. The "POOL" Key allows you to set the pool Start and Stop times. If you received and ECOsmarte Controller with the Pool Pump Relay Option* your pool pump will be turned ON and OFF at the Start and Stop times set with this function. Press the "POOL" Key to display the following screen:

Use ↑↓ >< Keys to set
Start Stop
Pool 8:00A- 4:00P-
Press NEXT when done

The cursor automatically starts below the hour hand of the start time. Use the "UP" and "DOWN" arrow keys to set the appropriate hour. Then press the "RIGHT" arrow key to move to the minute hand. At any time, use either the "LEFT" or "RIGHT" arrow keys to move within the LCD. Use "UP" and "DOWN" to change any values. When all values are correct, press the "NEXT WEEK" key to return to the "Home Screen."

SPECIAL NOTES: "OXY" and "ION" start and end times **MUST** be set within the "POOL" start and end times or no power will be delivered, although the LCD will display your selected values, (this is a safety feature). In addition, even if you do not own a pump timer, you must set the "POOL" start and end times according to when you manually turn your pump on and off, therefore we assure that we are never Ionizing or Oxidizing when the water is not flowing. Those without a firemans switch on thier timer must turn the pool heater off 15 minutes before pool is turned off.

Upon completing the setup for the "POOL" time, the "Home Screen" will display the new settings:

10:42:09A	5/22/2006
Pool 8:00A-	5:00P+
Oxy 10:00A-	4:00P+
Ion None	

OXY FUNCTION

The next step is to setup the "OXY" mode. Typically **residential** pools should run **6 to 10 hours per day**, commercial pools 18 to 24 hours per day. This is how long you are going to want to set up the "OXY" mode. It is strongly recommended that the running time of the Oxygen should be done during day-light hours. The parameters for the "OXY" mode must also be set within the "POOL" parameters. Now press the "OXY" key and the screen will display as shown:

Use ↑ ↓ > < Keys to set
Start Stop
Oxy 8:00A- 4:00P-
Press NEXT when done

The cursor automatically starts on the hour hand of the Start time. Use the "UP" and "DOWN" arrow keys to set the hour hand. Then press the "RIGHT" arrow key to move to the minute hand. Repeat the same process until the Start time (Hours/Minutes) and the Stop time (Hours/Minutes) are set to run "OXY" for the appropriate length of time, and within the pool pump parameters. Press "NEXT WEEK" when all values are correct.

The screen should now display the correct TIME, DATE, POOL "On" and "Off," and OXY "On" and "Off." The "Home Screen" will look as follows:

8:51:04A 1/11/2005
Pool 8:00A- 4:00P +
Oxy 8:00A- 4:00P +
Ion None

NEXT WEEK FUNCTION

The next step is to setup your ION mode. The NEXT WEEK feature allows you to set a DAY and a TIME period for Copper Ionization to occur. The ionization will occur once per week on the day and the time selected with this feature. It is NOT recommended that future ION settings be programmed without an operating history. Actual Ion time needed is often less than one full Oxy cycle.

SPECIAL NOTE: If you select MANual or ION which will turn ION on for the POOL run time, or OXY run time, **the setting for NEXT WEEK will need to be reset. In addition, no OXY or ION will actually occur outside the time parameters entered for POOL.**

WARNING: Never set OXY or ION to start and stop during times when your pool pump is not running.

TIRED OF RUST In Your POOL?



- **First Fill and Every Fill**
- **Outdoor Water Specialists**
- **ECOsarte® Whole House Systems**
- **ASK ABOUT PHOSPHATE FILTERS -**

Glass Pack®

Characteristic	Glass	ZEOLite	Sand
Environmentally sound	•		
Long Lasting (3x longer)	•		
Ionically charged (traps small particles)	•		
Removes twice the iron & manganese	•		
Self-sterilizing	•		
Reduce chemical use	•		
Less likely to block or channel	•		
Requires a salt bath		•	
Requires more water for backwash		•	•
Requires more chemicals		•	•
Class I Carcinogen*2		•	•
Harmful to breathe		•	•
Surface houses bacteria		•	•
Strip mined: depletes our environment		•	•

SETTING MULTIPLE DAYS OF IONIZATION

Use ↑ ↓ > < Keys to set
 Day Run Start Stop
 SU OFE 10:00A- 4:00P-
 Press NEXT when done

MANUAL FUNCTION

The MANual feature is used to set the IONization time to be equal to the POOL run time. This feature is usually used at start-up when you fill your pool or need to make a gross adjustment in the copper level in your water.

To activate this, simply push the "MAN" key once. This will set your ION Time to be equal with your POOL run time, and your OXY Time will read NONE. Your pool will now IONize when your pump is running. If you need to manually IONize longer, simply go into your POOL setup, and change the Start and Stop times of your pump. Then return to the "Home Screen" and press the "MAN" key to change the ION Start and Stop times. Your screen will now look as shown:

10:09:51A 1/04/2006
 Pool 10:00A- 4:00P+
 Oxy None
 Ion 10:30A- 3:30P+



Glass Media

Using ECOsmarte's glass water filtration media not only results in outstanding performance, but in real cost benefits over the life of a filter bed:

Savings with Glass

Based on Filtration for a 24" Pool Filter

Product	Cost	Life	Cost over 9 Years
Glass	\$300	9 yrs	\$300*1
Sand	\$60	3 yrs	\$180
ZEOLite	\$150	3 yrs	\$450
DE	\$15	2 mo	\$1,500* (1 set grids)

*1 Glass provides added savings due to reduced chemical use, and easier/less frequent backwashing. These costs are not reflected.

*2 No aspirant silica dust for customer. Glass Media is dust free.



GLASS FILTERS WILL NOT LOAD PHOSPHATES

Actual ION hours required to get your first residual will be a function of total gallons, TDS (total dissolved solids) and pH below 7.2 of your pool. A water test seeking 0.5 ppm copper should be taken before 10 hours of POOL and ION running time have passed. PH will rise during initial ionization, therefore, daily adjustments may be necessary at first.

The manual override key "MAN" is the most convenient method to put copper constantly to your pool. Select the "OXY" key to switch the unit back to oxygen equal to your programmed POOL run time.

AUTOMATION

Your water will become predictable after three weeks and the ION and CO2 values can auto repeat for weeks, after dialing them in with the water tests. Set "ION" to come on the day before you test (or your service) the copper each week.

ACC FUNCTION

The last function on the box to be discussed is the "ACC" key. The first feature listed is CO2, the other items are not relevant for residential pools or water features.

Pushing the arrow key pointing to the right will bring you to the screen where you can choose between "Timed", "ON" or "OFF" modes.

The screen is pictured on page 7.

SETTING CO2 FEED & PH TIME

The programmable controller will automatically split your minutes per day. CO2 setting into 4 equal increments beginning at pool start time. Minimum setting is 4 minutes per day (OR OFF).

For further technical support, please e-mail us at:
pools@ecosmarte.com



SET YOUR POOL UP

www.ecosmartecloud.com/register

FREE LIFETIME CLOUD SUBSCRIPTION

Use your email for your
username and water1 for
your initial password

INSTRUCTIONAL VIDEO

ONLINE:

[www.ecosmarte.com/
online-support.htm](http://www.ecosmarte.com/online-support.htm)

Pass: customer2007

BELOW:

Ecosmarte Chamber
installed before CO2
injector, between pump
and filter.



The ECOsmarte chamber can be installed anywhere on
the pressure line, CO2 is always after Cu/Oxy.

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.
- 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

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—backwashes 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.

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ECOsmarte Glass Pack™ is U.S. trademark with pending registration.

SAND FILTRATION IS DEAD, BUT YOUR SAND FILTER MAY NOT BE.

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.

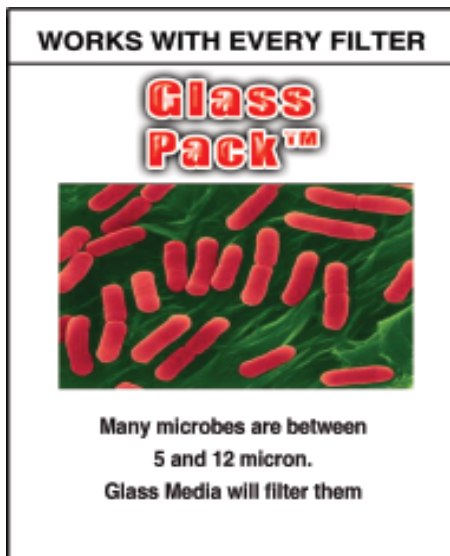
As the grains are nearly all angular in shape and have a fairly high degree of sphericity, the filter bed tends to have more opened packing resulting in better permeability than a filter of spherical silica grains.

Because glass is amorphous and has no internal crystal structure, the particles are homogeneous 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 backwashing.

Glass particles have a slight negative charge on their surface, which tend to hold onto fine particles during the filtration cycle. Upon backwashing, 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.



2014: SPECIAL PRICING			
900 LBS.	FILTER	\$1,399	
500 LBS.	FILTER	\$999	
300 LBS.	FILTER	\$899	
(Includes Filter, Glass Base and Multiport Valve)			
(5YR MINIMUM LIFE INSTEAD OF 3 YR SAND)			
Larger Models Quote			

**Makes Your Water
Look Like Glass...**

2007 Automated CO2 Feature Enhancements

The default settings are shown below:

Use ↑↓ >< Keys to set
CO2 Output Enable
CO2 TIMED
Press NEXT when done

Changing the setting should be done after install. All CO2 users must use the ACC keypad, choose CO2 ON. Right arrow key will bring you to the next screen that allows to choose between several options such as "ON", "TIMED" and "OFF". It is strongly recommended that CO2 feed feature be set on "TIMED" option.

Feature	Setting >
CO2 Feed	OFF
PH Sense	OFF
↑ More Features ↓	

The "NEXT" button will bring you to the screen where CO2 injection time should be set. Right arrow key used to move cursor to the next necessary entry (from hours to minutes). The up and down arrow keys allow you to program or change the number of hours/minutes per day. It is the rule that Southern pools should begin at 40 minutes (minimum time is 4 minutes).

Use ↑↓ >< Keys to set
CO2 Output Enable
CO2 TIMED
Press NEXT when done

All pools should make an initial major PH down adjustment with Muriatic acid before depending on the CO2, the pool should be monitored three times the first week and minutes modified upward or downward as needed. CO2 Minutes are injected four times per day with the first injection occurring at the beginning of the programmed pool run time. **NOTE: Default setting on CO2 feeds constant gas to pool to confirm no leaks at install. You must reselect "TIMED" and use Right arrow key to get minutes to appear on the cursor. Your tank can drain in one day if the time is not entered correctly.** CO2 PH control is a maintenance method only. Acid supplement is required in early weeks of use.



PLANET FRIENDLY™



SECURITY SEQUENCE:
UNLOCKS KEYPAD AT ANY TIME
TO ENTER INFORMATION

SECURITY SEQUENCE

- 1) Your new unit will prompt you to enter the security sequence (up, down, up).
- 2) Each time you want to enter information into the operating unit, you first **need to touch the keypad** and then enter the security sequence.



INCREASES or DECREASES values
when depressed.
Holding down keys will run
the numbers faster.



RIGHT Arrow when correct values are
entered. Both will move cursor to the
various number fields within the LCD,
and RIGHT will return back to first
cursor position, when at the end of a line.



Either button will allow you to change
TIME, DATE, or DAY of the week.
A “Super Cap” instead of a battery will
give you an operating clock of at least 100 hours if
power is interrupted.

ZERO:SALT

ZERO:CHLORINE

POOL

Tells ECOsmarte unit maximum hours your POOL is running. The ECOsmarte unit will not output outside of the programmed pool run time. **NOTE:** Pool Heater must turnoff 15 minutes before the pool to avoid plumbing damage due to heat.

OXY

To setup the number of hours of OXYGEN your pool needs per day. (i.e. OXYGEN purifies water in plumbing 6-10 hours per day.)

**ION
CU**

COPPER IONization is delivered to the pool for the number of hours programmed. Press ION to change the Start and Stop times. Press OXY to stop ionizing immediately when Copper ppm is reached. At setup confirm all settings after using this button.

MAN

This key will change default from POOL = OXY to POOL = ION Ideal at new fill or when you wish to IONIZE today. Will auto repeat, so you must press OXY when ION levels are reach.

**NEXT
ENTER**

Allows you to select future day for Copper to IONIZE your Pool or to oxidize and ionize on the same day. Will repeat each week if function is not turned OFF. **THIS key also allows completion of ALL programming tasks.**

ACC

Activates Pool pump Relay option, CO2, PH sensor, a visual or audio alarm for PH range and power to chambers and CU sensors (if technology becomes available), TDS and Water Temp are Future upgrades, as is remote computer windows interface.

PROGRAMMING MEMORY

Your unit retains all values in the RAM programmed for seven days consecutive without power to ECOsmarte box.
No battery is utilized.

Ecosmarte Planet Friendly, Inc.

Programmable Control Box Manual

Initial Setup

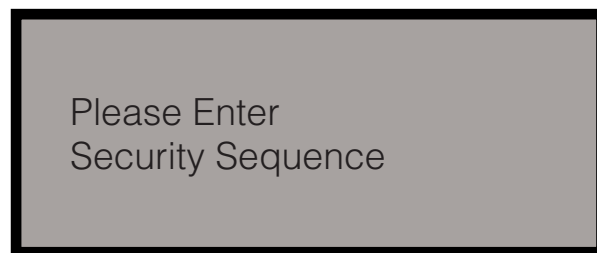
When power to the controller box is first turned on, the following message is displayed on the screen as shown below:



Language Setting Screen

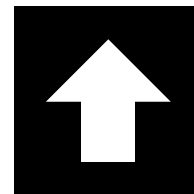
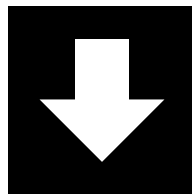
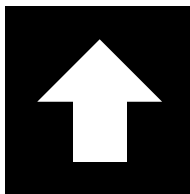
Choose Language

Wait for this screen to pass automatically (about 5 seconds), and then the “security screen” will be displayed as shown below:

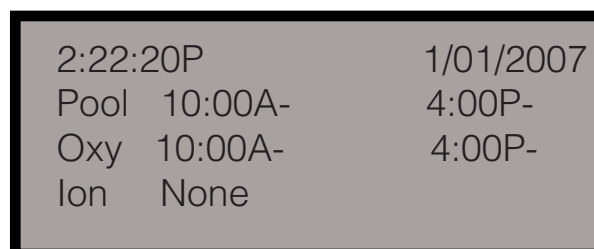


To continue, press the keys: “Up, Down, Up” in succession. This sequence of buttons will always unlock and activate your keypad. This is to protect your system from any accidental programming by an unauthorized source (children, neighbors, pool services, etc.)

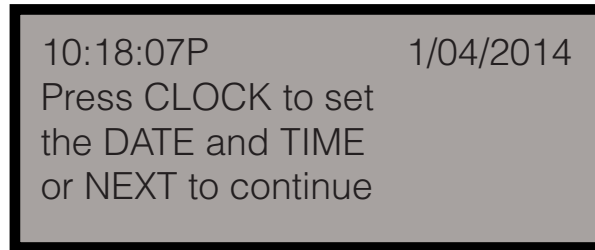
Security Sequence




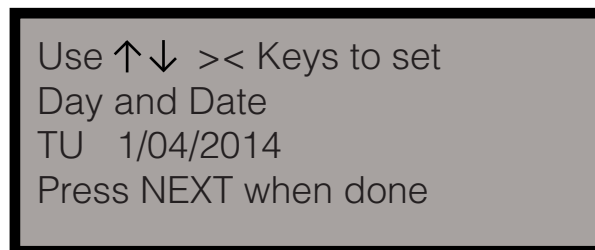
When the security sequence is entered correctly, the display will change to the “Home Screen.”



Now, it is time to set up the DATE and TIME of your box. Press “CLOCK” or “DATE” to setup either or both values. You will get the following screen:



Press “CLOCK” or “TIME” a second time to continue setting up the DATE and TIME of your box. The  arrow key will return you to the “Home Screen.” Upon pressing “CLOCK” or “DATE” the display will read as follows:

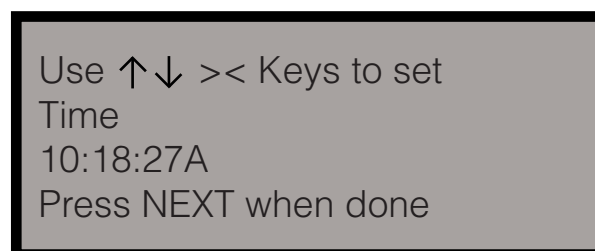


The cursor automatically starts on the day of the week. Press the “UP” or “DOWN” arrows until the correct day of the week is displayed.



Then, press the “RIGHT” arrow key to move the cursor across the LCD to the month. Continue this process until the correct year, day, month, and day of the week is displayed. At any time, use either the “LEFT” or “RIGHT” arrow keys to move within the LCD. Use “UP” and “DOWN” to change any values.

When all values are correct, press the “NEXT WEEK” key to move onto the next screen where you can setup the correct time. The screen is displayed as follows:



The curser automatically starts under the “hour” clock. Use the “UP” and “DOWN” keys to set the correct hour. Then press the “RIGHT” arrow key to switch to minutes. Repeat process until the correct time is displayed. Then press the “NEXT WEEK” key to complete the setup. The display will then return to the “Home Screen.” The correct TIME and DATE should be displayed across the top.

Home Screen

2:22:20P	1/01/2007
Pool 10:00A-	4:00P+
Oxy 10:00A-	4:00P+
Ion None	

+ Plus sign indicates output is occurring

Pool Function

The next step is to setup the parameters for your pool pump. The "POOL" key allows you to set the pool Start and Stop times. If you received an Ecosmarte controller with the Pool Pump Relay Option, your pool pump will be turned ON and OFF at the Start and Stop times set with this function.

Press the "POOL" key to display the following screen:



Use ↑ ↓ > < Keys to set	
	Start Stop
Pool	8:00A- 4:00P-
Press NEXT when done	

The cursor automatically starts below the hour hand of the start time. Use the "UP" and "DOWN" arrow keys to set the appropriate hour. Then press the "RIGHT" arrow key to move to the minute hand. At any time, use either the "LEFT" or "RIGHT" arrow keys to move within the LCD. Use "UP" and "DOWN" to change any values. When all values are correct, press the "NEXT WEEK" key to return to the "Home Screen."

Special Notes

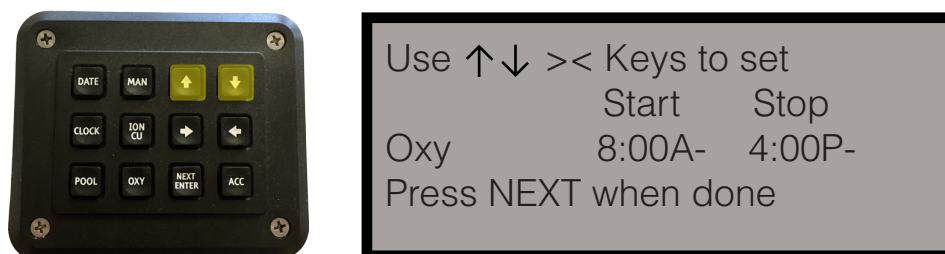
"OXY" and "ION" start and end times **MUST** be set within the "POOL" start and end times or no power will be delivered, although the LCD will display your selected values (this is a safety feature). In addition, even if you do not own a pump timer, you must set the "POOL" start and end times according to when you manually turn your pump on and off. Therefore we assure that we are never ionizing or oxidising when the water is not flowing. Those without a firemans switch on their timer must turn the pool heater off 15 minutes before the "POOL" is turned off.

Upon completing the setup for the "POOL" time, the "Home Screen" will display the new settings.

10:42:09P	5/22/2007
Pool 8:00A-	5:00P+
Oxy 10:00A-	4:00P+
Ion None	

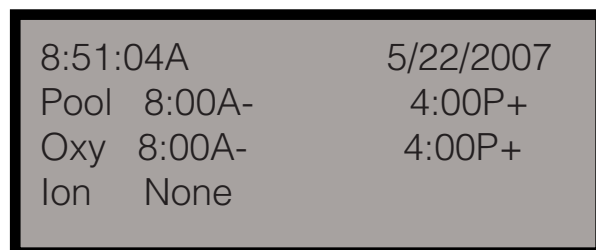
OXY Function

The next step is to setup the “OXY” mode. Typically residential pools should run 6-10 hours per day, commercial pools 18-24 hours per day. This is how long you are going to want to set the “OXY” mode. It is strongly recommended that the running time of the oxygen should be done during day-light hours. The parameters for “OXY” mode must also be set within the “POOL” parameters. Now press the “OXY” key and the screen will display as shown:



The curser automatically starts on the hour hand of the start time. Use the “UP” and “DOWN” arrow keys to set the hour hand. Then press the “RIGHT” arrow key to move to the minute hand. Repeat the same process until the start time (hours/minutes) and the stop time (hours/minutes) are set to run “OXY” for the appropriate length of time, and within the pool pump parameters. Press “NEXT WEEK” when all values are correct.

The screen should now display the correct TIME, DATE, POOL “On” and “Off” and OXY “On” and “Off.” The “Home Screen” will look as follows:



Next Week Function

The next step is to setup your ION mode. The NEXT WEEK feature allows you to set a DAY and a TIME period for Copper Ionization to occur. The ionization will occur once per week on the day and the time selected with this feature. It is NOT recommended that future ION settings be programmed without an operating history. Actual Ion time needed is often less than one full Oxy cycle.

Special Note

If you select manual or ION, which will turn ION on for the POOL run time, or OXY run time, the setting for NEXT WEEK will need to be reset. In addition, no OXY or ION will actually occur outside the time parameters entered for pool.

Warning

Never set OXY or ION to start and stop during times when your pool pump is not running.

Setting Multiple Days of Ionization

Use ↑↓ >< Keys to set
Day Run Start Stop
SU OFE 10:00A- 4:00P-
Press NEXT when done

Manual Function

The Manual feature is used to set the Ionization time to be equal to the POOL run time. This feature is usually used at start-up when you fill your pool or need to make a gross adjustment in the copper level in your water.



To activate this, simply push the “MAN” key once. This will set your ION time to be equal with your POOL run time, and your OXY time will read NONE. Your pool will now ionize when your pump is running. If you need to manually ionize longer, simply go into your POOL setup, and change the start and stop times of your pump. Then return to the “Home Screen” and press the “MAN” key to change the ION start and stop times. Your screen will now look as shown:

10:09:51P	5/22/2007
Pool 10:00A-	4:00P+
Oxy None	
Ion 10:30A-	3:30P+

Actual ION hours required to get your first residual will be a function of total gallons, TDS (total dissolved solids) and pH below 7.2 of your pool. A water test seeking 0.5ppm copper should be taken before 10 hours of POOL and ION running time have passed. pH will rise during initial ionization, therefore, daily adjustments may be necessary at first.

The manual override key “MAN” is the most convenient method to put copper constantly to your pool. Select the “OXY” key to switch the unit back to oxygen equal to your programmed POOL run time.

AUTOMATION

Your water will become predictable after three weeks and the ION and CO2 values can auto repeat for weeks after dialing them in with water tests. Set “ION” to come on the day before you or your service tests the copper each week.

ACC Function



The last function on the box to be discussed is the “ACC” key. The first feature listed is CO2, the other items are not relevant for residential pools or water features.

Pushing the arrow key pointing to the right will bring you to the screen where you can choose between “Timed”, “ON” or “OFF” modes.

Use ↑↓ >< Keys to set
CO2 Output Enable
CO2 TIMED
Press NEXT when done

Setting CO2 Feed & pH Time

The programmable controller will automatically split your minutes per day. Your CO2 setting will be split into 4 equal increments beginning at pool start time. Minimum setting is 4 minutes per day (or OFF).

For further technical support, please email us at:
larryc@ecosmarte.com

SET YOUR POOL UP

www.ecosmarteccloud.com/register
FREE LIFETIME CLOUD SUBSCRIPTION
Use your email for your username and water1 for your
initial password

INSTRUCTIONAL VIDEO

ONLINE:
www.ecosmarte.com/onlinesupport.html
Password: customer2007

Automated CO2 Feature Enhancements

Use ↑ ↓ > < Keys to set
CO2 Output Enable
CO2 TIMED
Press NEXT when done

Changing the setting should be done after install. All CO2 users must use the ACC keypad, choose CO2 ON. The right arrow key will bring you to the next screen that allows you to choose between several options such as “ON”, “TIMED” and “OFF”. It is strongly recommended that CO2 feed feature be set on “TIMED” option.

Feature	Setting >
CO2 Feed	OFF
PH Sense	OFF
↑ More Features ↓	



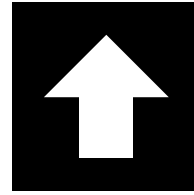
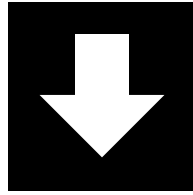
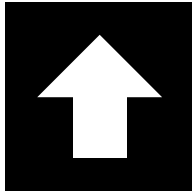
The “NEXT” button will bring you to the screen where CO2 injection time should be set. Use the right arrow key to move cursor to the next necessary entry (from hours to minutes). The up and down arrow keys allow you to program or change the number of hours/minutes per day. It is a rule that Southern pools should begin at 40 minutes (minimum time is 4 minutes).

Use ↑ ↓ > < Keys to set
CO2 Output Enable
CO2 TIMED
Press NEXT when done

All pools should make an initial major pH down adjustment with Muriatic Acid before depending on the CO2. The pool should be monitored three times the first week, minutes modified upward or downward as needed. CO2 minutes are injected four times per day with the first injection occurring at the beginning of the programmed pool run time.

Note

Default settings on CO2 feeds constant gas to pool to confirm no leaks at install. You must re-select “TIMED” and use the right arrow key to get minutes to appear on the cursor. Your tank can drain in one day if the time is not entered correctly. CO2 pH control is a maintenance only method. Acid supplement is required in early weeks of use.



Security Sequence

Unlocks keypad at any time to enter information

SECURITY SEQUENCE

- 1) Your new unit will prompt you to enter the security sequence (up, down, up)
- 2) Each time you want to enter information into the operating unit, you first need to touch the keypad and then enter the security sequence.



Increases or decreases values when pressed.
Holding down the keys will run the numbers faster.



The right arrow is pressed when correct values are entered.
Both arrows will move cursor to the various number fields within the LCD. The right arrow will return back to the first cursor position when at the end of a line.



Either button will allow you to change the time, date, or day of the week. A "Super Cap" instead of a battery will give you an operating clock of at least 100 hours if power is interrupted.

ZERO:SALT

ZERO:CHLORINE



The POOL button tells Ecosmarte unit the maximum hours your pool is running. The Ecosmarte unit will not output outside of the programmed pool run time. Note: Pool Heater must turn off 15 minutes before the pool to avoid plumbing damage due to heat.



The OXY button is used to setup the number of hours oxygen your pool needs per day (Oxygen purifies water in plumbing 6-10 hours per day).



The ION/CU button is used to program the amount of copper ionization that is delivered to the pool. Press ION to change the start and stop times. Press OXY to stop ionizing immediately when copper ppm is reached. At setup confirm all settings after using this button.



MAN will change the default from POOL = OXY to POOL = ION. Ideal at new fill or when you wish to ionize today. Will auto repeat, so you must press OXY when ION levels are at reach.



NEXT/ENTER allows you to select future day for copper to ionize your pool or to oxidize and ionize on the same day. Will repeat each week if function is not turned off. This key also allows completion of ALL programming tasks.



ACC activates pool pump relay option, CO2 pH sensor, a visual or audio alarm for pH range, and power to chambers and CU sensors (when it becomes available). TDS and water temperature are future upgrades, as is remote computer windows interface.

PROGRAMMING MEMORY

Your unit retains all values in the RAM programmed for 7 consecutive days without power to the box. No battery is utilized.

CO2 Swimming Pool Installation Guide

1. Confirm 110V outlet cord and CO2 tubing will reach target install area, which is as close as possible to swimming pool on the return lines.
2. Plug in electrical timer or Ecosmarte Programmable Controller.
3. Select area and measure 7", mark pipe.
4. Cut PVC and clean pool pipe ends & chamber fittings.
5. Using PVC glue, install chamber fittings to the pool pipe ends. Let dry, then screw the chamber onto the fittings.
6. Screw flow regulator into CO2 cylinder, and connect 1/2" pressure hose from regulator to the solenoid. NOTE: CO2 cylinder must be standing up.
7. With solenoid "OFF," open valve on CO2 tank slowly until open all the way. Then turn 1/4 turn back. Test all fittings between tank and solenoid for leaks using soapy water. Tighten any loose fittings.
8. Start using 30 minutes per day on pools, 3 minutes on spas. Modify as test results dictate with twice weekly testing.

Specifications

ELECTRICAL

- Manual: 110V, 60 Hz
- Programmable: 12V
- CE, UL Listed Solenoid
- Power Cord

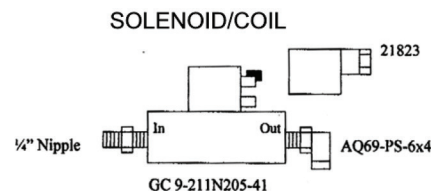
PLUMBING

- Maximum tank PSI: 3000
- Maximum operating PSI: 60
- CGA 320 valves, tanks, fittings

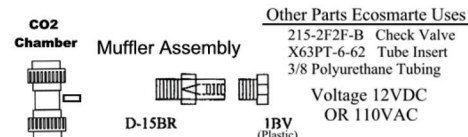
CO2

- Indoor installations require vented rooms
- Northern units should avoid freezing; 5lb cylinders fit inside the cabinet
- Direct sunlight above 120 degrees Fahrenheit on Southern units should be avoided

CO2 Assembly Components



INJECTION CHAMBER



Programmable Tips

At Start-Up

- The MAN or manual override will put copper constantly to your pool until the initial residual reaches .5 ppm.
- pH is controlled in minutes per day and you cannot over adjust it using carbonic acid. You can lower your time in minutes the third week to save CO2 gas.
- A 20 lb cylinder weighs 35 lbs FULL, 15 lbs EMPTY. Gauges are not accurate and a \$5 bathroom scale can be put under your tank.
- Profile your pool on the Ecosmarte Cloud. Go to www.ecosmartecloud.com/register and use your email address for your username and water1 for your initial password.

TYPICAL CO2 TANK LIVES

20 LB	20 MIN PER DAY	8 WEEKS
35 LB	40 MIN PER DAY	6 WEEKS
	60 MIN PER DAY	4 WEEKS
50 LB	20 MIN PER DAY	20 WEEKS
	40 MIN PER DAY	10 WEEKS
	60 MIN PER DAY	6 WEEKS

REPLACEMENT PARTS

CO2 SOLENOID \$85
(4 YR-5YR)
INJECTOR CELL \$297
(4YR-5YR)

Warranty is three years

PROBLEM SOLVES

1. Programmable box chatters
 - a) Metal remover is in the water
 - b) Salt level is over 600
 - C) Phosphates are over 1000ppb

Turn off box immediately. Call tech support at 612-866-1200 for directions.

2. "Low Voltage" plate alarm ionize/oxidize modes
 - a) Chamber leads hooked up wrong
 - b) Metal remover, salt, or phosphate levels are too high
 - C) The entire chamber needs cleaning

Continued operation will crash the software in the INTEL chip requiring factory re-install

Programmable Applications

- Residential Spa
- Residential Pool
- 100% Chemical-Free Water Features - Pond, Waterfall, Fountain
- Cooling Tower - Chillders, Swamp Coolers
- Closed Loop - Process Water, Scale and Fungus Control
- Greywater - Soft Oxidation, Bacteria Control

IMPORTANT SAFETY INSTRUCTIONS

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

1. Read and follow 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 trippes, 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

Eliminate Acid

WiFi Compatible

1-800-IONSWIM

612-866-1200

www.ecosmarte.com

www.ecosmartecloud.com





ECOsmarte Planet Friendly, Inc.

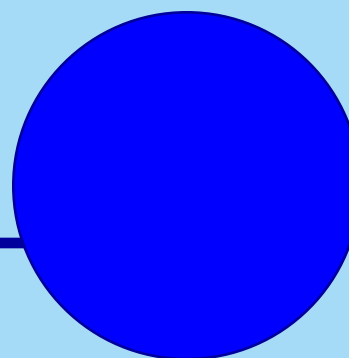
THE COMPREHENSIVE GUIDE

*To Swimming Pool
Ownership*

By Larry Couture, Jeff Grotte, and
Michael Dewar



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Introduction.

Some of the best and most enduring childhood memories will typically revolve around the family swimming pool. In many areas, a swimming pool is needed just to cool off. Lately, swimming pools have become an integral part of fitness and therapy. This book is an attempt to save you numerous hours of time and frustration in the operation of your pool and is the collaborative effort of over 10 pool professionals with a combined 200 years of experience and 20,000 swimming pools built and supported. This pool experience has come from the vinyl markets in Minnesota, the gunnite markets of the Arizona desert, and the moderate climate, service oriented geography of California, the south of France, and the

Middle East.

This book reflects, in every case, the swimming pool owner's perspective. As with all works of this nature, the information includes some philosophy, but this book's main purpose is to encourage swimming pool ownership and provide the first-ever comprehensive guide to owning a swimming pool.

Whether you are a do-it-yourself or a hands-free pool service client, we are sure that the information in this book will make your swimming pool ownership a very pleasant experience and you will use LESS chemicals.



Questions?

Call us toll-free

1-800-IONSWIM (U.S.)
(612)866-1200 (INT)

To estimate the amount of water in your pool, insert the requested measurements in the correct equation. *You will use this number to calculate your cycle time.

Rectangular Pool:

LENGTH	X	WIDTH	X	AVG DEPTH	X 7.5 =	GALLONS
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>

Circular Pool:

DIAMETER	X	DIAMETER	X	AVG DEPTH	X 5.9 =	GALLONS
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>

Oval Pool:

MAX WIDTH	X	MAX WIDTH	X	AVG DEPTH	X 5.9 =	GALLONS
<input type="text"/>		<input type="text"/>		<input type="text"/>		<input type="text"/>

CYCLE TIME CALCULATION

GALLONS			
<input type="text"/>			
		=	
PUMP GPM	X 60		
<input type="text"/>			
			THIS IS YOUR CYCLE TIME
			<input type="text"/>

- To calculate your cycle time, enter the appropriate measurements into the equation.

- Gallons per minute (GPM) can be found on the side of the filter pump or written within the pump instruction manual. It is usually 55 or 70 GPM.

EXAMPLE

If my pool is 40' by 20' with an average depth of 5' and a GPM of 70, then...

40 x 20 x 5 x 7.5 = 30,000 gallons (use this number)

30,000 / (70 x 60) = 7.14 hour cycle (about 7 hours, 8 minutes)

Figuring out what you own: Swimming pool overview

Equipment Sheet (Fill in)

Name _____				Phone _____			
Address (Street) _____				(City) _____	(State) _____	(Zip) _____	
Surface Type (circle): Plaster _____				Vinyl _____		Fiberglass _____	
Finish Type _____							
Dinemsions: _____				If free form: _____ Perameter (in ft. or m)			
Gallons est.: _____				Max depth: _____			
Filter Type (circle): Sand				D/E		Cartridge(s)	
Filter Size (circle): 200 300 500 900				24 36 48 60 72		75 150 200 Other: _____	
Pump Type (circle): 3/4 HP 1.0 HP 1 1/2 HP 2.0 HP				Other: _____			
# Skimmers (circle): 1 2 3 4				Other: _____			
# Jets (circle): 1 2 3 4				Other: _____			
Vacuum Type (circle): Skimmer				Robot	Pressure Side Sweep	Hand Vacuum Only	
Vacuum Brand: _____				_____			
Covers (circle all that apply): Solar Winter Safety Automatic With Reel With Waterbags							
Open Mash Below Track Solid Mesh Above Track							
Heater/Heat Pump (circle): Natural gas Propane Electric				Brand: _____			
Heater size in BTU (circle): 120 180 265 325 400				Other: _____			
Main drains (circle): Yes No Antisucktion 2 Main drains							
Lighting (circle): In-pool Perimeter LED Fiberoptic							
Automated Controls (circle): Jandy Compool Pentair Intermatic							
Alternative Sanitizers (circle): Saltwater Generator Ozone/Oxygen Ionization Ionization/Oxygen							
Brand: _____				_____			
Attached Water Feature (circle all that apply): Spa Waterfall Diving board Slide							
Builder (if known): _____				Phone: _____			
Other notes: _____							

Complete this form and give to Pool Store before seeking advice or quote on filtration systems or chemicals

Inventory your pool: Chemicals on hand

Test Kits

pH
Alkalinity
Sanitizer
Calcium Hardness
Cyanuric Acid
Meters (if any)
Phosphates

please circle if applicable

Phenol Red Bromethyl Blue

_____	_____	_____	_____
Cl	Br	Cu	NONE
YES	YES	YES	NONE
YES	NO	NO	NONE
_____	_____	_____	NONE
_____	_____	_____	NONE

Chemicals

pH UP

Sodium
Bicarbonate
Soda Ash

pH DOWN

Sodium Bisulfate
Muriatic Acid
Carbon Dioxide

Algaecide

_____ Brand

Sanitizer

_____ Chlorine
_____ Bromine
_____ Bacquacil
_____ Other

Shock

_____ Brand
Chlorine Non-Chlorine Circle

Scale Control

_____ Brand

Metal Remover

_____ Brand

Clarifer

_____ Brand

Hardness Increaser

_____ (Calcium Chloride)

Balance Pack

Complete this form and give to Pool Store before seeking advice or quote on filtration systems or chemicals

POOL TALK

Getting Ready.

Turnover Cycles

Use the conversion charts on page 4 to determine the time necessary for your pump and filter to completely cycle the water in your pool 1 1/2 to 2 complete cycles per day. The sanitizer requires at least 1 1/2 to 2 complete cycles per day in order to maintain crystal-clear water. Running the pump during daylight hours is necessary to achieve good results.

What causes algae problems?

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 vac-

uum is highly recommended by most manufacturers, as is backwashing only after a pressure rise of 6 lbs and before a rise of 10 lbs.

Algae are living aquatic creatures that multiply 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: people do not want to go swimming (1), and it takes time and money to rid the water completely of algae (2). Algae itself is not harmful to swimmers, but pools with algae may also be residence to other pathogens. Proper water balance and filter maintenance 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 sanitizer and existing filtration. Filtration upgrades will solve 99% of these problems.

Confirming your cycle

Once you have calculated your turnover time, you can confirm the number of operating daylight hours needed to properly filter your pool. Whenever your swimming pool does not look right, your pump and filter must operate 24/7 until your pool looks crystal clear, assuming, of course, that your pump and filter are properly sized.

Visiting your pool store

We have enclosed (on pg. 5 and 6) two comprehensive forms to hold all the information you need when visiting a pool store. A completed form will allow a swimming pool professional to give you the proper advice.

Testing your water:

Weekly testing is required

Regardless of what sanitation method you choose, you must test the water every week and, in desert climates, at least twice per week between May and September if you wish to operate a crystal clear pool. The number of swimming pools that operate crystal clear 52 weeks in southern climates or 26 weeks in northern climates may be zero, but certainly 95 percent of them experience six to eight consecutive week runs of crystal clear water on a regular basis.

Unfortunately during these six to eight week periods both homeowners and pool services become complacent, particularly in the area of water testing. You must own and perform the following weekly tests if you seek the 52 week elusive goal of crystal clear pool water, categorized by sanitizer and frequency of the test per their manufacturers.

To achieve 52 weeks crystal clear:

	Chlorine/Bromine	SALT-Chlorine	Ionization	Ozone/UV
FREE CL/BR	Daily/Weekly	Weekly	N/A	Weekly
TOTAL CL/BR	Daily/Weekly	Weekly	N/A	Weekly
pH	Weekly	Weekly	Weekly	Weekly
CH	Quarterly	Quarterly	Annually	Quarterly
aK	Weekly	Monthly	N/A	Weekly
Cyanuric acid	Monthly	Monthly	N/A	Monthly
Total salinity	N/A	Monthly	N/A	N/A
Phosphates	Semi-annually	Annually	Annually	Annually
Copper	Annually (to remove)	N/A	Weekly	Annually

If you employ a pool service it is reasonable to request your weekly water test results, particularly if extra charges apply for chemical or extra maintenance issues. It is not reasonable to expect 365 days of crystal clear water, regardless of the price paid for weekly pool services or the sanitation method used.

If you seek the elusive 365 days be prepared to learn your pool, help your service, pay

for or perform preventative maintenance and communicate with your suppliers regularly, not just when issues arise. The swimming pool industry has invested in water testing services, which are excellent for problem solving, but require weekly visits to the pool computer for best results. Use the inventory sheets on p. 5 and 6 of this book to receive the best advice and materials.

Understanding your computerized water analysis

There are several factors involved in running a balanced swimming pool

pH

Potential hydrogen is important for sanitation to work properly. For chlorine or bromine pools, the pH needs to be maintained between 7.4 and 7.8. For bacquacil, the pH needs to be between 7.2 and 7.6. For alternative sanitizers like ionization, 6.8 to 7.2 is appropriate. In all three of these cases, you are actually running at neutral, as chlorine raises the neutrality to 7.4.

Calcium Hardness

Calcium is also very important to running a swimming pool. For this reason, pools should not be filled with soft water. All pools should maintain a minimum of 200 ppm, with 400 ppm being ideal for ionization.

Chlorine/Bromine

Chlorine/bromine needs to be measured for a chlorine/bromine based pool. The ideal level of sanitation is 1.5 ppm (one important note- chlorine loses its effectiveness if the temperature if it goes over 90 degrees).

Copper

Copper needs to be measured for ionized pools. The ideal level of sanitation is between 0.4 and 0.7 ppm if there is zero chlorine. Copper can be maintained at 0.4 ppm if free chlorine is 0.5 ppm. If copper or free chlorine numbers are any higher there is a risk of staining the pool.

Biguanide

The ideal level of biguanide for a bicquacil pool is 30 to 50 ppm. Hydrogen peroxide shock and algacide also need to be added weekly.

Alkalinity

Alkalinity is a factor for chlorine, bromine, and bacquacil pools. Proper alkalinity levels can help to stabilize the pH of the pool. Typically, this should measure between 80 to 120 ppm.

Phosphates

Phosphates can cause significant problems when trying to run a pool properly. They ideally should measure 0 ppm. If they measure less than 1000 ppm then a product like Zero-Phos is effective at removing them. If over 1000ppm, aluminum sulfate should be used to remove them. (See page 10).

TDS

Total dissolved solids are anything solid that can dissolve in water. If this level reaches a level of over 2000 ppm then the pool needs to be drained and refilled.

CYA

Cyanuric acid (cyanide) is a stabilizer used to extend the life of chlorine. 35 is the ideal level. Cyanide is not compatible with ozone or oxygen based sanitation. This level should be monitored to avoid significant negative health effects at a level of 100 ppm.

Salt

Sodium is often measured as a function of your TDS. Solid levels over 3000 ppm can pit concrete, ruin landscaping, and give backteria a place to hide.

PHOSPHATES

Will fertilize your pool

The proper procedure for using aluminum sulfate on phosphate removal when levels are over 1000 is as follows:

The pH must be at 7.4 or higher. Add 5 lbs of aluminum sulfate per 10,000 gallons of water. Recirculate the water for 2 to 3 hours. Allow the pool to settle (approximately 18 to 36 hours). When the water is clear, vacuum to waste, and rebalance your pool. This procedure will knock the phosphates down to about 200 ppm, so Phos Free will still need to be added when rebalancing.

Phosphates typically come from fertilizers in a variety of ways. They can be tracked into the pool by walking across a chemically treated lawn. They can blow into the pool from an airplane that is spraying a farmer's field. With

the recent softened restrictions on water quality, phosphates can even be found in your water supply that is refilling your pool. In recent years, the new "clear air act" has changed air quality requirements for burning coal and refining petroleum.

Phosphates will create all kinds of issues for the pool that may seem unexplainable. Signs of phosphates in your pool include murkiness that won't go away, fluorescent green water, and algae blooms that come and go.

Phosphates act as a food source for algae and will counteract all known sanitation methods. They also tend to load in certain types of medias, like Zeolites, and can be very troublesome to remove. If you can locate the source of them, you have a chance of being able to eliminate them.

If phosphates are found in your water supply, a carbon filter on the end of the hose will keep them out of the pool. When lawns are being sprayed, avoid walking on the grass, and cover your pool.

Whether your pool uses conventional chlorine or an alternative sanitizer, you must confirm phosphates at zero. There are two methods of removing phosphates from the water based on the level found. Phosphates are measured in parts per billion. At 1000 or less, a product like Phos Free will work on them. If they are over 1000, then aluminum sulfate will be required to knock them down to a level where Phos Free will work.

Phosphates over 2,000 ppm - Step 1

Procedure for aluminum sulfate removal:

pH must be 7.4 or higher

Add 5 lbs aluminum sulfate per 10,000 gallons of water

Let pool run in recirculate mode for 2 to 3 hours

Shut the pool off and allow it to settle until water is clear (18 to 36 hours)

Vacuum pool to waste

Add liquid phosphate remover to get them to zero

PHOSPHATES

The new pool industry buzzword.

Author: Natural Chemistry® Newsletter - Vol. 11, March 2007, p. 2

Phone: 1-800-753-1233

URL: <http://www.naturalchemistry.com/>

Two of the most frequently asked questions on Natural Chemistry's pool tech line are, "What is phosphate?" and "How do phosphates get into my pool or spa?"

What is a phosphate?

Phosphates have been around long before any pools or spas were built. However, it has recently been proven that phosphates have a detrimental impact on pool and spa water, making phosphates the "buzzword" in the industry.

How are phosphates introduced into pools and spas?

Some of the more common sources of phosphate contamination are:

Source water - many municipalities are now using varying forms of phosphate based chelating agents in an effort to preserve the water main lines from corrosion. These added chemicals **will** increase phosphate levels.

Pool chemicals - many of the stain and scale inhibitors, as well as metal sequestering agents are phosphonic/phosphoric acid based. This can be confirmed by checking MSDS sheets and product labels. Once these products are added to a pool or spa, they begin to deteriorate and will increase phosphate levels.

Environment - debris such as dust, pollen, dirt, and leaves will contribute to phosphate levels in pool and spa water.

Fertilizers - both lawn and general agricultural fertilizers will increase phosphate levels.

REMEMBER! - although phosphates from these sources are usually poly-phosphates or organically bound, all **will** degrade to "ortho", or reactive, phosphates with time.

WHY DOES MY POOL LEAK?

Autofills

The water for your swimming pool must always be above your skimmer inlet. While this may be stating the obvious, some not so obvious issues can occur.

Evaporation

Based on an 8x5 foot perimeter pool, a week without rainfall and a high heat of 100-120 degrees (TX, AZ, and NV) could cause a 3" minimum - 6" maximum water loss. Without an autofill, add one or two inches of water. With moderate heat of 95-100 degrees, the water loss is 1/2" minimum to 1 1/2" maximum. With low heat of 70-90 degrees, the water loss is 0" minimum to 1/2" maximum.

A daily loss of 1/8" or less is hard to qualify, but if the pool requires hose filling in moderate temperature or rainfall weeks, it is likely leaking.

Plaster pool: look for holes, they often have brown/black stains

Fiberglass pool: look for cracking

Vinyl pool: watch for stair frame screws, skimmer, light gasket, and main drain gasket

Leak to Level

In freeze climates, the owner is logically afraid of a broken underground pipe. These are relatively rare and can be confirmed by allowing the pool to leak to level, with and without the pump running. A pressure test is ordered from a pool company after it is determined the pool will leak below the skimmer.



Money saving search for leaks

Raise pool water two inches per day after allowing it to leak to level. Using your liquid Phenol red from your pH kit, squirt a few drops at any jet rings, ladder, stair step or skimmer trim. The red liquid will be drawn to the leak.



TYPES

of in-ground pools

Plaster/Vinyl/Fiberglass

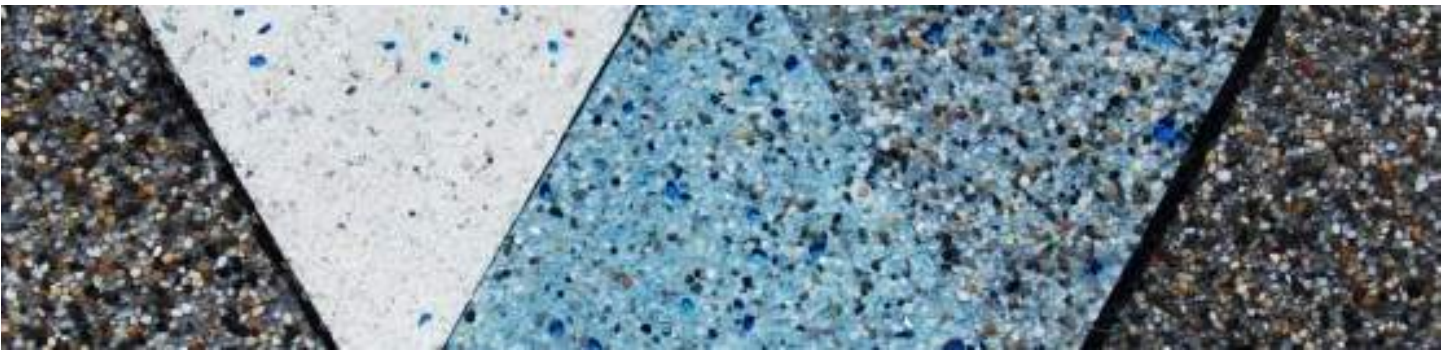
Plaster Pools

These pools are also referred to as plaster, granite, concrete, pebbletech, marble light, marcite, or diamondbrite pools. The dominant form of pool, particularly in the southern US and Europe is a rebar reinforced, plaster or concrete based shell and a top finish. The terms granite, pebbletech, marble light, and diamondbrite apply to the finish. Absent one of these finishes, ceramic tile or glass pools could be cared for in the same manner. Resurfacing these pools with fiberglass finish has been a growing trend over the last 20 years.

Plaster Types

Grey or white- These surfaces are the least expensive, but they have the shortest life and require the highest maintenance. Basically, they are portland cement, with or without a tint additive. For longer life stone, glass accents and other durable items have raised the life of the finish and widely expanded the color choice.

Pebble Tec® (Small stones in plaster)- The developer of the imitated small stone in the plaster has been Pebble Tec®, offering a multi color, more water resistant finish. 3M Diamond Brite and other stone finishes have become popular.



Operating Issues

- 1) These pools must never allow calcium hardness to fall below 200 ppm.
- 2) These pools must be brushed weekly in high season or employ a suction vacuum.
- 3) These pools will stain or bleach, require 7 to 10 year reapplication of the finish, and are the most amicable to attached custom water features.
- 4) These are the only pools which allow large, free form designs and multiple water features attached with one filtration and purification system.

Because they lend themselves to free form design, plaster pools will always be a dominant force in the swimming pool industry. In other markets, they are significantly more expensive to construct.

Vinyl Pools

Since 1980, the vinyl liner has made substantial inroads on the swimming pool industry and has become the dominant choice. In the northern markets, some have argued vinyl lined pools are crack resistant during below freezing weather. The 7 to 15 year window on vinyl replacement is less expensive than a replaster project. Vinyl Liner replacement can be as much as \$3000 to \$4000 less than a re-plaster in most North American markets.

90% or more of the northern U.S. pools are lined with vinyl, and these pools have recently begun showing up in Texas, Florida, and California.

Operating Issues

As with plaster pools, the calcium hardness should be maintained at about 200 ppm minimum and the pH should be maintained above 6.6 (7.2 if using chlorine or bromine). Sanitizer levels above 5.0 ppm (free chlorine) can bleach the liner, as can improper handling of chlorine or acid. Vinyl pools are more resistant to stains and less resistant to mold underneath the pool or damage from concentrated chemicals. To avoid mold, confirm all drainage flow from the house is directed away from the pool.

Maintenance Issues

Vinyl pools require little maintenance and have a 6 to 20 year life dependence on water chemistry. Liners are replaced at a cost of \$3000 to \$4000 and come in hundreds of colors. If your pool is built in a clay (vs. sand) soil environment, proper filling and drainage are needed to keep water from forming under the liner and giving you water mold issues.

Make certain ALL drainpipes are pointed away from the pool. If water is running toward your pool from the neighbor's higher elevation house, installing a French drain system may be necessary.

Vinyl pools do not require weekly brushing to avoid algae in high season but do have other issues. Shocking the pool with chlorine must be done with care to avoid bleaching and spotting. Distribute shock (liquid or solid) around the pool and emphasize the deep end. Dilute liquid acid with water in five gallon bucket and "pool" it in the deep end of the pool when adjusting pH down. Keep calcium above 200 ppm and pH above 6.6 to prevent the liner from becoming brittle before its tenth year after install.



Fiberglass Pools

Perhaps the fastest growing surface choice is a fiberglass pool. This trend is consistent with pools getting smaller and not having diving boards or deep ends. The entire shell is trucked in as one piece, limiting the size due to freight expenses and road restrictions.

Operating Issues

Whether it is an entire fiberglass shell or fiberglass applied over plaster, the fiberglass pool will generally require less maintenance if it has been properly installed. Usually, the smooth surface does not require brushing.

Maintenance Issues

Keeping calcium above 200 ppm and avoiding high sanitizer levels will keep this surface from staining or spotting. Fiberglass owners with well water may wish to put an iron filter on their outdoor swimming pool feed line. Use vitamin C tablets to remove spots or granular ascorbic acid if it is available, no more than one kilogram per 10,000 gallons.



SALTWATER POOLS



Salt water pools use salt-to-chlorine generators to generate chlorine gas. Saying this, salt water pools are not actually chlorine-free, it simply uses a chlorine generator to reduce the handling of chlorine. A wide range of salt chlorinators are available between \$600 and \$1800 and require the unit to be sized to the pool. The entire cell on salt water pools needs to be replaced every 3-5 years.



ABOVE GROUND POOLS



Above ground pools are a very popular choice for many reasons. Above ground pools are definitely the inexpensive option to owning your own swimming pool, and they come in a multitude of sizes and shapes to suit any budget. They are usually vinyl liner pools and should be expected to provide many years of enjoyment. Above ground pools are equipped with filtration and usually alternative sanitizers and filter medias are purchased separately. You can filter and sanitize the pool with whatever system is right for you: chlorine system, salt-to-chlorine generators, or ecosmarte copper ionization and oxidation for chemical free water.



MAINTENANCE ITEMS

regardless of
pool surface

WEEKLY TASKS FOR ALL POOLS

- Test pH
- Test sanitizer
- Empty skimmer basket
- Empty pump basket
- Vacuum all leaves
- Consider backwash (If pressure has risen on filter, clean the cartridge)

ANNUAL MAINTENANCE ITEMS: TESTS

- Test phosphates and remove with chemical
- Test calcium hardness and adjust
- Test cyanuric acid on chlorine pool

ANNUAL MAINTENANCE ITEMS: FILTER

- Replace cartridge (12 to 24 months life)
- Soak DE grids in acid/water (5 parts water, 1 part acid)
- Check bed depth on sand filter annually (2-3 times in souther markets, 1-2 times in northern markets):
 - Sand
 - ZEOLite
 - Glass

(Filter bed depth should be six to eight inches from the top of the filter and, if short, will result in murky water and/or increased chemical use).

In southern pools, these items will result in extra charges from the service. With northern pools, they can be ordered with an opening or closing of the pool (and also involve charges).



FILTERS

the key to time and chemical savings

3 BASIC TYPES

Three basic types of filters exist for both above ground and in-ground swimming pools:

- Sand filter
- Diatomaceous earth
- Cartridge

It is important to confirm that the size of filter is adequate for your pool and your pool pump is correctly rated for your filter. Generally, the filter cannot be oversized (the bigger the better). An undersized filter will easily double your chemical use, double your time spent on water chemistry, and give you many days of murky water. Very few above ground pools are sold with an adequate filter, so make sure you double check yours is the correct size.

Sand Filter Size	Maximum U.S. Gallons
180 LBS	9,000
200 LBS	12,000
300 LBS	26,000
500 LBS	36,000
600 LBS	50,000
900 LBS	75,000

Pools with inadequate filters can either add a second filter or increase the size by replacing an existing filter. In the case of sand filters, an upgrade in the media itself may permit a marginally sized filter to successfully operate the pool. Media options will result in a specific micron removal with a properly sized pump.

Sand Filter Media Options	Microns Filtered
Quartz silica sand	50
ZEOLite	2-10*
Glass Media	2-5*

* With proper horsepower/ filter size combination

FILTER MEDIA

In soft water areas and with pools using a mineral purifier, many types of zeolites sold will be incompatible. Only after installation will you be able to determine if calcium hardness, copper/silver, or zinc is being removed from your pool. All zeolites are incompatible with metal

remover, flocculant, and clarifier. Zeolites will also load with phosphate if it is present in the pool water. Be cautious, some manufacturers do not acknowledge these issues.

In 2004, the pool industry was introduced to glass media. Though glass is the most

expensive option upfront, it has the lowest micron rating and longest life expectancy of all media types, making it the most cost effective type of media. Glass is available in multi-color or white, and may or may not come pre-sterilized.

Sand Filter Troubleshooting Chart

Problem	Probable Fix
Valve handle is hard to move	Spider "O" ring
Water trickles out backwash hose	Spider "O" ring
Sand or media comes out of jets	Dirty filter/ Broken distributor
Sand or media comes out of hose	Bent or broken



SAND



ZEOLITE



GLASS

If any of these medias are found in the pool or backwash site glass; make sure that certain media have been installed in the filter properly with a pea gravel bed fully covering the laterals.

The 1 HP Rule

The HP rating of the swimming pool pump is most critical in successful operation of the pool and specific accessories. The most common misconception as consumers update pools with aftermarket pumps is that a 2 HP pump is superior to a 1 HP pump. A 2 HP pump will not function with a 300 LB sand filter, a 48 sq ft DE, or a 53 sq ft cartridge, the most popular builder sizes.

All pumps have a GPM rating, as do the filters. A 72 GPM 1 HP pump is the proper rating for the aforementioned filters and a 96 GPM 2 HP pump will require at least a 600 LB sand filter or a 72 sq ft DE filter.

While subtle issues exist related to the plumbing manifolds (1.5" pipe vs. 2" pipe), total feet of pipe between skimmer and the pump is also a consideration.

The exception to this are accessory water features and in floor cleaning systems, usually new construction issues only. The trend is to incorporate both a separate pump, and in many cases, a separate filter, which is always required for in floor cleaning systems.

Variable flow pumps, "Intelligent" engineering as the manufacturers call it, are not being marketed all through the United States. The mechanical track record and claimed energy savings of variable flow pumps are vague at best.

Two operating issues need to be considered beyond HP and variable speed or flow analysis:

- 1) The pool must circulate during daylight hours since algae are dormant at night.
- 2) Timing systems require the pool owner to be able to reprime their pump on occasion or pay for a service call if the pool fails to restart.
- 3) A rotary pump can run at the lowest RPM speed 1/8 HP for 24 hours and still use 75% less electricity.

Many builders run the pump and filter 24 hours to avoid these issues. This "off peak" circulation adds between \$10 and \$20 per month to the monthly electric bill at average U.S. rates.

The leading North American swimming pool pump manufacturers are Hayward, Sta-Rite, Pentair, Jandy and Jacuzzi, all with service and parts networks to support their customers.

Signs of a failing pump are: overheating (shutting the pool off), tripping the breaker, or cavitating the flow. Normally, this gives homeowners some advance warning. The pump consists of an electric motor, wet end, and basket. Because rebuilding the motor requires two trips and usually an outside vendor, most pool professionals will recommend replacement of the pump, or at least a brand new motor. Do-it-yourselfers may save half of their money or more with a motor rebuild only. They are unlikely to get the same useful life of replacement.



The NEW Trend: Rotary Pumps

“Greening your pool while keeping blue water”

Eliminates up to 80% of the KW to operate the pool.



Being the latest member of the IntelliFlo family, the IntelliFlo VS Speed Pump further refines the proven advancements that have characterized IntelliFlo pumps enabling them to outsell all the other competing variable speed pumps. With the features below, buying this product is definitely a super move.

Product Description

Digital controls that includes an 8 programmable speed setting with a built in timer allowing custom program of optimum speeds for specific tasks - filtering, cleaning, heating, waterfalls, spa jets etc.

Motor has an ultra-efficient permanent magnet design for reduced noise and vibration assuring greater efficiency and longer pump life. Spectacularly quieter operation - as low as 45 decibels making the pump 4 times quieter than most traditional pumps. Low average operating speed and totally enclosed fan cooled (TEFC) makes the pump the quietest on earth. Fully compatible with other brands of pool/spa controls systems for managing pump, water, lighting, heating, including IntelliTouch®, EasyTouch® and Sun-Touch®. 90% energy saving compared to traditional pumps saving thousands of dollars in energy costs over its lifetime. Safety Vacuum Release System (SVRS) ensures safety by sensing drainage and automatically shuts off the pump hence protecting it for longer life.

The IntelliFlo VS Variable Speed Pump is a real breakthrough in energy efficiency and service life. Many states (California and Arizona for example) are requiring two speed pumps and offer rebates to defray the higher initial cost.

ECOsmarte

Reuse the backwash water on your lawn



Get greener grass than your neighbor

The yard to the right is using regular El Paso city water, the “wetter” water to the left is oxygenated and ionized with ECOsmarte’s whole house water system.

You not only achieve the “greener” grass look, but you also use one half of the water your neighbors do. No impact on budget, high impact on curb appeal.



Glasspack Water Savings

DID YOU KNOW? If just 1/2 of the swimming pools in CA, FL, TX, or AZ that use silica sand switched to using Glasspack Media, EACH STATE WOULD SAVE 10 BILLION GALLONS of fresh water per year.

Backwash Monthly Instead of Weekly

-Glasspack® filters skin cells, blood cells and 70% of all bacteria such as coliform or ecoli. No need to “shock” or flocculate the pool as with sand or cartridge filters.

-Glasspack® contains no crystalline silica - resulting in better lung protection for employees and a far healthier environment. Silica is a TYPE 1 known aspirant carcinogen.

-Glasspack® is manufactured from 100% recycled glass, sterilized and machined like sugar.

-Glasspack® grains are amorphous, smooth particles that have higher attrition strength and do not permanently trap bacteria in cracks.

-Use of Glasspack® filter media will lower your consumption of chlorine and coagulants. Coagulants and metal removers are not compatible with ZEOLite and are compatible with glass.

-Glasspack® media is superior to DE and it will change your life if you manage your own filter.



Vacuums

Hand Vacuum

Skimmer Mount: TOP

Operation of Hand Vacuum:

Set up: The pool pole attaches to the vacuum head; the head is attached to one of the skimmers by using a vacuum hose. Make sure the vacuum hose you own is long enough to reach from the skimmer to the furthest end of your pool. Adjusting skimmer valves not in use with the vacuum may be needed for best results. Never vacuum through the filter, always vacuum to waste.



Helpful Hint: If your pool has two skimmers, close the one not supporting the vacuum one half turn to maximize your suction.

Suction Side

Skimmer Mount: FACE

Pressure Side Sweep: Separate Pump

If your pool has one skimmer only, vacuums such as Baracuda are not the vacuum for your pool. If you have a DE filter, this is also not the vacuum for your pool.

Robotic with Countdown Timer:

These DC voltage driven vacuums are the most expensive but arguably the best. Blue Diamond, Aquabot, Tigershark, and Dolphin Shark are the proven brands.

In-Floor and Pop-Up

In-Floor Cleaning Systems provide performance by systematically moving heavy debris toward your pool's main drains, while suspending the light debris, which are removed by the standard filtration process.



***hand vacuums may still be needed with other vacuum types**

Pool Lighting

There are many pool lighting options available in the pool industry today. Contact your pool professional to see what options may be available for your pool. Below are some of our favorites. All use DC voltage, LEDs, and require the water to be grounded in 2015 as the new U.L. Standard.



Many brands of sand filters require a pea gravel base to cover the water distribution laterals and this is not well documented by various replacement media sellers. Failure to cover the laterals with gravel on most Pentair, Jacuzzi, or Sta-Rite filters will result in the sand, ZEOLite, or glass plugging the

razor-like openings. In addition to plugged laterals, media will pass to the pool, filter bed depth will fall, and the filter media will channel. NO AMOUNT of chemical will clear the pool for more than a few days after this happens.

INSTALLING NEW MEDIA >



Sand filter lateral

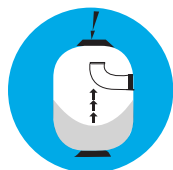
Pea gravel must cover all laterals fully with glass or ZEOLite. Glass manufacturers, even though their material is machined to sugar-like consistency, are universal in their pea gravel bed requirement. Most ZEOLite suppliers do not document the gravel requirements.

Replacing the Sand

INSTALLATION INSTRUCTIONS



1. Remove tank cover. Cover the exposed vertical pipe.



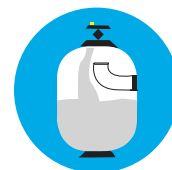
2. Remove the sand; use of wet-vac is helpful.



3. Check all piping for correct fit and defects. Cover laterals w/ pea gravel.



4. Add media to achieve specific filter bed depth. Put back the tank cover and introduce water.



5. Backwash until water is clear. (Please note: If using ZEOLite, the backwash process should take place after each bag is added).

Glass, ZEOLite, or 20 Quartz Silica Sand (regular sand will not work)

Sand - Every 3 years

ZEOLite - Every 3-5 years

Glass - Every 5-7 years

(Bacquacil users will need to change sand or ZEOLite every year)

Sand filters must plug and have pressure rise on their gauge to remove small particles from the pool. A functional pressure gauge is necessary to successfully operate the pool. It is highly recommended that pools with **slide valves** should upgrade to a multiport valve. Multiport valves give you full operation of a sand filter. A slide valve has

only two options- filter and backwash. A slide valve does not include the rinse feature. Without a rinse feature, it is impossible to properly backwash a sand filter to its maximum cleanliness. The rinse feature on the multiport valve is an intricate part of removing the particulate that has been collected in the filter, cleaning your pool properly.

BACKWASHING YOUR SAND FILTER >

Backwashing the pool should occur after 6 lb pressure rise on the gauge and prior to a 10 lb rise over starting pressure. The starting pressure must be recorded after a proper backwash. The gauge can be marked with a waterproof marker so any pool professional or family member will know the operating status of your filter.

The proper method to backwash the filter is shown below. **YOU MUST TURN THE PUMP OFF** between each movement on the multiport valve, or you will damage the “spider” O-ring inside the valve. The multiport valve should easily and distinctly lock into position.

When finished with the second backwash/ rinse cycle, the pump should be turned off and the

valve returned to the “filter” position. The pool should be operating at your starting pressure. The “recirculate” and “waste” settings are covered under **problem solving** and **vacuum** chapters of this book.

Backwashing too frequently will result in more chemical use and less water clarity with a sand filter. Any sand filtered pool that has gone 6-8 weeks without a pressure rise should backwash the pool regardless of pool clarity.

TWO COMPLETE CYCLES: FULLY PURGE THE MEDIA



1. Turn off pool pump
2. Set multiport valve to “backwash”
3. Turn on pool pump for 2 1/2 minutes
4. Turn off pool pump
5. Set multiport valve to “rinse.” Rinse to clear in-site glass (15 to 45 seconds)
6. Repeat this process

The diatomaceous earth filter for backwashing purposes operates on a similar principle to sand but will not require a pressure rise. The maximum pressure rise, usually 12-16 lbs, is more important with this platform to avoid damage to the filter itself, and early backwashing will not hurt the overall

filter performance. It may be prudent, for example, to backwash the filter if the gauge has a 4 lb rise and the owners or pool service will be gone for several days.

DE BACKWASHING: a diatomaceous earth filter

The use of the multiport valve is identical to a sand filter; you must turn off the pump between each valve handle movement. The DE platform requires **three** 2-minute backwashes followed by rinse to clear, usually less than 30 seconds.

The backwash of a DE filter is designed to knock down all powder and contaminant from the

grids. Softly slapping the side of the filter after each rinse cycle will yield optimum results as dirty powder drops to the bottom of the filter to be rinsed out.



Pentair Multiport Valve

DE FILTER TROUBLESHOOTING CHART

Symptom	Cause
Powder in the pool	<ul style="list-style-type: none"> - Hole in grids - Valve to separation tank is faulty or open - Too much powder in the filter
“Murky” water or Oil Slick:	<ul style="list-style-type: none"> - Not enough powder in filter - Grids need to be cleaned - Grid assembly is cracked - Breather cap plugged

Failure to get all used powder at the bottom of the filter will not allow new powder to coat the grids evenly. At least twice per year, the grids must be removed and soaked for trouble free performance.

A one hour soak in five parts water, one part muriatic acid and 1 lb TSP (Trisodium Phosphate). It is usually a good idea to hire a pool professional if this is your first swimming pool on your first DE filter.



The 60 sq ft DE filter typically contains six or seven fabric “grids” that must be perfectly maintained with the carriage assembly and grids soaked quarterly. The filter must be re-assembled squarely and with even tension on the cartridge.

ALTERNATIVE SANITIZERS

Chemicals

Chlorine is the dominant form of pool sanitation, but Bromine, Bacquacil, and Sodium Tetraborate sanitation have a statistical presence.

Those pools using an alternative form of chemical sanitation will most likely be required to drain the pool to convert it back to chlorine, OR install an alternative sanitizing device. The number of alternative chemical pools is falling dramatically while the percentage of pools with a sanitizing device is increasing.

Bromine

Bromine users will operate the pool by testing free bromine, total bromine, pH, calcium hardness, and totally alkalinity - all just as critical as chlorine.

Bromine users will typically use non-chlorine shock to respond to cloudy water and often need weekly algaecide treatment.

Bromine salts themselves typically cloud water. Movement to a copper sanitizing device will require draining the pool to avoid copper salts which can be toxic and can cloud the water.

Bromine has better microbe kill rates than chlorine on hot water. While bromine has become the dominant sanitizer for spas, very few pool companies have the larger packaging of bromine to support a swimming pool or employ the expertise to operate a bromine spa or pool.

Bacquacil (and private label bioguanides)

By far, the dominant chemical other than chlorine in swimming pools is bacquacil. The sanitation chemical itself (and the shock) is considerably less irritating than chlorine, but it is more expensive, and requires regular algaecide supplement and annual filter media change out. It also provides some economics on getting the alkalinity up and increasing the calcium hardness. Bacquacil is much less corrosive than chlorine or bromine, though some evidence shows that the more years that the water is in the pool, the more sanitation chemical are required, regardless of weather. Bacquacil users should consider draining and refilling the pool and changing out the filter media every 3 to 5 years (instead of the 7 to 10 year window with chlorine).

Sodium Tetraborate Pools: PROTEAM

The manufacturer of this patented system, The John Girvan Company, should be contacted directly for assistance in operating these pools and updating proprietary test kits. Materials are generally shipped from Florida.

ALTERNATIVE SANITIZING DEVICES

Numerous alternative devices, many dating back to the late 1980s, exist to reduce or eliminate the use of certain pool chemicals. Many of them completely eliminate the use of chlorine stabilizer, cyanuric acid, and the obvious human health issues associated with chemical use in pools and spas.

Ionization

The oldest methods involve copper or copper/silver ionization using ionic metals to kill algae, bacteria, and virus. Early Roman fountains and modern day wishing wells easily demonstrate the water clarity achieved from the stable part per million metal residuals. NASA legitimized this science in the 1960s by using ionization on three week Apollo missions to the moon when moon microbes were greatly feared. Only since 1999 have efficacy studies confirmed superior kill rates on Legionella, Polio Virus, Ecoli, and Coliform with the use of ionization. The issues with ionization, however, revolve around staining and the need for oxidation.

Ionization/Oxygen and Ionization/Ozone

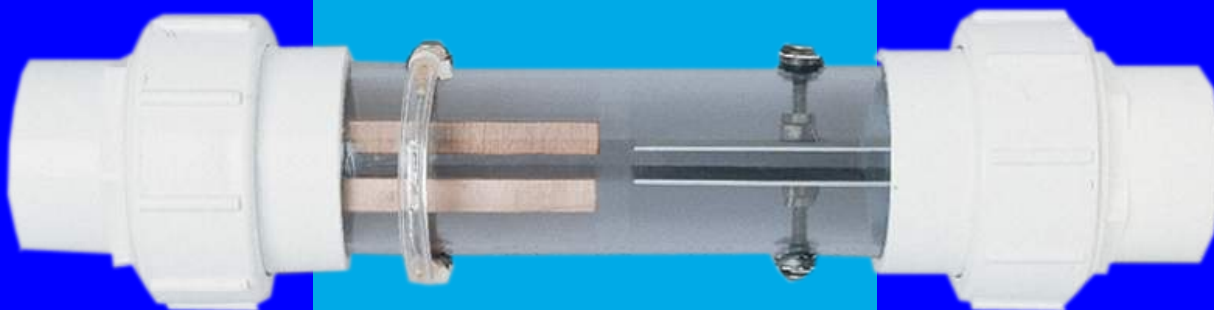
In swimming pool applications, ionization alone does not address body oils, uric acid, and other organic chemicals brought into the water by swimmers. Therefore an oxidation supplement or method is required to rid the water of these things.

The less expensive ionization products (\$800-\$1400) recommend the use of household bleach or non-chlorine shock on a regular basis to accomplish the needed oxidation (Caribbean Clear, Pioneer, Sigma, Challenger, Lifeguard). The more sophisticated and successful manufacturers will incorporate a second device (ozone or oxygen generators) to eliminate the regular use of halogen chemicals (Clearwater, Superior Aqua, Ecosmarte). These dual systems, while not necessarily doubling the cost (\$1900-\$4500), should be scrutinized, particularly if ozone is used to ensure proper sizing based on both the size of the pool and projected swimmer volume. Tens of thousands of pools operate without regular chemical added to the pool, a fact that North American pool professionals have acknowledged only after Wal-Mart, Sam's Club and Canadian Tire garnered over 30% of the swimming pool chemical business.

Ozone

Ozone has been the accepted chemical reduction standard in water treatment since the early 1900s. Ozone's short life, however, makes both oxidation supplements and algacide use a necessity. The main problem with ozone generators in residential applications is the cost of electricity and element replacement. Residential ozone generators require 24 hour circulation and annual bulb/element replacement.

Ozone generators are rated in grams per hour. 2-3 gram output is required to have an impact on the chemical demand of the pool.



AUTOCOVERS

Turn the key, and the pool is covered

A growing trend to cover pools with a retractable cover has occurred in North America. If your pool has such a cover, and you are experiencing problems, the following troubleshooting guide has been compiled using information from manufacturers.

TROUBLESHOOTING GUIDE: AUTOCOVERS		
Problem	Possible Cause	Solution
Cover will not move forward or will not reverse	<ol style="list-style-type: none"> 1. Circuit breaker or GFI is tripped 2. Water on cover 3. Water accumulated between roll-up tube and pool 4. Cover adhering to deck 5. Torque limiter loose 6. Motor needs service 	<ol style="list-style-type: none"> 1. Reset circuit breaker 2. Pump water from cover 3. Sweep water off cover 4. Lift cover and billow air under cover. Use replaceable welcome mat, etc., to break deck adhesion 5. Tighten both torque-limiter bolts 1/2 revolution until it engages 6. Call for service
Water leaking onto cover	<ol style="list-style-type: none"> 1. Cover caught on something sharp 2. Abrasion pinhole 	<ol style="list-style-type: none"> 1. Remove sharp object and use patch kit to repair
Cover retracts out of square (some unevenness may be unavoidable due to pool configuration)	<ol style="list-style-type: none"> 1. Rope length is unequal 2. Uneven drag on cover as it retracts off pool 	<ol style="list-style-type: none"> 1. Re-pin the rope onto the rope reel so the extra rope around the reels is exactly the same on both sides 2. Tighten rope reel brakes slightly. Do not overtighten.
Cover not even at end of pool	<ol style="list-style-type: none"> 1. Rope length is unequal 	<ol style="list-style-type: none"> 1. Re-pin the rope onto the rope reel so the extra rope around the reels is exactly the same on both sides
Cover seems to be running under stress	<ol style="list-style-type: none"> 1. Excess friction during operation 2. Cover adhering to deck 3. Debris in housing 4. Cover too tight 5. Brake too tight 	<ol style="list-style-type: none"> 1. Clean guides with hose. Clean all turning parts 2. Billow cover by lifting fabric to break adhesion 3. Clean housing of debris 4. Raise water level to mid-tile or replace cover 5. Loosen brake

Top Track (See page 35)

Track is mounted in the concrete deck. This is the only retrofit option unless you are prepared to replace your concrete deck.

Below Track (See below)

Track is built under the concrete deck with no exposed runners, over with a cantilevered edge...

Without entering into the debate it is not wise to use these covers as winter covers in a northern freeze climate, despite manufacturers' claims. A fabric replacement due to an ice tear is \$3,500 to \$5,000, excluded from their warranties. Investing \$1,500 to \$4,000 in a true safety cover is the ideal way to winterize an autocover pool, extending the life and simplifying the maintenance. Leaf stains accumulated in the fall can also ruin the appearance.

OPERATING ISSUES

Cover Pump

A small sump pump is required to pump water off of the cover, especially before opening it. A leaf blower or pressure washer also simplifies the cleaning process.

The manufacturers that recommend their autocovers for winter use expect the cover to be regularly pumped as water accumulates and before ice forms. They also expect you to pump it as ice melts. The fabric itself will become very dirty over winter months and must be cleaned each spring.

Sunlight

It is a good idea to frequently expose your pool to the UV sunlight, regardless of the sanitation methods used. Salt water generators, chlorine generators, and ozone generators will destroy the fabric and the track if the cover is not opened every day.

Heating the Pool

Keep the cover closed and realize your energy saving benefit with the autocover. Generally, two to four hours with a properly sized heater will raise the pool water temperature for planned swimming events. This permits the heater to be turned off or down on days when the homeowner knows there will be unlikely use of the pool.



WINTER CLOSING

Closing Northern Pools - Frozen Water

1. Test copper and pH.

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 pump off. 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, gizmoz, 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 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 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 of RV anti-freeze directly into each skimmer.
4. Plug skimmers. If gizmo is not used, leave an empty plastic anti-freeze jug in the skimmer cavity (plastic jug will absorb winter expansion).

Main Drain

1. With skimmer valves closed, open main drain valve.
2. Open 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 traces of anti-freeze entering the pool.
5. Close valve quickly.

SOUTHERN POOL CLOSING PROCEDURE

If you are located in a region where freezing water is not a concern, then lower pH to 7.2 (neutral) and raise sanitizer levels. There is no need to run the pump and filter everyday. However, you must 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.

Southern pool owners will most likely use an auto cover in their winterization strategy. “Swamping” a southern pool and cleaning it up in the spring makes little sense.

MISCELLANEOUS

- Stuff rag or sock in each end of “blow spot”. Rubber bind or duct tape rags in place.
- If you have a slide, a water-powered vacuum (Polaris, Kreepy Krauly, etc.), or a 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 the 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.



Safety Options



A safety cover, capable of supporting a deer, child, or moose, can be starched. Merlin Industries® Smart Mesh™ allows only water to pass through the cover. The straps allow the cover to rise if the ice rises and the anchors mount flush to the deck during swimming season. NOTE: Standard or 'Open Mesh' covers will add 10-20 hours for Spring clean up and as much as \$200 in chemicals.

Winterizing: Autocovers are not true safety or winter covers.

Regardless of whether you own an above or below track auto cover, you do not want to cleaning, fabric or track replacement that occurs in northern climates from ice damage. Even the manufacturers who recommend this usage expect you to pump off surplus water. An ice tear in the fabric sells for \$4,000. Cleaning the cover without the winter-accumulated dirt and tree tannins is also an easier



Top track required on free form pools



Below track is optimum for rectangular pools

It is a great concept model which permits attractive cantilever decking as well as a concrete lid system to hide tracks.



SEVEN SECRETS SALT WATER POOL SELLERS DON'T WANT YOU TO KNOW

SECRET #1

Salt water systems corrode the pool equipment.

The Facts - The salt itself has issues of attacking the cement in the plaster and deck materials. This is a relatively slow process when the salt levels are low. The salt also can kill any landscaping in or around the pool as well as in the backwash area.

If the sodium hypochlorite levels are too high, the corrosion is caused by the chlorine being produced by the electrolytic cell. Chlorine can bleach the test reagents, giving you a “false negative”, and people can grossly over-chlorinate their pool damaging equipment, the pool surface, lighting fixtures, and ladders. Over time the salt will attack any area the water evaporates at.

A common problem is corrosion at the ladder. The deck anchors are usually cast aluminum and the ladder should be stainless steel. The salt water will corrode the anchors overtime and a “safety event” will be pending.

Buyers should be aware that if you have salt water above 2800 ppm, (often 4000 to 5000 ppm), you will need to reseal your coping every year, especially if it is a porous stone like limestone or travertine. Otherwise, the salt will dry and start to etch the coping. Besides sealing the stone, it is also advisable and an added precaution to hose down the coping at the end of any swim day with fresh water. Although the salt water in the pool may not be corrosive at levels of 3000-3500 ppm, when that water hits the coping and evaporates, it leaves pure salt behind. The pure salt is corrosive and is the main cause of the corroding coping. Most autocover manufacturers now void their track warranty if a salt system is used.

Some pool builders are now refusing to build any salt water pools with cream limestone or taupe coping. Any customer that wants either coping for a salt water rock or gunnite pool must usually sign a release form. Pool builders have said that they have had to replace a significant amount of both these types of coping this past year. Cantilever designs simply disappear as the stone dissolves away.

SECRET #2

Salt water systems require chemicals almost every week.

The obvious weekly use of muriatic acid is combined with the not so obvious need to use cyanuric acid to guarantee your salt chlorine generator can achieve 1-3 ppm chlorine residual in your pool. Since salt water pools produce chlorine, the sanitizing effectiveness of the system is impacted by changes in temperature, bather load, sunlight and rainfall. CYANIDE based, the CYANURIC acid is euphemistically referred to as conditioner or stabilizer and must be maintained between 35 and 85 ppm. Stabilized levels over 100 are harmful to children, pets, older swimmers, the pool itself and of course the environment.

Occasional algaecide, clarifier, stain and scale control and shock will be needed with a salt chlorine pool (maybe slightly more than a stabilized “puck” pool) and only the handling of the solid chlorine is avoided. Numerous other sanitation devices will cut overall chemical use, a salt system may not.

SECRET #3

Salt water systems require cell replacement every 2 to 3 years at a cost of \$500-\$800.

With over 40 manufacturers in the salt water generator business the cell warranty ranges from 1 to 3 years and the replacement costs are from \$500 self-installed to \$800 installed by a dealer. Assuming the owner gets to the fourth year with the cell, salt can be one of the most expensive methods to sanitize the pool. If the cell does not make it through the third year, salt becomes the most expensive system in terms of operating cost.

SECRET #4

You must worry about the pH with a salt system and do regular maintenance or you will destroy the pool and have zero recourse.

The Fact - When the pH and alkalinity get out of balance, the chlorine is much less effective. The pH should be 7.4-7.6. Chlorinating with a salt water chlorinator is similar to chlorinating with liquid chlorine-- they both have a high pH (11.7). One common problem is that homeowners tend not to test their pools' pH and alkalinity enough. Unfortunately, too many builders and retailers sell these systems as a "set it and forget it" solution. Most people with salt systems will run their pH from 7.8-8.0. This is bad for two reasons: 1) the pool is in a scaling mode, and 2) the chlorine is locked up by the basicity of the higher pH. It is best to run between 7.4-7.6 when using chlorine. Lack of pH management can ruin the cell in less than 90 days, scaling up the swimming pool as well as the cell. "Improper chemical use" will void any warranty, a system employed by portable spa manufacturers on delaminated shells and first year heater failure.

SECRET #5

Salt systems are more harmful to human health than conventional chlorine, bromine or bioguanide chemicals.

With a salt system your skin will absorb sodium, salt, AND chlorine, versus just the halogen with a chemical sanitizer such as chlorine or bromine. Sodium absorption through the skin has long been known to present health risks at levels far below the 3000-5000 ppm levels salt chlorine generators require. For nearly 20 years people with high blood pressure, stroke history or other circulatory system issues have been asked to stop using their water softeners (at 200-400 ppm sodium in the water for just ten minutes in the shower) to avoid the heart mortality risks. The chlorine level and skin absorption of the chlorine is still based on the same 1-3 ppm chlorine residuals found, dioxin forms (as do chloramines) and the backwash water contains 3000 ppm or more chlorides.

SECRET #6

Salt systems are damaging to the environment and have been banned on all pools in areas such as Los Angeles County.

While the "Ban the Brine" movement may have not picked up much steam in recent years, individual counties banning chloride discharge such as Livingston County, Michigan or specific bans on salt water chlorine generators in Los Angeles County, California have gotten regional attention. Those existing Los Angeles area salt water generators when the ordinance was passed are NOT "grandfathered" in.

SECRET #7

One size does not fit all and salt generators use both high voltage AND high amperage outputs.

The Facts - It is essential when selecting a salt chlorinator to oversize the unit for your pool. You are better off having a chlorinator too large for your pool, one that is undersized is a complete waste of money. A chlorinator too large can be turned back or run for less time each day, making the cell last longer. A unit too small will mean algae problems later on if you don't run it for longer periods each day or add extra chlorine on a regular basis. The high amperage output of the cell will add between 500 to 1000 watts per day or 1.0 KW to 1.5 KW to your electric demand and monthly bill, at .11¢ per watt, this is \$5 to \$11 every month. Electric rates range from .11¢ to .19¢ per KW and will not likely decrease in price.

There is no maintenance on a salt water pool.

Fact - All salt water generator cells require cleaning every 90 days. This must be carried out before the calcium build up within the cell housing becomes one big block. If not cleaned for six months, four expensive things occur, (even with the unit turned off the scale still forms):

The cell housing breaks when you attempt to clean it.

The cell life shortens as the high voltage/amperage cannot penetrate the scale on the plates.

The pool becomes a swamp when the cell scales up.

The electronic box blows - due to scale on the cell or salt ppm above 5000 in the pool.

It is also very important to watch the salt level in the pool. A low salt level (less than 2000 ppm) will cause oxygen production and damage the platinum group metals on the cell anode, therefore, shortening the life of the cell. It is recommended that you try to keep the salt level at the higher end of the manufacturer's scale, for your specific model.

With a salt water pool, the owner MUST maintain a proper pH or the pool will scale, stain brown and destroy the cell. Also cyanuric acid levels must be maintained or the chlorine will quickly dissipate out of the pool.

Before you buy a device and throw 200 to 500lbs of salt in your pool, remember an old term - "Salting the Earth", 2000 years ago mankind knew better.

Manufacturers and their contact information

Manufacturer	Product Categories
3M/Industrial Business Phone: (651) 733-6486	Adhesives, Concrete
A.O. Smith Phone: (937) 667-2431 www.aosmithmotors.com	Pump Motors
ABER Hot Tub Mfg. Phone: (800) 263-7727 www.aberhottubs.com	Spas
Acu-Trol (Now Hayward) Phone: (800) 2734667 www.acu-trol.com	Chemical Controllers, Controls, Programmable Controls, Flow, pH ORP Meters
Acura Spa Systems, Inc. Phone: (951) 684-6667 www.acuraspa.com	Electromechanical Controls, Spa Heaters, Spa Pillows, Spa Pumps
Air Energy Heat Pumps Phone: (800) 334-4328 www.air-energy.com	Heat Pumps, Above-ground Pool Heaters, Spa and Hot Tub Heaters
Alaglas Swimming Pools Phone: (877) 655-7179 www.alaglas.com	Fiberglass Pools, Pool Lighting, Water Features, Spas, Kiddie Pools
Alden Leeds, Inc. Phone: (800) 822-5387 www.aldenleeds.com	Algaecides, Antifreeze, Bromine, Pool and Spa Chemicals
Aldrich Co. Phone: (309) 695-2311 www.aldrichco.com	
All Valley Solar Phone: (323) 850-0720 www.allvalleysolar.com	Solar Equipment
ALL-PRO a Scheu Co. Phone: (800) 325-7057 www.allpro-heaters.com	Above-ground Pool Heaters, Heaters Accessories
Aloha Fiberglass Pools Phone: (800) 786-2318 www.alohafiberglasspools.com	Fiberglass Pools, Lighting, Tile, Mosaics, Pool Covers, Pool Fences

Manufacturers and their contact information

Manufacturer	Product Categories
ALPS Spas Phone: (800) 733-7665 www.alps-spas.com	Above-ground Pool, In-ground Vinyl Liner, Portable Spa
American Fiberglass Pools Phone: (800) 324-7665 www.americanfiberglasspools.com	Fiberglass Pools, Spas, Diving Pools, Swim Spas
American Leak Detection, Inc. Phone: (800) 755-6697 www.americanleakdetection.com	Leak Detection, Leak Repair
Aqua Creek Products, LLC Phone: (888) 687-3552 www.aquacreek.com	Grate Drain Covers, Pool Filters, In-Ground Pool Steps
Aqua Jet, LLC Phone: (800) 221-1750 www.aquaproducts.com/aqua	Automatic Pool Cleaners, Robotic Pool Equipment
Aqua Pro Systems Phone: (877) 278-2797 www.ecoaquapro.com	Pumps, Filters, Heat Pumps, Air Blowers, Chlorine Generators
Aqua Products Phone: (800) 221-1750 www.aquabot.com	Robotic Pool Cleaners
Aqua Vac Systems, Inc. Phone: (800) 786-7751 www.aquavacsystems.com	Automatic Pool Cleaners, Robotic Pool Equipment
AquaCal, Inc. Phone: (800) 786-7751 www.aquacal.com	Heat Pumps, Spa and Hot Tub Heater
AquaCheck Pool and Spa Test Trips Phone: (800) 548-4381 www.aquacheck.com	Test Kits, Water Analysis
Aquamatic Cover Systems Phone: (800) 262-4044 www.aquamatic.com	Pool Covers, Spa Covers
Aquascape Design, Inc. Phone (800) 306-6227 www.aquascapedesign.com	Water Gardens/Ponds, Waterfalls

Manufacturers and their contact information

Manufacturer	Product Categories
Aquatemp Products Corp. Phone: (310) 225-3333 www.aquatemp.com	Solar Equipment
Aquatherm, Inc. Phone: (800) 535-6307 www.warmwater.com	Above-ground Pool Heaters, In-ground Pool Heaters, Solar Heaters
Arch Chemicals, Inc. Phone: (800) 478-5727 www.archchemicals.com	Algaecides, Pool Chemicals, pH Adjusters, Winterizing Products
AstralPool USA Phone: (904) 378-0999 www.astralpoolusa.com	Pumps, Filters, Heaters, Cleaners, Sanitization
AstralPool USA Phone: (904) 378-0999 www.astralpoolusa.com	Pumps, Filters, Heaters, Cleaners, Sanitization
Automatic Pool Covers, Inc. Phone: (800) 878-5789 www.automaticpoolcovers.net	Automatic Pool Covers, Safety Pool Covers
AutoPilot Systems, Inc. Phone: (800) 922-6246 www.autopilot.com	Bromine Generators, Chlorine Generators
Badu SwimJet Systems Phone: (800) 223-8538 www.badujet.com	Water Treadmills
Barrier Reef Pools Phone: (888) 457-6657 www.brpoolsusa.com	Fiberglass Pools
Bio-Dex Laboratories Phone: (800) 617-3477 www.bio-dex.com	Algaecides, Acid Washing Equipment, Clarifiers, Pool and Spa Chemicals
BioGuard Pool and Spa Products Phone: (800) 859-7946 www.bioguard.com	Algaecides, Chlorine Shock, Clarifiers, Pool and Spa Chemicals
BioLab, Inc. Phone: (678) 502-4000 www.biolabinc.com	Algaecides, Chlorine Shock, Clarifiers, Pool and Spa Chemicals

Manufacturers and their contact information

Manufacturer	Product Categories
Blue Haven Pools www.bluehaven.com	Gunitite Pools, Fiberglass Pools, Vinyl Liner Pools, Filters, Pumps, Heaters, Cleaners, Ozonators, Sanitizers
Blue Hawaiian Fiberglass Pools Phone: (888) 840-7699 www.bluehawaiianfiberglasspools.com	Fiberglass Pools, Wading Pools, Swim Spas
Caldera Spas Phone: (800) 999-4688 x8432 www.calderaspas.com	Spas, Spa Covers & Cover Lifters, Spa Steps, Water Chemicals, Water Testers, Spa Accessories
Cantar/Polyair Corp. Phone: (800) 448-2343 www.cantar.com	Fences, Winter Covers
Carefree Clearwater, Ltd. Phone: (800) 762-0647 www.swimcsi.com	Algaecides, Anodes, Sacrificial Catalytic Purifiers, Ionizers, Mineral Purifiers
Caretaker Systems, Inc. Phone: (800) 762-0647 www.swimcsi.com	Alarms, Gate Doors, Automatic Pool Cleaners, Pool Plans, Fittings
Catalina Spas Phone: (951) 940-4556 www.catalinaspas.com	Swim Spas, Hot Tubs, Gazebos, Spa Covers, Spa Features
CCSI International, Inc. Phone: (800) 537-8231 www.ccsiusa.com	Sun Rooms, Pool and Spa Enclosures, Skylights
CGT Pool Liners Phone: (519) 623-1633 www.cgtpoolliners.com	Vinyl Pool Liners
Chemical Automation Technology Phone: (800) 657-2287 www.chemauto.com	Chemical Controllers, pH Meters and Controls, Water Chemistry Sensors, Water Analysis Equipment
Chemtrol, Div. of Santa Barbara Control Systems Phone: (800) 621-2279 www.sbcontrol.com	Water Analysis Equipment, Water Analysis Software, Chemical Controllers, pH Meters and Controls, Water Chemistry Sensors
ChlorMatic Phone: (800) 447-2838 www.clormatic.com	Chlorinators, Chlorine Generators, Heat Exchangers, Commercial Pool Equipment

Manufacturers and their contact information

Manufacturer	Product Categories
Clayton and Lambert Phone: (800) 626-5819 www.claytonlambert.com	Stainless Steel/Steel Pool Walls, In-ground Spas, In-ground Vinyl Liner Pools
ClearWater Enviro Technologies, Inc. Phone: (800) 756-7946 www.clearwaterpoolsystems.com	Antiscale, Water Conditioner, Ionizers, Ozone Generators, Scale Controls
ClearWater Tech, LLC Phone: (800) 262-0203 www.cwtozone.com	Ozone Generators, Ozone Injectors
Coates Heater Company, Inc. Phone: (253) 872-7256 www.coatesheater.com	Electric Pool & Spa Heaters, Boiler Parts
Confer Plastics, Inc. Phone: (800) 635-3213 www.conferplastics.com	Pool Ladders, Pool & Spa Steps, Spa Bars & Pads
Consolidated Pool and Spa Industries, Inc. Phone: (877) 464-6496 www.consolidatedpool.com	Pool Lighting, Spa Lighting, Above-Ground Pool Lights, Heaters, Vacuums, Spa Ozonators
Cover Valet Phone: (800) 730-7727 www.covervalet.com	Spa Cover Lifters, Spa Steps, Spa Rails, Spa Accessories
Cover-Pools, Inc. Phone: (800) 447-2838 www.coverpools.com	Pool Enclosures, Above-ground/In-ground Automatic Pool Covers, Vinyl Repair Kits
CoverLogix Advanced Safety Cover Systems Phone: (855) 992-6837 www.coverlogix.com	Safety Covers
Coverstar, Inc. Phone: (800) 617-7283 www.coverstar.com	Automatic Pool Covers, In-Ground Pool Covers, Spa Covers
Coverttech Phone: (800) 837-8961 www.coverttechfab.com	Insulation, Above-ground/In-ground Pool Covers, Solar Blankets, Water Bags
Crestwood Pools Phone: (607) 786-0010 www.crestwoodpools.com	Above-Ground Pools, Vinyl Liners, Ionizers, Pool Covers, Walk-In Stairs

Manufacturers and their contact information

Manufacturer	Product Categories
Custom Fiberglass Pools www.custom-fiberglasspools.com	Fiberglass Pools
Del Ozone Phone: (800) 676-1335 www.delozone.com	Air injectors, Clarifiers, ORP Meters, Ozone Generators, Commercial Pool Equipment
Dolphin Fiberglass Pools Phone: (609) 965-5188 www.dolphinindustriesnj.com	Fiberglass Pools, Spas
Doughboy Recreational Phone: (662) 536-4333 www.doughboy-pools.com	Automatic Suction Pool Cleaners, Filters, Cartridges, Above-ground Pool Ladders, Liners
Earth Science Laboratories, Inc. Phone: (800) 257-9283 www.pristineblue.com	Algaecides, Pool and Spa Chemicals, Scale Control, Test Kits, Nonchlorine Shocking Agents
Eco-Matic Salt Water Pool Systems Phone: (800) 881-2284 www.ecomatic.com	Algaecides, Bromine Generators, Chlorine Shocking Agents, Chlorine Generators
ECOsmarte Planet Friendly, Inc. Phone: (800) 466-7946 www.ecosmarte.com	Ionizers, Oxygen Generators, Alternative Filter Media
Enersol Solar Products Phone: (800) 884-6444 www.enersol.com	Solar Heater, Solar Collectors, Solar Equipment
Environmental Pool Systems, Inc. Phone: (800) 514-7051	Dehumidifiers, Pool Enclosures, Commercial Pool Equipment
Esther Williams Swimming Pools Phone: (800) 235-0185 www.estherwilliamspools.com	Above-ground Pools, Decking, Ladders, Fiber-Optic Lights
Fantasy Spas Phone: (888) 961-7727 www.fantasy-spas.com	Spas, Spa Steps, Spa Cover Lifters, Spa Lights, Ozonators
Feherguard Products, Ltd. Phone: (905) 876-4766 www.feherguard.com	Tile and Vinyl Adhesives, Pool and Spa Ladders, Repair Kits

Manufacturers and their contact information

Manufacturer	Product Categories
Fiberstars Phone: (888) 704-2276 www.fiberstars.com	Fountains, Lights, Waterfalls
Fibre Tech, Inc. Phone: (800) 3963-7283 www.poolpreserver.com	Fiberglass Pools, Wading Pools, Swim Spas
Focus Temp International Phone: (405) 796-4333 www.focustemp.com	Heat Exchangers, Heat Pumps
Fort Wayne Pool, Inc. Phone: (219) 432-8731 www.surfthepool.com	Aluminum Coping, Cover Fabrics, Injection Molding, Foam Pool Walls, Steel Pool Walls, Steps
Freeflow Spas Phone: (888) 961-7727 www.freeflowspas.com	Spas
Garrett Liners, Inc. Phone: (800) 222-3650 www.garrettliners.com	Garden/Ponds Water, Hot Tub and Pool Liners, Vinyl Repair Kits
Gladon Company, Inc. Phone: (877) 445-2366 www.gladon.com	Pool Pads, Pool Coves
GLB Pool and Spa Phone: (800) 445-2059 www.GLBPoolSpa.com	Algaecides, Pool and Spa Chemicals, Enzymes, Winterizing Products
Goldline Controls, Inc. Phone: (800) 343-0826 www.goldlinecontrols.com	Chlorine Generators, Freeze-Protection Controls, Programmable Controls
Guardian Pool Fence Systems, Inc. Phone: (800) 366-7233 www.guardianpoolfence.com	Pool Enclosures, Fences
Hanna Instruments, Inc. Phone: (800) 426-6287 www.hannainst.com	Chemical Controllers, Programmable Controls, ORP Meters, Water Analysis Equipment
Haviland Enterprises, Inc. Phone: (800) 456-1134 www.havilandusa.com	Pool & Spa Chemicals, Pool Hoses

Manufacturers and their contact information

Manufacturer	Product Categories
Hayward Pool Products, Inc. Phone: (888) 429-9273 www.haywardnet.com	Automatic Suction Pool Cleaners, Filters, Heaters, Pumps
Heliocol Solar Pool Heating Phone: (800) 797-6527 www.helicol.com	Heat Exchangers, Above-ground/In-ground Pool heaters, Spa and Hot Tub Heaters, Solar Equipment
Hutchinson Fiberglass Pools & Spas Phone: (609) 361-0202 www.hutchisonpools.com	Fiberglass Pools, Spas, Cascades, Safety Covers, Lighting
Hydrotech Pool and Spa Products Phone: (800) 959-7946	Algae and Spot Remover, Algaecides, Pool and Spa Chemicals, Filter Cleaners
Industrial Test Systems, Inc. Phone: (800) 861-9712 www.sensafe.com	Water Test Kits, Visual Water Test Strips, Digital Water Testers
Inter-Fab, Inc. Phone: (800) 737-5386 www.inter-fab.com	Benches, Water Garden/Ponds, Fountains, Handrails, Waterfalls, Ladders, Slides
Intex Recreation Corp. Phone: (800) 234-6839 www.intexcorp.com	Above-Ground Pools & Accessories, Inflatables, Pool & Swim Toys, Pool Lounges, Pumps, Filters,
Jack's Magic Phone: (800) 348-1656 www.jacksmagic.com	Algae and Spot Remover, Algaecides, Chlorine Removers, Rust Stains Removers, Concrete Cleaners
Jacuzzi Pool Equipment Phone: (866) 370-2664	Cartridge, D.E. Pressure, Gravel/Sand Filters, Lights, Pump, Tanks
Kafco Manufacturing Limited Phone: (888) 721-7665 www.kafko.com	Aluminum Coving, Pool Covers, Skimmer Baskets, Steps, Vinyl Liners
King Technology, Inc. Phone: (800) 222-0169 www.kingtechnology.com	Floating Chemical Feeders, In-line Chemical Feeders, Pool and Spa Chemicals, Chlorinators
KoolGrips LLC. Phone: (877) 445-6654 www.koolgrips.com	Covers for Pool & Spa Handrails & Ladders

Manufacturers and their contact information

Manufacturer	Product Categories
LaMotte Co. Phone: (800) 344-3100 www.lamotte.com	Water Analysis Software, ORP Meters, pH Controls and Meters, TDS Meters, Test Kits, Labs
Latham Pool Products, Inc. Phone: (800) 833-3800 www.lathampool.com	Fiberglass Pools, Vinyl Liner Pools, Steel Pools, Polymer Pools, Above Ground Pools, Automatic Pool Covers, Safety Covers, Pool Liners, Steps
Leisure Concepts Phone: (800) 469-2428 www.leisureconcepts.com	Spa Cover Lifts, Spa Steps, Spa Covers, Spa Accessories
Leisure Pools Phone: 855-85-SPLASH www.leisurepoolsonline.com	Fiberglass Pools, Pumps, Filters, Pool Covers, Pool Cleaners, Lighting
Liberty Composite Pools www.libertycompositepools.com	Fiberglass Pools, Pool Tile
Life Saver Pool Fence Systems, Inc. Phone: (800) 282-3836 www.poolfence.com	Pool Alarms, Fences
Lifeguard Purification Phone: (800) 678-7439 www.lifeguardsystems.com	Catalytic Purifiers, Programmable Controls, Ionizers, pH Adjusters, Controls, Meters
Lochinvar, LLC Phone: (615) 889-8900 www.lochinvar.com	Pool & Spa Heaters, Boilers
LOOP-LOC, Ltd. Phone: (800) 562-5667 www.looploc.com	Cover Fabrics, Pool Covers, Safety Covers
LoneStar Fiberglass Pools Phone: (866) 471-6900 www.lonestarfiberglasspools.com	Fiberglass Pools, Pool Slides, Pool Games, Pool Cleaners, Pumps, Filters, Feeders, Pool Tile
Maytronics Group Phone: (888) 365-7446 www.maytronics.com	Robotic Pool Cleaners, Pool Covers, Pool Alarms
Mazzei Injector Corp. Phone: (661) 363-6500 www.mazzei.com	Ozone Injectors, Venturi Injectors

Manufacturers and their contact information

Manufacturer	Product Categories
Merlin Industries Phone: (800) 289-1836 www.merlinindustries.com	Covers, Fences, Liners, Swim Training Equipment, Safety Covers
Miami Filter Phone: (888) 642-6482 www.miamifilter.com	Pool Filters, Commercial Pool Equipment
Micro Pure Phone: (780) 452-1577 www.micropure.com	Filter Bags, Cartridges, Media, ZEOLite, First Aid Equipment
N. Jonas and Co., Inc. Phone: (800) 523-6533 www.njonas.com	Algae and Spot Remover, Algaecides, Anti-freeze, Antiscale, Pool and Spa Chemicals
Natural Chemistry, Inc. Phone: (203) 295-2300 www.naturalchemistry.com	Pool and Spa Chemicals, controllers, Enzymes, Test Kits
Oasis Pool Products www.oasisswimmingpoolproducts.com	Steel Pools & Spas, Polymer Pools & Spas, Vinyl Liners, Safety Covers, Automatic Covers, Pool
Ocean Reef Pools www.oceanreefpools.com.au	Fiberglass Pools, Pumps, Filters, Heaters, Cleaners, Lighting, Water Features, Sanitization
Pacific Industries, Inc. Phone: (800) 833-3800 www.pacificpools.com	Aluminum Coping, PVC Coping, Pool Covers, Walls, Safety Covers, Diving Towers and Stands, Overflow Systems
Paramount Pool and Spa Systems Phone: (800) 621-5886 www.1paramount.com	In-Floor Cleaning Systems, Purifiers, Lighting, Automatic Skimmers
Pebble Technology, Inc. Phone: (800) 937-5058 www.pebbletec.com	Chlorintors, Pool Coating and Finishes
Pentair Pool Products, Inc. Phone: (800) 831-7133 www.pentairpool.com	Salt Water Chlorinators, Programmable Controls, Filters, Heat Pumps, Heaters, Pumps, Lights, Skimmers
Plastimayd Corp. Phone: (800) 348-2600 www.plastimayd.com	Vinyl Adhesives, PVC Coping, Domes, Liners, Covers, Repair Kits

Manufacturers and their contact information

Manufacturer	Product Categories
Polaris Pool Systems Phone: (800) 348-2600 www.polarispoolsystems.com	Air Blowers, Automatic Pool Cleaners, Chemical Controllers, Spa Chemicals, Chlorinators, Fountains, Spa Vacuums
Pool Cover Specialists Nat.'l, Inc. Phone: (800) 369-5152 www.powertrackcovers.com	Covers, Cover-Removal Systems, Safety Covers, Spa Covers, Pumps
Pool Patch Phone: 800-588-4008 www.poolpatch.com	Pool Plaster, Pebble, Tile, and Deck Repair Kits, Pool Skimmers, Pool Cleaners, Automatic Pool Brushes
Protect-A-Child Pool Fence Systems Phone: (800) 992-2206 www.protectachild.com	Fences
Radiant Pools Phone: (800) 723-4268 www.radiantpools.com	Above-Ground Pools, In-Ground Pools, Energy Efficient Pools
Raypak, Inc. Phone: (805) 278-5300 www.raypak.com	Electromechanical Controls, Heat Pumps, Heaters
Riviera Fiberglass Pools www.rivierafiberglasspools.com	Fiberglass Pools, Pool Covers, Spas, Splash Pads, Swim Spas, Swim Gyms
S.R. Smith Phone: (888) 677-7776 www.srsmith.com	Anchor Sockets, Diving Stands, Boards and Towers, Slides, Pool Toys and Games, Ladders, Rail Goods
Saftron Phone: (305) 233-5511 www.saftron.com	Pool & Spa Rails, Ladders, Safety & Exercise Bars, Accessories
San Juan Products, Inc. Phone: (800) 535-7946 www.sanjuanpools.com	Fiberglass Pools, Spa Shells, Spa Gelcoat, Swim Spas
Sentry Pool, Inc. Phone: (800) 443-8625 www.sentrypool.com	Aluminum Coping, PVC Coping, Pool Walls, Swim Spas
Sharkline Pools Phone: (631) 951-9800 www.sharkline.com	Above-Ground Pools, Liners, Decks, Ladders, Fences







Manufacturers and their contact information

Manufacturer	Product Categories
Silbrico Corp. Phone: (800) 323-4287 www.silbrico.com	D.D. Alternative Filter Media, Perlite Filter Media
SmartPool, Inc. Phone: (888) 560-7665 www.smartpool.com	Gate/Door Alarms, Pool Alarms, Solar Heaters, Lights, Solar Equipment, Robotic Pool Cleaners
Speck Pumps Phone: (800) 223-8538 www.usa.speck-pumps.com	Pool and Spa Equipment Packs, Spa Filters, Swim Jets, Pumps, Skimmers, Multiport Valves
Splash SuperPools Phone: (800) 927-7527 www.splashpools.com	Pool Decking, Ladders, Portable Pools and Spas
Splash-A-Round Pools Phone: (909) 980-7709 www.splasharoundpools.com	Above-Ground Pools, Soft-Sided Pools, Spas, Automatic Pool Cleaners, Solar Heat Squares, Test Kits, Skimmers, Pool Brushes, Thermometers
Sun Fiberglass Pools Phone: 1-800-764-7946 www.sunpools.com	Fiberglass Pools
Sweep Fins Phone: (800) 588-4008 www.sweepfins.com	Automatic Pool Brushes
Swimcraft, Inc. Phone: (260) 665-3360 www.swimcraftinc.com	Fiberglass Pools, Pool Walls, Pool Steps
Swimline, Corp www.swimline.com	In-Ground & Above-Ground Pool Liners, Pool Covers, Winter Covers, Leaf Nets, Inflatables, Toys & Games, Accessories
Thursday Pools Phone: (877) 929-7665 www.thursdaypools.com	Fiberglass Pools
Trevi Pools, Inc. Phone: (888) 777-0447 www.etrevi.com	Pool Liners, Walls Canada's Largest
Trilogy Pools Phone: (931) 438-4744 www.trilogypools.com	Fiberglass Pools, Pool Covers, Pool Lighting







Manufacturers and their contact information

Manufacturer	Product Categories
United Chemical Corp. Phone: (800) 524-5550 www.swimpool.com	Pool Chemicals, Algaecides, Alkalines, Bromine, Clarifiers, Filter Cleaners, pH Adjuster, Scale Controls
Viking Pools, Inc. Phone: (800) 854-7665 www.vikingpools.com	Fiberglass Pools, Spa Shells, Swim Spas
VynAll Pool Products Phone: (800) 553-5320 www.vynall.com	Vinyl Liners
Water World Fiberglass Pools Phone: (800) 596-6224 www.waterworldpools.us	Fiberglass Pools, Spas
Waterpik Technologies Phone: (800) 227-1442 www.jandy.com	Chlorine Generators, Programmable Contros, Filters, Heaters Lights, Valves, Waterfalls
Waterway Plastics Phone: (805) 981-0261 www.waterwayplastics.com	Air Blowers, Filters, Injection Molding, Spa Lights, Main Drains, Spa Jets, Pump, Skimmers
Watkins Manufacturing Corporation Phone: (800) 999-4688 x8432 www.hotspring.com	Spas
Zeotech Corp. Phone: (800) 575-7887 www.zeotechcorp.com	D.E. Alternative Filter Media, ZEOLite Filter Media
Zodiac Pool Systems, Inc. Phone: (800) 822-7933 www.zodiacpoolsystems.com	Pumps, Filters, Heaters, Automatic Pool Cleaners, Sanitizers, Lighting, Pool Covers, Valves, Water Designs, Pool Accessories



Apps

Photo	App Name	Description	Price	Retail or Wholesale?	Interactive?
	Insta-Link Water Testing	Insta-Link is a free app that uses a special pool test strip to help you manage your pool. The app takes a photo of the test strip, then tells you exactly what chemicals you need to add! No hardware needed, but the test strips are available at the above link.	\$0	Both	Yes
	Nimbus Pool Doctor	Nimbus pool doctor helps users balance the chemicals in their pool, and keeps a record of the treatments that they have completed in the past. It is a simple app that helps you as a pool owner balance the chemistry of your pool.	\$9.99	Both	No
	Pool Calculator	Pool-Calculator does just what the name implies! It does the complex pool calculations for you. All you need to do is input accurate information about your pool (size, chem readings, etc) and it will tell you how much of each chemical to use.	\$4.99	Both	Yes
	Pool Boy Pro	Pool Boy Pro includes multiple calculators, and charts so you can see the change in readings over time.	\$2.99	Both	No
	The Pool Monitor Free	Pool Monitor Free is a free app (duh!) that helps you keep track of your pool readings, and helps calculate the correct chemical inputs for your pool.	\$3.99	Both	Yes
	NSPF Suite of Apps	The National Swimming Pool Foundation has teamed up with inQ Mobile Apps to release a suite of iPhone apps for pool service operators. While a few of them can be used by homeowners, most of them are geared towards the pool service professional.	\$1.99- \$3.99	Wholesale Few Retail	No

Apps

Photo	App Name	Description	Price	Retail or Wholesale?	Interactive?
	Pool Smart	Pool Smart includes a checklist for managing your pool as well as a chemical calculator that shows you the exact amount of chemicals to use.	\$0.99	Both	Yes
	Swim University	Shameless Plug: Did you know we have an iPhone app that allows you to read our wonderful and entertaining blog on-the-go or near your pool? Well, we do! You can download it here :-)	\$0	Both	No
	Balboa Spa Control App	The Balboa Spa Control app lets you control your supported spa from Balboa. This app lets you directly control everything from temperature to filtration cycles. Note: This app only works if you have a Balboa brand system with Wifi, the list can be found at the above link.	\$0 With Balboa Spa Purchase	Retail	Yes
	Zodiac iAquaLink	The Zodiac iAquaLink system is one of the most advanced pool management devices on the planet. If your pool has a Zodiac iAquaLink system installed, you can use the mobile app to manage everything about your pool. Things like lights, pumps, and temperature are easily changed right from your smartphone or tablet.	\$0	Retail	Yes
	Pentair ScreenLogic	The Pentair ScreenLogic app works much like the Zodiac App but works with the Pentair pump control systems. It supports changing all of your pool settings on the fly if you have the supported Pentair pump system.	\$0	Retail	Yes
	Pool Pro	Pool Pro is another maintenance app aimed at service techs. It has a chemical calculator, route mapper and a function that enables techs from a company to sync their information.	free 10-day trial then \$9.99, for Android	Wholesale	Yes

Apps

Photo	App Name	Description	Price	Retail or Wholesale?	Interactive?
	Ecosmarte Cloud	The ECOsmarte Cloud is designated for users to monitor the status of their swimming pools and other devices while on the go. The cloud will help in viewing and regulating pH and copper levels and keep customers regularly updated. Includes how-to videos, an interactive pool and spa help, startup/FAQ, and more. Simple 5 minute set up	\$0	Both	Yes
	PoolCorp	A popular app with service techs is POOL360, from PoolCorp . This app allows users to find out if a specific item is in stock at their local SCP or Superior store, and order the item. For companies with more than one tech, the account holder can administer the apps in a way that limits each tech to certain functionalities, such as the ability to order parts or check pricing.	\$0	Wholesale	Yes

Web URLs

ECOsmarte Planet Friendly, Inc.
www.ecosmarte.com

Hayward Pool Products
www.hayward-pool.com

Inter-Fab, Inc.
www.interfab.com

Jacuzzi Pool Products
www.jacuzzipoolproducts.com

Jandy Pool Products, Inc.
www.jandypoolproducts.com

Merlin Industries
www.merlinindustries.com

Pentair Pool Products
www.pentairpool.com/poolproducts.htm

Plastimayd Corp
www.plastimayd.com

Protect-A-Child Pool Fence Systems
www.protectachild.com

S.R. Smith
www.srsmith.com

Sta-Rite
www.starite.com

The Pool Tool Co.
www.pooltoolco.com

Waterway Plastics
www.waterwayplastics.com

ZEObrite
www.zeobrite.com

Zodiac Pool Systems
www.zodiacpoolsystems.com

Toll-Free Support Lines

In this day of online emphasis, it may be difficult to bring your computer to the pool. The following toll-free support lines are offered by manufacturers to encourage successful pool ownership and safety.

American Association of Poison Control Centers
1-800-222-1222

ECOsmarte Planet Friendly, Inc.
1-800-IONSWIM (466-7946)

Glasspack Filter Media
1-800-466-7946

Hayward Pool Products
888-429-9273

Inter-Fab, Inc.
1-800-737-5386

Intex Pools Customer Service
1-800-234-6839

Pentair Pool Products
1-800-831-7133

Plastimayd Corp
800-348-2600

Protect-A-Child Fence Systems
800-992-2206

S.R. Smith
1-800-824-4387

Water Tech Corp's Customer Experience Center
800-298-8800

Waterway Plastics
888-SPA-JETS

ZEObrite
1-800-7877

Zodiac Pool Systems
800-822-7933

ECOSMARTE upgrade

In the midst of summer, Ecosmarte offers some great "trade-up" opportunities



THOUGHT ABOUT UPGRADING?

PROCESS

REFRESH

YOUR COPPER/OXYGEN CHAMBER. ELIMINATE NEARLY ALL ACID WITH OUR AUTOMATED SYSTEM.

RETURN

YOUR OLD CONTROL BOX TO US. WE WILL REFURBISH IT. KEEP YOUR OLD CHAMBER AS A BACK-UP FOR FUTURE USE.

TRADE IN REWARD!

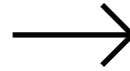
WE'LL GIVE YOU A FULL TRADE-IN VALUE TOWARDS THE PRICE OF THE FULLY AUTOMATED SYSTEM.

REJOICE

IN MORE CONTROL WITH A PROGRAMMABLE UNIT AND GET READY FOR PHONE CONTROL (COMING SOON).

REALLY,

YOU'LL BE GLAD YOU DID IT.



TURBO UNIT TO PROGRAMMABLE UNIT

\$3499

INCLUDES SWITCHOVER
CO2 MANIFOLD FOR FREE
FREE SHIPPING
CALL 612-866-1200
TO ORDER

THE INTERACTIVECLOUD

The cloud is now able to work with spas and pool systems. The Ecosmarte cloud makes it extremely easy for pool owners or their pool guy to keep track of the information on their specific pool. The cloud also has a trouble shooting section to resolve any pool or spa issues. Along with that, there are specific instructions on how to keep your pool or spa in the best possible condition. When the Ecosmarte WiFi pool product is released, it will automatically upload your pool to spa numbers to the Ecosmarte cloud, proactively notifying you if any of the numbers appear too high or too low. This will allow the customer to spend less time on pool keep-up, and more time on the things that they truly enjoy in life.

IN ORDER TO UPGRADE TO THE WIFI UNIT WHEN IT IS AVAILABLE, YOU MUST OWN A PROGRAMMABLE UNIT. UPGRADE TO A PROGRAMMABLE UNIT NOW WILL ALLOW YOU TO PURCHASE THE WIFI UNIT WHEN IT HITS THE MARKET.

FREE LIFETIME MEMBERSHIP
THIS YEAR ONLY

Free 24/7 Cloud Support
WiFi enabled - Phone, Tablet, or Desktop capable
New WiFi Controller released Spring 2015
www.ecosmarteccloud.com

New WiFi
in BETA