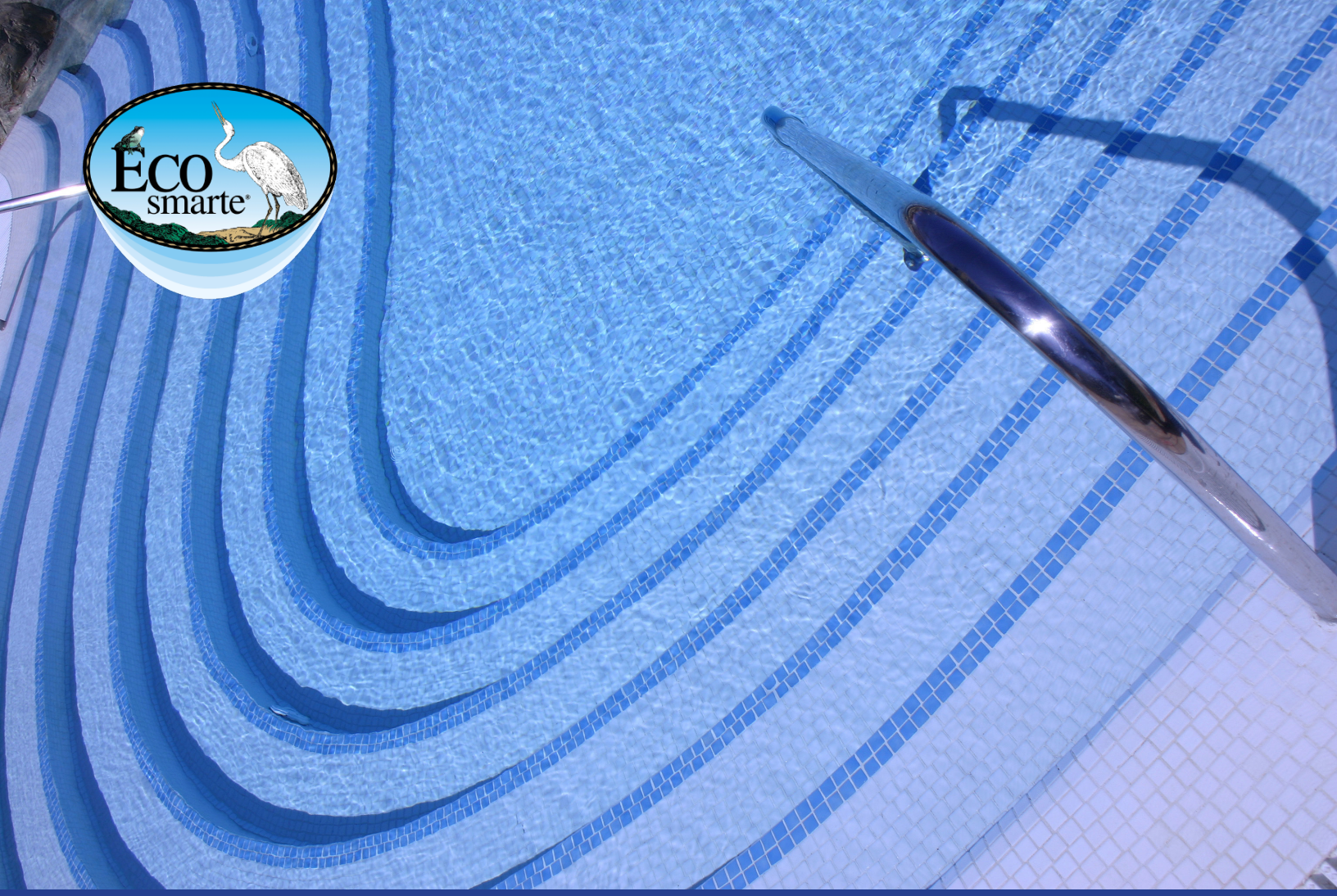


ECOSMARTE UNIVERSITY

STUDY GUIDE

INDEX

POOL VOLUME

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

Rectangular Pool:

LENGTH		WIDTH		AVG DEPTH			GALLONS
	X		X		X 7.5	=	

Circular Pool:

DIAMETER		DIAMETER		AVG DEPTH			GALLONS
	X		X		X 5.9	=	

Oval Pool:

MAX WIDTH		MAX WIDTH		AVG DEPTH			GALLONS
	X		X		X 5.9	=	

CYCLE TIME CALCULATION

GALLONS		THIS IS YOUR CYCLE TIME
	=	
PUMP GPM	X 60	

- 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 _____ (Finish Type) Vinyl Fiberglass

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

please circle if applicable

pH	Phenol Red Bromethyl Blue
Alkalinity	_____
Sanitizer	Cl Br Cu NONE
Calcium Hardness	YES YES YES NONE
Cyanuric Acid	YES NO NO NONE
Meters (if any)	_____ NONE
Phosphates	_____ 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	_____	

MAINTENANCE ITEMS

Regardless of Pool Surface

Weekly tasks for all pools

- Test pH and adjust if necessary
- Test copper and adjust if necessary
- Test phosphates and remove if necessary
- Empty skimmer basket
- Empty pump basket
- Vacuum all leaves
- Check pressure on filter (if pressure has risen 6-10 lbs, backwash filter)

Annual maintenance items: tests

- Test calcium hardness and adjust

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, most compatible with Ecosmarte

(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

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.

3 basic types

Three basic types of filters exist for both above ground and in-ground swimming pools:
- Sand filter, most compatible with Ecosmarte
- 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 Media Options	Microns Filtered
Quartz silica sand	50
ZEOlite	2-10*
Glass Media	2-5*

* With proper hoursepower/filter size combination

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

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 avaiable 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.

INSTALLING NEW MEDIA

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 openeings. 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.

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)

BACKWASHING YOUR SAND FILTER

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 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

DE BACKWASHING

A diatomaceous earth filter

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.

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	- Hole in grids - Valve to separation tank is faulty or open - Too much powder in the filter
“Murky” water or Oil Slick:	- 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 usally 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.

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	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	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	1. Cover caught on something sharp 2. Abrasion pinhole	1. Remove sharp object and use patch kit to repair
Cover retracts out of square (some unevenness may be unavoidable due to pool configuration)	1. Rope legth is unequal 2. Uneven drag on cover as it retracts off pool	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	1. Rope length is unequal	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	1. Excess friction during operation 2. Cover adhering to deck 3. Debris in housing 4. Cover too tight 5. Brake to tight	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

Adding a retractable cover to an existing pool is expensive, but doing so can save you on both energy and water chemistry. There are two types of covers, each either electric or hydraulic.

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, regarless 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.

TURBO SYSTEM

The standard Ecosmarte Turbo pool/spa system

The turbo has two switches, an ion/oxy switch and a high/low switch. The ion/oxy switch determine whether the system is releasing copper or oxygen into the water. Copper should only ever be released into the pool if after a copper test you determine that the copper is lower than 0.4 ppm. Otherwise, the switch should be set to oxidize by default. The high/low switch should always be set to high unless directed otherwise by an ECOsmarte technician.

Ecosmarte Planet Friendly, Inc.
Programmable Control Box Manual
Instructional Manual

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

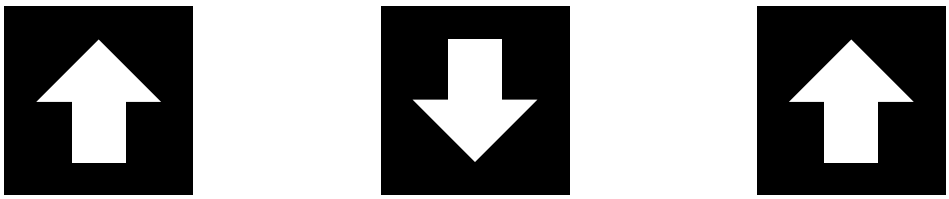
Language Setting Screen

Choose Language
Wait for this screen to pass automatically (about 5 seconds), and 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, etc.)

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:


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

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:


```
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 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:


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

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:


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

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:

```
8:51:04A                5/22/2007
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.

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.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/onlinesupport.html
Password: customer2007

```
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 ↓
```

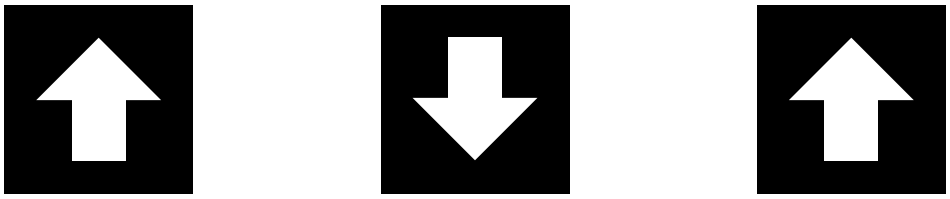
The “NEXT” button will bring you to the screen where CO2 injection time should be set. Use the right arrow key to move cursor to the next necessary entry (from hours to minutes). The up and down arrow keys allow you to program or change the number of hours/minutes per day. It is a rule that Southern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

Note

Default settings on CO2 feeds constant gas to pool to confirm no leads 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 polition 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.

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 censor, a visual or audio alarm for pH rance, and power to chambers and CU sensors (when it becomes available). TDS and water tempurature 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 are 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 leads 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

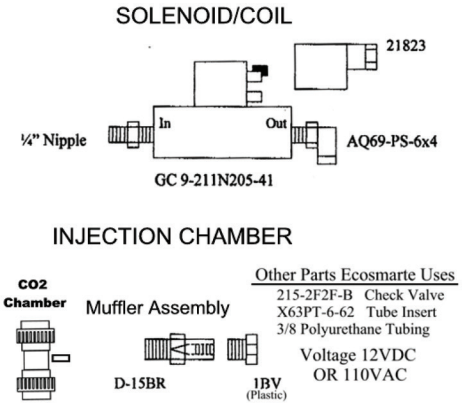
PLUMBING

- 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



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/oxizide 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

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	Ecosmarte	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	Weekly	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 resonable 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 minimum for Ecosmarte.

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 algaecide 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.

WATER PROPERTIES

The four chemical levels that are essential to the efficient operation of the ECOsmarte pool system are pH, copper, calcium and phosphates.

pH

We will start with pH. Potential Hydrogen, otherwise known as pH affects how acidic is the water. It stabilizes the copper as an effective sanitizer. The correct level for pH is 6.8-7.2, leaning towards 6.8. If pH is too low (rare), it can cause a crystal clear green color in the pool. If pH is too high, it can cause the copper ions to fall out of the water, causing staining and a blue hue.

The following steps detail how to test pH in the pool.

- Make sure the plastic sample tube is clean and dry.
- Take a sample of water from about 18" below the surface of the water, away from the return jets and skimmers.
- Add 5 drops of phenol red to the water sample.
- Put the cap on the sample tube and turn the tube over to mix.
- Hold the sample out at arm's length and compare side by side to the pH color samples.
- Record the results.

The following detail how to correct for an imbalance of pH.

- If pH is too Low (rare)
- Add 4 lbs baking soda to the pool.
- After 24 hours, retest the pH.
- If the pH level still lower than 6.6, add another 4 lbs baking soda.
- A total of 8 lbs baking soda should be enough to raise the pH to 6.8 - 7.2.
- If pH is too High
- Fill a 5 gallon bucket about halfway with pool water. Then, add liquid muriatic acid to the bucket, creating a solution of about 2 parts water to one part acid.
- Walk around the pool gradually adding the acid/water solution evenly to the pool.
- Wait a day for the solution to mix thoroughly, and then test the pH again. If the pH is still above 7.2, add another dose of water/acid solution.

WATER PROPERTIES

Copper

The second level is copper. Copper is the active ingredient in the pool that acts as both an antimicrobial and algaecide. The correct level for copper is between 0.4-0.7. If copper is too low, is can cause copper to be rendered ineffective. Copper kills bacteria at 0.1 ppm and algae at 0.3 ppm, if below those levels it will be rendered ineffective accordingly. If copper is too high, it can cause copper staining.

The following steps detail how to test copper in the pool.

- With a clean, dry sample tube, take a sample of water about 18” below the water - away from return jets and skimmers.
- Add 5 drops of Copper A to the tube, cap it, and turn it upside-down to mix.
- Add 5 drops of Copper B to the same tube, cap it, and turn it upside-down to mix.
- Wait three minutes.
- With the color chart on a flat surface, hold the tube about 1” above the chart. Look down through the length of the tube and compare to the color chart.
- Record Results. The pool must have a copper level between .4 - .7ppm. On a 20,000 gallon pool, it takes, on average, 4 hours to move .1ppm and 12 hours to move .3ppm.

The following detail how to correct for an imbalance of copper.

- If copper is too Low
- Set Controller mode to ION until Copper levels register at least 0.4
- If copper is too High
- Method 1
- Drain 2 feet of water from the pool and refill.
- Retest the copper.
- If the copper level is still above .7ppm, drain another 2 feet and refill.
- Method 2
- Place 4 Ferre Tabs (from a local pool store or online at ecosmarteonlinestore.com) into the skimmers.

WATER PROPERTIES

Calcium

The third level is calcium. Calcium adds conductivity to the water so that the electrodes can send electricity through the copper anodes and release copper ions into the water. The correct level for calcium is between 400-2500 ppm. If calcium is too low, copper ions will not be released into the water efficiently. If calcium is too high, the water becomes dangerously conductive.

The following steps detail how to test calcium in the pool.

- Dip one paper calcium test strip into the water for 3 seconds and then remove.
- Immediately match to the closest color on the color chart.
- Read results as ppm and record.

The following detail how to correct for an imbalance of calcium.

- If calcium is too Low
- Put a little calcium at a time in a leaf skimmer. Swish it around toward the middle of the pool until it dissolves. Repeat this process to add 50 - 100 lbs of calcium.
- Wait a couple days before testing the water again to make sure the calcium is thoroughly mixed into the pool water.
- Retest the water.
- Repeat this process until the calcium level is at least above 400ppm.
- If calcium is too High
- Drain 2 feet of water from the pool and refill.
- Retest the calcium.
- If the calcium level is still above 2500ppm, drain another 2 feet and refill.

WATER PROPERTIES

Phosphates

The fourth and last level is phosphates. Phosphates in simplest terms are food for algae, and by reducing the phosphates to zero, the fuel for algae is eliminated. The correct level for phosphates is between 0-100ppb, leaning towards 0. If phosphates are too high, then algae will begin to grow in the pool provided there are active live algae.

The following steps detail how to test phosphates in the pool.

- With a clean, dry sample tube, take a 10 mL sample of water from about 18″ below the surface of the water, away from the return jets and skimmers.
- Gently bend a phosphate test strip in half (do not fold), with pads facing inward. Place the strip inside the test tube cap.
- Cap the test tube and invert the tube slowly 5 times, allowing the air bubble to go from the top to bottom and bottom to top.
- Remove the cap and test strip.
- Place the bottom of the test tube on the white boxed area of the color chart on the phosphate test container. Look down through the top of the OPEN test tube and compare it to the color chart.
- Read results as ppb and record.

The following detail how to correct for an imbalance of phosphates.

- If between 100-1000 ppb, use one of the following
- Sea Klear Phosphate Remover
- Phos-Free
- Phos-X
- Zero-Phos
- If above 1000 ppb, use
- Sea Klear Phosphate Remover

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.

WINTER CLOSING

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.

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

SECRET #1
Salt water systems corrode the pool equipment and the concrete deck.

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 back-wash 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. Vinyl liner manufacturers report numerous problems.

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.

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

SECRET #3
Salt water systems require cell replacement every 2 to 3 years at a cost of $500-$800. The warranty is usually one year.

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 as the salt manufacturers disclaim all liability.

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 basisity 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.

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

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.

They also claim 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.

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